Service Manual

EVOII WASHING MACHINE

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1 EVOII (LCD) WASHING MACHINE

1.1 CONTROL PANEL

Stand-by

Start/Reset

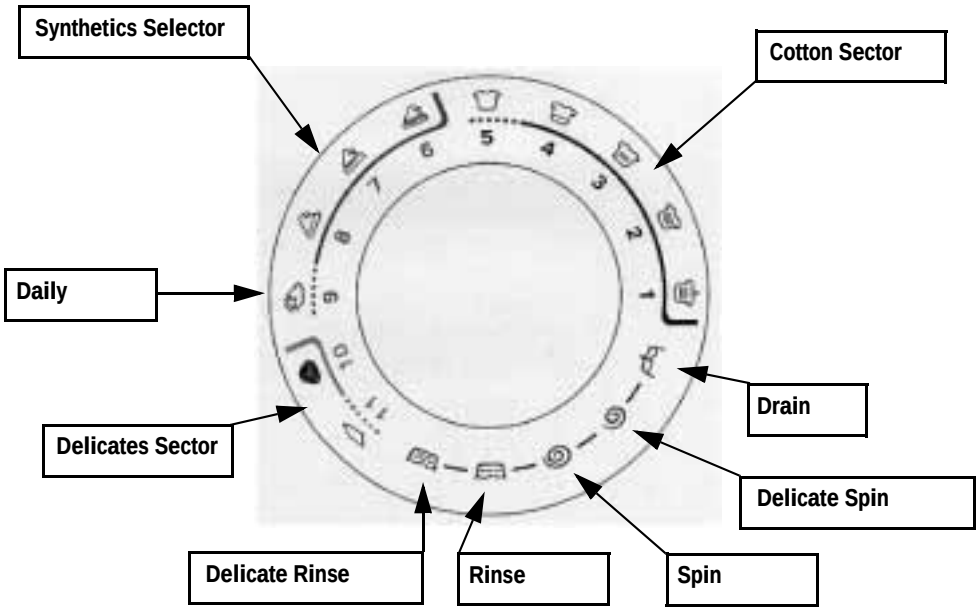
Mode

Select

Temperature Regulation

Spin Regulation

1.2 PROGRAMME KNOB



1.3 DISPLAY

Delay Timer	Prewash	Cotton
Bleaching	Wash	Coloureds
Easy iron	Rinse	Synthetics
Super Wash	Spin	Wool
Fast		Silk
Extra rinse		Door locked indicator
Drying		

1.4 Operational logic

Starting a programme

Close the door

Activate the machine by pressing the STAND-BY key (symbol), the door lock LED flashes at a frequency of 1Hz

Select the desired programme with the programme knob

The display shows the estimated time for the selected programme

To start the cycle press START/RESET (symbol). To cancel the set programme keep the START/RESET key (symbol) pressed for 2 seconds

1.5 Customizing and options

Temperature change

Press the temperature key (symbol), the maximum temperature of the set programme is displayed. It can be decreased by pressing the temperature key (symbol) repeatedly.

OFF indicates cold wash.

Spin change

Press the spin key (symbol), the maximum spin speed of the set programme is displayed. It can be decreased by pressing the spin key (symbol) repeatedly.

OFF indicates no spin.

1.5.1 Options selection

Press the mode key (symbol) to select the desired option. The symbol and the option flash. Press the select key (symbol S) to set the option. A square appears around the symbol.

Delay timer option

For delaying machine start up to **24** hours: press the key S several times until the desired delay time is displayed.

OFF indicates no delay.

Bleaching option

The bleaching cycle is recommended for removing stubborn stains. To start it, press the key S until the word **ON** appears.

Remember to put the bleach in the special tray

Note: not compatible with **Easy iron** option & Pre-wash.

Easy Iron option

Reduces creases on fabrics **facilitating ironing**.

To start it, press the key S until the word ON appears.

In the programmes for **Cotton**, **Silk** and **Delicate rinse** the wash cycle stops, keeping the laundry soaked; the symbol flashes.

Press the Start/Reset key to complete the cycle with a spin.

To empty, without a spin, set spin to **OFF** and press the Start/Reset key.

Note: not compatible with **Bleaching** option.

Super Wash option

This option offers perfectly clean laundry; visibly whiter than the actual Class A wash standard.

To start it, press the key S until the word ON appears.

Note: not compatible with **Fast** option.

Fast option

This option allows a 30% reduction in wash cycle duration.

To start it, press the key S until the word ON appears.

Note: not compatible with **Super Wash** option.

Extra Rinse option

For more effective rinsing by adding a rinse. Recommended when the washing machine has a full load and with high amounts of detergent, it is available only on Cotton & Synthetic programmes.

To select it, press the key S until the word ON appears.

Drying option

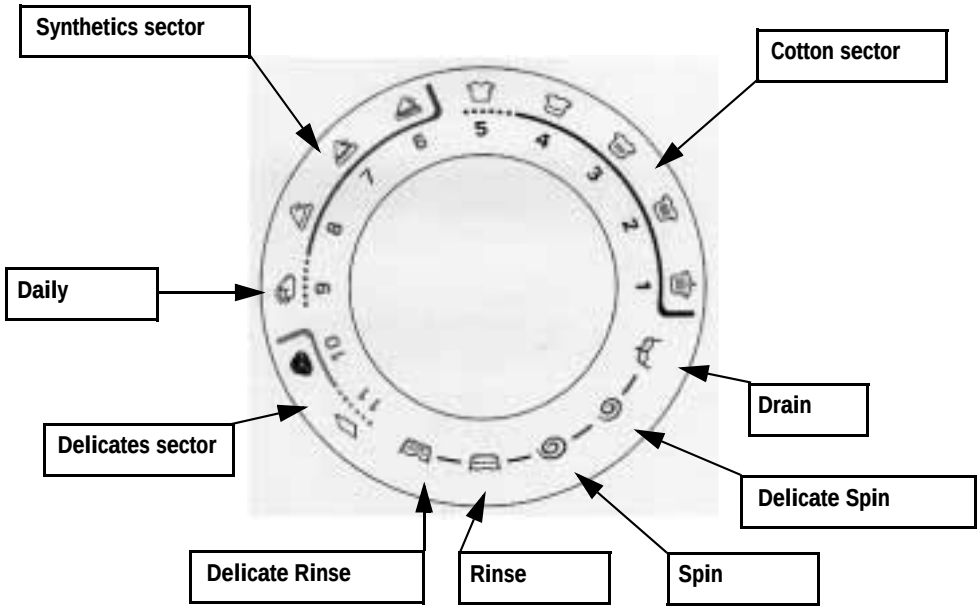
This option is not active.

2 EVOII (LED) WASHING MACHINE

2.1 CONTROL PANEL

	Stand-By		Prewash
	Start/Reset		Wash
	Temperature Regulation		Rinse
	Spin Regulation		Spin
	Delay Timer		Door lock indicator
	Extra rinse		
	Bleaching		
	Easy iron		

2.2 PROGRAMME KNOB



2.3 Operational Logic

Starting a programme

Close the door

Start the machine, pressing the STAND-BY key (symbol ⏻), the door lock LED flashes at a frequency of 1Hz.

Select the desired programme with the programme knob

To start the cycle press START/RESET (symbol ⏯)

To cancel the set cycle keep the START/RESET key (symbol ⏯) pressed for 2 seconds

2.4 Customizing and options

Temperature change

Turn the knob to set the wash temperature given in the programme table. It also allows you to decrease the temperature recommended for the programme selected, down to cold wash (✳).

Spin change

Turn the knob to cut out spin (selecting the symbol ⊗), and also reduce the spin speed of the selected programme. Max. speeds for the 4 types of fabrics are:

Fabric	***Speed***
Cotton	*1200 rpm*
Synthetics	*800 rpm*
Wool	*600 rpm*
Silk	*no*

In any case, the machine carries out a distribution of load at low speed.

2.4.1 Options

You can choose from various options to meet all needs.

Delay timer option

Press the key to delay machine start time from 1 to 12 hours (depending on the washing machine model): press it several times until selecting the desired delay time.

Pressing the key the first time, the first LED (1h) lights up

Pressing the key a second time also the second LED (2h) lights up

Pressing the key a third time, also the third LED (6h) lights up

Pressing the key a fourth time also the fourth LED (12h) lights up

Pressing the key a fifth time, the function deactivates and the LEDs go off.

Extra Rinse option

Press the key to increase the number of rinses in the programmes for **cotton** and **synthetic** fabrics. This function is recommended when the washing machine has a full load and with high amounts of detergent.

Bleaching option

Press the key for more intense washing optimizing the performance of the liquid additives and for removing stubborn stains.

If this function is used prewash & easy iron cannot be carried out.

Easy Iron option

Press the key to obtain uncreased laundry, therefore **easier to iron**.

It can be used with programmes **3-5** (Cotton), **6-7-8** (Synthetics) and **11** (Delicates).

In programmes **6-7-8-11** the wash cycle is stopped, keeping the laundry soaked.

Press the Start/Reset key to complete the cycle.

Note: the options selected are signalled by the relevant key lighting up.
A flashing key indicates that the relevant option cannot be selected.

What do the indicator lights mean?

If the **Delay Timer** function has been activated, they go off in order, until the wash cycle starts:

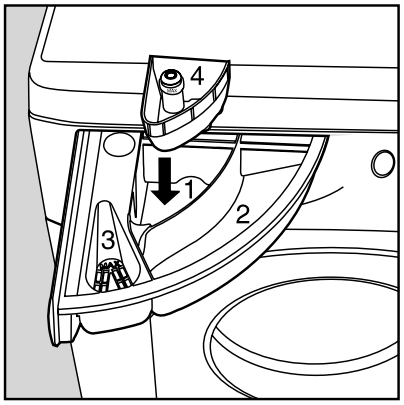
- **1 h**
- **2 h**
- **6 h**
- **12 h**

During the wash cycle they light up in order, to indicate the state of progress:

- Prewash
- Wash
- Rinse
- Spin

2.5 DETERGENT HOLDER

The detergent holder opens by turning it outwards. Pour the detergent and possible additive, according to the quantities given on the packs.



Compartment 1

Detergent for prewash (powder).

Compartment 2

Detergent for wash (powder or liquid).

Compartment 3

Softeners

Compartment 4

Bleach and delicate bleach.

The detergent holder is removable; lift and pull outwards.

2.6 SPECIAL PROGRAMMES

Class A at 40°C

Your washing machine has a special programme for obtaining excellent washing results even at low temperatures. By setting programme **4** to **40°C**, the results are the same as for **60°C**, thanks to the washing machine action and the increased wash duration.

Daily wash

Your washing machine has a programme designed for washing slightly soiled garments in a short time. Setting programme **9** to **30°C** different types of fabrics (except wool and silk) can be washed together, with a max. load of **3 kg**. This programme offers savings in time and energy, because it only lasts for approx. **30** minutes. *USE OF LIQUID DETERGENT IS ADVISABLE .*

2.7 WASH CYCLES - Temperatures, rpm, volume of water

Cycle 5kg COTTON 60°

Phase no.	Name	Description	Movement	Heating	Door locked	Duration
1	Preload	Load time for approx. 3l	no	no	no	25"
2	Ball closing	Pump ON for 2"	no	no	yes	2"
3	Pause	Pause	no	no	yes	30"
4	Soaking	Load water absorption phase	25rpm 5"on 5"off + 10"on 5"off	no	no	90"
5	Heat 30°C	Heating to 30°C	25rpm 5"on 5"off + 10"on 5"off	yes - 30°C	no	variable
6	Heat 40°C	Heating to 40°C	25rpm 5"on 7"off	yes - 40°C	no	variable
7	Biodynamic	Drum movement for recovering detergent	40rpm 12"on 3"off	no	yes	4'
8	Heat 50°C	Heating to 50°C	40rpm 12"on 3"off	yes - 50°C	yes	variable
9	Biodynamic	Drum movement for recovering detergent	40rpm 12"on 3"off	no	yes	2'
10	Heat 53°C	Heating to 53°C	40rpm 12"on 3"off	yes - 53°C	yes	variable
11	Mechanical	Mechanical wash movement	40rpm 12"on 3"off	no	yes	30"
12	Drain + spin			no	yes	approx. 5'
RINSE						
13	Load wash 1st level	Load from wash solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes	90"
14	Extra load	Load approx. 12l	55rpm 5"off 7"on	no	yes	variable
15	Drain + spin			no	yes	approx. 4'
16	Load softener 1st level	Load from softener solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes	3'
17	Extra load	Load approx. 12l	55rpm 5"off 7"on	no	yes	variable
18	Drain + spin			no	yes	90"
19	Laundry detaching		25rpm 5"on 7"off	no	yes	90"
20	Drain + spin			no	yes	6'
21	Laundry detaching		25rpm 5"on 7"off	no	yes	variable

Cycle 5kg COTTON 90°

Phase no.	Name	Description	Movement	Heating	Door locked	Duration
1	Preload	Load time approx. 3l	no	no	no	25"
2	Ball closing	Pump ON for 2"	no	no	yes	2"
3	Pause	Pause	no	no	yes	30"
4	Soaking	Load water absorption phase	25rpm 5"on 5"off + 10"on 5"off	no	no	90"
5	Heat 30°C	Heating to 30°C	25rpm 5"on 5"off + 10"on 5"off	yes - 30°C	no	variable
6	Heat 40°C	Heating to 40°C	25rpm 5"on 7"off	yes - 40°C	no	variable
7	Biodynamic	Drum movement for recovering detergent	40rpm 12"on 3"off	no	yes	4'
8	Heat 50°C	Heating to 50°C	40rpm 12"on 3"off	yes - 50°C	yes	variable
9	Biodynamic	Drum movement for recovering detergent	40rpm 12"on 3"off	no	yes	5'
10	Heat 70°C	Heating to 70°C	40rpm 12"on 3"off	yes - 70°C	yes	variable
11	Heat 80°C	Heating to 80°C	no	yes - 80°C	yes	variable
12	Mechanical	Mechanical wash movement	40rpm 12"on 3"off	no	yes	15'
13	Drain + spin			no	yes	approx. 5'
RINSE						
14	Load wash 1st level	Load from wash solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes	90"
15	Extra load	Load approx. 12l	55rpm 5"off 7"on	no	yes	3'
16	Drain + spin			no	yes	approx. 4'
17	Load softener 1st level	Load from softener solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes	90"
18	Extra load	Load approx. 12l	55rpm 5"off 7"on	no	yes	3"
19	Drain + spin			no	yes	90"
20	Remove clothes		25rpm 5"on 7"off	no	yes	90"
21	Drain + spin			no	yes	6'
22	Laundry detaching		25rpm 5"on 7"off	no	yes	variable

Cycle 5kg COTTON 40°

Phase no.	Name	Description	Movement	Heating	Door locked	Duration
1	Preload	Load time approx. 3l	no	no	no	25"
2	Ball closing	Pump On for 2"	no	no	yes	2"
3	Pause	Pause	no	no	yes	30"
4	Soaking	Load water absorption phase	25rpm 5"on 5"off + 10"on 5"off	no	no	90"
5	Heat 30°C	Heating to 30°C	25rpm 5"on 5"off + 10"on 5"off	yes - 30°C	no	variable
6	Heat 40°C	Heating to 40°C	25rpm 5"on 7"off	yes - 40°C	no	variable
7	Biodynamic	Drum movement for recovering detergent	40rpm 12"on 3"off	no	yes	5'
8	Heat 44°C	Heating to 44°C	40rpm 12"on 3"off	yes - 44°C	yes	variable
9	Mechanical	Mechanical wash movement	40rpm 12"on 3"off	no	yes	15'
10	Drain + spin			no	yes	approx. 5'
RINSE						
11	Load wash 1st level	Load from wash solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes	90"
12	Extra load	Load approx. 12l	55rpm 5"off 7"on	no	yes	3'
13	Drain + spin			no	yes	approx. 4'
14	Load softener 1st level	Load from softener solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes	90'
15	Extra load	Load approx. 12l	55rpm 5"off 7"on	no	yes	3'
16	Drain + spin			no	yes	90"
17	Laundry detaching		25rpm 5"on 7"off	no	yes	90"
18	Drain + spin			no	yes	6'
19	Laundry detaching		25rpm 5"on 7"off	no	yes	variable

At 40° @ 60°

Phase no.	Name	Description	Movement	Heating	Door locked	Duration
1	Preload	Load time approx. 3l	no	no	no	25"
2	Ball closing	Pump On for 2"	no	no	yes	2"
3	Pause	Pause	no	no	yes	30"
4	Soaking	Load water absorption phase	25rpm 5"on 5"off + 10"on 5"off	no	no	90"
5	Heat 30°C	Heating to 30°C	25rpm 5"on 5"off + 10"on 5"off	yes - 30°C	no	variable
6	Heat 40°C	Heating to 40°C	25rpm 5"on 7"off	yes - 40°C	no	variable
7	Biodynamic	Drum movement for recovering detergent	40rpm 12"on 3"off	no	yes	10'
8	Heat 44°C	Heating to 44°C	40rpm 12"on 3"off	yes - 44°C	yes	variable
9	Mechanical	Mechanical wash movement	40rpm 12"on 3"off	no	yes	8'
10	Heat 45°C	Heating to 45°C	40rpm 12"on 3"off	yes - 45°C	yes	variable
11	Mechanical	Mechanical wash movement	40rpm 12"on 3"off	no	yes	8"
12	Heat 46°C	Heating to 46°C	40rpm 12"on 3"off	yes - 46°C	yes	variable
13	Mechanical	Mechanical wash movement	40rpm 12"on 3"off	no	yes	25"
14	Drain + spin			no	yes	approx. 5'
RINSE						
15	Load wash 1st level	Load from wash solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes	90"
16	Extra load	Load approx. 12l	55rpm 5"off 7"on	no	yes	3'
17	Drain + spin			no	yes	approx. 4'
18	Load softener 1st level	Load from softener solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes	90"
19	Extra load	Load approx. 12l	55rpm 5"off 7"on	no	yes	3'
20	Drain + spin			no	yes	90"
21	Laundry detaching		25rpm 5"on 7"off	no	yes	90"
22	Drain + spin			no	yes	6'
23	Laundry detaching		25rpm 5"on 7"off	no	yes	variable

SYNTHETICS 60°

Phase no.	Name	Description	Movement	Heating	Door locked	Duration
1	Preload	Load time approx. 3l	no	no	no	25"
2	Ball closing	Pump On for 2"	no	no	yes	2"
3	Pause	Pause	no	no	yes	30"
4	Soaking	Load water absorption phase	25rpm 5"on 5"off + 10"on 5"off	no	no	90"
5	Heat 30°C	Heating to 30°C	25rpm 5"on 5"off + 10"on 5"off	yes - 30°C	no	variable
6	Heat 40°C	Heating to 40°C	25rpm 5"on 7"off	yes - 40°C	no	variable
7	Heat 53°C	Heating to 53°C	40rpm 12"on 3"off	yes - 53°C	yes	variable
8	Mechanical	Mechanical wash movement	40rpm 12"on 3"off	no	yes	10'
9	Heat 56°C	Heating to 56°C	40rpm 12"on 3"off	yes - 56°C	yes	variable
10	Mechanical	Mechanical wash movement	40rpm 12"on 3"off	no	yes	20'
11	Drain + spin			no	yes	approx. 5'
RINSE						
12	Load wash 1st level	Load from wash solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes	90"
13	Extra load	Load approx. 10l	25rpm 5"off 7"on	no	yes	3'
14	Drain + spin			no	yes	approx. 4'
15	Load softener 1st level	Load from softener solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes	90"
16	Extra load	Load approx. 10l	25rpm 5"off 7"on	no	yes	3'
17	Drain + spin			no	yes	90"
18	Laundry detaching		25rpm 5"on 7"off	no	yes	90"
19	Drain + spin			no	yes	6'
20	Laundry detaching		25rpm 5"on 7"off	no	yes	variable

SYNTHETICS 40°

Phase no.	Name	Description	Movement	Heating	Door locked	Duration
1	Preload	Load time approx. 3l	no	no	no	25"
2	Ball closing	Pump On for 2"	no	no	yes	2"
3	Pause	Pause	no	no	yes	30"
4	Soaking	Load water absorption phase	25rpm 5"on 5"off + 10"on 5"off	no	no	90"
5	Heat 30°C	Heating to 30°C	25rpm 5"on 5"off + 10"on 5"off	yes - 30°C	no	variable
6	Heat 40°C	Heating to 40°C	25rpm 5"on 7"off	yes - 40°C	no	variable
7	Mechanical	Mechanical wash movement	40rpm 12"on 3"off	no	yes	10'
8	Heat 43°C	Heating to 43°C	40rpm 12"on 3"off	yes - 43°C	yes	variable
9	Mechanical	Mechanical wash movement	40rpm 12"on 3"off	no	yes	15'
10	Drain + spin			no	yes	approx. 5'
RINSE						
11	Load wash 1st level	Load from wash solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes	90"
12	Extra load	Load approx. 10l	55rpm 5"off 7"on	no	yes	3'
13	Drain + spin			no	yes	approx. 4'
14	Load softener 1st level	Load from softener solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes	90"
15	Extra load	Load approx. 10l	25rpm 5"off 7"on	no	yes	3'
16	Drain + spin			no	yes	90"
17	Laundry detaching		25rpm 5"on 7"off	no	yes	90"
18	Drain + spin			no	yes	6'
19	Laundry detaching		25rpm 5"on 7"off	no	yes	variable

DAILY 30°

Phase no.	Name	Description	Movement	Heating	Door locked	Duration
1	Preload	Load time approx. 3l	no	no	yes	25"
2	Ball closing	Pump ON for 2"	no	no	yes	2"
3	Pause	Pause	no	no	yes	30"
4	Load 1st level	Load water	25rpm 5"on 5"off + 10"on 5"off	no	yes	9"
5	Heat 30°C	Heating to 30°C	25rpm 5"on 5"off + 10"on 5"off	yes - 30°C	yes	
6	Movement		25rpm 5"on 7"off	no	yes	
7	Mechanical	Mechanical wash movement	40rpm 12"on 3"off	no	yes	5'
8	Drain + spin			no	yes	approx. 5'
RINSE						
9	Load wash 1st level	Load from wash solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes if T>45°C	variable
10	Extra load	Load approx. 10l	25rpm 5"on 5"off + 10"on 5"off	no	yes	2'
11	Drain + spin			no	yes	approx. 4'
12	Load softener 1st level	Load from softener solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes	variable
13	Extra load	Load approx. 10l	25rpm 5"on 5"off + 10"on 5"off	no	yes	2'
14	Drain + spin			no	yes	90"

SILK 30°

Phase no.	Name	Description	Movement	Heating	Door locked	Duration
1	Preload	Load time approx. 3l	no	no	yes	25"
2	Ball closing	Pump ON for 2"	no	no	yes	2"
3	Pause	Pause	no	no	yes	30"
4	Load 1st level	Load water	no	no	yes	variable
5	Extra load	Load approx. 18l	25rpm 5"on 5"off + 10"on 5"off	no	yes	4'
6	Heat 28°C	Heating to 28°C	25rpm 4"on 56"off	yes - 28°C	yes	variable
7	Mechanical	Mechanical wash movement	25rpm 5"on 5"off + 10"on 5"off	no	yes	12'
8	Drain			no	yes	variable
RINSE						
9	Load wash 1st level	Load from wash solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes	variable
10	Extra load	Load approx. 18l	55rpm 5"off 7"on	no	yes	4'
11	Drain			no	yes	variable
12	Load softener 1st level	Load from softener solenoid valve	25rpm 5"on 5"off + 10"on 5"off	no	yes	variable
13	Extra load	Load approx. 18l	55rpm 5"off 7"on	no	yes	4'
14	Drain			no	yes	variable
15	Load softener 1st level	Load from softener solenoid valve	25rpm 5"on 7"off	no	yes	variable
16	Extra load	Load approx. 18l		no	yes	4'
17	Drain		25rpm 5"on 7"off	no	yes	variable

NCT TEMPERATURE

T (C°) Water Agitated	R. (Ohm)	
	R. min	R. max
25°C	19600	20400
30°C	15710	16470
60°C	4737	5149
80°C	2362	2622
90°C	1713	1919
100°C	1261	1427

2.8 PARTICULAR PHASES

2.8.1 Antishock

If the machine goes to a drain phase (e.g. Spin) and the water temperature is higher than a fixed limit (e.g. 60°) the machine does a particular cycle before draining:

e.g.

1. Load 5 litres from EV Wash
2. Movement 5" ON, 5" OFF, 25 rpm for 4'
3. If Temperature > Limit go to 1 otherwise go to 4
4. Drain + Spin

2.8.2 Antifoam

If there is too much foam in the machine during the first rinse (detected by the pressure switch) it does a second cycle:

1. Stop for 2'
2. Load 10 litres from EV Wash
3. Movement 5" ON, 5" OFF, 25 rpm for 2'
4. Spinning stopped at the beginning restarts

This procedure is repeated until the foam problem is gone.

2.9 BLEACH

When bleaching is required insert extra tray 4 in compartment 1 of the detergent holder; when pouring the bleach make sure not to exceed the max. level.

This washing machine has a special function to be used whenever doing bleaching (option).

When bleaching is done separately pour the bleach in extra tray 4, press the antistain button , switch on the machine and bring the selector to Rinse.

When bleaching is done during a normal wash cycle, pour the detergent and additives in the special compartments, press the antistain button , switch on the machine and set the desired wash cycle.

N.B.: bleaching cannot be done with the silk programme.
Use of the extra tray for bleach excludes the possibility of performing the prewash & easy iron function.

2.10 ELECTRONIC CARD

One of the main differences introduced with the new LVB EVO II is that the **electronic card is also fed when the washing machine is off (VIRTUAL OFF): therefore, to turn off the power to the washing machine** disconnect **the cable from the electrical power supply.**

Evo II washing machines no longer have the On/Off key (that switches off power to the machine) but only the Stand By key for switching the washing machine on or *"virtual off"* .
The term *"virtual off"* indicates that the machine is off (interface off: LED and Lcd) but the electronic card is fed.

The card is common to each product family: the various models are differentiated by the Eeprom

The card inside the machine:

2.10.1 Replacing the card

1. Turn off the power to the machine removing the plug from the electrical socket.
2. **If the washing machine is a THREE-PHASE, wait 5 minutes for the card to electrically discharge (otherwise go to point 3 keeping the plug out of the electrical socket).**
3. Remove the rear panel
4. Remove the screws fixing the module to the cabinet and remove the module

5. Then free it from the connectors

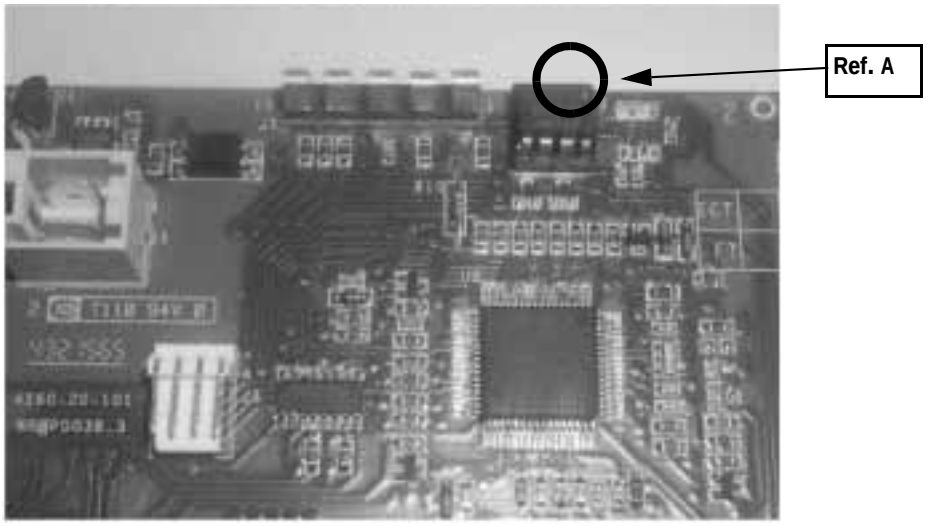
2.10.2 Replacing the Eeprom

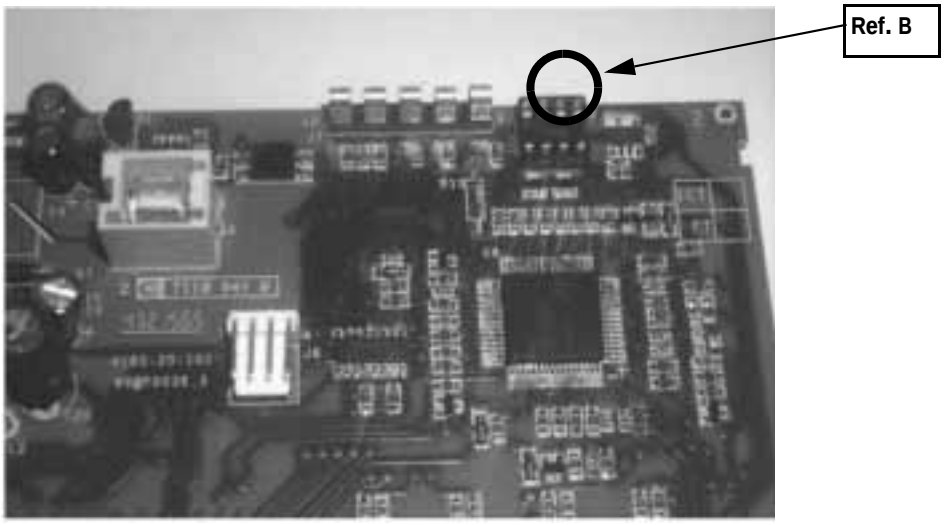
The card is customized through EeProm; this is soldered to the card, therefore if the card has to be replaced, also the EeProm must be replaced.

On models AVD and AVL (EVO II) there is a single eeprom on the power card. This EeProm also contains the information for the display cards.

When replacing, pay attention to the side on which the Eeprom is fitted.

There are two references, Ref. A and Ref. B, which must remain aligned when refitting the Eeprom.





2.10.3 List of EVOII FAULTS and troubleshooting

If a fault occurs on the washing machine then the self test function will display this, or the new hardware key may be used to show the fault.

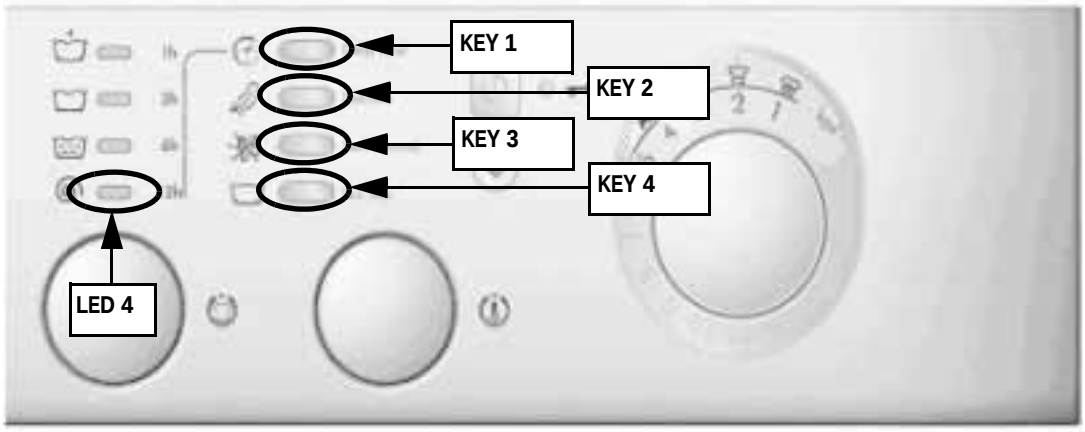
The type of fault can be signalled in different ways:

- on AVD models the fault is shown directly on the machine display.
- On AVL models the fault is signalled by LEDs.

2.10.4 Reading of Faults signalled by LEDs

When the machine has a fault:

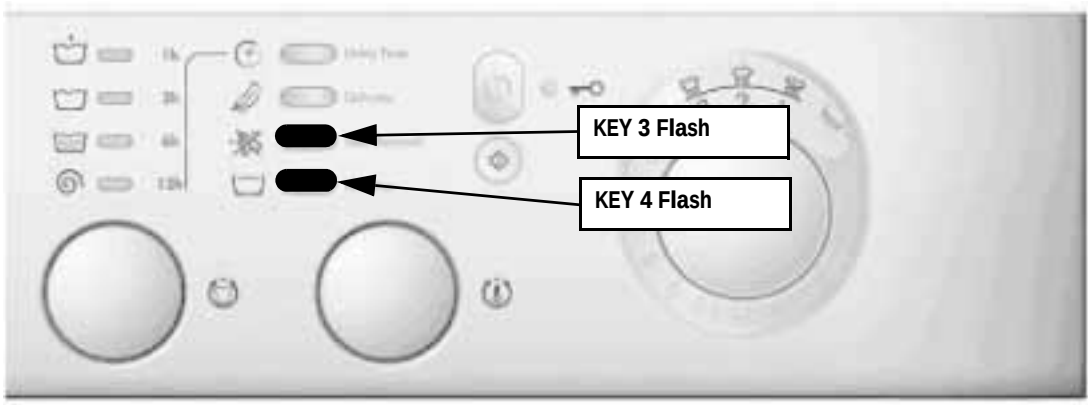
1. The door is locked
2. The door lock indicator flashes quickly (surely > 1 Hz)
3. The control panel LEDs flash, to signal the fault, according to the following table



Fault	Key 1	Key 2	Key 3	Key 4	Led 4
01	Off	Off	Off	Flash	Off
02	Off	Off	Flash	Off	Off
03	Off	Off	Flash	Flash	Off
04	Off	Flash	Off	Off	Off
05	Off	Flash	Off	Flash	Off
06	Off	Flash	Flash	Off	Off
07	Off	Flash	Flash	Flash	Off
08	Flash	Off	Off	Off	Off
09	Flash	Off	Off	Flash	Off
10	Flash	Off	Flash	Off	Off
11	Flash	Off	Flash	Flash	Off
12	Flash	Flash	Off	Off	Off
13	Flash	Flash	Off	Flash	Off
14	Flash	Flash	Flash	Off	Off
15	Flash	Flash	Flash	Flash	Off
16	Off	Off	Off	Off	Flash
17	Off	Off	Off	Flash	Flash

Table Fault LED

The example shown in the figure (Example Fault F03) below indicates which LEDs flash if the machine has a Fault F03



Example Fault F03

2.10.5 List of faults, malfunctions and Warnings:

F01: Triac Motor short circuit

- Check for any water leaks that can reach connector **J9** short circuiting the relevant contacts
- Check the motor terminal block (a possible problem due to chemical work residuals corroding the contacts that can cause a short circuit)
- Replace Card

F02: Motor blocked, Tachometrics in Short Circuit/Open

- Check motor if blocked
- Check the efficiency of **J9** connector on the card
- Check the tachometric winding checking an ohm resistance reading of 115 - 170 ohm between pins **1** and **2** on wiring connector **J9**. In case of short circuit, open circuit check the wiring between pins **1** and **2** of **J9** relevant to the tachometrics. With a three-phase motor, make sure there is ohm continuity between J9 pins **6** and **7**.
- Replace motor
- Replace card

F03: Detected: NTC Open or in Short Circuit or wash heater relay stuck (signalled in presence of full load)

- Check efficiency of **J8** connector contacts on the card
- Check NTC verifying that the ohmic resistance value at room temperature 20°C is approx. 20Kohm on **J8** wiring connector pin **11** and **12**.
- If the measurement is incorrect check **J8**/NTC wiring continuity. Check the same parameter directly on NCT
- Replace NTC
- Replace Card

F04: Simultaneous empty and overflow (pressure switch stuck on empty). If the pressure switch contact is stuck on empty the washing machine loads water until reaching the overflow. The drain pump is automatically started by the contact on the overflow pressure switch.

- Check the efficiency of **J3** connector contacts on the card.
- Check pressure switch status checking **J3** wiring connector pins:
  - 2-4 ohm continuity - tub empty
  - 2-3 ohm continuity - full tub
  - 2-1 ohm continuity - tub overfilled, at least halfway up door glass
- Check wiring of connector **J3**/pressure switch
- Replace pressure switch
- Replace card.

F05: Detected: Pump Blocked or pressure switch empty not reached

- Check the efficiency of **J9** connector contacts on the card checking the presence of 220V current between pins **8** and **9**.
- Check pump: if fed
- Check Pump Filter + wall drain
- Change Pump
- Replace Card

F06: Not on AVD and AVL

F07: Detected: No Absorption Wash Heating Element (the fault is only signalled with the pressure switch on empty)

- Check the efficiency of **J3** connector contacts on the card
- Check the continuity of the wash heater on **J3** connector pins **5** and **6**. The 1800w 230V heating element has a resistance of 25 ohm.
- Check the connection of pressure switch **J3** connector pins **2** and **3**: there must not be ohm continuity (shared with full load).
- Check the connection of pressure switch **J3** connector pins **2** and **4**: there must be ohmic resistance

- Replace Heating Element
- Replace Pressure Switch
- Replace Card

F08: Wash Heater Relay Stuck (signalled in presence of empty) or pressure switch stuck on Full (simultaneously empty and full)

- Check the efficiency of **J3** connector contact on the card
- Check pressure switch status checking **J3** wiring connector pins **2** and **4** ohm continuity (it must only be present with tub empty) and pins **2** and **3** ohm continuity (it must only be present with water in the drum) and pins **2** and **1** ohm continuity (it must only be present with water in the tub above normal level, at least halfway up door glass).
- Check wiring **J3**/pressure switch
- Check connection of heating element **J3** connector pins **5** and **6**.
- Replace pressure switch
- Replace Card

F09: Detected: Machine Setup Error (eeprom error)

- In case of production card with eeprom soldered: replace card and eeprom
- In case of replacement of eeprom and card, check the correct housing of eeprom on card base

F10: No full and empty signal

- Check the efficiency of **J3** connector contacts on the card
- Check pressure switch status checking **J3** wiring connector pins:
  - 2-4 ohm continuity - tub empty
  - 2-3 ohm continuity - full tub
  - 2-1 ohm continuity - tub overfilled, at least halfway up door glass
- Check wiring of connector **J3**/Pressure switch
- Replace Pressure Switch
- Replace Card

F11: Detected: No Pump Feedback (Drain pump disconnected or winding broken)

- Check the efficiency of **J9** connector contacts on the card
- Check continuity of the Pump on **J15** connector pins **1** and **2** (in case of washing machine with Easy Door function) or on **J9** connector pins **8** and **9** (in case of conventional door lock), checking resistive value equal to 170 ohm.
- Check wiring of connector **J15** (or **J9**)/Pump
- Replace Pump
- Replace Card

F12: No Communication Display Card/LED-Main Card

- Check the efficiency of contacts on card of **J11** connector
- Check the continuity of **J11** connector-display card 5-pin connector
- Replace Main Card
- Replace Display Card/LED

F17: Door lock unfed/open (with Easy Door)

- Check the presence of 230V mains power on **J4** wiring connector inserted on board between pins **3** and **4**, (not present with machine on standby) the presence of power from 230V door lock between pins **3** and **5**
- Check the ohm continuity of door microswitch (with door closed on and off) on **J4** connector inserted on the board between pins **1** and **2**
- Check continuity of **J4**/door lock wiring
- Check door hooking
- Replace door lock
- Replace card

F17: Door lock unfed/open (conventional door lock, not Easy Door)

- Check the presence of 230V mains power onJ4 wiring connector inserted on board between pins **2** and **3**, (not present with machine on standby) the presence of power from 230V door lock between pins **3** and **1**
- Check door hooking
- Replace door lock
- Replace card

2.10.6 Faults not signalled

Motor thermoprotector cut-in

If the motor thermoprotector cuts in, the machine stops without signalling any fault.

As soon as the thermoprotector resets, the machine restarts the cycle from where it stopped.

Thermoprotector stopping can be checked as follows:

check **J9** connector pins **6** and **7**ohm continuity.

If the thermoprotector is closed a resistance of between **1** and **2** ohm is read.

If the thermoprotector is open an infinite resistance is read

Motor stator winding (field coils) broken (commutator models)

In case of breaking in the motor stator winding, the machine stops and signals Fault F01.

This can be checked by verifying the ohmic resistance value, which must be between 2 and 3 ohms, on connector **J9**, between pins **3** and **5**. With middle field socket on **J9** connector pins **3** and **4** resistance of between **1** and **1.5** ohm.

Motor terminal block disconnected, no fault signalled.

The machine starts, takes programmes but does not start a load: locked door solenoid valves, pump, heating elements.

Solenoid valve break or solenoid valve triac short circuit

Heating element broken, with pressure switch in full, the machine does not finish the wash.

2.10.7 Other checks

Card feed check

Check 220V power supply on **J1** connector between pins **1** and **2**.

Door open/closed microswitch (in case of Easy Door lock)

Continuity of the door microswitch can be checked by checking **J4** connector pins **1** and **2** ohm continuity in case of door closed.

Solenoid valve status

Continuity of the solenoid valve circuit can be checked by verifying ohmic resistance between 3.5 and 4 Kohm on **J8** connector pins **1** and **3** EVL, pins **4** and **6** EVP, pins **7** and **9** EVC **3.5**. The drying solenoid valve can be checked on **J10** connector pins **1** and **3** EVA.

2.10.8 Warnings

Warnings are signalled on the washing machine display (CON, DOOR and H2O), therefore on machines not provided with displays the warnings are not present.

There are 3 warnings:

- **CON**: signalled in case of disconnected conductivity sensor (the washing machines works just the same, in this case the number of rinses is maximum: 3)
- **DOOR**: signalled if the user does not close the door within 20 seconds of pressing start, in which case the washing machine does not start the cycle: close the door, the warning disappears and the cycle starts
- **H2O**: signalled if the pressure switch does not go to full after 6 minutes. If a cock is closed, open it, the warning disappears and the programme starts

3 DISASSEMBLY AND REPLACEMENT OF COMPONENTS

3.1 Top

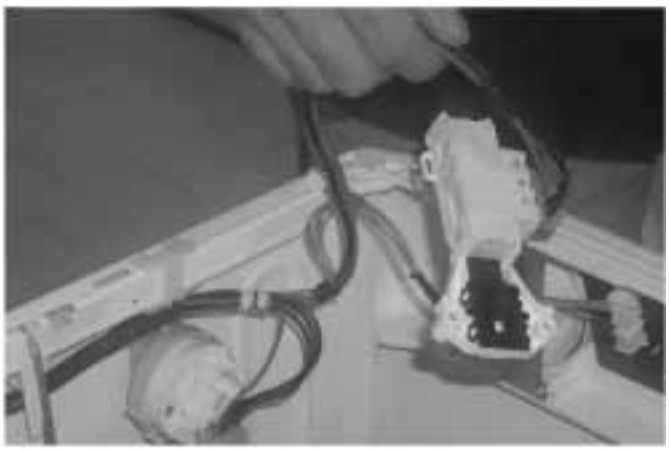
The top fits into the front on the panel and at the back on the cabinet with two screws that fix it securely.

To remove the top, undo the screws then slide it horizontally towards the back.

3.2 Microdelay device

1. Turn off the power to the machine
2. Remove the top
3. Remove the two external screws and extract the component from above, keeping it away from the wiring

4. Remove the connector on the component and replace the latter
5. Slide the microdelay device in its seat and refit it, tightening the two screws.



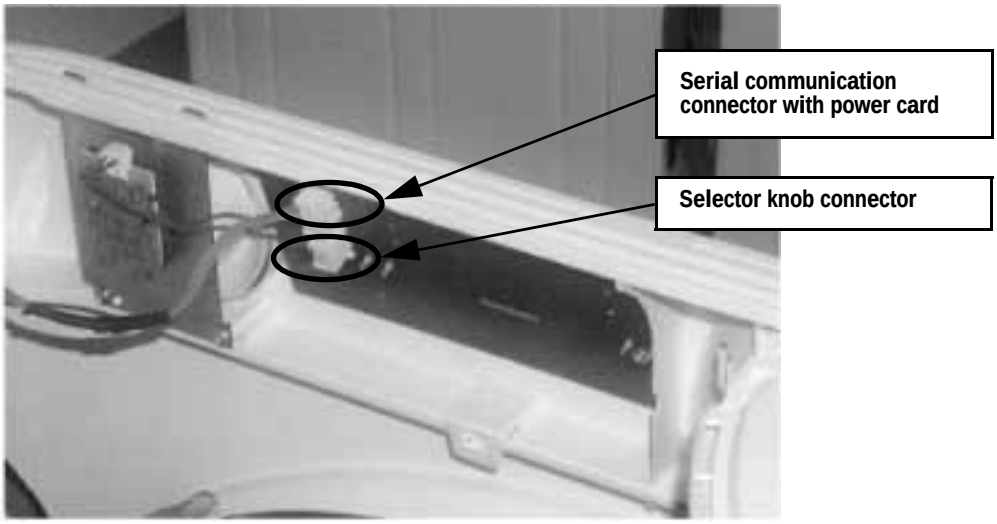
3.3 Control panel

1. Remove the top
2. Open the detergent holder and press on the tray at the place shown in the photo to release it

then pull out the detergent holder

3. Remove the two product dispenser fixing screws and the two panel fixing screws
4. Extract the display card wiring connector (on machines with display)
5. Remove the component knobs (in washing machines equipped with temperature regulation and spin regulation knobs) and the programme knob cover

6. If the display card has to be replaced, undo the four screws fixing it to the panel and remove the wiring connector.

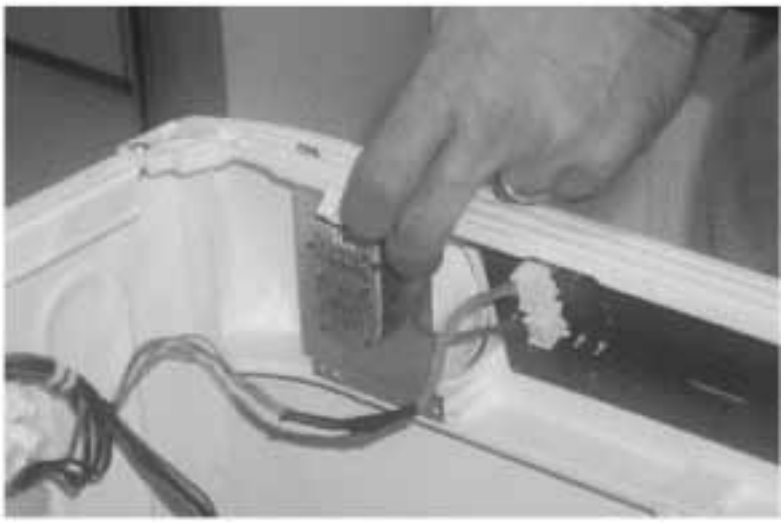


3.4 Programme knob

To remove the programme knob (potentiometer):

- Remove the top
- Remove the external white plastic knob pulling it towards you; in this way also the spring is extracted
- Remove the internal component, pulling it hard towards you
- Remove the two screws on the cabinet
- Remove the connector
- Remove the potentiometer from the support

To refit, carry out the above operations in reverse order.



3.5 Top Counterweight

With a 13 mm (?) Allen key undo the two fixing screws and remove the counterweight.

3.6 Front Counterweight

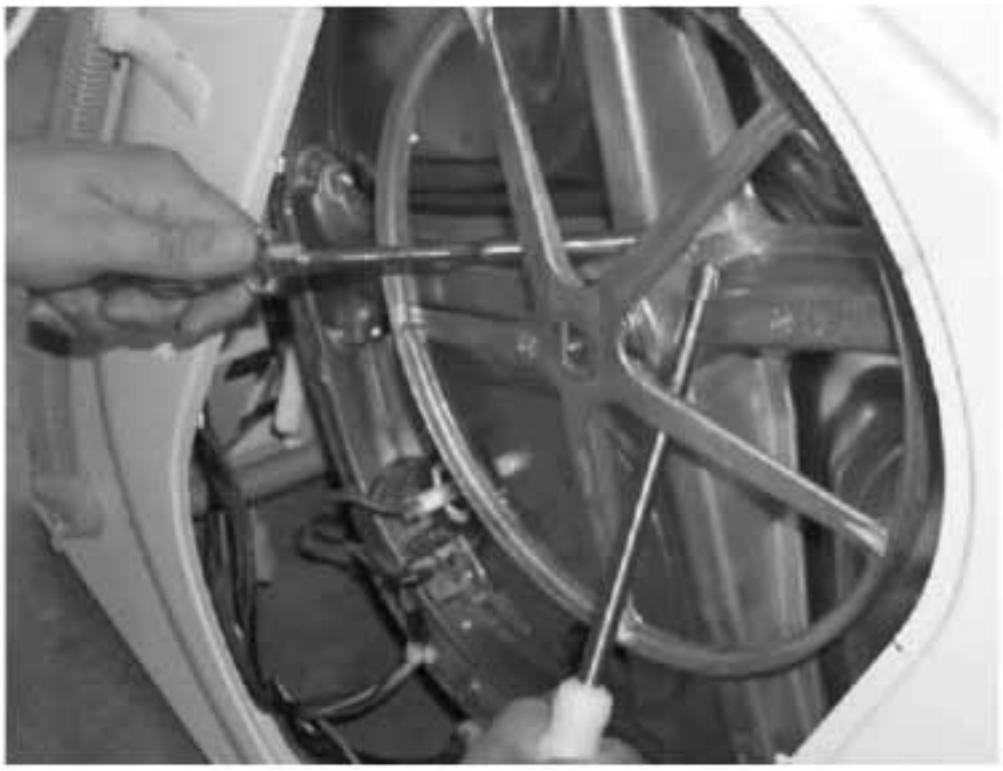
After removing the suspended unit from the cabinet (see TUB CROSSPIECE disassembly) undo the 8 fixing screws (?) and remove the counterweight.

3.7 Driven Pulley

1. Remove the rear panel
2. Remove the transmission belt
3. Undo the pulley fixing screw using a TORX T40 wrench, suitably clamping pulley rotation

As the screw is assembled with a locking compound, its release is assisted if its head is given a sharp hammer blow, to release the locking compound.

4. Lever using two wrenches and remove the pulley

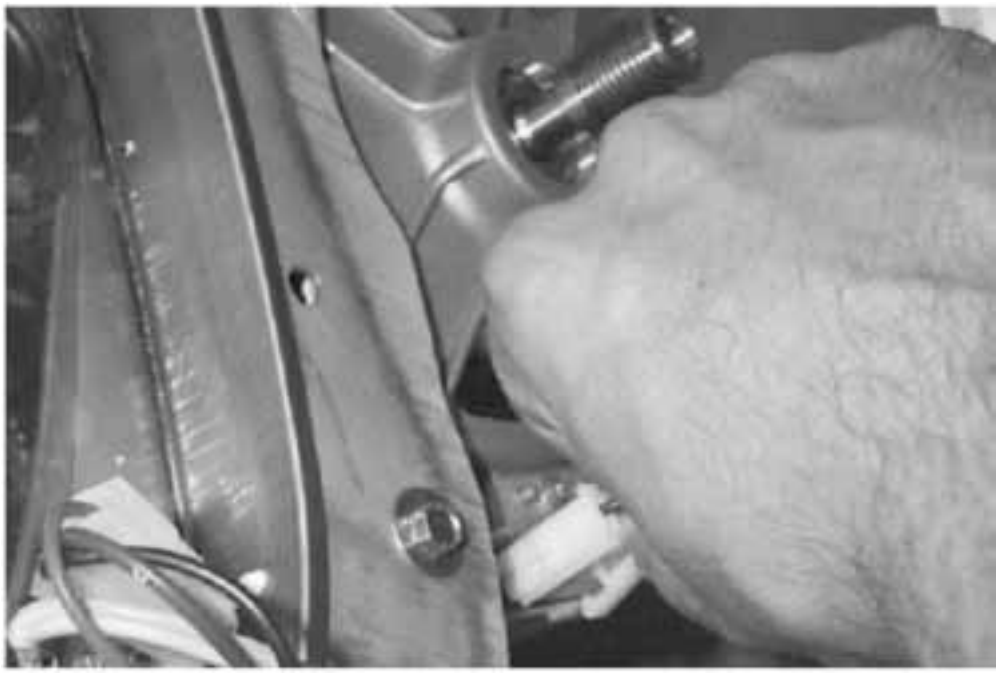


To ensure effective fixing of the screw, apply a drop of Loctite 270 (code 001109) on the thread.

When tightened down, wait 3 hours before using the washing machine.

3.8 Motor

1. Remove the rear panel
2. Tilt the machine forward and support it. Take care not to damage the electrical components on the control panel or the microdelay devices by placing packing between the tub & case front.
3. Remove the transmission belt
4. Disconnect the motor from the wiring, removing the terminal block and disconnect the earth wire

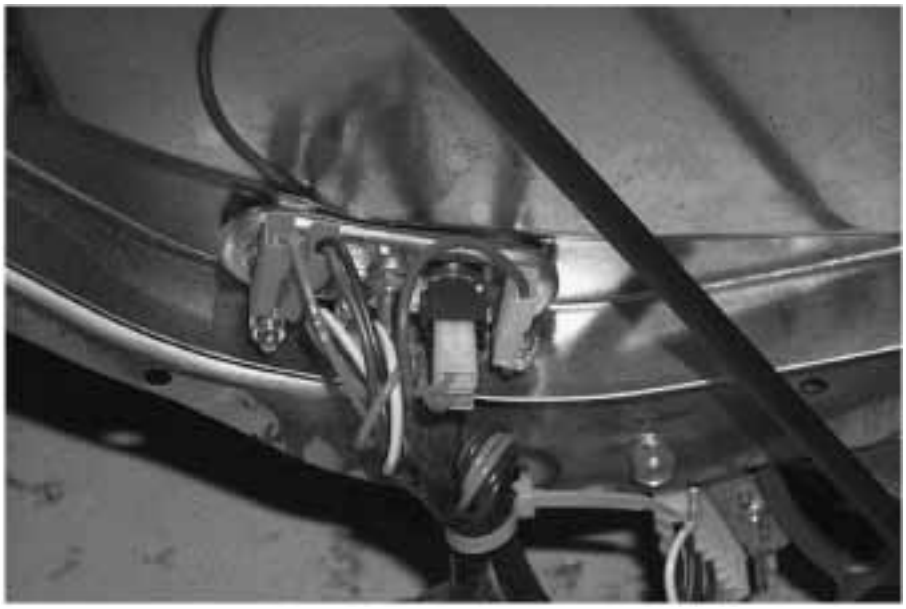


5. Remove the two 8 mm self-tapping hexagon fixing screws
6. Lower the motor and pull it towards the back of the machine to remove it

Recover the rubbers and plastic mounts that will be used on the new motor.

3.9 Temperature Sensor

1. Remove the rear panel
2. Remove the fastons
3. Using a screwdriver extract the sensor



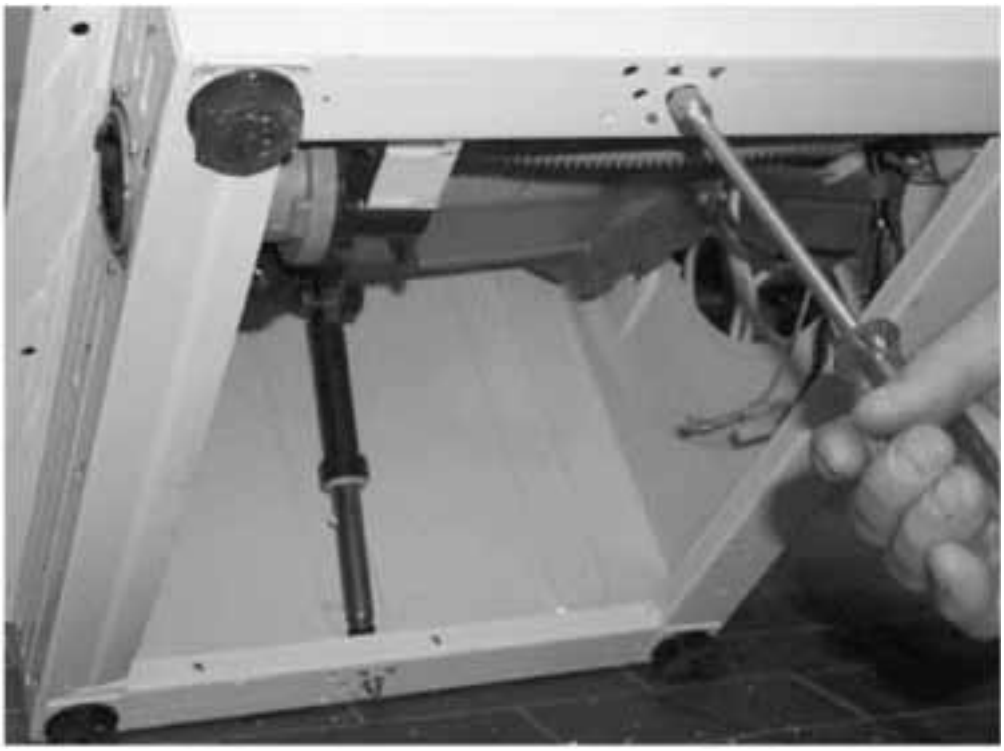
3.10 Drain Pump

1. Remove the base, levering with a screwdriver at the three fixing points

2. Undo the 4 screws
3. Release the tubes
4. Replace the pump

3.11 Vibration dampers

1. Carefully place the machine on a side
2. Using a 10 mm wrench, completely undo the nut fixing the vibration damper to the cabinet
3. Push the vibration damper on the stem to remove it from the cabinet
4. Using a 17 mm and 15 mm wrench undo the bolt fixing the vibration damper to the unit and remove it



To fit the new vibration damper carry out the above operations in reverse order.

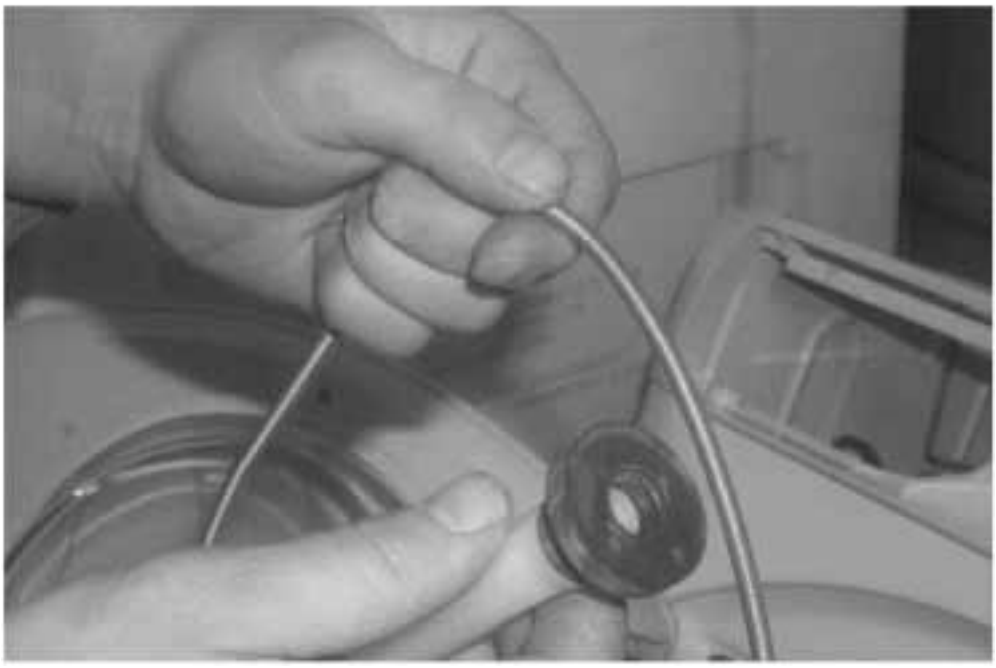
4 NEW COMPONENTS IN AVD AND AVL MODELS

4.1 Door Seal

1. Tilt the machine backward and support it
2. Prize off the front ring seal by inserting the tip of a screwdriver between the ring and the seal
3. Free the seal from the cabinet and push it inwards
4. Remove the seal pulling it from the top downwards this also frees the spiral spring
5. To refit:
6. Insert the seal on the edge of the tub lid seat making sure to correctly position the seal: the rubber tab must be positioned vertically at the top

7. Adapt the seal to the tub

8. Insert the spring at the top centre
9. Insert the “spacer” between the tub lid and cabinet front, locking it to prevent the spring from coming out



10.Using both hands keep inserting the spring all around the seal

11.Insert the seal in the cabinet front seat

12. Refit the flush ring, widening and inserting it in the seat making sure to position the wire clip at the bottom centre

4.2 Tube with OKO assembly

The OKO system consists of a plastic ball component inserted in a tube connecting the tub to the drain pump.

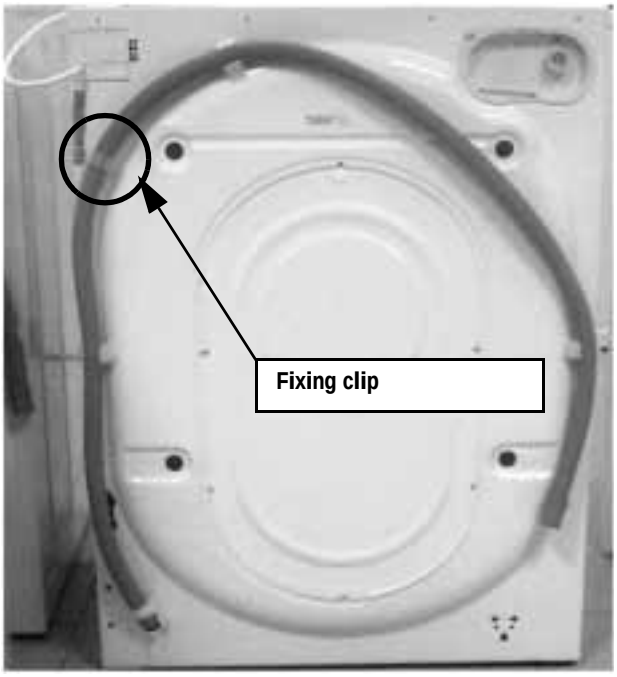
At the start of each wash cycle, suitably operating the drain pump, a difference in level is created between the water in the tub and the drain hose; this difference in level increases the upward thrust of the ball, hermetically closing the tub/pump connection hose (Ball closing).

This offers the dual advantage of:

1. Separation of wash water and “dead” water in the drain hose, hence energy saving during the heating phase.
2. Optimum use of detergent.

N.B.: with introduction of this new component
- there is no detergent recovery tube
- the pump has only one hole for tub water inlet, and one for outlet to the drain hose
- no movement at 93 rpm in all cycles during the biological step

4.3 Drain hose



The drain hose of the new EVOII washing machine is fixed to the back of the cabinet by a plastic clamp which must not **be removed during installation of the product.**

To prevent this occurring, the clamp is made to withstand a force of 25 kg.

This new hose fixing has been made for correct operation of the OKO mechanism.

4.4 Three-Phase Motor

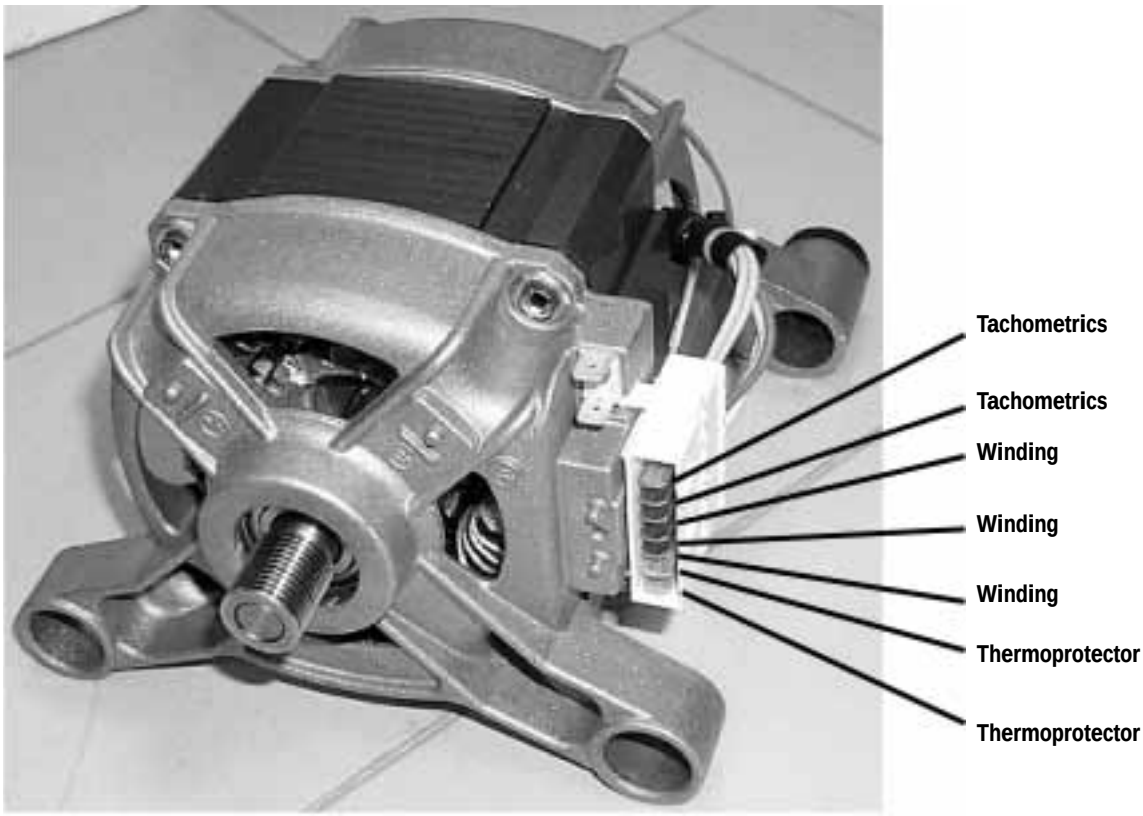
The new range of EVOII washing machines also includes a model equipped with three-phase motor.

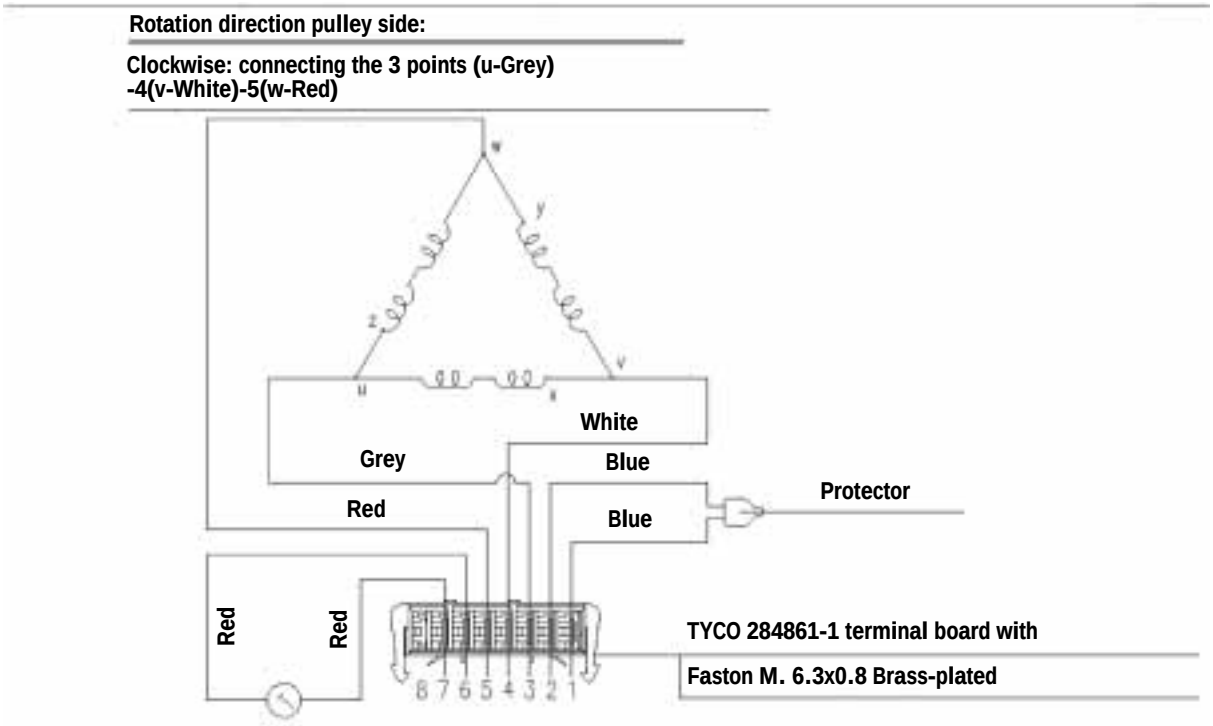
Compared with the commutator motor there are no brushes and the stator has three winding star-connected internally (see diagram).

Compared with models with commutator motor also the power card is different and becomes a special code for three-phase machines

The three-phase motor has a thermoprotector that cuts in turning off the supply to the power part of the electronic card and therefore to the motor.

The photo and diagram below give the connection diagram of the windings.





Connection diagram - Terminal board seen from coupling side

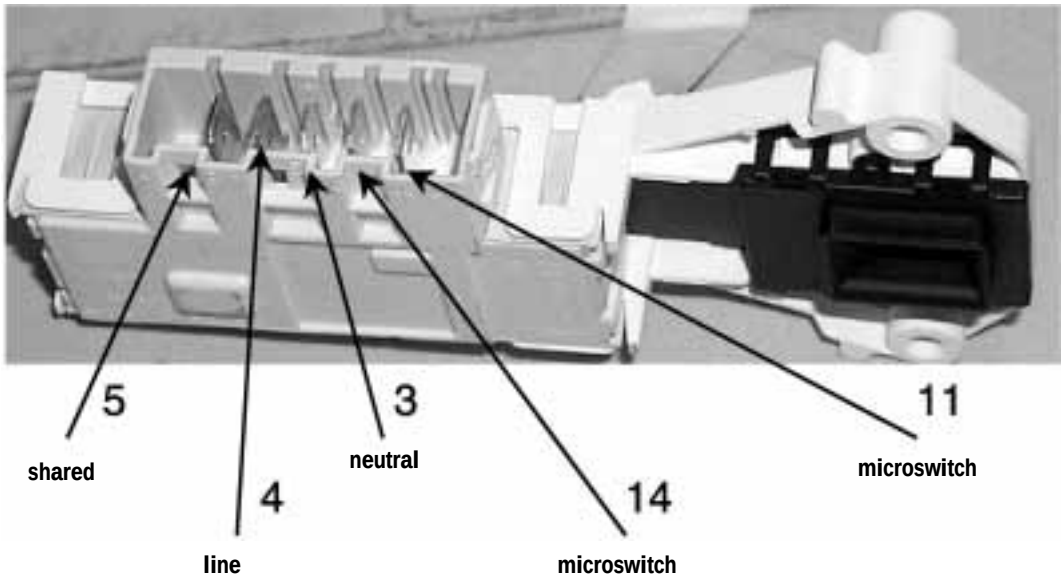
4.5 Easy door function

This new component allows the user to open the door during the cycle whenever the machine is “safe”.

In particular, the conditions in which this function keeps the door locked are:

- Temperature >= 45°C
- Set speed >= 55 rpm
- Load time exceeding pressure switch full

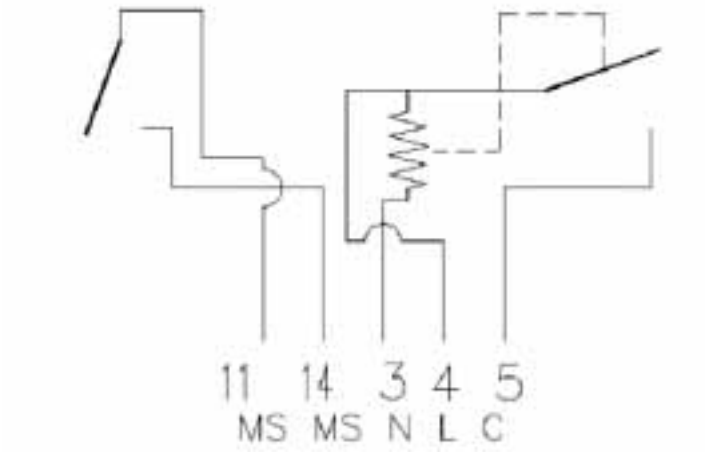
As a result of the above conditions the door is released during the wash phase whereas it is locked during rinses.



Contacts 11 and 14 represent the microswitch that indicates door status (open/closed). If the door is closed there is electrical continuity between contacts 11 and 14. If the door is open there is open circuit between contacts 11 and 14.

Contacts 4 and 5 represent locked door. If the door is locked there is electrical continuity between contacts 4 and 5. If the door is released there is an open circuit between contacts 4 and 5.

ELECTRICAL CONNECTIONS



4.6 Wiring

Unlike the LVB2000 washing machine, the EVO II platform also introduces insulation perforation technology (**IDC**) also on the power part, leaving "crimping" only for the earth connections, noise filter and conductivity sensor.

A fundamental feature of IDC is the parallel connection between users.

For example, connection 1 of J9 connector is connected to 7 of the wash motor connector, 2 of J9 to 6 of the motor, 3 of J9 to 5 of the motor, etc.

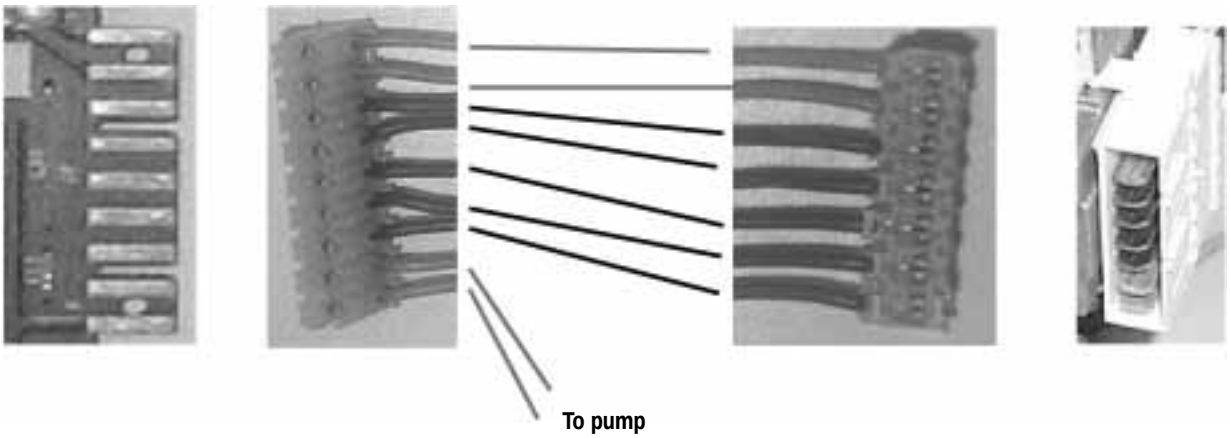
This means that there is a single connection to the corresponding electrical component from each connector on card; there are no connections external to the card. The wiring of each component can be checked directly on the card connectors (see Faults).

Intervention on the IDC connectors, in case of cable trouble, can only be done using the special pliers supplied by the Manufacturer of the connectors, always complying with the parallel order described.

Check continuity of the contacts with a multimeter, after any operation of this type.

All the IDC connectors are polarized and likewise their corresponding parts, cards and electrical components. **This means that the connectors cannot be reversed when inserting in the corresponding parts.**

Given below is an example of an IDC connection relevant to the **J9**



4.7 Filter with built-in cable

The LVB 2000 machine has a noise filter with built-in power supply cable.

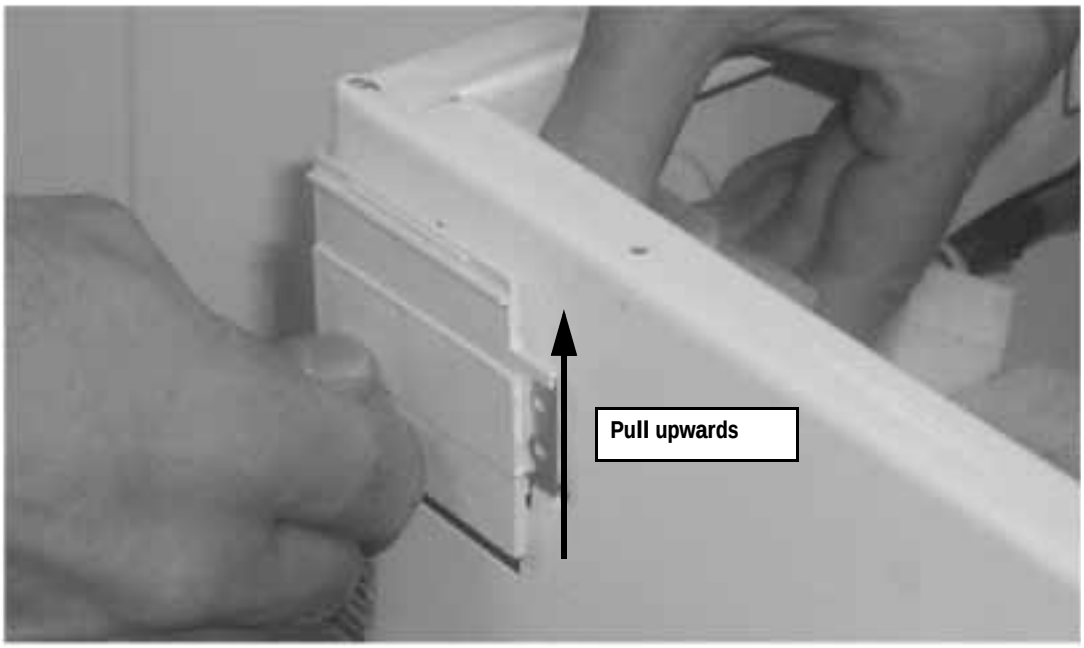
This application is also used on the EVOII.

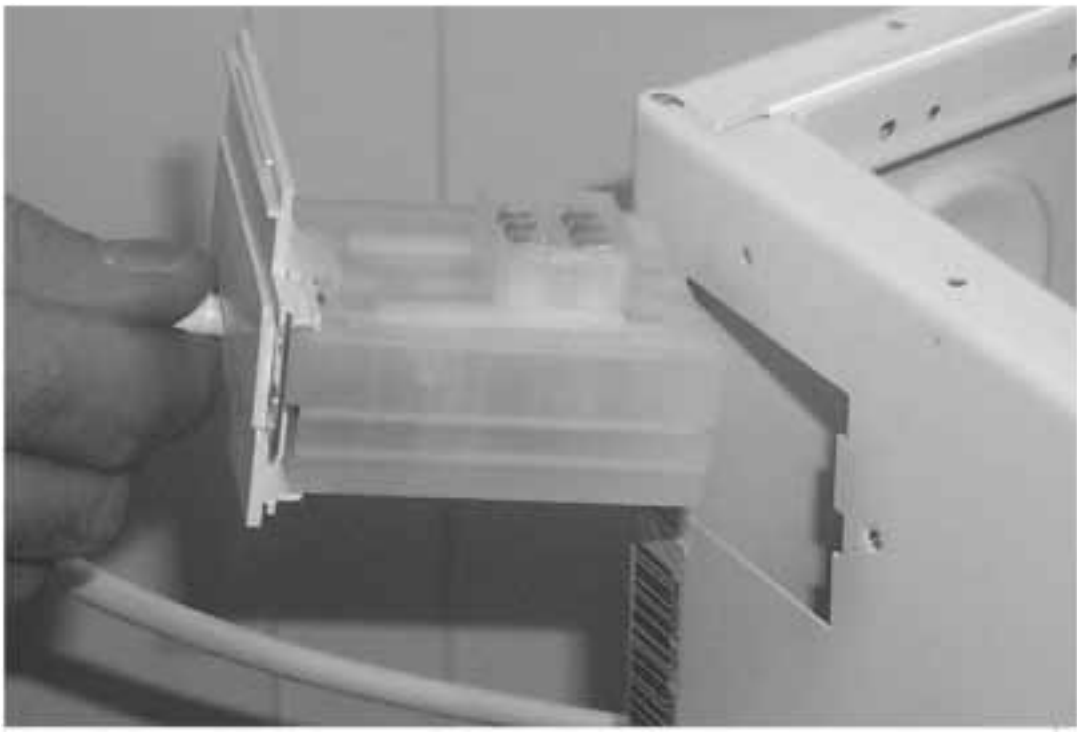
In this new component the supply cable is directly co-moulded with the filter and the connections between supply cable and filter are no longer external with fastons, but inside the filter. Power to the machine is obtained with an 8-pin connector with faston that inserts on the corresponding part of the filter.

Therefore in case of filter or power supply cable replacement the replacement is single.

The steps for replacing the component are:

- Disconnect the power outlet from the system
- Remove the top
- Remove the 8-pin connector on the filter
- Undo the fixing/continuity screw
- Lift the filter upward holding it by the power supply cable, tripping the check tooth.
- Remove the filter perpendicularly from the cabinet



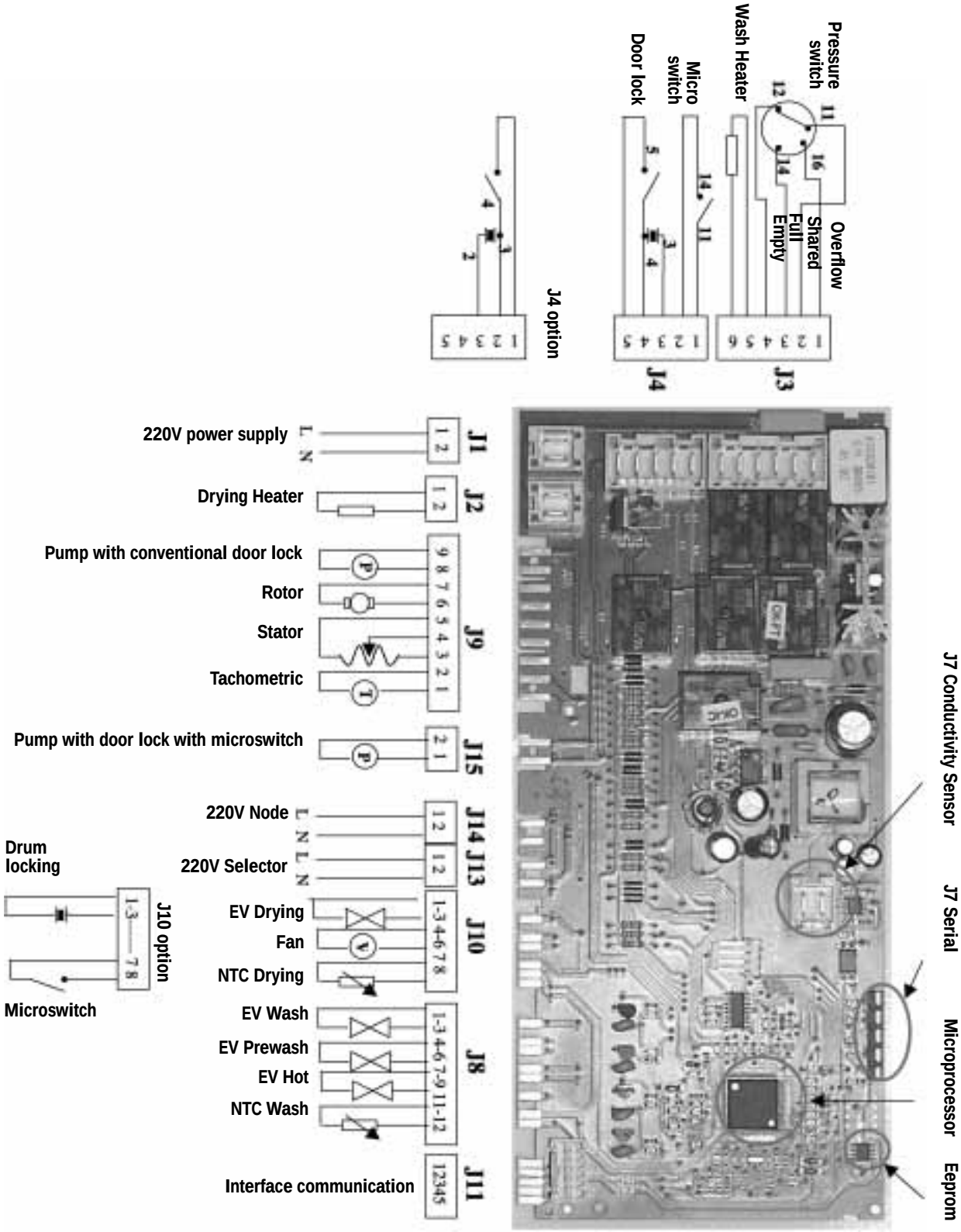


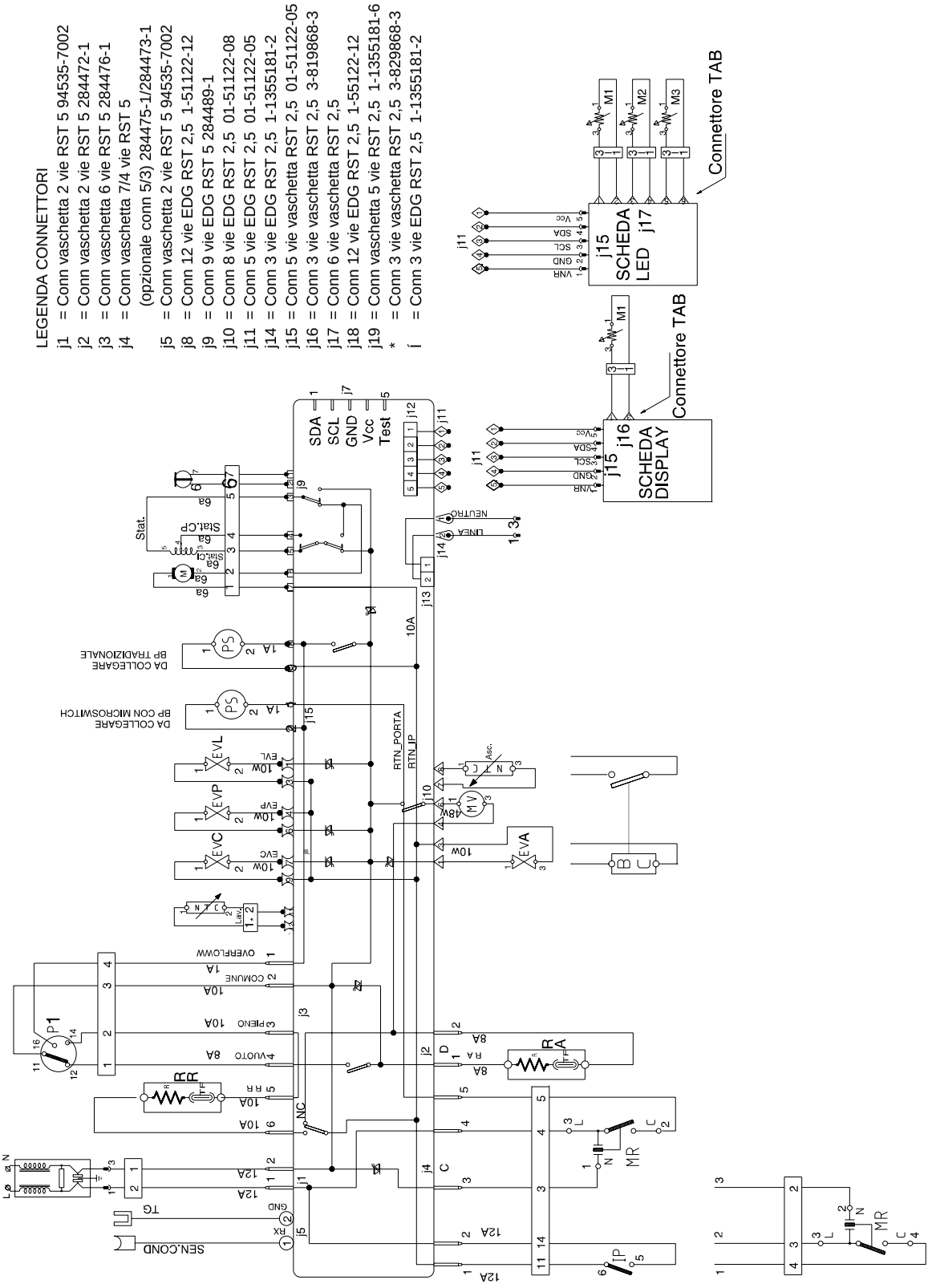
To refit the component, carry out the above steps in reverse order.

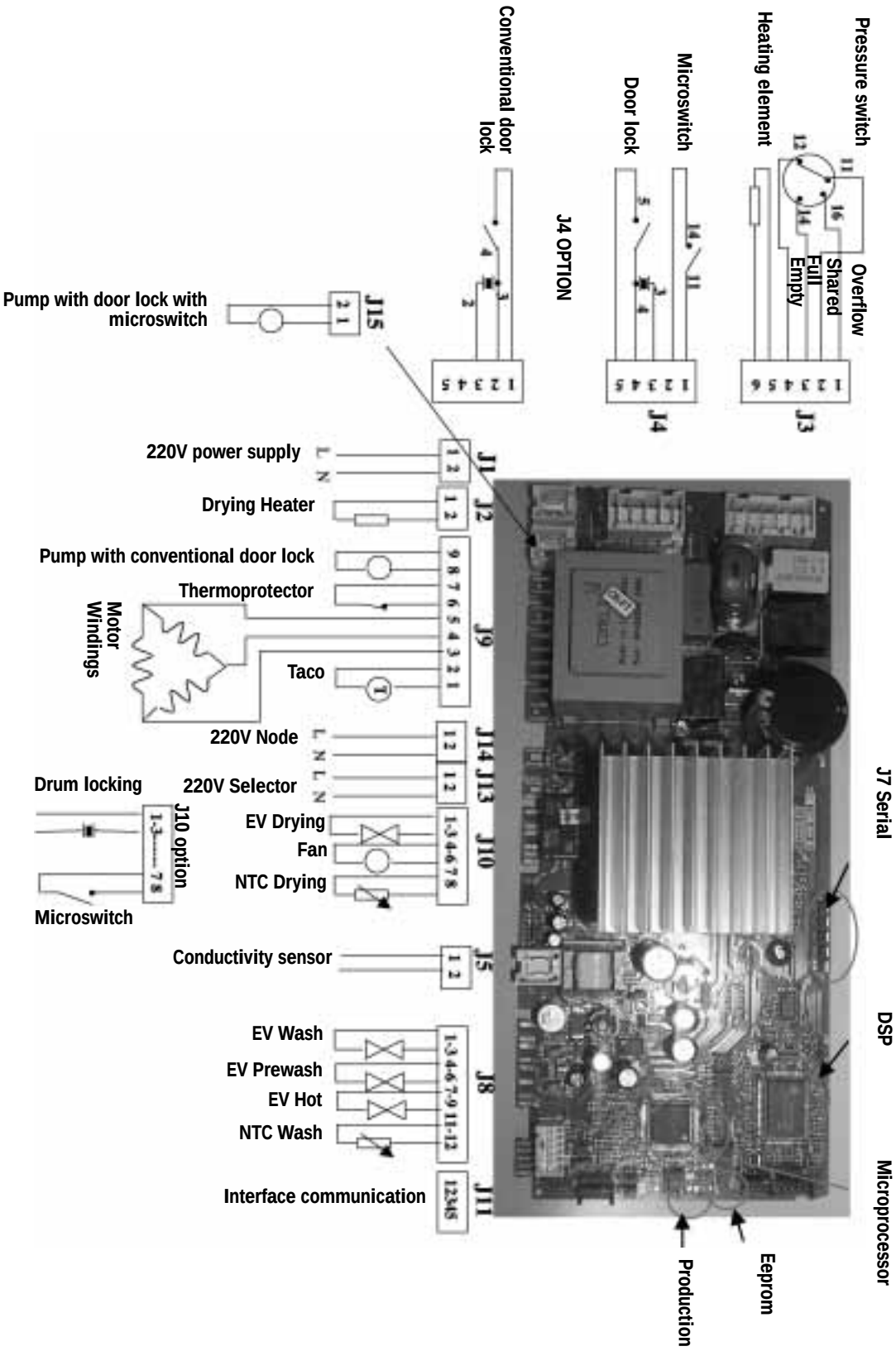
CAUTION: the fixing/continuity screw is a specific screw guaranteeing earth continuity between filter and cabinet The same screw must be refitted in order to guarantee machine conformity.

5 LVB WIRING DIAGRAMS

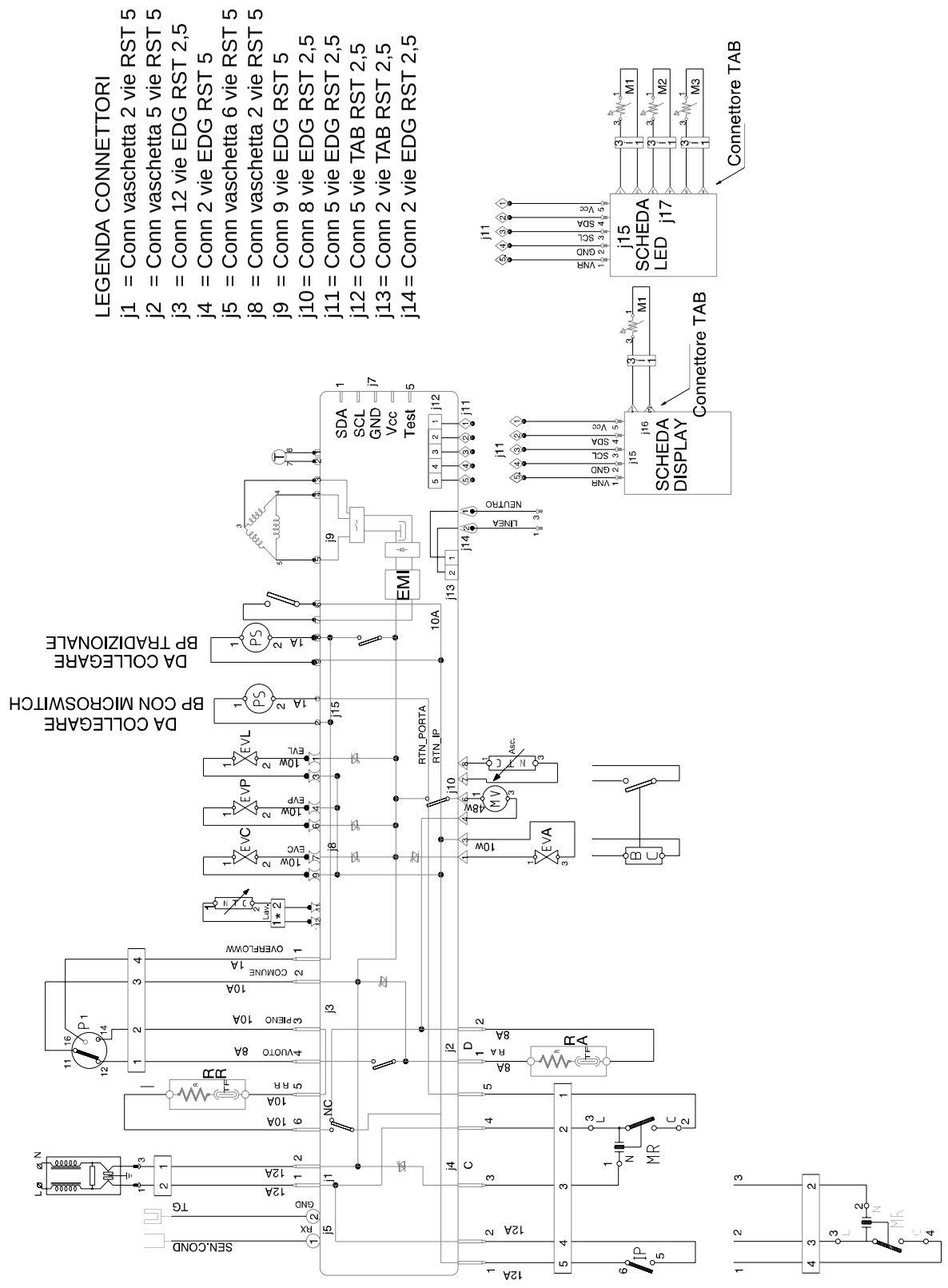
5.1 COMMUTATOR MOTOR LVB WIRING DIAGRAMS




LEGENDA CONNETTORI
j1 = Conn vaschetta 2 vie RST 5 94535-7002
j2 = Conn vaschetta 2 vie RST 5 284472-1
j3 = Conn vaschetta 6 vie RST 5 284476-1
j4 = Conn vaschetta 7/4 vie RST 5
(opzionale conn 5/3) 284475-1/284473-1
j5 = Conn vaschetta 2 vie RST 5 94535-7002
j8 = Conn 12 vie EDG RST 2,5 1-51122-12
j9 = Conn 9 vie EDG RST 5 284489-1
j10 = Conn 8 vie EDG RST 2,5 01-51122-08
j11 = Conn 5 vie EDG RST 2,5 01-51122-05
j14 = Conn 3 vie EDG RST 2,5 1-1355181-2
j15 = Conn 5 vie vaschetta RST 2,5 01-51122-05
j16 = Conn 3 vie vaschetta RST 2,5 3-819868-3
j17 = Conn 6 vie vaschetta RST 2,5
j18 = Conn 12 vie EDG RST 2,5 1-55122-12
j19 = Conn vaschetta 5 vie RST 2,5 1-1355181-6
* = Conn 3 vie vaschetta RST 2,5 3-829868-3
í = Conn 3 vie EDG RST 2,5 1-1355181-2
Connettore TAB
SCHEDA LED j17
SCHEDA DISPLAY
j15
j16
SDA
SCL
GND
Vcc
Test
NEUTRO
LINEA
DA COLLEGARE BP TRADIZIONALE
DA COLLEGARE BP CON MICROSWITCH
RTN_PORTA
RTN_IP
OVERFLOWW
COMUNE
PRENO
VUOTO
SEN.COND
Stat.
Stat.CP
EVL
EVP
EVC
EVA
MR
IP
P1
Asc.


Pressure switch
Overflow
Shared
Full
Empty
Heating element
Microswitch
Door lock
Conventional door lock
J4 OPTION
J3
J4
Pump with door lock with microswitch
J15
220V power supply
L N
J1
Drying Heater
J2
Pump with conventional door lock
Thermoprotector
Motor Windings
Taco
J9
220V Node
L N
J14
220V Selector
L N
J13
Drum locking
Microswitch
J10 option
EV Drying
Fan
NTC Drying
J10
Conductivity sensor
J5
EV Wash
EV Prewash
EV Hot
NTC Wash
J8
Interface communication
J11
J7 Serial
DSP
Microprocessor
Production
Eeprom

5.2 THREE-PHASE MOTOR LVB WIRING DIAGRAMS



Wiring Diagram Legend

AQS	Acquastop solenoid valve
B	Buzzer or Door lock
BF	Terminal board contacts, dryer heating element and fan.
BP	Door lock
C	Condenser
AC	Condenser
DV	Switch
EF/CL	Cold water/bleach solenoid valve
EF/L	Cold water/wash solenoid valve
EF/P	Cold water/prewash solenoid valve
ER	Cut-out heater
ET	Cut-out thermostat
EV	Solenoid valve
EVA	Drying solenoid valve
EVC	Hot water solenoid valve
EVF	Cold water solenoid valve
EVL	Wash solenoid valve
EVP	Prewash solenoid valve
FA	Noise filter
FD	Delicate drying thermostat
FE	Intense drying thermostat
FRT	Thermofuse resistance
I	Reverser
I1..I2..3..	Switches/deviators
IA	On/Off switch
IC	Switch NC / 1/2 load
ID	No spin switch
IE	Water-economizer or NC Switch
IF	Spin decrease switch
IP	Door switch
IR	Line switch
IS	Water-stop
L	Line or Lamp
LB	Low level
LN	Normal level
LS	Indicator light
M	Earth symbol or Dryer motor
MC	Spin motor or Spin winding
MI	Induction motor
ML	Wash motor or Wash winding
MO	Terminal board
MP	Door microswitch
MR	Microdelay device
MT	Timer motor
MV	Fan
MV - Ras	Dryer fan (RA)
Mzbn/M	zbn timer motor
N	Neutral or Terminal board
NC	No spin
P	Pressure switch
P1	Pressure switch 1st level
P2	Pressure switch 2nd level
PA	High speed potentiometer

PB	Low speed potentiometer
PL	Pure wool
PM	Motor thermoprotector
PR	Timer programmer or Pressure switch
PS	Drain pump
R	Heating element
Ras/RA	Drying heater
RE	Relay
RR	Heating element
RV	Speed regulator
S	Indicator light
SL	Line indicator light
SO	Door indicator light
SR	Heating indicator light
ST	Temperature selector or Stop with water
SV	Spin speed selector
T	Timer contacts
TA	Drying timer contacts
TB	Low temperature thermostat
TC	Crosspiece earth
TFL	Flange earth
TG	Main earth
TH	Thermostat
TH1	Thermostat 1st temperature
TH2	Thermostat 2nd temperature
TH3	Thermostat 3rd temperature
THF	Work thermostat
THR	Adjustable thermostat
TM	Motor earth
TMB	Base cabinet earth
TMP	Motor thermoprotector
TMS	Thermostop
TP	Thermoprotector or Pump earth
TPS	Drain pump earth
TR	Heating element earth
TS	Safety thermostat or Support earth
TT	Timer earth
TTH	Thermostat earth
TV	Tub earth
ZBN	Timer

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