Data Sheet and Service Manual

ECAM220.XX MAGNIFICA START

Date: 17.05.2022

Uploaded: 03.05.2023



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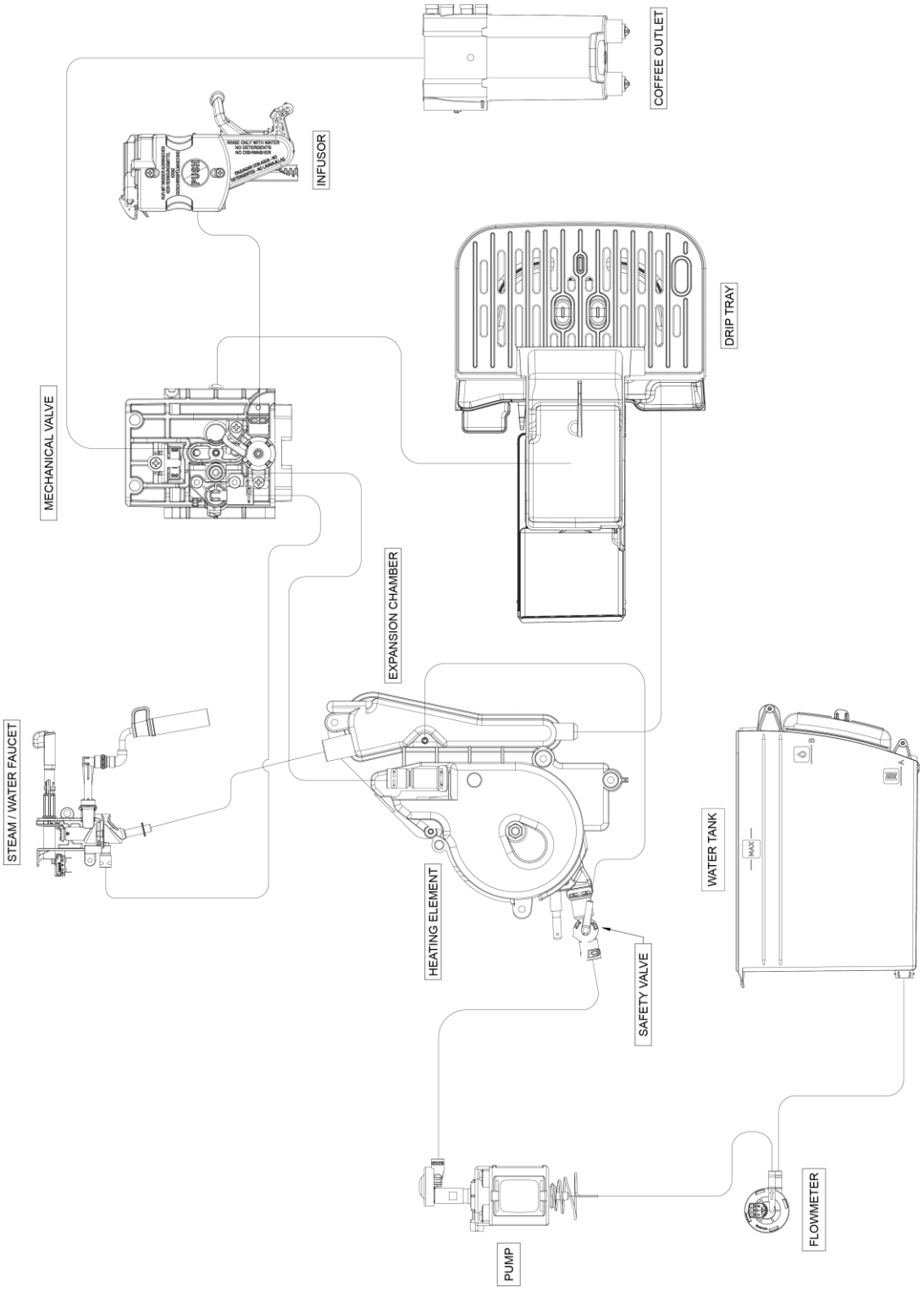
2 TECHNICAL DATA

Voltage – Frequency – Input Power	220 - 240 V – 50 / 60 Hz – 1450 W
Stand-by Button OFF	≈ 0.23 Wh

COMPONENTS

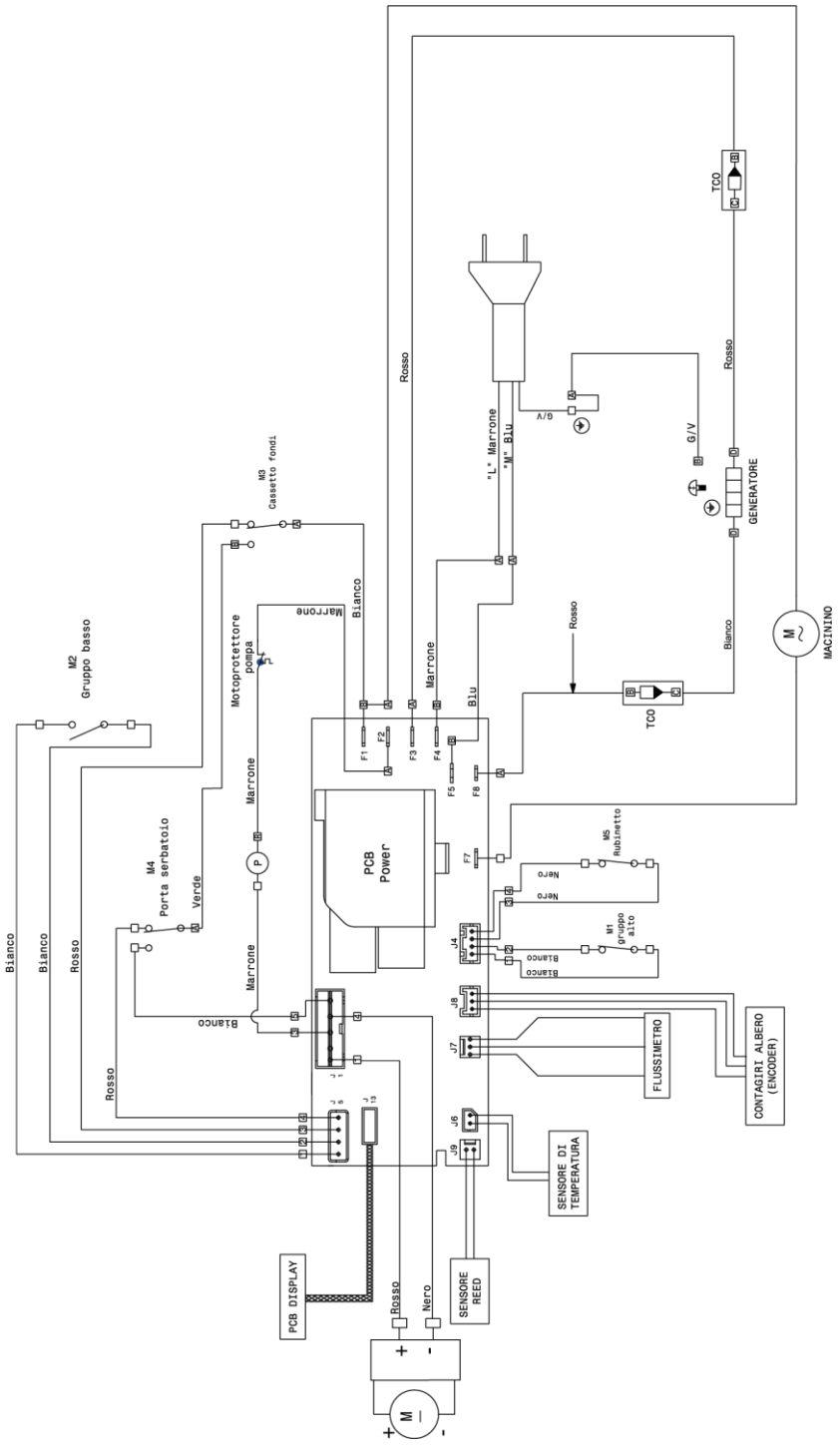
Pump	230 V AC – 48 W – 15 bar
Grinder motor	AC
Transmission motor	DC with position encoder
Coffee thermoblock	
- Temperature probe	NTC sensor
- Thermal fuse TCO	192 °C
- Heating element	230 V AC – 1400 W

3 HYDRAULIC DIAGRAM

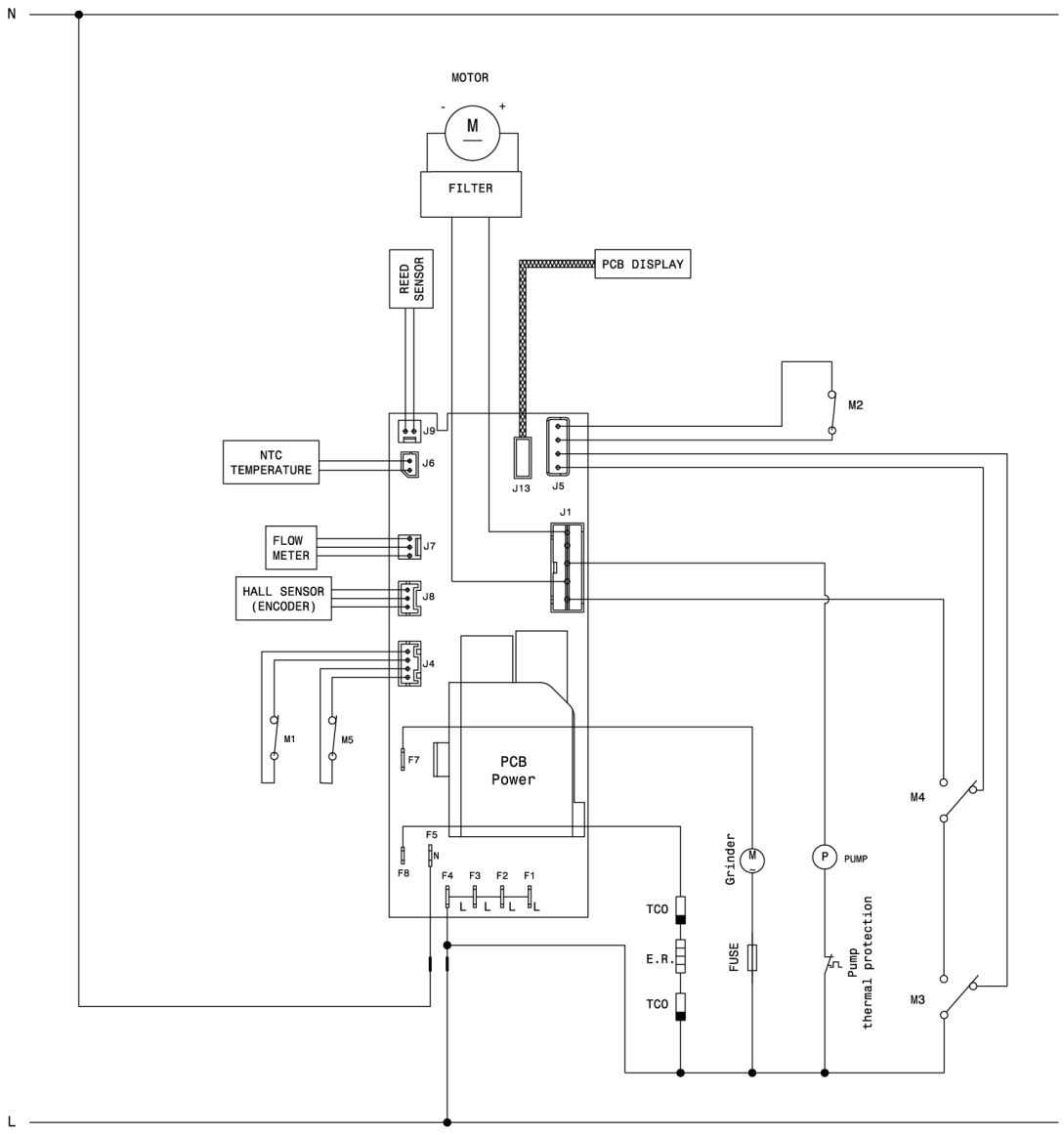


4 WIRING DIAGRAM

4.1 Practical Outline



4.2 Theorical Outline



Legend:

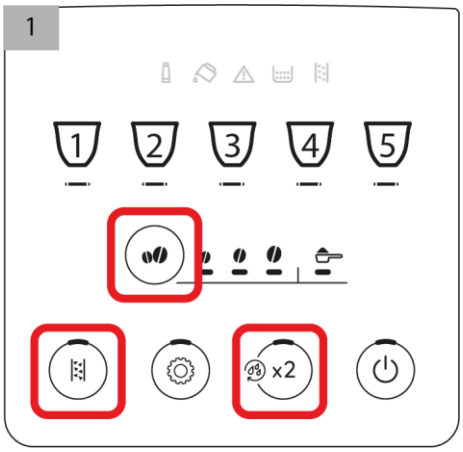
L: Phase/Line
N: Neutral
TCO: Thermal cut off/thermal link
HE: Heating element
M1: Microswitch upper (group infusion-motor)
M2: Microswitch lower (group infusion-motor)
M3: Microswitch drawer
M4: Microswitch water tank
M5: Microswitch water/steam

5 WORKING PRINCIPLE

5.1 MICROSWITCHES, SENSORS AND SOLENOID VALVES

MICROSWITCHES	**Function**	**Logic**
M1 = UPPER MICROSWITCH	Detects when the infuser is on top position	“NC”, it opens when the infuser is in top position
M2 = LOWER MICROSWITCH	Detects when the infuser is on down position	“NO”, it closes when the infuser is in down position
M3 = DRAWER MICROSWITCH	Detects when the drip tray is in correct position	3-pin micro switch. When the drip tray is inserted: - the contact for the drip tray detection is OPEN; - the contact for the transmission motor power supply is CLOSED.
M4 = WATER TANK MICROSWITCH	Detects the presence of the water tank	3-pin micro switch. When the water tank is inserted: - the contact for the water tank detection is OPEN; - the contact for the transmission motor power supply is CLOSED.
M5 = HOT WATER / STEAM MICROSWITCH	Detects when the hot water / steam knob is in “I” position	“NC”, it opens when the user move the knob to the “I” position
REED AND ENCODER	**Function**	**Logic**
REED SENSOR EMPTY WATER TANK	Detects when the water level is at minimum	
HALL SENSOR ENCODER	Detects rotations of transmission motor	

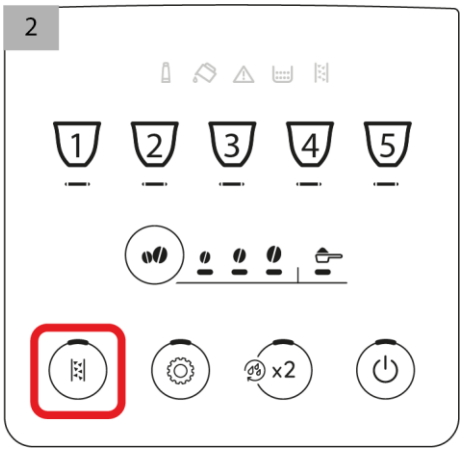
6 TEST MODE



To activate the test mode proceed as follows:

1. The appliance must be plugged-in and in stand-by mode.
2. Remove the drip tray.
3. When the request to insert the drip tray prompts on the display, press and hold + x2 + (see the position, not the graphic of the buttons) until the drip tray alarm goes off.
4. Insert the drip tray.
5. Select the desired test mode.

6.1 LOAD TEST MODE

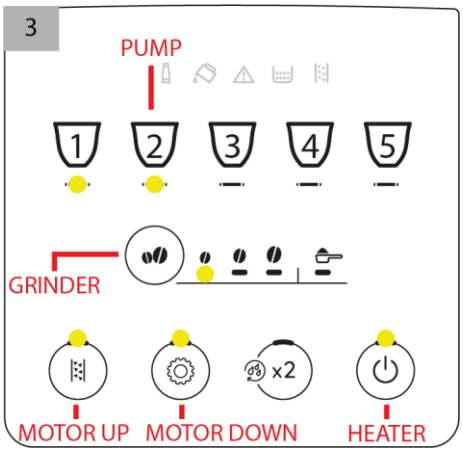


After having accessed the test mode as indicated previously, press to access the LOAD TEST MODE.

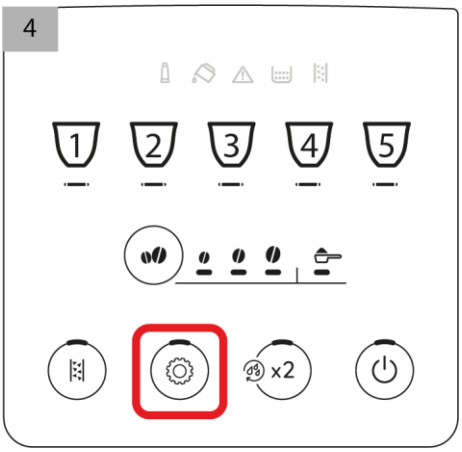
Press one of the icons as shown in the image n°3 to activate the relative load.

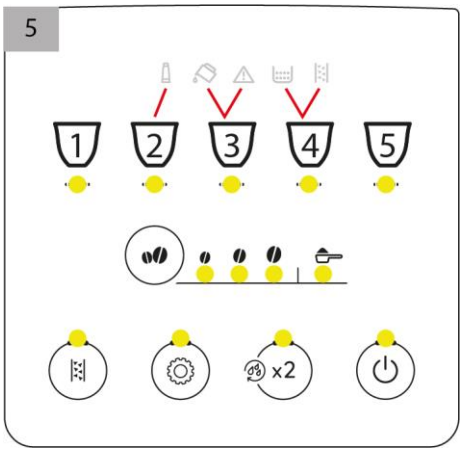
LED legend:

- **steady ON:** available functions (the steam LED lights up when the knob is in the position “I”)
- **slow blinking:** active load
- **fast blinking:** UP/DOWN micro switch pressed



6.2 DISPLAY TEST MODE





After having accessed the test mode as indicated, press  to access the DISPLAY TEST MODE:

During the display test mode all the LEDs are light up.

When a button is pressed, only the LED of that button remains ON, while all the other buttons will be turned OFF.

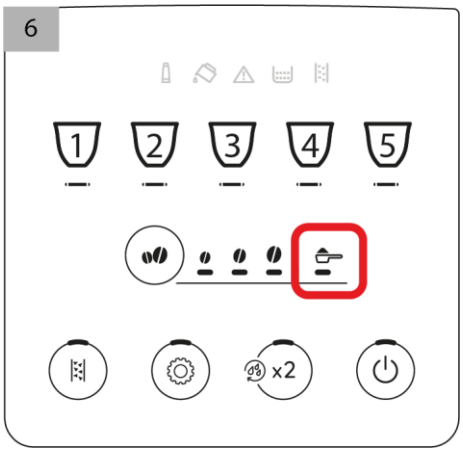
In particular, by pressing each of the 3 buttons below, in addition to the button LED, also the two neighbour warning LEDs will illuminate steadily:

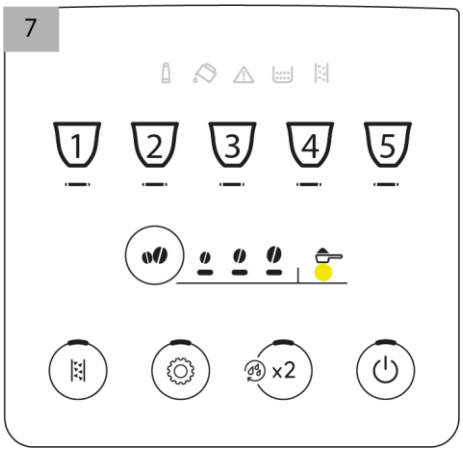


NOTICE: The DISPLAY TEST MODE will reset the following settings in the appliance:

- **first run:** the machine will ask again for hydraulic circuit filling
- **language:** the machine will ask again to choose the language
- **filter installation:** if the filter installation function was enabled, it will be disabled

6.3 RESET ENCODER



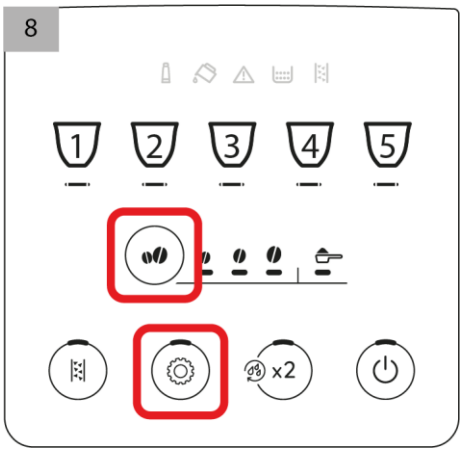


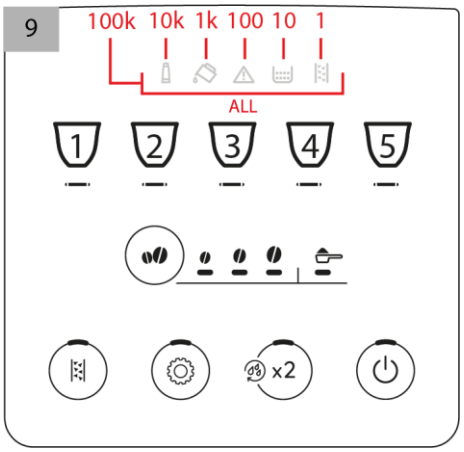
After having accessed the test mode as indicated, press to start the RESET ENCODER:

LED legend:

- **blinking:** reset in progress
- **steady ON:** reset done

7 STATISTICS MODE





The appliance allows the reading of the statistics data to understand exactly how the machine operated along the time.

To access the STATISTICS MODE:

- make sure the appliance is **ready to use** (i.e. in ready-for-coffee mode)
- hold + pressed for at least 5 seconds

The and LEDs blink to confirm the STATISTICS MODE.

Button	Statistics
	Number of descales
x2	Litres of water used
3	Number of filters installed
2	Number of coffee beverages
1	Number of steam erogations

Press the desired button to display the corresponding statistics data:

After having pressed the desired button, the appliance will display the corresponding statistic value with the sequential flashing of the below lights:



Example: To display a total amount of 104 coffee beverages, the appliance will display:

1. the ,  and  LEDS flash to advice which icons will be involved on the count
2. the  LED flashes once
3. the machine emits a long beep to advice that the second value is 0
4. the  LED flashes 4 times

To exit the statistics mode, press the SETTINGS button again or wait for 120 seconds without operating on the machine.

The appliance will come back to the ready to use mode.

8 A. HEATING ELEMENTS RESISTANCE CHECK

Thermoblock resistance value: ≈ 35 Ohms.

Resistance/temperature characteristics for the thermoblock NTC:

RESISTANCE - TEMPERATURE CHARACTERISTICS

TEMP. °C	MINIMUM kΩ	NOMINAL kΩ	MAXIMUM kΩ	Temp. Accy °C	Resi.Accy %
0.0	310.0	328.9	348.8	± 1.17	± 6.05
20.0	118.6	124.6	130.9	± 1.10	± 5.00
40.0	50.75	52.85	55.02	± 1.01	± 4.10
60.0	23.82	24.61	25.43	± 0.92	± 3.31
80.0	12.09	12.41	12.73	± 0.81	± 2.62
100.0	6.557	6.691	6.825	± 0.60	± 2.00
120.0	3.664	3.759	3.855	± 0.94	± 2.55
140.0	2.161	2.228	2.296	± 1.22	± 3.06
160.0	1.327	1.375	1.423	± 1.51	± 3.51
180.0	0.8445	0.8781	0.9126	± 1.82	± 3.93
200.0	0.5541	0.5783	0.6033	± 2.14	± 4.32

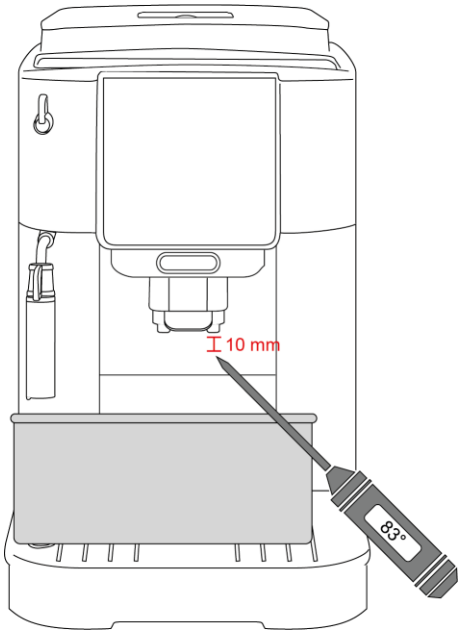
9 COFFEE TEMPERATURE TEST

Complaints from end users about coffee temperature are quite frequent. They are mainly due to incorrect appliance adjustments or to an incorrect expectation by the customer.

A **coffee temperature measurement** is required all the times any of these complaints are encountered.

To perform the coffee temperature test, follow in sequence the below steps:

1. Turn the appliance ON
2. Run 1-2 rinse cycles to warm up the hydraulic circuit
3. Select to prepare a **X2 ESPRESSO COFFEE** (refer to the user manual for more details)
4. Start the coffee preparation
5. Wait until at least 20ml of coffee have been delivered into the cup
6. Measure the coffee flow temperature at about 2÷10mm from the coffee spout, as shown in the below picture:



The **optimal indicative temperature measurement** for coffee should be:

- **82°C ± 3°C** for the minimum level of temperature
- **84°C ± 3°C** for the medium level of temperature
- **86°C ± 3°C** for the maximum level of temperature

Refer to the user manual for more details to how set the level of temperature.