POURING PERFECTION

Marco Beverage Systems Ltd.

INSTRUCTIONS FOR MODELS

ECOSMART PB10, ECOSMART PB10 Hi Deck
ECOSMART T10

(P/N: 1000677#, 1000678#, 1000674#)

Water pressure : 5 - 50 psi (min.-max.)35 - 345 kPa (min.-max.)

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SAFETY:

- This appliance must be earthed.
- Risk of flooding. A hose is not supplied with this unit. When connecting to the water mains it should be considered that a hose is not a permanent connection. It is, therefore, advisable to switch off boiler and close the stopcock valve when boiler is not in use, e.g. overnight, weekends etc.
- Risk of scalding. Beware of accidentally operating the water drawoff tap or push button especially when cleaning the front of the boiler.
- The utmost care has been taken in the manufacture and testing of this unit. Failure to install, maintain and / or operate this boiler according to the manufacturer's instructions may result in conditions that can cause injury or damage to property. If in any doubt about the serviceability of the boiler always contact the manufacturer or your own supplier for advice.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.
- In the event any wires are damaged, such wires can only be replaced by experts or professional after service staff from the manufacturer, after service department or similar function departments.
- **CAUTION** – Risk of fire and electric shock. Only to be used with manufacturer's specified power cord set. Marco p/n 1501487 (USA), 1501488 (EU), 1501489 (UK / Ire).

INSTALLATION DETAILS:

Electrical installation:

- Electrical specification:

Machine type	Rated power	Plug type	Plumbing
1000677US 1000678US	2.9kW @ 240V 2.2kW @ 208V 50Hz / 60Hz	NEMA 6-15P or NEMA L6-20P	(3/8" NPT)
1000677 1000678	2.8kW @ 230V 50Hz / 60Hz	BS 1363	(3/4" BSP)
1000677MJ 1000678MJ	2.8kW @ 200V 50Hz / 60Hz	-	(3/4" BSP)

Plumbing installation procedure:

- Mains water pressure required (limits): 5-50psi (35-345kPa).
- Fit a stop Valve on a cold water line and attach a suitable fitting.
- Connect a suitable hose to the stop valve fitting.
- Turn on the water to flush any impurities, dust etc from the inlet hose and water pipe. Allow several gallons through. Especially for new installations.
- Connect the hose to the inlet valve of the boiler. Make sure a sealing washer is fitted.
- Turn on water and check for leaks.

Backflow Prevention:

- This equipment must be installed with adequate backflow protection to comply with all applicable federal, state and local codes. US versions only.

Operating boiler for the first time:

- Check that all installation procedures have been carried out.
- Ensure water valve is on.
- Connect power cable to IEC socket on base of boiler.

- Plug boiler into suitable power socket.
- The “power on” light will glow green and the machine will fill to a safe level, above the elements, before heating. The display will show the current water temperature and the status “Filling…”.
- The “Ready/Status” light will cycle two red flashes while the machine is filling to the safe level.
- After this amount of water has heated to about 95ºC the boiler will draw more water in until the temperature drops by 1 or 2 degrees. The boiler will then heat again. This heat fill cycle continues until the boiler is full.
- While filling, the “Ready/Status” light will remain blank.
- The “Ready/Status” light will glow green when the machine is up to normal operating temperature.
- The boiler is now ready for use – the display will show the Water Temperature and the status “READY”.
- The Boiler may now be used to dispense Hot Water to the preset factory settings.
    - 95ºC
    - Push and Hold operation
    - Continuous flow – no pulsing
    - Auto Heat Fill Mode

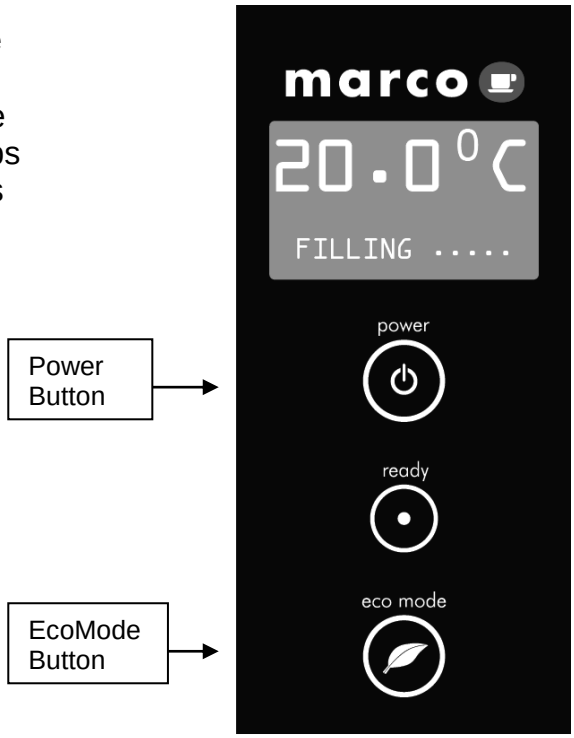


Figure 1: Machine User Interface

NOTE: Because the boiler is electronically controlled no priming is necessary.
The element cannot switch on until a safe level of water is reached.

EcoSmart FEATURES:

The EcoSmart Ecoboiler has many settable features which gives the operator great flexibility in choosing how the unit will operate. The following explains how the various features may be changed and their function.

HOW TO SETUP AN EcoSMART:

Smart Boiler (software Revision 1.10)

- Once the machine is plugged to the power socket the display will show welcome screen with current software revision.
- After few seconds the display will show the main screen:



Welcome screen with version number



main screen

- Top part of the display always shows live read-out of the tank temperature (0.5°C accuracy).
- Bottom part shows current machine status.

Entering Setup Mode

- To enter setup mode press ***power*** and ***eco*** buttons on the front panel at the same time.
- The display will show “USER SETUP” message:

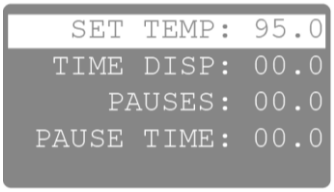
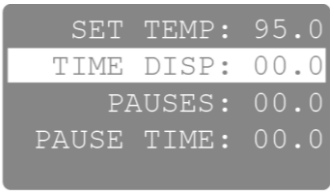
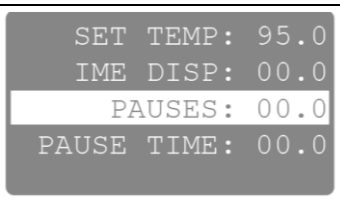
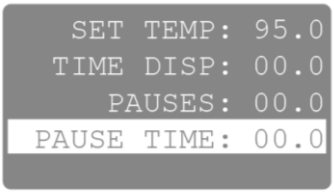


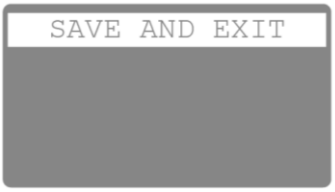
- Release the buttons now to enter the user setup mode.
- To enter advanced settings keep the buttons pressed until the display shows “SERVICE SETUP” message and release them.



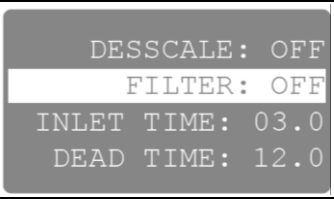
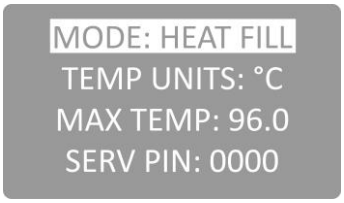
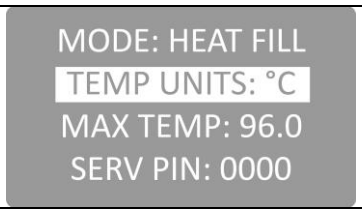
- In both setup modes use front panel buttons to navigate the settings:
  - ***power*** button to scroll through the functions,
  - ***eco*** button to increase set value (press and hold for auto-repeat).

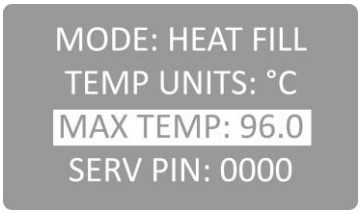
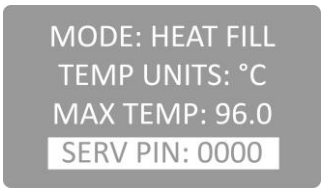
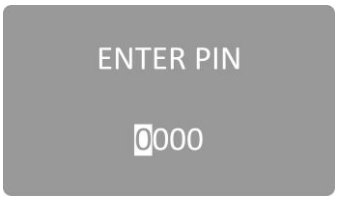
USER SET UP OPTIONS:

Screen view	Description	Default value
	No. 1 Sets new tank temperature. **NOTE:** Temperature should never be set for more than 97°C because it may cause steam to be generated during the low pressure days. Range: 60 – 98.5 °C *Range can be limited in Service Settings, see Service Setup below.* Resolution: 0.5 °C	95.0
	No. 2 Sets dispense time **(PB version only)**. Range: 0 – 99.9 seconds (0.1 sec resolution) 100 – 600 seconds (1 sec resolution) For PUSH & HOLD mode set to 0 (default).	00.0
	No. 3 Sets number of pauses during time dispense **(PB version only).** Range: 0 – 20 If machine set as PUSH & HOLD then number of pauses has no impact on dispense.	00
	No. 4. Sets pause time (same for each of the pauses) – PB version only. Range: 0 – 20.0 seconds Resolution: 0.1 second If machine set as PUSH & HOLD then time of pause has no impact on dispense.	00.0

	No. 5 Press the ***eco*** button to save all the values and reset the machine.	-

SERVICE SETUP OPTIONS:

Screen view	Description	Default value
	No. 1 Sets and shows remaining weeks before de-scaling is needed ("DESCALE TANK" message on the screen). Setting it to OFF will disable the function. Range: 1 – 60 weeks	OFF
	No. 2 Sets and shows remaining litres of water before filter change is needed ("CHANGE FILTER" message on the screen). Setting it to OFF will disable the function. Range: 100 – 9900 litres	OFF
	No. 3 Sets the time for which the inlet opens every time the machine needs water. It minimises temperature fluctuations. The value should be picked to allow 0.5 - 1°C cooling after water intake and depends on the tank size and element power. This is a factory setting and should only be changed by trained personnel. Range: 0 – 20.0 seconds Resolution: 0.1 second	3.0 (2.8kW) 6.0 (5.6kW) 9.0 (8.4kW)
	No. 4 Sets the time at which machine waits for the water too cool down after water intake. Measured from the beginning of the water intake. The value depends on tank size and element power. This is a factory setting and should only be changed by trained personnel. Range: 0 – 60.0 seconds Resolution: 0.5 second	12.0
	No. 5 Sets the mode the machine works in: • HEAT FILL (default – minimises temperature fluctuations), • CONT FILL (continuous fill – makes sure the tank is always full but temperature may vary), • COOL FILL (allows cooling but reduces tank size by using ECO mode), • MANUAL (manual filling). • See further explanations pg 7	HEAT FILL
	No. 6 Sets temperature units on screen.	Celsius

	No.7 This sets max limit of the temperature that user can set in USER SETUP; max value is 98.5 deg C	96ºC
	No. 8 “SERV PIN” limits access to SERVICE SETUP, setting it to 0000 disables the pin (default)	0000
	No. 9 PIN entry screen - once PIN is set and user wants to access SERVICE SETUP this screen will pop up; use top button to move through positions and bottom to scroll through the values (0 to 9 and again 0); if PIN is accepted you will gain access to the SERVICE SETUP, if PIN is rejected machine will reset itself.	
	No.10 Press the ***eco*** button to save all the values and reset the machine.	-

DISPLAY INFORMATION DESCRIPTIONS:

Status	Description
BOILER OFF	Machine off. Display backlight off but temperature read-out still working.
FILLING ...	Water level below low level probe. Machine is filling automatically. Status LED – 2 red blinks.
FILL THE TANK	Water level below low level probe. Machine has to be refilled manually (shown only in MANUAL mode). Status LED – 2 red blinks.
WAIT ...	Water is being heated. Dispense valve disabled.
BOILER READY	Water is up to the temperature and can be used. Note that this only means that the tank is heated and not that it is full. Status LED – green.
DISPENSE	Water is being dispensed. If machine is set to time dispense – there will also be a progress bar drawn underneath. Dispense can always be cancelled by clicking the dispense button again.
COOLING ...	Machine was set by the user to a lower temperature than the current tank temperature and is trying to cool down by taking in more cold water. This process may take between 20 seconds to a few minutes depending on tank size and temperature difference. Works only in COOL FILL mode.

DISPENSE WATER TO COOL THE TANK	Machine can not take more cold water to cool the tank because it is full. Water needs to be dispensed to allow room for more cold water to come in and finish cooling process.
DESCALE TANK	Descale timer elapsed. Time to de-scale the tank.
CHANGE FILTER	Litres output exceeds set value. Time to change the water filter.
CHECK LOW PROBE	Low water level probe broken (disconnected). Machine detects high level probe signal but can not detect low level one. Filling is disabled. Status LED – 1 red flash.
THERMISTOR S/C	Temperature sensor (thermistor) is short circuited. Dispense and heater disabled. Status LED – 3 red flashes.
ELEMENT FAILURE	Heating element is broken. Error is triggered when after 20 minutes of heating and not taking in water temperature in the tank fails to increase. Dispense is disabled. Status LED – 4 flashes.
THERMISTOR O/C	Temperature sensor (thermistor) is disconnected. Dispense and heater disabled. Status LED – 5 red flashes.
LOW PRESSURE	Incoming water pressure too low. The error will be reset after water supply restores. All boiler functions are active. Status LED – 6 flashes.
COMM ERROR	Display board lost communication with boiler PCB (can not receive serial data about temperature and probes). All actions cancelled.

MODES OF OPERATION (Service setup setting 5):

The boiler can operate in 4 different modes:

- HEAT FILL – Standard operation the boiler will take in water until the temperature in the tank drops, the inlet will close and the heating element is activated. When the temperature reaches the set temperature the inlet will reopen to take in more water. This cycle will continue until the Tank is Full.

  This mode is used to ensure that the water temperature is controlled within set values.

- CONTINUOUS MODE – In this mode the boiler will take in water and activate the element until the tank is full and the temperature has reached the set temperature. Typically used in high demand situations where the temperature stability is not primary concern.

- COOL MODE – In this mode the temperature can be adjusted up or down [Set-up function no.1.] while in operation. Depending on the water level in the tank selecting a lower temperature will cause either a message to “DISPENSE WATER TO COOL THE TANK” or will automatically take in cooler water to reduce the temperature to the new set temperature. In applications where selecting different temperatures frequently is required this Cool Mode is best selected.

  Please note that Cool Mode will cause the boiler to operate at half the capacity (eg 10L boiler to operate as a 5L boiler).

- MANUAL FILL – if the boiler is not plumbed into a water supply the operator must select Manual Fill mode for best operation of the boiler. In this mode the water is added manually by the operator.

ECO MODE OPERATION:

Note: In the COOL FILL mode [see Service setup setting No. 5] the ECO Mode is automatically selected.

- All ECO Boilers use high grade insulation and it is applied to give a significant energy usage improvement over a standard water boiler.
- The counter top range incorporates a ½ tank 'ECO mode' function.
- To enable the 'ECO Mode' press the button located below the 'Ready' indicator so that the leaf symbol illuminates green.
- This mode saves energy by minimising the energy wasted during machine down-time.
- NOTE: The ECO mode is most effective in installations where the machine has a regular 'off' period.
- To achieve the most benefit from the energy saving 'ECO Mode' on your ECO boiler unit (10L variants only), the following method should be employed:
    - Towards the end of the boilers operating period for a given day, switch the machine to ECO Mode. Whilst maintaining water at preset value, the machine tank will slowly drop to half full, where it will remain.
    - During the 'off' period as there is less water in the tank there will be less energy lost to the surrounding environment resulting in an energy saving.
- To disable simply press the 'ECO Mode' button again so that the leaf symbol is not illuminated

TROUBLESHOOTING:

The Ready/Status light signals various errors or problems. A cycle of red flashes indicates an error. The number of flashes in a cycle corresponds to the symptom in the table below:

Status/Diagnostic light guide:

No of flashes	Symptom	Action required
2	Water level below elements. Normal when machine first fills.	Check water pressure , if this is OK then call service agent.
3	Temperature sensor failure (o/c)	Call service agent
4	Water not heating	Call service agent
5	Temperature sensor failure (s/c)	Call service agent
6	Machine not filling	Check water pressure, if OK then call service agent.

MAINTENANCE:

This machine has been designed to give many years of trouble free service.
The only regular maintenance required is occasional de-scaling.

Descaling Procedure:

- Isolate machine from power supply.
- Isolate machine from water supply.
- ALLOW TO COOL COMPLETELY!
- Drain water from machine.
- Remove all lids.
- Remove as much scale as possible by hand, paying particular attention to level probes (White plastic with steel tab). Be very careful not to damage any attachments.
- Use ScaleKleen, Marco part No. 8000270 or similar. Follow instructions carefully.
- Thoroughly clean and flush the machine before re-use.
- Follow installation and first time operation instructions.

CLEANING:

The exterior of these machines may be cleaned with a damp cloth and a light detergent. Do not use abrasive cloths or creams, as this will spoil the finish of the machine. Do not use a water jet or spray.
NB: Beware of accidentally operating the draw off tap or push button when cleaning the front of the machine.

To Clean Dispense Tap (on Tap versions only):

- Isolate machine from power supply.
- Isolate machine from water supply.
- ALLOW TO COOL COMPLETELY!
- Drain water from machine.
- Tap bonnet assembly can be removed by rotating the black plastic assembly counter clockwise. The Upper bonnet assembly can them be cleaned with water and/or a mild detergent.
- The metal lower tap assembly can be removed by loosening the retaining nut and then cleaned with water and/or a mild detergent.

LIMESCALE:

In common with all water boiler manufacturers, service calls resulting from limescale are not covered by warranty. Fitting a scale reducer is recommended, especially in hard water areas. This can reduce the build-up of scale but may not stop it altogether. The frequency that descaling is required depends on the local water supply; hard water areas need more attention. Descaling of the machine should ideally be carried out by qualified service personnel.

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