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# EX3

## Technical Manual




TM_EN

Part No.: 1964229_2

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# MANUAL REVISIONS

| Rev. #: | Date: | TSB#: | Change Description |
|---|---|---|---|
| 01 | Feb. 05, 2020 | None | First draft released for technical review.<br>Firmware rev 1.04 |
| 02 | Apr. 03, 2020 | None | Include Mini models & update Electric diagrams |
| | | | |
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## NOTIFICATIONS

· Explanation of descriptions

There are five different levels of notification intensity within this manual, as identified by the signal terms: DANGER, WARNING, IMPORTANT, NOTE and PRO TIP. The level of risk and importance of the notification is determined by the following definitions. Always observe the warnings to ensure safety and prevent potential injury and product damage.

### *Important:*

Alerts against unsafe practices. Observe Important notifications to ensure food safety, prevent possible minor personal injury, or damage to the machine.

### *WARNING:*

Indicates a potentially hazardous situation which, if the WARNING is ignored, could result in serious injury or even death.

### *DANGER:*

**INDICATES AN IMMINENTLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL LIKELY RESULT IN SERIOUS INJURY AND EVEN DEATH.**

### *Note:*

Gives additional information which may be helpful during the operation, routine maintenance, and cleaning of the machine.

### *Pro Tip:*

Gives helpful hints and suggestions from the manufacturer that take the guesswork out of choosing settings and care intervals.

# ROUTINE MAINTENANCE SCHEDULE

## · Service intervals

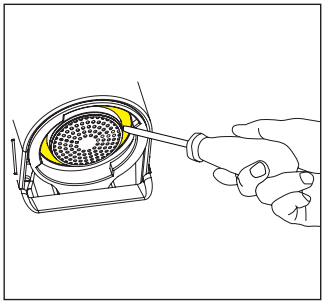
| Main components | Part No. | Months (Cycles) | | | |
|---|---|---|---|---|---|
| | | 6 (12500) | 12 (25000) | 18 (37500) | 24 (50000) |
| **Boiler** | | | | | |
| Non suction valve | 65000210 | | Check | | Replace |
| Boiler filling solenoid valve | 60000202 | | | | Replace |
| Boiler upper raccord | 30000200 | | Check | | Check |
| Boiler lower raccord | 30000210 | | Check | | Check |
| Safety Valve | 65000115 | | Check | | Check |
| **Brewing group** | | | | | |
| Group solenoid valve | 60000156 | | | | Replace |
| Shower | 75000010 | Replace | Replace | Replace | Replace |
| Group head gasket | 75000081<br>75000083 | Replace | Replace | Replace | Replace |
| **Taps** | | | | | |
| Steam tap | 15000342 (R)<br>15000338 (L) | | Clean | Replace | |
| Water tap | 15000342 (R)<br>60000100N (A) | | | | Replace |
| **Motor-pump** | | | | | |
| Pump head | 60000030 | | | | Replace |
| Non return valve | 60000010 | | | | Replace |
| Expansion valve | 65000021 | | | | Replace |

***Important***:
Always conduct the 6 month service intervals without delay to ensure excellent performance of the machine and to ensure full warranty coverage.

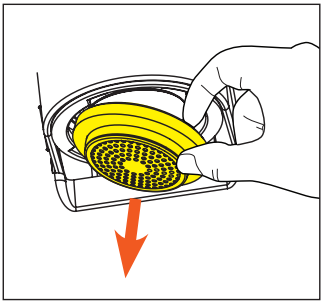
***Note***:
(R) Manual rotary tap / (L) Manual lever tap / (A) Automatic tap solenoid

# CHANGING THE GROUP GASKET

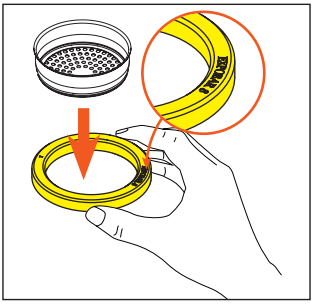
· All versions



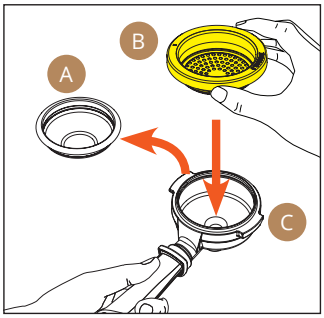
1. To remove the porta-filter, use a straight-blade screwdriver to release the shower by prying down with medium force.



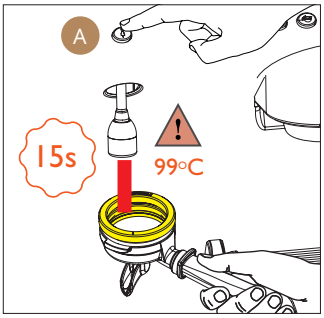
2. Remove the shower and gasket.

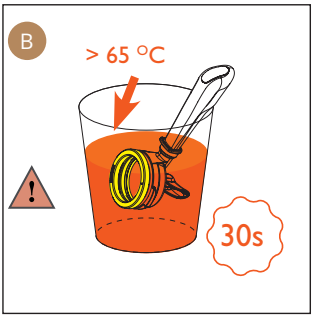


3. Remove and discard the old gasket. Insert the new gasket (chamfer and EXPOBAR logo facing up) into the shower.




4. Remove the filter basket(A), then place the new gasket and shower(B) into the porta-filter(C).




5. Preheat the gasket to soften the rubber. A - heat the gasket for 15 seconds using the water from the hot water outlet, or B - place the gasket, shower, and porta-filter in hot water for 30 seconds.

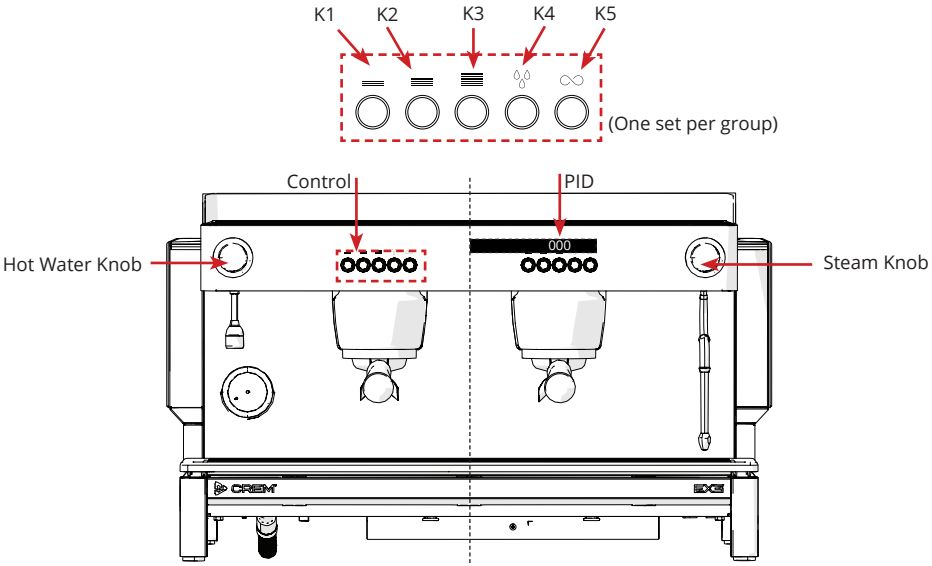
***WARNING!***
The water from the water tap is very hot! Handle with care to prevent scalding or burns.

# BUTTONS AND CONTROLS

## · Machine controls

EX3 features a push button control block for each brewing group. Control functions are explained below.

Versions with display (PID) are equipped with an individual 3 digit display on each group for monitoring machine status, performing user programming and machine adjustments.




| Button | Selection description | Programming menu function |
|---|---|---|
| K1 | Short espresso | (+) |
| K2 | Medium espresso | (-) |
| K3 | Large espresso | |
| K4 | Group flush | |
| K5 | Continuous / Hot water | Enter / Accept |

***Pro Tip:***

All group buttons are fully adjustable via the user programming. See the Dose Programming section for more details.

***Pro Tip:***

Versions with display will show the shot timer during the brewing process.

# SERVICE PROGRAMMING

## · Stand-by [oFF] status

To put the machine on electronic Stand-by mode **[oFF]** from home screen, press K5 and then K3 at the same time. Message **[oFF]** is shown on the display.

On this mode, the heating element will remain disconnected.

To exit from the Stand-by mode, just press any button (K1 – K2 – K3 – K4) to come back to the home screen.

## · Factory preset

To restore the machine to factory default programming settings, follow the steps below:

1. Turn the machine off at the main power switch.
2. Press and hold K1+K3+K5 simultaneously while turning the main power switch back on. The display will show **[PrS]** and all previously customized settings will be erased and replaced with the factory settings.
3. Cycle the machine off and on once more at the main power switch to remove the message.

## · Service menu - Access

To access the service programming settings, follow the steps below:

1. Put the machine on Stand-by mode **[oFF]** (see previous instructions).
2. When **[oFF]** is shown on the display, hold K5 for 15 seconds, until **[toU]** (1st menu setting) is shown on the display.
3. Browse through the menu by pressing K1 & K2.
4. Access to each setting by pressing K5. The adjustable parameter will flash. Accept and save by pressing K5 again.
5. To exit from the menu, browse to **[ESc]** (Escape) and press K5 to come back to **[oFF]** mode.

## · Service menu - Settings summary chart

| Setting | Description |
|---|---|
| **[toU]** | Boiler filling time-out |
| **[cLE]** | Cleaning program cycles |
| **[Prd]** | Dose programming |
| **[SEn]** | Level probe sensitivity |
| **[PiF]*** | Preinfusion (electronic) |
| **[tEA]*** | Automatic tea valve |
| **[Eco]*** | Eco mode functions |
| **[tEc]** | Eco mode boiler temperature |
| **[SLA]*** | Service liter alarm (Filter maintenance) |

| Setting | Description |
|---|---|
| **[ScA]*** | Service coffee alarm (maintenance) |
| **[tU ]** | Temperature units |
| **[SkP]** | 'kP' PID parameter |
| **[Ski]** | 'kI' PID parameter |
| **[Skd]** | 'kD' PID parameter |
| **[Sb ]** | PID band parameter |
| **[SE ]** | Display temperature offset |
| **[AUt]*** | Auto On/Off |

* Disabled by default after PCB factory preset

# SERVICE PROGRAMMING

## · **toU** – Boiler filling Time-out

To change the boiler filling time-out, follow the steps below:

1. Enter the service programming and browse through the menu (see previous instructions).
2. When **[toU]** is shown on the display, enter by pressing K5.
3. Select with K1 and K2 the boiler filling time-out in seconds.
4. Accept and save setting by pressing K5. You are back in the service programming menu.

## · **cLE** – Automatic group cleaning cycles

To change the automatic group cleaning program cycles, follow the steps below:

1. Enter the service programming and browse through the menu (see previous instructions).
2. When **[cLE]** is shown on the display, enter by pressing K5.
3. Select with K1 and K2 the automatic group cleaning cycles.
4. Accept and save setting by pressing K5. You are back in the service programming menu.

## · **Prd** – Enabling/Disabling dose Programming

To enable or disable the dose programming function, follow the steps below:

1. Enter the service programming and browse through the menu (see previous instructions).
2. When **[Prd]** is shown on the display, enter by pressing K5.
3. Use K1 and K2 to enable **[on]** or disable **[oFF]** the Dose programming function.
4. Accept and save setting by pressing K5. You are back in the service programming menu.

## · **SEn** – Level probe sensitivity

To change the level probe sensitivity, follow the steps below:

1. Enter the service programming and browse through the menu (see previous instructions).
2. When **[SEn]** is shown on the display, enter by pressing K5.
3. Select with K1 and K2 the Level probe sensitivity between: **[L]** Low; **[M]** Medium; **[h]** High.
4. Accept and save setting by pressing K5. You are back in the service programming menu.

# SERVICE PROGRAMMING

## · **PiF** – Enabling/Disabling electronic Preinfusion

To enable or disable the electronic preinfusion function, follow the steps below:

1. Enter the service programming and browse through the menu (see previous instructions).
2. When **[PiF]** is shown on the display, enter by pressing K5.
3. Use K1 and K2 to enable [on] or disable **[oFF]** the electronic preinfusion function.
4. Accept and save setting by pressing K5. You are back in the service programming menu.

***Note***:
If enabled on service menu, electronic Preinfusion can be enabled **[on]** or disabled **[oFF]** individually on each group **[Pi1]**, **[Pi2]** or **[Pi3]** on the user menu.

## · **tEA** – Enabling/Disabling automatic hot water function

To enable or disable the automatic hot water functions, follow the steps below:

1. Enter the service programming and browse through the menu (see previous instructions).
2. When **[tEA]** is shown on the display, enter by pressing K5.
3. Select with K1 and K2 the hot water tap function: **[oFF]** Manual hot water tap; **[on]** Automatic hot water tap; **[St]** Smart Tea function (specific model only).
4. Accept and save setting by pressing K5. You are back in the service programming menu.

## · **Eco** – Enabling/Disabling Eco mode function

To enable or disable the Eco mode function, follow the steps below:

1. Enter the service programming and browse through the menu (see previous instructions).
2. When **[Eco]** is shown on the display, enter by pressing K5.
3. Use K1 and K2 to enable **[on]** or disable **[oFF]** the Eco mode function in the user menu.
4. Accept and save setting by pressing K5. You are back in the service programming menu.

## · **tEc** – Eco mode boiler temperature

To change the Eco mode machine's boiler temperature, follow the steps below:

1. Enter the service programming and browse through the menu (see previous instructions).
2. When **[tEc]** is shown on the display, enter by pressing K5.
3. Select with K1 and K2 the Eco mode boiler temperature.
4. Accept and save setting by pressing K5. You are back in the service programming menu.

# SERVICE PROGRAMMING

## · **SLA** – Service liter alarm (Water filter maintenance)

To change the Service liter alarm, follow the steps below:

1. Enter the service programming and browse through the menu (see previous instructions).
2. When **[SLA]** is shown on the display, enter by pressing K5.
3. Select with K1 and K2 the Service filter alarm value. The counter can be adjusted in steps of 10L = **[001]**: From **[000]** = 0L = Disabled, to **[999]** = 9990L.
4. Accept and save setting by pressing K5. You are back in the service programming menu.

## · **ScA** – Service coffee alarm (Maintenance)

To change Service coffee alarm, follow the steps below:

1. Enter the service programming and browse through the menu (see previous instructions).
2. When **[ScA]** is shown on the display, enter by pressing K5.
3. Select with K1 and K2 the Service coffee alarm value. The counter can be adjusted in steps of 1000coffees = **[001]**: From **[000]** = 0coffees = Disabled, to **[999]** = 999000coffees.
4. Accept and save setting by pressing K5. You are back in the service programming menu.

## · **tU** – Temperature units

To change the Temperature units, follow the steps below:

1. Enter the service programming and browse through the menu (see previous instructions).
2. When **[tU]** is shown on the display, enter by pressing K5.
3. Select with K1 and K2 the Temperature units between: **[c]** Celsius; **[F]** Fahrenheit.
4. Accept and save setting by pressing K5. You are back in the service programming menu.

## · **SkP** – Ski - Skd – PID parameters kP, Ki & kd

To change the PID factors value, follow the steps below:

1. Enter the service programming and browse through the menu (see previous instructions).
2. When **[SkP]**, **[Ski]** or **[Skd]** is shown on the display, enter by pressing K5.
3. Select with K1 and K2 the selected PID parameter value.
4. Accept and save setting by pressing K5. You are back in the service programming menu.

# SERVICE PROGRAMMING

## · **Sb** – PID band zone

To change the PID band zone, follow the steps below:

1. Enter the service programming and browse through the menu (see previous instructions).
2. When **[Sb]** is shown on the display, enter by pressing K5.
3. Select with K1 and K2 the PID working band value.
4. Accept and save setting by pressing K5. You are back in the service programming menu.

## · **SE** – Display temperature offset

To change the home Display temperature offset, follow the steps below:

1. Enter the service programming and browse through the menu (see previous instructions).
2. When **[SE]** is shown on the display, enter by pressing K5.
3. Select with K1 and K2 the Display temperature offset.
4. Accept and save setting by pressing K5. You are back in the service programming menu.

***Note***:
The temperature shown on the display at home screen will be the boiler temperature read by the temperature probe minus the **[SE]** value. E.g.: If Tboiler = 116ºC and **[SE]** = 20, the value shown on the display will be Tboiler – **[SE]** = 116 – 20 = **[ 96]**

## · **AUt** – Enabling/Disabling Auto On/Off function

To enable or disable the Auto On/Off function, follow the steps below:

1. Enter the service programming and browse through the menu (see previous instructions).
2. When **[AUt]** is shown on the display, enter by pressing K5.
3. Use K1 and K2 to enable **[on]** or disable **[oFF]** the Auto On/Off function.

If enabled **[on]**, press K5 and the machine will ask for the close day **[00X]**.

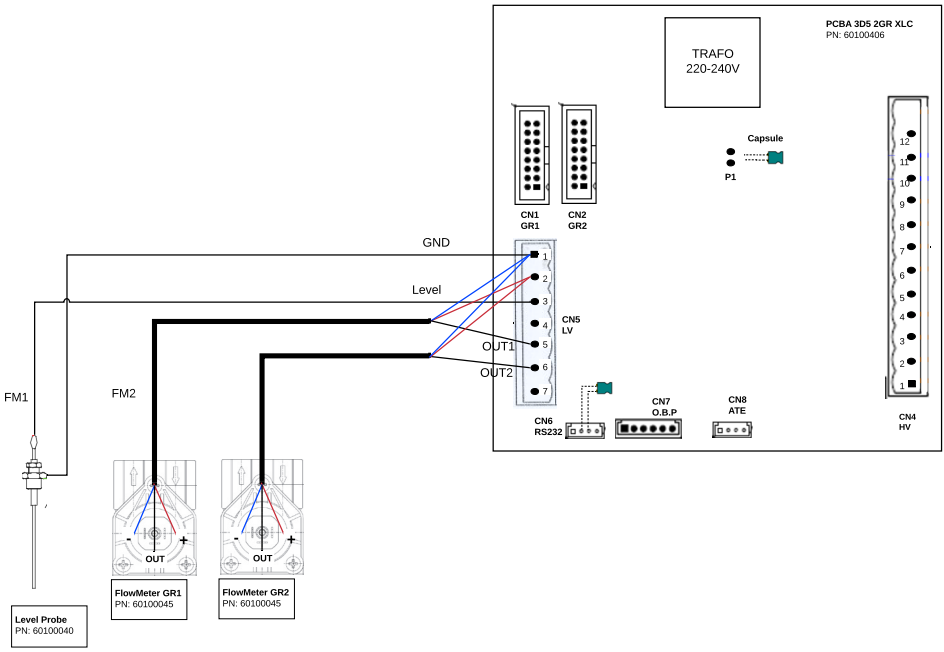
Weekdays: **[001]** Monday; **[002]** Tuesday; ... ; **[007]** Sunday.

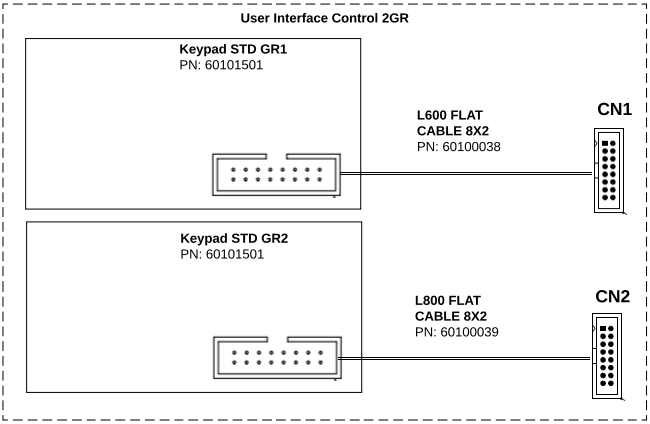
4. Accept and save setting by pressing K5. You are back in the service programming menu.

***Note***:
The Auto On and Off timers are adjusted on User menu when the function is enabled in service menu.

# ELECTRICAL DIAGRAMS

## · PCB & LED lights connections - EX3 1B Control Versions

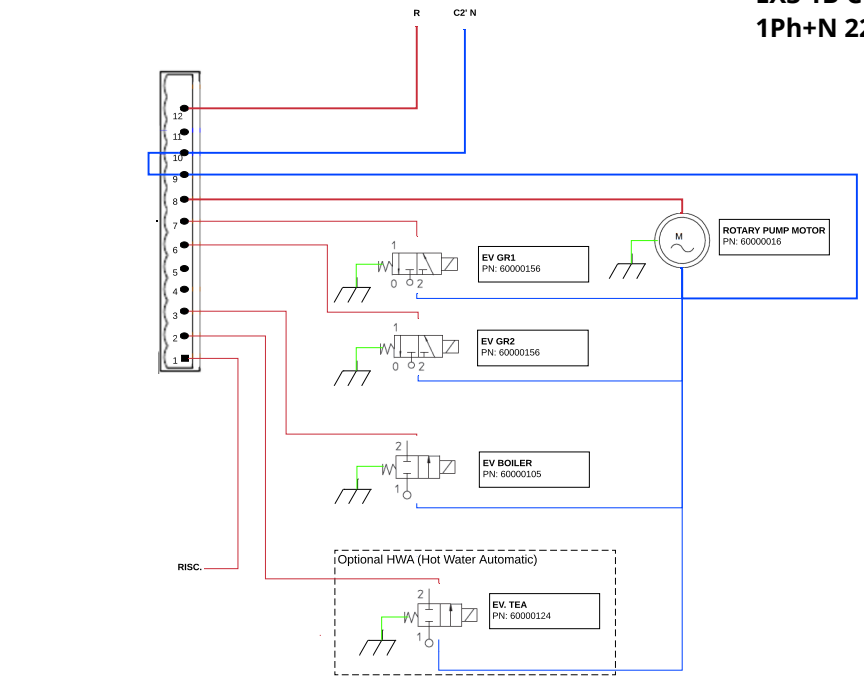


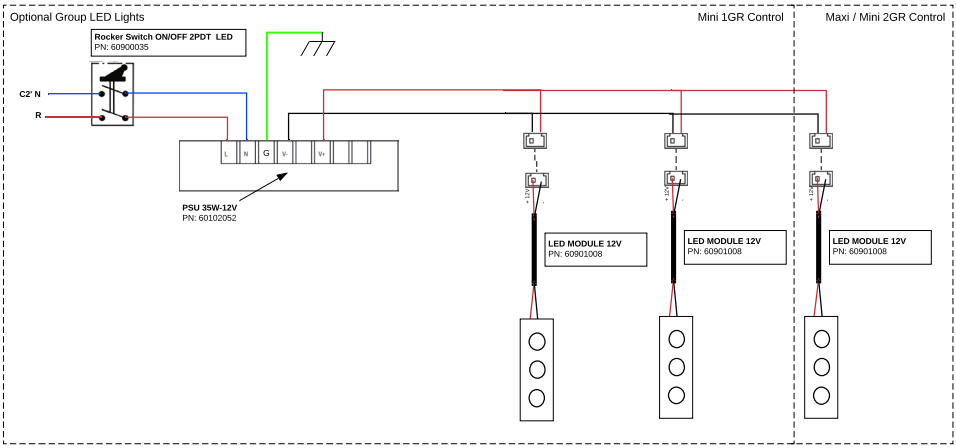



# ELECTRICAL DIAGRAMS

## · PCB & LED lights connections - EX3 1B Control Versions

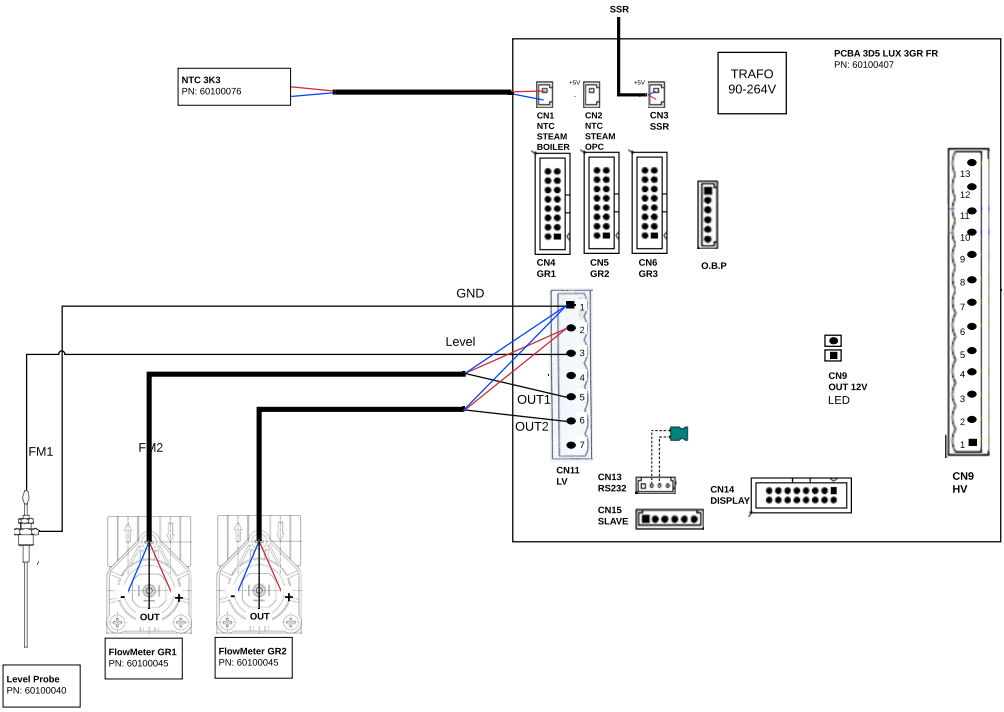
**EX3 1B CONTROL**
**1Ph+N 220-240V**

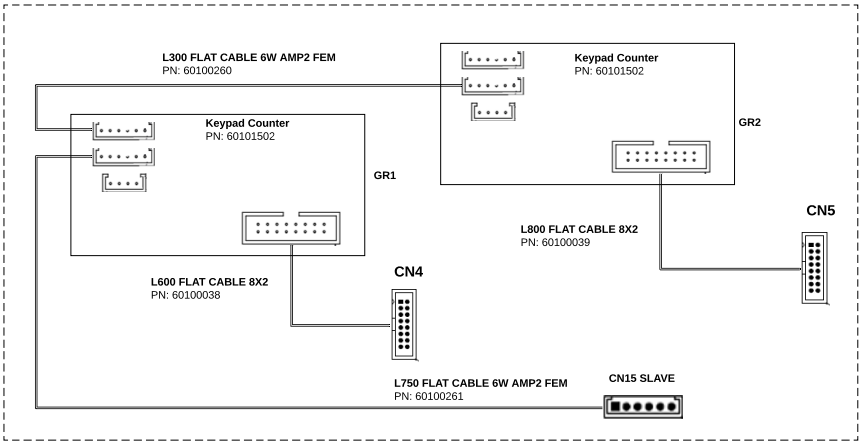


# ELECTRICAL DIAGRAMS

## · PCB & LED lights connections - EX3 1B Display PID Versions

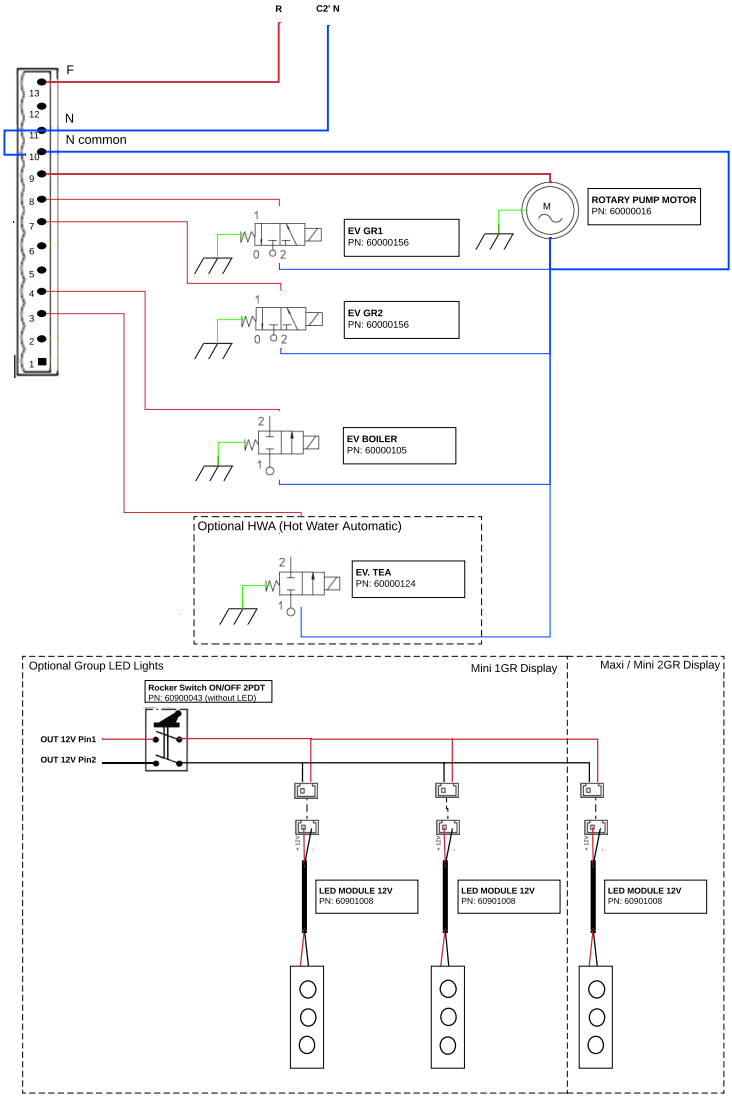


# ELECTRICAL DIAGRAMS

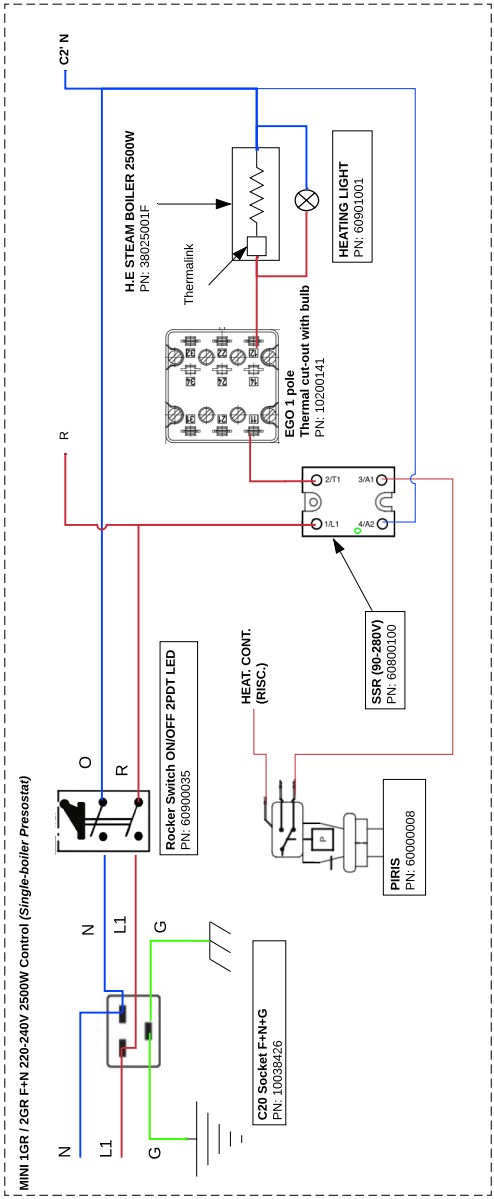
## · PCB & LED lights connections - EX3 1B Display PID Versions

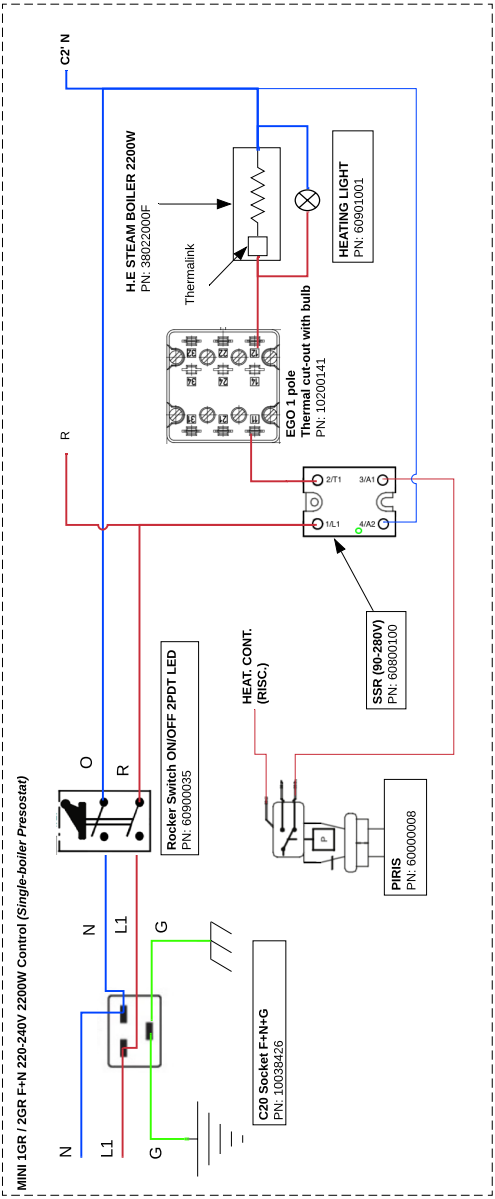
**EX3 1B Display PID**
**1Ph+N 220-240V**



# ELECTRICAL DIAGRAMS

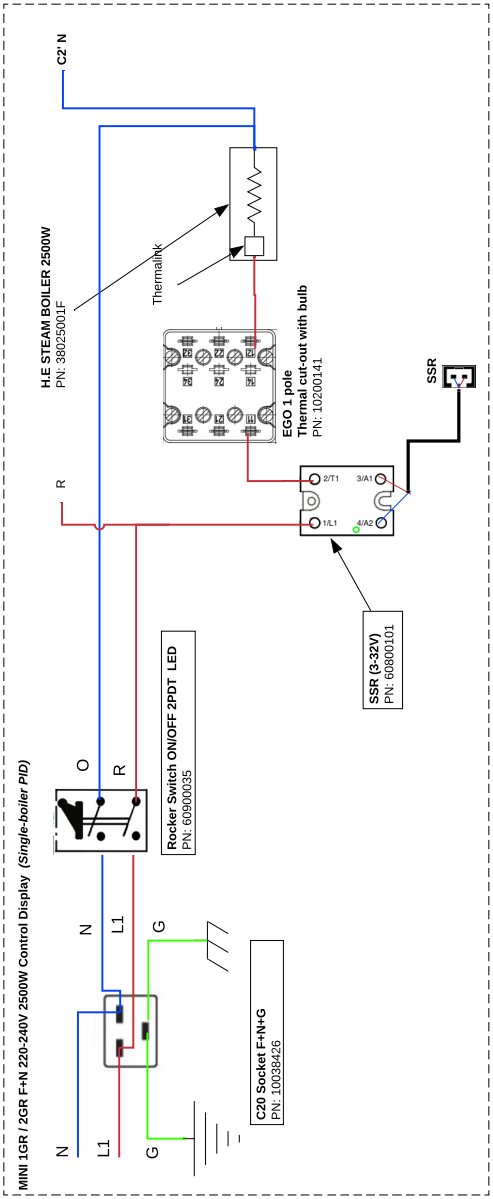
## · Power diagram - EX3 MINI 1Gr & MINI 2Gr Control - 1Ph+N 220-240V

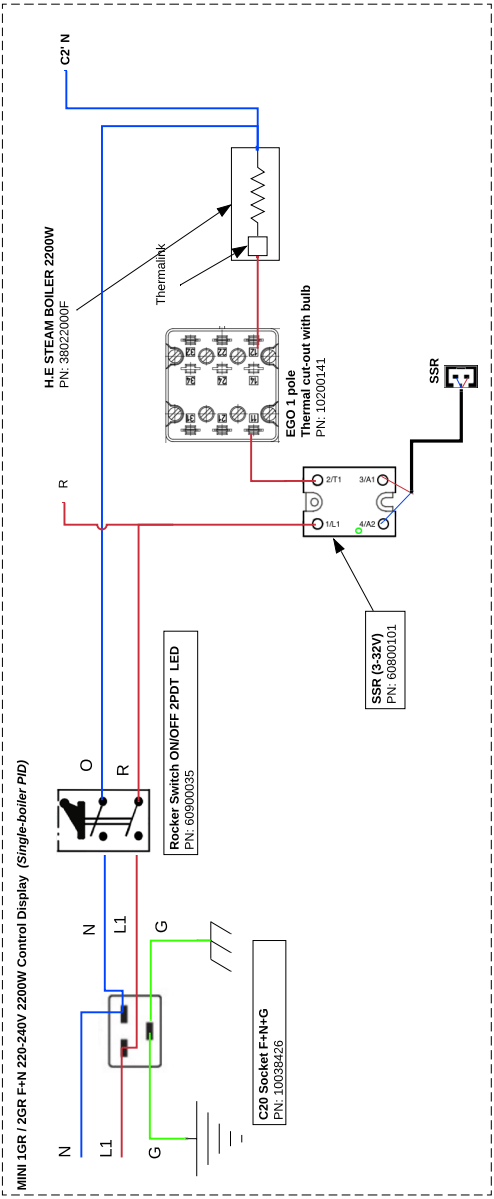


# ELECTRICAL DIAGRAMS

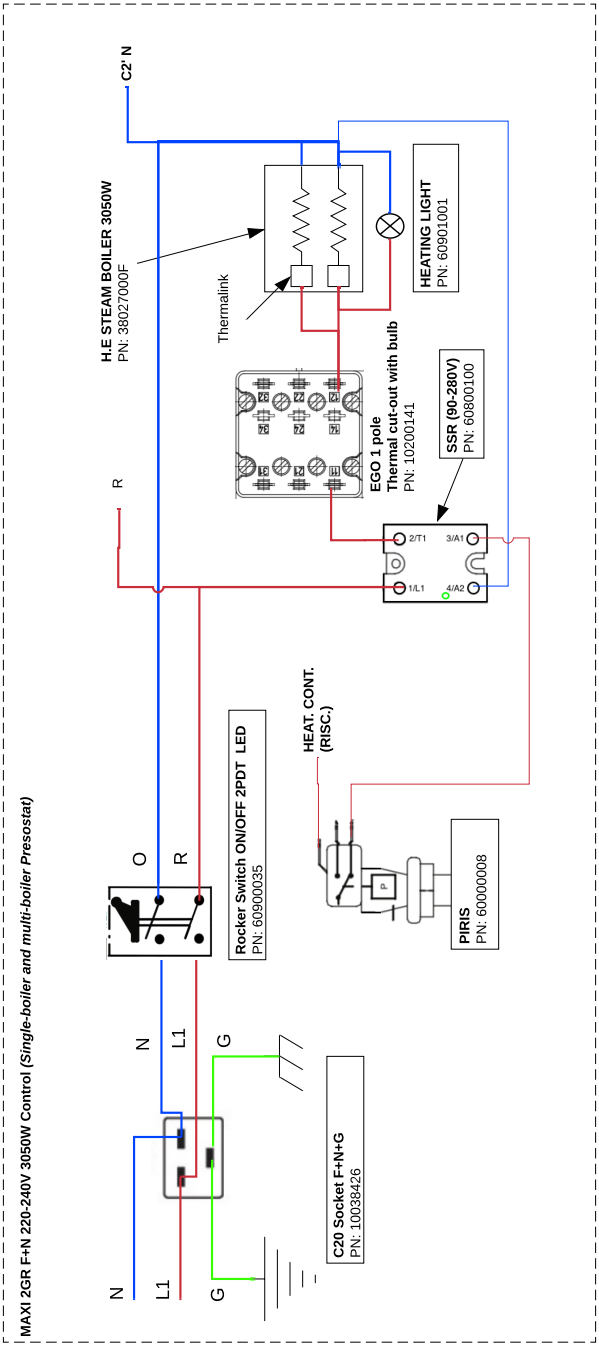
## · Power diagram - EX3 MINI 1Gr & MINI 2Gr Display PID - 1Ph+N 220-240V



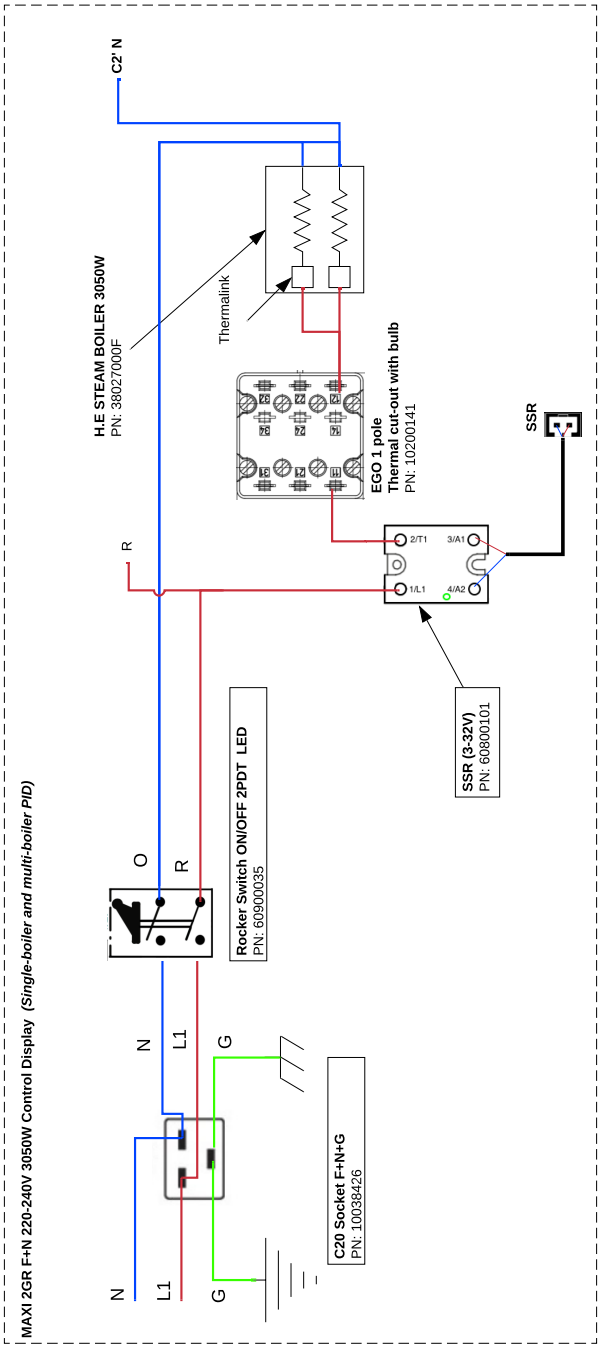
# ELECTRICAL DIAGRAMS

## · Power diagram - EX3 2Gr Control - 1Ph+N 220-240V



# ELECTRICAL DIAGRAMS

## · Power diagram - EX3 2Gr Display PID - 1Ph+N 220-240V



# MACHINE ALERTS

## · Alarms and warnings

To alert users that routine service of the machine is due or against a situation that could possibly cause damage to the machine, EX3 has the following alerts programmed into its software:

**Display versions**

| Display Code | Machine status | Alarm Name | Warning / Alarm | Solution |
|---|---|---|---|---|
| **[AL1]** | Machine blocked and all touchpads buttons blink | NTC is short-circuited | Alarm | Call a service specialist to replace it |
| **[AL2]** | Machine blocked and all touchpads buttons blink | NTC is not connected | Alarm | Call a service specialist to replace it |
| **[AL3]** | Selected button blinks and brew must be stopped manually | No flow detected on this group | Warning | Call a service specialist |
| **[FiL]** | Machine blocked and all touchpads buttons blink | Steam Boiler FillingUp timeout | Alarm | Turn the main switch off and on again.<br>Check that the machine is receiving water |
| **[Eco]** | Touchpads lights off<br>Boiler temperature is decreased to 105ºC | Eco mode status | Warning | Press any button from K1 to K4 to 'wake up' the machine |
| **[oFF]** | Touchpads lights off<br>Boiler element disconnected | Stand-by mode status | Warning | Press any button from K1 to K4 to 'wake up' the machine |
| **[SEr]** | Machine works<br>Static message on group 1 | Service maintenance alarm | Warning | Call service specialist to perform maintenance routine.<br>To reset the service alarm counter:<br>- Keep pressed K1+K2 and turn the machine on by the main switch.<br>- Message [rSE] will be shown on Group 1 |
| **[FiL]** | Machine works<br>Static message on group 1 | Water filter maintenance alarm | Warning | Call service specialist to perform maintenance routine.<br>To reset the service alarm:<br>- Keep pressed K3+K4 and turn the machine on by the main switch.<br>- Message [rFi] will be shown on Group 1 |

# TROUBLESHOOTING

## · Machine faults

| Problem | Possible cause | Solution |
|---|---|---|
| The machine does not start up when turned on | The plug is not correctly inserted into the power socket | Check that the plug is correctly inserted and that the power socket is operational. |
| | The circuit breaker and/or differential are disconnected. | Check that they are connected. |
| | Check that they are connected | Call service personnel to replace them. |
| The steam wand does not dispense steam | The steam wand is clogged with dried milk. | Clean the wand and, if necessary, remove the nozzle and unclog it using a pin or needle. |
| The group boiler does not heat water | Standby mode is activated. | Press again K1+K5 to exit Standby mode. |
| Preinfusion is not working | When the preinfusion mode is “enabled” you must program the ON/OFF settings of this function. | Set up the preinfusion settings as explained in “User Programming > Preinfusion settings” |
| Water is found underneath the machine | The drain tube is blocked with used grounds/rubbish or is pulled off the drain cup. | Clean the drainage tube. |

## · Brewing faults

| Problem | Possible cause | Solution |
|---|---|---|
| Coffee dispensing is too fast: | The coffee grind is too coarse. | Switch to a finer grind of espresso. |
| Coffee dispensing is too slow: | The coffee grind is too fine. | Switch to a coarser grind of espresso. |

## · Limescale faults

| Problem | Possible cause | Solution |
|---|---|---|
| Coffee dispensing temperature is too cold: | Heat-exchanger outlet pipes are clogged with limescale. | Turn of the machine at the switch and contact a technician to make needed repairs. |
| Brewing groups do not dispensing water: | Water system is clogged with limescale. | Turn of the machine at the switch and contact a technician to make needed repairs. |

For the warranty to be valid the conditions for maintenance must have been followed according to our instructions, proper precaution has been made and warranty claim been issued without delay.

The affected equipment may not be used during awaiting service if there is any risk that the damage or defect would worsen.

The warranty will not cover consumption supplies such as glassware, normal maintenance such as cleaning of filters, contaminations in water, lime, incorrect voltages, pressure or adjustment of water amounts.

The warranty will not cover damages of defects caused by incorrect handling and operation of the appliance.

## For service

**Please contact your dealer**

**Your Dealer**

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