

# **míra**

## **Line Maintenance Program**

# Mira

## PM Program

# UNIC

ESPRESSO ENGINEERS

12407 Mukilteo Speedway / Suite 250-B

Lynnwood, WA 98087, United States

+1 (866) 295-8642

[usa.service@unic-sa.com](mailto:usa.service@unic-sa.com)

Unic Mira PM Parts	Unic Parts Listing Description	Part #	Plate/Page RB9005	Quantity			Years			
				Mira	Twin	TRI	6 Months	1 3 5	2 4	6
<b>Group Service</b>										
Group O-Ring 2.62mm x 52.07mm	GASKET - 2.62 X 52.07	27800	241	1	2	3	✓	✓	✓	✓
Group Gasket	HEAD GASKET 9MM	PC-17	241	1	2	3	✓	✓	✓	✓
Complete Gicleur Assembly	GICLEUR Ø 0.7 KIT	23127	241	1	2	3		✓	✓	✓
Diffuser Disk	WASHER DIFFUSER	31910	241	1	2	3		✓	✓	✓
Slotted Screw - Shower Screen	SCREW - M5 X 10	50200	241	1	2	3		✓	✓	✓
Shower Screen	PACKER FILTER	ID-103	241	1	2	3		✓	✓	✓
<b>Steam/Water Wands Service</b>										
Lower Swivel O-Ring	O RING - 9,13 X 2,62	PH-78	480, 530	2	3	3	✓	✓	✓	✓
Upper O-Ring - Steam Wand	O RING - 13.95 X 2.62	PH-54	480, 530	2	3	3	✓	✓	✓	✓
Copper Spacer Washer	COPPER GASKET	AG-14	480	2	3	3		✓	✓	✓
Wand Spring	SPRING	PA-43	480, 530	2	3	3		✓	✓	✓
Wand Spring Holder	BRASS END	RR-67	480, 530	2	3	3		✓	✓	✓
<b>Steam Valve Service</b>										
Steam Lever Screw M4 x 16	SCREW - M4 X 16	CN-489	480	1	1	1		✓	✓	✓
Steam Lever Hex Insert	STEAM HANDLE INSERT	NZ-4014	480	1	1	1		✓	✓	✓
Steam Lever	STEAM HANDLE	NZ-7003	480	1	1	1		✓	✓	✓
Steam Valve Ceramic Cartridge	CERAMIC CARTRIDGE	25925	480	1	1	1		✓	✓	✓
<b>General Service</b>										
Steam Boiler Safety Valve	LP VALVE 1/8	27200	470	1	1	1		✓	✓	✓
Drip Tray O-Ring	O RING - 2.62 X 17.13	27845	230	1	1	1		✓	✓	✓
Vacuum Break Plunger O-Ring	GASKET - 6.07 X 1.78	CN-198	530	1	1	1		✓		
Anti-Vacuum Upper & Lower O-Rings	GASKET - 10.82 X 1.78	CN-2850	530	2	2	2		✓		
Complete Vacuum Break Kit	VACUUM VALVE KIT	27224	530						✓	✓
O-Ring Grouphead To Boiler	GASKET - 36,09 X 3,53	PE-28	241	1	2	3			✓	✓
Brew Valve O-Rings	O RING - 6,07 X 1,78	27737	260	2	4	6			✓	
Flow Meter O-Ring	GASKET - DOSING DEVICE	CN-828	460	1	2	3			✓	✓
Flow Meter Impeller	TURBINE	CN-829	460	1	2	3			✓	✓
Level Probe L-130mm	LEVEL PROBE L=130	CN-670	540	1	1	1			✓	✓
Level Probe Compression Nut	LEVEL PROBE COMPRESSION NUT	NA-70	540	1	1	1			✓	✓
Level Probe Insulation	LEVEL PROBE INSULATION	NA-71	540	1	1	1			✓	✓
<b>Complete 6 Year Service</b>										
Brew Valve w/o Coil (Incl O-Rings)	WHOLE ELECTROVALVE W/O COIL	PI-45X	241	1	2	3				✓
Flow Meter Cap	WATER DOSING DEVICE LID	CN-827	460	1	2	3				✓
Hot Water Valve	ELECTROVALVE 2W W/O COIL	CN-245W	530	1	2	2				✓
Flat Rubber Gasket (Hot Water Valve)	GASKET - 20 X 12 X 2	28352	530	1	2	2				✓
Pressurestat UL - Sirai	PRESSURESTAT UL - SIRAI	AE-53A	560	1	1	1				✓
Copper Crush Washer (Pstat)	GASKET - 11.4 X 6.2 X 1	CN-618	560	1	1	1				✓
Procon Pumphead 200L/H	PROCON PUMP 200L/H	37225	600	1	1	1				✓
Pump Coupler Kit	COUPLING KIT	37216	600	1	1	1				✓
Heating Element O-Ring	GASKET - 66.68 X 3.53	CV-20	770	1	1	1				✓
Filling Valve	ELECTROVALVE 2W ADJ. W/O COIL	CN-631W	450, 451	1	1	1				✓
Filter Screen-Filing Valve	FILTER FOR EV 1/8	25400	450, 451	1	1	1				✓
Copper Washer - 2mm Orifice	WASHER 1/4 D:2	DV-203	450, 451, 530	2	3	3				✓
Expansion Valve	COMPLET H.P. VALVE	DO-191	450, 452	1	1	1				✓
O-Ring 2mm x 9.5mm	O RING - 2 X 9,5	28134	450, 452, 530	3	6	6				✓
Copper Washer (Pump/Filling Valve)	WASHER - COPPER - 3/8	CH-16	451, 600	3	2	2				✓

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## PM Form

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Date:		PM Level:	
Serial Number:		Work Order Number:	
Machine Location:		<b>Complete Water Specification Table (Below)</b>	
		Supply Voltage:	VAC
		Pump Pressure:	bar
Contact Person:		Expansion Pressure:	
Contact Phone:		by-pass @ ____ bar	max @ ____ bar
Service Company:		Steam Pressure:	
		differential @ ____ bar	set point @ ____ bar
		Group Flow (mL/10sec):	Group 1: mL
Technician:			Group 2: mL
Service Company Phone:			Group 3: mL

### Water Specification Table

Water Component	Minimum Value	Maximum Value	Measured Value (pre-filter)	Measured Value (post-filter)
TDS (Total Dissolved Solids)	50PPM	125PPM		
Total Hardness	3GPG	5GPG		
pH	6.5	7.5		
Free Chlorine	--	0.5PPM		
Total Chlorine	--	1PPM		
Flow Rate	1GAL/MIN	--		
Line Pressure	30PSI	100PSI		



# **MAINTENANCE PROCEDURES**

# Mira

## Maintenance

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The following items must be checked at every PM visit:

### Water:

Due to the erratic nature of local water utilities, water supplied to Unic equipment must always pass through a treatment system, even if pre-treated water meets all listed specifications. For testing, water samples must be taken post treatment system and Unic recommends Hach product #275525. These testing strips are available from [www.hach.com](http://www.hach.com).

Water Component	Minimum Value	Maximum Value	Measured Value
TDS (Total Dissolved Solids)	50PPM	125PPM	
Total Hardness	3GPG	5GPG	
pH	6.5	7.5	
Free Chlorine	--	0.5PPM	
Total Chlorine	--	1PPM	
Flow Rate	1GAL/MIN	--	
Line Pressure	30PSI	100PSI	

### Supply Voltage:

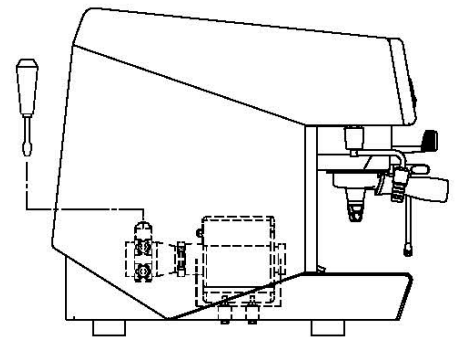
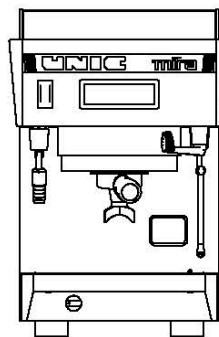
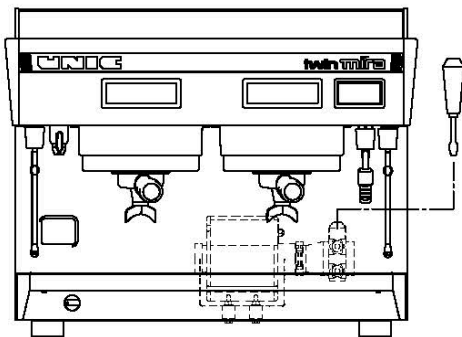
Steam recovery speed and proper functioning of low-voltage circuits (dosing) are dependent on supply voltage. Always measure supply voltage at terminal of the machine. Access to terminal is through the right side of the single group Mira, and through the left side of the Twin and Tri models. Take measurement across terminals 'N' and '1' for all models.

- Mira: 115VAC (+/-8%)
- Twin/Tri: 208VAC-240VAC

### Pump Pressure:

By SCA definition, "espresso is a 25-35ml (.85-1.2 ounce) beverage prepared from 7-9 grams (14-18 grams for a double) of coffee through which clean water of 195 °-205 °F (92 °-95°C) has been forced at **9-10 ATMOSPHERES OF PRESSURE**, and where the grind of the coffee is such that the brew time is 20-30 seconds".

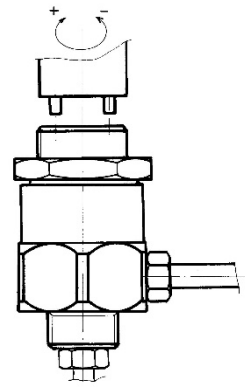
Brew (pump) pressure is registered on the high-pressure (left/green) side of the gauge during coffee extraction. Adjustment can be made by turning the by-pass screw on the output of the pump clockwise for higher brew pressure, or anti-clockwise for lower brew pressure, while coffee is extracting.



## Expansion Pressure:

The expansion (HP) valve allows by-pass of excess pressure exerted on the high-pressure hydraulic circuit. This occurs when cool (condensed) incoming water expands as it is heated following an extraction. An expansion valve that is stuck, or set too high, may cause the 3-way brew valve to leak shortly after an extraction.

To check expansion pressure, first allow a chosen group to flow without restriction for 5sec. Then, locate the drainage tube that dispenses by-pass from the expansion valve into the drip pan. This drainage tube is located behind the backsplash panel and above the portion of the drain pan that extends back. It is on the right side of the Mira model and left side of the Twin and Tri models. Observe the pressure registered on the high-pressure (left/green) side of the gauge when the expansion valve begins to by-pass (drip from drainage tube). For the Mira model, this will happen almost immediately after the flow of water from the group is stopped, as it is set at only 8bar due to its proximity before the pump. For the Twin and Tri models, bypass should not occur until the gauge registers approximately 12-13bar. If adjustment is necessary, follow the drainage tube to the expansion valve, loosen the 24mm jam nut and adjust the threaded (spanner cap).



ALWAYS RE-CHECK/VERIFY EXPANSION PRESSURE AFTER MAKING AN ADJUSTMENT.

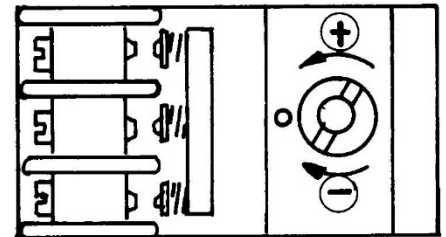
## Steam Pressure:

Service boiler pressure normally ranges from 0.9 to 1.2bar, depending on the operator's preference, and is registered by the low-pressure (right/red) side of the gauge. A pressure switch (pressurestat) regulates boiler pressure via a set of contacts which close and open the heating circuit as the boiler pressure decreases and increases against a diaphragm. The **set point** is the pressure at which the contacts open (highest pressure registered/end of heating cycle). The **differential** is the difference between the set point and the closing of the contacts (lowest pressure registered/beginning of heating cycle). A new pressurestat will have a differential of approximately 0.15bar. This value will increase as the pressurestat wears over time and replacement is advised when differential exceeds 0.4bar.

### Example:

While the machine is heated and sitting idle, the contacts of the pressurestat are observed to open when the gauge registers 1.2bar. The pressure slowly decreases to 0.9bar before the contacts close and the heating cycle begins. The boiler pressure returns to 1.2bar and the contacts open again, thus, ending the heating cycle. The set point is 1.2bar and the differential is 0.3bar – the pressurestat is aged, but still ok.

To check steam pressure, vent the boiler through the steam wand for approximately 5sec, or until the pressure switch closes (audible 'click'). Wait for the contacts to open and record the registered high pressure as **set point**. Allow the machine to remain idle as the pressure decreases. When the contacts close, and the heating cycle begins, record the difference between the set point and the registered low pressure as **differential**.



To change the set point, gain access to the pressurestat through the top of the machine and adjust the spring tensioner clockwise for lower pressure set point, or anti-clockwise for higher pressure set point.

## Group Flow:

Each group head is equipped with a  $\varnothing 0.7$ mm restrictor (gicleur). These small orifices are prone to obstruction by mineral deposits and debris, however, they play a very important role in the thermodynamic and hydrodynamic properties of the coffee brewing system. Without a portafilter installed, each group should displace 100mL (+/-25%) of water in 10sec. Of equal importance, is the relation in flow rates from group to group, which should be +/-10% of one another.

### Example:

On a Tri Mira, group 1 displaces 80ml of water in 10sec, while groups 2 and 3 displace 110mL and 105mL, respectively. While all three groups are within the general 75-125mL target range, group 1 demonstrates sign of a partial obstruction, in that its flow rate is only 74.4% of groups 2 and 3. Intervention is required to correct the flow rate of group 1.

To check group flow, either a gram scale (preferred), or a 150ml capacity measuring vessel with 10mL graduated increments will be required. Remove the portafilter from group 1 and place the measuring vessel beneath the outlet. Then press the start/stop button [\\▼] and allow group to flow for precisely 10sec. Check the displaced water weight/volume and record g/mL. Repeat for groups 2 and 3, if applicable.

If intervention is required to correct the flow rate of any group, see the Cooling Procedure section prior to any further action.

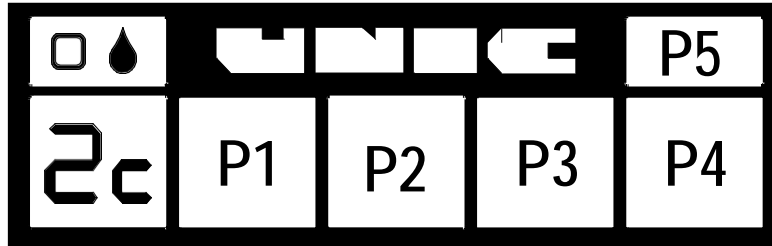
## Volumetric Programming:

Volumetric programming can be affected by the natural entropy of the components as they age and are subjected to certain harsh water conditions. For this reason, it is important to check programming of each button for accuracy and while using coffee. Request coffee recipe/specification from the customer prior to checking volumetrics and make corrections as necessary.

Please note that all controls units which display 'd3' during booting (when machine is power-cycled) have two programmed doses per button. This allows for a small dose and a large dose to be programmed and is displayed as 'c' and 'C' on the display when a chosen button is pressed twice to toggle.

### MANUAL VOLUMETRIC PROGRAMMING [Pr]

**IMPORTANT: ALWAYS PROGRAM VOLUMETRICS WITH THE MACHINE FULLY HEATED AND USING THE COFFEE[S] INTENDED FOR PRODUCTION.** TO GUARANTEE PRECISE RESULTS, UNIC RECOMMENDS PROGRAMMING BY WEIGHT USING A GRAM SCALE. IF PROGRAMMING BY VOLUME, CONSIDER CURRENT PUMP PRESSURE AND ROAST DATE OF COFFEE, AS BREW PRESSURE AND COFFEE FRESHNESS INFLUENCE CREMA PRODUCTION.



1. PREPARE PORTAFILTER WITH DOSE TO BE PROGRAMMED.
2. SET ROTARY POWER SWITCH TO POSITION 0 (OFF).
3. PRESS AND HOLD P5 ON CHOSEN CONTROL UNIT WHILE SETTING THE ROTARY POWER SWITCH BACK TO POSITION 2 (ON/HEATING). RELEASE P5 WHEN THE LED SCREEN DISPLAYS 'Pn'.
4. PRESS P5 TWICE TO DISPLAY 'Pr' ON SCREEN.
5. INSTALL PREPARED PORTAFILTER TO GROUP AND POSITION SHOT GLASS[ES] ON GRAM SCALE BENEATH SPOUT. TARE SCALE WEIGHT.
6. SELECT BUTTON TO BE PROGRAMMED (P1 THROUGH P4). DISPLAY WILL INDICATE SELECTION.  
*FOR d3 CONTROL UNITS: BE SURE TO ALSO SELECT DESIRED SUB-DOSE ('c' OR 'C') TO BE PROGRAMMED. TOGGLE BY PRESSING THE SELECTED BUTTON TO BE PROGRAMMED.*
7. PRESS P5 TO BEGIN EXTRACTION.
8. PRESS P5 TO STOP EXTRACTION WHEN WEIGHT/VOLUME OF OUTPUT IS SUFFICIENT TO RECIPE.
9. DOSE IS AUTOMATICALLY SAVED.
10. REMOVE PORTAFILTER AND PREPARE NEXT DOSE TO BE PROGRAMMED. PROGRAMMING MODE WILL EXPIRE AFTER 5SEC.

## Draining:

Check that the drain pan drains quickly and evenly. The drain line should follow a continuous downward path and must be checked for kinks and p-traps to ensure efficient evacuation. Secure with ties if necessary.

## Cooling Procedure:

To permit safe access to hydraulic circuits within a heated machine:

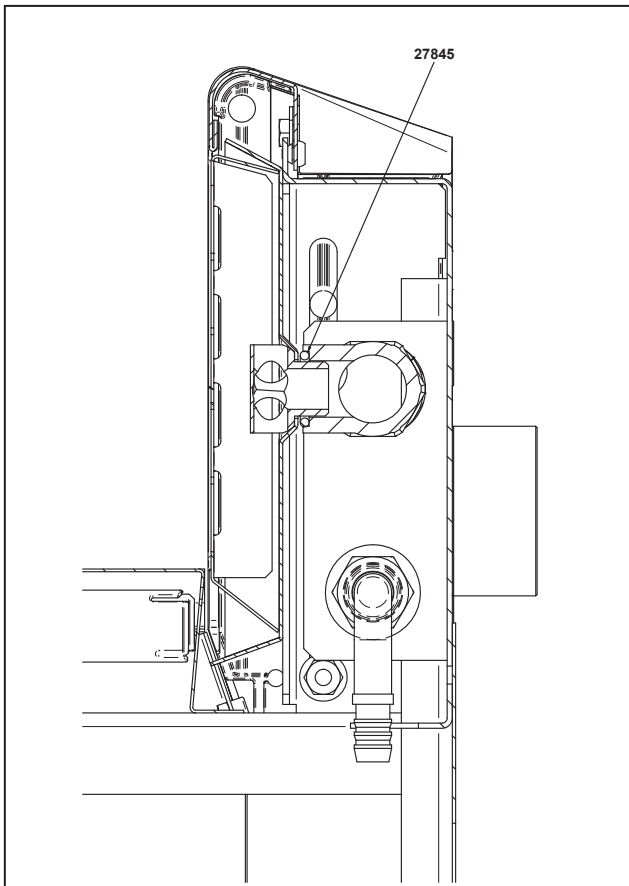
1. Set rotary power switch to position 1 (On/Not Heating).
2. Continuously flush hot water from tap of machine until flow stops and low-pressure (right/red) side of the gauge registers 0bar.
3. Continuously flush all groups using start/stop button [\\▼] until flow runs lukewarm (approximately 100°F).
4. Shut-off external water supply to machine.
5. For no more than 3sec, briefly cycle any group using start/stop button [\\▼] to completely evacuate high-pressure system.
6. Set rotary power switch to position 0 (Off) and disconnect machine from power supply.
7. Vent service boiler through manual steam tap.
8. Verify that both sides of pressure gauge register 0bar and use EXTREME CAUTION when proceeding to service.



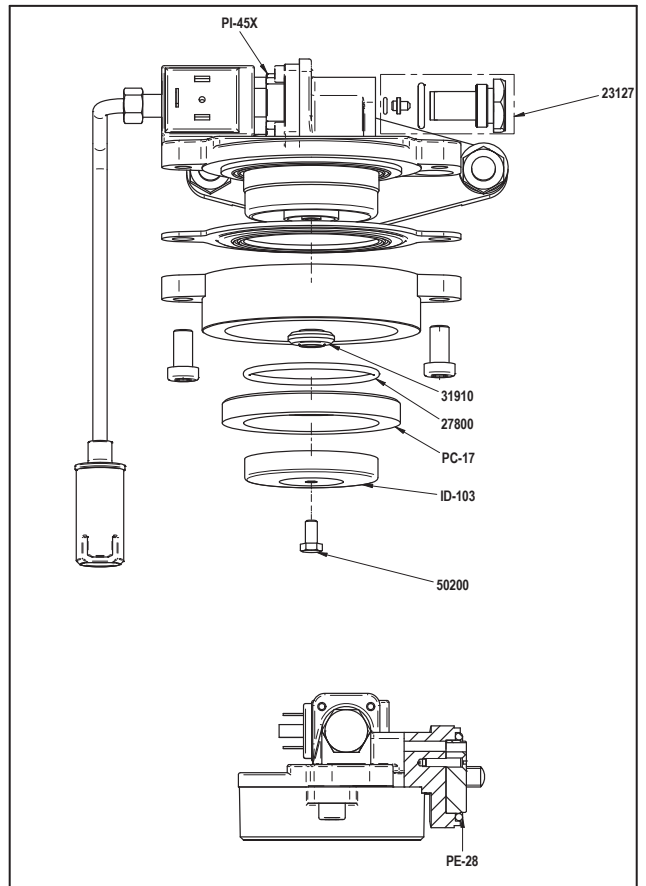




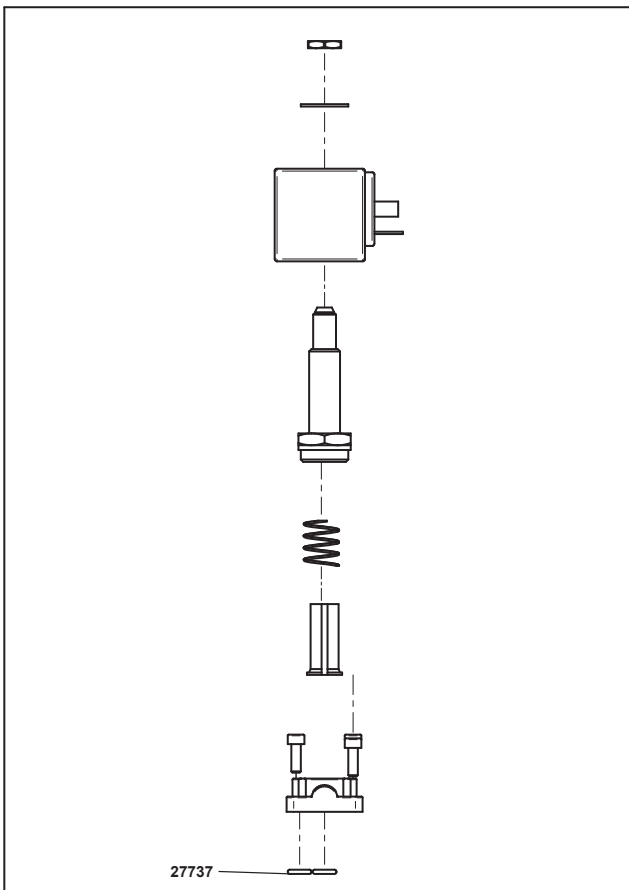
# **SCHEMATICS**



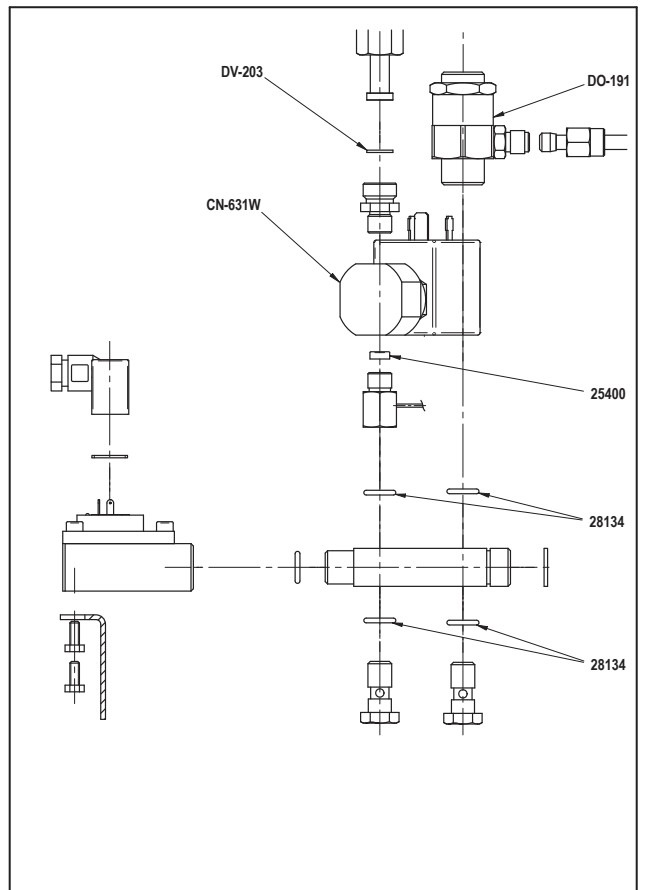
01/14 DRAIN AND WATER INLET **UNIC** 230



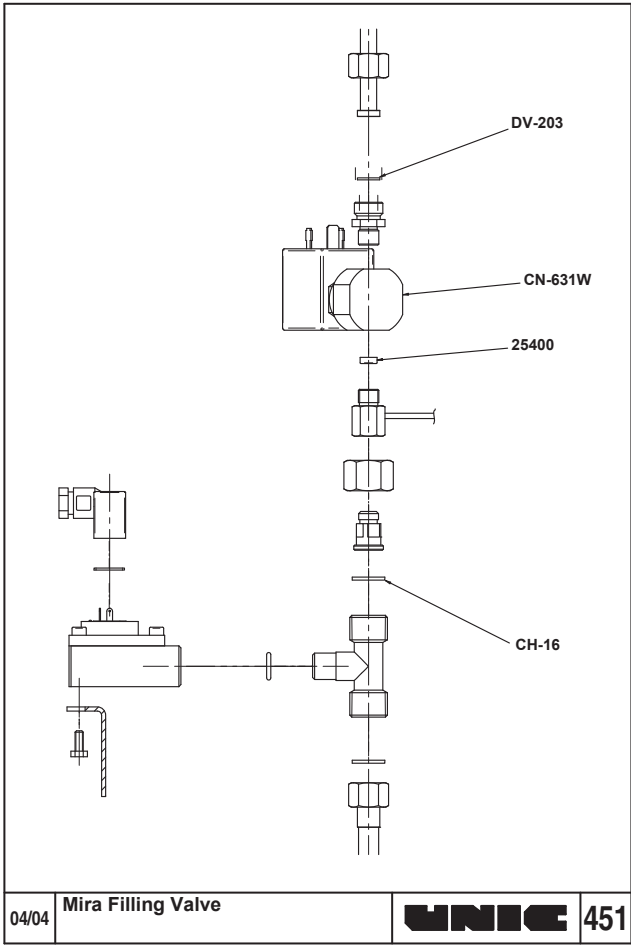
02/15 Crema Group Head **UNIC** 241



11/11 3-Way (Brew) Valve **UNIC** 260

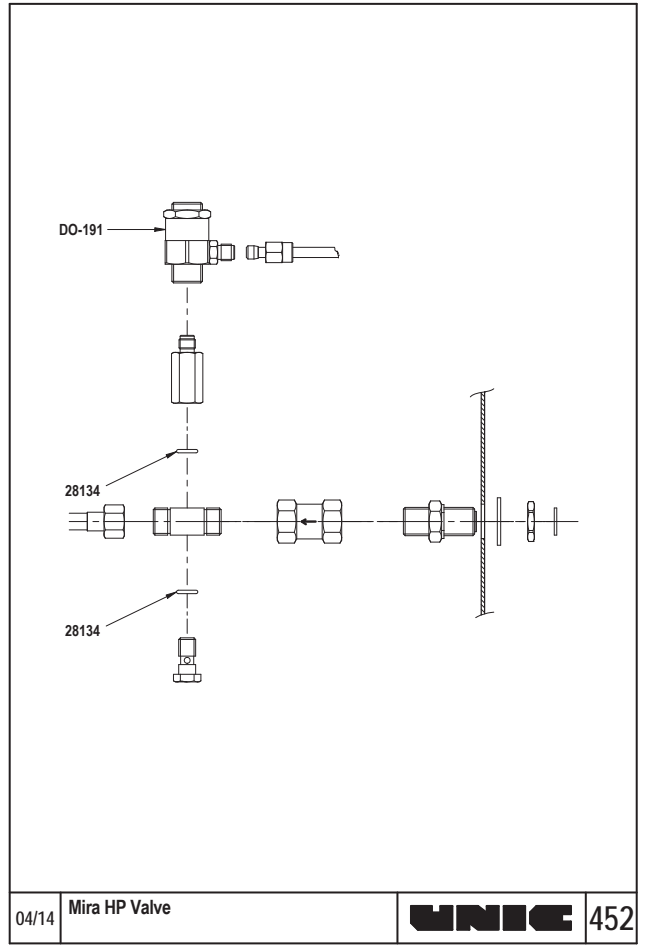


02/15 Twin/Tri Filling/HP Valves **UNIC** 450



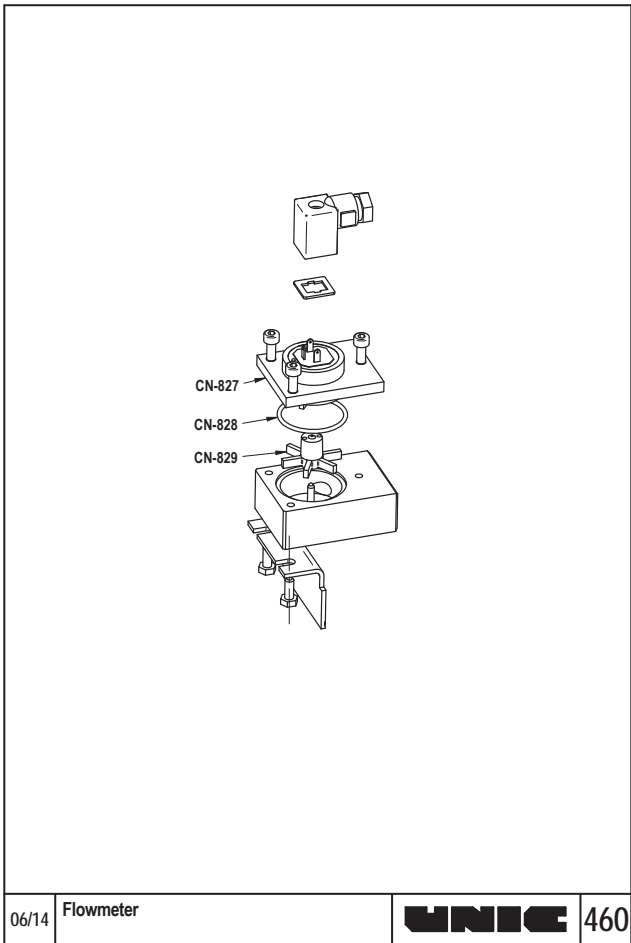
04/04 Mira Filling Valve

**UNIC** 451



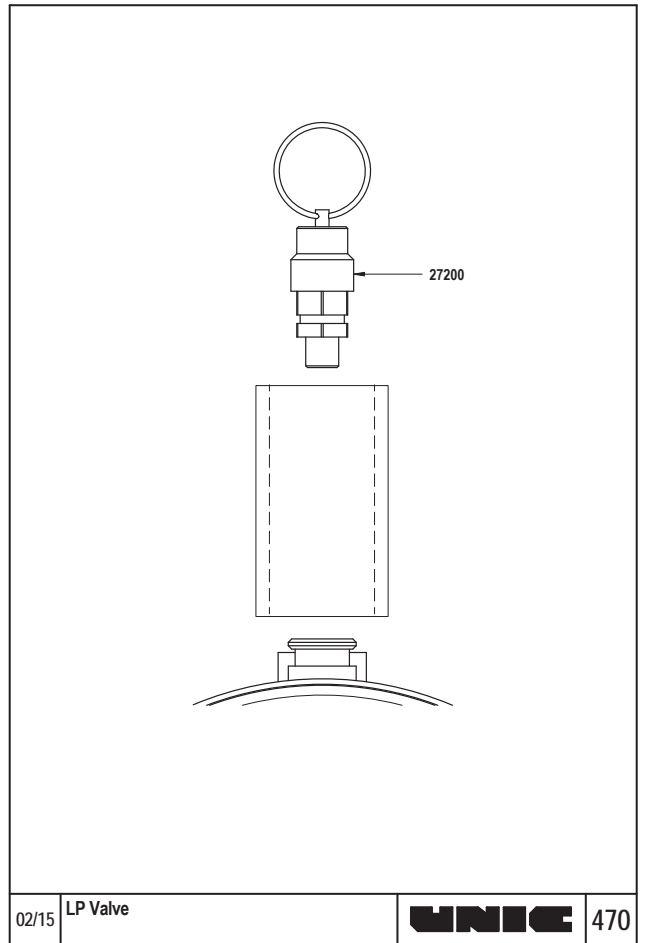
04/14 Mira HP Valve

**UNIC** 452



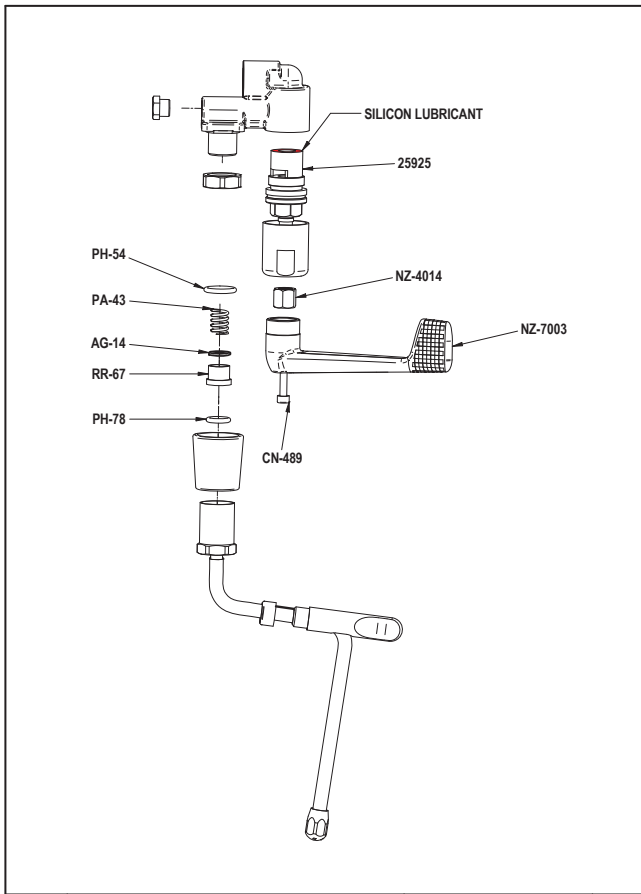
06/14 Flowmeter

**UNIC** 460

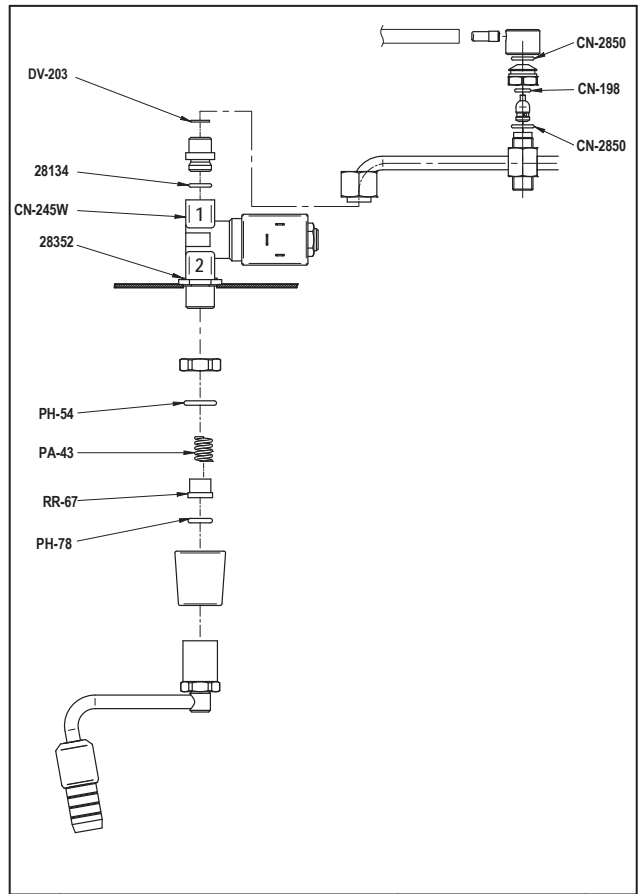


02/15 LP Valve

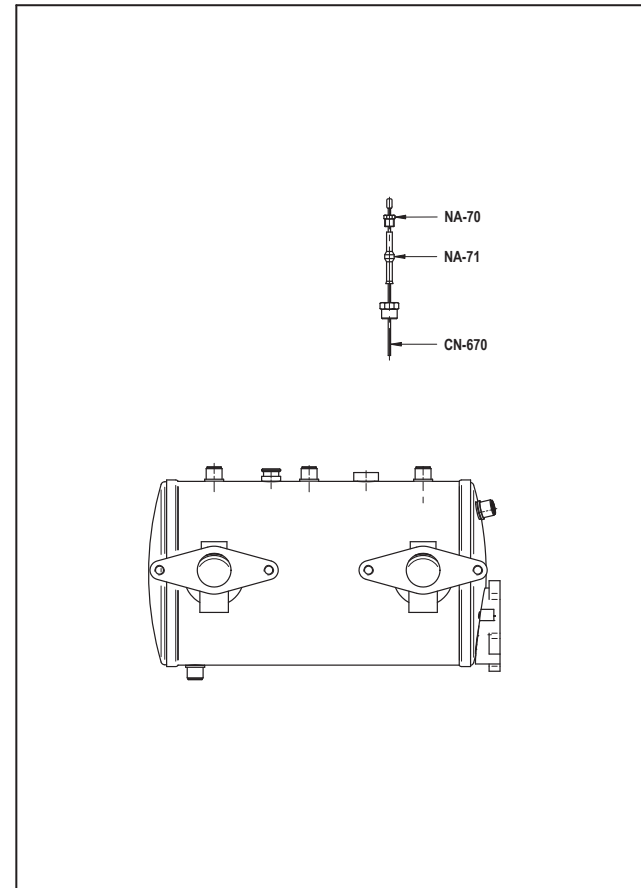
**UNIC** 470



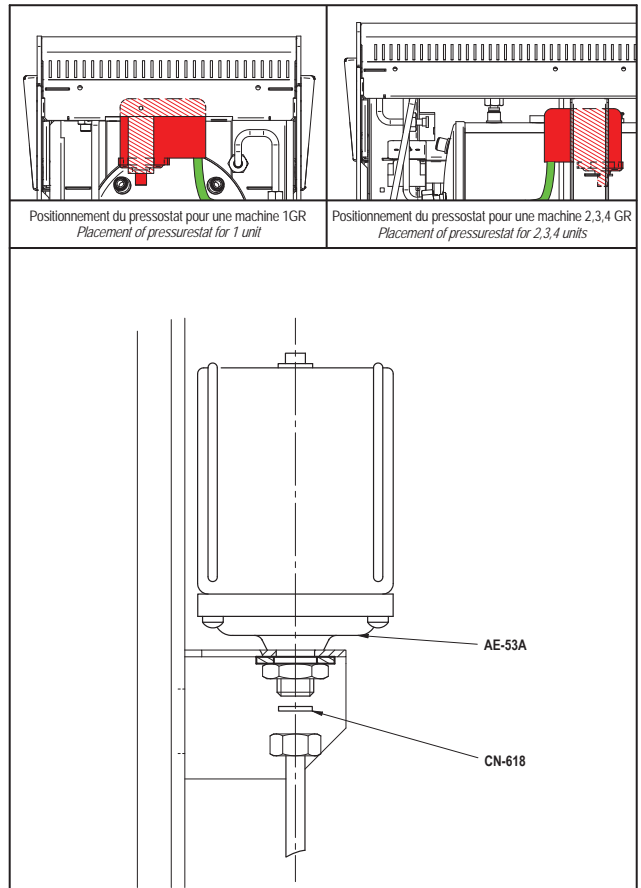
09/15 Manual Steam Tap **UNIC** 480



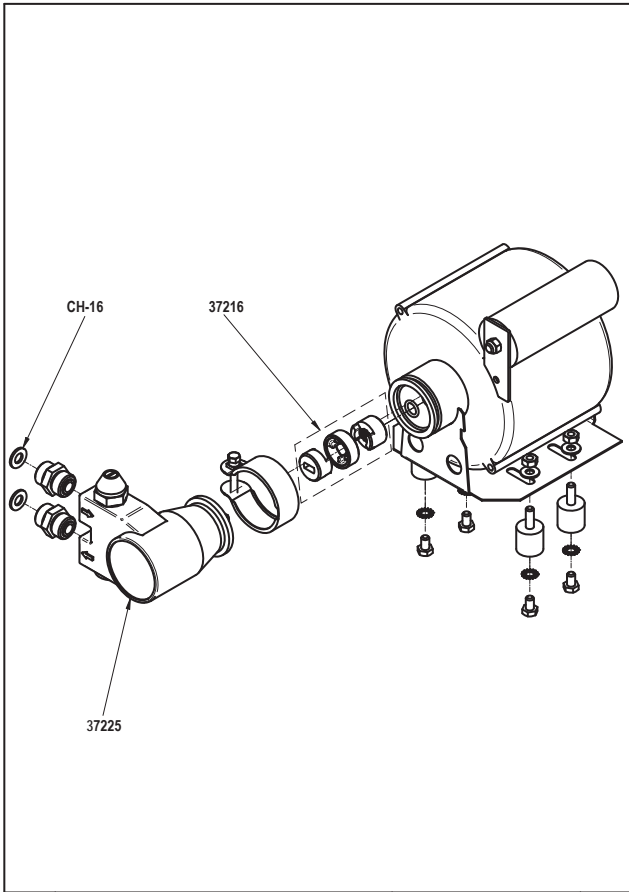
05/15 Hot Water/Steam Electrovalves **UNIC** 530



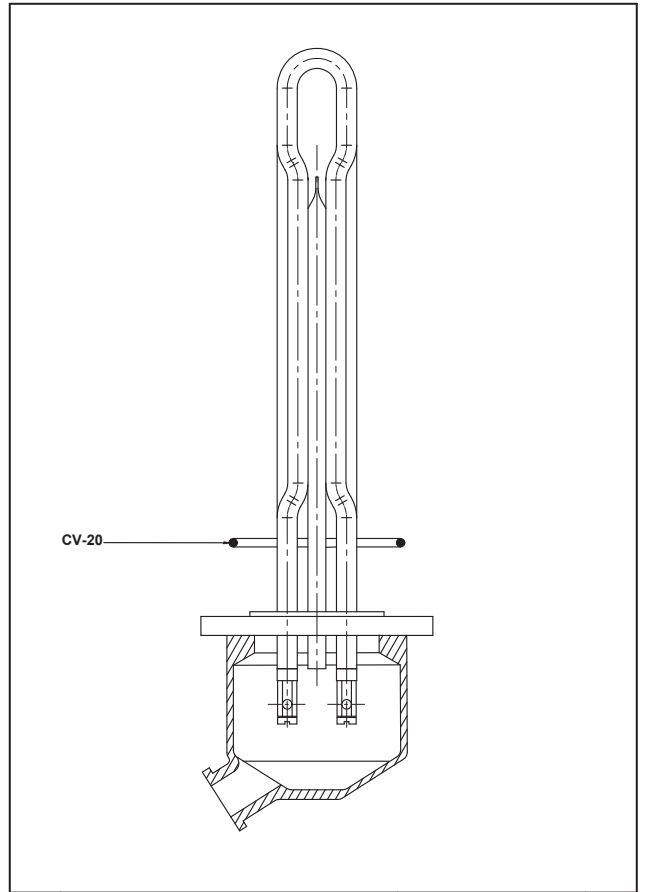
09/14 Level Probe **UNIC** 540



05/15 Pressurestat **UNIC** 560



09/15 Water Pump **UNIC** 600



03/04 Heating Element Gasket **UNIC** 770

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