GRINDMASTER® Operator Manual

CS Espresso Machine
CS1-110, CS1-220, CS2-220, CS3-220

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Model CS2-220

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Thank you for purchasing this quality espresso machine. For your safety and the safety of others, read all warnings and the operator manual before installing or using the product. Properly instruct all operators. Keep training records. For future reference, record serial number here:

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Grindmaster Cecilware

0318 Form # CW-345-02
Part # 390-00119

Safety Information

Important Safety Information

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

For your safety and the safety of others, read all warnings and the operator manual before installing or using the product.

DANGER: This term warns the user of imminent hazard that will result in serious injury or death.

WARNING: This term refers to a potential hazard or unsafe practice, which could result in serious injury or death.

CAUTION: This term refers to a potential hazard or unsafe practice, which could result in minor or moderate injury.

NOTICE: This term refers to information that needs special attention or must be fully understood.

⚠ WARNING

To reduce risk of electrical shock, do not remove or open cover. No user-serviceable parts inside. Repair should be done by authorized service personnel only.

The appliance is not intended for outdoor use. Do not expose to rain or direct sunlight.

Do not clean with pressurized water or use in an area where pressurized water may be used.

Cleaning and maintenance shall be made only by properly trained persons with supervision.

This appliance is not intended for use by persons 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.

Do not alter or deform the power cord or plug in any way! Altering or deforming the plug may cause electrical shock, damage unit, and will void warranty.

To reduce risk of explosion or fire, do not use near combustibles.

⚠ CAUTION

For safe and proper operation the appliance must be placed in a stable, vertical position.

To reduce risk of serious burns or scalding, do not place hand or other body parts under dispenser while product is brewing.

Always unplug unit from power supply before servicing.

Surfaces are hot and can cause burns. Use caution especially in the areas of the steam wand, hot water wand, and brewing group.

Packaging material, including plastic bag and Styrofoam, can be dangerous and should be kept out of reach of children.

To reduce risk of electrical shock, do not touch machine with wet hands or feet.

NOTICE

Observe machine voltage configuration. Do not apply improper voltage to machine or damage to machine may occur. For use on individual dedicated branch circuit only. Do not use extension cord.

Follow national and local electrical codes.

Do not use the machine and turn off the power during water outage.

This equipment must be installed in compliance with applicable Federal, State, and/or Local plumbing codes having jurisdiction. This product requires an approved back flow prevention water device, such as a double check valve, to be installed between the machine and the water supply.

Please follow maintenance and cleaning instructions specified in this manual to ensure the best operation efficiency of machine.

Specifications

Identification Label

Every machine has an identification label placed on the front of the machine as illustrated below. The label includes information of model number, voltage, serial number, wattage, and its certificate. Do not remove this label.

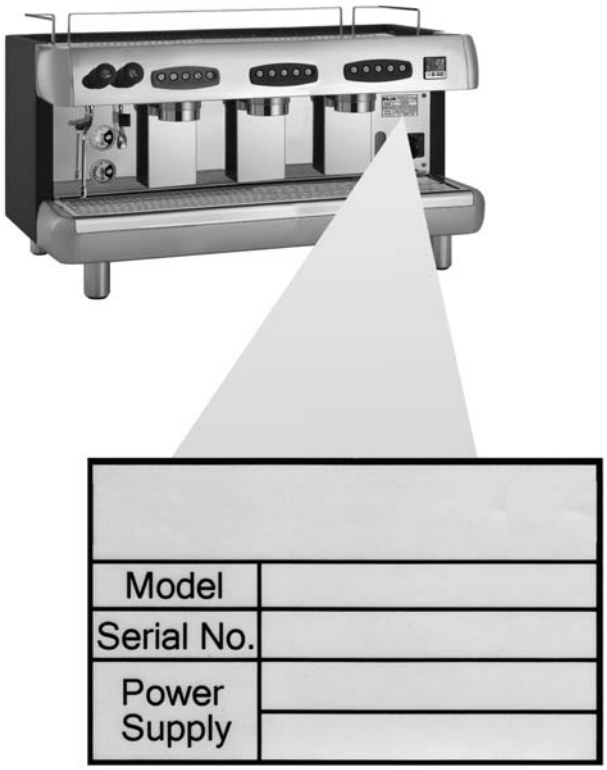


Figure A

Rough-In Drawing

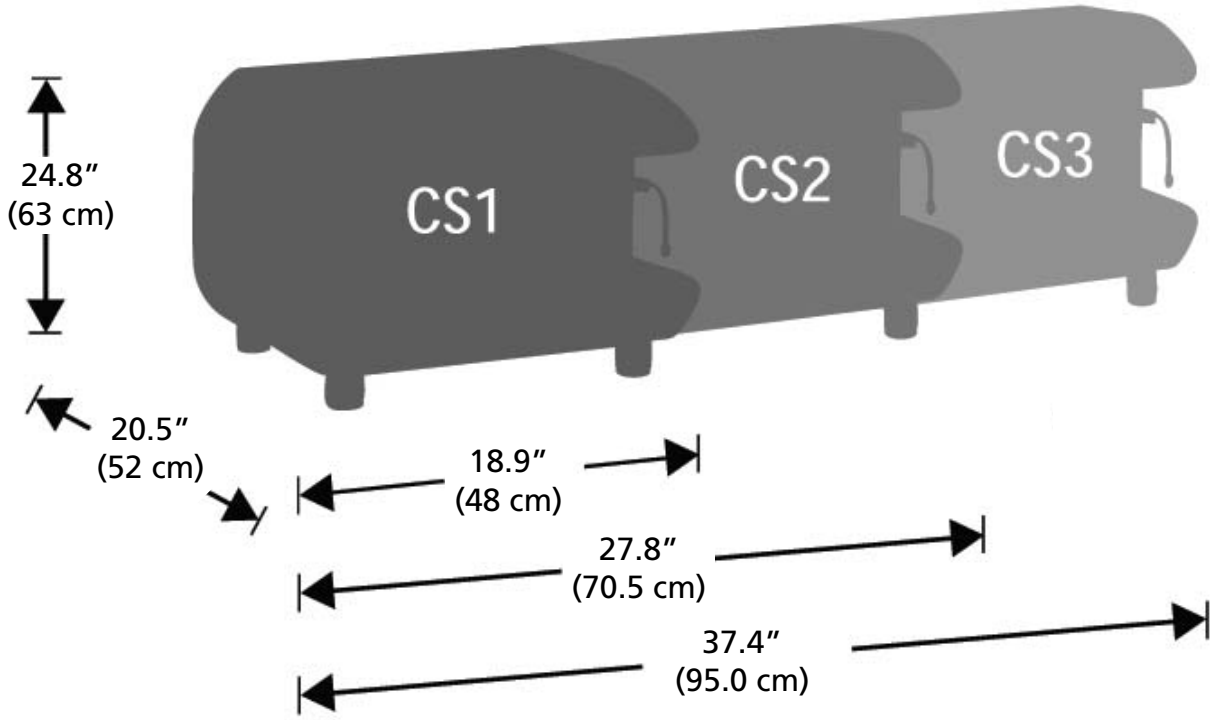


Figure B

Specifications (continued)

Specification Table

Model	Number of Heads	Boiler Capacity	Electrical
CS1-110	1 Group	6 quarts / 6 L	110/120V / 1Ph / 50/60 Hz / 18 A / 2 kW
CS1-220	1 Group	6 quarts / 6 L	220/240V / 1Ph / 50/60 Hz / 10 A / 2000 W
CS2-220	2 Groups	13 quarts / 6 L	220/240V / 1Ph / 50/60 Hz / 20 A / 4700 W
CS3-220	3 Groups	19 quarts / 18 L	220/240V / 1Ph / 50/60 Hz / 27 A / 6500 W
Side Clearance required - 4" (10.2 cm)			
Rear Clearance required - 4" (10.2 cm) for water and electrical connections			
Water connection size - 3/4" GHT, 1/2" water line required			
Water pressure between 20 PSI and 120 PSI (138 kPa - 827 kPa). Use regulator if higher pressure.			

Overview

CS1

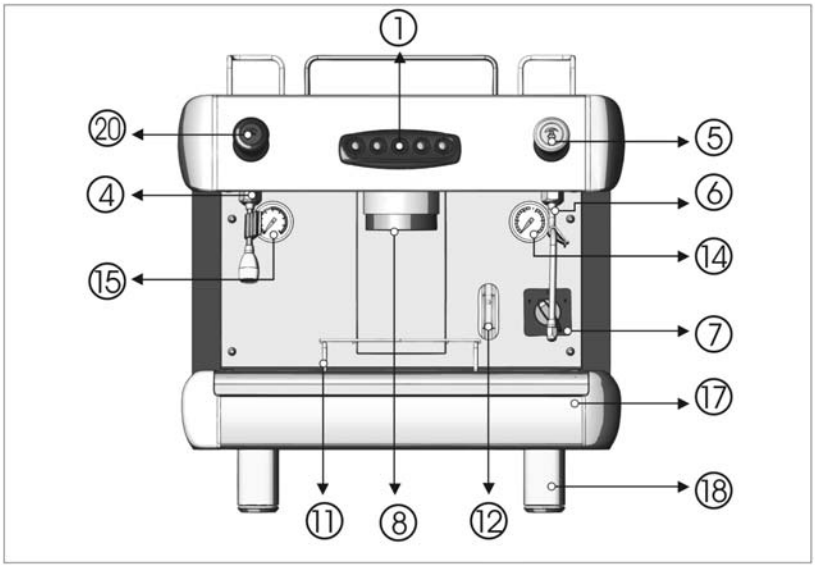


Figure C

CS2

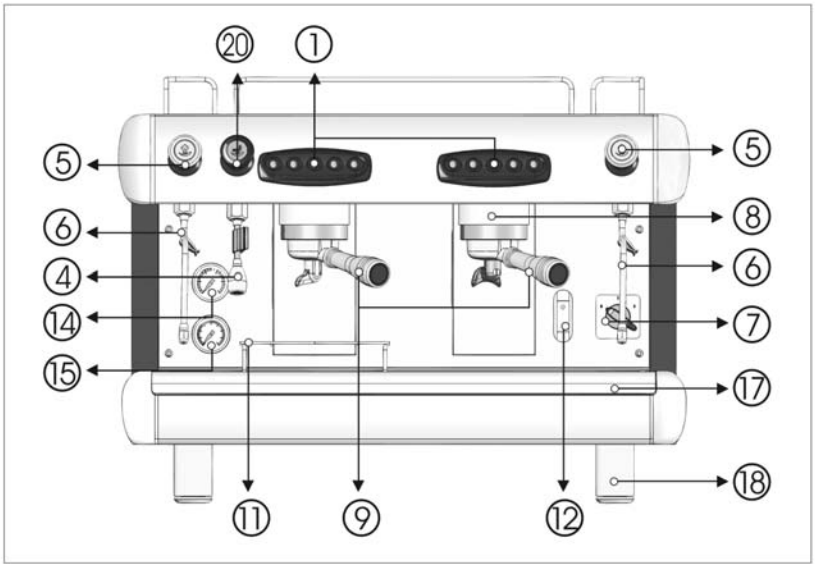


Figure D

Overview continued

CS3

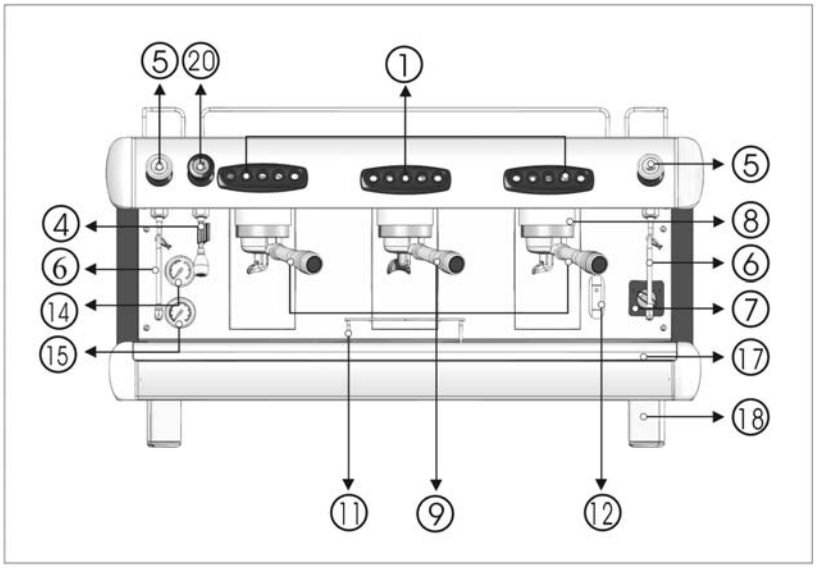


Figure E

1	**Espresso brewing unit control panel**	**11**	**Cup rack**
4	**Hot water wand**	**12**	**Sight glass (Boiler level check window)**
5	**Steam knob**	**14**	**Steam boilder pressure gauge**
6	**Steam wand**	**15**	**Pump pressure gauge**
7	**Main switch**	**17**	**Drain tray**
8	**Brewing group**	**18**	**Leg**
9	**Porta Filter**	**20**	**Hot water knob**

Figure F

Control Panel

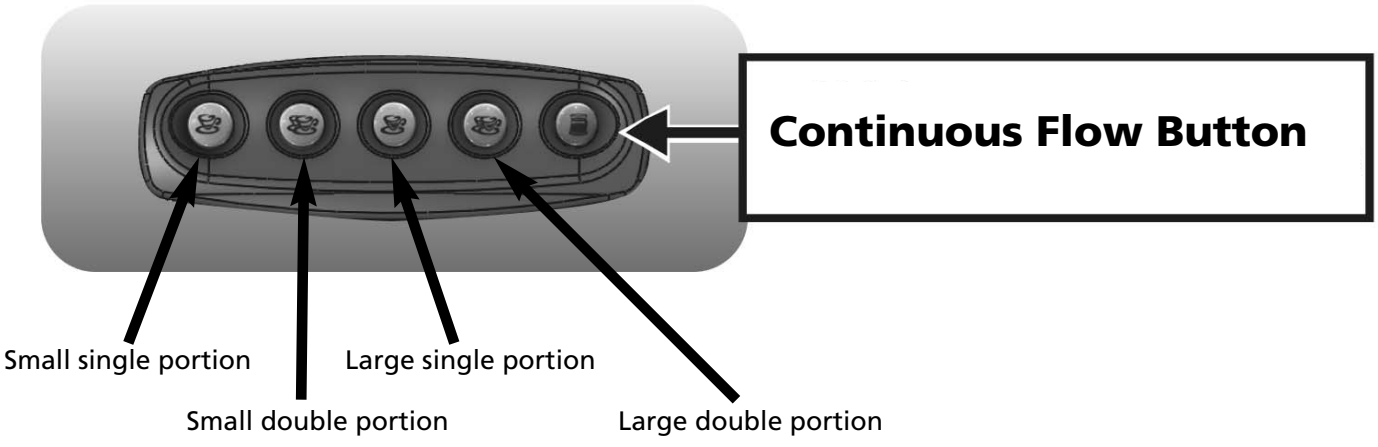


Figure G

Installation

⚠ WARNING: ELECTRIC SHOCK HAZARD!
Installation of this appliance should be performed by qualified service personnel only. Improper installation could result in electrocution.

Unpacking Instructions

Carefully unpack the machine and inspect immediately for shipping damage. The packaging may contain unattached parts. Your machine was shipped in a carton designed to give it maximum protection in normal handling. It was thoroughly inspected before leaving the factory. In case of damage, contact the shipper, not Grindmaster-Cecilware.

NOTICE: This equipment must be installed in compliance with applicable Federal, State, and/or Local plumbing codes having jurisdiction. This product requires an approved back flow prevention water device, such as a double check valve, to be installed between the appliance and the water supply. If a check valve type backflow preventer is used for water supply protection, a screen of at least 100 mesh (100 strands per 1.0 in [25 mm]) shall be installed immediately upstream. The screen shall be accessible and removable for cleaning or replacement. (Required for NSF approved water hook-up.)

Incoming pressure should be greater than 20 psi and not more than 90 psi.

• A filtering system is recommended to remove odors and inhibit lime and scale build up in the unit.

• In areas with extremely hard water, a water softener must be installed in order to prevent a malfunctioning of the equipment and in order not to void the warranty. Unsoftened water will decompose dissolvable minerals and turn to limescale after boiling. The limescale will reduce the machine's thermal efficiency and machine's lifetime.

NOTICE: Do not use extension cords. Make sure that the outlet the unit plugs into is grounded. Check rating marking on nameplate to be sure electric lines match voltage, phase, and amperage requirements of appliance.

Connections

1. When operating the machine for the first time or replacing water softener and filtration system, remove the water inlet tube and allow it to drain for about one minute in order to get rid of impurities from the water.
2. Connect a 1/2" diameter water line to the water supply connection.
3. Open the water shut-off valve and check connections for leaks. DO NOT over-tighten. Verify water supply.
4. Connect 18mm diameter drain line to bottom, center of machine.
5. Attach appropriate plug to cord. Power source corresponds to the electrical rating shown on the serial tag on unit. Plug the CS Espresso machine into a dedicated power supply outlet.
6. Activate the Power Switch on front of unit (see **Figure H**). The tank will fill in approximately 3-4 minutes.

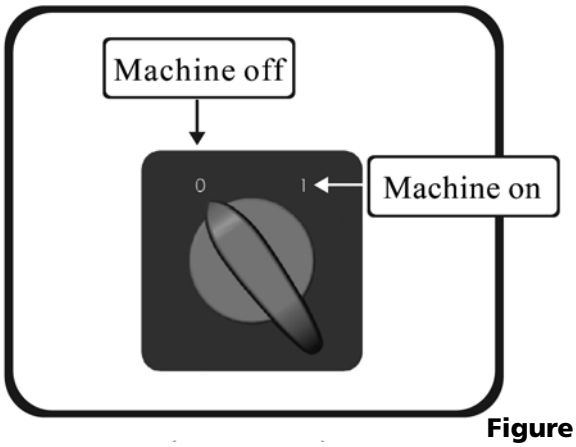


Figure H

7. Press continuous flow button on each control panel (right button) to verify water flow.
8. After installing the machine, verify that during water intake the steam boiler pressure gauge indicator is within the green zone (1~1.4bar) and the pump pressure gauge indicator, when using the continuous flow button, is also within the green zone (8~10bar). In case of need to adjust the pressure, refer to **Adjustments** section.

⚠ CAUTION: BURN HAZARD
Steam wand, hot water wand, and brewing unit are very hot. Use caution when operating unit to prevent burns.

Programming

Control Panel

There are two identical control panels on two-cup models and three identical control panels on 3-cup models. No default coffee output setting is provided. Settings must be made manually during set-up. If you are using a multi-cup machine, settings made on the farthest right hand side control panel will serve as the default for the others. Therefore, to set different values for different cup compartments, begin set up from the right and work your way to the left, to prevent the previous setting from being overwritten.

⚠ CAUTION: BURN HAZARD
Unit is very hot. Use caution when turning on programming switch to prevent burns.

Programming (continued)

1. Turn on the programming switch. (see **Figure I**)

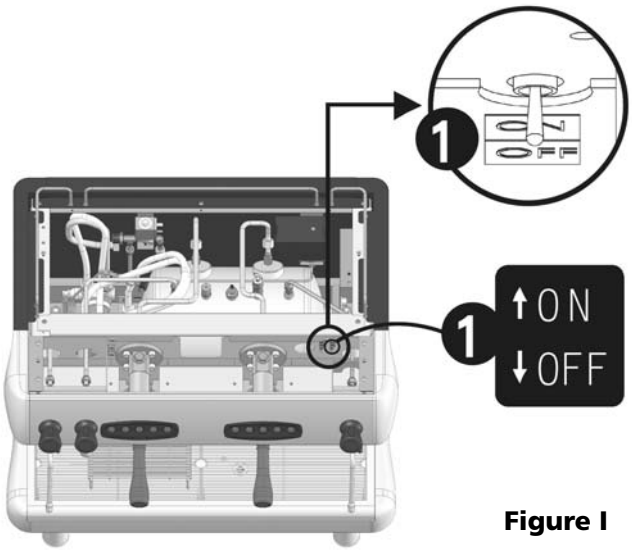


Figure I

2. The LED of buttons 1 - 4 on the control panel will be lit, and the fifth LED will flicker. This indicates programming mode for setting up the amount of continuous output. (See **Figure J**)
3. Place measuring cup under the brewing group. Hold down the first button until reaching the

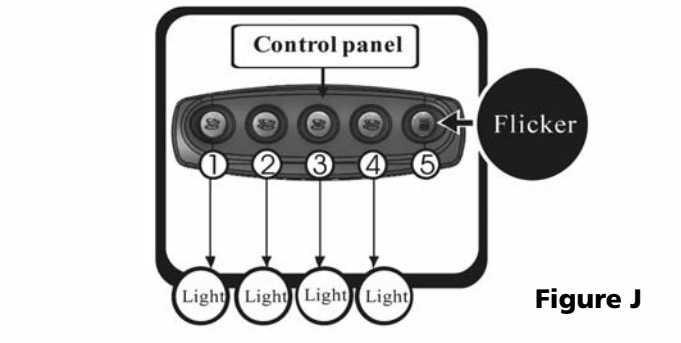


Figure J

required amount of water. Do not otherwise touch the panel. Meanwhile the first button's light will be off, the other three buttons still lit, and the fifth button flickers (see **Figure K**). It means the first button is programmed. Continue programming other buttons. Turn programming switch to OFF when completed. Each time the programming switch is turned ON, it will reset the buttons.

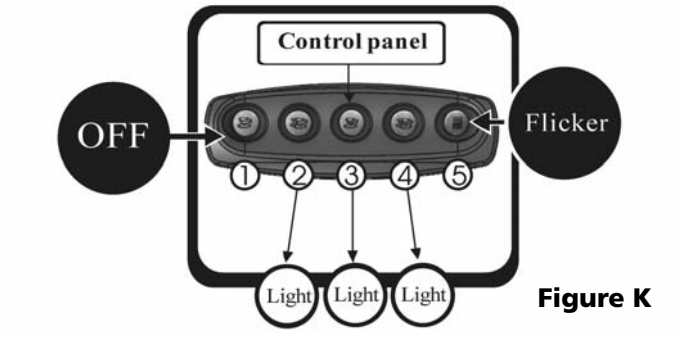


Figure K

Operation

NOTICE: To avoid overheating, electric wires should be kept untangled and free of obstructions. Don't block air intake or outlet vents on the machine. Never cover or otherwise prevent the free flow of air across the cup warmer.

NOTICE: Do not use cleansers, bleach liquids, powders or any other substance containing chlorine. These products promote corrosion and will pit the stainless steel. USE OF THESE PRODUCTS WILL VOID THE WARRANTY.

1. Place an appropriate quantity of ground coffee in the Porta Filter and tamp the ground coffee firmly. Clean all residual coffee from the rim and sides of the filter. This is to ensure a good seal and full pressure when brewing coffee, and prolong the

⚠ CAUTION: BURN HAZARD
Steam wand, hot water wand, and brewing unit are very hot. Use caution when operating unit to prevent burns.

lifetime of the gasket. Attach the Porta Filter to the machine by rotating until it locks in place.
2. Place cup(s) or glass(es) under spout(s).
3. Either press desired portion button or press and hold the continuous flow button until desired portion is dispensed. To stop flow at any time, press and release continuous flow button. (See **Figure L**)

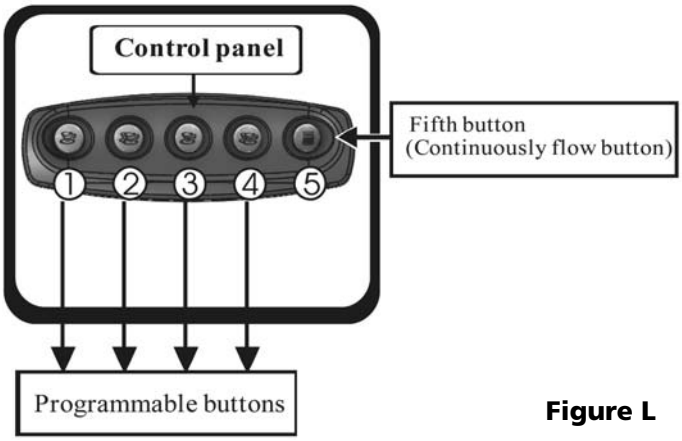


Figure L

4. Move cup(s) or glass(es) to side and remove Porta Filter. Dump grinds. Carefully hold Porta Filter near group head and rinse using the continuous flow button water. Use extreme caution to avoid burns. Then, fit empty Porta Filter to the brewing group to store and keep warm.

Steam Wand:
This can be used by turning the knob counterclockwise, which allows for a varied amount of steam or by pulling out the handle which will dispense the maximum amount of steam.

Operation (continued)

⚠ CAUTION: BURN HAZARD
Steam wand, hot water wand, and brewing unit are very hot. Use caution when operating unit to prevent burns.

Steam Wand (continued)

1. To drain condensate, ensure steam wand is pointed toward the drain grid and pull handle out briefly to dispense a small amount of steam.
2. Pour cold milk in a pitcher and place steam arm into pitcher. Hold pitcher with one hand and turn on steam, either by twisting to add a controlled amount or pulling knob out to add steam at full pressure.
3. Remove pitcher.
4. Wipe arm and nipple clean with soft cloth moistened with sanitizer solution after each use. After wiping, pull steam knob to release a steam burst through the tube to remove any residual milk remaining in the nozzle.

NOTICE: Remove the pitcher from the steam tube after foaming milk. Failure to do so may draw liquid from the pitcher into the steam tube, risking machine component contamination.

Hot Water

1. Turn the hot water knob counterclockwise to obtain hot water through hot water wand. Hot water output will increase the further the hot water knob is turned. Turn the knob clockwise to reduce/stop hot water output.
2. You can also pull the knob straight out in order to obtain hot water.

Cleaning

NOTICE: All sanitizing agents in the food zone must comply with 21 CFR 178.1010. Sanitize all food dispensing units periodically. All parts to be sanitized must be cleaned first. Cleaning and sanitizing frequency must follow state and local health department regulations.

NOTICE: Wipe the accessories with a soft cloth or specific detergent powder. Don't use scrub sponge or wire brushes.

After each brewing

1. Carefully hold Porta Filter near group head and rinse Porta Filter using the continuous flow button water. Water is hot - use extreme caution.
2. Wipe arm and nipple clean with soft cloth moistened with sanitizer solution after each use. After wiping, pull steam knob to release a steam burst through the tube to remove any residual milk remaining in the nozzle.

Daily

Exterior:

Wipe the machine exterior with soft, slight dampened cloth daily before starting operations. If necessary, a mild, non-corrosive cleaning agent may be applied to the cloth.

NOTICE: Do not spray cleaning fluid directly on the espresso machine to avoid corrosion or possible electrical damage.

Back flushing:

1. Remove screw (E), shower screen (D), and plate (C) from the group head (be careful, metal components may be hot). (see **Figure M**)

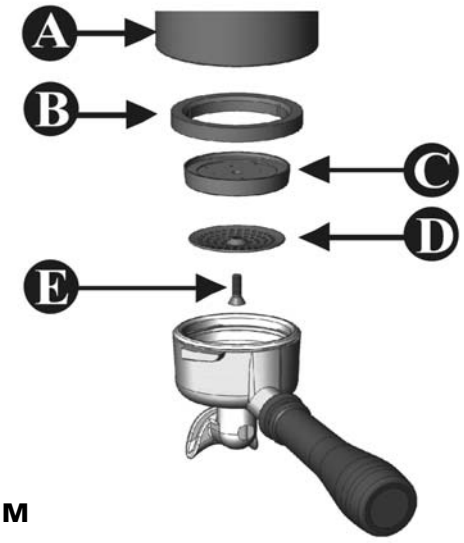


Figure M

2. Place the rubber disc in Porta Filter (see **Figure N**), and apply about 2-3 grams of espresso machine detergent/sanitizer on top of rubber disc. Attach the Porta Filter to the group head and check for tightness.

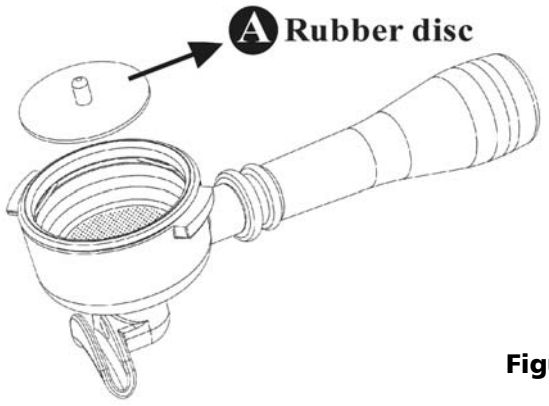


Figure N

3. Press first and fifth buttons simultaneously to start automatic back flushing function. The first and fifth button will be off, and middle three buttons will be lit. This auto back flushing system will complete 10 cleaning cycles. (see **Figure O**)

NOTE: If you want to discontinue the cleaning, press 3rd button to stop.

Cleaning (continued)

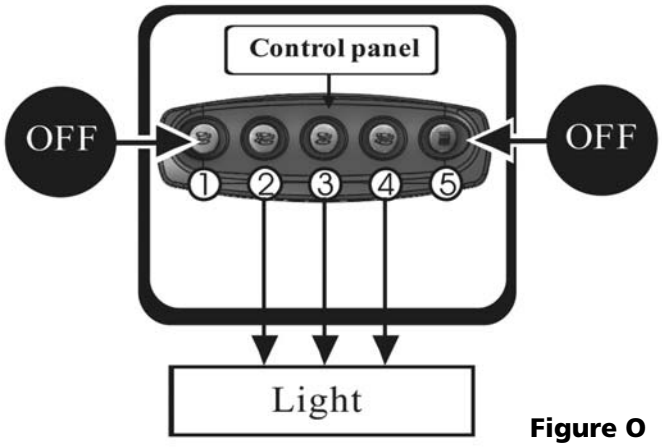


Figure O

4. After automatic back flushing cycle is complete, rinse Porta Filter and rubber disc with water from the continuous flow button until water in Porta Filter appears clean.
5. Replace rubber disc on Porta Filter, then place Porta Filter on the group head and press first and fifth buttons simultaneously to start automatic back flushing function to rinse. The first and fifth button will be off, and middle three buttons will be lit. This auto back flushing system will complete 10 cleaning cycles.

NOTE: If you want to discontinue the cleaning, press 3rd button to stop.

6. Screw (E), shower screen (D), and plate (C) should be cleaned and sanitized with the Porta Filter, steam wand nipple and hot water wand sprayer.

Cleaning and sanitizing portafilter:

> **⚠ CAUTION: BURN HAZARD**
> Steam wand, hot water wand, and brewing unit are very hot. Use caution when cleaning unit to prevent burns.

Notice: To avoid damage, do not immerse espresso Porta Filter handle in water. Do not put group gasket (item B from **Figure M**) in water or any liquid detergent.

1. Disassemble Porta Filter. (see **Figure P**)

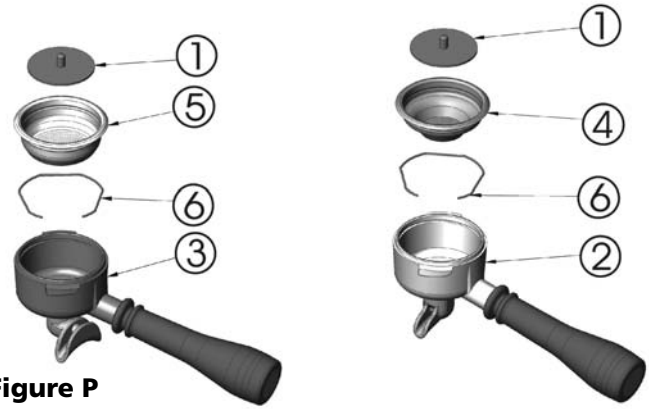


Figure P

2. Remove sprayer from hot water wand.
3. Remove nipple from steam arm.
4. Add loose group head parts [screw (E), shower screen (D), and plate(C) from **Figure M**].
5. Use brush to clean and wash parts in detergent or espresso urn cleaner/sanitiser. DO NOT immerse Porta Filter handle. (see **Figure Q**)

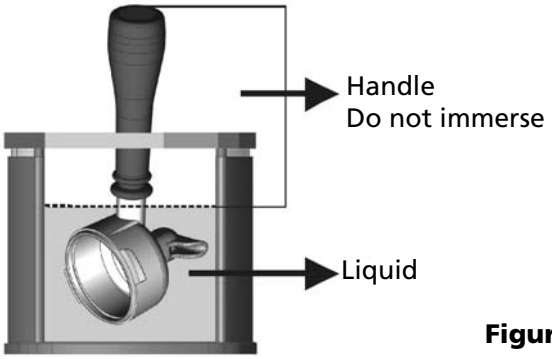


Figure Q

6. Rinse parts.
7. Prepare a sanitizing solution in accordance with local health department regulations. You may also refer to the US Food and Drug Administration regulation 21 CFR 178.1010 "Sanitizing Solutions" and US Environmental Protection Agency 40 CFR 18.940 "Tolerance exemptions for active and inert ingredients for use in antimicrobial formulations (Food-contact surface sanitizing solutions)".
8. Follow the instructions provided with the sanitizing agent.
9. Let all sanitized parts drain and dry naturally. DO NOT WIPE THEM DRY.
10. Reassemble parts.

Drain Tray and Discharge Trough:

1. Remove and wash the drain tray after stopping use. (see **Figure R**)

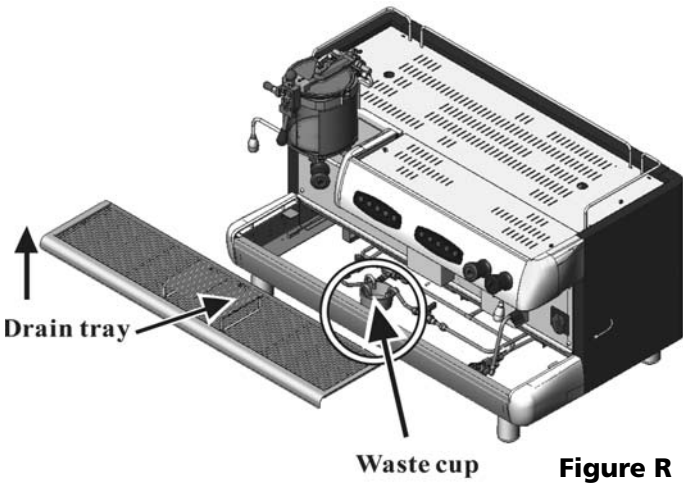


Figure R

2. Wipe and remove sediments in the discharge trough with a wet cloth and wash with hot water to clear the discharge tube.
3. If water does not discharge properly, place a

Cleaning (continued)

teaspoon of detergent into the discharge trough and flush with hot water to dissolve residual oils in the tube.

4. Reassemble after the water tray has dried.

Adjustments

⚠ CAUTION: BURN HAZARD
Steam wand, hot water wand, and brewing unit are very hot. Use caution when adjusting unit to prevent burns.

NOTICE: Please contact your authorized service representative to undertake these procedures.

The rest of this manual contains information to aid the service technician who is maintaining this equipment. This section has information on performing common service tasks.

Pump Pressure Adjustment

Figure S

The pump pressure has been factory adjusted to 9 bar (the recommended pressure). After machine starts up and water refills, press continuous flow button and read pressure on pressure gauge if the indicator is on green zone (8-10 bar) as shown in **Figure S**.

If the pressure is not in the green zone, adjust pressure as shown below:

1. Remove left side panel

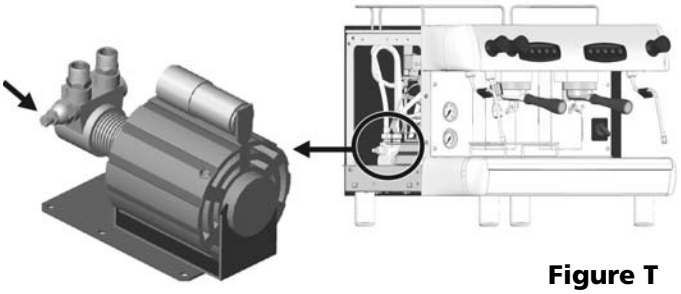


Figure T

2. Attach Porta Filter into the brewing group with filled ground coffee.
3. Press continuous flow button. Turn screw clockwise as shown in **Figure T** to increase pressure; turn counterclockwise to reduce pressure.

Steam Boiler Pressure Calibration

Steam boiler pressure is controlled by pressure switch. The pressure inside the boiler continues to rise as the water is heated by the heating elements. Reducing pressure will reduce temperature, while increasing pressure will increase temperature. The steam boiler has been factory adjusted to 1.2bar, (the recommended pressure). Please check if your pressure on the pressure switch is 1.2bar or on the green zone (1-1.4bar) (see **Figure U**). if so, you don't need to adjust the pressure. In case there is a need to calibrate the pressure, please follow below procedure for calibration:

Figure U

⚠ WARNING: SHOCK HAZARD
Disconnect power before adjusting steam boiler pressure.

NOTE: Please turn off the machine before undertaking this operation.

1. Turn off machine.
2. Remove top cover of machine, and locate the pressure switch on the upper right size.

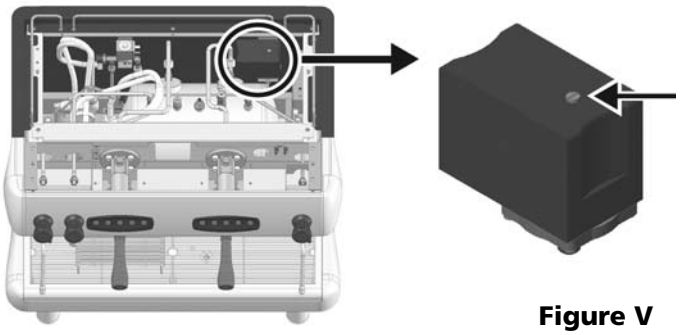


Figure V

3. Remove the yellow case from the pressure switch. Use screw to adjust the pressure as shown in **Figure V**. Turn screw clockwise to decrease pressure, or counterclockwise to increase pressure. A complete screw turn results in 0.1 bar variation.

Draining

⚠ CAUTION: BURN HAZARD
Dispenser surfaces and water inside dispenser are very hot. Use caution when draining unit to prevent burns.

⚠ CAUTION: BURN HAZARD
Never turn on drain valve when there is pressure in the boiler.

If espresso machine will not be used for an extended period, will be stored, or transported, drain tank to prolong life and prevent damage from freezing.

1. Turn off the machine, and release all the pressure from boiler by turning on the steam knob(s).
2. After the steam is completely released and the pressure on steam boiler pressure gauge reads "0", remove drain tray and locate drain valve under drain tray. Turn on drain valve to drain water out of boiler. Drain valve is on when it is parallel to pipe.

NOTE: Please DO NOT turn off the steam knob after the steam is released for storage. Keep the steam knob on. When you re-start the machine, do not turn off the steam knob until you see water drop from the steam wand. This is to balance the boiler pressure.

3. Turn off drain valve when water stops flowing into waste cup. Drain valve is off when it is perpendicular to pipe.

Troubleshooting

⚠ WARNING: To reduce the risk of electrical shock, unplug the dispenser power cord before repairing or replacing any internal components of the unit. Before any attempt to replace a component, be sure to check all electrical connections for proper contact. Only a qualified service technician should perform electrical and mechanical adjustments or repairs.

Before you call for help, please read the following:

INDICATION		PROBABLE CAUSE	SOLUTION
All lights on control panel turn on	• After two minutes of water input, indicator still does not show a rise in machine water level. It will take more than two minutes to replenish water when the machine is used for the first time.	• Water level probe not functioning properly. • Water intake solenoid is out of order. • Input water flow has been interrupted.	• Make sure that the water valve is turned on and there is water flowing into machine. • Turn off machine. Restart after 3 seconds. • Turn water supply on.
All lights on ONE control panel flash	• No water output from brewing group. • Brewing for a long time without reaching setup value.	• Coffee grounds are too fine. • Water intake solenoid is out of order. • Flow meter is out of order.	• Adjust fineness of coffee grinds. • Turn off machine. Restart after 3 seconds. • Press any key to eliminate the breakdown signal, and notify qualified service technician.

Note: Wait at least 3 seconds to restart the machine after turning it off to ensure previous error stored in memory is cleared.

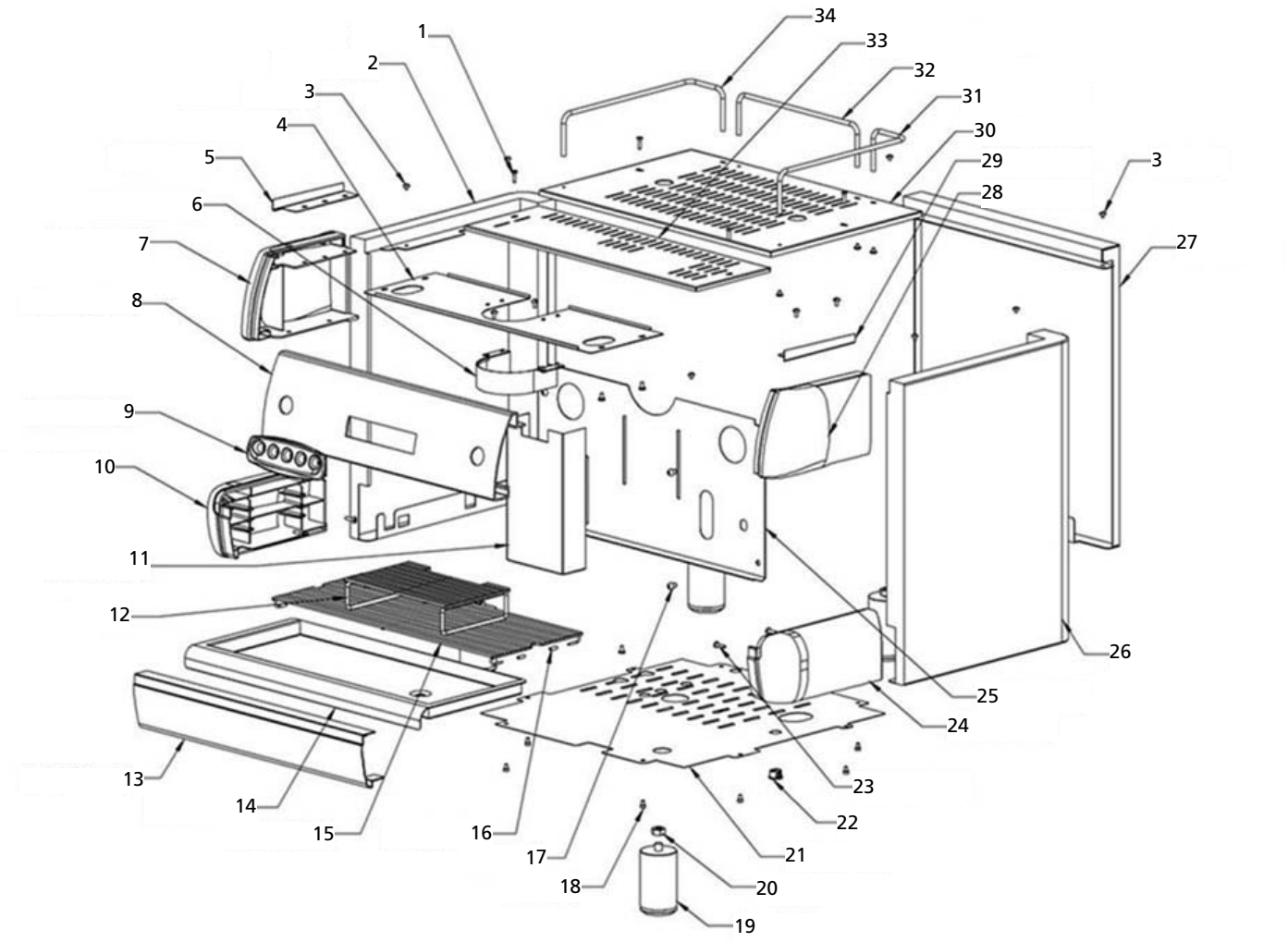
If you need help, call Grindmaster-Cecilware Technical Service Department, (502) 425-4776 or (800) 695-4500 (USA & Canada only) (Monday through Friday 8 AM - 6 PM EST). Please have the model and serial number ready so that accurate information can be given.

Prior authorization must be obtained from Grindmaster-Cecilware for all warranty claims.

Grindmaster-Cecilware provides the industry's BEST warranty. Visit our website at gmcw.com for warranty terms and conditions.

Parts Diagram

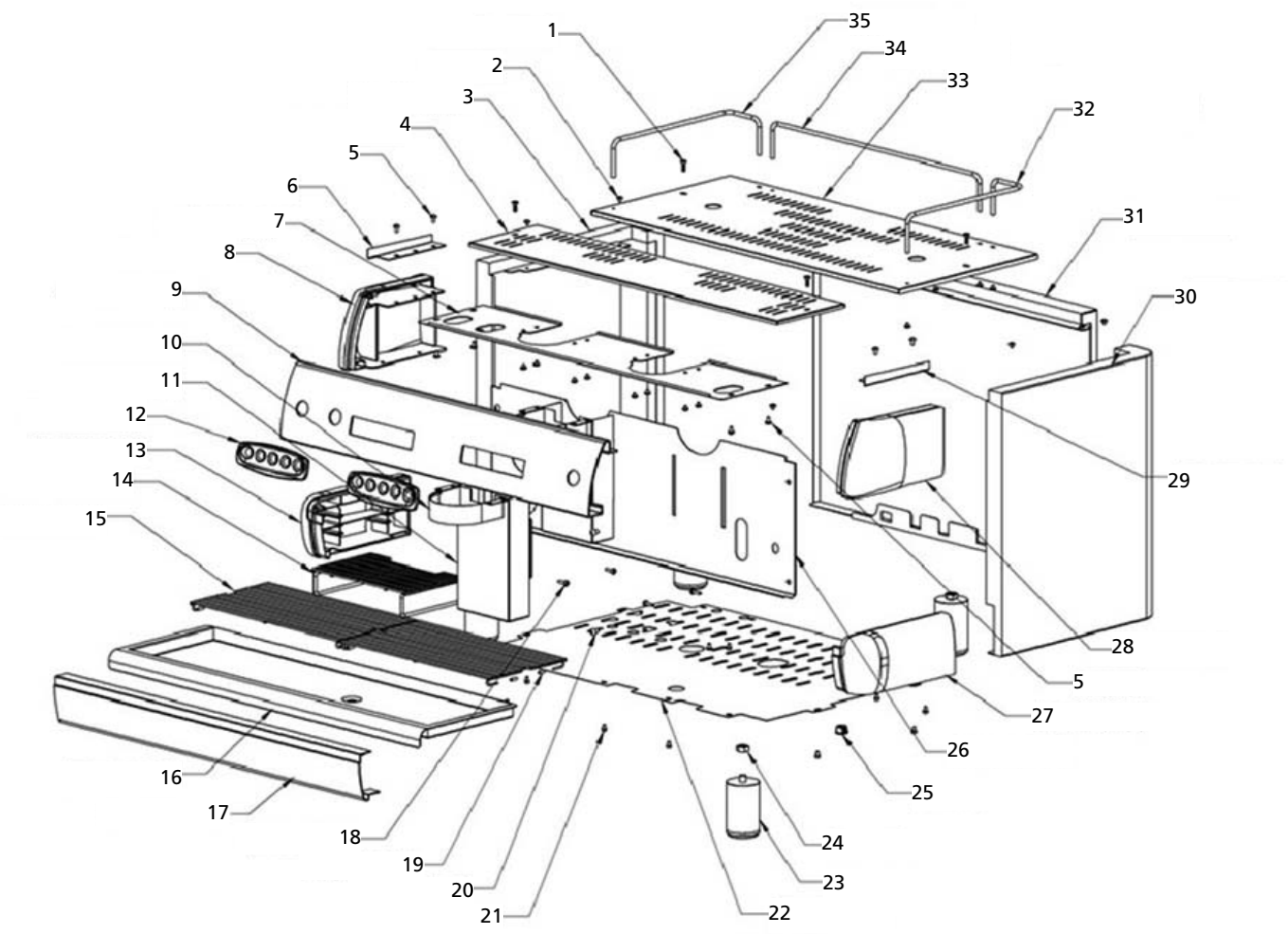
Body Parts CS1-110, CS1-220



Item	Part #	Description	Item	Part #	Description
1		SCREW M4*16	18		SCREW M4*5 (SUS)
2		LEFT SIDE PANEL(BLACK)	19	410-00482	FOOT
3		SCREW M4*5	20		NUT M10
4		CABLE COVER	21		BOTTOM METAL COVER (ETL)
5		TOP RIGHT SIDE PANEL SUPPORT	22		CABLE PROTECTION RING (ETL)
6		SURROUND STEEL	23		SCREW (4mm*15)
7		TOP LEFT SIDE PANEL	24		DOWN RIGHT SIDE PANEL
8		BASE FRONT PANEL	25		S.STEEL BOILER COVER
9	410-00483	OPERATE FACEPLATE	26		RIGHT SIDE PANEL (BLACK)
10		DOWN LEFT SIDE PANEL	27		BACK PANEL(BLACK)
11		VALVE COVER	28		TOP RIGHT SIDE PANEL
12	410-00484	CUP RACK	29		TOP LEFT SIDE PANEL SUPPORT
13		BASE FRONT PANEL	30		UPPER STAINLESS STEEL GRILL
14	410-00485	DRAIN PAN	31		CUP FENCE-RIGHT
15	410-00486	LOWER DRAIN PAN	32		CUP FENCE -REAR
16		DRAIN TUBE 5/8" HIGH TEMP	33		GROUP COVER
17		SCREW M6*8	34		CUP FENCE-LEFT

Parts Diagram (continued)

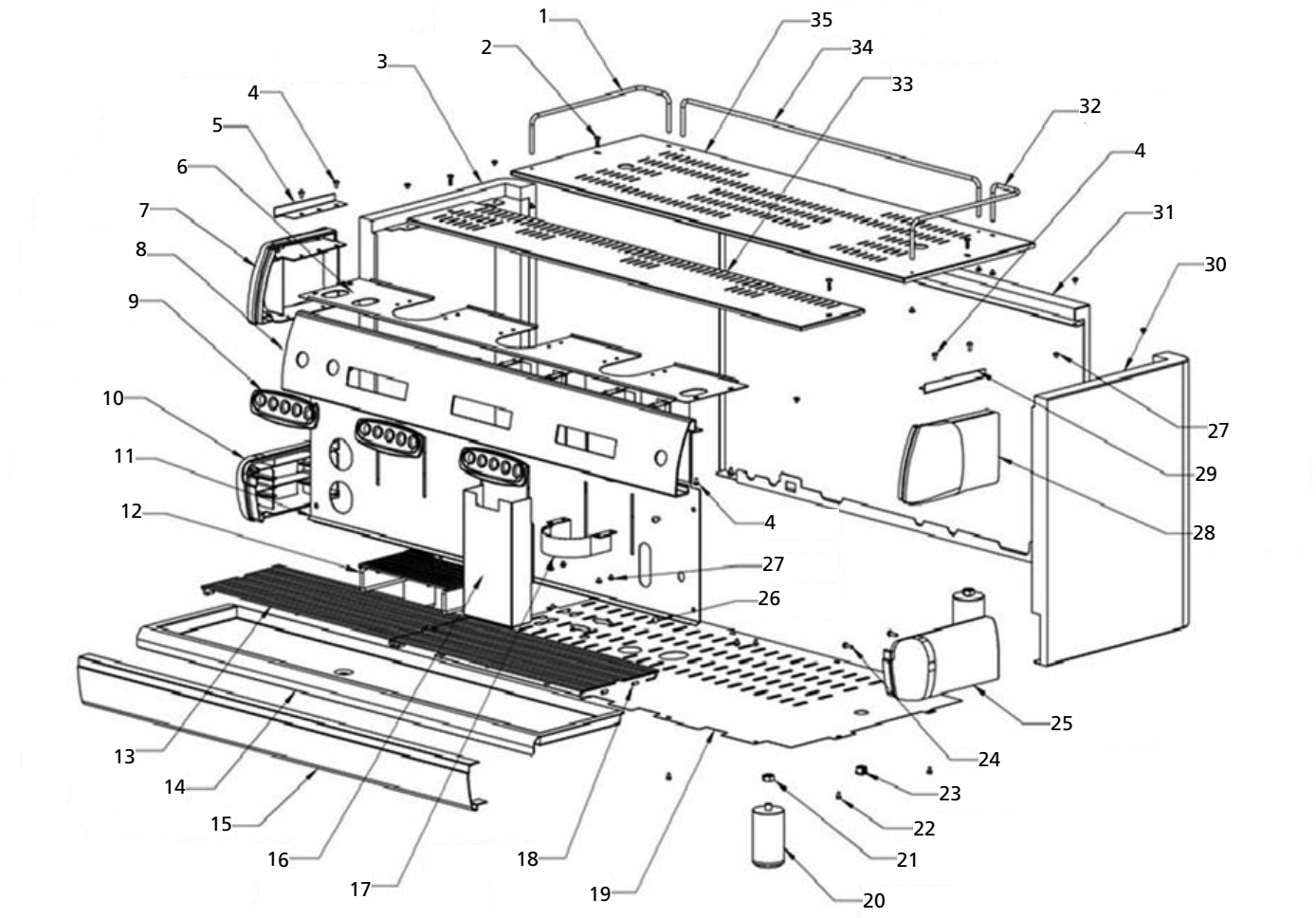
Body Parts CS2-220



Item	Part #	Description	Item	Part #	Description
1		SCREW M4*16	19		DRAIN TUBE 5/8" HIGH TEMP
2		SCREW M4*5	20		SCREW M6*8
3		LEFT SIDE PANEL(BLACK)	21		SCREW M4*6
4		GROUP COVER	22		BOTTOM METAL COVER (ETL)
5		SCREW M4*8 (SUS)	23	410-00482	FOOT
6		TOP RIGHT SIDE PANEL SUPPORT	24		NUT M10
7		CABLE COVER	25		CABLE PROTECTION RING (ETL)
8		TOP LEFT SIDE PANEL	26		S.STEEL BOILER COVER
9		OPERATION PANEL	27		DOWN RIGHT SIDE PANEL
10		SURROUND STEEL	28		TOP RIGHT SIDE PANEL
11		VALVE COVER	29		TOP LEFT SIDE PANEL SUPPORT
12	410-00483	OPERATE FACEPLATE	30		RIGHT SIDE PANEL (BLACK)
13		DOWN LEFT SIDE PANEL	31		BACK PANEL(BLACK)
14	410-00484	CUP RACK	32		CUP FENCE-RIGHT
15	410-00488	LOWER DRAIN PAN	33		UPPER STAINLESS STEEL GRILL
16	410-00487	DRAIN PAN	34		CUP FENCE-REAR
17		BASE SURROUND FRONT	35		CUP FENCE-LEFT
18		SCREW (4mm*15)			

Parts Diagram (continued)

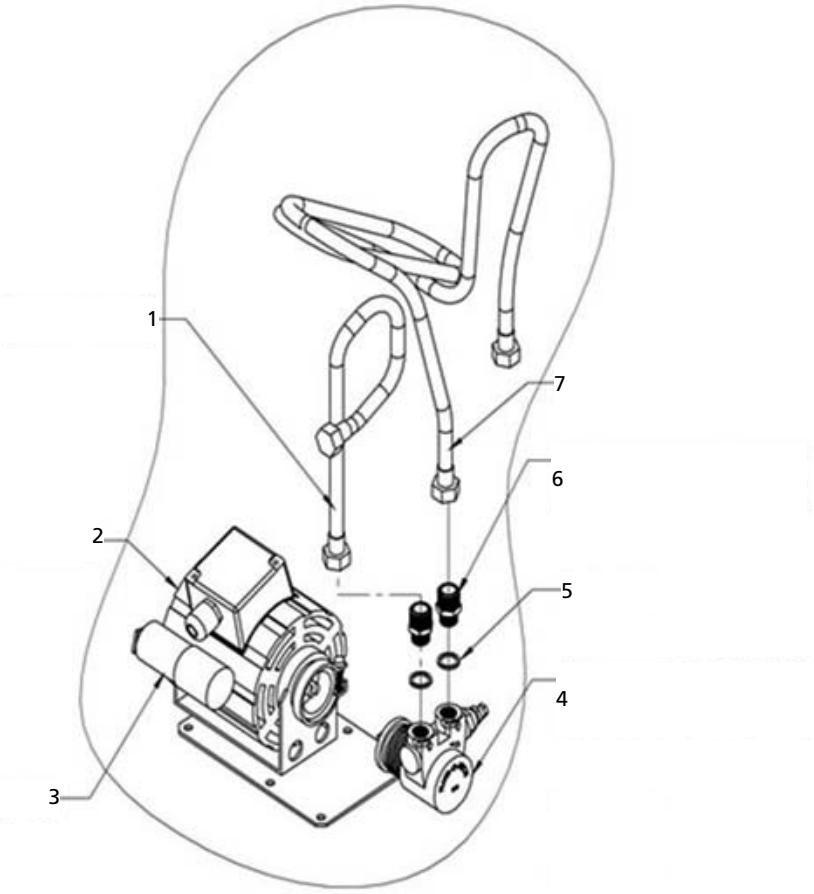
Body Parts CS3-220



Item	Part #	Description	Item	Part #	Description
1		CUP FENCE-LEFT	19		BOTTOM METAL COVER (ETL)
2		SCREW M4*16	20	410-00482	FOOT
3		LEFT SIDE PANEL(BLACK)	21		NUT M10
4		SCREW M4*8 (SUS)	22		SCREW M4*6
5		TOP RIGHT SIDE PANEL SUPPORT	23		CABLE PROTECTION RING (ETL)
6		CABLE COVER	24		SCREW (4mm*15)
7		TOP LEFT SIDE PANEL	25		DOWN RIGHT SIDE PANEL
8		OPERATION PANEL	26		SCREW M6*8
9	410-00483	OPERATE FACEPLATE	27		SCREW M4*5
10		DOWN LEFT SIDE PANEL	29		TOP RIGHT SIDE PANEL
11		S.STEEL BOILER COVER	30		TOP LEFT SIDE PANEL SUPPORT
12	410-00484	CUP RACK	30		RIGHT SIDE PANEL (BLACK)
13	410-00490	LOWER DRAIN PAN	31		BACK PANEL(BLACK)
14	410-00489	DRAIN PAN	32		CUP FENCE-RIGHT
15		BASE SURROUND FRONT	33		GROUP COVER
16		VALVE COVER	34		CUP FENCE-REAR
17		SURROUND STEEL	35		UPPER STAINLESS STEEL GRILL
18		DRAIN TUBE 5/8" HIGH TEMP			

Parts Diagram (continued)

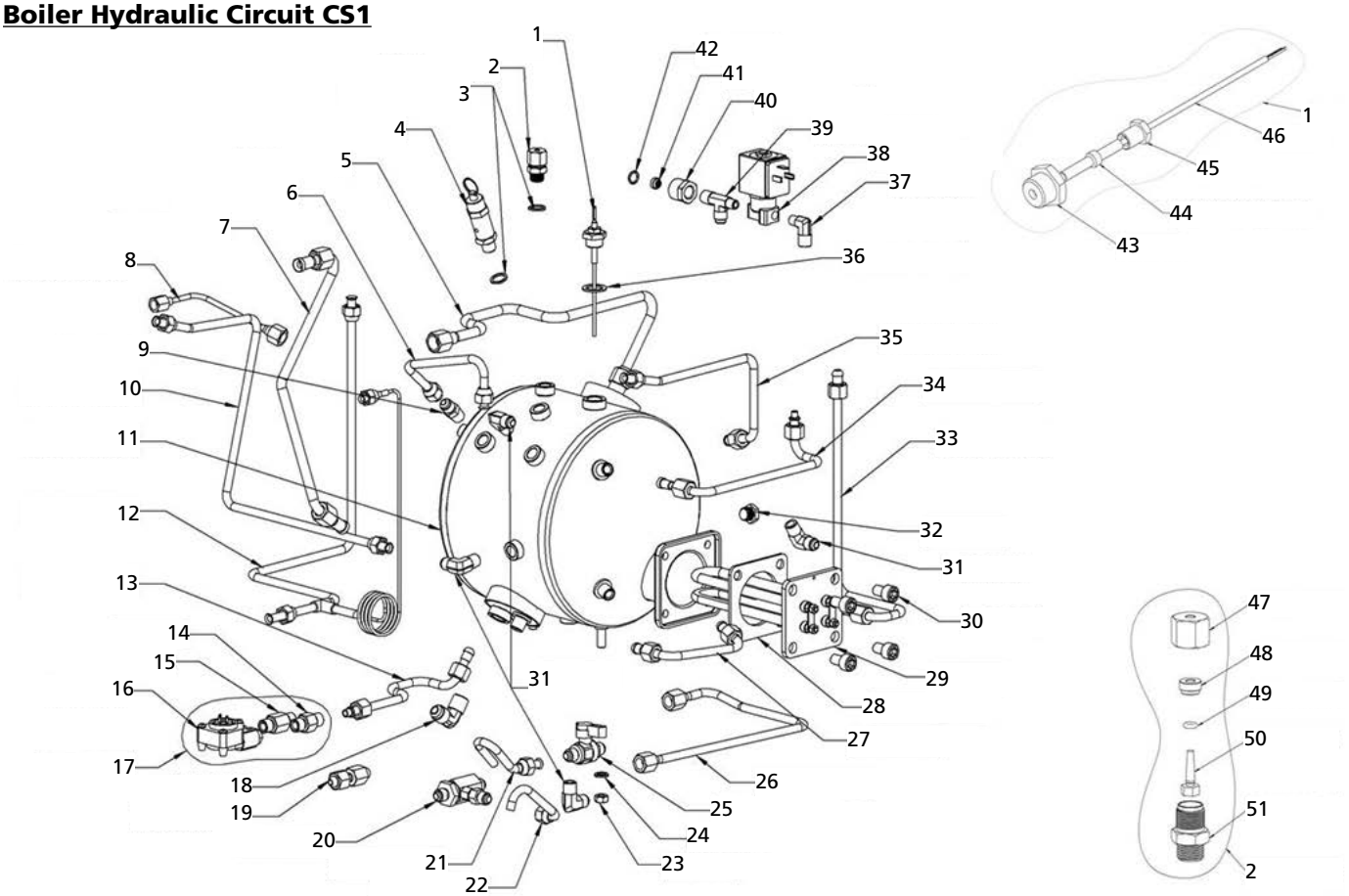
Motor Pump Assembly



Item	Part #	Description
1		S.T. STEEL WIRE PIPE (600mm)
2	01329L	MOTOR 220-240V 50/60Hz 1.6A (ETL)
3	410-00491	CAPACITOR 10µF
4	01330L	PUMP FOR CS1-220
4		PUMP FOR CS2 & CS3
4		PUMP FOR CS1-110
5	01312L	PIPE GASKET TEFLON
6		NPT FITTING NPT3/8"*NPT1/2"
7		S.T. STEEL WIRE PIPE (2400mm)

Parts Diagram (continued)

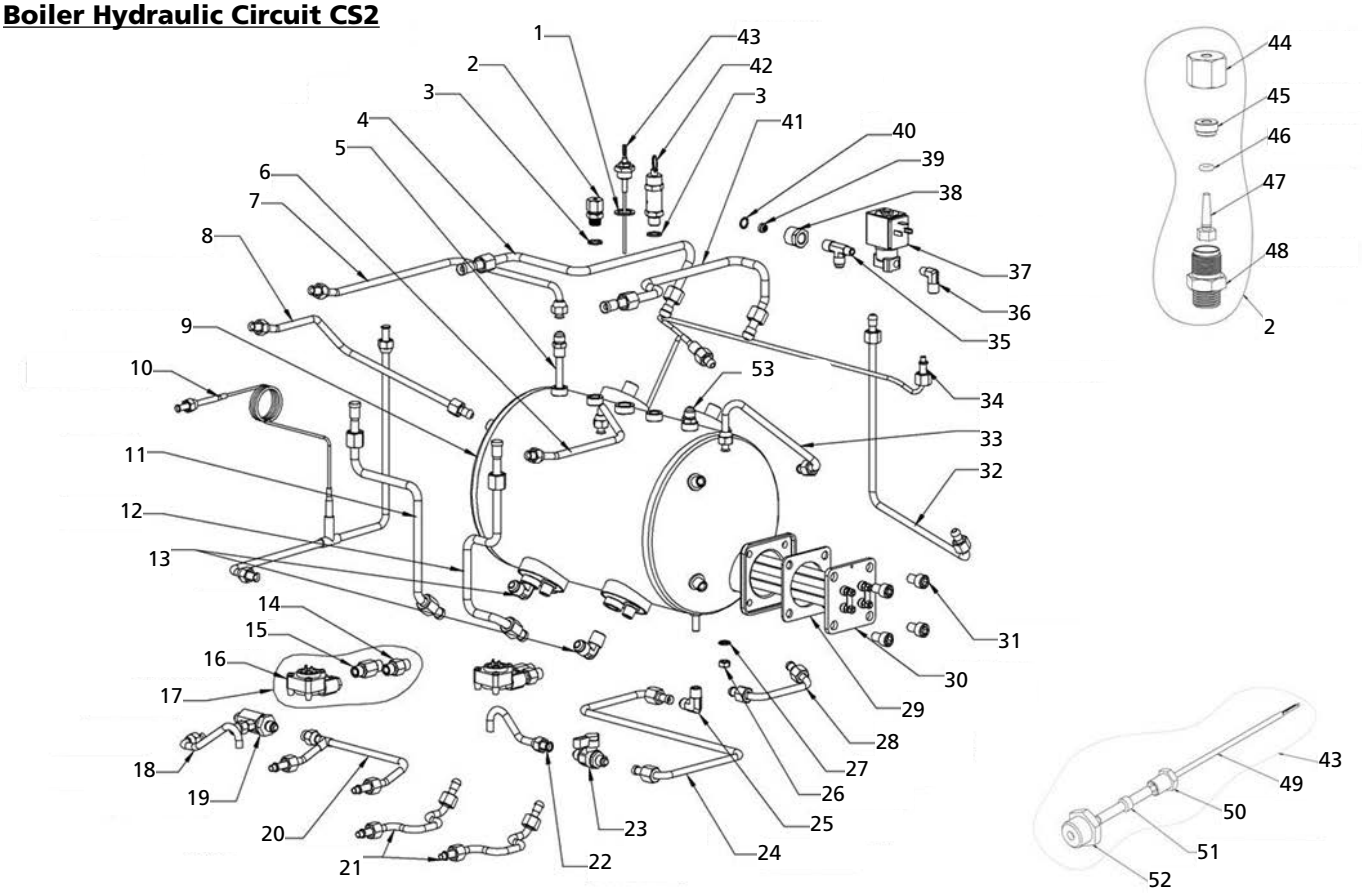
Boiler Hydraulic Circuit CS1



Item	Part #	Description	Item	Part #	Description
1	01320L	LEVEL PROBE ASSEMBLY	27		WATER LEVEL LOWER TUBE
2	01319L	ANTI-EDDY VALVE V.A.R.	28	01318L	SI-GASKET ELEMENT
3	01322L	VALVE GASKET BRASS	29	01316L	HEATING ELEMENT 2000W CE
4	01371L	SAFETY VALVE	29	410-00494	HEATING ELEMENT 1500W 110V)
5		HEAT EXCHANGER OUTLET TUBE	30	410-00495	HEX SCREW (M10*16)
6		WATER LEVEL UPPER TUBE	31		ELBOW BRASS 5/16*1/4
7		HEAT EXCHANGER RETURN TUBE	32		BRASS PLUG
8		STEAM PRESSURE GAUGE TUBE	33		AUT.WATER REFILL TUBE REAR
9		BRASS CONNECTOR 1/2-20UNF*PT1/4	34		PRESSURE GAUGE COPPER TUBE
10		HOT WATER OUTLET TUBE REAR	35		STEAM OUTLET TUBE FRONT RIGHT
11		BOILER	36	01321L	VALVE GASKET BRASS
12		AUT.WATER REFILL TUBE	37		BRASS CONNECTOR 1/4"X1/8"
13		HEAT EXCHANGER INLET TUBE	38	01324L	SOL. VALVE WATER REFILL ASSY 208~240V 60Hz
14		BRASS FITTING PS/1/4*PS1/4*L33.5	39		BRASS CONNECTOR PT1/4*1/2-20UNF*1/2-20UNF
15		BRASS FITTING PS/1/4*PS1/4*L42	40		BRASS CONNECTOR
16	01325L	FLOWMETER DOSER	41		SPHERICAL BRONZE CONICAL FILTER
17		FLOW METER GAUGE	42	01323L	NBR O RING
18		ELBOW BRASS PT3/8*3/8	43		LEVEL PROBE BASE
19		FLOWMETER INLET TUBE	44	410-00502	PROBE FIXED SUPPORT
20	410-00492	S.C.N.R.DOSER VALVE 1/2*1/2*1/2	45		PROBE FIXED BOLT
21		BOILER DRAIN TUBE FRONT	46	410-00504	PROBE (SUS304 /3mm L132)
22		EXPANSION DRAIN TUBE	47	410-00496	BRASS NUT
23		NUT M8	48	410-00497	TEFLON WASHER
24		SPRING WASHER M8	49	410-00498	SI O-RING
25	410-00493	PRESSURE RELEASE TAP BULK PS1/4xPS1/4	50	410-00499	SHAFT
26		BOILER DRAINTUBE REAR	51	410-00500	ANTI-EDDY VALVE BASE

Parts Diagram (continued)

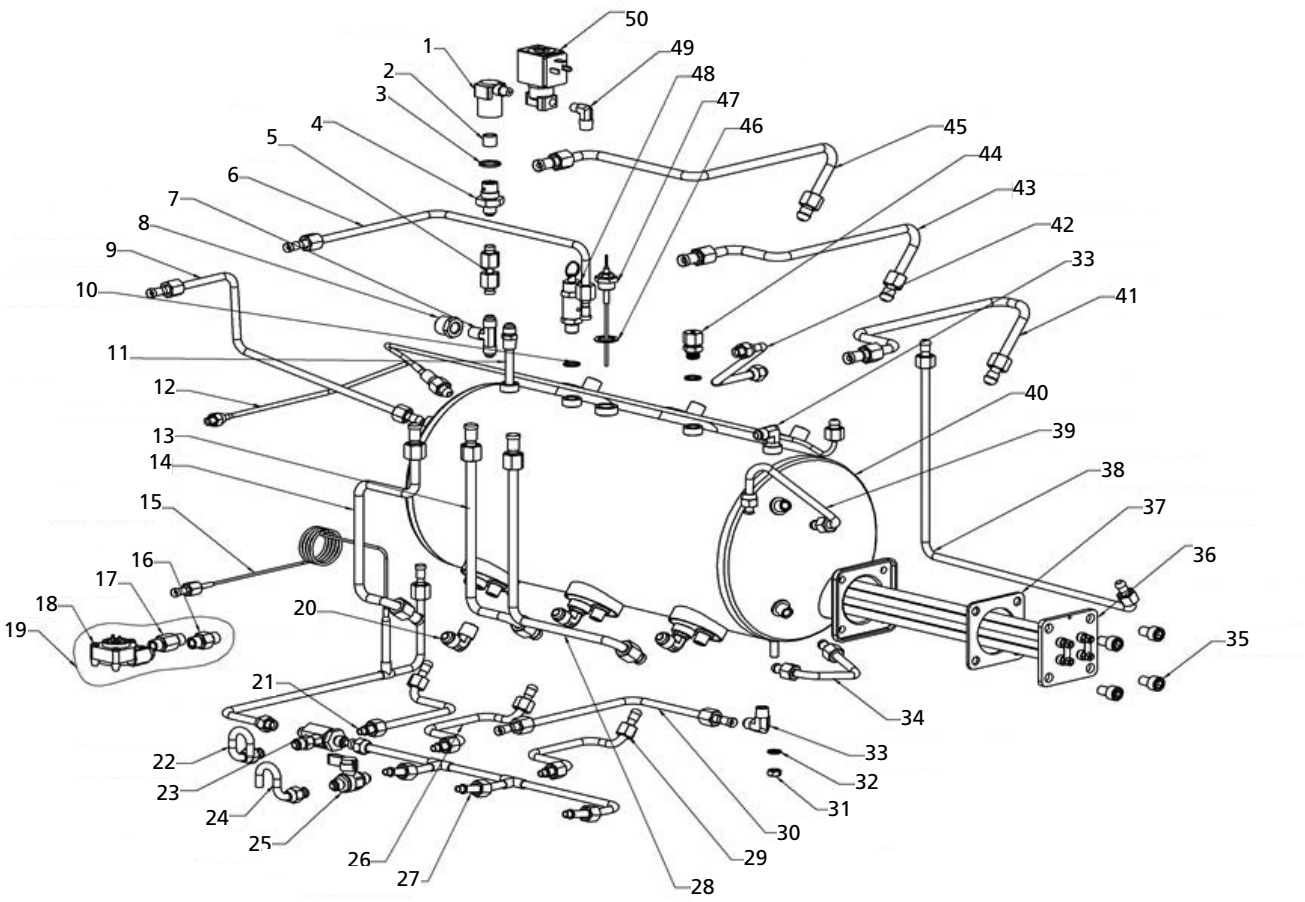
Boiler Hydraulic Circuit CS2

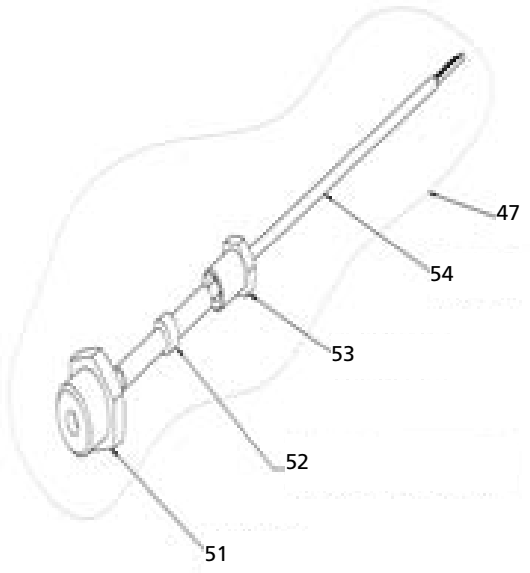


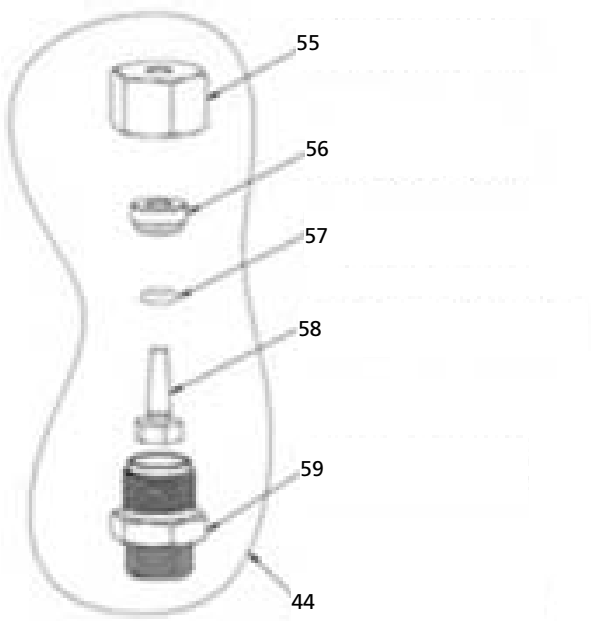
Item	Part #	Description	Item	Part #	Description
1	01321L	VALVE GASKET BRASS	28		WATER LEVEL LOWER TUBE
2	01319L	ANTI-EDDY VALVE V.A.R.	29	01318L	SI-GASKET ELEMENT
3	01322L	VALVE GASKET BRASS	30	01315L	HEATING ELEMENT 4000W (CE)
4		HEAT EXCHANGER OUTLET TUBE LEFT	31	410-00495	HEX SCREW (M10*16)
5		HOT WATER CONDUCT TUBE IN BOILER	32		AUT.WATER REFILL TUBE REAR
6		STEAM OUTLET TUBE FRONT RIGHT	33		WATER LEVEL UPPER TUBE
7		HOT WATER OUTLET TUBE REAR	34		PRESSURE GAUGE COPPER TUBE
8		STEAM OUTLET TUBE FRONT LEFT	35		BRASS CONNCTR PT1/4*1/2-20UNF*1/2-
9		BOILER	36		BRASS CONNECTOR 1/4"X1/8"
10		AUT.WATER REFILL TUBE	37	01324L	SOL. VALVE WATER REFILL ASSY 208~240V 60Hz
11		HEAT EXCHANGER RETURN TUBE LEFT	38		BRASS CONNECTOR
12		HEAT EXCHANGER RETURN TUBE RIGHT	39		SPHERICAL BRONZE CONICAL FILTER
13		ELBOW BRASS PT3/8*3/8	40	01323L	NBR O RING
14		BRASS FITTING PS/1/4*PS1/4*L33.5	41		HEAT EXCHANGER OUTLET TUBE RIGHT
15		BRASS FITTING PS/1/4*PS1/4*L42	42	01371L	SAFETY VALVE
16	01325L	FLOWMETER DOSER	43	01320L	LEVEL PROBE ASSEMBLY
17		FLOW METER GAUGE	44	410-00496	BRASS NUT
18		EXPANSION DRAIN TUBE	45	410-00497	TEFLON WASHER
19	410-00492	S.C.N.R.DOSER VALVE 1/2*1/2*1/2	46	410-00498	SI O-RING
20		FLOWMETER INLET TUBE	47	410-00499	SHAFT
21		HEAT EXCHANGER INLET TUBE	48	410-00500	ANTI-EDDY VALVE BASE
22		BOILER DRAIN TUBE FRONT	49	410-00504	PROBE (SUS304 /3mm L132)
23	410-00493	PRESSURE RELEASE TAP BULK UNIT PS1/4xPS1/4	50		PROBE FIXED BOLT
24		BOILER DRAINTUBE REAR	51	410-00502	PROBE FIXED SUPPORT
25		ELBOW BRASS 5/16*1/4	52		LEVEL PROBE BASE
26		NUT M8	53		BRASS CONNECTOR 1/2-20UNF*PT1/4
27		SPRING WASHER M8			

Parts Diagram (continued)

Boiler Hydraulic Circuit CS3







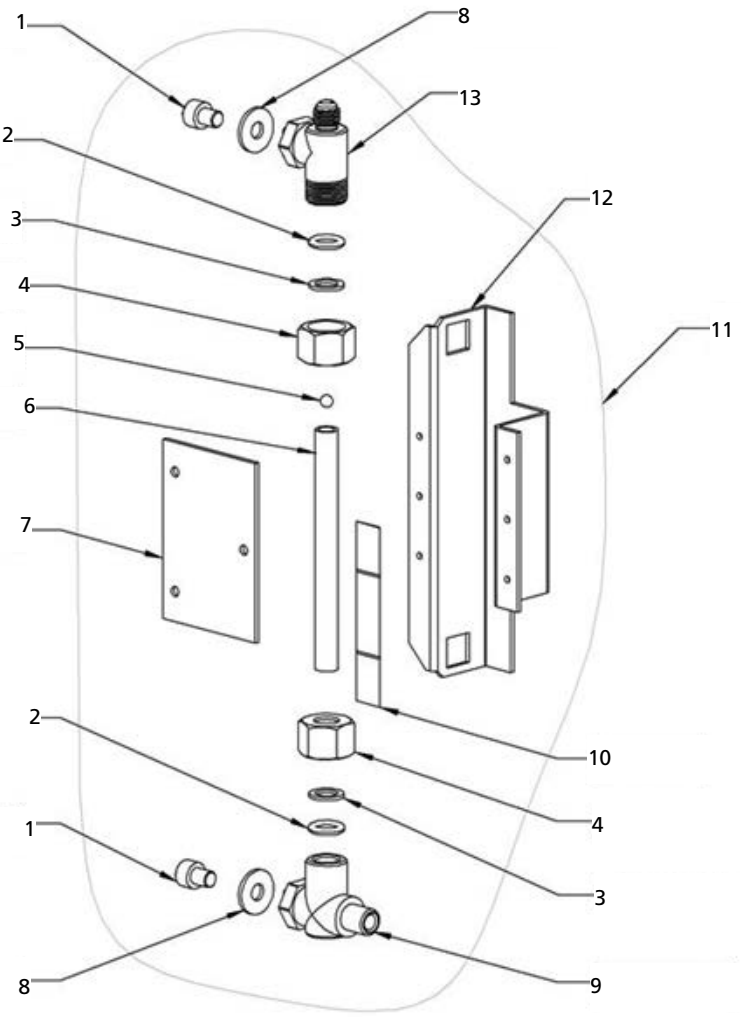
Parts Diagram (continued)

Boiler Hydraulic Circuit CS3

Item	Part #	Description	Item	Part #	Description
2		GROUP FILTER ST.STEEL D13.8*d10.5*11.5	32		SPRING WASHER M8
3	01323L	NBR O RING	33		ELBOW BRASS 5/16*1/4
4		AUT. WATER REFILL REDUCTION	34		WATER LEVEL LOWER TUBE
6		HOT WATER OUTLET TUBE REAR	35	410-00495	HEX SCREW (M10*16)
7		SHAFT	36	01317L	HEATING ELEMENT 6000W (CE)
8		BRASS CONNECTOR	37	01318L	SI-GASKET ELEMENT
9		STEAM OUTLET TUBE FRONT LEFT	38		AUT.WATER REFILL TUBE REAR
10	01322L	VALVE GASKET BRASS	39		WATER LEVEL UPPER TUBE
11		HOT WATER CONDUCT TUBE IN BOILER	40		BOILER
12		STEAM PRESSURE GAUGE TUBE	41		HEAT EXCHANGER OUTLET TUBE RIGHT
13		HEAT EXCHANGER RETURN TUBE MIDDLE	43		HEAT EXCHANGER OUTLET TUBE MIDDLE
14		HEAT EXCHANGER RETURN TUBE RIGHT	44	01319L	ANTI-EDDY VALVE V.A.R.
15		AUT.WATER REFILL TUBE MIDDLE	45		HEAT EXCHANGER OUTLET TUBE LEFT
16		BRASS FITTING PS/1/4*PS1/4*L33.5	46	01321L	VALVE GASKET BRASS
17		BRASS FITTING PS/1/4*PS1/4*L42	47	01320L	LEVEL PROBE ASSEMBLY
18	01325L	FLOWMETER DOSER	48	01371L	SAFETY VALVE
19		FLOW METER GAUGE	49		BRASS CONNECTOR 1/4"X1/8"
20		ELBOW BRASS PT3/8*3/8	50	01324L	SOL. VALVE WATER REFILL ASSY 208~240V 60Hz
21		HEAT EXCHANGER INLET TUBE LEFT	51		LEVEL PROBE BASE
22		EXPANSION DRAIN TUBE	52	410-00502	PROBE FIXED SUPPORT
23	410-00492	S.C.N.R.DOSER VALVE 1/2*1/2*1/2	53		PROBE FIXED BOLT
24		BOILER DRAIN TUBE FRONT	54	410-00504	PROBE (SUS304 /3mm L132)
25	410-00493	PRESSURE RELEASE TAP BULK UNIT PS1/4xPS1/4	55	410-00496	BRASS NUT
26		HEAT EXCHANGER INLET TUBE MIDDLE	56	410-00497	TEFLON WASHER
27		FLOWMETER INLET TUBE	57	410-00498	SI O-RING
28		HEAT EXCHANGER RETURN TUBE LEFT	58	410-00499	BRASS CONNECTOR PT1/4*1/2-20UNF*1/2-20UNF
29		HEAT EXCHANGER INLET TUBE RIGHT	59	410-00500	ANTI-EDDY VALVE BASE
30		BOILER DRAINTUBE REAR			WATER REFILL SET
31		NUT M8			STEAM OUTLET TUBE FRONT RIGHT

Parts Diagram (continued)

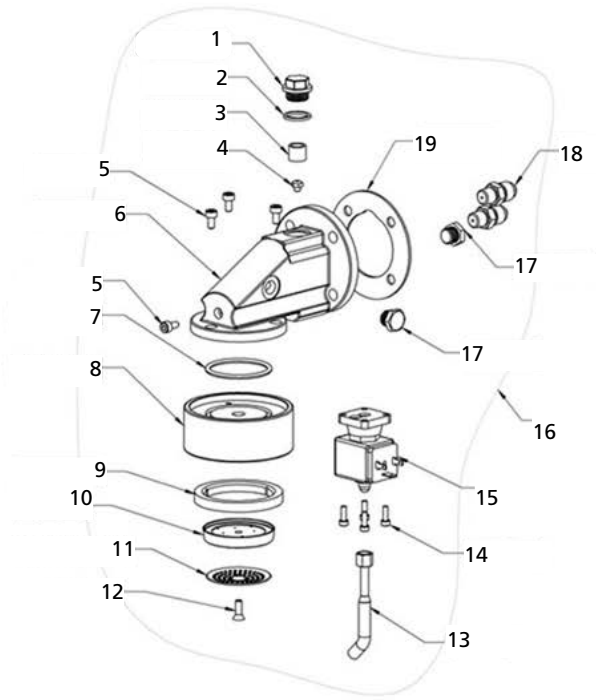
Water Level Assembly



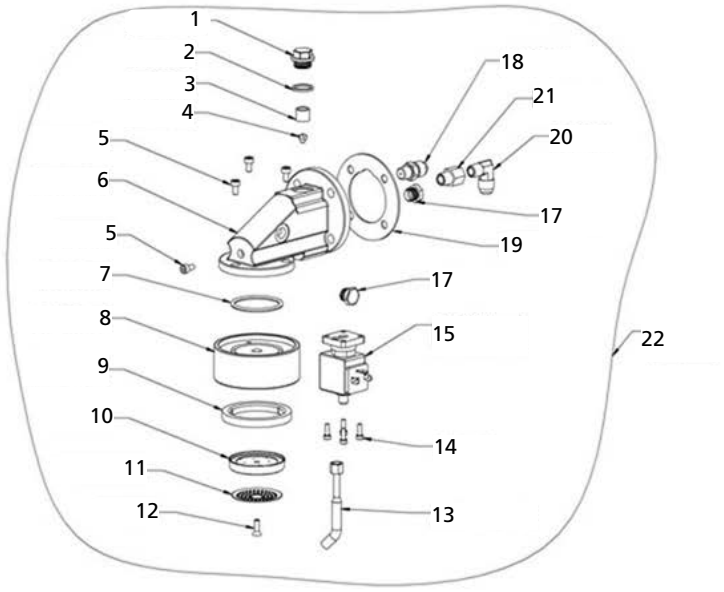
Item	Part #	Description
1	01375L	HEX SCREW (M8*10)
2	01305L	SIGHT GLASS RUBBER GASKET 10.69*ψ 3.5
3	01306L	COPPER SEAL
4	01372L	BRASS NUT
5	01373L	LEVEL-INDICATING BALL
6	01307L	SIGHT GLASS
7		PC PANNEL
8	01374L	WASHER (M8*3t)
9	01376L	LAVEL CONNECTOR (LOWER)
11		WATER LEVEL ASSEMBLY
12		SIGHT GLASS REAR COVER
13	01370L	LEVEL CONNECTOR (UPPER)
		LEVEL LABEL

Parts Diagram (continued)

Distribution Group Assembly



CS1-110, CS1-220

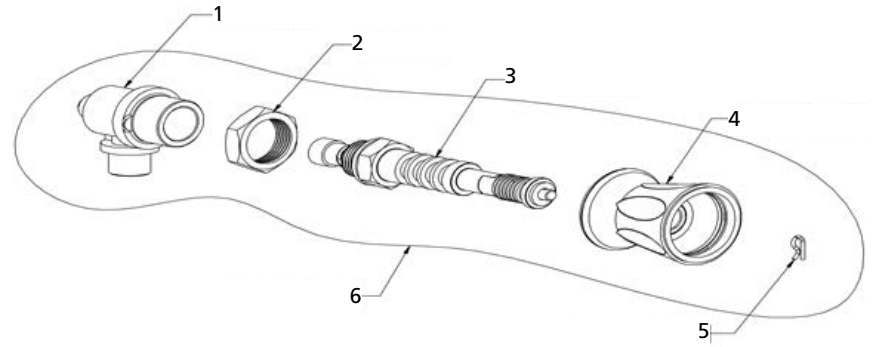


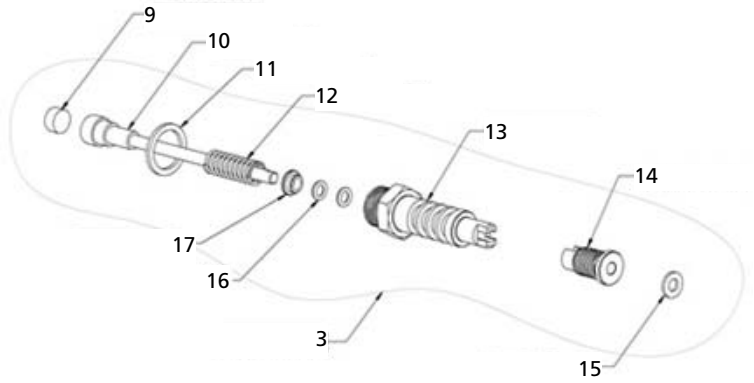
CS2-220, CS3-220

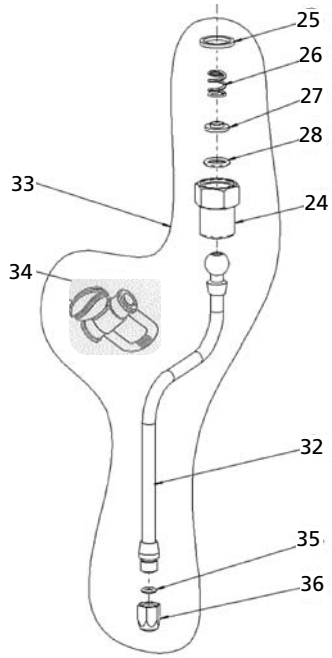
Item	Part #	Description	Item	Part #	Description
1		DISTRIBUTION GROUP CAP	14	410-00506	HEX SCREW M4*12
2		TEFLON GASKET D22*d18*2.0	15	01381L	GROUP JET D0.8
3	01382L	GROUP FILTER ST.STEEL D13.8*d10.5*11.5	15	01301L	PAEKER GROUP SOLENOID VALVE COIL 208~240V
5		STAINLESS STEEL SCREW M5*10	15	410-00507	PAEKER GROUP SOLENOID VALVE COIL 110V
6		DISTRIBUTION GROUP BODY	16	410-00508	DISTRIBUTION GROUP ASSEMBLY
7	01304A	SI_O-RING d47*3.5t	17		BRASS PLUG
8		CHROMED CLAMPING RING	18		WATER INLET CONNECTOR
9	01300L	FILTER GROUP GASKET	19	410-00510	GROUP WASHER
10	410-00501	GROUP PLATE	20		PT1/4x5/8-18UNF L_FITTING
11	410-00503	GROUP SHOWER SCREEN	21		WATER RECYCLE CONNECTOR
12	01302L	STAINLESS STEEL FLATHEAD SCREW M5*15	22	410-00509	DISTRIBUTION GROUP ASSEMBLY
13	410-00505	PRESSURE RELEASE DRAIN TUBE			

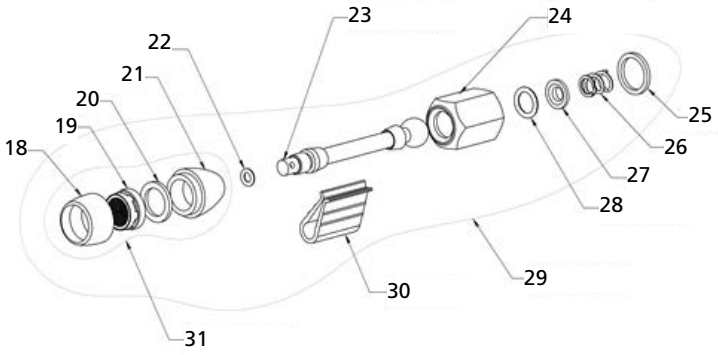
Parts Diagram (continued)

Water and Steam Assembly





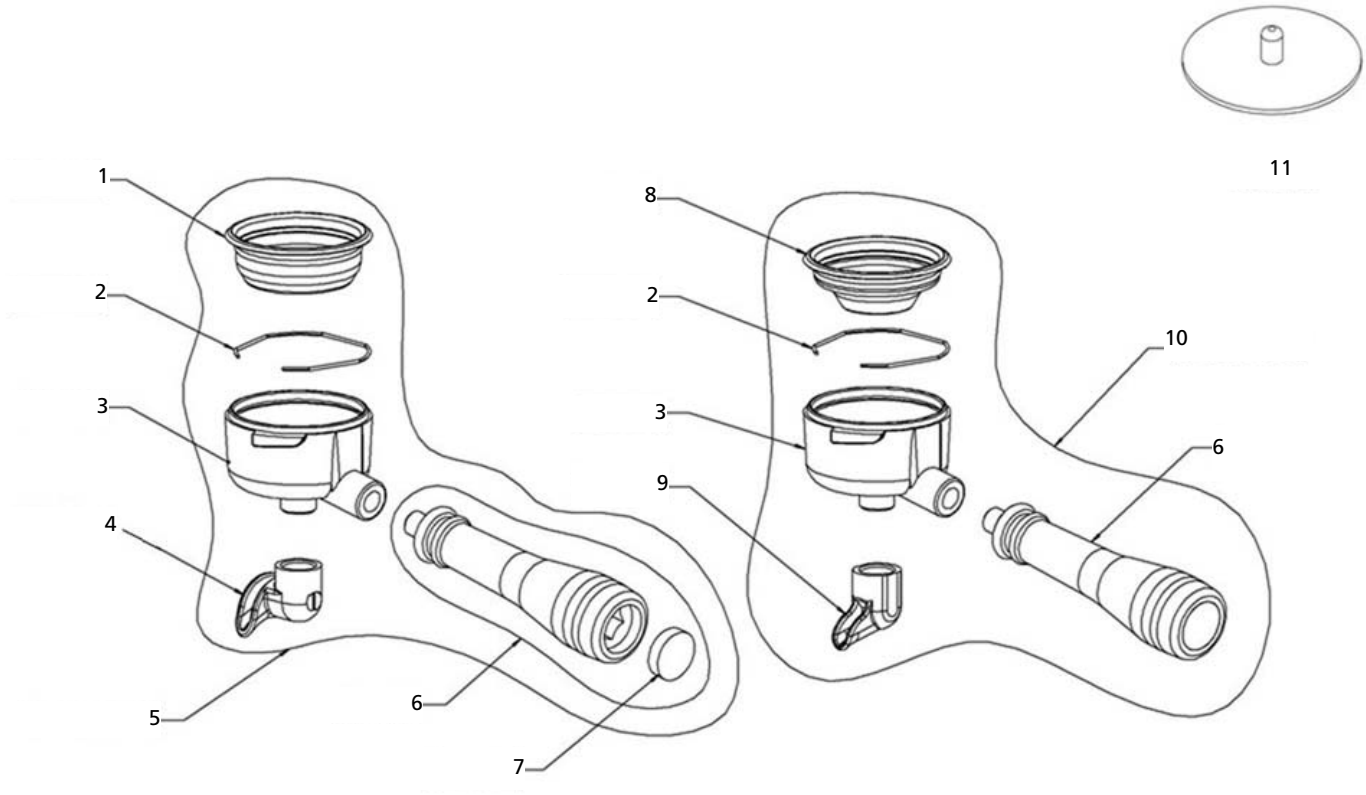




Item	Part #	Description	Item	Part #	Description
1	410-00511	TAP BODY	19		EXTERNAL SPRAYER
2		BRASS NUT	20		SILICON GASKET
3	410-00512	WATER/STEAM TAP UNIT	21		HOT WATER SPRINKLE-NOZZLE (UPPER)
4	01336L	AS KNOB	23		HOT WATER TUBE KIT
5	01311L	R STEEL CIRCLIP	24		NUT PIPE STEAM FOR SPRING
6	01337L	WATER STEAM TAP ASSEMBLY	25	01312L	PIPE GASKET TEFLON
7	01333L	STEAM KNOB CAP	26		STEAM TAP SPRING
8	01332L	HOT WATER KNOB CAP	27	01379L	STEAM TAP WASHER
9	01308L	SI-GASKET	28	01313L	O-RING
10		STEAM HOT WATER A VALVE SHAFT	29	410-00513	KIT HOT WATER TUBE
11	01310L	COPPER SEAL	31		EXTERNAL SPRAYER
12		STEAM TAP SPRING	32	410-00514	STEAM TUBE
13		TAP CONNECTOR	33	410-00515	STEAM TUBE KIT
14	01335L	CHROMED TAP SHAFT	34	410-00516	ANTISCORCHING CLIP
15		WASHER (SUS 304)	35		O-RING
17		TIGHTING GASKET	36		STEAM SPRAYER
18		HOT WATER SPRINKLE-NOZZLE (UNDER)			

Parts Diagram (continued)

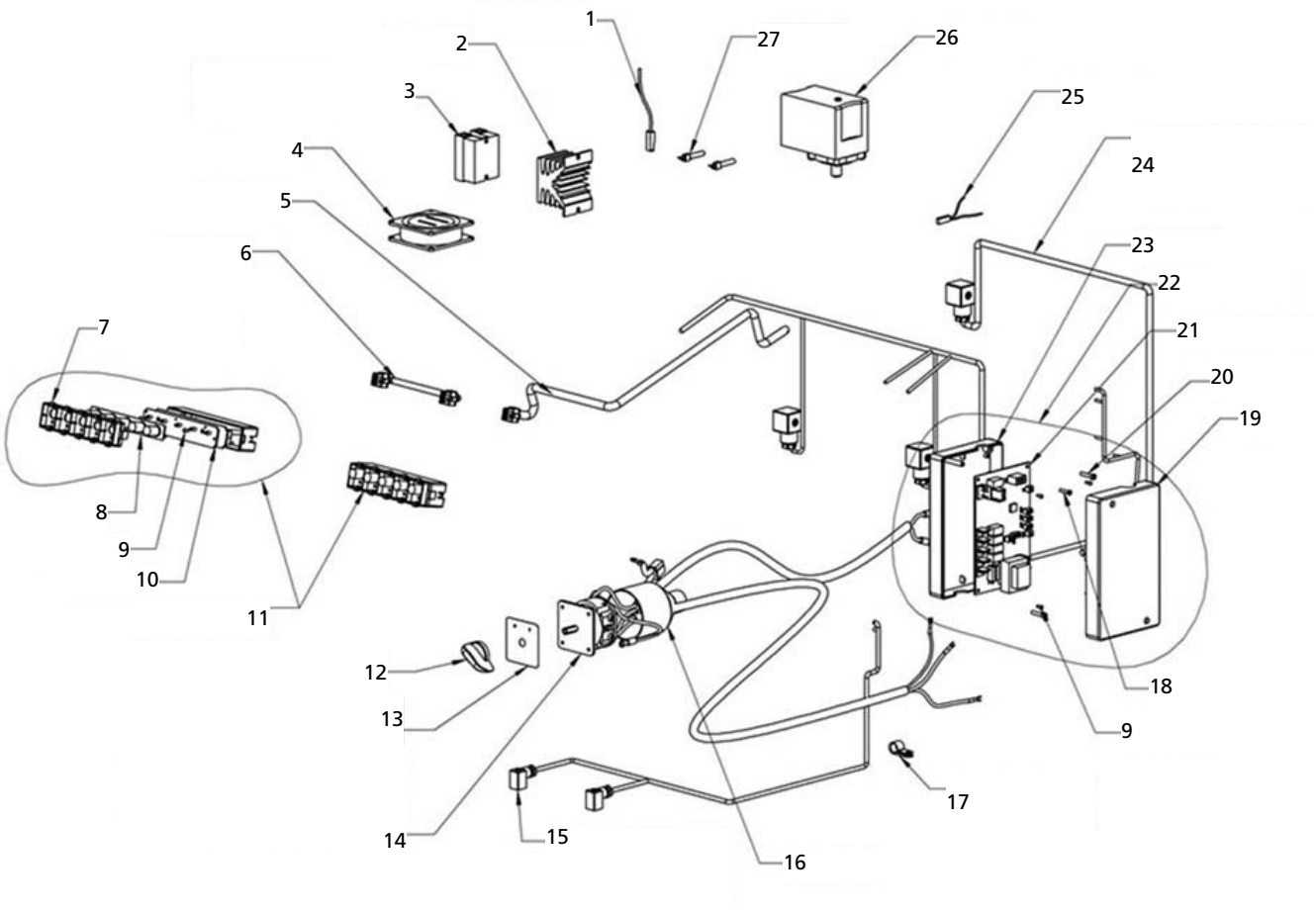
Portafilter Assembly



Item	Part #	Description
1	01356	2 CUP STAINLESS STEEL FILTER
2	01352	FILTER CLAMP SPRING D1.4
3	01350	FILTER SUPPORT
4	01358	2 CUP BRASS SPOUT
5	01355	2 CUP PORTA FILTER ASSEMBLY
6	01346	FILTER HOLDER KNOB CAP
7	01354	FILTER HOLDER BACK LID
8	01348	1 CUP STAINLESS STEEL FILTER
9	01351	1 CUP BRASS SPOUT
10	01347	1 CUP PORTA FILTER ASSEMBLY
11	01346	SILICA GEL WASHER

Parts Diagram (continued)

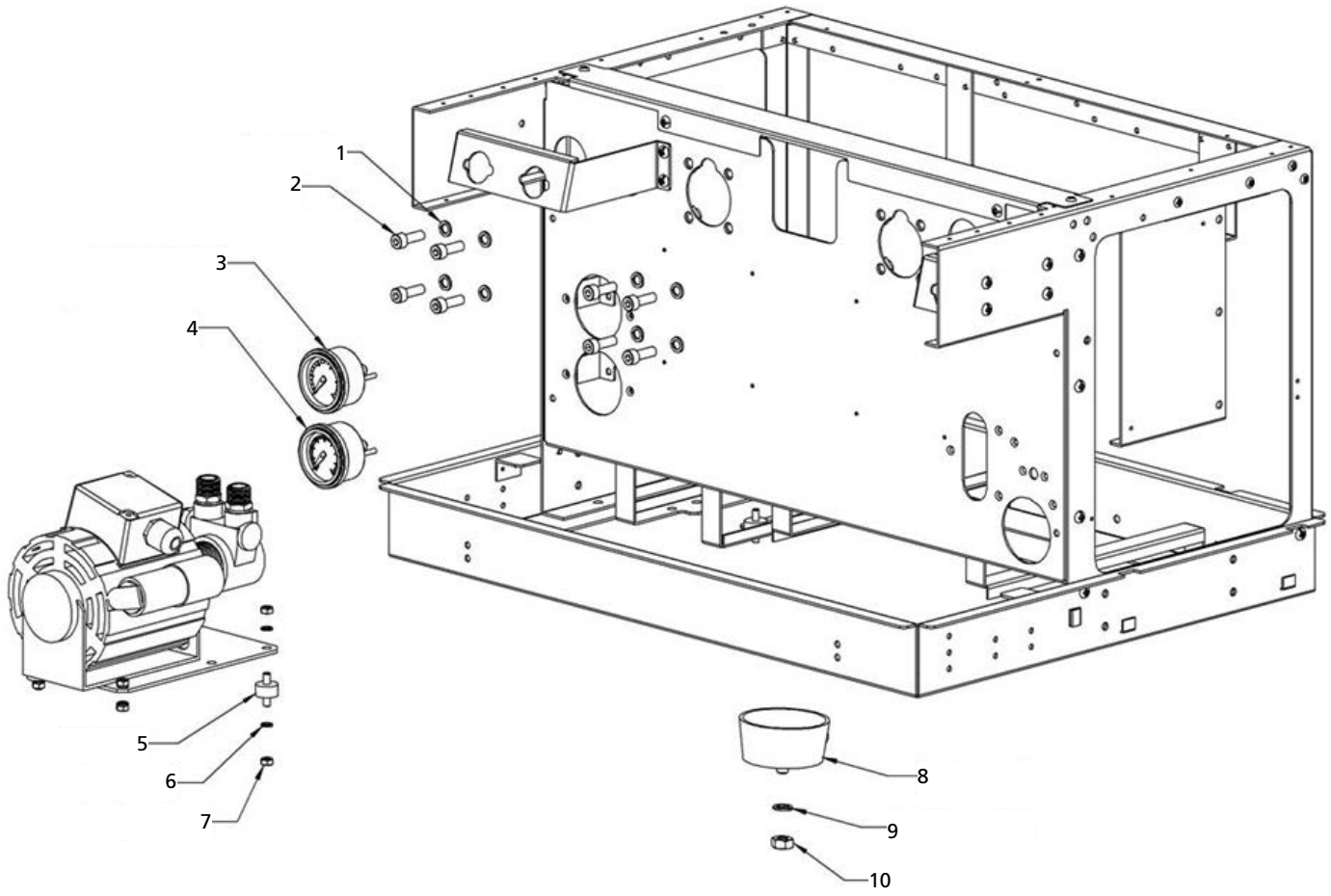
Electrical System Assembly



Item	Part #	Description	Item	Part #	Description
1		LEVEL PROBE CABLE	15		FLOWMETER GAUGE CABLE FOR CS2
2		RADIATOR (ETL)	15		FLOWMETER GAUGE CABLE FOR CS3
3	410-00517	SOLID STATE RELAY 25A GN84131011 /CS1	15		FLOWMETER GAUGE CABLE FOR CS1
3	410-00518	SOLID STATE RELAY 50A GN84137021 /CS2 CS3	16		MAIN SWITCH COVER
3	410-00519	SOLID STATE RELAY 25A GN84131011 /N1 110V	17		BAND/CS3
4	410-00520	FAN FOR SSR (ETL)	17		BAND/CS1 CS2
5		SERIES CABLE PCB<->PANEL	18		SCREW ST3.5*19
6		SERIES CABLE PANEL<->PANEL	19		CONTROL BOX WITHOUT IC BOARD (UP COVER)
7		OPERATE BOX	20		SCREW M4*20
8		KEY BOARD FOR COFFEE	21	410-00526	CONTROL PC-MAINBOARD
9		SCREW 3*8	21	410-00527	110V CONTROL PC-MAINBOARD
10		CONTROL PC-MAINBOARD	22	410-00528	CONTROL BOX WITH IC BOARD
11	410-00521	TIMER / TOUCH PAD(CONTROL PC-MAINBOARD)	23		CONTROL BOX WITHOUT IC BOARD (LOWER COVER)
12		MAIN SWITCH HAND GRIP (CE/AU)	24		CABLE UNIT / CS1
13		MAIN SWITCH HAND GRIP LABEL PLATE 0-1 (ETL)	24		CABLE UNIT / CS3
13		MAIN SWITCH HAND GRIP LABEL PLATE 0-1-2 (CE)	24		CABLE UNIT / CS2
14	410-00522	MAIN SWITCH ASSEMBLY /N1 N2(ETL)(32A)	25	01338L	TEMP. PROTECTION FUSE (ETL)
14	410-00523	MAIN SWITCH ASSEMBLY /N3 (ETL)(63A)	26	01326L	SI_501 CE PRESSURE SWITCH 220V AC 7KW 30A
	410-00524	MAIN SWITCH ASSEMBLY FOR CS3	27	410-00529	SELECT SWITCH
	410-00525	MAIN SWITCH ASSEMBLY FOR CS1 CS2			

Parts Diagram (continued)

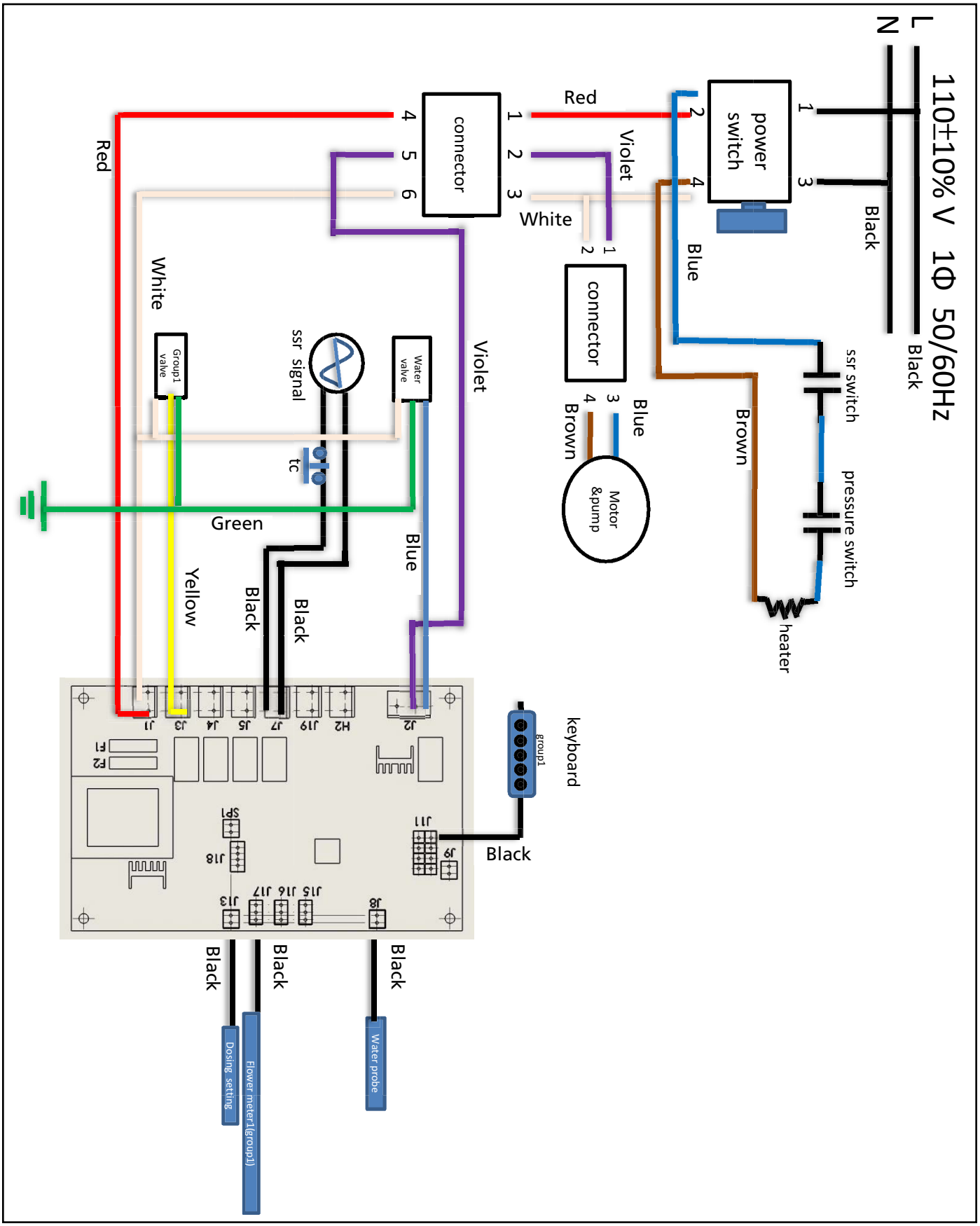
Other Components



Item	Part #	Description
1		SPRING WASHER M8
2		SCREW M8*25
3	410-00530	PRESSURE GAUGE 0 20 BAR
4	410-00531	PRESSURE GAUGE 0 ~ 6 BAR
5		ANTI FOOT VIBRATION
6		SPRING WASHER M6
7		NUT M6
8	410-00532	DRAIN BASIN
9	410-00533	SPRING WASHER M10
10	410-00534	NUT M10

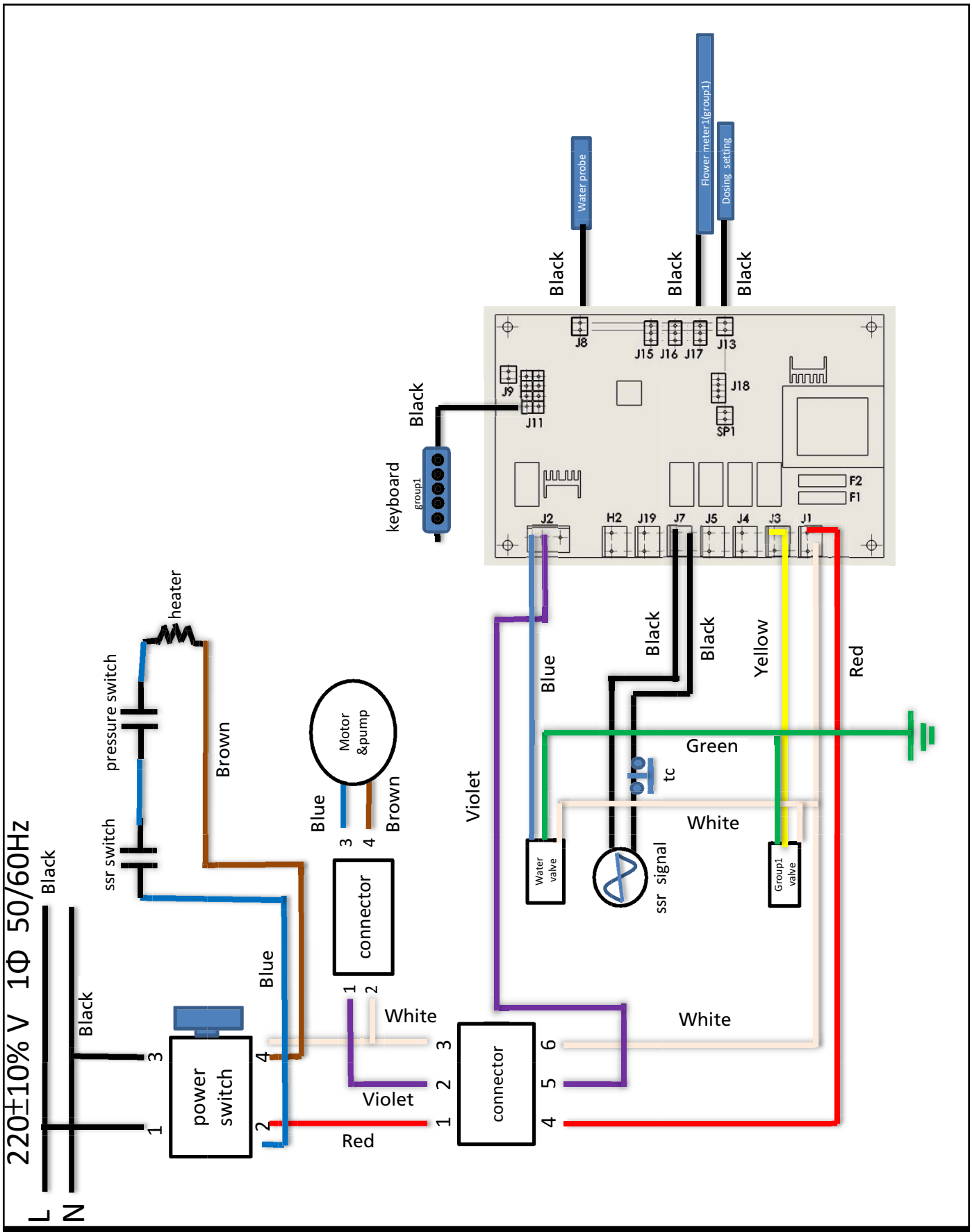
Wiring Diagram

CS1-110



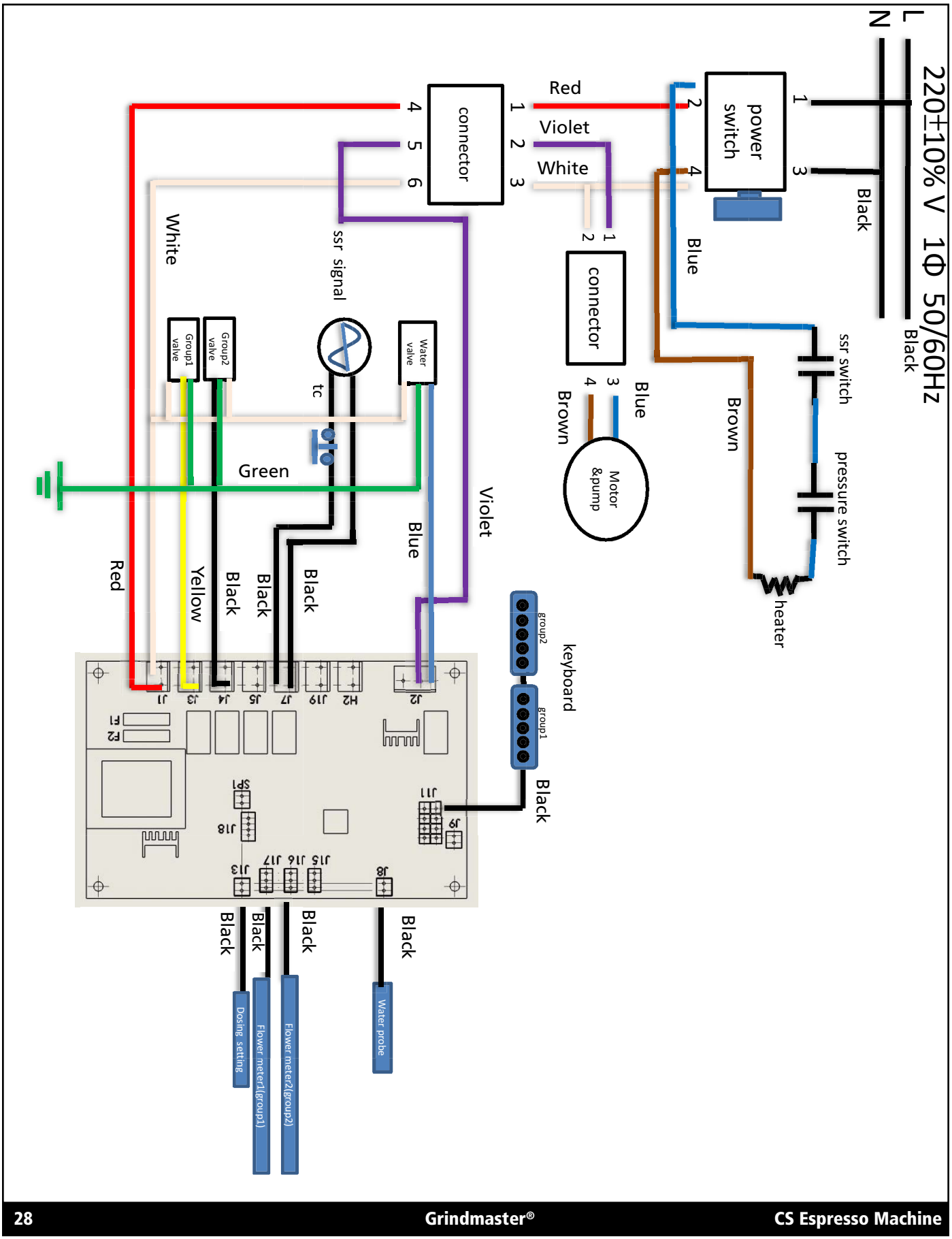
Wiring Diagram (continued)

CS1-220



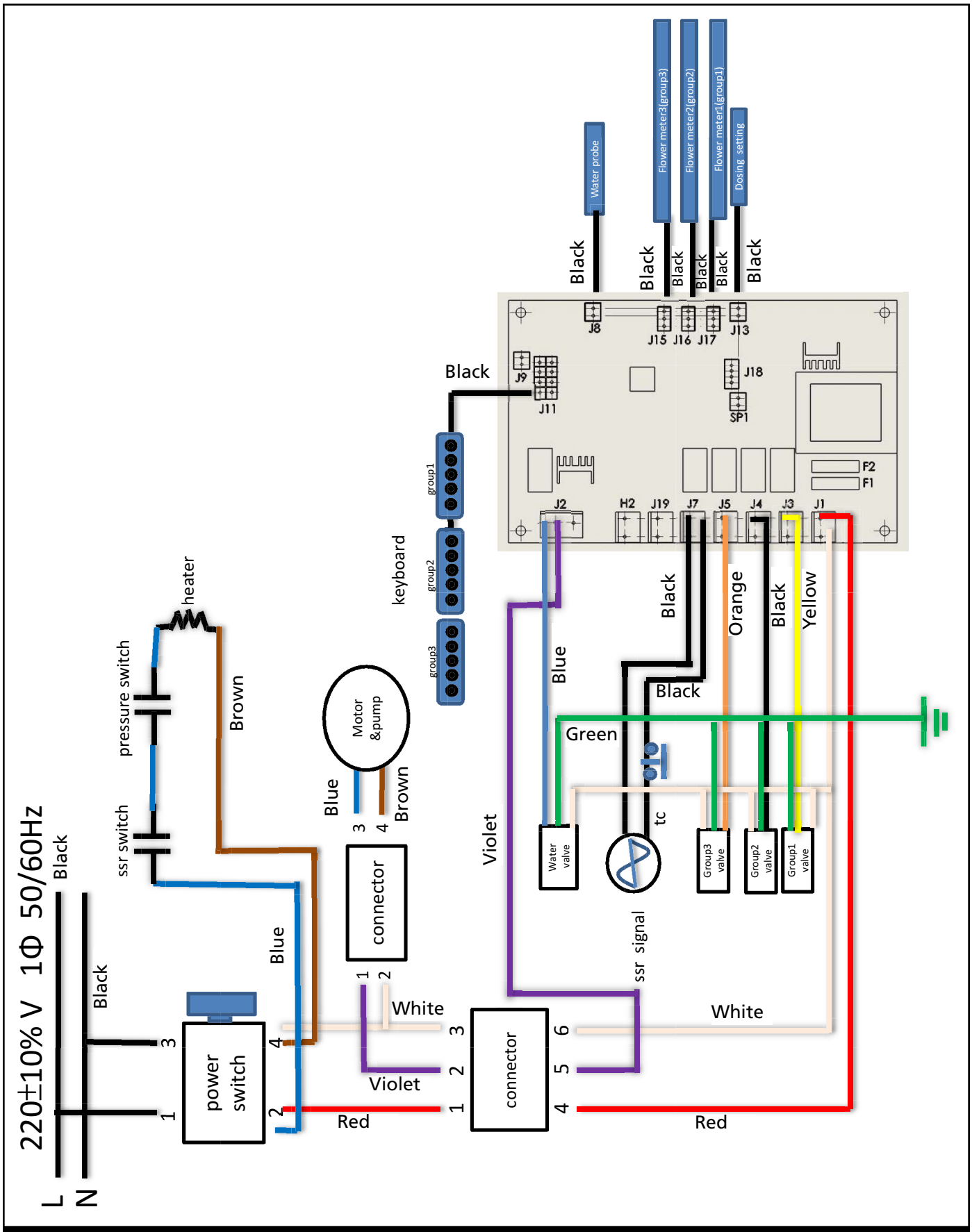
Wiring Diagram (continued)

CS2-220



Wiring Diagram (continued)

CS3-220



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Part # 390-00119