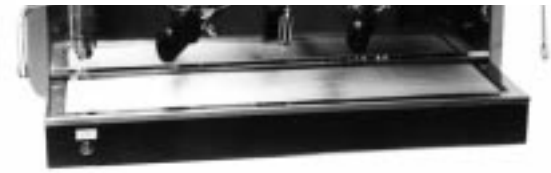
BUNN Espress®

ESPRESSO/CAPPUCCINO COFFEE BREWERS

DISCONTINUED VERSION

The information in this manual is no longer current.



P-244/P-245

ES•2A™ / ES•2SA™

OPERATING & SERVICE MANUAL

BUNN-O-MATIC CORPORATION

POST OFFICE BOX 3227
SPRINGFIELD, ILLINOIS 62708-3227
PHONE: (217) 529-6601 FAX: (217) 529-6644

22700.0000A 11/93

Bunn-O-Matic Corp. ("Bunn") warrants the equipment manufactured by it to be commercially free from defects in material and workmanship existing at the time of manufacture and appearing within one year from the date of installation. This warranty does not apply to any equipment, component or part that was not manufactured by Bunn or that, in Bunn's judgement, has been affected by misuse, neglect, alteration, improper installation or operation, improper maintenance or repair, damage or casualty.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY OTHER WARRANTY, WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF EITHER MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The agents, dealers or employees of Bunn are not authorized to make modifications to this warranty or to make additional warranties that are binding on Bunn. Accordingly, statements by such individuals, whether oral or written, do not constitute warranties and should not be relied upon.

The Buyer shall give Bunn prompt notice of any claim to be made under this warranty by telephone at (217) 529-6601 or by writing to Post Office Box 3227, Springfield, Illinois, 62708-3227. If requested by Bunn, the Buyer shall ship the defective equipment prepaid to an authorized Bunn service location. If Bunn determines, in its sole discretion, that the equipment does not conform to the warranty, Bunn shall repair the equipment with no charge for parts during the one year warranty period and no charge for labor for the first 90 days of the warranty period. If Bunn determines that repair is not feasible, Bunn shall, at its sole option, replace the equipment or refund the purchase price for the equipment.

THE BUYER'S REMEDY AGAINST BUNN FOR THE BREACH OF ANY OBLIGATION ARISING OUT OF THE SALE OF THIS EQUIPMENT, WHETHER DERIVED FROM WARRANTY OR OTHERWISE, SHALL BE LIMITED, AS SPECIFIED HEREIN, TO REPAIR OR, AT BUNN'S SOLE OPTION, REPLACEMENT OR REFUND. Bunn shall not be liable for any other damage or loss, including, but not limited to, lost profits, lost sales, loss of use of equipment, claims of Buyer's customers, cost of capital, cost of down time, cost of substitute equipment, facilities or services, or any other special, incidental or consequential damages.

The notices on this brewer should be kept in good condition. Replace unreadable or damaged labels.

NOTICE

160 psig max operating pressure

24247.0000

This equipment is to be installed to comply with the Basic Plumbing Code of the Building Officials and Code Administrators International, Inc. (BOCA) and the Food Service Sanitation Manual of the Food and Drug Administration (FDA).

00656.0000

⚠ CAUTION

HOT
Liquid-Steam-Surfaces

24246.0000

NOTICE

This "*Manual Fill Valve*" is to be used during installation ONLY! Watch the sight gage during use and do not fill past normal line!

24245.0000

⚠WARNING

- Fill water tank before turning -on thermostat or connecting appliance to power source.
- Use only on a properly protected circuit capable of the rated load.
- Electrically ground the chassis.
- Follow national/local electrical codes.
- Do not use near combustibles.

FAILURE TO COMPLY RISKS EQUIPMENT DAMAGE, FIRE, OR SHOCK HAZARD

READ THE ENTIRE OPERATING MANUAL BEFORE BUYING OR USING THIS PRODUCT

THIS APPLIANCE IS HEATED WHENEVER CONNECTED TO A POWER SOURCE

00831.0000

HOT WATER RINSE DISPENSING TUBE AND STEAM DISPENSING TUBE

The ES•2A™ ES•2SA™are equipped with a hot water rinse dispensing tube and two steam dispensing tubes. The Hot Water rinse dispensing tube is controlled by a knob centrally located on the front of the brewer. The Steam dispensing tubes are controlled by knobs located on the left and right side of the brewer, right knob controls the right side steam tube and the left knob controls the left side steam tube. They can be placed in a continuous flow position by turning the knobs approximately half way around. All three outlet tubes possess a rotary ball and socket type fitting for manual positioning.

WATER FEED TAP

This tap is of the automatically closing type. To introduce water into the tank, turn the control to the left or right, indistinctly and hold it in position. When you release the control, it will automatically close.

LEVEL

Water level should never rise above the maximum level zone (+) and never descend below the minimum level zone (-), as this may result in the heating element to melt. The optimum water level zone is indicated with (N). In the models with electronic water level control for the tank, The optimum water level (N) is maintained automatically.

Tank

The tank is made of copper plate, 1.5 mm thick and its components are made of cast or drop forged brass. The tank cover is fixed to the tank by bolts with exterior nuts to facilitate its removal. The operating pressure of the tank when in use should fluctuate between 0.9 and 1.2 bar as indicated on the tank pressure gauge with no air inside the tank. Whenever the machine is pressurized, the pressure indicated on the gauge should be checked to make sure it is the correct pressure. A pressure drop of 0.1 to 0.2 bar is considered normal. If there is an abnormal amount of air in the tank, a very quick pressure drop will be observed on the pressure gauge when one of the steam knobs are turned and steam is released. After a few moments, the real tank pressure can be read on the gauge.

The difference of 0.9 to 1.2 bar, i.e. 0.3 bar, allows the effective exchange required to maintain the optimum temperature in the units.

However, it is necessary that the installer, when installing the machine, decide at the installation site itself through the performance of the corresponding tests, the adequate thermal point or correct pressure, keeping in mind the working conditions of the machine, the hourly production rate required and the room temperature.

PUMP SET

The pump set is made up of a vane type, volumetric pump driven by a 0.25 HP single-phase motor, supplied at 220 v-60 Hz.

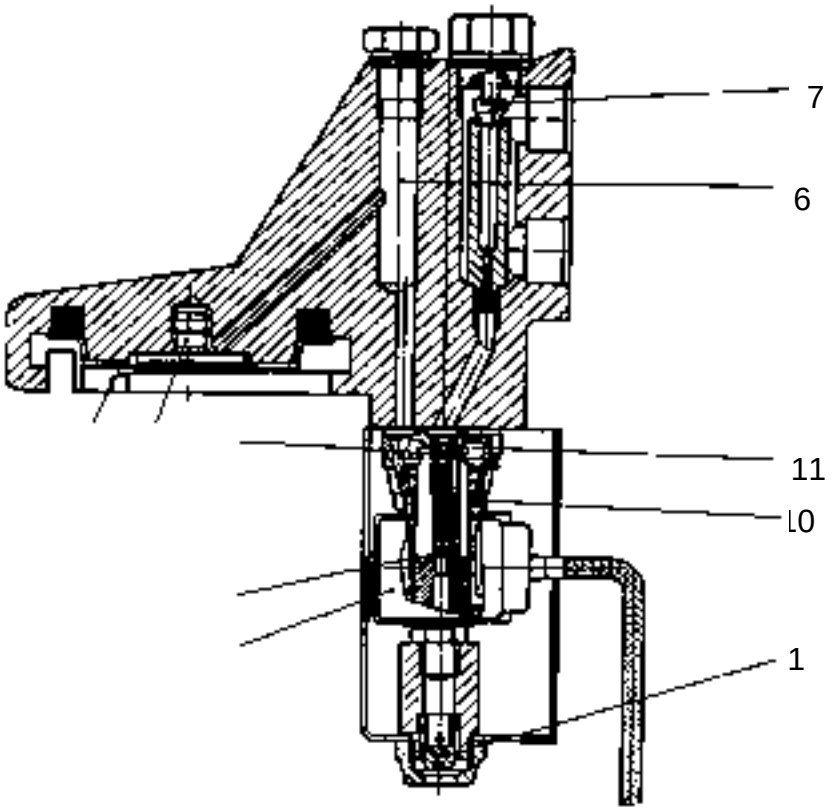
If the water pressure exceeds 7-8 bar, a pressure reducer should be placed between the water line and the pump set to reduce the output pressure of the water line to between 3-4 bar, which will be the pump set water feed input pressure.

The output pressure of the pump of the pump set should be between 8-9 bar as a maximum. To check this pressure, fill the cup of the coffee filter holder with pressed coffee and place it in any one of the infusion units, press the continuous flow button and read the pressure on the feed line pressure gauge. If the gauge does not show the previously mentioned values, the pump set's delivery pressure should be adjusted. This is done by loosening the screw to reduce pressure. Adjust said screw until the desired pressure is obtained. The adjustment screw should only be turned very slowly.

NOTE: Pump motor needs to be 1/4 -1/5hp, 1725 rpm, 230 volts, carbonator style, U.L. recognized

IMPORTANT: None of the high pressure pumps found on the market can operate without water for a period of more than approximately ONE MINUTE, After one minute of dry operation the pump will seize and become unserviceable.

Should water be shut off disconnect pump from power supply immediately.



Group head (Espresso extraction chamber)

The group head-espresso extraction chamber is where the coffee infusion takes place. After extraction, an electric pressure valve automatically discharges the accumulated pressure. When the coil (12) of the electro-valve receives an electric current, causing the plunger (10) to move, thus closing the discharge valve (2) and opening the water intake valve (9) allowing the water to pass towards the shower (4) through the sprayer (3). This is when the brewing process (infusion) begins.

The bubbling effect is produced by an interchange between air, contained in a bubble formed in the chamber, and water which progressively increases it's pressure on that bubble. The mixture of air and water produced then falls on coffee previously dampened by the infusion process. When the liquid extraction process of the coffee is complete, excess pressure contained in the filter holder is then released through a discharge valve (2). The atomizer (1) directs the water being discharged to the opening to avoid it's splashing outward.

WATER TREATMENT

It is essential to treat water entering the brewer to prevent lime scale build up in the boiler tank and other plumbing. Recommended treatments are reverse osmosis or softening. Polyphosphate type treatment for scale reduction, which works well on conventional coffee brewers, is not effective for espresso equipment.

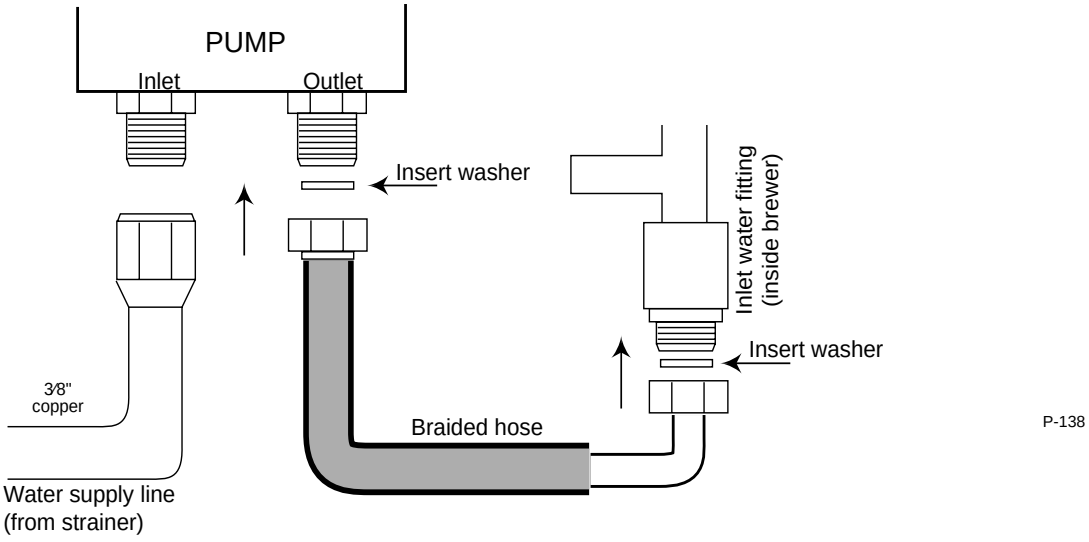
PLUMBING REQUIREMENTS

This brewer must be connected to a cold water system with an operating pressure between 20 and 90 psi. A shut-off valve should be installed before the pump. Install a pressure regulator in the line when the pressure is greater than 90 psi. to reduce the pressure to 50 psi. The water inlet fitting is a 3/8 flare.

This equipment is to be installed to comply with the Basic Plumbing code of the Building Officials and Code Administrators International, Inc. (BOCA) and the Food Service Sanitation Manual of the Food and Drug Administration (FDA).

PLUMBING HOOK-UP

1. Flush the water line and securely attach it to the 3/8" flare fitting on the inlet side of the pump.
2. Connect one end of the braided hose (supplied) to the outlet side of the pump and the other end to the water inlet fitting located under the drain tray of the brewer. This tray is removable. Do not overtighten the fittings. Rubber gaskets are provided to be inserted into each end of the braided hose.
3. Turn on the water supply and check for leaks.
4. Plumbing diagram is shown below.



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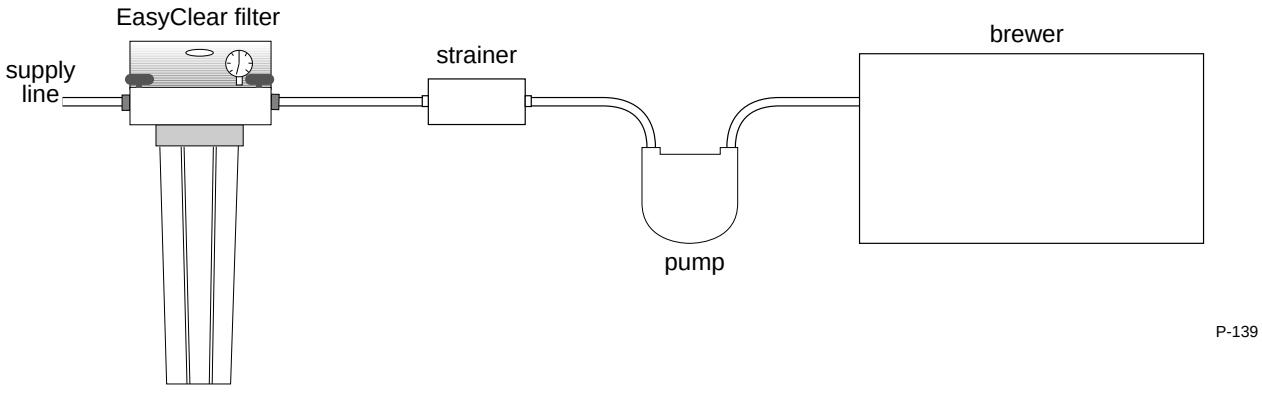

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Important: Both filter and strainer must be hooked up in system.

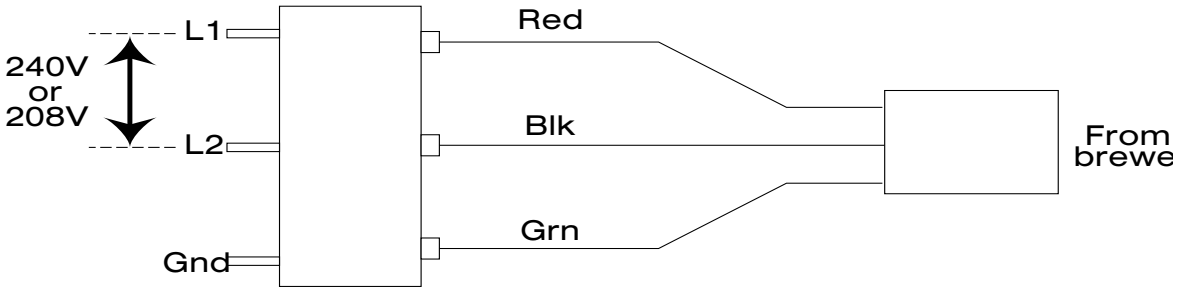
ELECTRICAL SPECIFICATIONS

This brewer requires a 2-wire grounded service rated 208 to 240 volts ac, 20 amp, single phase, 60 Hz.

ELECTRICAL HOOKUP

CAUTION: Improper installation will damage electronic components.

1. An electrician must provide electrical service as specified.
2. Using a voltmeter, check the voltage and color coding of each conductor at the electrical source.
3. The plug for the brewer is to be supplied by the installer.
4. Attach the plug to the brewer cordset as shown below:



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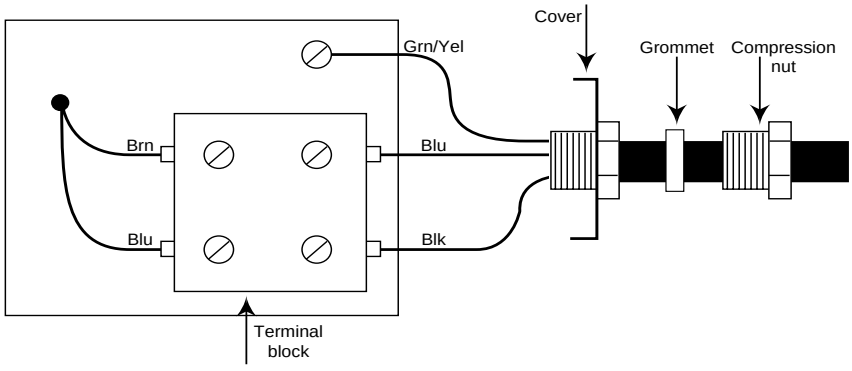
5. Attach wires from pump cordset to terminal block located on pump motor as shown below:



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NOTE: Wiring going into the terminal block must be tinned with solder to insure proper connection.

Warning: The brewer and pump must be electrically grounded. Do not assume that a plumbing line will provide an adequate ground.

START-UP

Retighten the tank cover bolts, nuts, flat section strips, tank heaters, and the individual tank section lids (at upper part of the tank). Fill the tank with water to the optimum water level zone (N) using the water feed tap. In the models with and electronic water level control fill the tank to the minimum water level zone (-).

Connect the electrical system.

Turn on the toggle switch located on the base (left side bottom). The indicator lamp on the front of the base (left side) will light up. When the toggle switch is turned on, in the model with an electronic water level control, the electronic water level operation pilot light will light up, start the pump set and open the water inlet valve (located inside the machine) introducing water into the tank until it reaches the optimum water level zone (N).

NOTE: During the initial fill of the tank, if manual fill is not used and automatic is filling the tank, the alarm condition will arise (during re-fill no water goes through the flowmeter). Refer to "DOSAGE PULSEMETER MALFUNCTION ALARM" in the TROUBLE SHOOTING section in this manual for further instruction.

When the water makes contact with the sensor probe, this will close the inlet valve, shut off the pump set, and disconnect the pilot light.

While waiting for the machine to reach working pressure (tank pressure gauge), check and adjust the pump set as on page 4.

When the tank and the pump pipes are filled, press the "continuous doses" push button on each set and the pumping unit will immediately start injecting water into the corresponding tank section and tube leading to the units until water begins to flow through them. This indicates that air has been bled from the hydraulic circuit and the push-buttons can be pressed again to shut off the pump.

Before the tank pressure reaches 1.2 bar, air must be bled from inside the tank as described on page 4.

When the tank pressure gauge indicates 1.2 bar, the electrical pressure switch will disconnect. If this does not occur at the mentioned pressure, adjust the pressure switch (page 29 figure 1), placed inside the machine on the right side, using the inside adjustment screw. Tightening the screws lowers the tripping pressure and vice-versa.

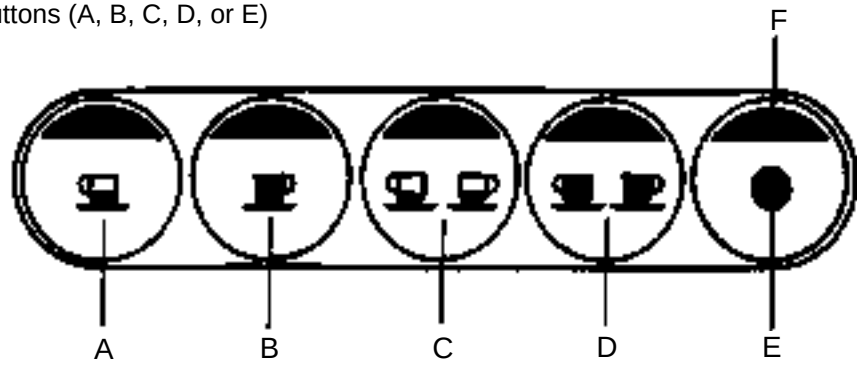
When the water in the individual tank sections and hydraulic circuit expands do to heating, the water pressure gauge reading will exceed 8-9 bar working pressure, and when the pressure reaches 11 bar the pressure release valve will open to release said pressure. If not, the inside nut (page 19 figure 13) must be adjusted so that it discharges the pressure at an indicated pressure of 11 bar.

Place a dose of ground coffee (approx. 6 grams) in the cup of the filter-holder and after lightly tamping the coffee, and wiping the rim free of any excess grounds, place the filter holder in the group head unit.

Turn on the push button control (red button) and all the mechanisms of the unit will begin operating, Let it run about 30 seconds and observe the pump feed pressure.

PUSH-BUTTON SET (AUTOMATICS ONLY)

This set is made up of five push-buttons (A,B,C,D, and E) and one pilot light (F). The A, B, C, and D push-buttons are used to select the four possible water dosed and the E push-button is for continuous infusion injection. The F pilot light indicates that the unit is operating. To Shut off the infusion injection process (STOP), press any of the push-buttons (A, B, C, D, or E)



PROGRAMMING DOSIFICATIONS

To change the factory set dosages, set the Program/Run toggle switch to the "Program" (right) position.

Depending on the dosage you wish to change (1 cup or 2 cups), fill the filter-holder with the proper amount of ground coffee and place in the hand infusion unit of the machine. Press the corresponding dosage push-button and hold for approximately 3 seconds. The brew light will be flashing. Once the desired amount of coffee is achieved press any of the dosage push-buttons to save the new setting in memory. Return the "Run/ Program" switch lever to the "Run" (left) position.

NOTES:
1. This operation must be repeated for each dosage you wish to reprogram.
2. The push-buttons which were not reprogrammed will continue using the previous dosage sets.
3. The "Continuous dosage" is not programmable.

PREINFUSION PROGRAMMING

Pre-infusion causes a non-programmable amount of brew water to be injected into the bed of coffee at the beginning of the brew cycle; thus wetting the coffee, this is followed by a short delay, followed by the programmed amount of dispense.

In order to check whether or not the pre-infusion has been turned on, turn the programming switch (14) to the "Program" (right) position. If the pilot lamp (F) comes on, pre-infusion is on. To eliminate the pre-infusion, press the continuous dosage button (E) until the pilot lamp (F) turns off; then return the programming switch to the "Run" position.

COFFEE EXTRACTION

1. Place ground coffee in the filter holder, shake it level, and compress the bed of coffee with the tamper on the grinder.
2. Clean the edge of the filter holder with the palm of the hand before locking it on to the set. This will prevent any coffee particles from imbedding themselves into the group gasket.
3. Place the filter holder in the set and twist it to the right until tight. Do not force the filter holder excessively.
4. Press any one of the four dosification buttons or the continuous draw button according to the dose required.
5. Extraction ends automatically. If the continuous liquid dispensing button was pressed, dispensing can be stopped by pressing on any one of the five buttons. The automatic liquid extraction caused by using one of the four dosification buttons can be stopped by pressing any of the dosification buttons.

   NOTE: The automatic selections have regulated doses, these can be set between 0 and 500 cc

The machines leave the factory with regulators adjusted for the following approximate amounts:

One short coffee:	50 cc of water
One normal coffee:	100 cc of water
Two short coffees:	100 cc of water
Two normal coffees:	200 cc of water

It should be noted that these doses have been set without coffee in the filter holder. With coffee, the volumes are slightly less. Should different volumes be required, refer to (Programming dosifications)

OBSERVATIONS

IT IS OF THE UTMOST IMPORTANCE FOR THE INFUSER UNIT OPERATION that there is no intermediate space between the pressed coffee and the injector spray head. Coffee dosage is 6 grams, although it may be more or less depending on the degree of grinding, coffee quality, etc. Perfect grinding of the coffee gives it a better creme'. If it is observed that the coffee is produced drop by drop, it means that it is ground too fine, and if the coffee comes out too quickly, it means that the grounds have not been ground fine enough.

During long periods in which the machine is not operating, drain the tank and clean the exterior of the machine, disconnect the power supply and cover the machine.

For optimum operation and conservation, all the elements of the machine should periodically be lubricated.

Before making the first cup of coffee, it is recommended to run water through the unit to heat up the system.

CLEANING

1. The use of a damp cloth rinsed in any mild, nonabrasive, liquid detergent is recommended for cleaning all surfaces on Bunn-O-Matic equipment.

2. A cleaning cycle must be ran nightly.

   To do this:
   a) insert solid filter basket into filter holder.
   b) Put 1 teaspoon of Cascade cleaning detergent into filter basket.
   c) insert filter holder into group head
   d) run brew cycle
   e) repeatedly start and stop brew cycles while observing drain cup under drip tray
   f) stop when water being discharged into drain cup shows no sign of detergent.

3. Clean the gasket that seals the filter and the group head , located under the group head. Ground coffee build-up on the gasket will result in a bad seal of the filter holder, and will leak while brewing. This is why it is important to wipe excess coffee off of the rim of the filter prior to insertion in the group head.

4. It is necessary once a week to remove the group head screen (under the head, fastened with a one slotted screw), and look through the screen to see if it needs to be cleaned.

5. The drip tray is to be cleaned nightly. Remove the grill and drip pan, wash them out thoroughly, and place them back into the brewer.

6. The steam wands must be cleaned after each use. Wipe with a damp cloth immediately after use. At the end of the night, run each wand for about 15 seconds to clean them out.

A troubleshooting guide is provided to suggest probable causes and remedies for the most likely problems encountered. If the problem remains after exhausting the troubleshooting steps, contact the Bunn-O-Matic Technical Service Department at 1-800-637-8606.

- Inspection, testing, and repair of electrical equipment should be performed only by qualified service personnel.
- Solenoid removal requires interrupting the water supply to the valve. Damage may result if solenoids are energized for more than ten minutes without a supply of water.
- The use of two wrenches is recommended whenever plumbing fittings are tightened or loosened. This will help to avoid twists and kinks in the tubing.
- Make certain that all plumbing connections are sealed and electrical connections tight and isolated.
- This brewer is heated at all times unless disconnected from the power source. Keep away from combustibles.

WARNINGS

- Exercise extreme caution when servicing electrical equipment.
- Disconnect the brewer from the power source when servicing, except when specified.
- Follow recommended service procedures.
- Replace all protective shields and safety notices.

Problem	Probable cause	Remedy
Equipment will not operate	No power or incorrect voltage	Connect the brewer to the power source. Check the contactor terminals for proper voltages. Check circuit breaker/fuse.
	Contactor	When on/off toggle (master) is turned on , pilot lamp on base should light up and the contactor should energize and pull in. If contactor does not pull in, unplug brewer and check coil for continuity. If open, replace contactor.
	Toggle switch (Master on/off)	Must be in the on position. Pilot lamp will light.
Brew cycle will not start	No water	Check plumbing and shut off valves.
	Water strainer or filter	Direction of flow arrows must be pointing toward the brewer. Remove the strainer and/or filter cartridge and check for obstructions. Clear or replace.
	Start switch	Disconnect power supply and check terminals of switch for continuity (semi-automatic version)
	Solenoid valve	Check voltage at terminals. If voltage is present when the start switch is pressed, disconnect power supply and check coil terminal for continuity. If there is continuity, solenoid is defective. Replace solenoid.

Problem	Probable cause	Remedy
Brew cycle will not start (cont.)	Pump	When starting switch is pressed, pump should turn on immediately. If this dies not happen, check voltage at terminal block on the pump.. If correct voltage is present, use a flat-blade screwdriver to turn the motor shaft on the rear end of the motor to see if the pump itself is locked up. If the shaft dies no turn, replace pump assembly. Remove the solenoid valve and clear it of any obstructions. Rebuild or replace the valve if necessary.
	Start switch	Switch must make and break contacts. Check with ohmmeter for continuity.
Water is not hot or long recovery time.	Limit thermostat	Check continuity of limit with ohmmeter. Disconnect power supply and check across limit terminals. If no continuity, replace limit thermostat.
	Tank heaters	Check tank heater terminals for correct voltage. If voltage is present and machine is not heating properly, replace tank heater. A good tank heater will show continuity.

DOSAGE PULSOMETER MALFUNCTION ALARM

This alarm is activated if, for any reason, the pump is running and the metering pulses of the volumetric meter are not received by the central control unit, or when there is a time period longer than 5 seconds (approximately) between meter pulses. If an infusion unit is operating (pilot light on the push-button panel turned on), it will shut off and the pilot light will flash on and off. If this happens, the following should be checked:

-Possible obstruction at the coffee outlet (dirty injection head, blocked unit nozzles, etc.)
- Volumetric meter connections.
- Unit electrovalve.
- Unit electrovalve connections.
- Operation of volumetric meter.
- Possible pump malfunction.

To cancel the alarm, just press any push-button on the infusion unit push-button panel that has produced the alarm, however, if the malfunction continues, the alarm will be reactivated when the programmed doses push-button is pressed.

This alarm does not prevent the machine from operating in the continuous dosage mode.

AUTOMATIC WATER LEVEL MALFUNCTION ALARM

This alarm is activated when there is a demand for water but there is not enough water in the tank, and water level is not reached within a maximum prefixed time period in each tank, thus preventing a possible flooding of same. The pilot light on the push-button panel of the infusion units will flash on and off. If this happens, check the following:

- Water level sensor.
- Water inlet (possible blockage of inlet).
- Water level sensor connection.
- Tank water electrovalve.

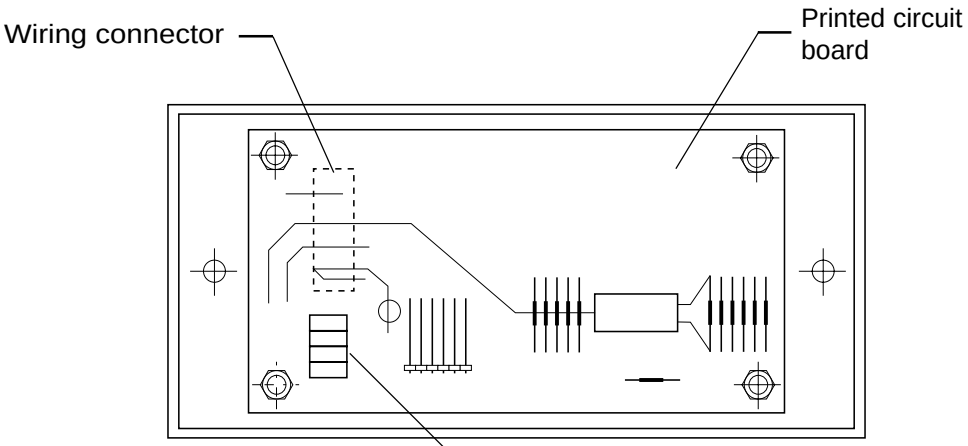
This alarm does not prevent the machine from operating in the continuous infusion mode and will not be shut off even though the machine is disconnected from the electric supply line. Should this occur, the optical level should be checked by sight and water fed into the boiler manually.

To cancel the alarm after the problem has been solved, place the programming switch in the programming position, then simultaneously press the push-buttons for one short dose and 2 short coffee doses. Then after the alarm has been shut off, return the programming switch to the operating position.

Keep in mind that this alarm will surely be activated when filling a completely empty tank or with a very low water level (after repairs or commissioning of a new machine). To prevent the alarm from being activated, load the water manually.

PUSH-BUTTON BOARD CONNECTIONS

All the set push-button boards are the same and are to be coded only according to the place they occupy with respect to the infusion units. The numbering order of the infusion units (lst, 2nd, 3rd and 4th), always counted facing the machine and from left to right.




Location of the jumper when placing the push-button board on unit No. 1


Location of the jumper when placing the push-button board on unit No. 2


Location of the jumper when placing the push-button board on unit No. 3


Location of the jumper when placing the push-button board on unit No. 4

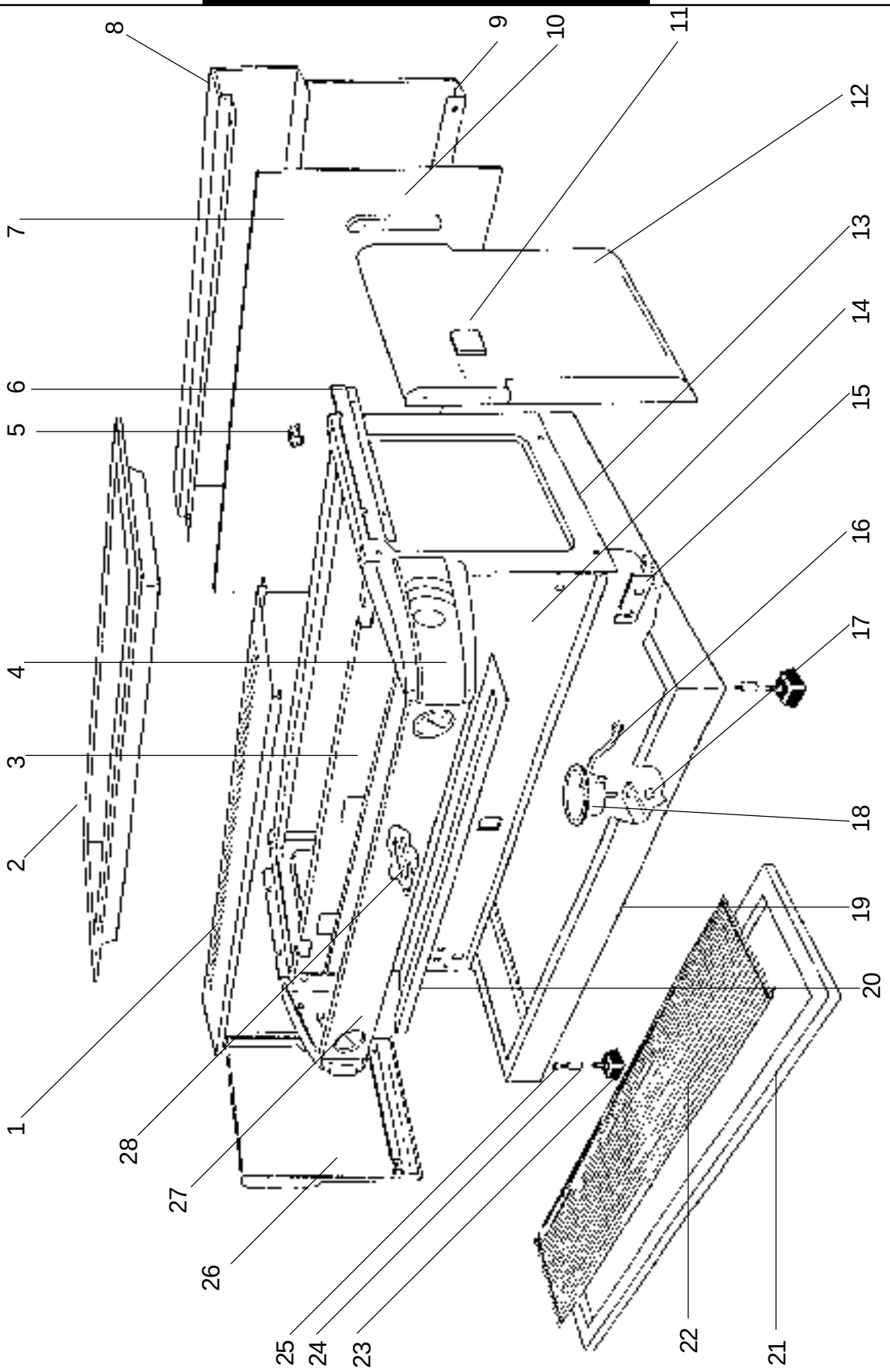


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Figure	Description	Part Number
1	Vented top panel (hood)	22795.0000
2	Top cup warmer panel	22319.0001
3	Divider panel	22782.0000
4	Hood corner piece (left & right)	22789.0000
5	Cage nut (10-32)	22851.0000
6	Side panel mounting channel	22776.0000
7	Galvanized back plate	22765.0000
8	Back panel (upper)	22787.0000
9	Back panel (lower)	22788.0000
10	Side panel end cap	22786.0000
11	Side panel decorator piece	22792.0000
12	Side panel (right)	22790.0000
13	Machine frame chassis	22764.0000
14	Chrome front panel	22879.0000
15	Inlet assy. mounting bracket	22841.0000
16	Discharge tube	22661.0000
17	Drain cup mounting nut	24046.0000
18	Drain cup	22832.0000
19	Base frame	22780.0001
20	Lower hood panel	22797.0000
21	Drip tray	22848.0000
22	Drip tray grate	22693.0000
23	Rubber foot	22615.0000
24	Foot extension	22843.0000
25	Foot extension nut	24049.0100
26	Side panel (left)	22791.0000
27	Front hood panel (semi-automatic)	22881.0000
27	Front hood panel (automatic)	22796.0000
28	Rubber grommet (faucet tube)	22842.0000

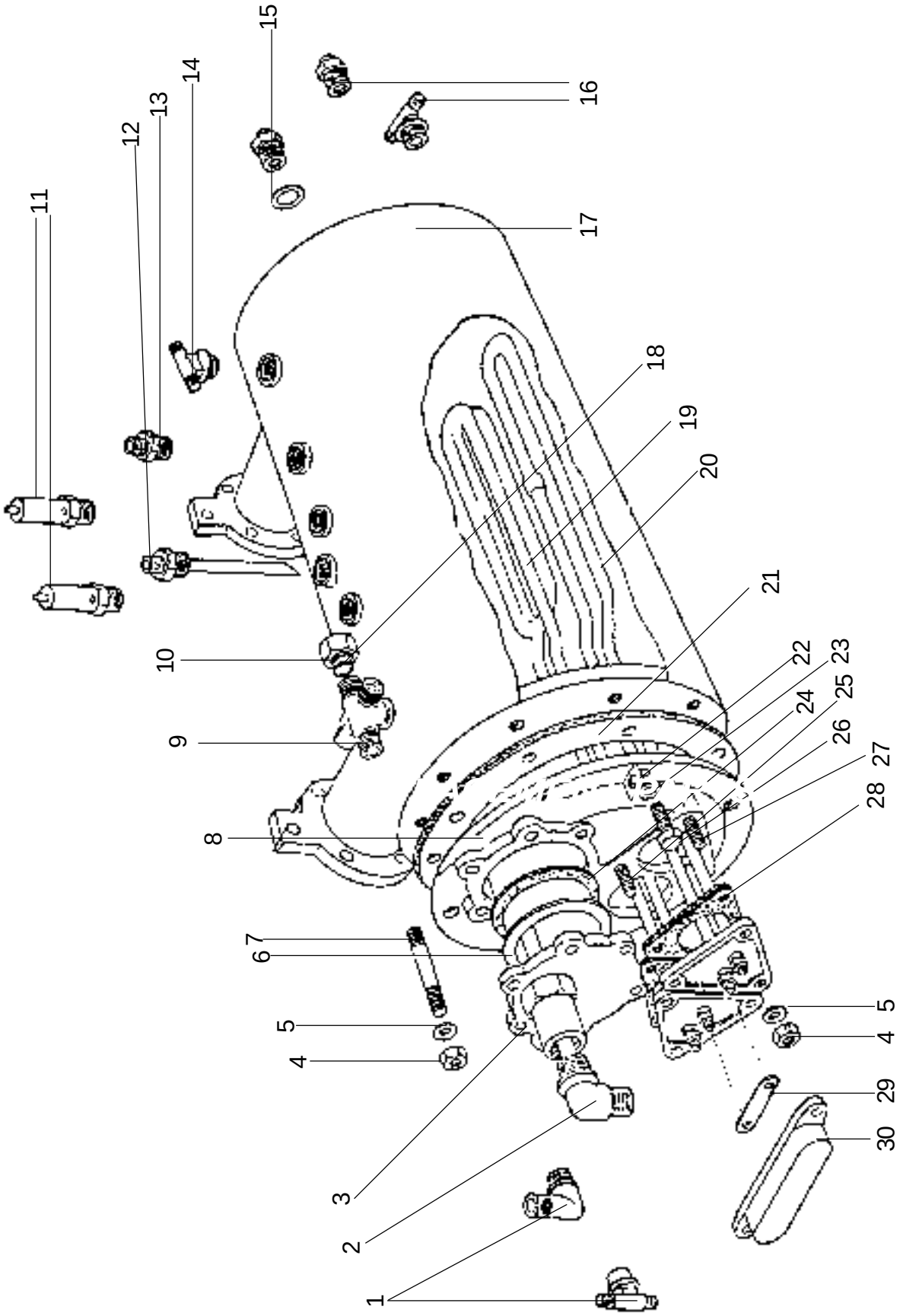
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Figure	Description	Part Number
1	Inlet water fitting	22849.0000
2	Brew water inlet tube	22614.0000
3	Heat exchanger bulkhead	22835.0000
4	Nut	24048.0100
5	Split lock washer	24028.0100
6	Heat exchanger tube (brew)	22613.0000
7	Stud	22834.0000
8	Tank-end bulkhead	22768.0000
9	4-way steam fitting	22828.0000
10	O-ring seal	22868.0000
11	Pressure pop-off valves	22575.0000
12	Water inlet tube	22857.0000
13	Steam outlet fitting	22850.0000
14	2-way steam fitting	22827.0000
15	Copper O-ring seal	22867.0000
16	Tank-end water & steam fittings	22817.0000
17	Tank (boiler)	22826.0000
18	Compression nut	22815.0000
19	Tank heater, 1300W, 220V (left)	22607.0000
20	Tank heater, 1300W, 220V (right)	22608.0000
21	Tank-end bulkhead gasket	22602.0000
22	”L“ bracket	22859.0000
23	Flat washer	24028.0001
24	Exchanger tube gasket	22612.0000
25	Tank heater mounting stud	22580.0000
26	Hex bolt (bulkhead mounting)	24008.0000
27	Tank heater mounting stud	22580.0000
28	Tank heater gasket	22579.0000
29	Tank heater terminal shorting bar	22818.0000
30	Tank heater terminal cover shield	22639.0000

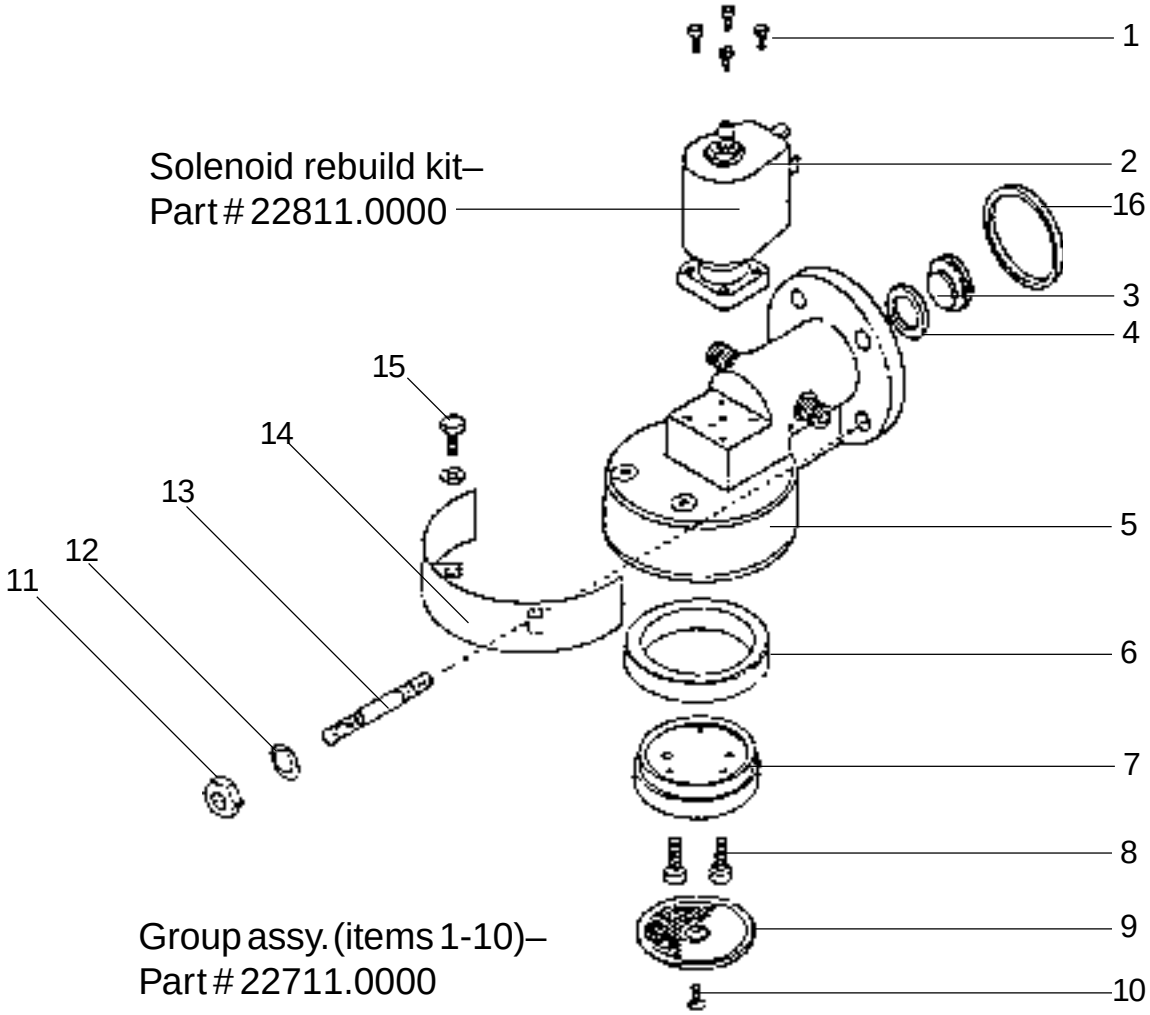

Figure	Description	Part Number
1	Solenoid mounting screws	24005.0400
2	Solenoid assembly	22712.0000
3	Group head end plug	22806.0000
4	Group head end plug gasket	22808.0000
5	Group head	22809.0100
6	Filter holder seal gasket	22571.0000
7	Sprayhead	22804.0000
8	Sprayhead mounting screws	24007.0300
9	Sprayhead screen	22708.0000
10	Sprayhead screen mounting screw	24006.0000
11	Group head mounting stud nut	24048.0100
12	Group head mounting stud washer	24028.0100
13	Group head mounting stud	22609.0000
14	Group head cover shield	22783.0000
15	Cover shield bolt	24007.0000
16	Group head to tank gasket	22657.0000

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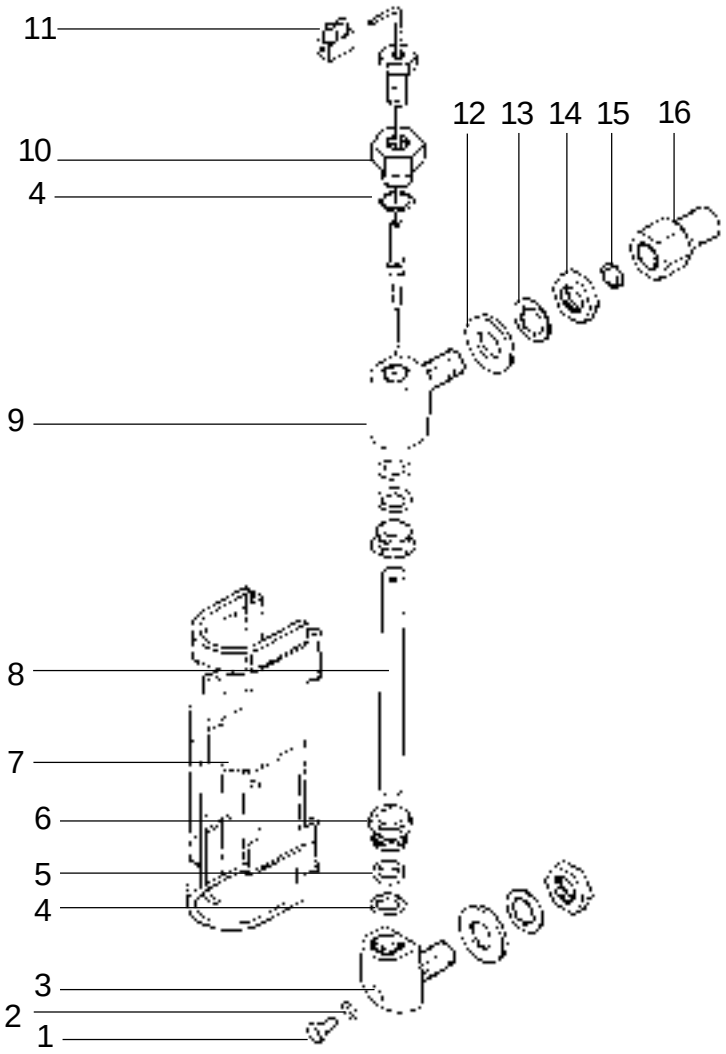

Figure	Description	Part Number
1	Tank drain screw	24006.0400
2	Tank drain screw gasket	22836.0000
3	Lower sight gauge elbow	22644.0000
4	Seal washer	22616.0000
5	Sight gauge glass gasket	22617.0000
6	Sight gauge glass compression nut	22618.0000
7	Sight gauge housing	22620.0000
8	Sight gauge glass	22619.0000
9	Upper sight gauge elbow	22643.0000
10	Probe assy. hex fitting	22629.0000
11	Terminal block (probe)	22814.0000
12	Flat washer	24031.0000
13	Lock washer	24030.0000
14	Mounting nut	24050.0300
15	Seal washer	22868.0000
16	Extension fitting	22831.0000

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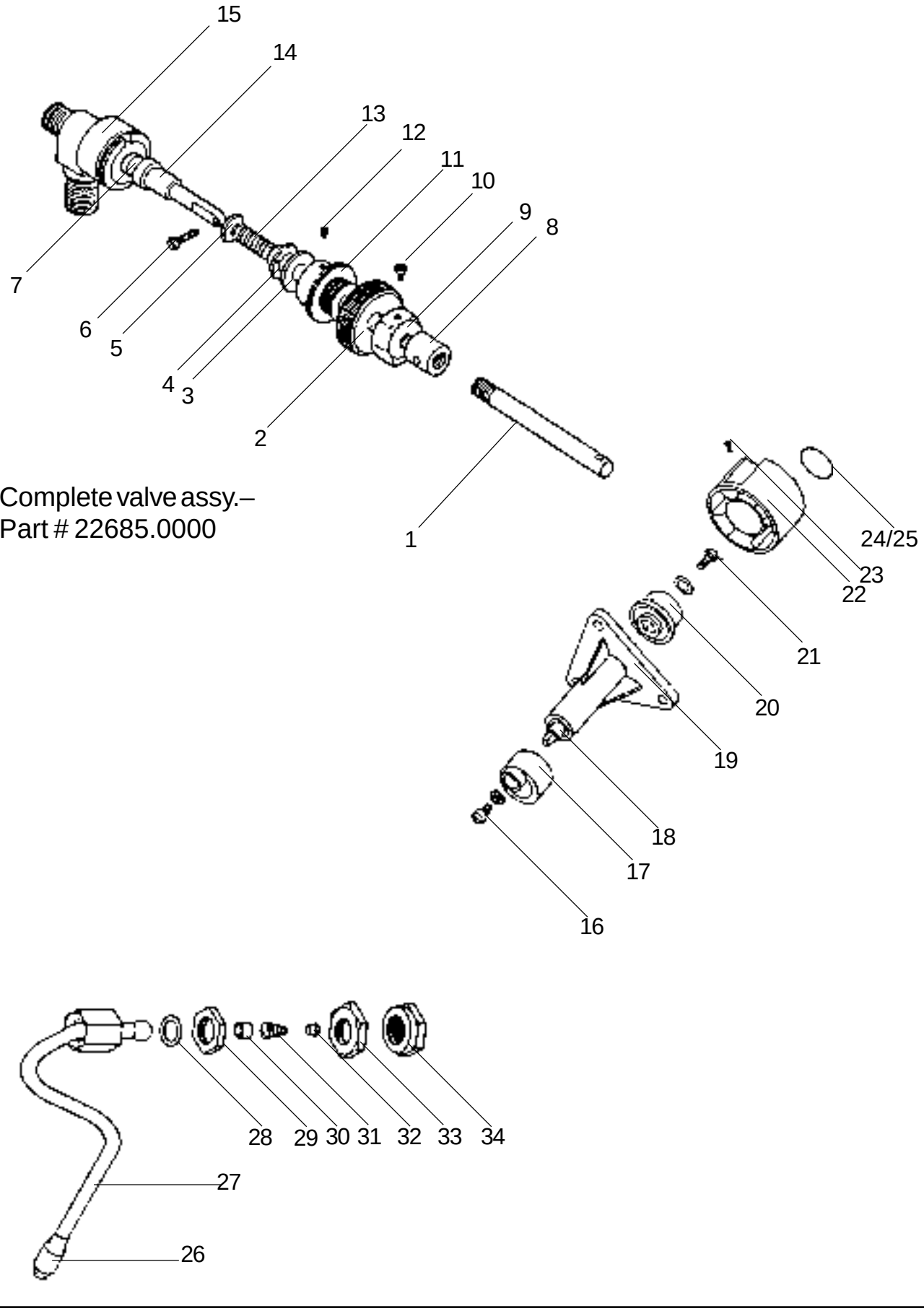

Complete valve assy.–
Part # 22685.0000

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Figure	Description	Part Number
1	Actuator shaft - steam valve	22684.0000
2	Steam valve collar nut	22824.0000
3	Insert washer	22862.0000
4	Blue rubber gasket - steam valve	22605.0000
5	Spring support washer	24028.0000
6	Actuator shaft coupling screw	22766.0000
7	Rubber seat - plunger	22604.0000
8	Actuator shaft coupling	22833.0000
9	Actuator pivot nut	22864.0000
10	Actuator pivot nut set screw	24005.0000
11	Steam valve seal fitting	22825.0000
12	Steam valve seal fitting set screw	22869.0000
13	Spring - steam valve	22606.0000
14	Plunger shaft	22823.0000
15	Valve body - steam valve	22611.0000
16	Cam mounting screw	24006.0000
17	Actuator cam	22682.0000
18	Shaft - steam valve actuator	22681.0000
19	Housing - actuator shaft	22781.0000
20	Knob mounting bushing	22621.0000
21	Knob mounting bushing screw	24006.0401
22	Knob - steam/faucet	22694.0000
23	Knob retainer screw	24003.0500
24	Decal - steam knob	22779.0000
25	Decal - hot water	22778.0000
26	Nozzle - steam wand	22581.0000
27	Left side steam wand	22655.0000
27	Right steam wand	22649.0000
28	“O-ring” - rubber	22616.0000
29	Nut	24052.0300
30	Brass bushing	22654.0000
31	Coil spring	22653.0000
32	Rubber valve	22652.0000
33	Retaining nut	24052.0301
34	Bulkhead mounting nut	22829.0000

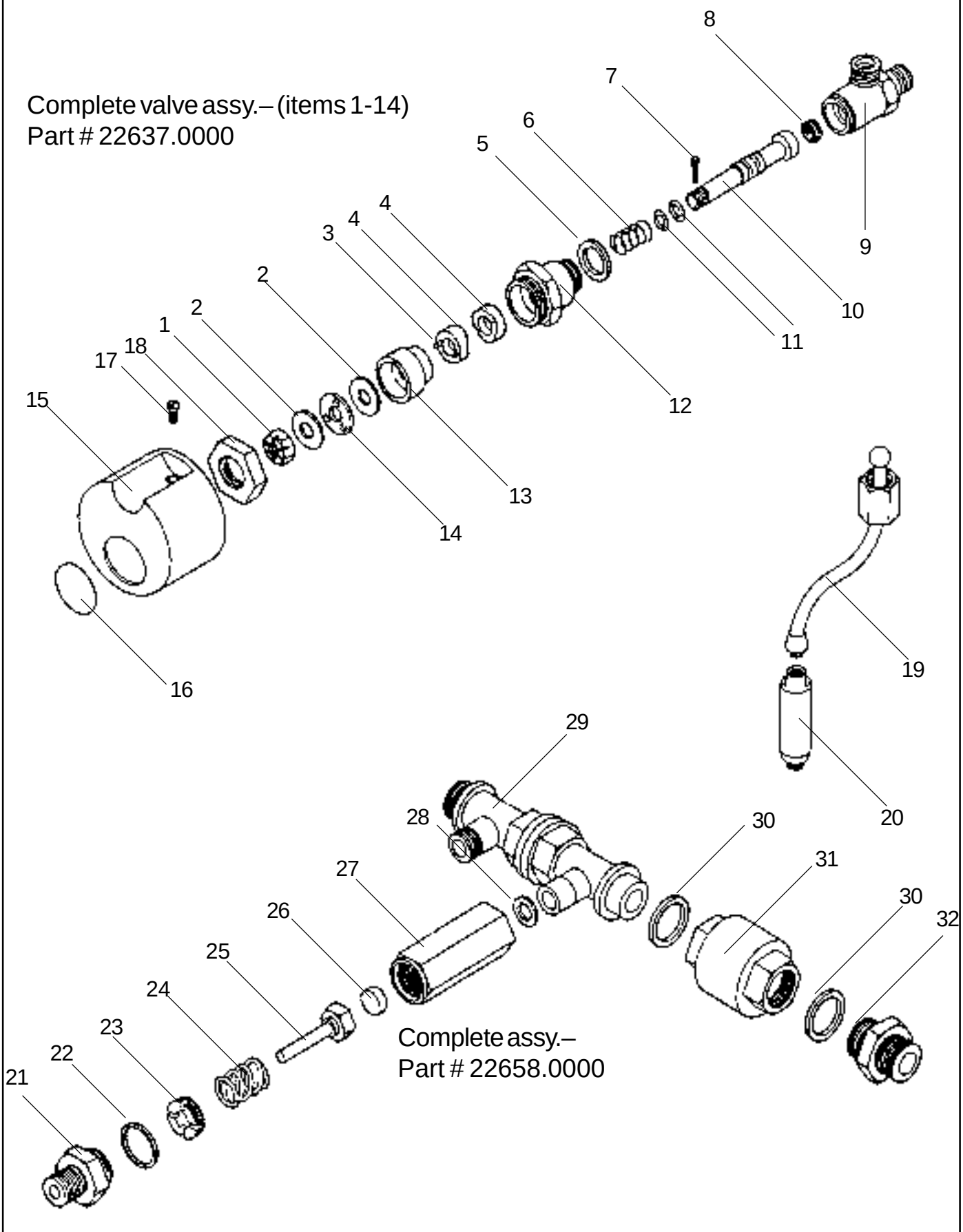
Complete valve assy.– (items 1-14)
Part # 22637.0000
Complete assy.–
Part # 22658.0000
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Figure	Description	Part Number
1	Hex nut – plunger shaft	22863.0000
2	Black thrush washer	22624.0000
3	Faucet valve detent pins	22845.0000
4	Faucet valve detent	22626.0000
5	Copper seal washer	22839.0000
6	Faucet spring	22610.0000
7	Cotter pin	22798.0000
8	Rubber seat	22604.0000
9	Valve body	22852.0000
10	Plunger shaft	22622.0000
11	O-ring – plunger shaft	22572.0000
12	Panel mount fitting	22625.0000
13	Brass bearing holder	22627.0000
14	Bearing	22623.0000
15	Label – water inlet	22777.0000
15	Label – hot water	22778.0000
16	Knob – steam-hot water-water inlet	22694.0000
17	Knob set screw	24003.0500
18	Valve mounting nut	22865.0000
19	Hot water tube	22697.0000
20	Hot water nozzle	22844.0000
21	Pressure vent cap nut	22840.0000
22	Copper seal gasket	22839.0000
23	Tension adjusting nut	22813.0000
24	Pressure spring	22830.0000
25	Plunger	22838.0000
26	Rubber seat	22604.0000
27	Pressure vent housing	22837.0000
28	Seal washer	22868.0000
29	Water manifold body	22670.0000
30	Copper seal gasket	22867.0000
31	Inlet water check valve	22628.0000
32	Inlet water fitting	22850.0000

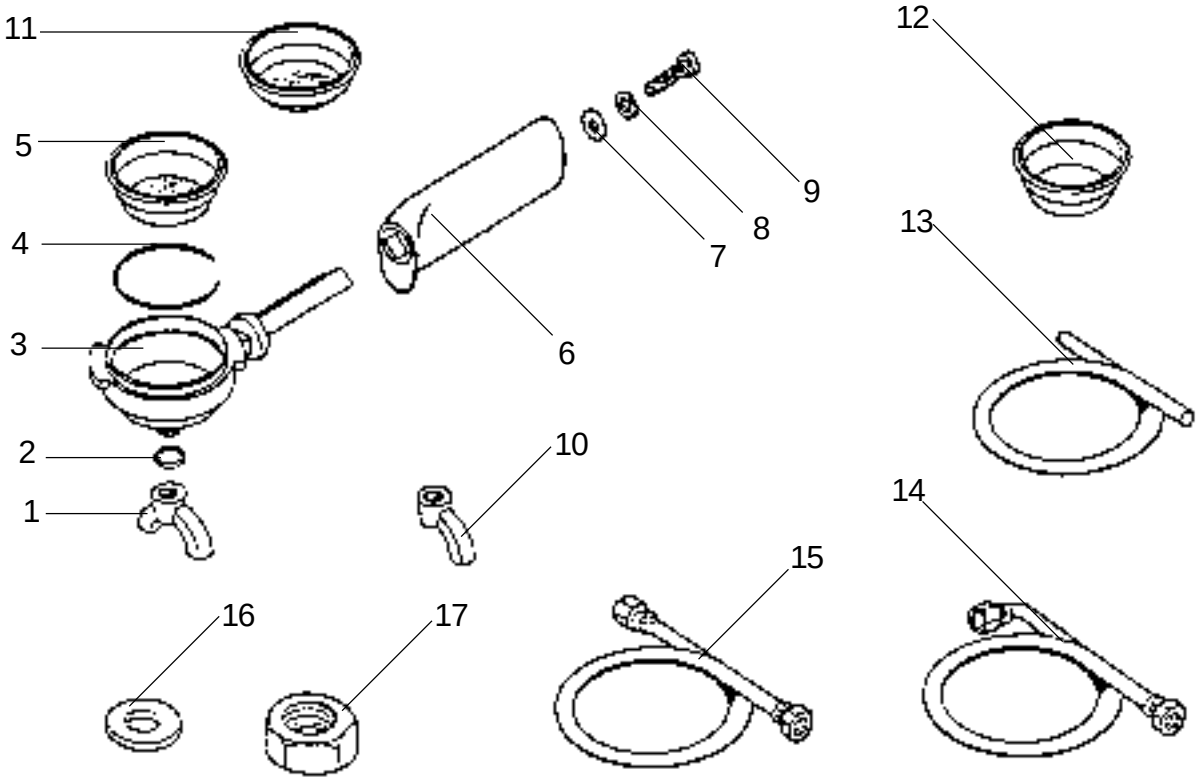

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Figure	Description	Part Number
1	Dispense nozzle - 2 cup	22802.0000
2	Nozzle seal washer	22803.0000
3	Filter holder	22801.0200
4	Filter support wire	22819.0000
5	Filter - 2 cup	22710.0000
6	Handle	22704.0000
7	Flat washer - handle	24028.0000
8	Lock washer - handle	24028.0100
9	Screw - handle	24008.0400
	Complete filter holder assy. - 2 cup	22706.0000
10	Dispense nozzle - 1cup	22705.0000
11	Filter - 1 cup	22709.0000
	Complete filter holder assy. - 1 cup	22707.0000
12	Pessure test cup (no holes)	22807.0000
13	Drain hose	22603.0000
14	Water inlet hose (pump out to machine in)	22855.0000
15	Water inlet hose (supply to pump in)	22662.0000
16	Rubber seal washer - hose	22638.0000
17	Nut - legs	24049.0100

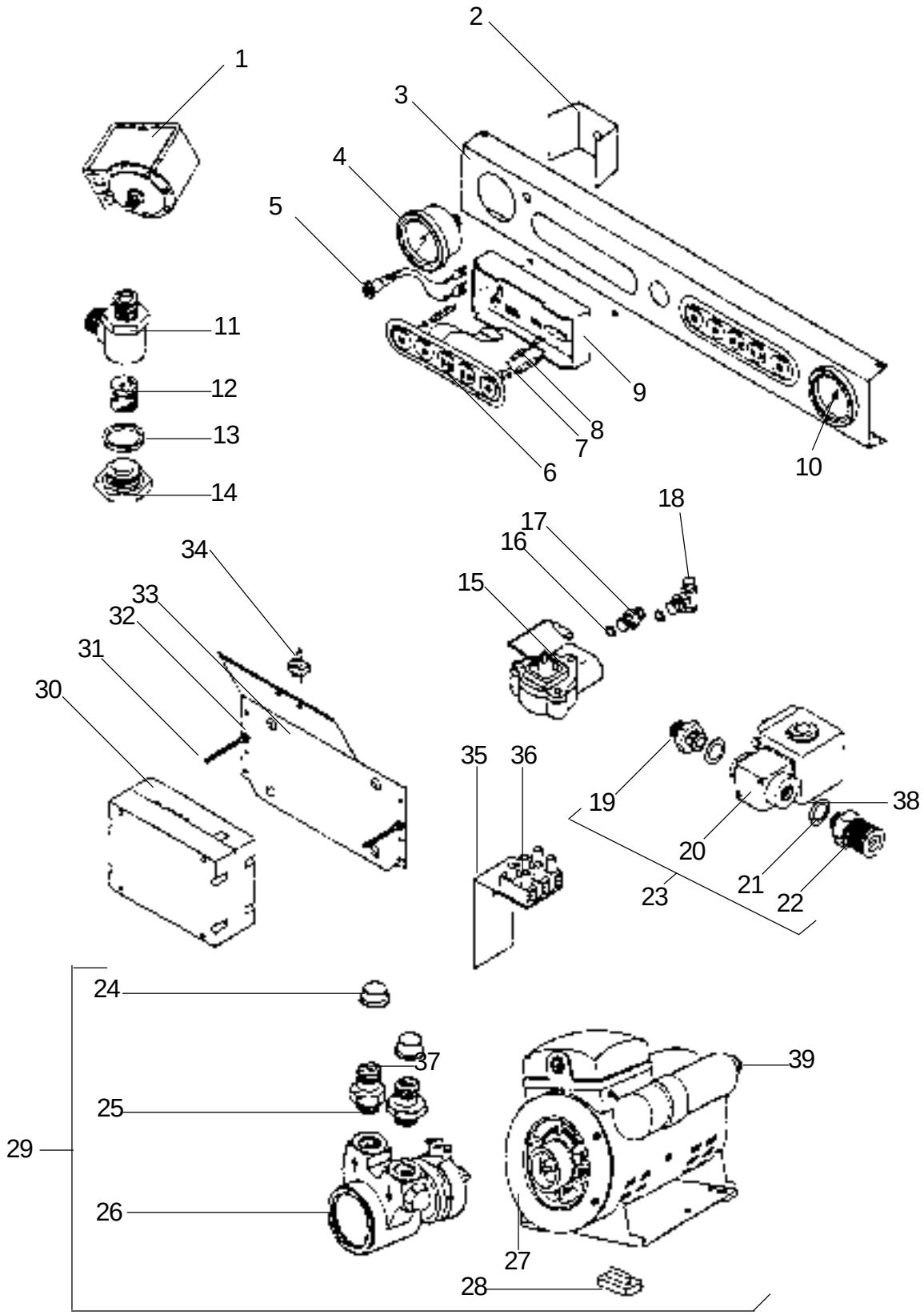
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Figure	Description	Part Number
1	Pressure switch - heater control	22574.0000
2	Pressure gauge mounting bracket	22645.0000
3	Front hood face plate - 2 group	22796.0000
4	Pump pressure gauge	22692.0000
5	Pump indicator lamp	22846.0000
6	Switch select panel	22695.0000
7	Switch select panel standoff	22698.0000
8	Indicator lamp - brew	22674.0000
9	Circuit board assy.	22699.0000
10	Steam pressure gauge	22680.0000
11	Strainer housing	22769.0000
12	Filter screen	22667.0000
13	Rubber o-ring	22822.0000
14	Strainer housing end cap	22770.0000
15	Flow meter complete	22775.0000
16	Flow meter fitting gasket washers	22868.0000
17	Outlet fitting - flow meter	22821.0000
18	Inlet fitting - flow meter	22771.0000
19	Refill solenoid end fitting - outlet	22762.0000
20	Refill solenoid - complete	22646.0000
21	End fitting seal washer	22872.0000
22	Refill solenoid end fitting - inlet	22805.0000
23	Refill solenoid - complete	22763.0000
24	Protective caps - pump fittings	22665.0000
25	Pump outlet fitting	22905.0000
26	Pump impeller unit	22713.0000
27	Motor assy.	22903.0000
28	Rubber foot - pump base	22576.0000
29	Pump assy. - complete	22904.0000
30	Electronic module - 2 group automatic	22577.0000
31	Module bracket support standoffs	22773.0000
32	Bracket support standoff nut	24046.0000
33	Module bracket support	22774.0000
34	Programming switch - toggle	22816.0000
35	Terminal block mounting bracket	22784.0000
36	Terminal block	22578.0000
37	Pump inlet fitting	22387.0000
38	Coil, 220V - refill valve	22890.0000
39	Capacitor - motor	22902.0000

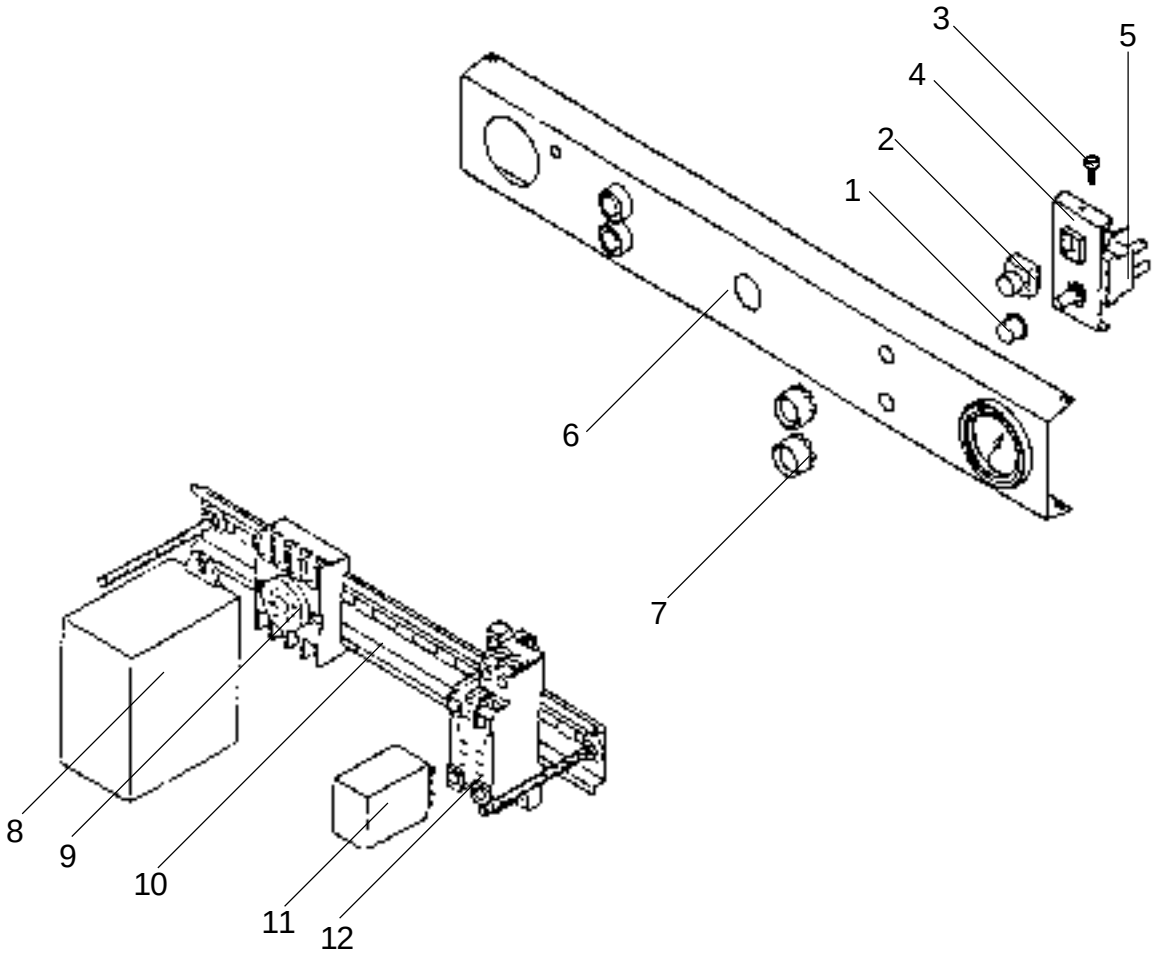

Figure	Description	Part Number
1	Red push button on/off switch	22687.0000
2	Brew indicator light	22689.0000
3	Switch/lamp mounting bracket screw	24005.0200
4	Switch/lamp mounting bracket	22880.0000
5	Brew on/off switch	22688.0000
6	Front hood panel (2 group)	22881.0000
7	Bezel - group on/off/indicator	22686.0000
8	Control module	22882.0000
9	Socket - control module	22883.0000
10	Module/relay support bracket	22691.0000
11	Relay	22635.0000
12	Socket - relay	22884.0000

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Replacement Parts Not Illustrated

Figure	Description	Part Number
1	Water strainer ⅜" x ⅜" mflrd	01245.0000
2	Cordset	01699.0000
3	Limit thermostat	04680.0004
4	Contactor coil	06335.0002
5	Indicator lamp (240 volt)	12984.0003
6	Pressure switch (water inlet)	21397.0000
7	Toggle switch (master on/off)	22566.0000
8	Base plate	22315.0000
9	Mylar shield (switch & solenoid, semi-automatic)	22316.0000
10	⅜" flare x ⅜" mpt fitting (pump inlet)	22387.0000
11	Mylar shield (valve & switches, automatic)	22464.0000
12	Limit thermostat bracket	22563.0000
13	Tube, steam valve steam valve (right)	22648.0000
14	Tube, tank to right steam valve	22650.0000
15	Tube, steam valve steam valve (left)	22651.0500
16	Tube, inlet valve to refill solenoid	22656.0000
17	Tube, water inlet valve to heat exchange	22660.0000
18	Tube, water inlet press. relief-drain	22661.0000
19	Tube, refill solenoid to tank	22663.0000
20	Tube, water inlet valve	22664.0000
21	Tube, sight gauge to tank	22666.0000
22	Tube assy, drain manifold	22669.0000
23	Tube, flow meter to group assy (auto)	22671.0000
24	Tube, flow meter to flow meter (auto)	22672.0000
25	Tube, left group solenoid to drain manifold	22673.0000
26	Tube, screen filter to flow meter	22678.0000
27	Tube, right group solenoid to drain manifold	22679.0000
28	Tube, tank to steam valv (left)	22767.0000
29	Tube, copper-chrome plated	22772.0000
30	Tube, pump gage to flow meter	22785.0000
31	Tube, tank to hot water valve	22793.0000
32	Tube, tank to pressure gage	22794.0000
33	Tube, tank to manual fill	22853.0000
34	Tube, tank to pessure switch	22854.0000
35	Tube, tank to sight gage	22856.0000
36	Ribbon cable	22874.0000

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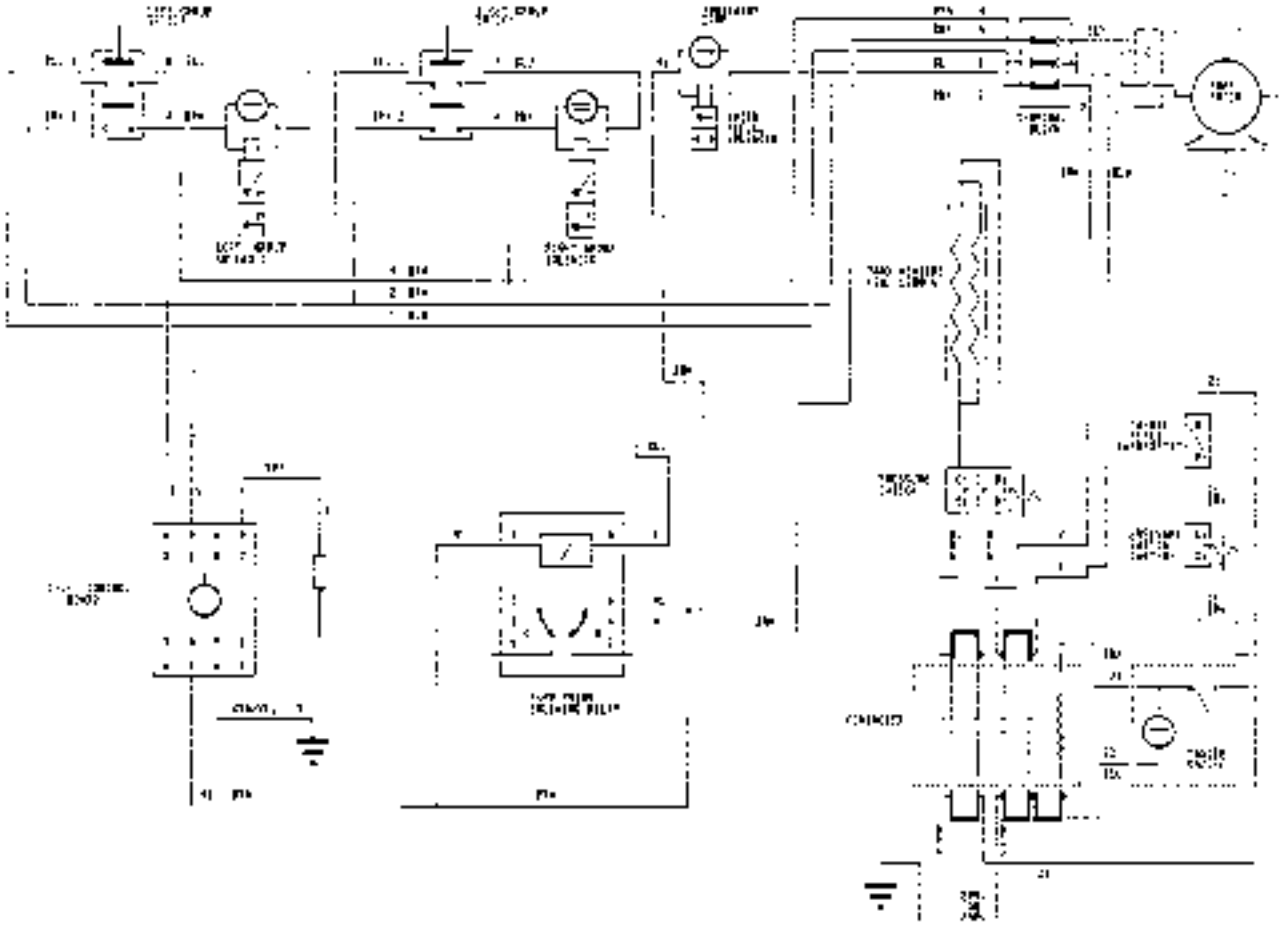

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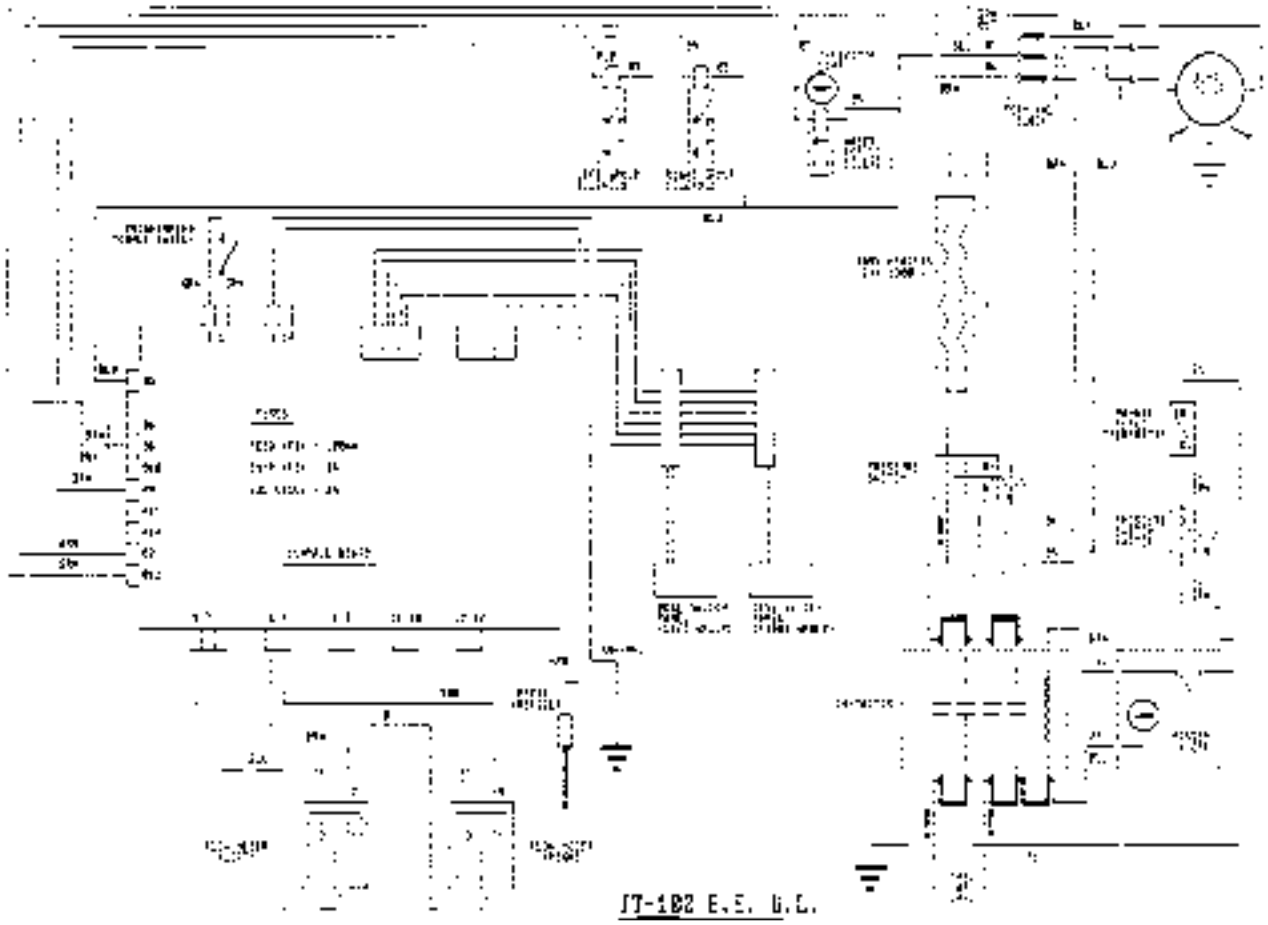

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