



OPERATOR MANUAL

IMPORTANT INFORMATION, KEEP FOR OPERATOR

888-994-7636, fax 888-864-7636
unifiedbrands.net

THIS MANUAL MUST BE RETAINED FOR FUTURE REFERENCE. READ, UNDERSTAND AND FOLLOW THE INSTRUCTIONS AND WARNINGS CONTAINED IN THIS MANUAL.

FOR YOUR SAFETY Instructions to be followed in the event user smells gas. This information shall be obtained by consulting your local gas supplier. As a minimum, turn off the gas and call your gas company and your authorized service agent. Evacuate all personnel from the area.

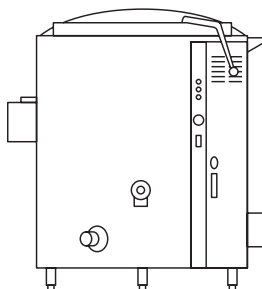
WARNING Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

NOTIFY CARRIER OF DAMAGE AT ONCE It is the responsibility of the consignee to inspect the container upon receipt of same and to determine the possibility of any damage, including concealed damage. Groen suggests that if you are suspicious of damage to make a notation on the delivery receipt. It will be the responsibility of the consignee to file a claim with the carrier. We recommend that you do so at once.

Manufacture Service/Questions 888-994-7636.

This manual provides information for:

STEAM JACKETED KETTLE WITH STANDARD ELECTRONIC IGNITION MODELS AH/1E (CE) INTERNATIONAL



- Self Contained
- Gas Heated
- Floor Mounted
- Stationary

REFERENCES

CSA AMERICA INC
8501 East Pleasant Valley Road
Cleveland, Ohio 44131

NSF INTERNATIONAL
798 N. Dixboro Rd. / P.O. Box 130140
Ann Arbor, Michigan 48113-0140

NSF/ANSI 4
ANSI Z83.11

NATIONAL FIRE PROTECTION ASSOCIATION
60 Battery March Park
Quincy, Massachusetts 02269

NFPA/70 The National Electrical Code
NFPA/54 Installation Gas Appliances &
Piping

AMERICAN NATIONAL STANDARDS INST., INC
1430 Broadway
New York, New York 10018

Z223.1-1984 National Fuel Gas Code
Z21.30 Installation of Gas Appliances &
Piping

EQUIPMENT DESCRIPTION

AH/1 steam kettles are stainless steel, floor mounted kettles with a self-contained steam source heated by gas. A closed steam jacket covers the lower portion of the kettle. Heat from the gas burner boils water in the jacket to produce steam under pressure. To ignite the burners, the kettle uses electronic spark ignition.

The kettles are stationary (non-tilting). Liquids can be removed through the tangent draw-off valve.

Exposed surfaces are stainless steel. Insulated sheathing protects the kettle body, and a housing encloses the controls. Three tubular legs support the unit. Bullet feet adjust to level the kettle.

A one piece dome cover is hinged to the kettle on the 20-gallon (75.7 liters) model. Covers for 40 and 60-gallon (151.4 and 227 liters) kettles are supplied with counterbalancing spring actuators to hold the covers in the fully open or closed position.

Controls provided include the ON/OFF switch, to control electric power for the unit, and the thermostat, to set the cooking temperature. The automatic controls and a brief description of each are as follows.

1. Gas pressure regulator: Protects the unit from high pressure in the gas supply line.

2. Automatic gas valves: Allow gas into the burners as needed.
3. Pressure switch: Turns off the burner when jacket pressure reaches 27 PSI (186.1 kPa, 1.86 bars). Lights the burner when pressure drops to 22 PSI (151.6 kPa, 1.52 bars).
4. Safety valve: Lets steam out of the jacket if the steam pressure exceeds 30 PSI (206.7 kPa, 2.06 bars).
5. Low-water cutoff: Turns off the burner if the water level in the jacket gets too low for safe operation.

Instruments also are provided to show what is happening inside the unit. These are:

1. Water level sight glass: Indicates whether there is enough water in the steam jacket.
2. Pressure/vacuum gauge: Shows steam pressure, and whether too much air has entered the jacket.
3. Heating indicator light: Indicates that the kettle is being heated.
4. Power on indicator light: Glows when the unit is turned on.
5. Low water indicator light: Lights to show that jacket water needs to be replenished.



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IMPORTANT - READ FIRST - IMPORTANT

IMPORTANT: THESE APPLIANCES MUST BE INSTALLED BY A COMPETENT PERSON IN CONFORMITY WITH THE INSTALLATION AND SERVICING INSTRUCTIONS AND NATIONAL REGULATIONS IN FORCE AT THE TIME. PARTICULAR ATTENTION MUST BE PAID TO THE FOLLOWING (CE):

I. E. E. REGULATIONS FOR ELECTRICAL INSTALLATIONS

ELECTRICITY AT WORK REGULATIONS

GAS SAFETY (INSTALLATION & USE REGULATIONS

HEALTH AND SAFETY AT WORK ACT

FIRE PRECAUTIONS ACT

LOCAL AND NATIONAL BUILDING REGULATIONS

DETAILED RECOMMENDATIONS ARE CONTAINED IN INSTITUTE OF GAS ENGINEERS PUBLISHED DOCUMENTS: IGE/UP/1, IGE/UP/2, BS6173 AND BS5440 (CE).

THESE APPLIANCES HAVE BEEN CE-MARKED ON THE BASIS OF COMPLIANCE WITH THE GAS APPLIANCE DIRECTIVE, EMC AND LOW VOLTAGE DIRECTIVE FOR THE COUNTRIES, GAS TYPES AND PRESSURES AS STATED ON THE DATA PLATE.

WARNING: TO PREVENT SHOCKS, ALL APPLIANCES WHETHER GAS OR ELECTRIC, MUST BE EARTHED.

ON COMPLETION OF THE INSTALLATION, THESE INSTRUCTIONS SHOULD BE LEFT WITH THE ENGINEER-IN-CHARGE FOR REFERENCE DURING SERVICING. FURTHER TO THIS, THE USERS INSTRUCTIONS SHOULD BE HANDED TO THE USERS AND THE INSTALLER SHOULD INSTRUCT THE RESPONSIBLE PERSON(S) IN THE CORRECT OPERATION AND MAINTENANCE OF THE APPLIANCE. EMPHASIS SHOULD BE MADE WITH REGARD TO SAFE OPERATION OF DRAIN VALVE.

IT IS MOST IMPORTANT THAT THESE INSTRUCTIONS BE CONSULTED BEFORE INSTALLING AND COMMISSIONING THE APPLIANCE. FAILURE TO COMPLY WITH THE SPECIFIED PROCEDURES MAY RESULT IN DAMAGE OR THE NEED FOR A SERVICE CALL.

WARNING: IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH. READ THE INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING OR SERVICING THIS EQUIPMENT.

WARNING: THE UNIT MUST BE INSTALLED BY PERSONNEL QUALIFIED TO WORK WITH GAS AND ELECTRICITY.

WARNING: UNIT MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES.

CAUTION: TO AVOID DAMAGING PARTS OF THE BURNER SYSTEM UNDERNEATH THE KETTLE, LIFT THE UNIT ONLY BY THE RING BENEATH THE OUTER PORTION OF THE BODY.

WARNING: DO NOT ATTACH THE UNIT TO A TYPE "B" VENT. IT COULD CAUSE FIRE OR PROPERTY DAMAGE.

WARNING: DO NOT CONNECT ANY PIPING TO THE SAFETY VALVE. IT MUST BE FREE TO VENT STEAM AS NEEDED. TO AVOID BURNS FROM THE VENTED STEAM THE VALVE DISCHARGE SHOULD POINT DOWN. IMPROPER INSTALLATION WILL VOID WARRANTY.

WARNING: FAILURE TO PERIODICALLY CHECK SAFETY VALVE OPERATION COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO EQUIPMENT.

WARNING: WHEN TESTING, AVOID EXPOSURE TO THE STEAM BLOWING OUT OF THE SAFETY VALVE. DIRECT CONTACT COULD RESULT IN SEVERE BURNS.

DANGER: ELECTRICALLY GROUND THE UNIT AT THE TERMINAL PROVIDED. FAILURE TO GROUND THE UNIT COULD RESULT IN ELECTROCUTION AND DEATH.

CAUTION: BE SURE ALL OPERATORS READ, UNDERSTAND AND FOLLOW THE OPERATING INSTRUCTIONS, CAUTIONS AND SAFETY INSTRUCTIONS CONTAINED IN THIS MANUAL.

CAUTION: DO NOT OVER FILL THE KETTLE WHEN COOKING, HOLDING OR CLEANING. KEEP LIQUIDS A MINIMUM OF 2-3" (5-8 CM) BELOW THE KETTLE BODY RIM TO ALLOW CLEARANCE FOR STIRRING, BOILING AND SAFE PRODUCT TRANSFER.

CAUTION: KEEP FLOORS IN FRONT OF KETTLE WORK AREA CLEAN AND DRY. IF SPILLS OCCUR, CLEAN IMMEDIATELY TO AVOID SLIPS OR FALLS.

WARNING: KEEP WATER AND SOLUTIONS OUT OF CONTROLS AND BURNERS. NEVER SPRAY OR HOSE DOWN THE CONTROL CONSOLE, ELECTRICAL CONNECTIONS, ETC.

CAUTION: MOST CLEANERS ARE HARMFUL TO THE SKIN, EYES, MUCOUS MEMBRANES AND CLOTHING. TAKE PRECAUTIONS: WEAR RUBBER GLOVES, GOGGLES OR FACE SHIELD AND PROTECTIVE CLOTHING. CAREFULLY READ WARNINGS AND FOLLOW DIRECTIONS ON CLEANER LABELS.

NOTICE: NEVER LEAVE A SANITIZER IN CONTACT WITH STAINLESS STEEL SURFACES LONGER THAN 10 MINUTES. LONGER CONTACT CAN CAUSE CORROSION AND PITTING.

WARNING: TO AVOID INJURY, READ AND FOLLOW ALL PRECAUTIONS STATED ON THE LABEL OF THE WATER TREATMENT COMPOUND.

WARNING: BEFORE REPLACING ANY PARTS, DISCONNECT THE UNIT FROM THE ELECTRIC POWER SUPPLY AND CLOSE THE MAIN GAS VALVE. ALLOW FIVE MINUTES FOR GAS TO VENT.

CAUTION: USE OF ANY REPLACEMENT PARTS OTHER THAN THOSE SUPPLIED BY AUTHORIZED DISTRIBUTORS CAN CAUSE OPERATOR INJURY AND DAMAGE TO THE EQUIPMENT, AND WILL VOID ALL WARRANTIES.

WARNING: KEEP AREA AROUND KETTLE FREE AND CLEAR OF ALL COMBUSTIBLE MATERIALS. FAILURE TO DO SO COULD RESULT IN FIRE OR PROPERTY DAMAGE.

CAUTION: HEATING AN EMPTY KETTLE MAY CAUSE THE RELEASE OF STEAM FROM THE SAFETY VALVE.

CAUTION: UNIT WEIGHS 470 TO 1120 LB (212 TO 509 KG). FOR SAFE HANDLING, INSTALLER SHOULD OBTAIN HELP AS NEEDED, OR EMPLOY APPROPRIATE MATERIALS HANDLING EQUIPMENT (SUCH AS A FORKLIFT, DOLLY, OR PALLET JACK) TO REMOVE THE UNIT FROM THE SKID AND MOVE IT TO THE PLACE OF INSTALLATION.

WARNING: THIS UNIT IS DESIGNED FOR COMMERCIAL USE. NEVER USE HOME OR RESIDENTIAL GRADE GAS CONNECTIONS. THEY DO NOT MEET COMMERCIAL GAS CODES AND COULD BE HAZARDOUS.

IMPORTANT: SERVICE PERFORMED BY OTHER THAN FACTORY AUTHORIZED PERSONNEL WILL VOID WARRANTIES.

CAUTION: THIS APPLIANCE CAN BE USED BY CHILDREN AGED FROM 8 YEARS AND ABOVE AND PERSONS WITH REDUCED PHYSICAL, SENSORY OR MENTAL CAPABILITIES OR LACK OF EXPERIENCE AND KNOWLEDGE IF THEY HAVE BEEN GIVEN SUPERVISION OR INSTRUCTION CONCERNING USE OF THE APPLIANCE IN A SAFE WAY AND UNDERSTAND THE HAZARDS INVOLVED.

CAUTION: CHILDREN SUPERVISED ARE NOT TO PLAY WITH THIS APPLIANCE.

CAUTION: CLEANING AND USER MAINTENANCE SHALL NOT BE MADE BY CHILDREN WITHOUT SUPERVISION.

CAUTION: FOR APPLIANCES INTENDED FOR USE AT ALTITUDES EXCEEDING 2,000 M, THE MAXIMUM ALTITUDE WILL BE STATED OR MARKED ON APPLIANCE.

The kettle body is welded into one piece and has a rim reinforced by a rectangular bar. The interior and exterior of the kettle is polished to a 180 emery grit finish. The unit is ASME shop inspected and registered with the National Board for working pressures up to 30 PSI (206.7 kPa, 2.06 bars).

The standard 2 inch (50mm) tangent draw-off is a 316 stainless steel, compression disc valve. A removable strainer with 1/4 inch (6.35 mm) holes keeps pieces of product from entering the draw-off during cooking.

The jacket is filled at the factory with water containing rust inhibitors. The kettle can operate at steam pressures up to 30 PSI (206.7 kPa, 2.06 bars), which provide temperatures of 150°F (65°C) to approximately 270°F (135°C). This range allows warming, simmering, boiling, or braising.

For the kettles, options include:

1. Larger 3 inch (76 mm) tangent draw-off
2. Solid disc strainer or strainer with 1/8" (3.18 mm) perforations

3. Water fill faucets
4. Basket inserts
5. Kettle brush kit
6. Gallon etch marks
7. Flanged feet

Model	Kettle Capacity	Jacket Capacity	Kettle Inside Diameter	Kettle Depth	Overall Width	Front-to-Back	Rim Height
AH/1E-20	20 Gallon (75 liter)	4-1/2 Gallon (17 liter)	20 inches (508 mm)	18 inches (457 mm)	36-3/4 inches (934 mm)	39 inches (991 mm)	40 inches (1016 mm)
AH/1E-40	40 Gallon (150 liter)	7 Gallon (26.5 liter)	26 inches (660 mm)	22 inches (559 mm)	38-1/4 inches (972 mm)	45 inches (1143 mm)	42 inches (1067 mm)

Model	Kettle Capacity	Jacket Capacity	Kettle Inside Diameter	Kettle Depth	Overall Width	Front-to-Back	Rim Height
AH/1E-60	60 Gallon (225 liter)	9-1.2 Gallon (36 liter)	30 inches (762 mm)	25 inches (635 mm)	41 inches (1041 mm)	49 inches (1245 mm)	49 inches (1245 mm)

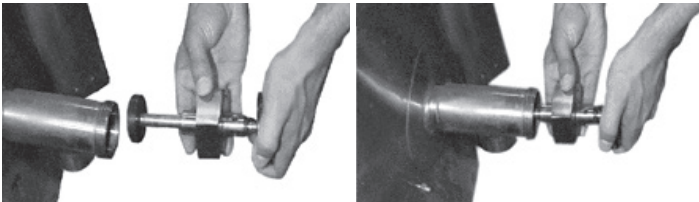
Model	Ignition	FIRING RATE, BTU/HOUR	
		Natural Gas	Propane Gas
AH/1E-20	Spark	85,000	85,000
AH/1E-40	Spark	100,000	85,000
AH/1E-60	Spark	145,000	145,000

INSPECTION & UNPACKING

WARNING: INSTALLATION OF THE KETTLE MUST BE DONE BY A CERTIFIED ELECTRICIAN AND PLUMBER OR AUTHORIZED REPRESENTATIVE QUALIFIED TO WORK WITH ELECTRICITY & GAS. IMPROPER INSTALLATION CAN RESULT IN INJURY TO PERSONNEL AND/OR DAMAGE TO EQUIPMENT.

CAUTION: SHIPPING STRAPS ARE UNDER TENSION AND CAN SNAP BACK WHEN CUT. TAKE CARE TO AVOID PERSONAL INJURY OR DAMAGE TO THE UNIT BY STAPLES LEFT IN THE WALLS OF THE CARTON.

CAUTION: UNIT WEIGHS FROM 468 LBS (212 KG) TO 1120 LBS (508 KG). FOR SAFE HANDLING, INSTALLER SHOULD OBTAIN HELP AS NEEDED AND USE MATERIAL HANDLING EQUIPMENT TO REMOVE THE UNIT FROM THE SKID AND MOVE IT TO ITS PLACE OF INSTALLATION.



The unit arrives completely assembled, except for the TDO valve and flue gas converter, which are usually packed separately and shipped inside the kettle. The unit is strapped on a skid in a heavy wooden crate. Inspect the box carefully for damage. Open the container and check the unit for hidden damage. Report shipping damage or shipment errors to the delivery agent.

Write down the model number, serial number, and installation date for your unit at the top of the Maintenance and Service Log at the back of this manual. Keep the manual with the unit.

When installation is to begin, cut the straps holding the kettle to the skid, and lift the kettle straight up off the skid. Examine the packing materials to make sure no loose parts are discarded with the materials.

Once the kettle is unpacked, the tangent draw-off valve is easily attached, as shown above. The large nut which attaches the valve to the kettle should be hand tightened only.



INSTALLATION

NOTICE: TO AVOID DAMAGING PARTS OF THE BURNER SYSTEM UNDERNEATH THE KETTLE, LIFT THE UNIT ONLY BY THE RING BENEATH THE OUTER PORTION OF THE BODY.

CAUTION: DO NOT CONNECT ANY PIPING TO THE PRESSURE RELIEF SAFETY VALVE. IT MUST BE FREE TO VENT STEAM AS NEEDED. ELBOW SHOULD POINT DOWN TOWARD FLOOR. IMPROPER INSTALLATION WILL VOID WARRANTY!

DANGER: ELECTRICALLY GROUND THE UNIT AT THE TERMINAL PROVIDED. FAILURE TO GROUND UNIT COULD RESULT IN ELECTROCUTION AND DEATH.

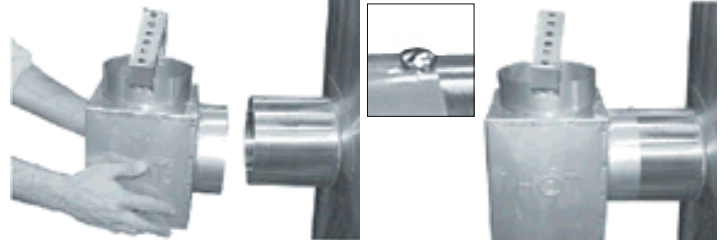


Figure 1



Figure 2

These appliances must be installed by a competent person in conformity with the installation and servicing instructions and national regulations in force at the time. Particular attention must be paid to the following:

- I. E.E. Regulations for Electrical Installations
- Electricity at Work Regulations
- Gas Safety (Installation & Use Regulations)
- Health and Safety at Work Act
- Fire Precautions Act
- Local and National Building Regulations

WARNING: THIS APPLIANCE MUST BE EARTHED.

EQUIPMENT	Ventilation Rate Required	
	m ³ /min	ft ³ /min
Range, Unit Type	17	600
Pastry Oven	17	600
Fryer	26	900
Grill	17	600
Steak Grill	26	900
Boiling Pan	17	600
Steamer	17	600
Sterilizing Sink	14	500
Bain-Marie	11	400
Tea/Coffee Machine	8.5-14	300-500

Detailed recommendations are contained in institute of gas engineers published documents: IGE/UP/1, IGE/UP/2, BS6173 AND BS5440.

1. Installing Clearances

- a. Vertical clearance of at least 1000 mm should be allowed between the top rim of the kettle and any overlying surface.
- b. Adequate ventilation, whether natural or mechanically induced, must be provided to ensure a supply of fresh air for gas combustion, and to facilitate effective removal of the products of combustion.
- c. Ventilation recommendations for catering appliances are provided in BS 5440:2. Furthermore, guidance on the column of ventilation air required for different types of catering equipment to ensure sufficient room ventilation is provided at right.

- d. For multiple installations, the requirements for individual appliances should be added together. Installation should be made in accordance with local and national regulations applying at the time. A competent installer must be employed.
- e. The appliance flue discharges horizontally from the top of the unit. It must not be directly connected to any flue, mechanical extraction system, ducting, etc., which leads to the outside of the building. The appliance is best discharged under an open canopy connected with a ventilating system.
- f. Install the unit with a minimum clearance to combustible and non-combustible construction of six inches (152 mm) at the sides and six inches (152 mm) between the draft diverter and the wall. Also leave enough room for cleaning, maintenance, and service.
- g. Electrically protective earth ground the unit at the terminal provided (figure 1). This unit is fitted with an equipotential terminal in accordance with national regulations and CE directives. Locate this marking for equipotential terminal connection (figure 2).

2. Gas Supply

Incoming service must be of sufficient size to supply full rate without excessive pressure drop. A gas meter is connected to the service pipe by the gas supplier.

Any existing meter should be checked by the supplier to ensure that the meter has the capacity for passing the required rate of gas for the kettle in addition to any other gas equipment installed.

The appliance governor is incorporated in the gas control valve which is situated in the control cabinet. The control valve governor is suitable for both natural and propane gases without conversion.

Installation pipework should be fitted in compliance with IEGE/UP/2. The pipework should not be smaller than the gas inlet connection (Rp $\frac{1}{2}$ [$\frac{1}{2}$ " B.S.P.]). An isolating cock must be located close to the appliance to allow shut-down during emergencies or service. Installation must be tested for gas soundness and purged as specified in IGE/UP/1.

3. Electrical Supply

This unit is designed for connection to fixed wiring. A suitably rated isolating switch with contact separation of at least three millimeters on both poles, must be fitted to the installation. The wiring must be executed in accordance with the regulations listed inside the cover page of this manual supplement.

Power supply to this unit must be 230V, 1 Phase, 50/60hz with wiring suitable for an electronic load of 50 watts.

Cable entry is at the lower rear on right hand side of the appliance. Access to the terminals is gained by removing access panel.

Electrical Safety & Advice Regarding Supplementary Electrical Protection

Commercial kitchens and foodservice areas are environments where electrical appliances may be located close to liquids, or operate in and around damp conditions, or where restricted movement for installation and service is evident.

The installation and periodic inspection of the appliance should only be undertaken by a qualified, skilled and competent electrician; and connected to the correct power supply suitable for load as stipulated by the appliance data label.

The electrical installation and connections should meet the necessary requirements to local electrical wiring regulations and electrical safety guidelines. We recommend:

- Supplementary electrical protection with use of a residual current device (RCD).
- Fixed wiring appliances incorporate a locally situated switch disconnector to connect to, which is easily accessible for switching off and safe isolation purposes. The switch disconnector must meet the specification requirements of IEC 60947.

4. Water Supply

Not applicable to these appliances except for optional faucets.

5. Gas System Performance

The tables shown here provide the total Gas Rates, Injector Diameters and Pressure Adjustments for model AH/1E (CE) using natural (G20) and propane (G31) gas sources.

Total Gas Rate

Model	Natural (G20) KW	Natural BTU/hr	Propane (G31) KW	Propane BTU/hr
AH/1E-20	22	75,100	22	75,100
AH/1E-40	25	85,300	22	75,100
AH/1E-60	40	136,500	40	136,500

Injector Diameters - Natural & Propane Gas

Model	Natural Gas (G20) mm	Propane Gas (G31) mm	No. of Orifices (injectors)
AH/1E-20	4.39	2.64	1
AH/1E-40	4.57	2.64	1
AH/1E-60	1.1	0.64	32

Gas Pressure Adjustment A pressure test point is fitted on the burner manifold and on the gas control valve.

Model		AH/1E-20	AH/1E-40	AH/1E-60
Natural Gas (G20)	mbar	8.75	8.75	8.75
	in. WC	3.5	3.5	3.5
Propane Gas (G31)	mbar	25	25	25
	in. WC	10	10	10

NOTE: With reference to the gas rate, pressure adjustments and conversions, this appliance is CE-approved for use with the following gases:

- a. Gas Category I2H, G20 natural gas may be supplied to the appliance in Austria, Denmark, Finland, Greece, Iceland, Italy, Luxembourg, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.
- b. Gas Category I3P, G31 propane gas may be supplied to the appliance in Germany, Ireland, the Netherlands, Portugal, Spain, Switzerland and the United Kingdom.

Use of the appliance with non-approved gases in a listed country, or use in other countries will void CE certification.

6. Burner Adjustment

The burner has a primary air adjustment. The gap should be 1/4" (6.35 mm) to 3/8" (9.53 mm).

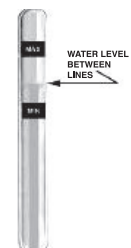
INITIAL START-UP

IMPORTANT: BE SURE ALL OPERATORS READ, UNDERSTAND AND FOLLOW THE OPERATING INSTRUCTIONS, CAUTIONS, AND SAFETY INSTRUCTIONS CONTAINED IN THIS MANUAL.

WARNING: AVOID ALL DIRECT CONTACT WITH HOT SURFACES. DIRECT SKIN CONTACT COULD RESULT IN SEVERE BURNS. AVOID ALL DIRECT CONTACT WITH HOT FOOD OR WATER IN THE KETTLE. DIRECT CONTACT COULD RESULT IN SEVERE BURNS.



The pressure relief valve must face downward.



Correct water level.



Now that the kettle has been installed, you should test it to ensure that the unit is operating correctly.

1. Remove all literature and packing materials from inside and outside of the unit.
2. The unit is equipped with a draw-off valve (product outlet), clean out any material which might clog or damage the draw-off.
3. Turn on the electrical service to the unit.
4. Pour 1-2 (.95 - 1.89 liters) quarts of water into the kettle.
5. Following "To Start Kettle" instructions in the "Operation" section of this manual, begin heating the water at the highest thermostat setting. The heating indicator light should come on immediately, and heating should continue until the water boils.
6. To shut down the unit, turn the power thermostat to "0" and the power switch to "OFF".

If the unit functions as described above, it is ready for use. If the unit does not function as intended, first recheck power supply connections and, if necessary, contact your local Certified Service Agency.

OPERATION

WARNING: WHEN OPENING TANGENT DRAW-OFF (TDO) VALVE:

- 1) WEAR PROTECTIVE OVEN MITT AND PROTECTIVE APRON.
- 2) USE DEEP CONTAINER TO CONTAIN AND MINIMIZE PRODUCT SPLASHING.
- 3) PLACE CONTAINER ON STABLE, FLAT SURFACE, AS CLOSE TO KETTLE AS POSSIBLE.
- 4) DO NOT OVERFILL CONTAINER. AVOID SKIN CONTACT WITH HOT CONTAINER AND ITS CONTENTS.

WARNING: DO NOT EMPTY CONTENTS FROM KETTLE UNTIL PRESSURE REDUCES OR READS APPROXIMATELY ATMOSPHERIC PRESSURE.

WARNING: OPENING TANGENT DRAW OFF (TDO) VALVE WILL LEAD TO THE DISCHARGE OF HOT CONTENTS.

WARNING: AVOID ALL DIRECT CONTACT WITH HOT SURFACES AND HOT FOOD OR WATER IN THE KETTLE. DIRECT CONTACT COULD RESULT IN SEVERE BURNS.

CAUTION: DO NOT OVERFILL THE KETTLE WHEN COOKING, HOLDING OR CLEANING. KEEP LIQUIDS AT LEAST 2-3" (5-8 CM) BELOW THE KETTLE RIM TO ALLOW CLEARANCE FOR STIRRING, BOILING AND SAFE PRODUCT TRANSFER.

WARNING: AVOID ALL DIRECT CONTACT WITH HOT FOOD OR WATER IN THE KETTLE. DIRECT CONTACT COULD RESULT IN SEVERE BURNS.

CAUTION: HEATING AN EMPTY KETTLE MAY CAUSE THE RELEASE OF STEAM FROM THE PRESSURE RELIEF VALVE.

CAUTION: ANY POTENTIAL USER OF THE EQUIPMENT MUST BE TRAINED IN SAFE AND CORRECT OPERATING PROCEDURES.

WARNING: KEEP AREA AROUND KETTLE FREE AND CLEAR OF ALL COMBUSTIBLE MATERIALS. DO NOT ATTEMPT TO LIGHT ANY BURNER WITH A FLAME.



OPERATING PROCEDURE

1. To Start Kettle Heating:
 - a. EVERY DAY make sure that the jacket water level in the middle of the sight glass. If the level is too low, see "Jacket Filling and Water Treatment" in this manual.
 - b. Check the pressure/vacuum gauge. If the gauge does not show -20 to -30 inches of mercury (Hg) vacuum or a range of -0.7 to -1.0 Bar, see "Jacket Vacuum" in this manual.
 - c. Turn on the electrical power to the unit.
 - d. Turn on the main power switch on the control face.
 - e. Turn the temperature knob to the desired setting. The heating indicator light indicates that the kettle is heating, and cycling of the on and off indicates that the kettle is being held at the set temperature. Once in each cycle the contactors in the support housing will make a clicking sound. This is normal.
2. To Transfer Product or Empty Kettle:
 - a. The kettle is emptied by means of its draw-off valve, ladling product out, or with the optional tri-basket insert.
3. To Stop Kettle Heating:
 - a. Turn temperature dial to "0" and power switch to OFF.
 - b. For a prolonged shut-down:
 - 1) Follow the procedure above.
 - 2) Disconnect electric power from the unit.

USE OF COMMON ACCESSORIES

1. Hinged or Counterbalanced Cover:
 - a. As with stock pot cooking, an optional cover can speed up the heating of water and food products. It helps retain heat and reduces the heat and humidity in the kitchen. A cover can reduce some product cook times and help maintain the temperature, color and texture of products held or simmered for longer periods.
 - b. Be sure the handle is secure on the lift-off cover before using. ALWAYS use the handle to place or remove cover from the kettle. Wear protective oven mitts and apron.
2. Basket Insert

An optional kettle basket insert can assist in cooking water-boiled products including eggs, potatoes, vegetables, shell fish, pasta and rice. The nylon mesh liner must be used when cooking product smaller than the mesh size of the basket, which is approximately 1/4" (6 mm). This includes rice and small pasta shapes. Tips for use:

 - a. Allow for the water displacement of the basket and product to be cooked. This may mean only filling the kettle half full of water. Test the basket and product displacement with the kettle temperature dial turned to 0 and power switch to "OFF", with cold water in the kettle.
 - b. Load baskets on a level, stable work surface.
 - c. Lift loaded baskets with both hands. Get help from another person if the basket is too heavy for safe handling.
 - d. Slowly lower product into kettle.
 - e. When removing baskets with cooked product, lift straight up, ensuring basket bottoms clear the kettle rim and pouring lip. Wear protective oven mitts and protective apron.
 - f. Allow hot water to fully drain from product before moving basket away from the kettle. Do not rest baskets on kettle rim or pouring lip. If baskets are too heavy for individual to lift and safely move, get help. Remove product immediately from basket into another container, being sure to avoid contact with hot product and hot basket or...
 - g. Place baskets with food on a stable, flat surface, inside a solid steamer or bake pan, to catch any remaining hot water draining from product.

3. Ball Valve

Some kettles are equipped with an optional valve.



CLEANING

WARNING: KEEP WATER AND SOLUTIONS AWAY FROM CONTROLS AND ELECTRICAL EQUIPMENT. NEVER SPRAY THE SUPPORT HOUSING OR ELECTRICAL CONNECTIONS.

CAUTION: MOST CLEANERS ARE HARMFUL TO THE SKIN, EYES, MUCOUS MEMBRANES, AND CLOTHING. PRECAUTIONS SHOULD BE TAKEN. WEAR RUBBER GLOVES, GOGGLES OR FACE SHIELD, AND PROTECTIVE CLOTHING. READ THE WARNINGS AND FOLLOW THE DIRECTIONS ON THE LABEL OF THE CLEANER CAREFULLY.

CAUTION: NEVER LEAVE A SANITIZER IN CONTACT WITH STAINLESS STEEL SURFACES LONGER THAN 30 MINUTES. LONGER CONTACT CAN CAUSE CORROSION.

WARNING: AVOID DIRECT CONTACT WITH HOT SURFACES. DIRECT SKIN CONTACT COULD RESULT IN SEVERE BURNS.



Optional ball valves can be easily disassembled for cleaning. Parts can be cleaned in standard sanitizer or dish washing.



Use a brush, sponge, cloth, plastic or rubber scraper, or plastic wool to clean.



Don't use metal implements or steel wool when cleaning.



SUGGESTED CLEANING SUPPLIES

1. Cleaner, such as Klenzade HC-10 or HC-32 from ECOLAB, Inc. or equivalent.
2. Kettle brushes in good condition
3. Sanitizer such as Klenzade XY-12.
4. Film remover such as Klenzade LC-30.

PRECAUTIONS

Before cleaning, shut off the kettle by turning the main power switch to "OFF," and shut off all electric power to the unit at a remote switch, such as the circuit breaker.

PROCEDURE

1. Clean food-contact surfaces as soon as possible after use. If the unit is in continuous use, thoroughly clean and sanitize the interior and exterior at least once every 12 hours.

2. Scrape and flush out food residues. Be careful not to scratch the kettle with metal implements.
3. Prepare a hot solution of the detergent/cleaning compound as instructed by the supplier. Clean the unit thoroughly. A cloth moistened with cleaning solution can be used to clean controls, housings, and electrical conduits.
4. Rinse the kettle and draw-off valve parts thoroughly with hot water, then drain completely.
5. As part of the daily cleaning program, clean soiled external and internal surfaces. Remember to check the sides of the unit and control housing, underside of cover, etc.
6. To remove burnt on foods, use a brush, sponge, cloth, plastic or rubber scraper, or plastic wool with the cleaning solution. To reduce effort required in washing, let the detergent solution sit in the kettle and soak into the residue. Do NOT use abrasive materials or metal tools that might scratch the surface. Scratches make the surface harder to clean and provide places for bacteria to grow. Do NOT use steel wool, which may leave particles in the surface and cause eventual corrosion and pitting.
7. The outside of the unit may be cleaned with a warm water (100°F or less) spray. Do not use a high pressure spray.
8. The outside of the unit may be polished with a stainless steel cleaner such as "Zepper" from Zep Manufacturing Co.
9. When equipment needs to be sanitized, use a solution equivalent to one that supplies 200 parts per million available chlorine. Obtain advice on sanitizing agents from your supplier of sanitizing products.
10. It is recommended that each piece of equipment be sanitized just before use.
11. Clean the kettle thoroughly. If there is difficulty removing mineral deposits or a film left by hard water or food residues, then use a de-liming agent, following manufacturer directions.
12. Rinse and drain the unit thoroughly before further use.
13. If cleaning problems persist, contact your cleaning product representative for assistance. The supplier has a trained technical staff with laboratory facilities to serve you.

MAINTENANCE

WARNING: AVOID ANY EXPOSURE TO THE STEAM BLOWING OUT OF THE PRESSURE RELIEF VALVE. SEVERE BURNS CAN RESULT ON EXPOSED SKIN. FAILURE TO CHECK PRESSURE RELIEF VALVE OPERATION PERIODICALLY COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO EQUIPMENT.

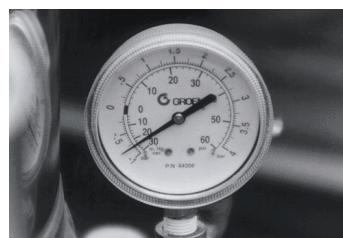
CAUTION: KEEP GREASE AWAY FROM ELECTRICAL PARTS LOCATED NEAR THE GEARS.

WARNING: TO AVOID INJURY, READ AND FOLLOW ALL PRECAUTIONS STATED ON THE LABEL OF THE WATER TREATMENT COMPOUND.

WARNING: USE OF ANY REPLACEMENT PARTS OTHER THAN THOSE SUPPLIED BY THE MANUFACTURER OR THEIR AUTHORIZED DISTRIBUTORS CAN CAUSE INJURY TO THE OPERATOR AND DAMAGE TO THE EQUIPMENT AND WILL VOID ALL WARRANTIES.

CAUTION: INSURE ELECTRICAL POWER IS REMOVED AND THE GAS IS TURNED OFF AT THE SHUTOFF VALVE PRIOR TO PERFORMING ANY MAINTENANCE ON THIS KETTLE.

WARNING: THIS KETTLE IS DESIGNED TO BE WATER RESISTANT. FAILURE TO FOLLOW PROPER MAINTENANCE PROCEDURES MAY VOID THE WARRANTY.



The pressure gauge should show a vacuum of -20 to -30 inches of mercury (Hg) vacuum or a range of -0.7 to -1.0 Bar when the kettle is cold.



The open end of the pressure relief valve must face downward.



Model	Kettle Capacity	Jacket Capacity
AH/1E-20	20 Gallon (75 liter)	4-1/2 Gallon (17 liter)
AH/1E-40	40 Gallon (150 liter)	7 Gallon (26.5 liter)
AH/1E-60	60 Gallon (225 liter)	9-1.2 Gallon (36 liter)

PERIODIC MAINTENANCE

NOTICE: Contact an authorized representative when repairs are required.

A Maintenance & Service Log is provided at the back of this manual. Each time maintenance is performed on your kettle, enter the date on which the work was done, what was done, and who did it. Keep this manual on file and available for operators to use. Periodic inspection will minimize equipment down time and increase the efficiency of operation. The following points should be checked:

[BY OPERATOR]

1. Check the pressure/vacuum gauge every day. The gauge should show a vacuum of -20 to -30 inches of mercury (Hg) vacuum or a range of -0.7 to -1.0 Bar, see "Jacket Vacuum" in this manual.
2. Also check the jacket water level every day. It should be between the marks on the gauge glass. If the level is low, see "Jacket Filling and Water Treatment" in this manual.
3. Carefully test the pressure relief valve at least twice each month. With the kettle operating at 15 psi (105 kPa, 1.1 bar), pull the test lever and let it snap back to its closed position. If there is little discharge (mostly air), and the pressure gauge drops back to 0 psi (0 kPa, 0 bar), allow the pressure to build back to 5 psi (35 kPa, 0.34 bar) and repeat the procedure. (Tip: Using a screwdriver or other implement to pull the ring will help you avoid contact with the steam.

[BY SERVICE TECHNICIAN]

4. Electrical wiring should be kept securely connected and in good condition.
5. The inside of the support housing should be kept clean.
6. The gear housing has fittings for lubrication of moving parts. The gears do not run in oil, so periodic lubrication with grease is necessary.
7. Frequency of lubrication depends on operating conditions, but it should be done at least once every six months.
8. Use a #2 grade LGI lithium grease to add grease through Zerk fittings on gear housing until it flows out of the bearings around the trunnion shaft.
9. Place liberal amounts of grease on the gear to cover the arc that is in contact with the worm gear.
10. Keep electrical wiring and connections in good condition.
11. Keep the inside of the control console clean and dry.

JACKET VACUUM/REMOVING AIR FROM JACKET

When the kettle is cold, a positive pressure reading on the pressure/vacuum gauge or a reading near 0 psi (0 kPa, 0 bar) indicates that there is air in the jacket. Air in the jacket acts as an insulator, and slows kettle heating.

To remove air:

1. Start the unit. (Be sure there is water or product in the kettle when heating).
2. When the pressure/vacuum gauge reaches a positive pressure reading of 5 psi (35 kPa, 0.34 bar), release the trapped air and steam by pulling up the safety valve ring for about five seconds. Repeat this step three or four times. Then let

the pull ring snap back into the closed position.

3. If there is little discharge (mostly air), and the pressure gauge drops back to 0 psi (0 kPa, 0 bar), allow the pressure to build back to 5 psi (35 kPa, 0.34 bar) and repeat the procedure.
4. Once steam has been vented from the jacket as described in b, above, remove the hot water from the kettle and replace it with cold. This will condense steam in the kettle jacket, and the pressure gauge should show -20 to -30 inches of mercury (Hg) vacuum or a range of -0.7 to -1.0 Bar. If it does not, or if the vacuum is leaking down, contact an authorized service agency to correct the problem.

PRESSURE RELIEF VALVE

At least twice a month, test the pressure relief valve. Test the valve with the kettle operating at 15 PSI (105 kPa, 1.1 bar), by holding the test ring for at least five seconds. Then release the ring and permit the valve to snap shut. If the ring does not activate, if there is no discharge, or if the valve leaks, stop using the kettle immediately and contact a authorized service representative.

JACKET FILLING

The jacket was charged at the factory with the proper amount of treated water. You may need to restore this water, either because it was lost as venting steam or by draining. If you are replacing water lost as steam, use distilled water. If you are replacing treated water that ran out of the jacket, prepare more treated water as directed in "Water Treatment Procedure," below.

1. Allow the kettle to cool completely. The procedure will be easier with the kettle under vacuum (pressure gauge reading below zero).
2. Allow the kettle to cool completely. Remove the pressure gauge from the sight glass assembly. Pour in the distilled or treated water. Using a funnel will help you in this process. Hold the pressure relief valve open while you pour, to let air escape from the jacket. Continue adding water until the water level rises to the center of the round sight glass.
3. Position a funnel in the opening and fill it with properly treated water.
4. Air that gets into the jacket during the filling operation must be removed, because it will make heating less efficient. Follow the procedure in Jacket Vacuum/Removing Air From Jacket above, to restore a negative pressure reading.

WATER TREATMENT

1. Obtain water treatment compound and a pH test kit from your authorized parts distributor.
2. Fill a mixing container with the measured amount of water required. (See table). Distilled water is recommended.

Kettle Model	Jacket Capacity
EE-20	3-1/4 Gallons (12.3 liters)
EE-40	4-1/2 Gallons (17.0 liters)

3. Hang a strip of pH test paper on the rim of the container, with about 1" (2.54 cm) of the strip below the surface of the water.
4. Measure the water treatment compound (ones way to do this is to add the compound from a measuring cup).
5. Stir the water continuously, while you slowly add water treatment compound, until the water reaches a pH between 10.5 and 11.5. Judge the pH by frequently comparing the test strip color with the color chart provided in the pH test kit. If you are color blind use an electroanalytical instrument to measure the pH level or have a person who is not color blind read the test strip color level.
6. Record the exact amounts of water and treatment compound used. These amounts may be used again, if the same water sources and compound are used in the future. However, it is best to check the pH each time treated water is prepared.

SEQUENCE OF OPERATION

The following “action-reaction” outline is provided to help understand how the kettle works.

- When the power switch is turned on, it starts the spark igniter and opens the automatic valve for the pilot burner. The spark ignites a pilot flame, which heats the sensor. The sensor then sends a signal to turn off the spark. The flame thereafter acts as a standing pilot until the power is turned off.
- If the pilot flame is not sensed within 90 seconds after spark begins, a timer shuts down the entire operation. To attempt a second trial for ignition, turn off the power switch. Check the gas supply valves and wait five minutes before trying again by switching power on. If you cannot establish a pilot flame in four tries, close all valves, turn off the power, and contact an authorized Service Agency.
- When the operator sets a temperature on the thermostat, it causes the automatic valve to admit gas to the main burner, where it is ignited by the pilot flame. When the kettle reaches the set temperature, the thermostat switch opens. This stops the signal to the gas control valve and shuts off gas to the main burner. The pilot flame stays lit.
- When the kettle cools below the set temperature, the thermostat switch closes and start another cycle. On and off cycling continues and maintains the kettle at the desired temperature. This action is indicated by the Heat Indicator light.

The kettle has the following safety features in addition to the 90-second ignition timer:

- Low water cutoff relay that will shut off gas supplies to all burners until the jacket water level is corrected.
- High limit pressure switch, set to open at about 26 PSI and to shut down the burners until jacket pressure is decreased.
- Pressure relief safety valve, which will release steam if jacket pressure exceeds 30 PSI.
- Gas pressure regulator built into the gas control valve.

REPLACEMENT PARTS

To order parts, contact your Authorized Service Agent. Supply the model designation, serial number, part description, part number, quantity, and when applicable, voltage and phase.

CONTACT US

If you have questions pertaining to the content in this manual, contact Groen at 888-994-7636.

TROUBLESHOOTING

This unit is designed to operate smoothly and efficiently if properly maintained. However, the following is a list of checks to make in the event of a problem. Wiring diagrams are found at the end of this manual. When in doubt, turn unit off and call for service at 888-994-7636. If an item on the check list is marked with (X), it means that the work should be done by an Authorized Service Agent.

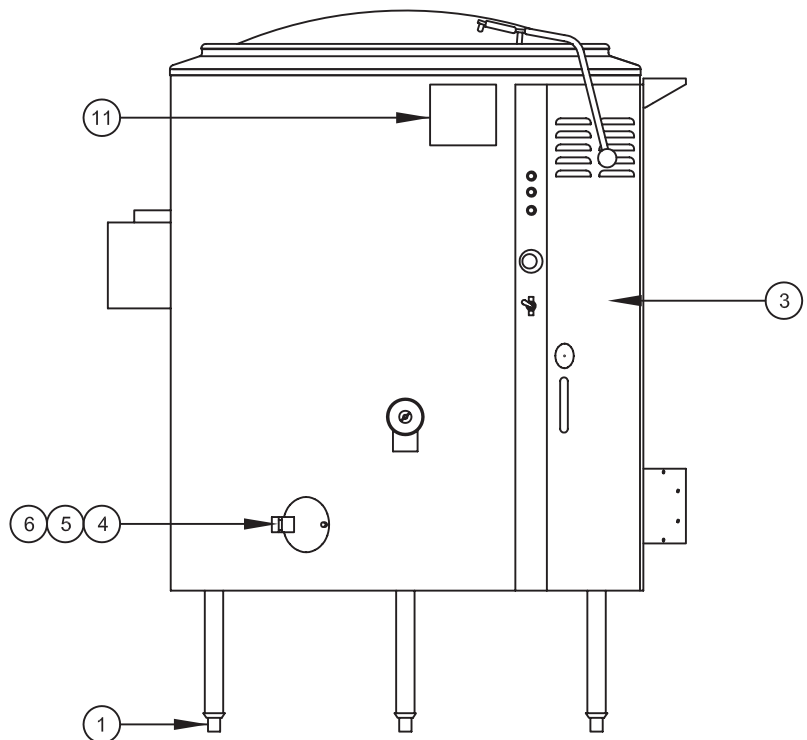
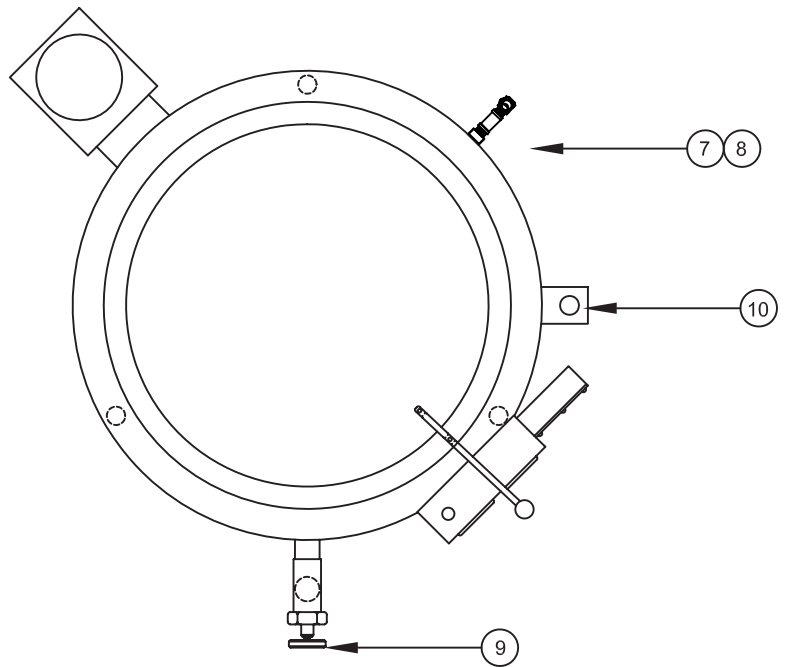
SYMPTOM	WHO	WHAT TO CHECK
Kettle continues heating after it reaches the desired temperature.	User	a. Thermostat dial setting.
	Auth Service Rep Only	b. Thermostat calibration. X c. Thermostat operation. The thermostat should click when the dial is rotated above and below the setting for the temperature of the kettle. X
Kettle stops heating before it reaches the desired temperature.	User	a. Thermostat dial setting.
	Auth Service Rep Only	b. Thermostat calibration. X c. Thermostat operation. Thermostat should click when the dial is rotated above and below the setting for the temperature of the kettle. X
Safety valve pops open.	User	a. For air in the jacket. See “Jacket Vacuum” in the Maintenance section. b. Thermostat dial setting.
	Auth Service Rep Only	c. For defective thermostat. The thermostat should click when the dial is rotated to settings above and below the temperature of the kettle. If defective, replace. X d. For defective safety valve. If the valve pops at pressures below 29 PSI, replace. X
Burners will not light.	User	a. That the main gas supply valve is open. (handle is in line with the gas pipe). b. Gas supply to the building.
	Auth Service Rep Only	c. Thermostat operation. The thermostat should click when the dial is rotated to settings above and below the temperature of the kettle. X
System does not produce a spark.	Auth Service Rep Only	a. AC voltage between terminals on secondary side of transformer with unit power turned on. If it is not 24 Volt, replace the transformer. X b. That the high tension cable is firmly attached and in good condition. If cracked or brittle, replace. X c. Pilot burner ceramic insulator for crack or break. X d. Pilot spark gap. Regap. X
Pilot lights, but main burner will not come on and spark does not stay on.	Auth Service Rep Only	a. For 24 V between terminals MV and PV/MV while pilot is burning. If 24V is not present, replace the ignition control module. X b. That gas pressure is at least 3.5” W.C.(8.7818 b). X c. Electrical connections of the main valve to terminals, to assure that they are securely attached. Check magnetic operator for main valve on gas valve. Repair or replace as necessary. X
Pilot lights, but main burner will not come on, the spark stays on.	Auth Service Rep Only	a. Check for bad burner ground. If necessary, repair with high temperature wire. X b. Pilot burner ceramic insulator for cracks. X c. That cable is not grounded out. If it is, correct the ground-out condition or replace cable. X d. For proper gas pressure. X e. Clean pilot assembly, or replace if necessary. X f. Tighten all mechanical and electrical connections. X g. If the pilot flame is weak, increase pilot orifice size. X h. Replace ignition control module. X
Main burner comes on but will not stay on.	Auth Service Rep Only	a. Check burner ground for bad wire or connection. Replace if necessary with high temperature wire. X b. Check for low gas supply pressure. If necessary, replace ignition control module. X
Spark is present but the pilot will not light.	Auth Service Rep Only	a. That the pilot valve is securely connected to terminals. X b. For 24 VAC at terminals PV and PV/MV. If 24V is not present, replace the ignition control module. X c. That gas pressure is at least 3.5” W.C.(8.7818 b). For gas at the pilot. If it is not flowing: (1) Check the pilot gas line for kinks and obstructions. X (2) Clean orifice, if necessary. X (3) Check magnetic operator for pilot valve on gas valve. Repair or replace as necessary. X d. That the pilot spark gap is located in the pilot gas stream. If not, adjust or replace the pilot burner. X e. For drafts. Shield the pilot burner, if necessary. X

CALL FACTORY FOR REPLACEMENT PARTS:
888-994-7636

Parts List

Key	Description	Part #
1	FOOT, ADJUSTABLE	013275
2*	RADIATION SHIELD ASM, AH-20/40	000448
2*	RADIATION SHIELD ASM, AH-20/60	000445
3	COVER PANEL, AH-20	012365
3	COVER PANEL, AH-40	012377
3	COVER PANEL, AH-60	013515
4	INSULATOR, PILOT BURNER ACCESS	008201
5	DOOR, PILOT	004035
6	HINGE, PILOT DOOR	004114
7	SAFETY VALVE & WATER FILL ASM	097010
8	PLATE W/CHAIN ASM	008332
9	TDO KIT	100573
10	BRACKET, FAUCET MOUNTING	009054
11	DATA PLATE, CE MARK	114504
12*	WATER TREATMENT KIT	110324
13*	LABEL, WIRING DIAGRAM	177027

* Not Shown

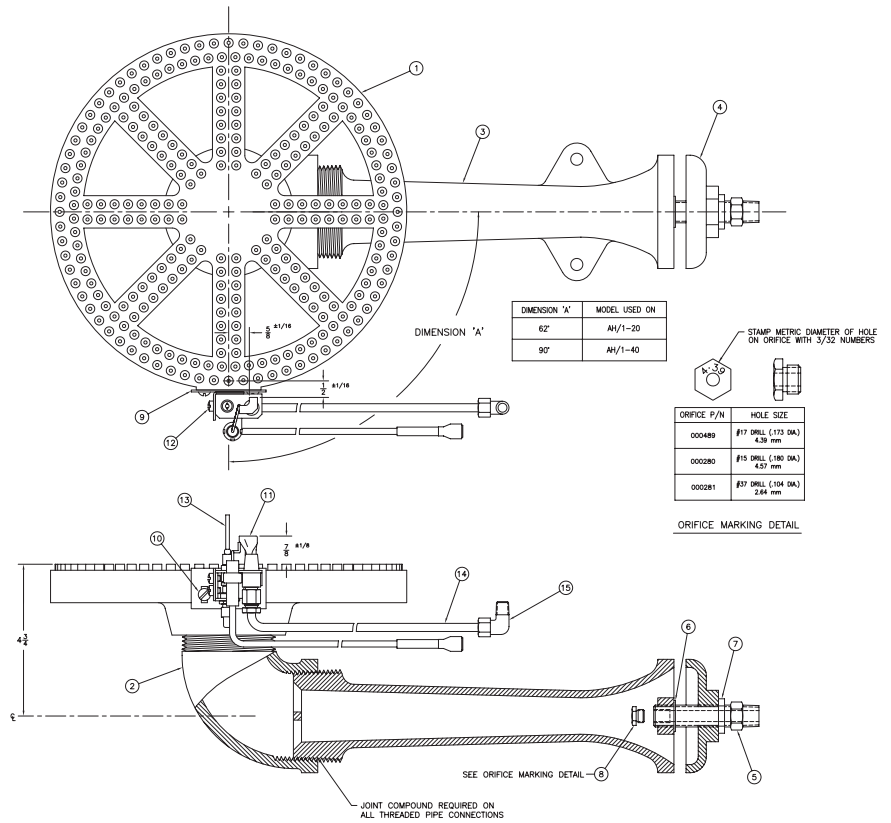


AH/1E-20 & 40

CALL FACTORY FOR REPLACEMENT PARTS:
888-994-7636

Parts List

Key	Description	Part #
1	BURNER HEAD	000286
2	90° ELBOW, 2-1/2" NPT	000289
3	VENTURI	000287
4	AIR SHUTTER	000288
5	SPUD ORIFICE	000279
6	RETAINING RING, E TYPE (5133-62)	000460
7	LOCK NUT, 3/8" NPT	000294
8	ORIFICE, NATURAL GAS (#17 DRILL .173 DIA. HOLE) (AH/1E-20 ONLY)	000489
8	ORIFICE, NATURAL GAS (#15 DRILL .173 DIA. HOLE) (AH/1E-40 ONLY)	000280
8	ORIFICE, PROPANE GAS (#37 DRILL .104 DIA. HOLE)	000281
9	BRACKET, PILOT BURNER MOUNTING	004425
10	SCREW #10-24 X 3/8" LG. ROUND HEAD SLTD.	006009
11	PILOT BURNER ASSY W/.018 DIA ORIFICE	117704
11	PILOT BURNER ASSY W/.010 DIA ORIFICE	117705
12	SCREW #10-32 X 1/4 FILLISTER HEAD SLTD.	090797
13	SENSING PROBE	003328
14	PILOT TUBING, 1/4" OD ALUMINUM	006796
15	FITTING COMPRESSION 90 1/8 NPT x 1/4 CC	004584

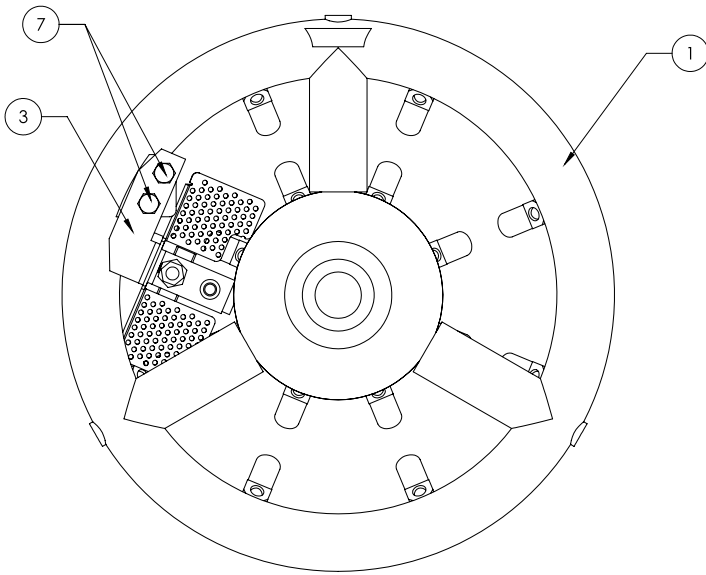
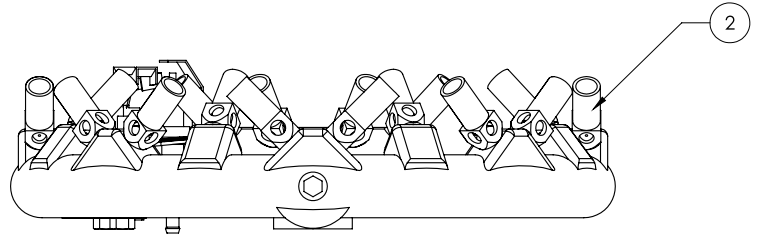
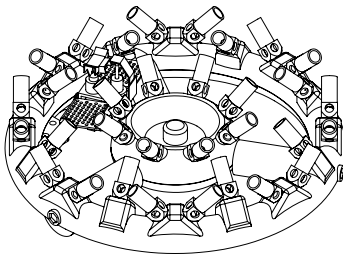
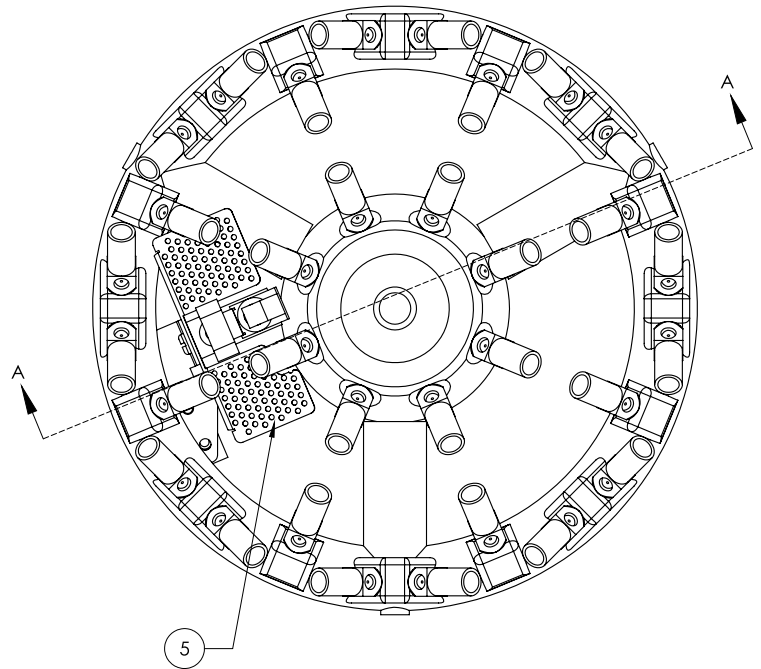


AH/1E-60

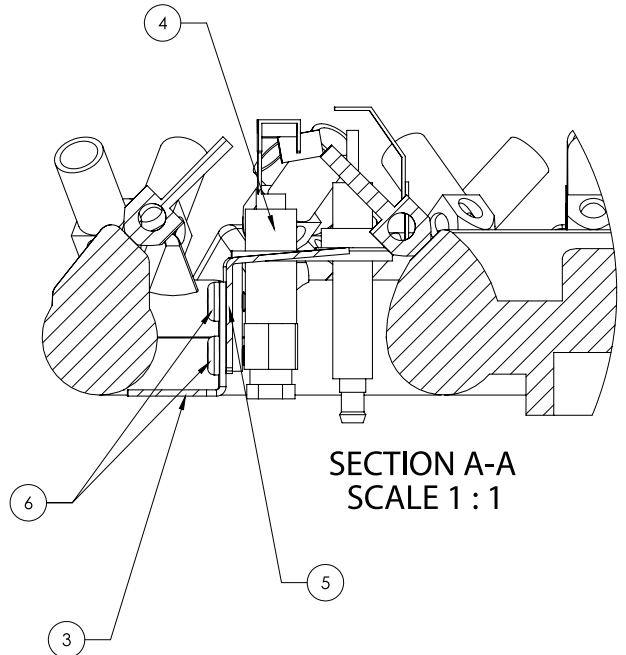
CALL FACTORY FOR REPLACEMENT PARTS:
888-994-7636

Parts List

Key	Description	Part #
1	BURNER ASSEMBLY AH-60 (G20)	175856
1	BURNER ASSEMBLY AH-60 (G31)	175861
2	PILOT BRACKET, AHS-40	139181
3	ASM PILOT BURNER (G20)	102258
3	ASM PILOT BURNER (G31)	104392
4	TUBE PILOT	139833
5	CABLE HI VOLT SPARK IGNITION	096728
6	SCREW/HEX HD 1/4-20 X 3/8	085199
7	SCREW/HEX HD #10-32 X 1/4	003254



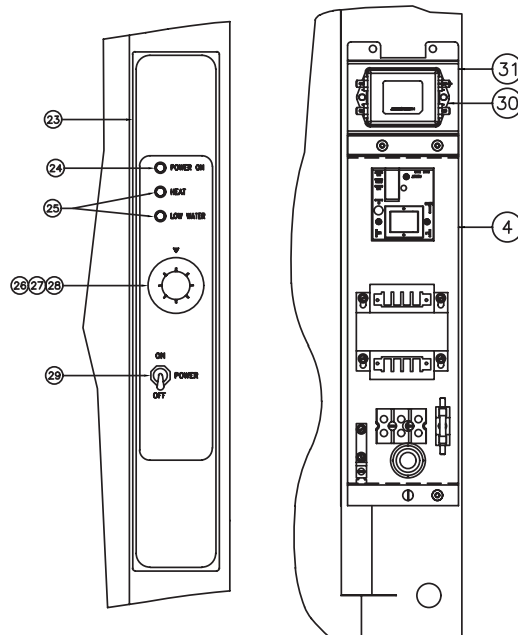
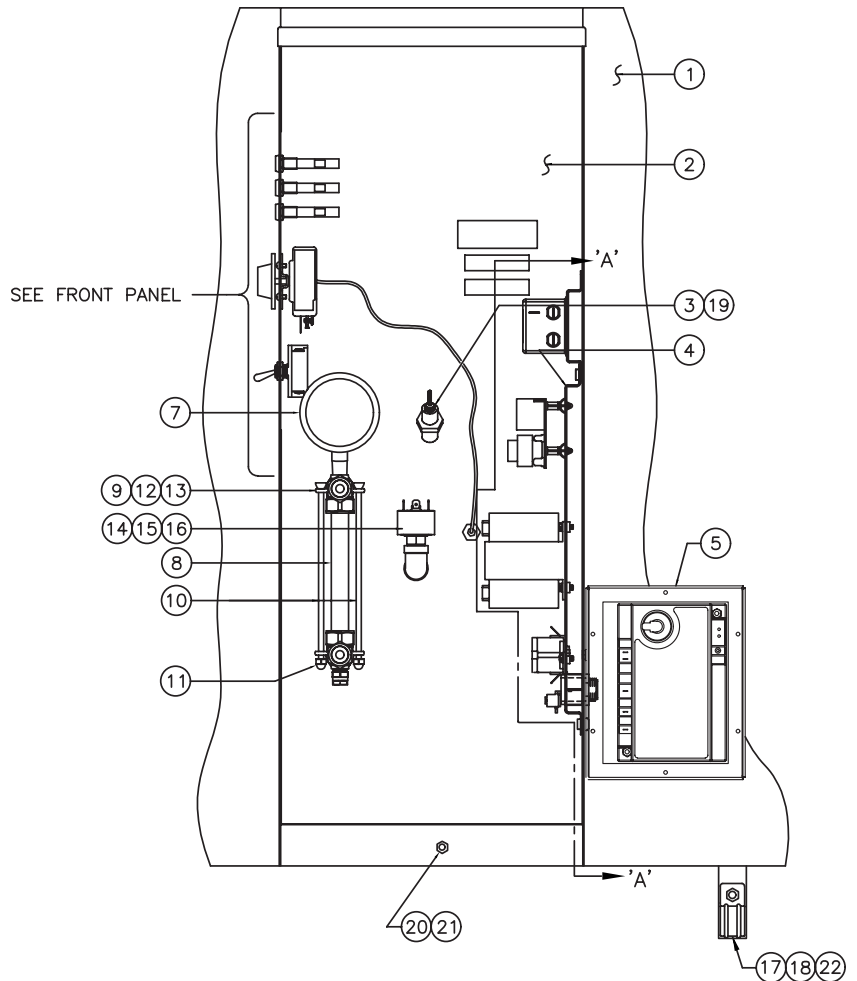
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CALL FACTORY FOR REPLACEMENT PARTS:
888-994-7636

Parts List

Key	Description	Part #
1	OUTER CASING	-
2	FRONT WALL	-
3	WATER LEVEL ELECTRODE	074665
4	ASSEMBLY, ELECTRICAL COMPONENTS	176392
5	ASSEMBLY, IGNITION MODULE BOX	154068
6	ASSEMBLY, FRONT PANEL COMPONENTS	0
7	PRESSURE GAUGE, 2" DIA, BLACK FINISH	099156
8	SIGHT TUBE, 5/8" DIA X 4-3/4" LG	008742
9	FITTINGS, SIGHT GLASS ASSEMBLY	002845
10	GUARD ROD FOR GAUGE GLASS	002981
11	NUT, HEX, CAP, #10-24	005470
12	COUPLING, FULL, 1/2" NPT, BLACK	005722
13	NIPPLE, 1/2" NPT X 2-1/2" LG, BLACK	005552
14	SWITCH, PRESSURE	177776
15	NIPPLE, 1/4" NPT X 2-1/2" LG, BLACK	127330
16	ELBOW, 90 DEGREE, 1/4" NPT	005682
17	CLAMP, RIGID CONDUIT, 3/4" NFPC	127345
18	NUT, HEX, KEPS, 1/4-20	NT1101
19	BOOT, LOW WATER PROBE	101143
20	STUD WELD, #10-32 X 3/4	002966
21	NUT, HEX KEPS, #10-32 W/SHAKE PROOF WASHER	071256
22	SCREW, HEX HEAD CAP	005609
23	LABEL, INDICATOR LIGHTS AND INSTRUCTIONS	177083
24	INDICATOR LIGHT, C 0275 00 (24V AMBER) W/CHROME BEZEL	116384
25	INDICATOR LIGHT, C 0275 00 (24V RED) W/CHROME BEZEL	116383
26	THERMOSTAT	012313
27	SCREW, 36-32 X 1/4" LG	018384
28	KNOB, THERMOSTAT	122000
29	TOGGLE SWITCH	122004
30	EMI FILTER	177768
31	BRACKET, EMI FILTER	177861



FRONT PANEL

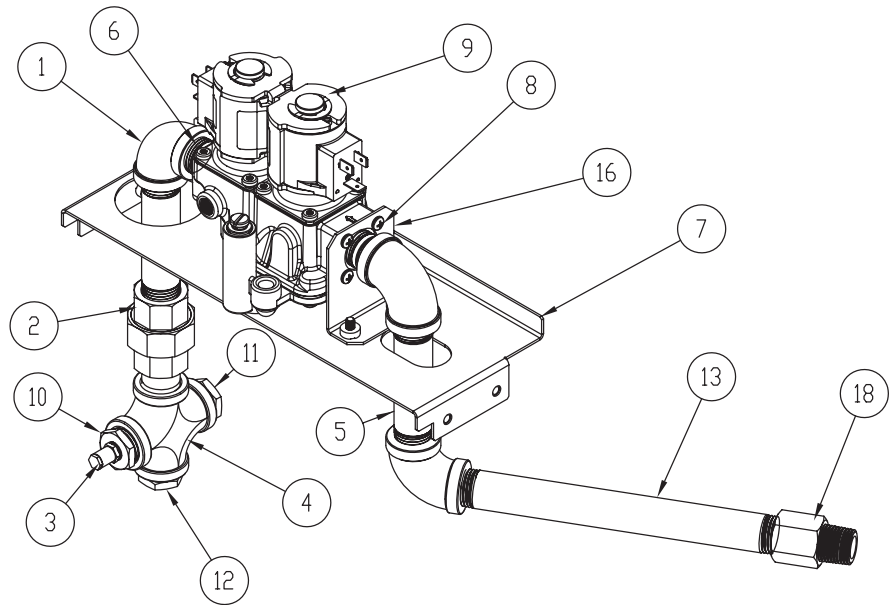
SECTION VIEW A-A

AH/1E-20 & 40

CALL FACTORY FOR REPLACEMENT PARTS:
888-994-7636

Parts List

Key	Description	Part #
1	ELBOW 90 DEG 1/2" NPT	008747
2	UNION 1/2" NPT	004186
3	NIPPLE, PRESSURE TEST 1/8" BSPT	117051
4	CROSS 1/2" NPT 150#	097587
5	NIPPLE BLK 1/2" NPT X 4" LONG	005554
6	NIPPLE, CLOSE 1/2" BSPT X 1/2" NPT	116394
7	BRACKET, GAS VALVE MTG	117717
8	SCREW, PHILLIPS HEAD, M4 X 5MM	123717
9	GAS VALVE, CE	160776
10	BUSING REDUCING 1/2" X 1/8" NPT	088290
11	BUSING REDUCING, HEXAGON 1/2" X 3/8" NPT	007442
12	BUSING REDUCING 1/2" X 1/4"	008739
13	NIPPLE BLK 1/2" NPT X 8" LONG	005557
14	SEALANT, PIPE JOINT (NOT SHOWN)	122002
15	SCREW HEX HD CAP #10-32, 1/2" LG	128757
16	MOUNTING BRACKET ASSY, CE GAS VALVE	176050
17	NIPPLE 1/2" NPT X CLOSE	008877
18	1/2" NPT TO 1/2" BSPT ADAPTER	116392



AH/1E-60

CALL FACTORY FOR REPLACEMENT PARTS:
888-994-7636

Parts List

Key	Description	Part #
1	GAS VALVE, CE	160776
2	ELBOW, 1/2" NPT STREET 90	004185
3	NIPPLE, 1/2" NPT X 1 1/2" LONG	005673
4	NIPPLE, 1/2" NPT X 1-1/2" LONG	004184
5	NIPPLE, 1/2" NPT X 3-1/2" LONG	175476
6	NIPPLE BLK 1/2" NPT X 8" LONG	005557
7	UNION 1/2" NPT	004186
8	SCREW HEX HEAD CAP	005698
9	NUT - HEX SERRATED ZINC 1/4-20	NT1101
10	CLAMP, RIGID CONDUIT	127345
11	GAS MANIFOLD BRACKET	139861
12	NIPPLE 1/2" NPT X 6" BLACK IRON	096934
13	TEE 1/2" NPT	008772
14	BUSING REDUCING 1/2" X 1/8" NPT	088290
15	NIPPLE, PRESSURE TEST 1/8" BSPT	117051
16	BUSING REDUCER 3/4"	008719
17	ELBOW 90 DEG UNION 1/2" NPT	005495
18	NIPPLE 1/2" NPT X 2-1/2" LONG	005552
19	SEALANT, PIPE JOINT (CE)	122002
20	1/2" NPT TO 1/2" BSPT ADAPTER	116392

