



# INSTALLATION & OPERATION MANUAL

## GAS 2/3 JACKETED STATIONARY AND TILTING KETTLES

### MODELS

<i>K20GL</i>	<i>ML-136090</i>
<i>K40GL</i>	<i>ML-136091</i>
<i>K60GL</i>	<i>ML-136092</i>
<i>K20GLT</i>	<i>ML-136094</i>
<i>K40GLT</i>	<i>ML-136095</i>
<i>K60GLT</i>	<i>ML-136096</i>



*K40GL*

For additional information on Vulcan-Hart or to locate an authorized parts and service provider in your area, visit our website at [www.vulcanequipment.com](http://www.vulcanequipment.com)

## IMPORTANT FOR YOUR SAFETY

THIS MANUAL HAS BEEN PREPARED FOR PERSONNEL QUALIFIED TO INSTALL GAS EQUIPMENT, WHO SHOULD PERFORM THE INITIAL FIELD START-UP AND ADJUSTMENTS OF THE EQUIPMENT COVERED BY THIS MANUAL.

POST IN A PROMINENT LOCATION THE INSTRUCTIONS TO BE FOLLOWED IN THE EVENT THE SMELL OF GAS IS DETECTED. THIS INFORMATION CAN BE OBTAINED FROM THE LOCAL GAS SUPPLIER.

### IMPORTANT

IN THE EVENT A GAS ODOR IS DETECTED, SHUT DOWN UNITS AT MAIN SHUTOFF VALVE AND CONTACT THE LOCAL GAS COMPANY OR GAS SUPPLIER FOR SERVICE.

### FOR YOUR SAFETY

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS OR LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

**⚠ 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.

IN THE EVENT OF A POWER FAILURE, DO NOT ATTEMPT TO OPERATE THIS DEVICE.

RETAIN THIS INSTRUCTION MANUAL FOR FUTURE REFERENCE

# CONTENTS

GENERAL .....	4
INSTALLATION .....	5
Unpacking.....	5
Installation Codes and Standards.....	5
Draw-Off Valves.....	5
Gas Connections .....	6
Gas Connection Data .....	7
Testing the Gas Supply System.....	7
Gas and Altitude Conversion .....	8
Flue.....	9
Faucet Bracket .....	9
Electrical Connection.....	9
Location .....	10
Leveling .....	11
Before First Use.....	11
OPERATION.....	12
Controls and Indicators.....	12
Before Operation .....	13
Operation.....	13
Daily Shut Down .....	13
Extended Shut Down.....	13
Venting.....	14
Reservoir Jacket Water Level Check.....	14
Tilting Kettles .....	14
Operating Data .....	14
STAINLESS STEEL EQUIPMENT CARE AND CLEANING.....	15
CLEANING .....	17
Compression Draw-Off Valve Cleaning Instructions.....	17
Plug Valve Cleaning Instructions .....	18
MAINTENANCE .....	19
Venting.....	19
Filling The Reservoir Jacket .....	19
Shutdown.....	19
Service.....	19
TROUBLESHOOTING .....	20

# INSTALLATION, OPERATION AND MAINTENANCE OF KGL AND KGLT SERIES GAS KETTLES

SAVE THESE INSTRUCTIONS FOR FUTURE USE

## GENERAL

Vulcan gas 2/3 jacketed kettles are produced with quality workmanship and material. Proper installation, usage and maintenance will result in many years of satisfactory performance. It is suggested that you thoroughly read this entire manual and carefully follow all of the instructions provided.



Model K40GL



Model K40GLT

MODEL CHART			
Model	Gallons	Quarts	Liters
K20GL & K20GLT	20	80	76
K40GL & K40GLT	40	160	152
K60GL & K60GLT	60	240	228

# INSTALLATION

## UNPACKING

This kettle was inspected before leaving the factory. The transportation company assumes full responsibility for safe delivery upon acceptance of the shipment.

Immediately after unpacking, check for possible shipping damage. If kettle damage is found, save the packaging material and contact the carrier within 15 days of delivery. Freight damage is not covered under Vulcan Warranty.

## INSTALLATION CODES AND STANDARDS

In the United States, Vulcan kettles must be installed in accordance with:

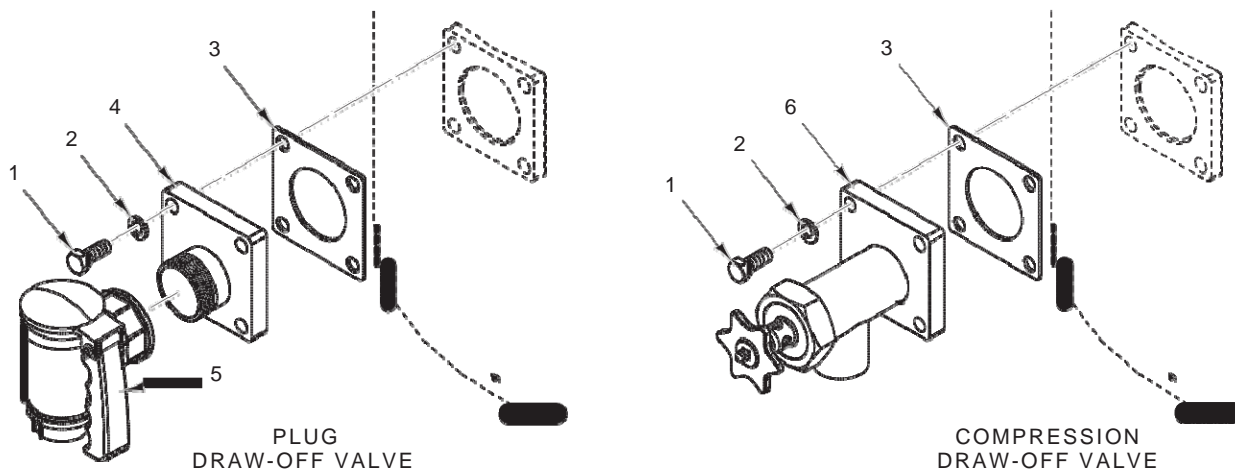
1. State and local codes.
2. National Fuel Gas Code, ANSI-Z223.1 (latest edition). Copies may be obtained from the American Gas Association, Inc.; 1515 Wilson Blvd.; Arlington, VA 22209.
3. National Electrical Code, ANSI/NFPA-70 (latest edition).
4. NFPA Standard NFPA-96, *Vapor Removal from Cooking Equipment*, latest edition, available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

In Canada, Vulcan kettles must be installed in accordance with:

1. Local codes.
2. CAN/CGA-B149.1 National Fuel Gas Code (latest edition), available from the Canadian Gas Association; 178 Rexdale Blvd.; Etobicoke, Ontario; Canada M9W 1R3.
3. CSAC22.2 No. 3 Canadian Electrical Code (latest edition), available from the Canadian Standards Association, 178 Rexdale Boulevard, Etobicoke, Ontario, Canada M9W1R3

## DRAW-OFF VALVES

Install the draw-off valve, if equipped. Install items 1 thru 5 for the plug style valve or items 1 thru 3 and item 6 for the compression style valve.



## GAS KETTLES

### GAS CONNECTIONS

**NOTICE** Gas supply connections and any pipe joint compound must be resistant to the action of propane gases.

Codes require that a gas shutoff valve be installed in the gas line ahead of the kettle.

Connect the gas supply line to the gas valve on the kettle. Make sure the pipes are clean and free of obstructions, dirt and piping compound.

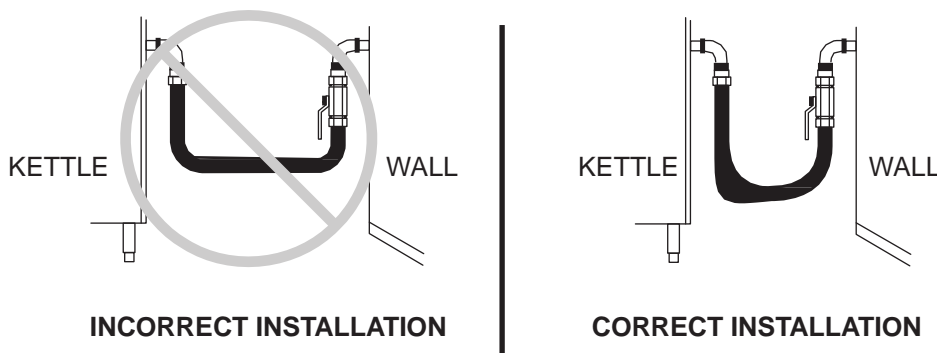
The gas line must be capable of delivering gas to the kettle without excessive pressure drop at the rate specified on the nameplate. Suggested gas supply line pressure is 7" Water Column (1.75 kPa) for natural gas and 11" Water Column (2.75 kPa) for propane. Burner manifold pressure is (-)1.4" Water Column (0.350kPa) for natural gas and (-)1.4" Water Column (0.350 kPa) for propane.

The proper sizing and installation of the gas connection is important for the machine to operate within its design specifications. In some installations, the gas supply may not be sufficient enough to allow all the gas equipment to operate properly at peak loads; or when other equipment with a high BTU/hr. input requirement is operating. The connection to the machine becomes even more important in this type of location. Flexible gas connectors with quick disconnect or swivel fittings (when used) and gas connectors beyond the length necessary will reduce the BTU/hr. flow capacity to the machine.

**NOTE:** Do not use corrugated stainless steel tubing for commercial gas equipment supply connections.

**NOTE:** A straight gas connection is the ideal condition for the rated BTU/hr. flow capacity of the connector. If a straight connection is not possible and a flexible gas connector is used, do not twist, kink or excessively flex the connector beyond a U shape. Flexing the gas connector as described will restrict gas flow or may damage the connector.

Changing a flexible gas connector may raise the BTU/hr. flow capacity enough to allow the machine to operate within its design specifications. (i.e. Removing the quick disconnect fitting, installing a shorter gas connector or installing a larger diameter gas connector.) An alternative may be to move the equipment to a different gas supply location in the kitchen. (i.e. Closer to the main supply into the kitchen or away from other equipment with high BTU/hr. input requirements.)



**⚠ WARNING** Prior to lighting, check all joints in the gas supply line for leaks. Use soap and water solution. Do not use an open flame.

After piping has been checked for leaks, all piping receiving gas should be fully purged to remove air.

## Gas Connection Data

FLEXIBLE GAS CONNECTORS BTU/hr. FLOW CAPACITY <sup>1,2</sup>								
	LENGTH <sup>3</sup>				LENGTH <sup>3</sup>			
	End Fittings - (1) Quick Disconnect & (1) Threaded				End Fittings - Both Threaded			
ID	36"	48"	60"	72"	36"	48"	60"	72"
1/2"	77,000	68,000	60,000	55,000	120,000	106,000	93,000	86,000
3/4"	218,000	180,000	158,000	139,000	256,000	225,000	198,000	175,000
1"	379,000	334,000	294,000	279,000	512,000	451,000	397,000	350,000
1 1/4"	615,000	541,000	476,000	419,000	946,000	833,000	733,000	645,000

1. Flow rating BTU/hr. 0.64 SP. GR @ 0.5 inch W.C. pressure drop.
2. BTU/hr. flow capacities are based on Dormont Mfg. Co. Supr-Safe gas line connectors and are provided for reference. Additional quick disconnect fittings, swivels, or manual shut off valves will reduce the BTU/hr. flow capacities listed in this table. If other flexible gas connectors are used, check the manufacturer's specifications for BTU/hr. flow capacities. Supr-Safe is a registered trademark of the Dormont Manufacturing Company.
3. The maximum length for a flexible gas connector is 72" per National Fuel Code standards.

BLACK IRON PIPE BTU/hr. FLOW CAPACITY <sup>1,2,3</sup>						
Natural Gas	Nominal Inside Diameter of Pipe					
Pipe Length	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
15'	76,000	172,000	345,000	750,000	1,220,000	2,480,000
30'	52,000	120,000	241,000	535,000	850,000	1,780,000
45'	43,000	99,000	199,000	435,000	700,000	1,475,000
60'	38,000	86,000	173,000	380,000	610,000	1,290,000
75'		77,000	155,000	345,000	545,000	1,120,000
90'		70,000	141,000	310,000	490,000	1,000,000

1. Flow rating BTU/hr. 0.64 SP. GR @ 0.3 inch W.C. pressure drop.
2. BTU/hr. flow capacities are based on Schedule 40 pipe, include a tolerance for pressure losses in gas piping systems are provided for reference.
3. Count each 90° elbow as 3' of gas pipe for the purpose of calculating total pipe length.

**TESTING THE GAS SUPPLY SYSTEM**

When gas supply pressure exceeds 1/2 psig (3.45 kPa), the kettle and its individual shutoff valve must be disconnected from the gas supply piping system.

When gas supply pressure is 1/2 psig (3.45 kPa) or less, the kettle should be isolated from the gas supply system by closing its individual manual shutoff valve.

## GAS KETTLES

### GAS AND ALTITUDE CONVERSION

The kettle can be field converted to propane gas or for operation at altitudes above 2000ft elevation. A manometer that reads in 1/100" WC and portable combustion analyzer are required.

#### Natural gas to Propane gas conversion:

1. Remove the right side controls compartment side panel.
2. Locate the gas combination valve located in the bottom of the controls compartment.
3. Turn S1 screw located right of manifold pressure port (Fig. 1) clockwise to completely close position. Then turn counter clockwise 10 turns.
4. Pressure at inlet port should be between 11" and 13" WC.
5. Turn the unit on.
6. Fill the unit half way with cold water.
7. Run the unit for ½ hour to burn off any residue in combustion chamber.
8. Using the combustion analyzer check the flue gases. If the analyzer reads Co Free Air the combustion gases should not exceed 0.04 % or 400 PPM. If the analyzer does not read Co Free verify the Co reading is below 100 PPM. If the reading is above, verify your settings and retest. If readings are still high, call tech support at the number located on the front of this manual.
9. Attach the conversion data plate located in the bottom of the controls compartment with rivets provided. The plate is to be mounted next to the kettle's factory data plate.
10. Replace the controls compartment panel.

#### Propane gas to Natural gas conversion:

1. Remove the right side controls compartment side panel.
2. Locate the gas combination valve located in the bottom of the controls compartment.
3. Turn S1 screw located right of manifold pressure port (Fig. 1) clockwise to completely close position. Then turn counter clockwise 16 turns.
4. Pressure at inlet port should be between 5" and 10.5" WC.
5. Turn the unit on.
6. Fill the unit half way with cold water.
7. Run the unit for ½ hour to burn off any residue in combustion chamber.
8. Using the combustion analyzer check the flue gases. If the analyzer reads Co Free Air the combustion gases should not exceed 0.04 % or 400 PPM. If the analyzer does not read Co Free verify the Co reading is below 100 PPM. If the reading is above verify your settings and retest. If readings are still high call tech support at the number located on the front of this manual.
9. Attach the conversion data plate located in the bottom of the controls compartment with rivets provided. The plate is to be mounted next to the kettle's factory data plate.
10. Replace the controls compartment panel.

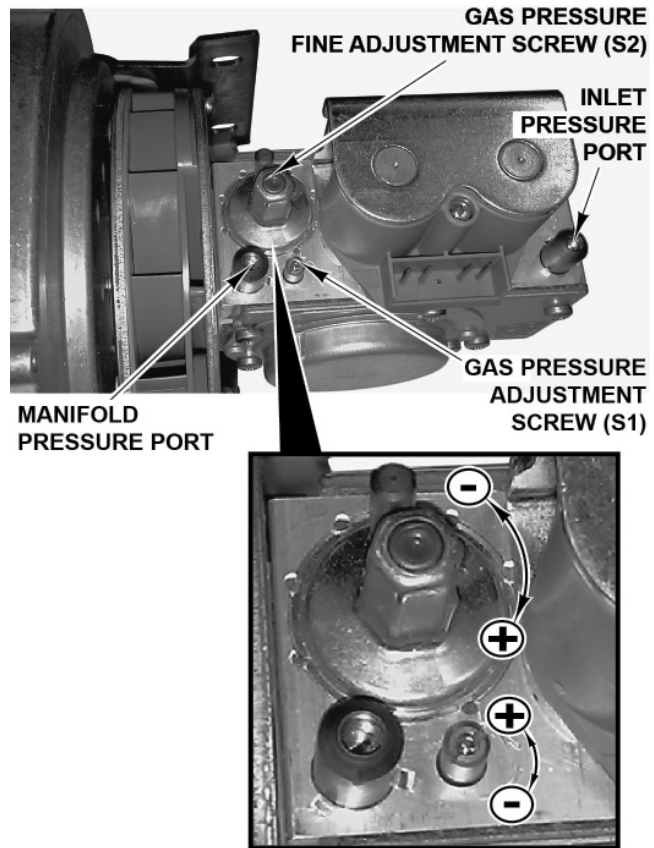


Fig. 1



**Altitude:**

1. Remove the right side controls compartment side panel.
2. Locate the gas combination valve located in the bottom of the controls compartment.
3. Turn S2 screw (Fig. 1) (using 5/64" Allen wrench), ½ turn clock wise
4. Turn the unit on.
5. Try five (5) times igniting the burner, if burner fails to ignite repeat step 3.
6. Inlet pressure setting:
  - a. Natural Gas: 5-7" WC
  - b. Propane: 11-13" WC
7. Fill the unit half way with cold water.
8. Run the unit for ½ hour to burn off any residue in combustion chamber.
9. Using the combustion analyzer check the flue gases. If the analyzer reads Co Free Air the combustion gases should not exceed 0.04 % or 400 PPM. If the analyzer does not read Co Free verify the Co reading is below 100 PPM. If the reading is above verify your settings and retest. If reading is still high call tech support at the number located on the front of this manual.
10. Replace the controls compartment panel.

**FLUE**

DO NOT obstruct the flow of flue gases from the flue located on the rear of the kettle. It is required that the flue gases be ventilated to the outside of the building through a ventilation system installed by qualified personnel. The flue on the kettle should not be directly connected to any ventilation system. From the termination of the flue to the filters of the hood venting system, a minimum clearance of 18" (116 cm) must be maintained.

Information on the construction and installation of ventilating hoods may be obtained from Vapor Removal from Cooking Equipment, NFPA-96 (latest edition), available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

**FAUCET BRACKET**

A bracket is provided for mounting a faucet on the kettle; this would allow the addition of water to the kettle for the convenience of the food preparer. A faucet is available as an accessory.

**NOTE:** Do not use tap water from faucet to fill kettle jacket. Refer to Jacket Water & Jacket Water Treatment.

**ELECTRICAL CONNECTION**

**⚠ WARNING** Electrical and grounding connections must comply with the applicable portions of the national electrical code and/or other local electrical codes.

**Electrical Grounding Instruction**

This appliance is equipped with a three-prong (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the grounding prong from this plug.

**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedure, before cleaning or servicing..

All kettles are supplied with a 120 Volt power cord.

**GAS KETTLES**

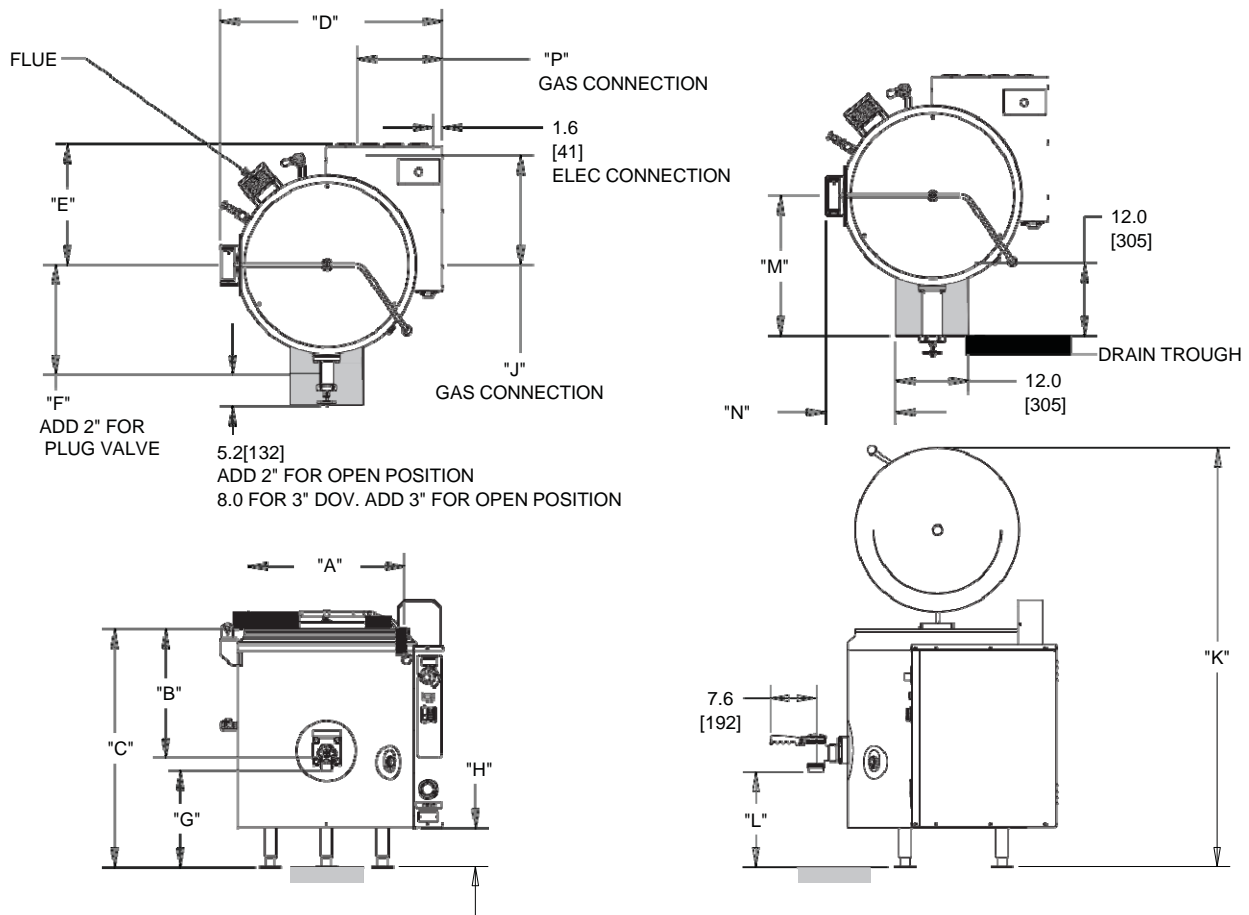
**LOCATION**

Position the kettle in its final location. Check that there are sufficient clearances for operating and servicing the kettle, and for proper clearance of the cover when raised. Keep the kettle free and clear from all combustible substances. Minimum clearance from combustible and non-combustible construction is 2" (5.0 cm) at the rear and 6" (15.2 cm) at each side.

The kettle draw off valve should be located near a floor drain.

Do not obstruct the flow of air into and around the kettle. This air flow is necessary for proper combustion of gases and for ventilation of the kettle. Provisions for ventilation and incoming air supply for the equipment in the room must be in accordance with the National Fuel Gas Code ANSI Z223.1 (latest edition).

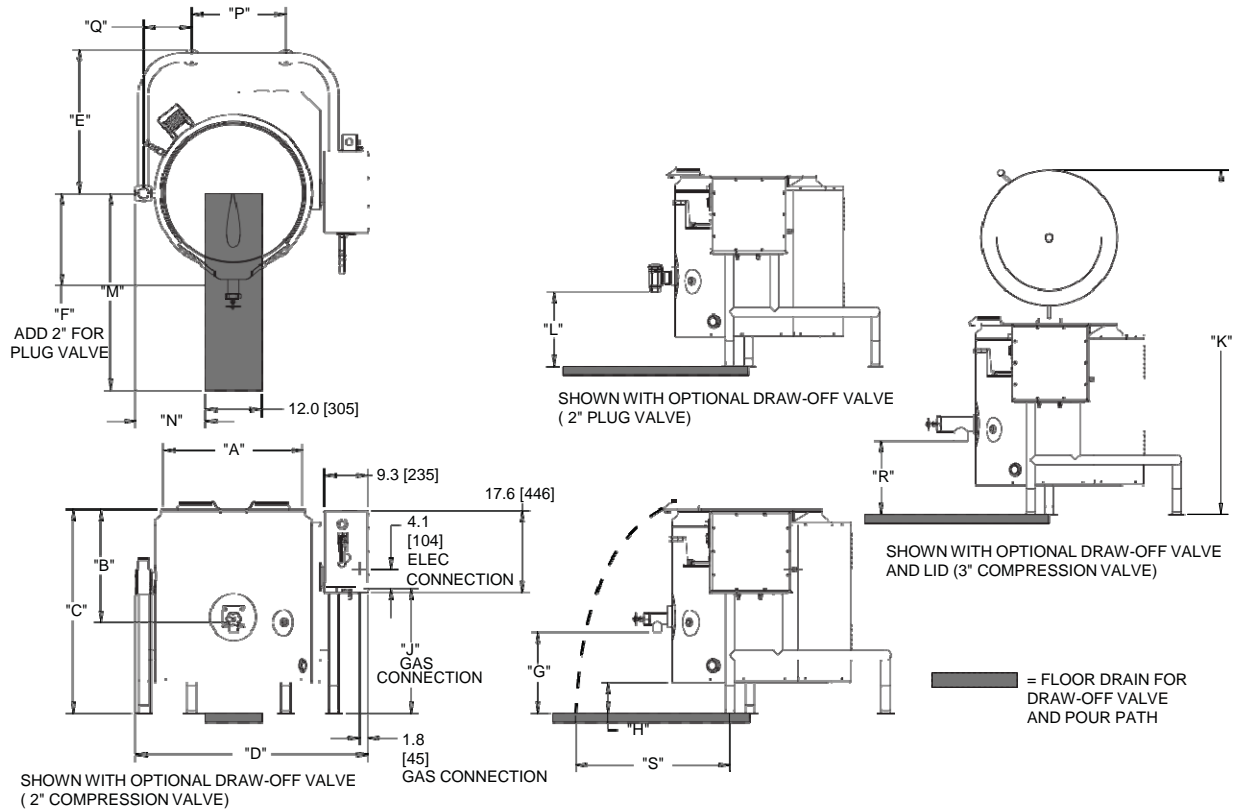
**Stationary Kettle**



**■ = FLOOR DRAIN FOR DRAW-OFF VALVE**

MODEL	TRUE WORKING CAPACITY	A	B	C	D	E	F	G	H	J	K	L	M	N	P
K20GL	20 gallons	21.6 in.	15.2 in.	36.8 in.	32.7 in.	18.6 in.	15.6 in.	19.5 in.	6.4 in.	17.0 in.	32.6 in.	19.2 in.	20.9 in.	8.3 in.	14.6 in.
	76 liters	549 mm	386 mm	935 mm	831 mm	472 mm	396 mm	495 mm	163 mm	432 mm	828 mm	488 mm	531 mm	211 mm	371 mm
K40GL	40 gallons	26 in.	21.2 in.	39.2 in.	36.7 in.	19.8 in.	17.8 in.	16.0 in.	6.4 in.	18.0 in.	69.0 in.	15.6 in.	23.0 in.	11.6 in.	14.1 in.
	152 liters	660 mm	538 mm	996 mm	932 mm	503 mm	451 mm	406 mm	163 mm	457 mm	1753 mm	396 mm	584 mm	295 mm	358 mm
K60GL	60 gallons	29.5 in.	24.2 in.	39.5 in.	40.9 in.	21.7 in.	19.8 in.	16.6 in.	6.0 in.	19.9 in.	76.6 in.	16.2 in.	26.5 in.	13.8 in.	13.7 in.
	227 liters	749 mm	615 mm	1003 mm	1039 mm	551 mm	502 mm	422 mm	152 mm	505 mm	1946 mm	411 mm	673 mm	351 mm	348 mm

Tilting Kettle



MODEL	TRUE WORKING CAPACITY	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
K20GLT	20 gallons	21.6	15.2	38.3	41.8	25.8	16	21	8.2	22.3	67.1	20.7	28	11	15	9.4	20	28
	76 liters	549	386	973	1062	655	406	533	208	566	1704	526	711	279	381	239	508	711
K40GLT	40 gallons	25.8	21.2	39.9	45.1	28.8	17.75	16.7	7.3	23	71	16	33	12.8	18.8	9.6	15.7	32
	152 liters	655	538	1013	1146	732	451	424	185	584	1803	406	838	325	478	244	399	813
K60GLT	60 gallons	29.5	23.9	43.7	49.6	30.8	20.4	17.6	6.8	26.7	78.7	17.2	36	14.8	21	10.3	16.9	36
	227 liters	749	607	1110	1260	782	518	447	173	678	1999	437	914	376	521	262	429.3	914

**LEVELING**

Place a spirit level on the rim of the kettle with the cover open. Turn the feet in or out to level the kettle in both the left-to-right and front-to-rear directions.

**BEFORE FIRST USE**

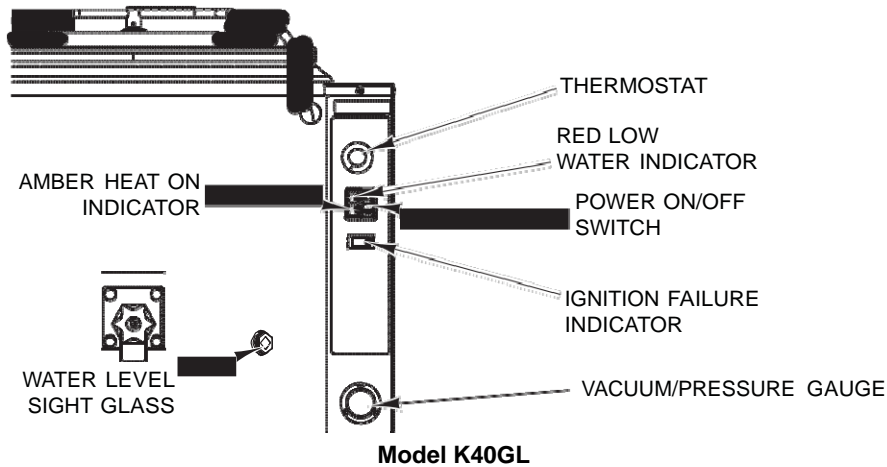
Use a non-corrosive, grease-dissolving commercial cleaner to clean the protective metal oils from all surface parts and the interior of the kettle. Follow the cleaner manufacturer's directions. Rinse thoroughly with warm water to remove all traces of the cleaner. Drain the kettle's interior cooking area. Wipe dry with a clean cloth.

# OPERATION

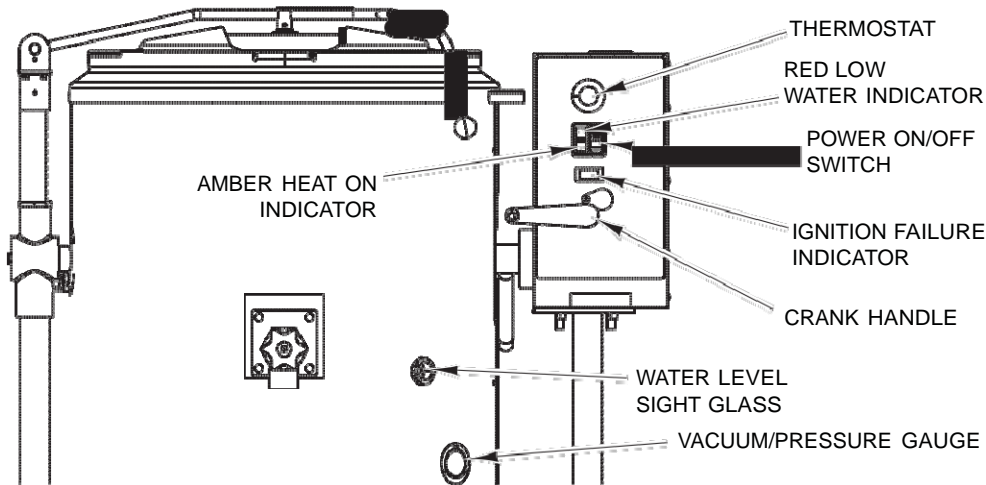
**⚠ WARNING** The kettle and its parts are hot. Use care when operating, cleaning or servicing the kettle.

## CONTROLS AND INDICATORS

Control	Function
Vacuum/Pressure Gauge	Indicates the vacuum (in inches) and pressure (in PSI) inside the kettle jacket.
Thermostat	Regulates kettle temperature from warm to rolling boil.
Low Water Indicator (Red)	When lit, indicates insufficient water in the kettle jacket and the sensing probe has interrupted power supply to the controls and to the burners.
Power ON/OFF Switch	Controls power to the kettle.
Power ON indicator (Amber)	When lit, indicates machine on/powered.
Heater Light (Amber)	When lit, indicates the burner is turned on.
Ignition Failure Indicator (Red)	When lit, indicates the burner has failed to ignite.
Water Level Sight Glass	Visually shows the water level in the jacket.
Crank Handle	Rotate the crank handle to tilt.



Model K40GL



Model K40GLT

**BEFORE OPERATION**

1. Check Gauge Pressure – should read 20-30 In. Hg. below zero when cold. (Higher reading indicates air in jacket. See Venting instructions.)
2. Check to make sure gas supply valve is turned on.
3. Check water level in sight glass. Water level should be in the middle of the sight glass. If level is less than  $\frac{1}{4}$  of the sight glass or the low water light is illuminated, water must be added to the jacket (See Jacket Water Level.) Do not over fill.
4. Check the flue at the rear of the kettle for any obstructions before operating.

**NOTE:** Use only distilled water to refill the jacket. Refilling the kettle with tap water will damage the kettle jacket and void the warranty.

**OPERATION**

1. Turn power switch to the “ON” position and set thermostat to maximum.
2. The heat light will illuminate.
3. If ignition failure light is illuminated then turn the power switch to the “OFF” position.
4. Wait five minutes then turn the power switch to the “ON” position.

**Preheat**

1. Set the thermostat to Simmer/Boil and wait until the heat light cycles off.

**Cooking**

1. Verify that the draw-off valve is closed.
2. Set thermostat to desired cooking temperature, warm, simmer, or boil.

**NOTE:** Food products with milk or egg base should be placed into a cold kettle before cooking. Avoid sudden contact of these food products to a hot kettle surface because they stick to the surface.

3. Pour the food to be cooked into the kettle.

**Tilting**

1. Set the thermostat to the minimum.
2. Turn power switch off.
3. Rotate the crank handle clockwise to tilt or counter clockwise to return.

**DAILY SHUT DOWN**

1. Set thermostat to minimum and turn the power switch off.
2. Clean and dry kettle thoroughly.

**EXTENDED SHUT DOWN**

1. Turn manual gas supply valve off.
2. Disconnect power from the kettle.

## GAS KETTLES

### VENTING

While the kettle is cold, check the vacuum/pressure gauge. The gauge should be in the vacuum zone measuring between 20 to 30 in. Hg (84 to 100kPa). If not, there is air in the jacket and it must be removed by venting for proper heating. Perform the venting procedure located in the Maintenance section of this manual.

### RESERVOIR JACKET WATER LEVEL CHECK

During use, the reservoir water level must be maintained high to cover the entire heating zone. If the low water light is illuminated during use, perform the Filling the Reservoir Jacket procedure located in the Maintenance section of this manual.

### TILTING KETTLES

The low water indicator light (red) should not be lit when kettle is in upright position during operation. This light indicates that the burner has been automatically shut off by the kettle's safety circuitry. It is, however, normal for the low water light (red light) to come on when the kettle is in a tilted position.

### OPERATING DATA

MODEL NO.	GALLONS OF WATER		BURNER INPUT BTU/HR	HEAT UP TIME-MINUTES	
	WORKING CAPACITY	JACKET CHARGE		EMPTY TO 5 PSI	2/3 FULL 130°F RISE
K20GLT/K20GLT	20	7	100,000	10	20
K40GLT/K40GLT	40	7	100,000	10	40
K60GL/K60GLT	60	8	100,000	15	60

# STAINLESS STEEL EQUIPMENT CARE AND CLEANING

(Supplied courtesy of NAFEM. For more information, visit their web site at [www.nafem.org](http://www.nafem.org))

## Contrary to popular belief, stainless steels ARE susceptible to rusting.

Corrosion on metals is everywhere. It is recognized quickly on iron and steel as unsightly yellow/orange rust. Such metals are called “active” because they actively corrode in a natural environment when their atoms combine with oxygen to form rust.

Stainless steels are passive metals because they contain other metals, like chromium, nickel and manganese that stabilize the atoms. 400 series stainless steels are called ferritic, contain chromium, and are magnetic; 300 series stainless steels are called austenitic, contain chromium and nickel; and 200 series stainless, also austenitic, contains manganese, nitrogen and carbon. Austenitic types of stainless are not magnetic, and generally provide greater resistance to corrosion than ferritic types.

With 12-30 percent chromium, an invisible passive film covers the steel’s surface acting as a shield against corrosion. As long as the film is intact and not broken or contaminated, the metal is passive and stain-less. If the passive film of stainless steel has been broken, equipment starts to corrode. At its end, it rusts.

## Enemies of Stainless Steel

There are three basic things which can break down stainless steel’s passivity layer and allow corrosion to occur.

1. Mechanical abrasion
2. Deposits and water
3. Chlorides

**Mechanical abrasion** means those things that will scratch a steel surface. Steel pads, wire brushes and scrapers are prime examples.

**Water** comes out of the faucet in varying degrees of hardness. Depending on what part of the country you live in, you may have hard or soft water. Hard water may leave spots, and when heated leave deposits behind that if left to sit, will break down the passive layer and rust stainless steel. Other deposits from food preparation and service must be properly removed.

**Chlorides** are found nearly everywhere. They are in water, food and table salt. One of the worst chloride perpetrators can come from household and industrial cleaners.

## So what does all this mean? Don’t Despair!

Here are a few steps that can help prevent stainless steel rust.

### 1. Use the proper tools.

When cleaning stainless steel products, use non-abrasive tools. Soft cloths and plastic scouring pads will not harm steel’s passive layer. Stainless steel pads also can be used but the scrubbing motion must be in the direction of the manufacturers’ polishing marks.

### 2. Clean with the polish lines.

Some stainless steel comes with visible polishing lines or “grain.” When visible lines are present, always scrub in a motion parallel to the lines. When the grain cannot be seen, play it safe and use a soft cloth or plastic scouring pad.

### 3. Use alkaline, alkaline chlorinated or non-chloride containing cleaners.

While many traditional cleaners are loaded with chlorides, the industry is providing an ever-increasing choice of non-chloride cleaners. If you are not sure of chloride content in the cleaner used, contact your cleaner supplier. If your present cleaner contains chlorides, ask your supplier if they have an alternative. Avoid cleaners containing quaternary salts; it also can attack stainless steel and cause pitting and rusting.

## GAS KETTLES

### 4. Treat your water.

Though this is not always practical, softening hard water can do much to reduce deposits. There are certain filters that can be installed to remove distasteful and corrosive elements. To insure proper water treatment, call a treatment specialist.

### 5. Keep your food equipment clean.

Use alkaline, alkaline chlorinated or non-chloride cleaners at recommended strength. Clean frequently to avoid build-up of hard, stubborn stains. If you boil water in stainless steel equipment, remember the single most likely cause of damage is chlorides in the water. Heating cleaners that contain chlorides have a similar effect.

### 6. Rinse, rinse, rinse.

If chlorinated cleaners are used, rinse and wipe equipment and supplies dry immediately. The sooner you wipe off standing water, especially when it contains cleaning agents, the better. After wiping equipment down, allow it to air dry; oxygen helps maintain the stainless steel's passivity film.

### 7. Never use hydrochloric acid (muriatic acid) on stainless steel.

### 8. Regularly restore/passivate stainless steel.

Job	Cleaning Agent	Comments
Routine cleaning	Soap, ammonia, detergent, Medallion	Apply with soft cloth or sponge.
Fingerprints and smears	Arcal 20, Lac-O-Nu Ecoshine	Provides barrier film
Stubborn stains and discoloration	Cameo, Talc, Zud, First Impression	Rub in direction of polish lines.
Grease and fatty acids, blood, burnt-on foods	Easy-off, DeGrease It Oven Aid	Excellent removal on all finishes
Grease and Oil	Any good commercial detergent	Apply with soft cloth or sponge.
Restoration/Passivation	Benefit, Super Sheen	

## Review

1. Stainless steels rust when passivity (film-shield) breaks down as a result of scrapes, scratches, deposits and chlorides.
2. Stainless steel rust starts with pits and cracks.
3. Use the proper tools. Do not use steel pads, wire brushes or scrapers to clean stainless steel.
4. Use non-chlorinated cleaners at recommended concentrations. Use only chloride-free cleaners.
5. Soften your water. Use filters and softeners whenever possible.
6. Wipe off cleaning agent(s) and standing water as soon as possible. Prolonged contact causes eventual problems.

To learn more about chloride-stress corrosion and how to prevent it, contact the equipment manufacturer or cleaning materials supplier.

Developed by Packer Engineering, Naperville, Ill., an independent testing laboratory.



# CLEANING

**⚠ WARNING** The kettle and its parts are hot. Use care when operating, cleaning or servicing the kettle.

**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedure, before cleaning or servicing..

**NOTICE** Never spray the exterior of the kettle or control box with water under any condition. Failure to comply will void the warranty.

The kettle interior and exterior should be thoroughly washed after each use when a different food is to be cooked next or when cooking is completed for the day. If the unit is used continuously through the day, it should be cleaned and sanitized once every 12 hours.

Empty the kettle. Close draw-off valve and add water to the kettle for cleaning to prevent residue from drying and sticking to the inside of the kettle.

- Never use harsh or corrosive cleaning chemicals.
- Never scrape the inside of the kettle with abrasive cleansers, metal tools or steel scouring pads, which will scratch the surface, spoil the appearance and make it more difficult to thoroughly clean.
- Add mild, non-chlorine, non-chloride, and non-bleach detergent and scrub the kettle interior with a nylon brush.
- Loosen stuck-on food by allowing it to soak at a low temperature setting.
- Thoroughly rinse the interior and dry with a soft cloth.
- Rinse the exterior and dry with a soft cloth.

## COMPRESSION DRAW-OFF VALVE CLEANING INSTRUCTIONS

### Daily After Use

Remove draw-off valve stem assembly for cleaning (Fig. 2).

1. Turn the valve handle counterclockwise until it stops.
2. Pull the valve handle back until it stops.
3. Turn large hex nut counterclockwise until the valve stem assembly is loose.
4. Pull the assembly straight out of the valve body.
5. Remove wing nut and handle. Unscrew valve stem from bonnet.
6. Wash valve body and stem assembly with mild soap and water, and then rinse. Make sure all food residue is removed from inside valve body.
7. Leave assembly apart to air dry.

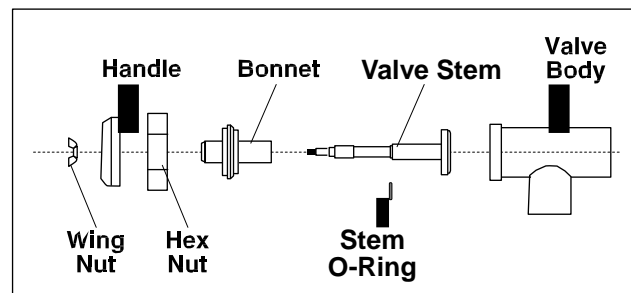


Fig. 2

Install draw-off valve assembly:

1. Apply PetroGel lubricant to valve stem threads, O-Ring, rubber plug face and large hex nut threads.
2. Thread the valve stem into bonnet till valve stem can be pulled through bonnet.
3. Insert valve stem into valve body.
4. Install large hex nut hand tight.
5. Install valve handle, lock washer and wing nut onto the valve stem.
6. Turn valve handle clockwise until closed. Do not overtighten.

## GAS KETTLES

### PLUG VALVE CLEANING INSTRUCTIONS

#### Daily After Use

Remove draw-off valve plug for cleaning (Fig. 3).

1. Unscrew the retaining ring and remove it and the bottom washer.
2. Pull the valve plug straight up to remove from valve body.
3. Wash valve body, plug, washer and retaining ring with mild soap and water, and then rinse.
4. Leave assembly apart to air dry.

Care should be taken not to scratch, ding or dent the valve plug to prevent valve leakage.

If multiple kettles are in use, care should be taken to keep each plug separate and returned to its original valve body.

Install draw-off valve plug.

1. Apply PetroGel lubricant to valve plug face.
2. Holding the valve handle, slide the plug down into the valve body.
3. Install the bottom washer, making sure to align the key with the groove in the valve plug.
4. Install the retaining ring and hand tighten.

If the valve is hard to open, then the ring has been overtightened.

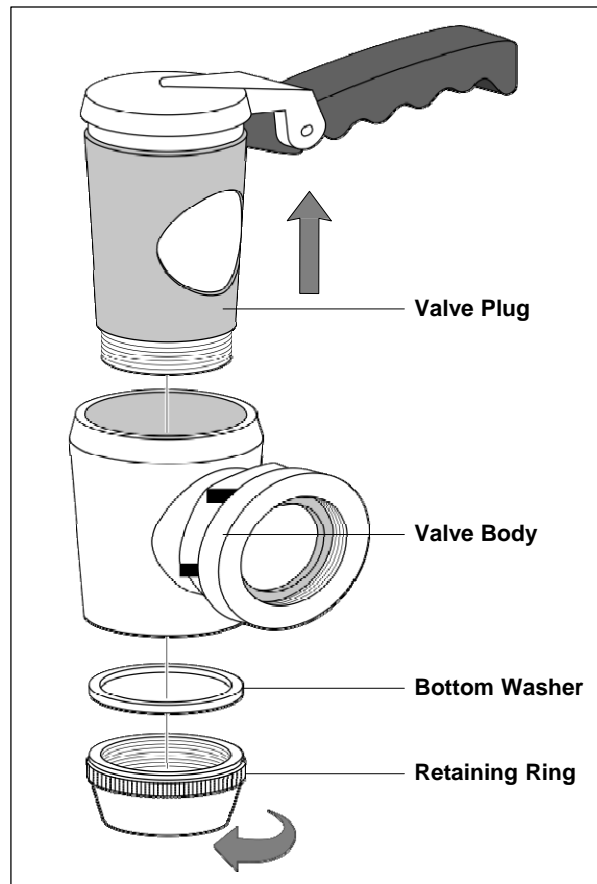


Fig. 3

# MAINTENANCE

**⚠ WARNING** The kettle and its parts are hot. Use care when operating, cleaning or servicing the kettle.

## VENTING

When cold, the pressure gauge vacuum measuring zone should be between 20 to 30 In. Hg (84 to 100kPa). If the vacuum indicator is not within this range, perform the following:

1. Ensure that the water level in the jacket is approx. 1/2 in the sight glass.
2. With the kettle empty, place the power switch to the ON position.
3. Set the temperature control to the max heat setting. Let the kettle heat until the jacket pressure reaches 10 PSI.

**⚠ WARNING** Hot steam. The kettle and its parts are hot. Use care when operating, cleaning or servicing the kettle.

4. Pull the pressure relief valve lever to relieve pressure for 10 seconds. Allow valve to snap shut to seal.
5. Turn kettle off and let cool. Check for a correct vacuum reading of 20 to 30 In. Hg (84 to 100kPa). If the reading is not correct, repeat steps 1 through 3.

## FILLING THE RESERVOIR JACKET

Use ionized distilled water with sodium (no tap water). Equipment failure caused by inadequate water quality is not covered under warranty. To fill the reservoir jacket, perform the following:

1. Set the thermostat and power switch to OFF position.
2. Release any pressure by lifting the lever on the pressure relief valve.
3. Insert a funnel into the fill valve and fill the jacket with water and anti-freeze mix until water level in the sight glass is 1/2 full.
4. Turn on the kettle.

If the low water light turns on, turn off the unit and repeat steps 3 and 4. If low water light is off, follow the venting procedure (see VENTING) to vent air from reservoir.

## SHUTDOWN

Turn the thermostat dial to the OFF position. Turn power switch off. For extended shutdown, close the gas shutoff valve.

## SERVICE

To obtain service and parts information concerning this unit, contact the Vulcan-Hart Service Agency in your area (refer to listing supplied with the kettle), or contact the Vulcan-Hart Service Department at the address or phone number shown on the front cover of this manual.

Parts and service are also available at [www.vulcanequipment.com](http://www.vulcanequipment.com).

# TROUBLESHOOTING

Problem	Possible Causes / Suggested Corrective Action
Will Not Turn On, no power light	Kettle is not plugged in / Plug in power cord.
	Power switch is off / Turn on power switch.
	Circuit Breaker tripped / Reset Breaker
	Ground Fault Receptacle is tripped / Reset Ground Fault Receptacle
	Hood system with power interrupt is not on / Turn on hood system.
	Tilt kettle not in the fully lower position / Lower kettle with crank to the level position
	Note: If the kettle still does not come ON verify that there is power at the receptacle by plugging in another electrical device such as a lamp. If the device does not come ON call an electrician or maintenance personnel. If the alternate device does come ON, call your authorized Vulcan Servicer.
Low Water Light On or Low water in Sight Glass	Water level to low / Fill jacket per instructions in this manual.
	Relief valve is not seated and leaking / With no pressure on gauge, lift lever on relief valve and allow it to snap closed, refill jacket per instructions in this manual
	Fill port is not fully closed and leaking / Close tightly fill port valve, refill jacket per instructions in this manual.
	Jacket was refilled with deionized water / Add a pinch of salt to jacket water.
Not Heating, Ignition Fail Light Is On	Gas Supply Valve is off / Turn on gas valve
	Combo Valve is off / Turn on combo valve
	Quick connect hose not connected or fully inserted / Connect quick connect hose or push connector in till quick connect snaps and locks.
	Gas line, flex hose, or quick connect undersize and not delivering enough gas / Increase gas line size to 125% of kettle rated BTU input.
	Gas supply pressure to low / Have plumber Increase gas supply pressure
Kettle not in vacuum when cold or will not boil when up to pressure	Air in jacket / Vent per instructions in this manual.
	Relief valve is not seated and leaking / With no pressure on gauge, lift lever on relief valve and allow it to snap closed, vent jacket per instructions in this manual
	Fill port is not fully closed and leaking / Close tightly the fill port valve, vent jacket per instructions in this manual.
	Note: If the kettle jacket continues to loose vacuum or requires frequent refilling of the jacket call your authorized Vulcan Servicer.