



INSTALLATION & OPERATION MANUAL

VHX24, VHL2, VHL3 & VH3616 SERIES FOOD STEAMERS & MHB24 SERIES STEAM GENERATORS

MODELS

VHX24E	ML-126852
VHX24E5	ML-126853
VHX24G	ML-114795
VHX24G5	ML-126590
VHX24D	ML-126862
VHX24D5	ML-126863
VHL2G	ML-126323
VHL3G	ML-126324
VHL2E	ML-126855
VHL3E	ML-126856
VHL2D	ML-126858
VHL3D	ML-126859
MHB24E	ML-126857
MHB24G	ML-114954
VH3616G	ML-136000
VH3616E	ML-136001
VH3616D	ML-136002



For additional information on Vulcan-Hart or to locate an authorized parts and service provider in your area, visit our website at www.vulcanhart.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.

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Installation, Operation and Care of VHX24, VHL2, VHL3 & VH3616 SERIES FOOD STEAMERS & MHB24 SERIES STEAM GENERATORS

SAVE THESE INSTRUCTIONS FOR FUTURE USE

GENERAL

Vulcan food steamers and steam generators 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.

Models with E in the model number have electric steam generators. Models with D in the model number must be connected to a direct steam source. Models with G in the model number are equipped with a high-efficiency gas steam generator.

Models VHX24E, VHX24G and VHX24D can accommodate three 2¹/₂" deep (6.4 cm) steam pans per compartment. Models VHX24E5, VHX24G5 and VHX24D5 can accommodate five 2¹/₂" deep (6.4 cm) steam pans per compartment. Models VHL2G and VHL3G can accommodate a selection of pans; refer to page 28. Model VH3616 can accommodate sixteen 1" deep pans, or eight 2¹/₂" deep pans, or six 4" deep pans per compartment. Models MHB24G and MHB24E are steam generators used to provide steam for other equipment and do not have steaming compartments.

INSTALLATION

Before installing, verify that the type of gas (natural or propane), the electrical supply and any direct steam supply required for the equipment covered by this manual agree with the specifications on the rating plate located on the lower door of the boiler base. If the supply and equipment requirements do not agree, do not proceed with the installation. Contact your dealer or Vulcan-Hart Company immediately.

UNPACKING

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

IMPORTANT: Immediately after unpacking, check for possible shipping damage. If the steamer is found to be damaged, save the packaging material and contact the carrier within 15 days of delivery.

INSTALLATION CODES AND STANDARDS

In the United States, the Vulcan steamer must be installed in accordance with state and local codes, with the National Fuel Gas Code, (ANSI-Z223.1, latest edition) available from the American Gas Association, 1515 Wilson Boulevard, Arlington, VA 22209, with the National Electrical Code (ANSI/NFPA No. 70, latest edition) available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269 and with *Vapor Removal from Cooking Equipment*, (NFPA-96, latest edition) available from NFPA.

In Canada, the steamer must be installed in accordance with local codes, with the National Fuel Gas Code (CAN/CGA-B149.1, latest edition) available from the Canadian Gas Association, 178 Rexdale Boulevard, Etobicoke, Ontario, Canada M9W 1R3, and with the Canadian Electrical Code (CSA C22.2 No.3, latest edition) available from the Canadian Standards Association, 178 Rexdale Boulevard, Etobicoke, Ontario, Canada M9W 1R3.

LEVELING — ALL STEAMERS & STEAM GENERATORS

Position the steamer or steam generator in its final installed location. Place a level on the horizontal area of the cabinet. Adjust the feet to level the steamer or steam generator in both the left-to-right and front-to-rear directions.

On VHX steamers only, elevate the front $\frac{1}{16}$ " to $\frac{1}{8}$ " (0.2 cm to 0.3 cm) to give proper drainage by rotating the adjusting nut on the rear legs in the proper direction 1 to $1\frac{1}{2}$ turns. Check drainage in the steamer compartments by pouring a little water in the compartment. All the water should drain. On VHL steamers only, elevate the right side legs $\frac{1}{16}$ " to $\frac{1}{8}$ " (0.2 cm to 0.3 cm) to give proper drainage.

The rear feet have holes in the flanges for anchor bolts. Direct steam models (steamers without generators) must be anchored to the floor.

PLUMBING CONNECTIONS — ALL STEAMERS & STEAM GENERATORS

WARNING: PLUMBING CONNECTIONS MUST COMPLY WITH APPLICABLE SANITARY, SAFETY AND PLUMBING CODES.

Water Requirements

Proper water quality can improve the taste of the food prepared in the steamer, reduce liming in the steam generator and extend equipment life. Local water conditions vary from one location to another. Ask your municipal water supplier for details about your local water supply prior to installation.

WATER REQUIREMENTS

Supply Pressure	20 — 60 psig
Hardness*	less than 3 grains
Silica	less than 13 ppm
Total Chlorine	less than 4.0 ppm
pH range	7 — 8
Undissolved Solids	less than 5 microns
* 17.1 ppm = 1 grain of hardness	

Presence of sediment, silica, excess chlorides or other dissolved solids may lead to a recommendation for alternate form(s) of water treatment. Test the water with the test strip included with the steamer. Other factors affecting steam generation are iron content, amount of chloridation and dissolved gases. A local water treatment specialist should be consulted before installation of steam generating equipment.

Water Supply Connection

Connect the treated water supply line to the $\frac{1}{2}$ " NPT (1.3 cm) inlet at the rear of the steamer. Connect the untreated water supply line to the $\frac{1}{4}$ " (0.6 cm) copper tube inlet, also at the rear of the steamer.

A water filter system is recommended for the water supply line going to the treated water inlet of your steamer. Follow the recommendations for use and installation instructions shipped with the water filter. If a water filter is not installed, the steamer or steam generator warranty may be limited.

Drain Connection

The $1\frac{1}{4}$ " NPT (3.175 cm) threaded fitting on the condenser box must be extended a maximum of 12" (30.5 cm) to an open air gap type drain. Do not reduce the $1\frac{1}{4}$ " (3.175 cm) drain piping throughout its length. Provide a suitable floor sink with a minimum depth of 12" (30.5 cm). The floor sink is NOT to be directly under the steamer and should be at a distance so that steam vapors will not enter the steamer from underneath. The drain pipe should be either iron or copper. DO NOT use PVC pipe; PVC pipe may lose its rigidity or glue may fail.

CAUTION: In order to avoid any back pressure in the steamer, do not connect solidly to any drain connection.

Temperatures in the boiler can briefly reach as high as 212°F (100°C). Local codes require that the temperature of drain water be no greater than 140°F (60°C). At the end of the day, when purging the boilers, some provision for lowering the water temperature must be provided by the user or installer to meet this code requirement.

LOCATION — GAS POWERED STEAMERS & STEAM GENERATORS

The equipment area must be kept free and clear of combustible substances.

The recommended clearance for proper operation is 36" (91.4 cm) at the front. The required clearance from combustible or non-combustible construction is 0" at the sides and back. The recommended clearance for service access is 18" (45.7 cm) at the sides and back.

Do not obstruct the flow of combustion and ventilation air. Adequate clearance for air openings into the combustion chamber must be provided. Make sure there is an adequate supply of air in the room to replace air taken out by the ventilating system. If you have any questions, contact the ventilation system installer.

An exhaust system should be located directly above the steamer to exhaust steam, flue exhaust and heat generated by the steamer.

Do not permit fans to blow directly at the steamer. Avoid wall-type fans which create air crosscurrents within the room.

Avoid open windows next to the steamer.

IMPORTANT: Do not locate the boiler base directly over a drain.

GAS SUPPLY CONNECTION

All gas supply connections and any pipe joint compound used must be resistant to the action of propane gases. A 1" (2.5 cm) minimum inside diameter gas supply line is required. If quick-disconnect devices are used, make sure they are rated to meet or exceed the required 270,000 BTU/Hr rate. Make sure the pipes are clean and free of obstructions. Codes require that a gas shutoff valve be installed in the gas line ahead of the steamer.

The burner is equipped with fixed gas and air orifices for use with natural or propane gas.

The gas line must be capable of delivering gas to the boiler without excessive pressure drop at the minimum 270,000 BTU/Hr rate specified on the rating plate. Inadequate gas supply would result in burner noise and poor burner performance. An indication of inadequate supply would be evidenced by a 1/4" W.C. or greater reduction in pilot burner pressure when the main burner comes on.

The boiler is equipped with a factory-preset pressure regulator. Check gas pressures with a manometer at time of installation to verify that they agree with the pressures in the table, below.

GAS SUPPLY PRESSURES

GAS TYPE	Line Pressure		Main Boiler Valve Pressure	Pilot Valve Pressure
	Minimum	Maximum		
Natural	7.0" W. C. (1.75 kPa)	14.0" W.C. (3.5 kPa)	3.0" W.C. (0.75 kPa)	3.5" W.C. (0.88 kPa)
Propane	11.0" W.C. (2.7 kPa)	14.0" W.C. (3.5 kPa)	3.0" W.C. (0.75 kPa)	3.5" W.C. (0.88 kPa)

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.

TESTING THE GAS SUPPLY SYSTEM

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

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

FLUE GAS EXHAUST

DO NOT obstruct the flow of flue gases from the flue located on the rear of the steamer.

It is recommended that the flue gases be vented to the outside of the building through a ventilation system installed by qualified personnel.

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.

ELECTRICAL CONNECTION — GAS STEAMERS & STEAM GENERATORS

WARNING: APPLIANCES EQUIPPED WITH A FLEXIBLE ELECTRIC SUPPLY CORD ARE PROVIDED WITH A THREE-PRONG GROUNDING PLUG WHICH MUST BE CONNECTED INTO A PROPERLY GROUNDED THREE PRONG RECEPTACLE. IF THE RECEPTACLE IS NOT THE PROPER GROUNDING TYPE, CONTACT AN ELECTRICIAN. DO NOT REMOVE THE GROUNDING PRONG FROM THE PLUG.

WARNING: ELECTRICAL AND GROUNDING CONNECTIONS MUST COMPLY WITH THE APPLICABLE PORTIONS OF THE NATIONAL ELECTRICAL CODE AND/OR OTHER LOCAL ELECTRICAL CODES.

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.

ELECTRICAL DATA

Volts	Hertz	Phase	Machine Amps	Minimum Circuit Ampacity Maximum Protective Device AMPS
120	60	1	3.0	15

Compiled in accordance with the National Electrical Code, NFPA-70 (latest edition).

The cord and plug supplied, is a suitable durable cord with molded plug and is provided with a proper strain relief.

If a hard-wired conduit type connection is desired, remove the cord and plug and connect the electrical supply circuit to the terminal block located in the boiler control box. A 7/8" (2.2 cm) diameter hole for 1/2" (1.27 cm) trade-size conduit is provided on the side of the control box. Use copper wire suitable for at least 75°C. A grounding wire must be connected to the ground lug.

The wiring diagram is located on the door of the boiler.

Connect the steamer to the electrical supply after the gas connections have been made.

LOCATION — ELECTRIC STEAMERS & STEAM GENERATORS

Position the steamer or steam generator in its final location.

The recommended clearance for proper operation is 36" (91.4 cm) at the front. The required clearance from combustible or non-combustible construction is 0" at the sides and back. The recommended clearance for service access is 18" (45.7 cm) at the sides and back. Clearances less than 18" may require removal of adjacent equipment during servicing at customer's expense.

An exhaust system should be located directly above the steamer to exhaust steam and heat generated by the steamer.

IMPORTANT: Do not locate the boiler base directly over a drain.

ELECTRICAL CONNECTIONS — ELECTRIC STEAMERS & STEAM GENERATORS

WARNING: ELECTRICAL AND GROUNDING CONNECTIONS MUST COMPLY WITH THE APPLICABLE PORTIONS OF THE NATIONAL ELECTRICAL CODE AND/OR OTHER LOCAL ELECTRICAL CODES.

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT / TAGOUT PROCEDURES.

Connect the electrical supply circuit to the terminal block in the field connection box located behind the left side panel at the rear. A 1⁷/₈" (4.8 cm) diameter hole for 1¹/₂" (3.8 cm) trade-size conduit is provided on the side of the control box. Use copper wire suitable for at least 75°C. A grounding wire must be connected to the ground lug.

The wiring diagram is located on the door of the boiler.

ELECTRICAL DATA

Volts	Hertz	Phase	Total KW	Machine Amps	Minimum Circuit Ampacity Maximum Protective Device AMPS
208	60	1	24	115.4	150
208	60	3	24	66.6	90
			36	99.9	125
			42	116.6	150
240	60	1	24	100	125
240	60	3	24	57.7	90
			36	86.6	125
			48	115.5	150
480	60	3	24	28.9	50
			36	43.3	70
			48	57.7	90

Compiled in accordance with the National Electrical Code, ANSI-NFPA-70 (latest edition).

CONNECTION OF OTHER STEAM COOKING EQUIPMENT TO AN ELECTRIC OR GAS BOILER

Steam can be supplied to additional steam equipment from the auxiliary steam port on the boiler, or Steam Line Connection (Fig. 1). When additional equipment is added, appliance efficiency will be affected. To be certain that you will be operating at optimum efficiency, contact the Vulcan-Hart sales representative in your area for steam boiler horsepower calculations.

The connection point for the steam line to other equipment is a $\frac{3}{4}$ " NPT tee (female) fitting (1.9 cm) on the left side of the boiler near the top and towards the rear. Remove the $\frac{3}{4}$ " NPT pipe plug (Fig. 1) (1.9 cm) and use the piping kit available from Vulcan-Hart.

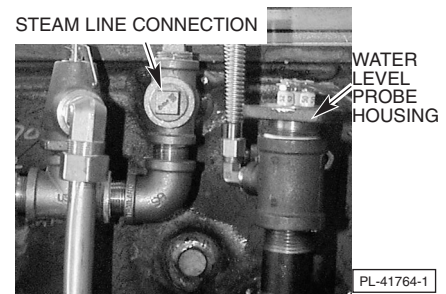


Fig. 1

SEQUENTIAL STARTUP OF OTHER STEAM COOKING EQUIPMENT CONNECTED TO A BOILER

After the boiler is operating and producing steam, start the equipment that is farthest away until it is preheated and up to temperature before starting the next piece of equipment. It is recommended that all kettles be started before any compartment steamers. This will allow the larger equipment or the equipment with greater steam requirements to be properly warmed up before smaller, nearer units which require less steam. This will prevent the system from being overwhelmed by initial demand. For configurations or recommendations, contact your Vulcan-Hart representative.

LOCATION — DIRECT CONNECTED STEAMERS

Position the steamer in its final location.

The recommended clearance for proper operation is 36" (91.4 cm) at the front. The required clearance from combustible or non-combustible construction is 0" at the sides and back. The recommended clearance for service access is 18" (45.7 cm) at the sides and back. Clearances less than 18" may require removal of adjacent equipment during servicing at customer's expense.

An exhaust system should be located directly above the steamer to exhaust steam and heat generated by the steamer.

IMPORTANT: Do not locate the steamer directly over a drain.

DIRECT STEAM CONNECTIONS

Provide dry steam to the inlets. If the steam is heavy with condensate, install a ball float trap before the pressure regulator valve. To ensure rapid heatup of heavy, cold loads, the steam supply line must be sized to provide the following:

1. To maintain steam at a pressure of 10 to 12 psi (68.9 to 82.7 kPa).
2. A minimum flow rate of 40 pounds (18.2 kg) of steam per hour per compartment for model VHX24D.
3. A minimum flow rate of 67 pounds (30.4 kg) of steam per hour per compartment for model VHX24D5.
4. A minimum flow rate of 34 pounds (15.4 kg) of steam per hour per compartment for VHL series steamers.

A pressure-reducing valve is furnished and set at 10 psi (68.9 kPa). Additional steam kettles and kettle modules can be interconnected to the steamer. Consult Vulcan-Hart for recommendations.

STARTUP TEST RUN — VHX24 & VH3616 SERIES STEAMERS

Refer to the OPERATION section for more information on VHX24 compartment and boiler controls.

WARNING: THE STEAMER AND ITS PARTS ARE HOT. USE CARE WHEN OPERATING, CLEANING OR SERVICING THE STEAMER.

WARNING: THE COOKING COMPARTMENTS CONTAIN LIVE STEAM. STAY CLEAR WHILE OPENING EACH DOOR.

After the steamer is installed and proper service connections have been made, thoroughly test the steamer before operation. For Direct connected steamers, open the steam valve and begin at step 9.

1. Open the water inlet valve. Close only for service or long shutdown.
2. Turn the power supply on.
3. Locate the boiler power switch and press [I] to start. Two amber indicator lights (low water and high pressure) will light as water fills the boiler. After about 4 to 5 minutes, the water will reach the required level in the boiler and the green indicator light on the reset switch will light. Refer to Fig. 2, page 16.
4. Observe the water level gauge sight glass to verify the water level. Keep both valves on the water gauge open at all times.
5. Press the reset switch when its green indicator light is lit to begin heating the boiler.
6. Both low water and high pressure indicator lights must be off before heating will begin. If the low water light does not go off, make sure the water supply is on. If the indicator lights do not go off after 15 minutes or if they come on during normal operation, press [O] on the power switch for OFF and contact an authorized Vulcan-Hart servicer.
7. If heating does not begin after 30 seconds, press [O] on the power switch for OFF, wait 5 minutes, then repeat steps 1 through 5. If heatup does not occur after 3 tries, press [O] on the power switch for OFF and contact an authorized Vulcan-Hart servicer.
8. Verify that the gas supply is adequate:
 - Monitor gas pilot pressure as the main burner lights. Sufficient gas supply will not allow the gas pilot pressure to drop when the main burner gas valve is energized.
 - Gas pilot pressure dropping more than 0.25" W.C. indicates an insufficient supply. Larger diameter (ID) gas supply piping to the steamer must be used.
 - Turn on other gas equipment that shares the gas supply line to the steamer. Verify gas pilot pressure does not drop more than 0.25" W.C. when the main burner gas valve is energized.
9. Steam generation will begin in about 10 minutes. Observe that the boiler pressure gauge indicates steam pressure in the range of 5 to 12 psi. Burners on gas models cycle on at 8 psi and off at 10 psi. Heaters on electric models cycle on at 10 psi and off at 12 psi. On first startup each day, the pressure in the boiler of gas models may overshoot and the pressure relief valve may open.
10. Set both timer dials to the OFF positions. The compartment green ready lights will be lit.
11. Open both compartment doors and observe that no steam has entered the cooking compartments.
12. Close the compartment doors.

13. Set both timer dials to 2 minutes. The green ready lights will go off, the red cooking lights will come on and steam will be heard entering the compartments.
14. Wait until 1 minute is left on the timers.
15. Open each door and observe that steam has stopped entering into each compartment. The red cooking lights remain on.
16. Close the compartment doors. Steam generation and timers resume. Make sure that steam from the drain is being cooled by water from the cold water condenser.
17. When the timer dials are at 0 minutes, each buzzer will sound. Steam flow to the compartments will stop. The red cooking lights will go off. The green ready lights will come on.
18. Turn timer dials to the OFF position to silence the buzzers.
19. Press [O] on the power switch on the boiler (Fig. 2) to turn the steamer off. The indicator lights are not lit. The boiler will automatically blow down.

STARTUP TEST RUN — VHL2 & VHL3 SERIES STEAMERS BUILT AFTER MAY 2003

Refer to the OPERATION section for more information on VHL compartment and boiler controls.

WARNING: THE STEAMER AND ITS PARTS ARE HOT. USE CARE WHEN OPERATING, CLEANING OR SERVICING THE STEAMER.

WARNING: THE COOKING COMPARTMENTS CONTAIN LIVE STEAM. STAY CLEAR WHILE OPENING EACH DOOR.

After the steamer is installed and proper service connections have been made, thoroughly test the steamer before operation. For Direct connected steamers, open the steam valve and begin at step 9.

1. Open the water inlet valve. Close only for service or long shutdown.
2. Turn the power supply on.
3. Locate the boiler power switch and press [I] to start. Two amber indicator lights (low water and high pressure) will light as water fills the boiler. After about 4 to 5 minutes, the water will reach the required level in the boiler and the green indicator light on the reset switch will light. Refer to Fig. 2, page 16.
4. Observe the water level gauge sight glass to verify the water level. Keep both valves on the water gauge open at all times.
5. Press the reset switch when its green indicator light is lit to begin heating the boiler.
6. Both low water and high pressure indicator lights must be off before heating will begin. If the low water light does not go off, make sure the water supply is on. If the indicator lights do not go off after 15 minutes or if they come on during normal operation, press [O] for OFF and contact an authorized Vulcan-Hart servicer.
7. If heating does not begin after 30 seconds, press [O] on the power switch for OFF, wait 5 minutes, then repeat steps 1 through 5. If heatup does not occur after 3 tries, press [O] on the power switch for OFF and contact an authorized Vulcan-Hart servicer.
8. Verify that the gas supply is adequate:
 - Monitor gas pilot pressure as the main burner lights. Sufficient gas supply will not allow the gas pilot pressure to drop when the main burner gas valve is energized.
 - Gas pilot pressure dropping more than 0.25" W.C. indicates an insufficient supply. Larger diameter (ID) gas supply piping to the steamer must be used.
 - Turn on other gas equipment that shares the gas supply line to the steamer. Verify gas pilot pressure does not drop more than 0.25" W.C. when the main burner gas valve is energized.
9. Steam generation will begin in about 10 minutes. Observe that the boiler pressure gauge indicates steam pressure in the range of 5 to 12 psi. Burners on gas models cycle on at 8 psi and off at 10 psi. Heaters on electric models cycle on at 10 psi and off at 12 psi. On first startup each day, the pressure in the boiler of gas models may overshoot and the pressure relief valve may open.
10. Set all timer dials to OFF.
11. Open all compartment doors and observe that no steam has entered the cooking compartments.
12. Close compartment doors.

13. Set all timer dials to 5 minutes. (Turn timer knob to 10 minutes or more to trip the switches, then back to 5 minutes.)

**COMPARTMENT
OPERATION**

REFER TO PAGE 20 – 21 FOR
AUTOMATIC CONTROLS.

REFER TO PAGE 22 – 23 FOR
PRE-VENT AUTOMATIC CONTROLS.

14. Press the top of the compartment switch (Fig. 6 or 7) to start the timer. Steam will be heard entering the compartments.
15. When timer dials are at 1 minute, steam flow to the compartments stops and the compartment drain opens. The cold water condenser in the drain may cycle on.
16. When the timers reach 0, silence the buzzers by pressing the bottom of the compartment switch.
17. Open compartment doors. Verify that the compartments were heated and drained.
18. Press [O] on the power switch on the boiler to turn the steamer off. The boiler will automatically blow down.

STARTUP TEST RUN — VHL2 & VHL3 SERIES STEAMERS BUILT BEFORE MAY, 2003

For STARTUP TEST RUN instructions and Compartment Controls information on VHL STEAMERS built before May, 2003, refer to pages 24 — 31. These earlier models were built with a steam control handle.

STARTUP TEST RUN — MHB24 SERIES STEAM GENERATORS, ELECTRIC OR GAS

WARNING: THE STEAMER AND ITS PARTS ARE HOT. USE CARE WHEN OPERATING, CLEANING OR SERVICING THE STEAMER.

After the steamer is installed and proper service connections have been made, thoroughly test the steamer before operation.

1. Open the water inlet valve. Close only for service or long shutdown.
2. Turn the power supply on.
3. Locate the boiler power switch and press [I] to start. Two amber indicator lights (low water and high pressure) will light as water fills the boiler. After about 4 to 5 minutes, the water will reach the required level in the boiler and the green indicator light on the reset switch will light. Refer to Fig. 2, page 16.
4. Observe the water level gauge sight glass to verify the water level. Keep both valves on the water gauge open at all times.
5. If required, press the reset switch when its green indicator light is lit to begin heating the boiler.
6. Both low water and high pressure indicator lights must be off before heating will begin.
 - If the low water light does not go off, make sure the water supply is on.
 - If the indicator lights do not go off after 15 minutes or if they come on during normal operation, press [O] for OFF and contact an authorized Vulcan-Hart servicer.
7. If heating does not begin after 30 seconds, press [O] on the power switch for OFF, wait 5 minutes, then repeat steps 1 through 5.
 - If heatup does not occur after 3 tries, press [O] on the power switch for OFF and contact an authorized Vulcan-Hart servicer.
8. Verify that the gas supply is adequate:
 - Monitor gas pilot pressure as the main burner lights. Sufficient gas supply will not allow the gas pilot pressure to drop when the main burner gas valve is energized.
 - Gas pilot pressure dropping more than 0.25" W.C. indicates an insufficient supply. Larger diameter (ID) gas supply piping to the steamer must be used.
 - Turn on other gas equipment that shares the gas supply line to the steamer. Verify gas pilot pressure does not drop more than 0.25" W.C. when the main burner gas valve is energized.
9. Steam generation will begin in about 10 minutes. Observe that the boiler pressure gauge indicates steam pressure in the range of 5 to 12 psi. Burners on gas models cycle on at 8 psi and off at 10 psi. Heaters on electric models cycle on at 10 psi and off at 12 psi. On first startup each day, the pressure in the boiler of gas models may overshoot and the pressure relief valve may open.
10. To shut down the boiler, press [O] on the power switch on the boiler. The indicator lights are not lit. The boiler will automatically blow down.

OPERATION

BOILER CONTROLS — GAS (Figs. 2, 3) or ELECTRIC (Figs. 2, 4)

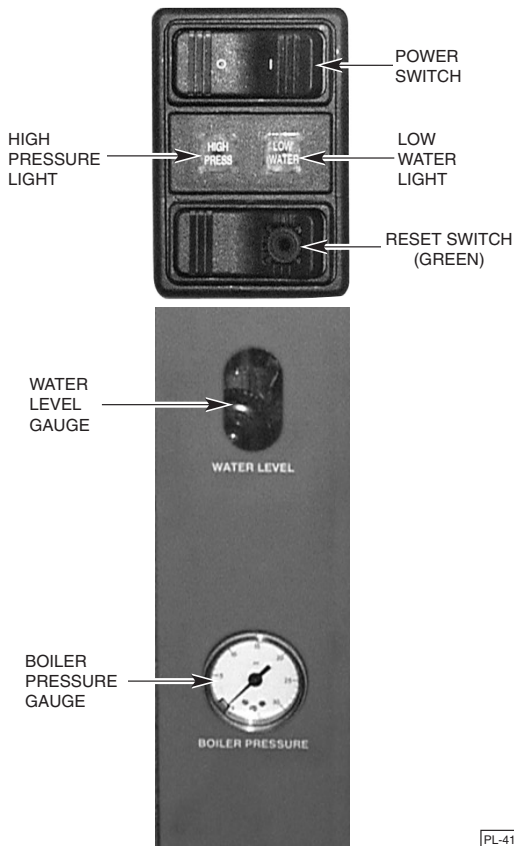


Fig. 2

Water Level Gauge

- The correct water level is approximately 1" (2.5 cm) of water in the water level gauge sight glass.
- The manual valves at the top and bottom of the water level gauge (Fig. 3) must be fully open (counterclockwise).
- Observe that the water is clean and clear in the glass tube.
 - The appearance of extreme murkiness in the water indicates inadequate water quality and will cause the controls and the steamer to fail. Warranty does not cover malfunction due to poor water conditions.

Pressure Relief Valve

- The pressure relief valve, located on the top left side, prevents pressure in the boiler from exceeding 15 psig.
- Manually pull up the lever daily to reduce scale buildup and verify that the pressure relief valve functions properly.

Power Switch

- Press [I] to power the controls and begin filling the boiler.
- Press [O] to turn the controls and the steamer off. The boiler automatically blows down for about 5 minutes.

High Pressure Light

- Is lit after [I] is pressed and stays on during fill. Goes off after the reset switch is pressed (when green light is lit).
- Is lit if pressure exceeds 15 psig.

Low Water Light

- Is lit after [I] is pressed and stays on during fill. Goes off after the reset switch is pressed (when green light is lit).
- Is lit if water level is too low.

Reset Switch

- When the high pressure and low water limits are satisfied, the green light in the reset button will come on. Press the reset button to clear high pressure and low water limit lights and start or resume normal operation.

Boiler Pressure Gauge

- Indicates the boiler steam pressure; the normal operating range is 5 to 12 psig.

Gas Boiler (Fig. 3)

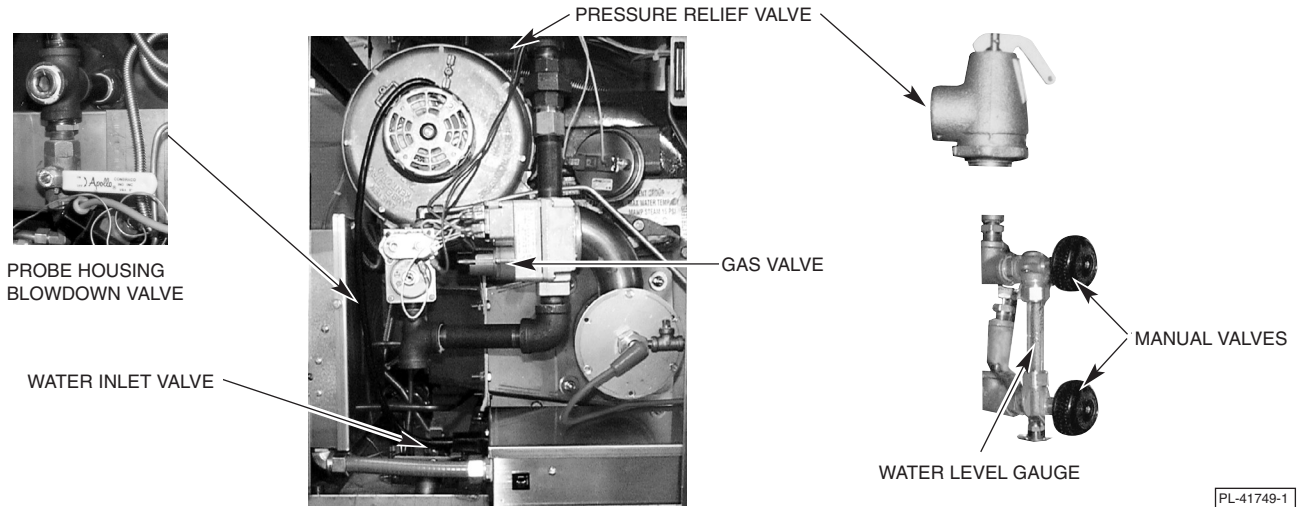


Fig. 3

Electric Boiler (Fig. 4)

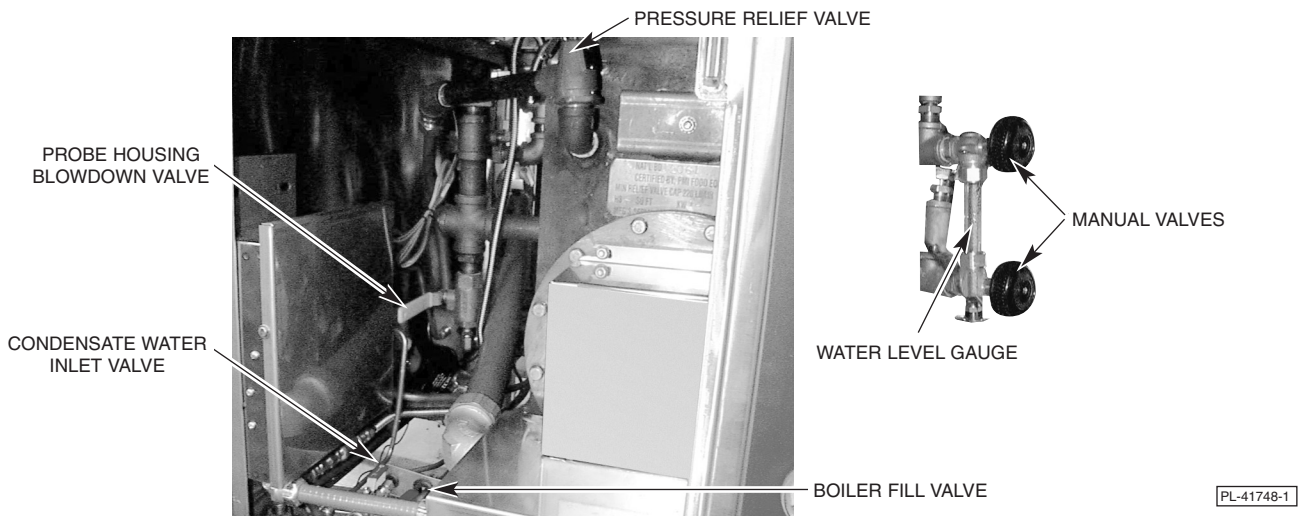


Fig. 4

Probe Housing Blowdown Valve

- Open periodically (monthly) to blow down the probes and to remove sediment and scale buildup.
- Located toward the back left side. Wait until the boiler is cool before opening the valve.

Water Inlet Valve

- Located toward the bottom center in the boiler.

Gas Valve (Gas-Powered Boilers Only)

- Located behind the door. Turn counterclockwise to ON; clockwise to OFF.

COMPARTMENT CONTROLS — VHX24 & VH3616 SERIES STEAMERS (Fig. 5)

WARNING: THE STEAMER AND ITS PARTS ARE HOT. USE CARE WHEN OPERATING, CLEANING OR SERVICING THE STEAMER.

WARNING: THE COOKING COMPARTMENTS CONTAIN LIVE STEAM. STAY CLEAR WHILE OPENING EACH DOOR.

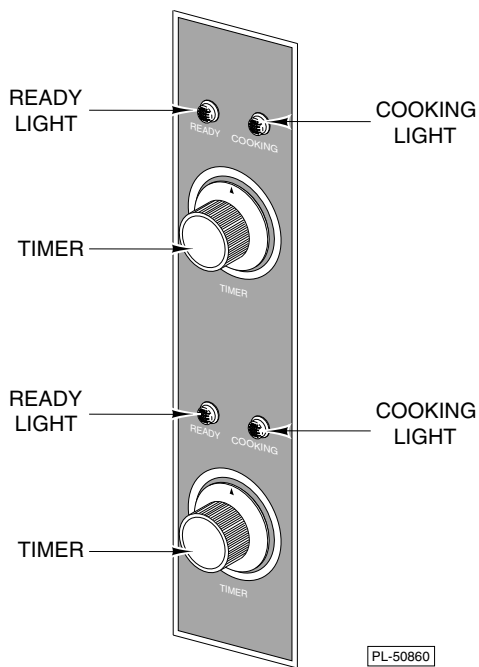


Fig. 5

Ready Light (Green)

— Indicates the steamer is ready for the cooking cycle.

Cooking Light (Red)

— Indicates the steamer is in the cooking phase.

Timer

— Sets the desired cooking time.

- Timer range is 0 to 60 minutes.
- Turn to the OFF position to silence the buzzer.

Refer to *Steam Cooking with Vulcan Kettles and Steamers* (packed with your steamer) for suggested cooking times. Also refer to the Suggested Cooking Guidelines on pages 33 – 35. Size, weight, pan loading and product quality will affect cooking times and should be adjusted to your own requirements.

PREHEATING

Preheat the cooking cavity when the steamer is first used for the day or whenever the compartment is cold. Keep the door closed during the preheat cycle.

OPERATING VHX24 & VH3616 SERIES STEAMERS

1. Press [I] and wait until the boiler is filled to the required level. Both the low water and high pressure indicator lights are lit.
2. Press the reset switch when its green indicator light is lit. Both the low water and high pressure indicator lights must go off before heating will begin.
3. Wait 10 minutes before starting a cooking operation.
4. Preheat the cooking compartment(s) as follows:
 - When the green ready light comes on, set the timer to 1 minute to preheat the compartment.
 - The red cooking light is lit.
 - When the buzzer sounds, turn the timer to the OFF position. The steamer is ready to cook.
5. With the compartment(s) preheated and the green ready light on, place pans of food into the cooking compartment(s) and shut the door(s).
6. Turn the timer(s) to the desired cooking time.
 - The cooking cycle will begin.
 - The cooking cycle and time may be interrupted at any time by opening the door. Close the door to resume cooking.
7. The buzzer will sound when the cooking cycle ends and steam has stopped entering the cooking compartment(s).
 - Turn the timer(s) to the OFF position to silence the buzzer(s); remove the cooked food.
 - The red cooking light will go off and the green ready light will come on to indicate the steamer is ready for the next cooking cycle.

EXTENDED SHUTDOWN

To shut down for an extended period:

1. Press [O] on the boiler power switch (Fig. 2).
2. Close the water inlet valve.
3. Clean the compartment(s).

STANDARD AUTOMATIC COMPARTMENT CONTROLS — VHL2 & VHL3 STEAMERS (Fig. 6)

WARNING: THE STEAMER AND ITS PARTS ARE HOT. USE CARE WHEN OPERATING, CLEANING OR SERVICING THE STEAMER.

WARNING: THE COOKING COMPARTMENTS CONTAIN LIVE STEAM. STAY CLEAR WHILE OPENING EACH DOOR.

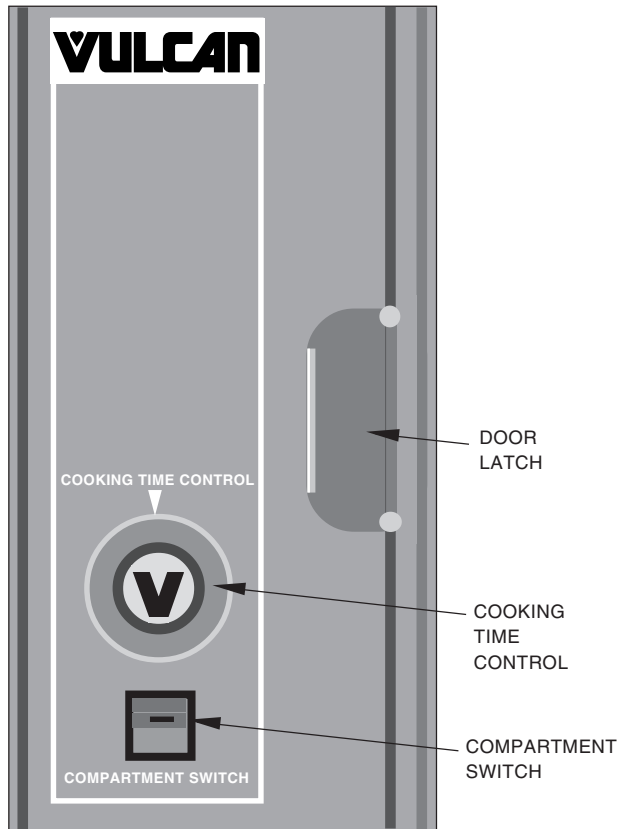


Fig. 6

Door Latch

- Holds the door closed.

Door Screw Handle (Not Shown)

- Seals door the gasket against the cabinet.

Cooking Time Control

- Sets the desired cooking time (0 to 60 minutes).

Compartment Switch

- Press the top of the switch to start the timer.
- At the end of the cooking cycle, press the bottom of the switch to silence the buzzer.

Refer to *Steam Cooking with Vulcan Kettles and Steamers* (packed with your steamer) for suggested cooking times. Also refer to the Suggested Cooking Guidelines on pages 33 – 35. Size, weight, pan loading and product quality will affect cooking times and should be adjusted to your own requirements.

PREHEATING

Preheat the cooking cavity when the steamer with automatic compartment controls is first used for the day or whenever the compartment is cold. Keep the door closed during the preheat cycle.

OPERATING VHL2 & VHL3 STEAMERS WITH STANDARD AUTOMATIC COMPARTMENT CONTROLS

1. Prepare vegetables, fruits, meats, seafood and poultry as you would for steam cooking or cooking in water: clean, separate, cut, remove stems, etc., and place in a pan.
2. Place loaded pans in the compartment and close the compartment door. Turn the door screw handle clockwise to seal the door gasket. Normal pressure will seal the compartment; however, a new gasket may require additional pressure after it becomes heated. After the pressure gauge (located below the lowest compartment controls) reaches a maximum pressure of 5 to 6 psi, turn the door screw handle clockwise enough to stop the leakage. The pressure gauge indicates steam pressure in the steam supply pipe, not the compartments.
3. The timer knob must be turned to 10 minutes or beyond to trip the switches. The knob may then be turned back to a lower setting if a shorter time setting is desired. Set the timer to the sum of the desired cooking time plus some minutes allowed for preheating (generally 5 to 10 minutes). The preheat allowance will vary with the type, size, temperature and condition (frozen or thawed) of the load, and must be determined from experience.
4. Press the top half of the compartment switch located under the timer; the cooking light will become lit. The drain closes, steam is allowed to enter the compartment and the timer starts. The balance of the cooking time sequence is automatic.
5. Steam will automatically be exhausted from the compartment one minute before the end of the cooking cycle as the steam supply is shut off.

Never attempt to open the compartment door during the cooking cycle, when the cooking light is lit or before the buzzer sounds.

6. At the end of the cooking cycle, the cooking light goes off and the buzzer sounds. Turn the steamer off by pressing the bottom half of the compartment switch — this also shuts off the buzzer. Loosen the door screw slowly and allow moisture to escape. After a few seconds, move the door latch to the left, slowly open the door and remove the pans of food.

PRE-VENT™ COMPARTMENT CONTROLS — VHL2 & VHL3 STEAMERS (Fig. 7)

WARNING: THE STEAMER AND ITS PARTS ARE HOT. USE CARE WHEN OPERATING, CLEANING OR SERVICING THE STEAMER.

WARNING: THE COOKING COMPARTMENTS CONTAIN LIVE STEAM. STAY CLEAR WHILE OPENING EACH DOOR.

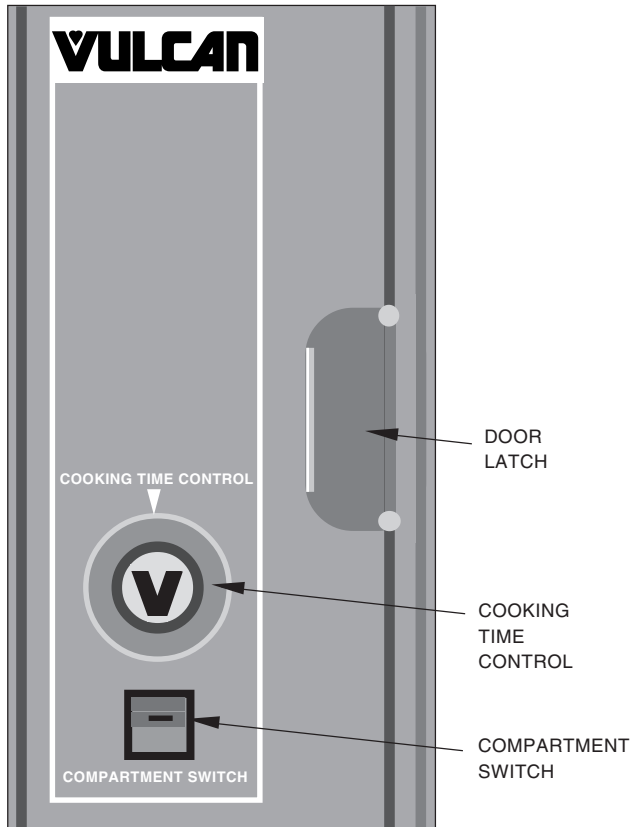


Fig. 7

Door Latch

- Holds the door closed.

Door Screw Handle (Not Shown)

- Seals the door gasket against the cabinet.

Cooking Time Control

- Sets the desired cooking time (0 to 60 minutes).
- Pre-Vent delays starting the timer until the compartment reaches 180°F (82°C).

Compartment Switch

- Press top of switch to start the timer.
- At the end of the cooking cycle, press the bottom of the switch to silence the buzzer.

Temperature Sensor (Inside Compartment)

- Starts the timer when the cooking compartment temperature reaches 180°F (82°C).

Refer to *Steam Cooking with Vulcan Kettles and Steamers* (packed with your steamer) for suggested cooking times. Also refer to the Suggested Cooking Guidelines on pages 33 – 35. Size, weight, pan loading and product quality will affect cooking times and should be adjusted to your own requirements.

OPERATING VHL2 & VHL3 WITH PRE-VENT COMPARTMENT CONTROLS

1. Prepare vegetables, fruits, meats, seafood and poultry as you would for steam cooking or cooking in water: clean, separate, cut, remove stems, etc., and place in a pan.
2. Place loaded pans in the compartment and close the compartment door. Turn the door screw handle clockwise to seal the door gasket. Normal pressure will seal the compartment; however, a new gasket may require additional pressure after it becomes heated. After the pressure gauge (located below the lowest compartment controls) reaches a maximum pressure of 5 to 6 psi, turn the door screw handle clockwise enough to stop the leakage. The pressure gauge indicates steam pressure in the steam supply pipe, not the compartments.
3. The timer knob must be turned to 10 minutes or beyond to trip the switches. The knob may then be turned back to a lower setting if a shorter time setting is desired.
4. Set the timer to the desired cooking time.
5. Press the top half of the compartment switch located under the timer. Steam enters the compartment during this automatic pre-vent or defrost period; the drain is open to allow any air and condensate to freely vent.
6. After the cavity reaches a temperature of 180°F (82°C), preheating and defrosting are complete: then the drain closes and the timer starts. During the cooking cycle, the compartment pressure reaches 5 to 6 psi, and limited venting takes place through the compartment drain to allow removal of condensate and residual air.
7. When the timer reaches 1 minute, the steam supply to the compartment is shut off and the drain is opened. The compartment will exhaust for about 1 minute.
Never attempt to open the compartment door during the cooking cycle, when the cooking light is lit or before the buzzer sounds.
8. When the timer reaches 0, the cook light goes off and the continuous buzzer will sound, indicating the end of the cooking cycle.
9. Turn buzzer off by pressing the bottom half of the compartment switch. Then loosen the door screw handle slowly to allow moisture to escape. After a few seconds, move the door latch to the left, slowly open the door and remove the pans of food.

STARTUP TEST RUN — VHL2 & VHL3 SERIES STEAMERS BUILT BEFORE MAY 2003

Refer to the OPERATION section for more information on VHL compartment and boiler controls.

WARNING: THE STEAMER AND ITS PARTS ARE HOT. USE CARE WHEN OPERATING, CLEANING OR SERVICING THE STEAMER.

WARNING: THE COOKING COMPARTMENTS CONTAIN LIVE STEAM. STAY CLEAR WHILE OPENING EACH DOOR.

After the steamer is installed and proper service connections have been made, thoroughly test the steamer before operation. For Direct connected steamers, open the steam valve and begin at step 10.

1. Be sure the water inlet valve is open. Close only for service or long shutdown.
2. Turn the power supply on.
3. Locate the boiler power switch and press [I] to start. Two amber indicator lights (low water and high pressure) will light as water fills the boiler. After about 4 to 5 minutes, the water will reach the required level in the boiler and the green indicator light on the reset switch will light.
4. Observe the water level gauge sight glass to verify the water level. Keep both valves on the water gauge open at all times.
5. Press the reset switch when its green indicator light is lit to begin heating the boiler.
6. Both low water and high pressure indicator lights must be off before heating will begin. If the low water light does not go off, make sure the water supply is on. If the indicator lights do not go off after 15 minutes or if they come on during normal operation, press [O] for OFF and contact an authorized Vulcan-Hart servicer.
7. If heating does not begin after 30 seconds, press [O] on the power switch for OFF, wait 5 minutes, then repeat steps 1 through 5. If heatup does not occur after 3 tries, press [O] on the power switch for OFF and contact an authorized Vulcan-Hart servicer.
8. Verify that the gas supply is adequate:
 - Monitor gas pilot pressure as the main burner lights. Sufficient gas supply will not allow the gas pilot pressure to drop when the main burner gas valve is energized.
 - Gas pilot pressure dropping more than 0.25" W.C. indicates an insufficient supply. Larger diameter (ID) gas supply piping to the steamer must be used.
 - Turn on other gas equipment that shares the gas supply line to the steamer. Verify gas pilot pressure does not drop more than 0.25" W.C. when the main burner gas valve is energized.
9. Steam generation will begin in about 10 minutes. Observe that the boiler pressure gauge indicates steam pressure in the range of 5 to 12 psi. Burners on gas models cycle on at 8 psi and off at 10 psi. Heaters on electric models cycle on at 10 psi and off at 12 psi. On first startup each day, the pressure in the boiler of gas models may overshoot and the pressure relief valve may open.
10. Set all timer dials to OFF.
11. Open all compartment doors and observe that no steam has entered the cooking compartments.
12. Close compartment doors.
13. Set all timer dials to 5 minutes. (Turn timer knob to 10 minutes or more to trip the switches, then back to 5 minutes.)

14. Pull the steam control handle forward and lock it by pulling down. This closes the drain. Steam enters the compartment as air is vented; a hissing sound is heard. Press the top of the Compartment Switch (Fig. 6 or 7, page 20 or 22) to start the timer.

**COMPARTMENT
OPERATION**

REFER TO PAGE 26 – 27 FOR
MANUAL CONTROLS.

REFER TO PAGE 28 – 29 FOR
AUTOMATIC CONTROLS.

REFER TO PAGE 30 – 31 FOR
PRE-VENT AUTOMATIC CONTROLS.

15. When timer dials are at 1 minute, steam flow to the compartments stops and the compartment drain opens. The cold water condenser in the drain may cycle on.
16. When the timers reach 0, silence the buzzers by pressing the bottom of the compartment switch.
17. Open compartment doors. Verify that the compartments were heated and drained.
18. Press [O] on the power switch on the boiler to turn the steamer off. The boiler will automatically blow down.

MANUAL COMPARTMENT CONTROLS — VHL2 & VHL3 STEAMERS BUILT BEFORE MAY, 2003

WARNING: THE STEAMER AND ITS PARTS ARE HOT. USE CARE WHEN OPERATING, CLEANING OR SERVICING THE STEAMER.

WARNING: THE COOKING COMPARTMENTS CONTAIN LIVE STEAM. STAY CLEAR WHILE OPENING EACH DOOR.

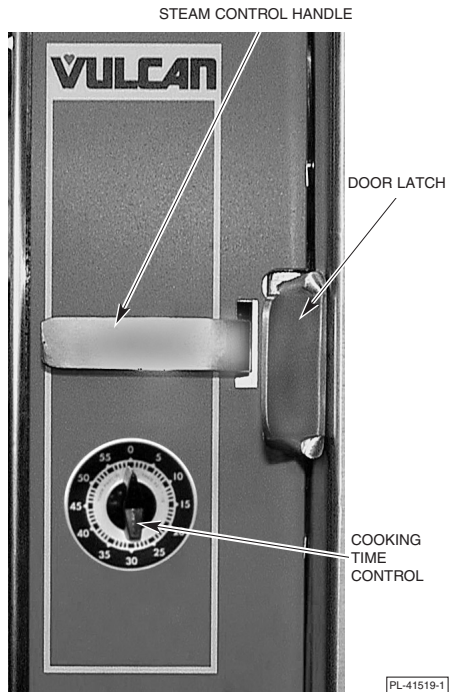


Fig. 9

Door Latch

- Holds the door closed.

Door Screw Handle (Not Shown)

- Seals door gasket against cabinet.

Steam Control Handle

- Pull out and down to open the steam valve.
- Push up and back to turn the steam valve off.

Cooking Time Control

- Sets the desired cooking time (0 to 60 minutes).
- At the end of the cooking cycle, buzzer sounds for a short interval and then stops.

Refer to *Steam Cooking with Vulcan Kettles and Steamers* (packed with your steamer) for suggested cooking times. Also refer to the Suggested Cooking Guidelines on pages 33 – 35. Size, weight, pan loading and product quality will affect cooking times and should be adjusted to your own requirements.

OPERATING VHL2 & VHL3 STEAMERS WITH MANUAL COMPARTMENT CONTROLS

This section covers operation of VHL2 & VHL3 Steamers built before May, 2003.

1. Prepare vegetables, fruits, meats, seafood and poultry as you would for steam cooking or cooking in water: clean, separate, cut, remove stems, etc., and place in a pan.
2. Place loaded pans in the compartment and close the compartment door. Turn the door screw handle clockwise to seal the door gasket. Normal pressure will seal the compartment. However, a new gasket may require additional pressure after it becomes heated. After the pressure gauge (located below the lowest compartment controls) reaches a maximum pressure of 5 to 6 psi, turn the door screw handle clockwise enough to stop the leakage. The pressure gauge indicates steam pressure in the steam supply pipe, not the compartments.
3. The timer knob must be turned to 10 minutes or beyond to trip the switches. The knob may then be turned back to a lower setting if desired. When setting the timer, add to the cooking time 5 to 10 minutes to allow for preheating. The timer setting depends on the type, size, temperature and condition (frozen or thawed) of the load and must be determined from experience.
4. Pull the steam control handle forward and lock it by pulling the arm down. The door latch cannot be opened when the steam control handle is pulled forward. This closes the drain and allows steam to enter the compartment. Air is automatically vented from the compartment as steam enters. The escaping air causes a hissing sound which is audible during the early part of the cycle.

Never attempt to open the compartment door during the cooking cycle.

5. When the timer buzzes (5 to 10 seconds), lift the steam control handle and give it a slight push to the rear. An internal spring will automatically pull the steam control handle to the rear, shutting off the steam supply and opening the drain.
6. Wait a minimum of 1 minute for the steam and condensate in the compartment to exhaust. Then loosen the screw handle on the compartment door to allow moisture to escape. After a few seconds, move the door latch to the left, slowly open the door and remove the pans of food.

AUTOMATIC COMPARTMENT CONTROLS — VHL2 & VHL3 STEAMERS (Fig. 10)

This section covers VHL2 & VHL3 Steamers built before May, 2003.

WARNING: THE STEAMER AND ITS PARTS ARE HOT. USE CARE WHEN OPERATING, CLEANING OR SERVICING THE STEAMER.

WARNING: THE COOKING COMPARTMENTS CONTAIN LIVE STEAM. STAY CLEAR WHILE OPENING EACH DOOR.

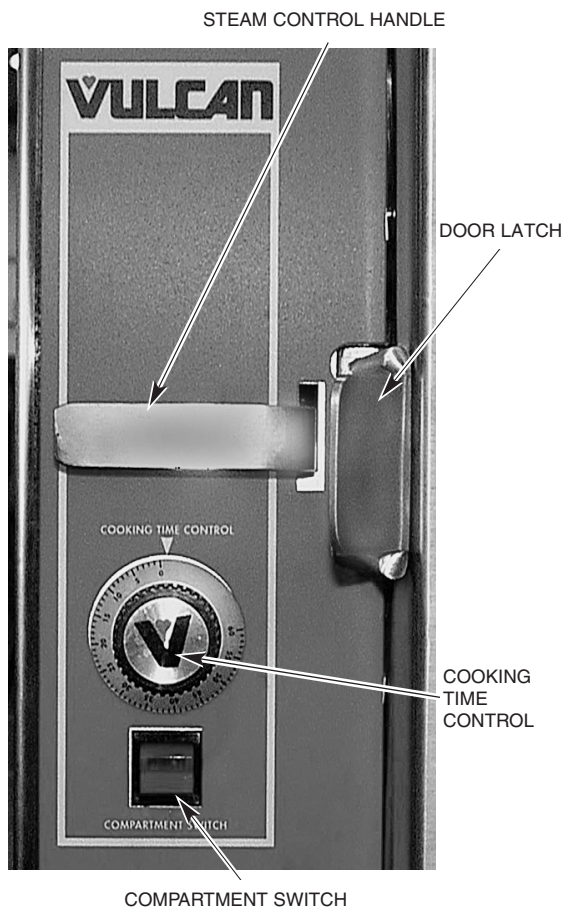


Fig. 10

Door Latch

- Holds the door closed.

Door Screw Handle (Not Shown)

- Seals the door gasket against the cabinet.

Steam Control Handle

- Push out and down to open the steam valve.
- Push up and back to turn the steam valve off.

Cooking Time Control

- Sets the desired cooking time (0 to 60 minutes).

Compartment Switch

- Press the top of the switch to start the timer.
- At the end of the cooking cycle, press the bottom of the switch to silence the buzzer.

Refer to *Steam Cooking with Vulcan Kettles and Steamers* (packed with your steamer) for suggested cooking times. Also refer to the Suggested Cooking Guidelines on pages 33 – 35. Size, weight, pan loading and product quality will affect cooking times and should be adjusted to your own requirements.

PREHEATING

Preheat the cooking cavity when the steamer with automatic compartment controls is first used for the day or whenever the compartment is cold. Keep the door closed during the preheat cycle.

OPERATING VHL2 & VHL3 STEAMERS WITH AUTOMATIC COMPARTMENT CONTROLS

This section covers operation of VHL2 & VHL3 Steamers built before May, 2003.

1. Prepare vegetables, fruits, meats, seafood and poultry as you would for steam cooking or cooking in water: clean, separate, cut, remove stems, etc., and place in a pan.
2. Place loaded pans in the compartment and close the compartment door. Turn the door screw handle clockwise to seal the door gasket. Normal pressure will seal the compartment; however, a new gasket may require additional pressure after it becomes heated. After the pressure gauge (located below the lowest compartment controls) reaches a maximum pressure of 5 to 6 psi, turn the door screw handle clockwise enough to stop the leakage. The pressure gauge indicates steam pressure in the steam supply pipe, not the compartments.
3. The timer knob must be turned to 10 minutes or beyond to trip the switches. The knob may then be turned back to a lower setting if a shorter time setting is desired. When the steamer is cold, add 5 to 10 minutes to the cooking time to allow for preheating. The timer setting depends on the type, size, temperature and condition (frozen or thawed) of the load and must be determined from experience.
4. Pull the steam control handle forward and lock it by pulling the arm down. The door latch cannot be opened when the steam control handle is pulled forward. This closes the drain and allows steam to enter the compartment. Air is automatically vented from the compartment as steam enters. The escaping air causes a hissing sound which is audible during the early part of the cycle. Press the top half of the red switch located under the timer. This starts the timer.
5. When the timer reaches 1 minute, the arm automatically moves to the rear, shutting off the steam supply and opening the drain. The compartment will exhaust for about 1 minute.

Never attempt to open the compartment door during the cooking cycle, when the cooking light is lit or before the buzzer sounds.

6. When the timer reads 0, the continuous buzzer will sound, indicating the end of the cooking cycle.
7. Turn the steamer off by pressing the bottom half of the red compartment switch. Then loosen the door screw handle, allowing moisture to escape. After a few seconds, move the door latch to the left, slowly open the door and remove the pans of food.

PRE-VENT™ AUTOMATIC COMPARTMENT CONTROLS — VHL2 & VHL3 STEAMERS (Fig. 11)

This section covers operation of VHL2 & VHL Steamers built before May, 2003.

WARNING: THE STEAMER AND ITS PARTS ARE HOT. USE CARE WHEN OPERATING, CLEANING OR SERVICING THE STEAMER.

WARNING: THE COOKING COMPARTMENTS CONTAIN LIVE STEAM. STAY CLEAR WHILE OPENING EACH DOOR.

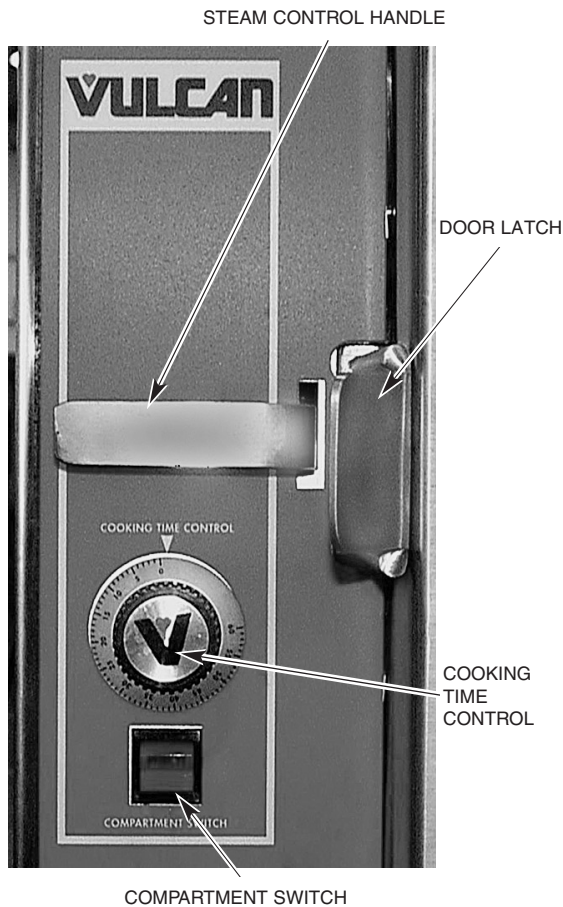


Fig. 11

PL-41445-1

Door Latch

- Holds the door closed.

Door Screw Handle (Not Shown)

- Seals the door gasket against the cabinet.

Steam Control Handle

- Push out and down to open the steam valve.
- Push up and back to turn the steam valve off.

Cooking Time Control

- Sets the desired cooking time (0 to 60 minutes).
- Pre-Vent delays starting the timer until the compartment reaches 180°F (82°C).

Compartment Switch

- Press top of switch to start the timer.
- At the end of the cooking cycle, press the bottom of the switch to silence the buzzer.

Temperature Sensor (Inside Compartment)

- Starts the timer when the cooking compartment temperature reaches 180°F (82°C).

Refer to *Steam Cooking with Vulcan Kettles and Steamers* (packed with your steamer) for suggested cooking times. Also refer to the Suggested Cooking Guidelines on pages 33 – 35. Size, weight, pan loading and product quality will affect cooking times and should be adjusted to your own requirements.

OPERATING VHL2 & VHL3 WITH PRE-VENT AUTOMATIC COMPARTMENT CONTROLS

This section covers operation of VHL2 & VHL Steamers built before May, 2003.

1. Prepare vegetables, fruits, meats, seafood and poultry as you would for steam cooking or cooking in water: clean, separate, cut, remove stems, etc., and place in a pan.
2. Place loaded pans in the compartment and close the compartment door. Turn the door screw handle clockwise to seal the door gasket. Normal pressure will seal the compartment; however, a new gasket may require additional pressure after it becomes heated. After the pressure gauge (located below the lowest compartment controls) reaches a maximum pressure of 5 to 6 psi, turn the door screw handle clockwise enough to stop the leakage. The pressure gauge indicates steam pressure in the steam supply pipe, not the compartments.
3. The timer knob must be turned to 10 minutes or beyond to trip the switches. The knob may then be turned back to a lower setting if a shorter time setting is desired.
4. Pull the steam control handle forward and lock it by pulling the arm down. The door latch cannot be opened when the steam control handle is pulled forward. This closes the drain and allows steam to enter the compartment. Air is automatically vented from the compartment as steam enters. The escaping air causes a hissing sound which is audible during the early part of the cycle.
5. Set the timer to the desired cooking time (if not done in step 3).
6. Press the top half of the red compartment switch located under the timer. The switch indicator light will not light and the timer will not start until the interior compartment temperature reaches 180°F (82°C). During this automatic pre-vent and/or defrost period, the drain is open, freely venting any air and condensate. At 180°F (82°C), the drain closes, the timer starts and the red light comes on. During the cooking cycle, the compartment reaches 5 to 6 psi, and limited venting takes place through the compartment drain to allow removal of condensate and residual air.
7. When the timer reaches 1 minute, the arm automatically moves to the rear, shutting off the steam supply and opening the drain. The compartment will exhaust for about 1 minute.
Never attempt to open the compartment door during the cooking cycle, when the cooking light is lit or before the buzzer sounds.
8. When the timer reaches 0, the continuous buzzer will sound, indicating the end of the cooking cycle.
9. Turn the steamer off by pressing the bottom half of the compartment switch. Then loosen the door screw handle to allow moisture to escape. After a few seconds, move the door latch to the left, slowly open the door and remove the pans of food.

SELECTION OF PANS FOR STEAM COOKING IN VHL2 & VHL3 STEAMERS

Vulcan Adapt-A-Pan™ steamer compartments (Fig. 12) are designed to accept combinations of the following perforated or solid cooking pans.

PAN SELECTION — VHL2 & VHL3 STEAMERS

Max Qty	Pan Size	Pan Depth
4	12" x 20" (30 cm x 51 cm)	6" (15 cm)
6	12" x 20"	4" (10 cm)
8	12" x 20"	2½" (6 cm)
6	18" x 26" (46 cm x 66 cm) (center support must be removed)	1 (2.5 cm)
16	12" x 20" (not shown)	1 (2.5 cm)



Fig. 12

COOKING HINTS

Spread food out evenly in pans and do not allow food to protrude above pans. This will interfere with steam circulation between pans in the compartment.

Preheating of compartments is necessary for satisfactory results except for VHL2 & VHL3 steamers with Pre-Vent Automatic Controls.

When time does not allow for defrosting of frozen vegetables, such as loose-pack peas, corn, diced carrots, etc., they may be cooked at once, provided you use just half of the suggested portions in the following cooking chart.

SUGGESTED COOKING GUIDELINES

The following table lists suggested cooking times and weights. These suggested guidelines are approximate; they will vary depending on initial product temperature, size, shape, etc. and should be adjusted to suit your operation.

PRODUCTS TO BE COOKED IN SOLID PANS

PRODUCT	TIMER SETTING IN MINUTES	WEIGHT PER PAN
Eggs, Scrambled	10 to 12	8 Dozen
Rice, Long Grain Cover with 4 cups water (32 fl.oz) per pound of rice. (Cover with 0.95 liter of water per 0.45 kg of rice.)	25	2 Lb. (0.9 kg)
Pasta (Place perforated pan inside solid pan, cover pasta with cold water.) Spaghetti - Regular/Vermicelli Macaroni - Shells/Elbows Noodles - 1/2" (1.3 cm) Wide Lasagna Noodles	12 to 15 15 to 18 12 to 15 15 to 18	
Frozen Casseroles, Lasagna	35	Full Pan
Meat Loaf, 3 to 5 Lb. (1.4 to 2.3 kg)	40	15 Lb. (6.8 kg)
Beef Ground Chuck Sliced as Purchased	20 to 25 35 to 40	10 Lb. (4.5 kg) 10 Lb. (4.5 kg)
Shrimp, Frozen, 10 Shrimp per Lb. (0.45 kg)	5	4 Lb. (1.8 kg)
Beans Baked Refried	9 9	10 Lb. Can (4.5 kg) 10 Lb. Can (4.5 kg)
Canned Vegetables	6	10 Lb. Can (4.5 kg)
Prunes, Dried	12 to 15	

PRODUCTS TO BE COOKED IN PERFORATED PANS

PRODUCT	TIMER SETTING IN MINUTES	WEIGHT PER PAN
Clams Frozen Fresh, Cherrystone	10 to 12 5 to 6	3 Dozen 3 Dozen
King Crab, Frozen Claws Legs	4 4 to 6	2½ Lb. (1 kg) 4½ Lb. (2 kg)
Lobster Tail, Frozen Lobster, Live, 10 to 12" (25.4 to 30.5 cm)	6 5	10 Lb. (4.5 kg) 4 Per Pan
Salmon Fillets, Frozen, 8 Oz. (227 grams) Each	5	7½ Lb. (3.4 kg)
Scallops, Fresh	4	3 Lb. (1.4 kg)
Scrod Fillets, Fresh	3 to 5	4 Lb. (1.8 kg)
Eggs Hard Cooked Soft Cooked Soft Yolk for Caesar Salad	15 9 to 10 6 to 8	4 Dozen 4 Dozen 4 Dozen
Chicken, Breasts, Legs, Thighs	20	15 Lb. (6.8 kg)
Turkey, Frozen Breasts (2) Cut Lengthwise	90 55	6 to 7 Lb. (2.7 to 3.2 kg) 20 to 25 Lb. (9 to 11 kg)
Corned Beef	40 to 75	6 to 8 Lb. (2.7 to 3.6 kg)
Hot Dogs or Wieners	3	80 to 100 Count
Asparagus Spears Frozen Fresh	10 to 12 5	3 Dozen 5 Lb. (2.3 kg)
Beans Green Beans, 2" (5 cm) Cut, Frozen or Fresh Lima, Frozen Baby Lima, Frozen	6 8 5	5 Lb. (2.3 kg) 5 Lb. (2.3 kg) 5 Lb. (2.3 kg)
Broccoli Spears, Frozen Spears, Fresh Flowerettes, Frozen	8 6 6	4 Lb. (1.8 kg) 5 Lb. (2.3 kg) 5 Lb. (2.3 kg)

PRODUCTS TO BE COOKED IN PERFORATED PANS

PRODUCT	TIMER SETTING IN MINUTES	WEIGHT PER PAN
Brussel Sprouts, Frozen	6	5 Lb. (2.3 kg)
Cabbage, Fresh 1/6 Cut	8	5 Lb. (2.3 kg)
Carrots Baby Whole, Frozen Crinkle Cut, Frozen Sliced, Fresh	8 7 to 8 11	7 Lb. (3.2 kg) 4 Lb. (1.8 kg) 9 Lb. (4.1 kg)
Cauliflower, Flowerettes Frozen Fresh	6 7 to 8	4 Lb. (1.8 kg) 5 Lb. (2.3 kg)
Celery, 1" (2.5 cm) Diagonal Cut	7	5 Lb. (2.3 kg)
Corn Yellow Whole Kernel, Frozen Cobbettes, Frozen Corn-On-Cob, Fresh	5 8 16 to 18 10 to 12 16 to 18	5 Lb. (2.3 kg) 27 Ears 80 Ears 18 Ears 54 Ears
Peas, Green	6	5 Lb. (2.3 kg)
Potatoes, Whole Russet	55	10 Lb. (4.5 kg)
Spinach Chopped Frozen Defrosted Fresh Cut	17 5 3	6 Lb. (2.7 kg) 6 Lb. (2.7 kg) 2 Lb. (1 kg)
Squash, Acorn, Halves	25	10 Halves
Zucchini, Slices	8	10 Lb. (4.5 kg)
Frozen Mixed Vegetables	6 to 7	5 Lb. (2.3 kg)
Fruit, Blanch for Peeling Grapefruit Oranges	3	
Pineapple, Whole for Cutting	4	

CLEANING

WARNING: DISCONNECT THE ELECTRICAL POWER TO THE MACHINE AND FOLLOW LOCKOUT/TAGOUT PROCEDURES BEFORE CLEANING.

COOKING COMPARTMENT DRAINS

Keep compartment drains running freely. Inspect compartment drains daily for blockage. Remove any particles or debris from the perforated strainer daily (or more often if needed).

After cooking greasy foods or seafood, close the doors and operate each compartment for 15 to 30 minutes to flush any residual grease and oils down the compartment drain. Make a solution of warm water and detergent and pour 1/2 gallon (1.9 liters) of it down each compartment drain. Rinse by pouring 1/2 gallon (1.9 liters) of hot water down each compartment drain.

BOILER BLOWDOWN

To prevent malfunction of controls and clogging, it is essential to blow down the boiler every day. This will flush out any accumulated minerals from the feed water. It will also aid in preventing internal scale buildup which would interfere with proper boiler operation. Failure to blow down the boiler every day may void the steamer warranty. The presence of minerals in suspension is indicated by a murky or milky condition in the first portion of the water drained.

WARNING: THE WATER BEING DRAINED IS HOT AND UNDER PRESSURE. USE CARE WHEN CLEANING OR SERVICING THE BOILER.

After the steamer boiler has been in operation, press [O] and the boiler will blow down for approximately 5 minutes, removing sediment, scale or lime buildup in the boiler.

COMPARTMENTS

Wash the inside of the compartment with a solution of warm water and detergent. Rinse with warm water.

Once a week, thoroughly clean the exposed surfaces (sides, front, door and top) with a damp cloth and polish with a clean cloth. To remove discolorations, use a nonabrasive cleaner.

DOOR GASKETS

Clean the gasket sealing surface of the compartment doors to remove harmful food acids for maximum gasket life. Do not use any solvents. Wash with a cloth moistened in a solution of mild detergent and warm water. Rinse with a fresh cloth moistened with warm water to remove all traces of detergent. Wipe dry with a clean cloth. Never apply food oils or petroleum lubricants directly to the door gasket. Petroleum-based solvents and lubricants will reduce gasket life.

LEAVE COMPARTMENT DOORS OPEN

CAUTION: Leave the compartment doors slightly open when the steamer is not in use. When the compartment is idle, never latch the door and apply pressure to the door gasket. Leaving the gasket under pressure can cause permanent deformation and reduce gasket life.

GUIDELINES FOR MAINTAINING STAINLESS STEEL SURFACES

There are four things that can break down stainless steel and allow corrosion to develop: 1) abrasion, 2) deposits, 3) water and 4) chlorides.

Avoid rubbing with steel pads, wire brushes or scrapers that can leave iron deposits on stainless steel. Instead, use plastic scouring pads or soft cloths. For stubborn stains, use products such as Cameo, Talc or Zud First Impression. Always rub parallel to the polish lines or with the grain.

Hard water can leave deposits that promote rust on stainless steel. Treated water from softeners or certain filters can eliminate these mineral deposits. Other deposits from food or lubrication must be properly removed by cleaning. Use mild detergent and nonchloride cleaners. Rinse thoroughly and wipe dry. If using chloride-containing cleaners or sanitizers, ***rinse repeatedly*** to avoid stainless steel corrosion. Where appropriate, apply a polish recommended for stainless steel (such as Benefit or Super Sheen) for extra protection and lustre.

MAINTENANCE

WARNING: THE STEAMER AND ITS PARTS ARE HOT. USE CARE WHEN OPERATING, CLEANING OR SERVICING THE STEAMER.

WARNING: THE COOKING COMPARTMENTS CONTAIN LIVE STEAM. STAY CLEAR WHILE OPENING EACH DOOR.

WATER TREATMENT SYSTEM

A water treatment system is recommended for steam generators. Refer to your supplier's manual for normal maintenance procedures for proper scale-free operation recommendations.

BOILER BLOWDOWN

At least once daily, after the steamer boiler has been in operation, press [O] to blow down the boiler.

BOILER PRESSURE RELIEF VALVE

At least once every day, check the pressure relief valve to verify that it is functioning properly. The valve is located on the top left side of the boiler (Fig. 3 or 4, page 17). Trip the pressure relief valve when the steam gauge shows 4 psi or above. When steam escapes, release the valve.

DOOR GASKETS — VHX24, VHL2 & VHL3 SERIES STEAMERS

If the door gasket is nicked or cut, it must be replaced. Damage to the gasket sealing surface will cause steam leakage.

If a leak occurs in one corner only and the gasket appears serviceable, turn the stainless steel screw on the gasket plate adjacent to the leaking corner one-half turn counterclockwise. Do not attempt excessive turning of screws since misalignment of the door is possible. If the door is misaligned, call your local Vulcan-authorized servicer.

WATER LEVEL GAUGE

Check the water level gauge sight glass daily. The correct water level is approximately 1" (2.5 cm) of water visible in the water level gauge sight glass. Extremely murky water in the sight glass indicates bad water conditions. The boiler should be blown down. If conditions persist, have the boiler inspected and cleaned by your local Vulcan-Hart servicer.

FLUE

Annually, when the steamer is cool, check the flue and clear any obstructions.

INSPECTION OF BOILER INTERIOR

An access plate to inspect the boiler interior is provided for the state boiler inspector and authorized service personnel. The frequency of boiler inspections may vary from state to state, but are generally required every 12 months. Each time the boiler access plate is removed, the gasket must be replaced with a new gasket to prevent leakage.

SCALE RELATED MAINTENANCE (GAS & ELECTRIC BOILERS)

Periodic maintenance is necessary to keep your boiler clean and efficient. Initially, after three months of steamer usage, it is recommended that you have your Vulcan-Hart authorized servicer inspect the boiler and perform the descaler maintenance described below. Local water conditions and steamer usage will determine the frequency that this service must be repeated; however, a minimum recommendation is once a year. This maintenance is not covered by warranty.

Cathodic protector(s) are provided inside the boiler to reduce boiler and component corrosion and reduce accumulation of scale from forming on the boiler interior walls. The cathodic protector(s) will be consumed. How fast the cathodic protector(s) will be consumed depends upon the chemical makeup of the feed water and the average volume of feed water used. An inspection by service personnel is recommended so that the expected normal life of the cathodic protector(s) can be estimated under your operating conditions. Thereafter, the cathodic protector(s) can be serviced at the appropriate frequency for your situation.

PROBE HOUSING BLOWDOWN VALVE (GAS & ELECTRIC BOILERS)

Open valve monthly to blow down the probes and to remove sediment and scale buildup. Valve is located toward the rear on the left side (refer to Fig. 3 or 4 on page 17). Wait until the boiler is cool before opening the valve.

LUBRICATION — VHL SERIES

The door screw was factory lubricated with high-temperature grease, but will require periodic relubrication by applying a bead of lubricant across the door handle screw threads. When the door screw is properly lubricated, the hand pressure required to seal the door is greatly reduced and the life of the screw and nut are lengthened. Frequency of lubrication depends upon use. Lubricate monthly at first and let experience determine the frequency. A high-temperature grease for the door screw can be obtained from Vulcan-Hart.

TROUBLESHOOTING

SYMPTOMS	POSSIBLE CAUSES
High Pressure and Low Water lights do not come on when [I] is pressed.	<ol style="list-style-type: none"> 1. Electrical power to the steamer is not on. 2. Power switch is not in the [I] position.
Steamer will not fill.	<ol style="list-style-type: none"> 1. If the Low Water light is on, the water supply valve may be off. Check water supply pressure. 2. Water filter is plugged. Refer to water filter manual. If symptom persists, contact Service.
Steamer will not heat or build pressure.	<ol style="list-style-type: none"> 1. Press Reset to clear any problem modes. 2. Water supply to the machine is not turned on. 3. Water filter may be clogged. 4. Make sure that both valves above and below the sight glass are open. 5. Make sure that the water inlet ball valves are in the open position.
Water flows into compartment.	Contact Service.
Door leaks.	<ol style="list-style-type: none"> 1. Check door gasket for damage. If adjustment is needed, contact Service. 2. Plugged drain or screen. Clear compartment cavity screen. If symptom persists, contact Service.
Water accumulates in compartment.	Drain may be clogged. Clear drain.
Water flows into drain when unit is off.	Contact Service.

SERVICE AND PARTS INFORMATION

To obtain service and parts information concerning this steamer, contact the Vulcan-Hart Service Agency in your area (refer to listing supplied with the steamer), or contact the Vulcan-Hart Service Department at the address or phone number shown on the front cover of this manual. Parts and service manuals are also available at WWW.VULCANHART.COM