

# VULCAN

## INSTALLATION & OPERATION MANUAL

### VSC SERIES STEAMERS WITH STEAM COIL REGENERATOR

MODEL

VSC2

VSC3



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

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# Installation, Operation and Care of VSC SERIES STEAMERS With Steam Coil Regenerator

**SAVE THESE INSTRUCTIONS**

## GENERAL

Model VSC2 and VSC3 Steamers have two or three pressurized steaming compartments for cooking vegetables, fish, eggs and other foods.

The heat exchanger in the cabinet base requires approximately 200 lb per hour of steam at 30 to 50 psi. (Refer to Steam Connection.)

Accessory 12" x 20" stainless steel pans are available, solid or perforated, in 2.5", 4" and 6" depths.

Each compartment has a 0 to 60 minute timer. (The buzzer requires manual shutoff.) Doors cannot be opened during pressurized cooking.

An optional steam take-off connection (<sup>3</sup>/<sub>4</sub>" NPT) can provide steam for adjacent equipment.

### ACCOMMODATION

MODEL	COMPARTMENTS	TOTAL NUMBER OF PANS			NUMBER OF PANS PER COMPARTMENT		
		2.5" Depth	4" Depth	6" Depth	2.5" Depth	4" Depth	6" Depth
VSC2	2	16	8	4	8	4	2
VSC3	3	24	12	6			

# INSTALLATION

## UNPACKING

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.

## LOCATION

Before installing, verify that the electrical supply agrees with the specifications on the data plate.

Position the steamer in its final location. Check that there are sufficient clearances to service the controls, for door swings, etc., so there will be no problem in making the required supply and drain connections.

Allow enough space between any other piece of equipment or a wall for service access. Service for the controls for the upper steamer compartments requires access to the upper left side panel. Service on the cabinet base may require access to the left and/or right side panels.

## INSTALLATION CODES AND STANDARDS

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

1. State and local codes.
2. National Electrical Code, ANSI/NFPA No. 70 (latest edition). Copies may be obtained from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.
3. NFPA Standard # 96 *Vapor Removal from Cooking Equipment*, latest edition, available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

## LEVELING

Using a spirit level or pan of water, level the appliance; then elevate the right side about 1/8" (3 mm) to assure proper compartment drainage. After installation, bolt and anchor the appliance securely to the floor. Seal bolts and rear flanged feet with an NSF approved sealer (Silastic or equivalent).

## EXHAUST HOOD

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

## **PLUMBING CONNECTIONS**

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

### **Water Supply Connection**

The water filter, provided, must be installed in the water supply line going to the filtered water inlet or your steamer warranty may be voided. For incoming water supply line pressures, refer to the water filter manual shipped with the water filter. Follow the recommendations contained in it. Water pressure to the steamer should be 20 to 60 psi.

### **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 before installation.

Recommended water parameters are included in the water filter manual shipped with the steamer; follow the recommendations contained in it.

Presence of sediment, silica, excess chlorides or other dissolved solids may lead to a recommendation for alternate form(s) of water treatment. Be sure to test the water with the test strip and register the results using the registration card or by visiting [vulcanhart.com](http://vulcanhart.com).

### **Drain Connection(s)**

The steamer drain should be piped to a floor drain near the steamer. There should be no solid drain connection; an open gap between the steamer and the floor drain is required.

### **Draining Requirements**

Temperatures in the boiler can reach as high as 240°F (116°C). Local codes will require that the temperature of the drain water be 140°F (60°C) or lower. 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.

### **STEAM TAKE-OFF CONNECTION (Optional)**

When connecting adjacent equipment to the steam take-off connection ( $\frac{3}{4}$ " NPT), follow the equipment manufacturer's instructions. Steam capacity should be carefully evaluated. If the optional steam take-off connection is provided on your steamer and is not connected to adjacent equipment, it should be plugged or capped.

## STEAM CONNECTION

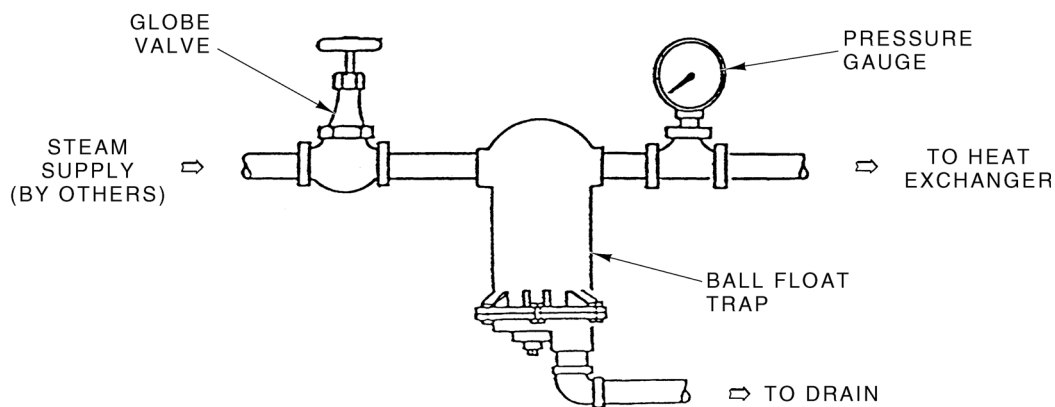
An adequate amount of steam must be delivered to the steamer to assure consistent steam cooking. Where possible, supply the steamer with a separate line from the steam source. If the steamer must be supplied from a line supplying other appliances, the pipe sizes and pressure must be verified.

## REQUIRED STEAM INPUT

Model VSC2	Model VSC3
70 lbs/hr	105 lbs/hr

Allow for elbows, pipe length and valves when calculating pressure loss (see example below).

Supply only clean, dry steam to the steamer. Water can condense in the supply line during idle periods, which will impede the flow of steam. The steam supply line should be level or run slightly downward toward the steamer, and a Ball Float Trap should be installed near the steamer to drain out condensed steam from the supply line (Fig. 1).



PL-56798

Fig. 1

## STEAM LINE—PRESSURE LOSS EQUIVALENTS

Pipe Size	Loss Rate	Equivalent Loss in Linear Feet			Delivery Rate (30 psi at steamer)
		90°	Angle Valve	Globe Valve	
$\frac{3}{4}$ " ID	1 psi/7.5 feet	1.8 feet	10 feet	18 feet	165 lbs/hr
1" ID	1 psi/10 feet	2.2 feet	12 feet	23 feet	285 lbs/hr

Example: A supply line with 1" diameter pipe has a total of 50' of pipe, three elbows and one globe valve. The total equivalent length =  $50' + 3 \times 2.2' + 23' = 79.6'$ . Multiply times the loss rate of 1 psi/10' yields a pressure loss of about 8 psi. Therefore, 40 psi at the source would deliver 32 psi at the steamer.

If the supply line were  $\frac{3}{4}$ " diameter pipe, the total equivalent length =  $50' + 3 \times 1.8' + 18' = 73.4'$ . Multiply times the loss rate of 1 psi / 7.5 feet yields a pressure loss of about 10 psi. Therefore, 40 psi at the source would deliver 30 psi at the steamer.

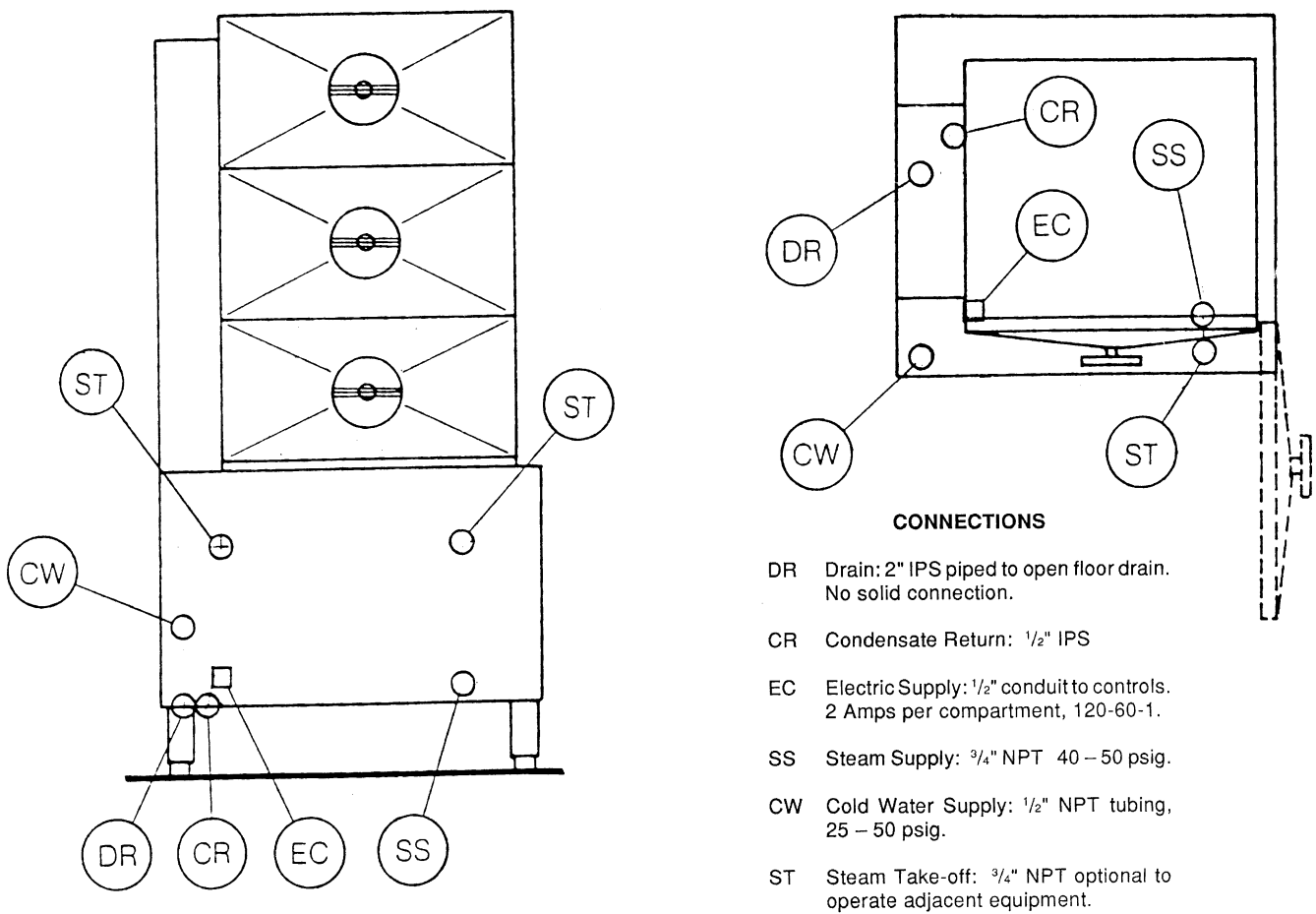
## ELECTRICAL CONNECTIONS

**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.

Refer to the electrical diagram located behind the access panel or cabinet door on the steamer.

## Service Connections



PL-22347

Fig. 2

# OPERATION

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

## COMPARTMENT CONTROLS (Fig. 3)



**Fig. 3**

- Timer (0 to 60 minutes) - Sets the steam time for the compartment.
- Indicator Light - Timed cycle is in progress when lit.
- Selector Switch - Pressurized means top compartment operates at 6 psi.
- Operating Handle - Pull out to send steam to the compartment, lock the door and enable operation.  
Push in to silence buzzer at end of cycle.
- Door Latch - Holds door closed and prevents door from fully opening until operating handle is pushed in. Move the door latch to the left to fully open the door after steam and condensate drain (1 minute). The handwheel is turned fully counterclockwise.
- Handwheel - Turn clockwise to seal door at start of cycle. After pressure release at end of cycle, turn counterclockwise to open.
- Buzzer (not shown) - Sounds an audible signal when timer cycle is complete. To silence buzzer, push in operating handle.
- Pressure Gauge - Indicates steam pressure. Reads 6 psi with compartments inactive and 4.5 to 6 psi during a cooking cycle.



## STEAM REGENERATOR CONTROLS (Inside Cabinet)

- Main Power Switch
  - ON begins generation of clean steam by the heat exchanger. You should allow 20 minutes to generate steam.
  - OFF opens the Automatic Blowdown valve. This empties the heat exchanger by releasing both water and steam to the drain. This should be done at least once daily to remove sediment, lime or scale.
- Pilot Light (green)
  - Indicates main power is ON.
- Boiler Pressure Gauge
  - Should read 9 to 13 psi during operation and 0 psi during shutdown.
- Water Level Sight Glass
  - This assembly indicates the water level, and should be checked at least once a day. The correct water level is one-half the height of the glass. Extreme murkiness indicates the boiler should be cleaned.
- Water Level Control
  - While ON, briefly open the manual valve under the float chamber once each week to remove any sediment that might accumulate and seize the floats. The float chamber is beside the regenerator tank.
- Safety Valve
  - This valve will release (pop off) if boiler pressure exceeds 15 psi. Once a week, this valve should be tripped during operation to make sure it functions properly.
- Pressure Regulator
  - Reduces the steam pressure from the boiler to the steamer compartments to 6 psi. Twice a year, unscrew the large hex head plug located at the bottom of the regulator and remove and clean the strainer. Carefully reassemble.

## STEAMING

Each steaming compartment is controlled by its own controls. When a compartment is not operating, the drain is open and the steam inlet valve from the boiler is closed. Food, properly portioned and in appropriate solid or perforated pans, is placed on rack supports (or wire shelves) in the steaming compartment. After closing and sealing the door, setting the timer and pulling out the operating handle, the steam inlet valve from the heat exchanger opens, allowing steam at a pressure of 6 psi to enter the compartment. Air from the sealed compartment exits through the vent until the temperature reaches 180°F (82°C); then the vent closes, and the compartment can become pressurized. Steaming continues until the timer reaches "0" and the buzzer sounds. To silence the buzzer, push in the operating handle. Wait 1 minute for steam or hot water to drain away. Open the door and remove the cooked food.

The cabinet (lower portion of steamer) contains the heat exchanger which has a steam coil in a pressurized tank. The steam coil is supplied with steam from an outside source which exchanges its heat and makes clean steam from fresh water fed into the tank. The supplied steam is kept separate from the newly created steam. Because of this separation, the outside steam source may be contaminated or toxic and yet does not come in contact with food. Only the clean steam created in the heat exchanger tank is sent to the compartments.

## PREHEAT COMPARTMENTS

If the steamer has been standing idle and the compartments are cold, preheat before loading.

## COOKING GUIDELINES

The cooking guidelines in this manual are suggestions only. You should experiment with your food products to determine cooking times that will give you the best results. Variables which affect cooking time include size, weight, thickness of foods, temperature, density, previous condition of the foods (fresh, preblanched or frozen) and how thoroughly the food is to be cooked.

To allow steam to circulate around the pans, food must be spread evenly and not piled too high. Best results are obtained after the compartments are allowed to preheat. When all compartments are to be loaded at the same time, it is best to allow the first compartment to reach 4 to 4.5 psi before starting the next compartment. When processing frozen vegetables, use half the suggested pan weights and allow sufficient time for cooking.

PRODUCT	PAN DEPTH	PERFORATED OR SOLID	WEIGHT/ QUANTITY PER PAN	STEAM TIME MINUTES	PANS PER COMPARTMENT
VEGETABLES (fresh)					
Beans, lima	2.5"	Perf	5 lbs	10 - 12 13 - 15	1 - 3 4 - 6
Beans, string or wax	2.5"	Perf	6 lbs	15 - 20 20 - 25	1 - 3 4 - 6
Broccoli, florets	2.5"	Perf	6 lbs	8 - 10 10 - 12	1 - 3 4 - 6
Broccoli, stalks	2.5"	Perf	6 lbs	10 - 15 15 - 20	1 - 3 4 - 6
Carrots, sliced	2.5"	Perf	9 lbs	18 - 21 21 - 25	1 - 3 4 - 6
Corn	2.5"	Perf	5 lbs	9 - 10 11 - 13	1 - 3 4 - 6
Peas	2.5"	Perf	5 lbs	6 - 7 8 - 9	1 - 3 4 - 6
Potatoes, chunked	2.5"	Perf	10 lbs	20 - 25 25 - 30	1 - 3 4 - 6
Rice, add 1 gallon of water	4"	Solid	4lbs	22 - 24 25 - 27	1 - 2 3 - 4
Spinach, cut, cleaned	4"	Perf	3 lbs	3 - 5 4 - 6	1 - 2 3 - 4
Vegetables, canned	2.5"	Solid	7 lbs	4 - 5 5 - 8	1 - 3 4 - 6
OTHER FOODS					
Chicken	2.5"	Perf	8 lbs	18 - 25 25 - 30	1 - 3 4 - 6
Eggs, out-of-shell	2.5"	Solid	4 doz	6 - 7 7 - 8	1 - 3 4 - 6
Eggs, in-shell	2.5"	Perf	3 doz	2 - 3 4 - 6	1 - 3 4 - 6
Fish, fillets	2.5"	Perf	3 lbs	8 - 12 10 - 15	1 - 3 4 - 6
Meatloaf	2.5"	Solid (for broth)	15 lbs	35 - 40 40 - 45	1 - 3 4 - 6
Spaghetti, add 7 quarts of water	4"	Solid	3 lbs	20 - 22 23 - 26	1 - 2 3 - 3
Turkey	2.5"	Perf	10 - 12 lbs	50 - 60 60 - 75	1 - 3 4 - 6

## **CLEANING**

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

Do not apply food oils or petroleum lubricants to the door gasket.

At the end of the day, turn the main power switch OFF (automatic blowdown drains the boiler tank). Allow compartments to cool. Remove pans and side racks and wash in a sink. Remove any food sediment from compartment bottoms. Wash compartment interior with mild detergent and warm water, rinse and wipe dry. Do not use steel wool on stainless steel surfaces. Replace side racks.

Wash the gasket and sealing surface of the compartment door daily with mild detergent and warm water, rinse with clean water and wipe dry.

Turn handwheel fully counterclockwise to retract the gasket plate and avoid pressure on the door gasket when the steamer is not in use.

Wipe all solids away from the drain opening to prevent clogging. Remove, clean and replace the stainless steel strainer if food or dirt accumulates. If greasy foods have been cooked, operate the steamer to dissolve and drain away grease. Close door, seal compartment, set timer and, at frequent intervals, pull out and release the operating handle to blow steam through the drain valve.

# MAINTENANCE

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

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

## DELIMITING

Refer to the water filter manual shipped in the box with your steamer.

## LUBRICATION

Once each month, lubricate the thrust screw of each compartment door. To access the thrust screw, open compartment door and turn handwheel fully clockwise until gasket plate is fully extended. Grasp finger hooks and lift up to remove gasket plate assembly. Apply grease (order part 880786 from your Vulcan servicer) to the thrust screw while rotating the handwheel to assure complete coverage. Replace gasket plate assembly. Turn handwheel fully counterclockwise to retract gasket plate into door. Close door.

## DOOR GASKET

If the door gasket becomes damaged from nicks or cuts and steam leakage results, contact your Vulcan-authorized servicer to have the gasket replaced.

## SERVICE

Contact your local Vulcan-authorized service office for any repairs or adjustments needed on this equipment.

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