



<b>IMPORTANT FOR FUTURE REFERENCE</b> Please complete this information and retain this manual for the life of the equipment:
Model #: _____
Serial #: _____
Date Purchased: _____

## Installation & Operation Manual

# Gas Fired Pressureless Cooker with Direct Steam Kettles

## GCX-2-(6,10), GCX-10-(6,10), GCX-2-6-(6,10) & GCX-10-6-(6,10)



Model GCX-2-10

### **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.

### **CROWN FOOD SERVICE EQUIPMENT**

 **MIDDLEBY** A Middleby Company

70 Oakdale Road, Downsview (Toronto) Ontario, Canada, M3N 1V9




Telephone: 919-762-1000

[www.crownsteamgroup.com](http://www.crownsteamgroup.com)

# SAFETY PRECAUTIONS

Before installing and operating this equipment, be sure everyone involved in its operation is fully trained and aware of precautions. Accidents and problems can be caused by failure to follow fundamental rules and precautions.

The following symbols, found throughout this manual, alert you to potentially dangerous conditions to the operator, service personnel, or to the equipment.

 <b>DANGER</b>	This symbol warns of immediate hazards that will result in severe injury or death.
 <b>WARNING</b>	This symbol refers to a potential hazard or unsafe practice that could result in injury or death.
 <b>CAUTION</b>	This symbol refers to a potential hazard or unsafe practice that could result in injury, product damage, or property damage.
<b>NOTICE</b>	This symbol refers to information that needs special attention or must be fully understood, even though not dangerous.

## IMPORTANT NOTES FOR INSTALLATION AND OPERATION

### **WARNING**

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

### **WARNING**

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

### **WARNING**

FOR YOUR SAFETY:

Do not store or use gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance.

### **NOTICE**

**PURCHASER:** Instructions to be followed in the event that the operator of this appliance smells gas must be posted in a prominent location. This information shall be obtained by consulting the local gas supplier.

### **NOTICE**

Keep the appliance area free and clear from combustibles.  
Do not obstruct the flow of combustion and ventilation air.  
Adequate clearances must be maintained for servicing and proper operation.

### **NOTICE**

Do not attempt to operate this unit in the event of a power failure.

### **NOTICE**

This product is intended for commercial use only. NOT FOR HOUSEHOLD USE.

### **NOTICE**

This manual should be retained for future reference.

It is recommended that this manual be read thoroughly and that all instructions be followed carefully.

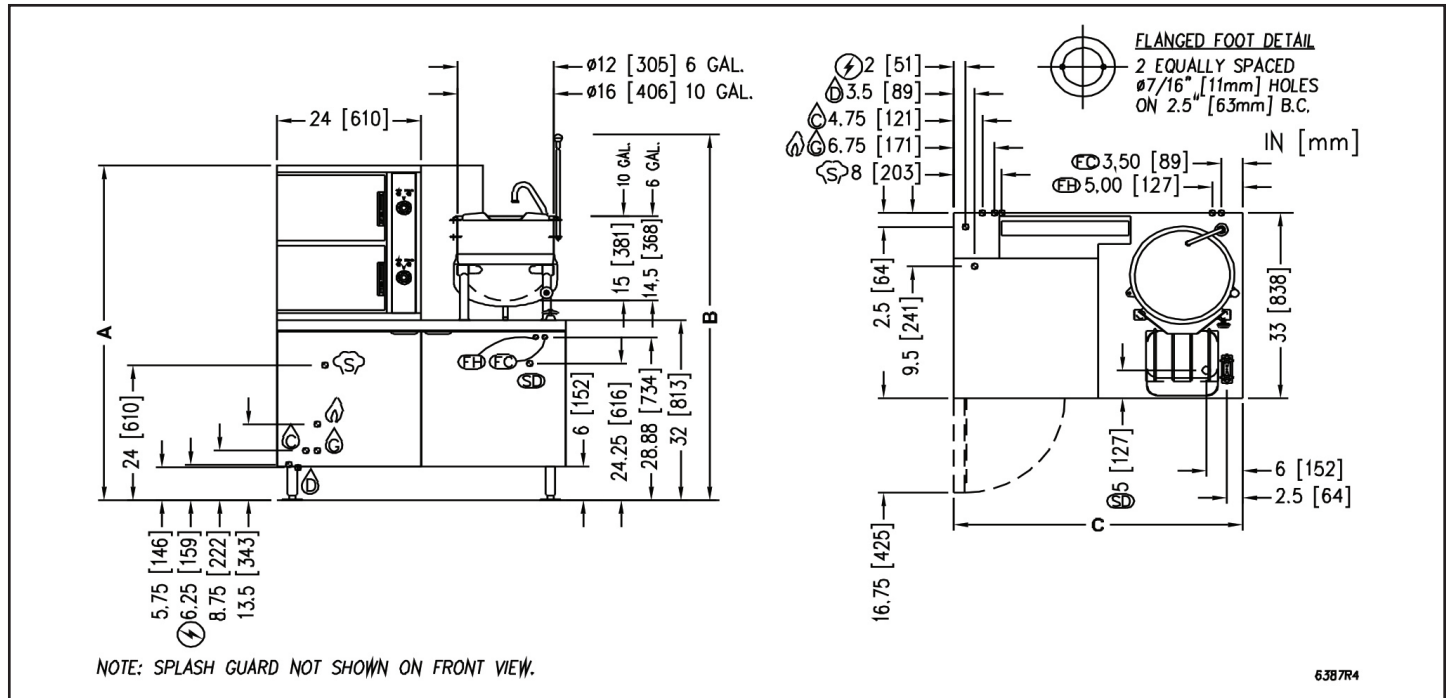
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RETAIN THIS MANUAL FOR FUTURE REFERENCE.

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# SERVICE CONNECTIONS



## SERVICE CONNECTIONS

- ELECTRICAL CONNECTION: 1/2" (13 mm) conduit connection to controls. 120 VAC-60Hz-1PH. 2 Amps per compartment or as specified on data plate.
- BOILER COLD WATER: 3/8" (10 mm) O.D. tubing, 25-50 PSI (170-345 kPa).
- CONDENSATE COLD WATER: 3/8" (10 mm) O.D. tubing, 25-50 PSI (170-345 kPa) (OPTIONAL)
- GAS CONNECTION: 3/4" (19 mm) IPS supply line required.
- STEAM TAKE-OFF CONNECTION: 3/4" (19 mm) IPS optional to operate adjacent equipment.
- FAUCET COLD WATER: 3/8" (10 mm) O.D. tubing at 25-50 PSI (170-345 kPa), NSF-61 compliant.
- FAUCET HOT WATER: 3/8" (10 mm) O.D. tubing at 25-50 PSI (170-345 kPa), NSF-61 compliant.
- DRAIN: 2" (51 mm) IPS piped to open floor drain. No solid connection.
- SINK DRAIN: 1 1/8" (29 mm) O.D. tubing.

## GAS SUPPLY AND SPECIFICATIONS

BTU/HOUR	kW/HOUR	WATER COLUMN PRESSURE	
		NATURAL	PROPANE
250,000	73.3	7" - 14" [178 mm - 355 mm]	11" - 14" [279 mm - 355 mm]
300,000	87.9		

MODEL	SHIPPING WEIGHT	A	B	C
GCX-2-6	980 lbs. [445 kg.]	59.5 [1511]	66.13 [1680]	44 [1118]
GCX-10-6	1000 lbs. [454 kg.]	72.5 [1842]		
GCX-2-10	1030 lbs. [467 kg.]	59.5 [1511]	65.13 [1654]	48 [1219]
GCX-10-10	1020 lbs. [462 kg.]	72.5 [1842]		

## WATER QUALITY STATEMENT

Water is the essential ingredient in steam equipment, water quality is the major factor affecting the performance of your appliance. Crown Steam Group offers a Comprehensive Water Treatment System which exceeds our minimum water requirements. Proof of installation and proper cartridges replacement is required for warranty coverage. Water supply to Crown Steam Group steamers must be within these guidelines.

Total dissolved solids.....	Less than 60 PPM	Chlorine.....	Less than 1.5 PPM
Total alkalinity .....	Less than 20 PPM	pH Factor .....	6.8 - 7.3
Silica .....	Less than 13 PPM		

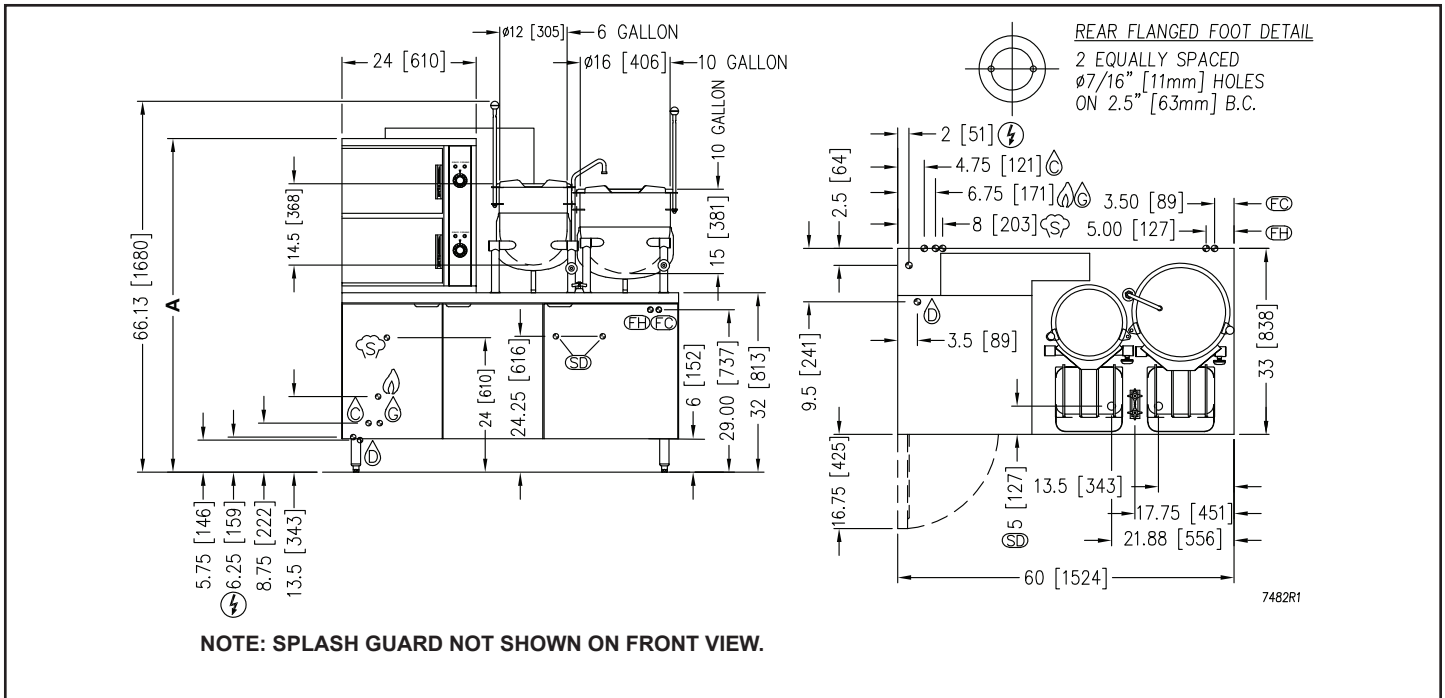
Water which does not meet these standards should be treated with the installation of Middleby's Water Treatment System. Call 919-762-1000 if you have questions concerning your water meeting these parameters.

\*Failure or malfunction of this appliance due to poor water quality is not covered under warranty.  
Reference [www.crownsteamgroup.com](http://www.crownsteamgroup.com) for complete warranty details and instructions.

## MISCELLANEOUS

If installing on any floor with an epoxy coating or other combustible floor surface (i.e., a surface other than quarry tile, cement or natural stone), contact the factory for installation options as damage due to improper installation is not covered under warranty.

As continued product improvement is a policy of Crown, specifications are subject to change without notice.



### SERVICE CONNECTIONS

<ul style="list-style-type: none"> <li> – ELECTRICAL CONNECTION: 1/2" (13 mm) conduit connection to controls. 120 VAC-60Hz-1PH. 2 Amps per compartment or as specified on data plate.</li> <li> – BOILER FEED WATER: 1/2" (13 mm) NPT at 25-50 PSI (170-345 kPa) [TREATED WATER]</li> <li> – CONDENSATE COLD WATER: 1/2" (13 mm) NPT at 25-50 PSI (170-345 kPa) (OPTIONAL)</li> <li> – FAUCET COLD WATER: 3/8" (10 mm) O.D. tubing at 25-50 PSI (170-345 kPa). NSF-61 compliant.</li> </ul>	<ul style="list-style-type: none"> <li> – FAUCET HOT WATER: 3/8" (10 mm) O.D. tubing at 25-50 PSI (170-345 kPa), NSF-61 compliant.</li> <li> – GAS CONNECTION: 3/4" (19 mm) IPS supply line required.</li> <li> – STEAM TAKE-OFF CONNECTION: 3/4" (19 mm) IPS optional to operate adjacent equipment.</li> <li> – DRAIN: 2" (51 mm) IPS piped to open floor drain. No solid connection.</li> <li> – SINK DRAIN: 1-1/8" (29 mm) O.D. tubing.</li> </ul>
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### GAS SUPPLY AND SPECIFICATIONS

BTU/HOUR	kW/HOUR	WATER COLUMN PRESSURE	
		NATURAL	PROPANE
250,000	73.3	7" - 14" [178 mm - 355 mm]	11" - 14" [279 mm - 355 mm]
300,000	87.9		

MODEL	A	SHIPPING WEIGHT
GCX-2-6-6	59.5 [1511]	1010 lbs. [458 kg.]
GCX-10-6-6	72.5 [1842]	1050 lbs. [476 kg.]
GCX-2-6-10	59.5 [1511]	1030 lbs. [467 kg.]
GCX-10-6-10	72.5 [1842]	1070 lbs. [485 kg.]

### WATER QUALITY STATEMENT

Water is the essential ingredient in steam equipment, water quality is the major factor affecting the performance of your appliance. Crown Steam Group offers a Comprehensive Water Treatment System which exceeds our minimum water requirements. Proof of installation and proper cartridges replacement is required for warranty coverage. Water supply to Crown Steam Group steamers must be within these guidelines.

Total dissolved solids.....Less than 60 PPM	Chlorine.....Less than 1.5 PPM
Total alkalinity .....Less than 20 PPM	pH Factor .....7.0 - 8.5
Silica.....Less than 13 PPM	

Water which does not meet these standards should be treated with the installation of Middleby's Water Treatment System. Call 919-762-1000 if you have questions concerning your water meeting these parameters.  
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# INTRODUCTION

## DESCRIPTION

Models GCX-2-(6, 10), GCX-10-(6, 10), GCX-2-6-(6, 10), and GCX-10-6-(6, 10), convection steamers with direct steam kettle(s) mounted on cabinet base and a gas fired boiler rated at 250,000 or 300,000 BTU. Each steamer has a pan capacity of 6 (2-1/2") pans. Kettle(s) is/are conveniently mounted beside the compartment cooker complete with mounted steam control valve located in the kettle leg. Kettle(s) is/are direct connected to boiler and all piping, steam traps and relief valves are connected to system. Kettle(s) is/are suffixed with either -6 or -10 to indicate the capacity of that kettle in U.S. gallons.

## BASIC FUNCTION

### GAS FIRED STEAMERS WITH DIRECT CONNECTED STEAM KETTLES

The sequence of operation is as follows:

1. Turn on main power switch. Pilot light will indicate main power is on and fill solenoid will open and water will begin to fill boiler. Allow 20 minutes to fill generator. OFF shuts off the boiler controls and opens the automatic blowdown valve, if so equipped, emptying the boiler and releasing water and steam to the drain. Manual valve will have to be opened to drain boiler if not equipped with automatic blowdown valve.
2. Boiler pressure gauge should read 9 - 11 psi during operation, 0 psi during shutdown.
3. Burners will cycle on and off as required to maintain pressure.
4. Compartment cooker is ready for use when READY light is on. Place pans of food to be cooked into compartments and close door(s).
5. Set timer to cooking time desired. Cooking will commence and cooking time may be interrupted at any time by opening door and resumed again by closing door.
6. Buzzer will sound indicating the end of the cooking cycle and that steam has stopped entering the compartment. The COOKING pilot will go off and the READY light will come on. Buzzer must be shut off by turning the timer to its off position.
7. Direct connected steam jacketed kettles consist of a stainless steel bowl and a stainless steel jacket which envelopes two thirds of the lower surface of the kettle thus forming a sealed pressure vessel (chamber) into which steam is introduced by means of a manual valve. Slowly turn steam control valve on to full open position (counterclockwise).
8. Regulate steam control valve depending on type of food being prepared.
9. To empty food from kettle, pull forward on handle slowly to avoid injury from spill and place kettle in upright position when empty.

# INSTALLATION INSTRUCTIONS

## GENERAL

The gas boiler in this appliance is designed to ASME Code and approved as a steam heating boiler restricted to operation at pressure not to exceed 15 psi. The gas boiler is installed in a 60" cabinet base rated at 250,000 or 300,000 BTU, operational on Natural or Propane gas. Boilers may have optional electronic ignition and CSD-1 controls.

## UNPACKING

### IMMEDIATELY INSPECT FOR SHIPPING DAMAGE

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

We cannot assume responsibility for damage or loss incurred in transit.

Before installing, verify that the gas (natural or propane), the elevation from sea level and the electrical supply agree with the specification on the data plate. NOTE: If this appliance is being installed above 2000 feet altitude, contact your authorized service office to assure that the proper orifice size for your elevation has been installed.

## LOCATION

The installation location must be kept free and clear of combustibles. Do not obstruct the flow of combustion and ventilation air. Clearance from combustible construction must be a minimum of 3 inches from the sides and 6 inches from the back. The appliance should be installed on a noncombustible floor. Provide adequate clearances for cleaning, maintenance, service and proper operation.

Sufficient air should be allowed to enter the room to compensate for the amount of air removed by any ventilating system and for combustion of the gas burners. Do not obstruct the air flow into and around the appliance. Do not obstruct the flow of flue gases from the flue duct located at the rear and above the cabinet. Position the appliance 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 on the cabinet base may require access to the left and/or right side panels.

## INSTALLATION CODES AND STANDARDS

Installation must conform to local codes, or in absence of local codes, with the National Fuel Gas Code - ANSI Z223.1/NFPA 54, or the Natural Gas and Propane Installation Code, CSA B149.1, as applicable, including:

1. The appliance and its individual shut off valve must be disconnected from the gas supply piping system during any pressure testing of that system at pressures in excess of ½ psig (3.5 kPa).
2. The appliance must be isolated from the gas supply piping system by closing its individual manual shut off valve during any pressure testing of the gas supply piping system at test pressures equal to or less than ½ psig (3.5 kPa).

Electrical grounding must be provided in accordance with local codes, or in the absence of local codes, with the National Electrical Code ANSI/NFPA 70. In Canada, installation must be in accordance with the Canadian Electrical Code CSA C22.2.

Ventilation must be provided in accordance with local codes, or in the absence of local codes, with *ANSI/NFPA 96 Standard for Ventilation and Fire Protection of Commercial Cooking Operations*.

WIRING DIAGRAM FOR APPLIANCE IS LOCATED INSIDE CABINET DOOR.



## LEVELLING AND ANCHORING THE APPLIANCE

1. Place appliance in the installation position.
2. Place a carpenter's level on top of the appliance and turn the adjustable feet to level side-to-side and front-to-back.
3. Mark hole locations on the floor through the anchoring holes provided in the rear flanged adjustable feet.
4. Remove appliance from installation position and drill holes in locations marked on the floor. Insert proper anchoring devices (not supplied).
5. Place appliance back in the installation position.
6. Place carpenter's level on top of appliance and re-level side-to-side and front-to-back.
7. Bolt and anchor appliance securely to the floor.
8. Seal bolts and flanged feet with silastic or equivalent compound.

## EXHAUST FANS AND CANOPIES

Canopies are set over ranges, ovens, kettles, etc., for ventilation purposes. It is recommended that a canopy extend 6" past the appliance and be located 6 feet 6 inches from the floor. Filters should be installed at an angle of 45 degrees or more with the horizontal. This position prevents dripping of grease and facilitates collecting the run-off grease in a drip pan, usually installed with the filter. A strong exhaust fan tends to create a vacuum in the room and may interfere with burner performance or may extinguish pilot flames. Makeup air openings approximately equal to the fan area will relieve such vacuum. In case of unsatisfactory performance on any appliance, check with the exhaust fan in the "OFF" position.

Information on the construction and installation of ventilating hoods may be obtained from the standard for "Vapor Removal from Cooking Equipment", NFPA No. 96 (latest edition), available from the National Fire Protection Association, Batterymarch Park, Quincy, MA, USA, 02269.

## CONNECTIONS

### NOTICE

If this equipment is being installed at over 2,000 feet altitude and was not so specified on order, contact service department. Failure to install with proper orifice sizing may void the warranty.

## PLUMBING CONNECTIONS

### WARNING

Plumbing connections must comply with applicable sanitary, safety, and plumbing codes.

## WATER SUPPLY CONNECTION

The incoming cold water supply connection, at the rear of the steamer cabinet, requires 3/8" tubing and water pressure of 25 - 50 psi. A manual shut-off valve must be provided convenient to the appliance; this valve should be open when the boiler is in operation.

### IMPORTANT

If your equipment was supplied with split water lines and a filter, connect the filter system to the connection marked "BOILER FEED" only. Make a second connection to the "CONDENSER FEED" from a cold and unfiltered water supply.

FAILURE OR MALFUNCTION OF THIS APPLIANCE DUE TO POOR WATER QUALITY IS NOT COVERED UNDER WARRANTY. SEE WATER QUALITY STATEMENT.

## DRAIN CONNECTION

The appliance drain (2" IPS) 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.



## GAS CONNECTION

### NOTICE

If this equipment is being installed at over 2,000 feet altitude and was not so specified on order, contact service department. Failure to install with proper orifice sizing may void the warranty.

1. The data plate on the cabinet door of the boiler indicates the type of gas your unit is equipped to burn. DO NOT connect to any other gas type.  
  
Keep the appliance area free and clear from combustible substances. Do not obstruct the flow of combustion and ventilation air.
2. A 3/4" NPT line is provided at the rear for the connection. Each boiler is equipped with an internal pressure regulator which is set at 3.5" W.C. manifold pressure for natural gas or 10.5" W.C. for L.P. gas. Use the 1/8" pipe tap on the burner manifold for checking pressure.

An adequate gas supply is necessary. Undersized or low pressure lines will restrict the volume of gas required for satisfactory performance. A steady supply pressure, between 7" W.C. and 14" W.C. for natural gas and 11" W.C. and 14" W.C. for propane gas is recommended. With all units operating simultaneously, the manifold pressure on all units should not show any appreciable drop. Fluctuations of more than 25% on natural gas, and 10% on propane gas, will create pilot problems and affect burner operating characteristics. Contact your gas company for correct supply line sizes.

Purge the supply line to clean out any dust, dirt, or foreign matter before connecting the line to the unit.

### CAUTION

The pipe thread compound used when installing pipes must be a type that is resistant to the action of liquified petroleum or propane gases.

Codes require that a gas shut-off valve be installed in the gas line prior to the steamer. Make sure the pipes are clean and free of obstructions, dirt, and piping compound.

### WARNING

Prior to start-up, check all joints in the gas supply line for leaks. Use soap and water solution. Do not use an open flame.

## ELECTRICAL CONNECTIONS

### WARNING

Do not connect the appliance to the electrical supply until after the gas connection has been made.

### WARNING

Electrical and grounding connections must comply with the applicable portions of the National Electrical Code and/or other local codes.

### 120 VAC-60 Hz - Single Phase

Make electrical connection to terminal block provided in rear of the appliance. A separate 15 amp supply is needed for each unit.

Refer to the electrical diagram located inside cabinet on door.

# OPERATION

## WARNING

Do not force the gas control knob. Use only your hand to turn the gas control knob. Never use any tool. If the gas control knob will not operate by hand the gas control should be replaced by a qualified service technician.

## WARNING

Do not disassemble the gas control; it contains no replaceable components. Attempted disassembly or repair may damage the gas control.

## WARNING

In the event of main burner ignition failure, a 5 minute purge period must be observed prior to re-establishing ignition source.

*For CSD-1 equipped boilers, see this section for Operation Instructions for CSD-1 Equipped Boilers.*

## BOILER CONTROLS (Inside Cabinet)

Gas steam generators are available with standard boiler controls or ASME CSD-1 complaint controls. In addition to the ON/OFF power switch and indicator pilot light with standard controls, the CSD-1 controls have in addition four more indicator pilot lights and a "Reset" switch. Follow the appropriate instructions for each.

- |                                |  |
|--------------------------------|--|
| <b>Main Power Switch</b>       | - ON fills the boiler tank and turns the boiler controls on. You should allow 20 minutes to fill the tank and generate steam.  |
|                                | - OFF shuts off the boiler controls and opens the automatic blowdown valve, emptying the boiler tank and releasing water and steam to the drain. This should be done at least once daily to remove sediment, lime, or scale. |
| <b>Pilot Light</b>             | - Indicates main power is ON.  |
| <b>Boiler Pressure Gauge</b>   | - Should read 9 -11 psi during operation; 0 psi during shutdown.   |
| <b>Water Level Sight Glass</b> | - Observe level of water in the boiler and water quality. Murkiness in the water indicates inadequate water quality; the owner must supply proper water to the boiler (see Water Quality Statement).                         |
| <b>Water Level Control</b>     | - While ON, briefly open the water level control daily to remove any sediment that might accumulate.   |
| <b>Safety Valve</b>            | - This valve will release (pop off) if the boiler has too much pressure. Once a week, this valve should be tripped during operation to make sure it functions properly.  |

## WARNING

In the event you smell gas, shut down equipment at the main shut off valve and contact the local gas company or gas supplier for service.

## 1. START-UP - BOILER OPERATION WITH STANDING PILOT IGNITION

Open manual gas shut off supply valve and if the appliance has a manual blowdown valve, close it. Open cabinet door and turn ON power switch located on left side. Green pilot light will come on, water will begin to enter boiler and required water level will be reached in about three minutes. Observe water gauge glass to verify.

The dial on the combination gas control valve has three positions (ON-PILOT-OFF) for manual gas control of main burners and pilot. Turn DIAL to PILOT. Depress dial and light pilot burner located on centre main burner of boiler. Maintain dial in depressed position for about 30 seconds and release. Observe that the pilot burner flame stays on. If at any time the flame should become extinguished, a 5 minute period of complete shut off of gas supply is required before relighting.

Turn dial to ON and burners should ignite. Steam generation will now commence and be completed in approximately 15 minutes. Steam generation should reach approximately 11 psi as indicated on the pressure gauge on the boiler.

## 2. START UP - BOILER OPERATION WITH ELECTRONIC IGNITION

Open manual gas supply valve.

Open cabinet door and turn main power switch ON. Green pilot light will come on, water will begin to enter boiler and required water level will be reached in about 3 minutes. Observe water gauge sight glass to verify.

The dial on the gas combination control valve has 2 positions (ON and OFF).

ON - [Rotated counterclockwise] permits gas to flow to the pilot and main burner.

OFF - [Rotated clockwise] prevents gas flow to pilot and main burner.

### NOTICE

Units are shipped with the control in the ON position.

With the gas control valve, power switch and water supply all ON, water begins entering the boiler and gas flows to the pilot: Spark will begin in 2 to 3 seconds. If the pilot fails to light in 90 seconds, the control will provide 100% lockout. If this occurs: Wait 5 minutes, then turn power switch off for one minute before turning power switch back on.

Once the pilot is lit and the required water level has been reached, the main burners will ignite. Burner will cycle to meet the steam pressure required. Steam pressure should reach approximately 11 psi as indicated on the pressure gauge on the boiler.

## DAILY SHUT DOWN

Turn power switch off.

Open blowdown valve if so equipped.

## COMPLETE BOILER SHUT DOWN

If boiler is not intended to be operated for a lengthy period of time, shut off all power, gas and water supplies to the appliance. Open blowdown valve if so equipped.

## OPERATION INSTRUCTIONS FOR BOILERS WITH CSD-1 CONTROLS

### **WARNING**

In the event of main burner ignition failure, a 5 minute purge period must be observed prior to re-establishing ignition source.

### INITIAL START-UP PROCEDURE

1. Open the manual gas shut-off supply valve.
2. Close the manual blowdown valve, if so equipped.
3. Light the pilot burner.

The dial on the gas combination valve has three positions (ON - OFF - PILOT) for manual gas control of main burners and pilot burner. Turn the dial on the gas combination valve to "PILOT", depress the dial and light the pilot burner on the centre burner. Maintain the dial in depressed position for about 30 seconds and release. Observe the pilot flame stays ON. Turn dial to "ON".

**If at any time the flame should become extinguished, a five (5) minute purging is required before relighting is attempted.**

4. Open cabinet door and turn "ON" the power switch.

The green pilot light will come "ON". Water should begin to enter the boiler. When enough water has entered the boiler the (amber) "STANDBY" pilot light will come on.

5. Press the "RESET" switch to begin boiler operation.

The "STANDBY" pilot light will go off and the boiler will begin operation.

### INITIAL START-UP PROCEDURE WITH ELECTRONIC IGNITION

1. Open the manual gas supply valve and water supply. Turn on power supply to the unit.
2. Open cabinet door. With gas control valve, water supply and power switch ON, green pilot light will come on. Water will begin to enter the boiler. When enough water has entered the boiler the (amber) "STANDBY" pilot light will come on.

The dial on the gas combination control valve has two positions (ON and OFF).

ON - (Rotated counterclockwise) permits gas to flow to the pilot and main burner.

OFF - (Rotated clockwise) prevents gas flow to pilot and main burner.

### **NOTICE**

Units are shipped with the control in the ON position.

3. Press the "RESET" switch to begin the boiler operation. The "STANDBY" pilot light will go off and the boiler will begin operation.

### DAILY STARTUP PROCEDURE

1. Close the manual blowdown valve, if so equipped.
2. Examine that the pilot burner flame is burning. If the pilot burner is out, a five (5) minute period of complete gas supply shut off is required before relighting.
3. Open cabinet door and turn "ON" the power switch.

The green pilot light will come "ON". Water will begin to enter the boiler. When enough water has entered the boiler the (amber) "STANDBY" pilot light will come on.

4. Press the "RESET" switch to begin the boiler operation. The "STANDBY" pilot light will go off and the boiler will begin operation.

## DAILY SHUTDOWN PROCEDURE

1. Turn "OFF" the power switch. Observe that the burners go off.
2. Open the manual blowdown valve, if so equipped. If the appliance is equipped with an automatic blowdown solenoid valve, the boiler's contents, water and steam will be blown out and exhausted through the appliance drain. The cold water solenoid valve will be activated.

## COMPLETE SHUTDOWN PROCEDURE

If the appliance is not intended to be operational for a lengthy period, then shut it down completely.

1. Open the manual blowdown valve, if so equipped.
2. Shut off all supplies of power, gas and water to the appliance.

## NORMAL BOILER OPERATING CYCLE

### Water Fill Cycle

On the initial filling of the boiler, the reset switch must be activated to initialize the safety lockout circuit. Once the water in the boiler has reached the proper level, the level control will open the circuit to the fill solenoid valve, stopping the flow of water to the boiler. As the water is consumed in the production of steam, the level control will close the circuit to the fill solenoid and water will be supplied to the boiler.

### Firing Cycle

The gas valve is operated by pressure sensing devices. On the initial operation of the boiler, steam generation should reach 11 psi in approximately 15 minutes. At this point the "Operating Pressure" switch will open, closing the gas valve. When pressure drops to 9 psi, the pressure switch closes, the gas valve will open and ignition should occur.

Should the pressure rise more than 14.5 psi the "Override Pressure Switch" will close the circuit to the override solenoid valve, releasing excess steam.

### Condensing Drain

A thermostat is located in the drain assembly and is activated by the temperature of steam. The thermostat opens the cooling solenoid valve, in turn supplying water to the drain to condense steam.

### Automatic Blowdown Valve

If the unit has an automatic blowdown valve, it is activated by the main power switch. The boiler will be drained should the main power switch be turned "OFF".

## SAFETY LOCKOUT CONDITIONS

### High Temperature Condition

A high temperature safety device is installed on the boiler. Should the temperature exceed the limit of this device, the boiler will be shut down and put in a state of lockout. The "Temperature" pilot light (red), and the "Standby" pilot (amber), will come on.

### High Pressure Condition

A high pressure safety switch is installed on the boiler. Should the pressure exceed the limit of this device, the boiler will be shut down and put into a state of lockout. The "Pressure" pilot light (red), and the standby pilot light (amber), will come on. Should this device fail to operate, the safety relief valve will open.

### Low Water Condition

A second low water safety cut off is supplied with the boiler. Should the water level fall below normal operating levels, this device will shut down and put the boiler in a state of lockout. The "Low Water" pilot light (red), and the "Standby" pilot light (amber) will come on.

## COOKER SECTION

### CAUTION

Live steam and accumulated hot water in the compartment may be released when the door is opened.

Start-up procedures for your cooker must be completed once daily prior to operation (see instruction plate or previous section in this manual for boiler start up procedures).

With ready pilot light on, preheat cooker compartment for one minute when the cooker is to be first used for the day or whenever the compartment is cold.

1. Close compartment doors and set timer to "1 minute".
2. When buzzer sounds, set timer to the "OFF" position.
3. Cooker is now ready for cooking.
4. With cooking compartment preheated and ready pilot light on, place pans of food to be cooked into compartment and shut door.
5. Set timer to cooking time desired. Cooking cycle may be interrupted at any time by opening door and resumed again by closing door.
6. When buzzer sounds, it indicates the end of the cooking cycle and that no more steam is entering the compartment. Cooking pilot light will go off and ready pilot light will come on. Buzzer must be shut off by turning the timer to its off position.

### CAUTION

An obstructed drain can cause personal injury or property damage.

Frequently check that the compartment drain and plumbing is free of all obstructions. Never place food containers, food or food portion bags in the cooking compartment in such a way that the compartment drain becomes obstructed

### IMPORTANT

Each compartment is equipped with a removable drain screen. Frequently check the drain screen for accumulation of food particles. Should food particles accumulate against, or clog the drain screen, remove it, clean it thoroughly and then replace it in its original position.

## SHUTDOWN

1. To shut down cooking compartment, set timers to their OFF position and leave doors slightly open.
2. At the end of the day, the boiler must be shut off. Details are in previous section of this manual.

### WARNING

Never spray water into electric controls.

### NOTICE

Contact the factory, the factory representative or a local service company to perform maintenance and repairs should the appliance malfunction. Refer to warranty terms.

## FUNCTIONING MODE

### DIRECT STEAM KETTLES

Direct connected steam jacketed kettles constructed to ASME CODE, consist of a stainless steel bowl and stainless steel jacket which envelopes two thirds of the lower surface of the bowl thus forming a sealed pressure vessel (chamber) into which steam is introduced by means of a manual control valve.

The kettle bowl is the container for the food product which ideally should be of a liquid or semi-liquid consistency to achieve complete contact with the bowl surface and thus fully absorb the heat transmitted through the surface.

The temperature required for the cooking process to function adequately must be greater than the boiling point of the liquid food product. Further, the greater the steam pressure used, the higher the temperature and consequently the quicker the cooking process. For example steam pressurized at 30 psi attains a temperature of 274 degrees Fahrenheit (135 degrees Celsius).

In the initial stages of the cooking process when the steam comes in contact with the cold kettle bowl surface it condenses and forms a considerable amount of water. A thermostatic steam trap is plumbed to the exit end of the kettle jacket. This trap is a mechanical device that closes on high temperatures and opens when the temperature drops thus allowing the water formed from condensate to exhaust but retain steam under pressure.

The suffix of the Model indicates the capacity of the kettle in U.S. gallons (DC-6 is 6 U.S. gal.).

## OPERATING PROCEDURE

1. Fill kettle with product to desired level.
2. Slowly turn on steam control valve to full open position.
3. The product should boil in three to four minutes per gallon.
4. Regulate steam depending on type of product being prepared.
5. When product is cooked, turn off steam supply to kettle.
6. Remove cooked product into holding pan by tilting kettle forward slowly to avoid injury from splashing hot food.
7. Clean kettle immediately to prevent residue from drying in kettle bowl.



# MAINTENANCE

## WARNING

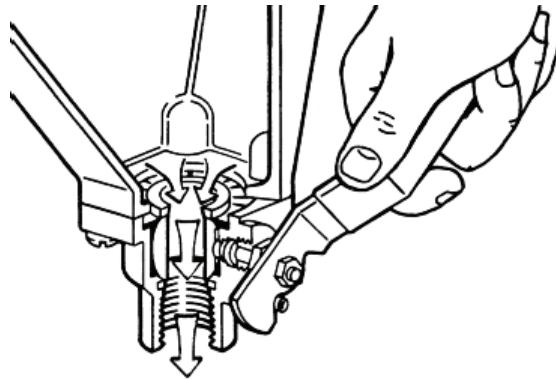
Disconnect the unit from the power supply before cleaning or servicing appliance.

## NOTICE

Contact the factory, the factory representative or a local service company to perform maintenance and repairs should the appliance malfunction. Refer to warranty terms.

## IMPORTANT INSTRUCTIONS

Be sure to flush your boiler water level control daily. Failure to follow this procedure can cause the control to malfunction resulting in serious boiler damage.



The Boiler Water Level Control installed on your boiler requires periodic maintenance. As boiler water circulates into the float chamber, sand, scale and other sediment may be deposited in the float chamber. While the chamber has been designed with a large accumulation bowl, it is necessary to flush the sediment from the chamber by blowing down the control so that the accumulation of sediment does not interfere with the movement of the float in the control.

Control must be flushed at least once a day.

## CAUTION

Protect yourself. When flushing control, hot water and steam will flow out of the drain.

When flushing control, note water level in gauge glass, allow the boiler to fill if necessary, and also to come up to temperature.

Before flushing control, note that water level in gauge glass is within operating range and the boiler pressure is at least 6 psi. While the boiler is being fired, open blowdown valve at bottom of control by rotating the handle counterclockwise about 1/4 turn to fully open the valve.

Opening the blowdown valve also checks the cut-off operation. Float should drop shutting burners off, hot water and steam will flow out the drain flushing away sediment.

## CAUTION

If burner does not shut off during blowdown, immediately discontinue use of appliance and call for service.

Continue draining water for about fifteen (15) seconds, from control until water is clean. Manually close valve. Recheck gauge glass. If water level has dropped significantly, wait for the boiler to restore water level and pressure and repeat if necessary.

1. Safety relief valve should be tripped during operation periodically to assure that it functions properly.

 **CAUTION**

Live steam will escape during this operation and may cause personal injury.

2. If appliance is equipped with a pressure regulator, twice a year the hex plug located at the bottom of the regulator should be removed and the strainer cleaned.
3. Burners should be cleaned on a regular basis to eliminate the accumulation of lint on burner ventures and burner orifices.

## DESCALING BOILER

It is recommended that the boiler should be checked every 90 to 120 days for scale build up. Regular maintenance should be carried out at this time.

If the boiler has been descaled, a new Anode should be installed in the boiler to help extend its life.

1. With boiler empty, close manual blowdown valve. If appliance is equipped with automatic blowdown, turn water supply OFF to appliance. Turn power switch ON. This will energize and close blowdown valve.
2. Remove 3/4" pipe plug from fitting on left front of boiler.
3. Insert appropriate hose or tube through fitting and pour in (1/2) half gallon (U.S.) of CLR Descaling Solution or use the Optional Deliming Assembly DPA-1 available from your dealer

### **For appliances equipped with CSD-1, descaling solution must be introduced through hand hole.**

4. Replace 3/4" pipe plug securely.
5. Open water supply to appliance allowing water to fill boiler to required level.
6. Let appliance cycle, allow two hours for descaling and cleaning. **DO NOT TURN STEAM ON TO THE COMPARTMENTS.**
7. Open both the blowdown and low water level control valves for complete drainage and then close both valves.

Appliance equipped with automatic blowdown - turn OFF power switch and open low water control valve. This will allow complete drainage. Once drained close water level control valve.

8. Turn appliance switch ON. When boiler is completely filled, turn power switch OFF. This will rinse and drain boiler. Appliance with manual blowdown valve must be opened to drain.
9. Complete Step 8 twice to assure boiler is completely rinsed.
10. Appliance is now ready for use.

# CLEANING

 **WARNING**

Disconnect the power supply to the appliance before cleaning or servicing.

 **WARNING**

Never spray water into electric controls.

 **CAUTION**

The appliance and its parts are hot. Use care when operating, cleaning or servicing the appliance.

 **CAUTION**

Do not use cleaning agents that are corrosive.

## KETTLES

1. Turn steam supply "OFF".
2. Pre-rinse inside of kettles thoroughly and tilt kettles to remove any food particles.
3. Use a nylon brush. Clean kettle with a mild detergent and warm water rinse. NEVER use steel wool or scouring powder as it will mark the stainless steel.
4. Tilt kettles and thoroughly rinse the inside draining out detergent solution.
5. Wipe the exterior of kettles with a clean, damp cloth.
6. Dry the entire kettles with a clean dry cloth.

## WHAT TO DO IF SURFACE RUST APPEARS

Metal utensils should never be used as they will scratch the surface of the equipment and rust may begin to form. To remove surface accumulation of rust from the inadvertent use of such utensils, the following may be used.

 **CAUTION**

Improper use of this procedure may damage your appliance.

1. Use undiluted white vinegar with a non abrasive scouring pad (plastic) or cloth on the affected area to remove the rust stains. The appliance should not be heated and remain at room temperature during the entire cleaning process.
2. If the stain resists removal, additional exposure time with vinegar may be required, to a maximum of one hour.
3. Thoroughly wash all the vinegar away with fresh water. Dry the surface completely and allow one hour before using the appliance to cook.

Following daily and period maintenance procedures will prolong the life of your equipment. Climatic conditions - salt air - may require more thorough and frequent cleaning or the life of the equipment could be adversely affected.

**USE OF CLEANING AGENTS THAT CONTAIN CHLORIDE, ACIDS OR SALTS ARE CORROSIVE AND MAY CAUSE PITTING AND CORROSION WHEN USED OVER A PERIOD OF TIME. THIS WILL REDUCE THE LIFE OF THE APPLIANCE.**

**SHOULD PITTING OR CORROSION OCCUR THIS IS NOT COVERED BY WARRANTY.**

## STEAMER COMPARTMENTS

1. Keep exposed cleanable areas of unit clean at all times.
2. Thoroughly wash oven cavities, door liners, and pan racks at the end of each day, or as required, with a mild detergent and water to prevent bacterial growth and odours.
3. Remove drain screens from inside compartment drains. Using a plastic bottle brush and mild detergent, clean inside the drain opening ensuring there is no food residue or blockage. Clean the drain screen and replace in its original position.
4. Wash gasket sealing surface daily with mild detergent to remove harmful food acids.
5. Clean around burner air mixer and orifice if lint has accumulated.
6. Visually assure carry over ports are unobstructed.
7. Rinse entire unit and dry. **DO NOT GET WATER** in electrical box or any electrical component.

# ADJUSTMENTS

At least twice a year have an authorized service person clean and adjust the unit for maximum performance.

## CALIBRATE PRESSURE SWITCHES

### NOTICE

Pressure switches are factory set. Calibration is only required if pressure switches are replaced or if adjustment is required.

### CAUTION

Operating, testing, and servicing should only be performed by qualified personnel.

Pressure switch range is from 1 to 15 psi.

Adjust all settings to maximum on high signal adjustment screw on pressure switches.

Adjust in the following sequence:

- High limit pressure switch.
- Override pressure switch. (if equipped).
- Operating pressure switch.
- Use relief valve to release pressure from boiler for setting adjustments.

#### 1. HIGH LIMIT PRESSURE SWITCHES

Allow pressure to build until unit shuts off. This should occur at 15 psi. Set the high signal to switch at 14.5 psi on the gauge.

#### 2. OVERRIDE PRESSURE SWITCHES

Allow pressure to increase to 13 psi. Set the high signal to switch at 13 psi on the gauge and the low signal to 11 psi.

#### 3. OPERATING PRESSURE SWITCHES

Set the high signal to switch at 11 psi on the gauge and the low signal to 9 psi.

4. Release pressure in boiler to below 9 psi. Burner will come on. Once pressure has reached 11 psi, burners will shut off. Repeat this process several times to make sure burners come on at 9 psi and shut off at 11 psi.

Once completed, pressure switches have been calibrated.

Should your unit not have the High Limit pressure switch, start procedure at Override pressure switch.

# TROUBLESHOOTING

## DOOR LEAKS

1. Check for damage to door gasket.
2. Compartment drain opening or associated piping may be blocked.

## WATER ACCUMULATES IN THE COMPARTMENT

1. Compartment drain screen clogged. Remove and clean thoroughly and replace.

## WATER NOT BEING SUPPLIED TO BOILER

1. Water supply is "OFF".
2. Defective water fill solenoid valve.
3. Water level control clogged or defective, unable to operate fill valve.
4. Check drain valve is closed. Also check that water level control valve is closed.
5. Supply water pressure too low.

## AUTOMATIC BLOWDOWN VALVE Does NOT DRAIN

1. Defective blowdown valve.
2. Heat exchanger build up of scalant clogging drain lines and valve.

## BOILER ACHIEVES PRESSURE SLOWER THAN NORMAL

1. Heavy build up of lime or scalant hampering heat transfer. Call for service to inspect interior of boiler. Should a considerable amount of scalant be found, have steam lines, water level control and valve also inspected.

## SAFETY VALVE BLOWS

1. Defective safety valve.
2. Pressure too high. Pressure switch requires adjustment (lower) or may be defective.

## BURNERS PRODUCE CARBON DEPOSITS

1. Wrong size orifices.
2. Burner air not adjusted properly.
3. Wrong gas supply.
4. Incorrect pressure at supply.

## BURNERS DO NOT COME ON

1. Gas supply to unit is "OFF".
2. Manual shut off valve is "OFF".
3. Pilot is out.
4. Power supply is "OFF".
5. Water level has not been reached. Check water supply and water level control.
6. Pilot may require flame adjustment on option electronic ignition units.
7. If water at proper level, check relay which energizes pressure switch and gas valve.
8. Pressure switch may need to be replaced if relay is operating.
9. Check gas control. If energized but not operating, have replaced.

## PILOT LIGHT DOES NOT IGNITE (ELECTRONIC IGNITION)

1. Gas control knob is in "OFF" position.
2. Loose or dirty wire connection to ignition module, clean/or tighten.
3. Ignition cable shorting out. Check that it is not in contact with metal or damaged.
4. Defective ignition module.
5. Unit is 100% lock out. Turn off and try in five minutes.
6. Dirty flame sensor. Clean with emery cloth.
7. Pilot burner/ignitor sensor, cracked ceramic insulator. Have replaced.
8. Check for too much draft in room.

## KETTLE DOES NOT HEAT

1. Steam control valve not turned on.
2. Steam trap not closing.
3. Steam trap not opening to release condensate water.
4. Boiler not producing enough steam pressure.

## KETTLE LEAKS STEAM

1. "O" rings are worn. Replace.
2. Steam valve seat worn. Replace seat.



## NOTES

# GCX-2-(6,10), GCX-10-(6,10), GCX-2-6-(6,10) & GCX-10-6-(6,10) Gas Fired Pressureless Cooker with Direct Steam Kettles



A product with the Crown name incorporates the best in durability and low maintenance. We all recognize, however, that replacement parts and occasional professional service may be necessary to extend the useful life of this appliance. When service is needed, contact a Crown Authorized Service Agency, or your dealer. To avoid confusion, always refer to the model number, serial number, and type of your appliance.



## CROWN FOOD SERVICE EQUIPMENT

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