USER'S INFORMATION MANUAL

IBC

Better Boilers

DC Series Boiler / Water Heaters
HC Series Boilers

(Natural Gas or Propane)

WARNING: If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury, or loss of life.

Do not store or use gasoline or other flammable vapours and liquids or other combustible materials in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS:

- **Do not try to light any appliance.**
- **Do not touch any electrical switch; do not use any phone in your building.**
- **Immediately call your gas supplier from a nearby phone. Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the fire department.**

Installation and service must be performed by a qualified installer, service agency or the gas supplier.

This Manual is also available in French - contact IBC or visit our web site www.ibcboiler.com

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ENERGY STAR

AHRI CERTIFIED™

⚠ WARNING

If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury, or loss of life.

SAFETY CONSIDERATIONS

Installation, start-up and servicing of IBC boiler / water heaters must be done with due care and attention, and should only be performed by competent, qualified, licensed and trained heating technicians. Failure to read and comply with all instructions and applicable National and local codes may result in hazardous conditions that could result in property damage and injury to occupants which in extreme cases might result in death.

HAZARDS & PRECAUTIONS

⚠ DANGER

Points out an immediately hazardous situation which must be avoided in order to prevent serious injury or death.

⚠ WARNING

Points out a potentially hazardous situation which must be avoided to prevent serious injury or death.

⚠ CAUTION

Points out a potentially hazardous situation which must be avoided to prevent possible moderate injury and/ or property damage

⚠ NOTE

Points out installation, maintenance and operation details that will result in enhanced efficiency, longevity and proper operation of your boiler / water heaters.

⚠ BEST PRACTICES

Points out recommendations for better installation.

CONTENTS

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⚠ DANGER

- Water temperture over 125°F (52°C) can cause severe burns instantly or death from scalds.
- Children, disabled, and elderly are at highest risk of being scalded.
- See instruction manual before setting temperature at boiler.
- Feel water before bathing or showering.
- Temperature limiting valves are available, see manual.

WATER HEATER INSTALLATION GUIDELINES

WARNING

- This boiler must be installed in accordance with local codes, if any; if not follow the National Fuel Gas Code, ANSI Z223.1/NFPA 54, or the Natural Gas and Propane Installation Code, CAN/CSA B149.1, as applicable.
- Failure to correctly install and operate this appliance can result in severe personal injury or death.
- The water heater, if utilized, shall have a pressure relief valve installed within 6" [152mm] of the DHW HOT outlet connection.
  Refer to the Boiler User's Manual before operating relief valve.
- The water heater, if utilized, requires a pressure relief valve identified with the ASME V or HV symbol and set to relieve at or below 150psi of domestic water pressure and a minimum relieving capacity of 125,000 Btu/hr with 3/4" NPT threads. For safe operation of the water heater, the relief valve must not be removed from its designated point of installation or plugged.
- For complete information refer to installation manual.
- Read and follow warnings and instructions.

CAUTION

- Hotter water increases the risk of scald injury. Before changing the temperature setting, see instruction manual.

ADJUSTABLE TEMPERATURE SETTING

- Press the  and hold for 2 seconds, then press again. When the  LED is lit, the Domestic Hot Water temperature can be set.

⚠ WARNING

HOT WATER CAN SCALD!

Water Temperatures over 125°F / 52°C can cause severe burns instantly or death from scalds.

Children, disabled, and elderly are at highest risk of being scalded.

- **Never leave then unattended in or near the shower, bathtub or sink.**
- **Never allow small children to use a not water faucet or draw their own bath.**

To avoid any potential scald hazard or if codes require specific water temperatures at the hot water faucet, the installer must:

- **Install the factory supplied thermostatic mixing valve at this appliance and ensure it is working properly.**

  AND

- **Set the thermostatic mixing valve to the lowest temperature which satisfies your hot water needs.**

TO AVOID INJURY:

- **Feel and adjust water temperature before bathing or showering.**
- **Water drained from the system drain valve may be extremely hot.**
- **Make sure all connections are tight.**
- **Direct water flow away from any person.**

⚠ WARNING

Close fill valve after any addition of water to the system, to reduce risk of water escapement.

⚠ WARNING

Water quality has a significant impact on the lifetime and performance of an IBC Boiler heat exchanger.

Improperly prepared water in a heating circuit may cause damage to the heat exchanger through corrosion or fouling. Repeated or uncontrolled water fills will increase the potential for damage.

High levels of dissolved solids or minerals may precipitate out of the fluid onto the hottest part of the heat exchanger, impairing heat transfer and resulting in overheating and premature failure. The amount of solids that may form on the heat exchanger will depend on the degree of hardness and the total water volume in the system. A high water volume system with a low hardness count may cause as much damage as a system with less volume and higher hardness, so it is recommended to treat water so as to remove all dissolved solids. Other water chemistry allowable limits are as follows:

- **Acidity pH is to be between 6.5 and 8.5**
- **Chloride is to be less than 125 mg/l**
- **Iron is to be less than 0.3 mg/l**
- **Cu less than 0.1 mg/l**
- **Conductivity is to be less than 400µS/cm (at 25°C)**
- **Hardness is to be 7 Grains or less**

IMPORTANT: Ensure that these limits are acceptable for the other water-side components in the system.

⚠ DANGER

Should overheating occur or the gas supply fails to shut off, do not turn off or disconnect the electrical supply to the pump. Instead shut off the gas supply at a location external to the appliance

⚠ WARNING

Keep boiler / water heater area free and clear of combustible materials, gasoline, and other flammable vapours and liquids.

⚠ WARNING

Combustion air must not be drawn from areas containing corrosive air from swimming pools or spas, including air directly next to outdoor pools and spas.

⚠ WARNING

The boiler / water heater shall not be exposed to water leaks from piping or components located overhead. This includes condensation dropping from un-insulated cold water lines overhead.

⚠ WARNING

In areas of high snow fall, users must check side wall exhaust vent and air intake terminations on a regular basis to ensure blockages do not occur.

⚠ WARNING

Do not use this boiler / water heater if any part has been under water. Immediately call a qualified service technician to inspect the boiler / water heaters and to replace any part of the control system and any gas control that has been under water.

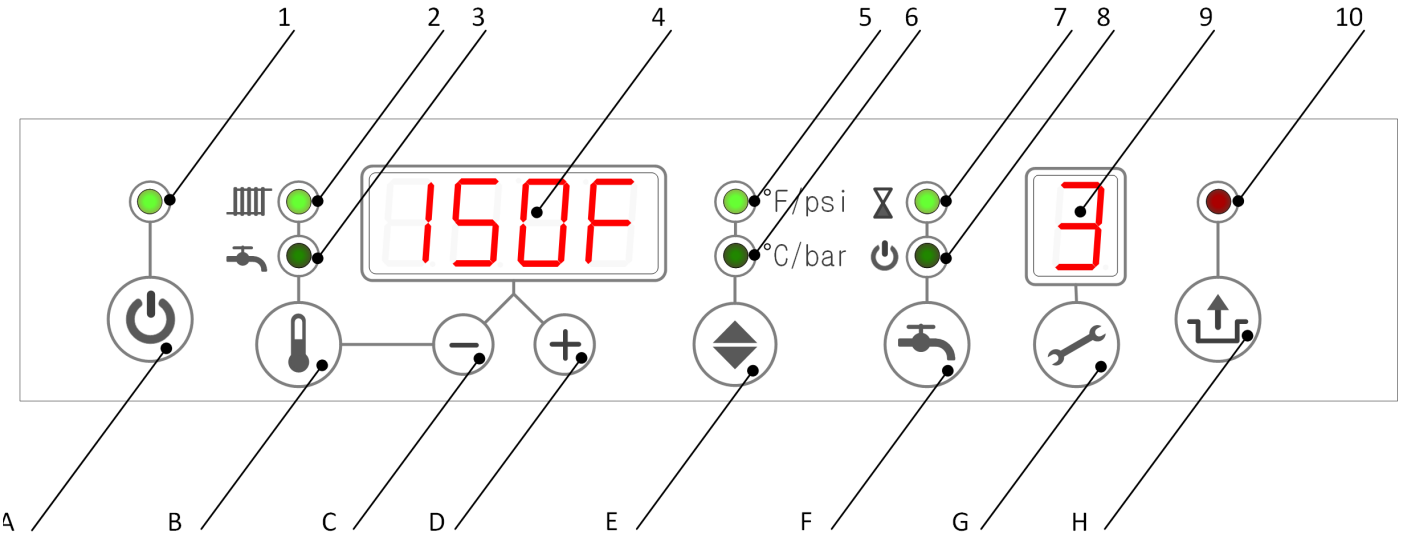
⚠ WARNING

Bacteria growth can develop in domestic hot water tanks and indirect water heaters if the minimum water temperature is not set high enough to prevent its growth.

⚠ DANGER

The thermostatic mixing valve installed with the DC Series Combi Boiler is to protect the users from scalding from excessive hot water temperatures at the faucets. The thermostatic mixing valves are user adjustable. To achieve a higher domestic hot water temperature, set the valve to a higher number. To achieve a lower domestic hot water temperature set the valve to a lower number.

CONTROL



⚠ CAUTION

Before adjusting the control settings, read the control instructions carefully.

1	Power Indicator	**A**	Power - ON / OFF
2	Space Heating	**B**	Space Heating / DHW Toggle
3	Domestic Hot Water	**C**	Minus
4	Main Display	**D**	Plus
5	Fahrenheit and PSI	**E**	Fahrenheit/Celsius
6	Celsius and Bar	**F**	Domestic Hot Water Comfort / Eco
7	Comfort / ECO / OFF - Indicator	**G**	Service
8	Comfort / ECO / OFF - Indicator	**H**	Reset Button
9	Service Display		
10	Flashes to indicate a fault		

Table 1: Controller Indicators and Buttons

NOTE: The control displays codes that include upper and lower case letter and a combination with a period after the letter. Example: C, c., c are all valid parameter codes. When adjusting settings, double check that you are in the correct parameter.

⚠ NOTE

The domestic hot water thermostat is adjusted it its lowest temperature position when shipped from the factory. It's recommended to set the domestic hot water thermostat to 120°F/49°C as an initial setting and further adjust as required. For energy efficient operation, this setting should be set as low as practical for the consumer's needs.

USER – INSTALLER INTERFACE

Appliance ON/OFF

The boiler can be switched on and off with the On/Off button. When the boiler is "ON", the green LED above the On/Off button will be on. When the boiler / water heater is on and there is no call for heat or DHW the displays are blank.

When the boiler / water heater is 'OFF' the main display reads the system pressure, e.g., "14P" for 14 psi.

If the boiler is being powered up after a power outage, the boiler will return to heating as it was when the power was removed from the boiler.

PSI and Fahrenheit / Bar and Celsius

PSI and Fahrenheit are the default setting as shipped from the factory. To change to Bar and Celsius simply press the to toggle Fahrenheit and Celsius.

Programing Mode

USER MENU

Adjusting the Space Heating Water Temperature

To enter the User Menu simply hold down the Space Heating /DHW Toggle button for 2 seconds. The LED beside the will illuminate and the current maximum heating system water temperature will be displayed in the 4 digit display. To alter this value simply press the Plus + or the Minus − buttons.

Adjusting the Domestic Hot Water Temperature

Press the Space Heating /DHW Toggle button a second time and the LED beside the will illuminate and the current tankless domestic hot water temperature target is displayed in the Main Display. To alter this value simply press the Plus + or Minus − buttons.

Saving the Changes

To exit from the User Menu and save the changes press the Reset button. Pressing the On/Off button will also exit the User Menu but will NOT save the changes.

TANKLESS DOMESTIC HOT WATER MODES

DC SERIES BOILERS ONLY

Tankless Domestic Hot Water - Standard, Comfort and ECO Comfort Modes

Standard Mode (both LEDs are off): The boiler's heat exchanger will not maintain its domestic hot water temperature between demands for hot water. (This the most energy efficient mode but will result in the "Cold Water Sandwich Effect".) The boiler will respond to a call for domestic hot water as a priority over the space heating demand. When the domestic hot water demand is satisfied the boiler will return to the space heating load if the load is still calling.

Comfort Mode (the top LED is on): The boiler's heat exchanger will maintain the pre-programmed temperature set in parameter n. or as set for the Tankless hot water temperature. (This is the least efficient mode but does offer the most consistent hot water delivery temperatures). This temperature will be the minimum temperature of the heat exchanger at all times unless the boiler is heating a low temperature load.

ECO Comfort Mode (the bottom LED is on): This mode operates like the Comfort Mode but has the added advantage of learning when the domestic hot water is used. During the low use periods the boilers heat exchanger is allowed to cool. (This mode is the most practical of the three options).

To toggle between the 3 modes simply press the Domestic Hot Water Comfort / Eco button.

Table of Programmable Parameters

PARAMETER	DESCRIPTION	DEFAULT	RANGE / OPTIONS
USER SET UP			
	Boiler Supply Temperature	180°F (82°C)	86°F (30°C) to 194°F (90°C)
	Tankless Domestic Hot Water Temperature	120°F (49°C)	104°F (40°C) to 149°F (65°C)

Table 2: Programmable Parameters

OPERATING AND SERVICE DISPLAY CODES

MAIN DISPLAY	SERVICE DISPLAY	DESCRIPTION
[pressure e.g., “14P”]	-	The boiler is OFF. Press the On/Off button to turn on the boiler
(blank)	(blank)	No Call for Heat - Standby
XXX	0	Boiler pump running – pump post purge
XXX	1	Boiler water temperature reached target – boiler pump is energized, call for heat still present
XXX	2	Self-test – When power is applied to the boiler the controller enters a self diagnostic mode for 5 seconds
XXX	3	Fan Pre-purge , Inter-purge and Post-purge
XXX	4	Trial for Ignition and Flame Proving
XXX	5	Heating – Space Heating
XXX	6	Heating – DHW
XXX	7	Burner on for Comfort mode or Freeze Protection mode

Table 4: Operating Display and Service Display Codes.

LIGHTING AND SHUTTING DOWN THE BOILER

FOR YOUR SAFETY READ BEFORE OPERATING

WARNING: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life

A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

B. BEFORE OPERATING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS

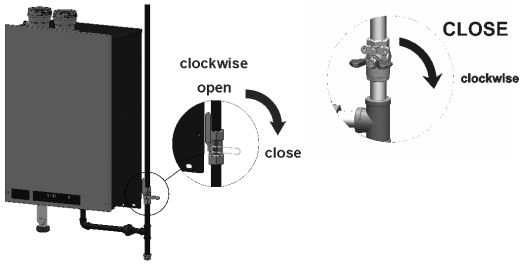
- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

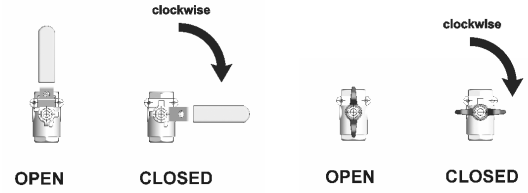
C. Use only your hand to turn the gas control valve. Never force using tools. If the valve will not turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

OPERATING INSTRUCTIONS

1. STOP! Read the safety information above on this label before doing anything.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance by selecting main power switch to OFF.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
5. Locate manual gas shut-off valve (see pictures below) and turn clockwise to "CLOSE".
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow step "B" in the safety information above on this label. If you don't smell gas, go to the next step.
7. Turn gas control valve to OPEN.
8. Turn on electric power to appliance by selecting main power switch to ON.
9. Set thermostat to desired setting.
10. If the appliance will not operate, follow the instructions "TO TURN OFF GAS APPLIANCE" and call your service technician or gas supplier.





TO TURN OFF GAS APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance by selecting main power switch to OFF.
3. Turn gas control valve to CLOSE.

MAINTENANCE

Daily Maintenance

- Check the surrounding area – inspect for water leaks in the general area around the boiler and boiler piping
- Check the system pressure. The heating system pressure should not exceed 25psi and not drop below 10psi in most applications. If the pressure is outside this normal range or if the water pressure fluctuates more than 2-3psi, contact your qualified service technician for service.
- Check the area around the boiler and the air intake opening for obstructions and chemical contaminates.

Monthly Maintenance

- Check all the Daily Maintenance items.
- For DC series boilers, check the domestic hot water temperature at the faucet to ensure the temperature is not too hot. If the temperature is too hot, you can adjust the thermostatic mixing valve to a lower number, adjust the water temperature with the boilers controller, or adjust the water temperature at the hot water tank. If these adjustments are not correcting the issue, call your qualified service technician for service.
- Check the pressure relief valve and discharge piping for signs of leakage or moisture. If water or moisture is found, contact your qualified service technician as soon as possible for service.
- Check the condensate trap and outlet pipe. The condensate trap shall be full of water. The outlet hose may be connected to a condensate neutralizer, if so, check the pH of the water coming out of the neutralizer is above 6.0pH. If the pH is below 6.0 then the neutralizer will need to be re-charged or replaced. Contact your qualified service technician for service.

Annual Maintenance

⚠ WARNING

Annual Maintenance must only be done by a qualified service technician.

The boiler must be inspected by your qualified service technician for the following:

- Inspect the flue gas exhaust and air intake connections. All connections should be tight and leak free.
- Inspect flue gas exhaust piping, combustion air piping and terminations.
- Inspect the boilers interior and vacuum if required.
- Check for water, gas and condensate leaks in the boiler and around the boiler.
- Check the condensate trap and clean if required. Re-fill the trap and re-install the trap hook.
- Check the water pressure, expansion tank and pumps.
- Check the electrical connections.
- Check the ignition electrode and remove oxidation from the electrode. Replace if necessary.
- Check the gas valve and ignition cable.
- Check the controller settings.
- Check the burners flame. Should be a quick and quiet ignition across the full burner.
- If required, clean the heat exchanger and the burner.

⚠ WARNING

Do not use automotive-type ethylene or other types of automotive glycol antifreeze, or undiluted antifreeze of any kind. This may result in severe boiler damage. It is the responsibility of the Installer to ensure that glycol solutions are formulated to inhibit corrosion in hydronic heating systems of mixed materials. Improper mixtures and chemical additives may cause damage to ferrous and non-ferrous components as well as non-metallic, wetted components, normally found in hydronic systems. Ethylene glycol is toxic, and may be prohibited for use by codes applicable to your installation location. For environmental and toxicity reasons, IBC recommends only using non-toxic propylene glycol.

⚠ NOTE

Installers should inquire of local water purveyors as to the suitability of their supply for use in hydronic heating systems.

If water quality is questionable, a local water treatment expert must be consulted for testing, assessment and, if required, treatment.

Alternatively, water or hydronic fluid of known quality can be brought to the site.

⚠ CAUTION

Before testing the relief valve, make certain the discharge pipe is properly connected to the valve outlet and arranged to contain and safely dispose of equipment discharge.

Relief Valve - Maintenance and Testing

The relief valve manufacturer requires that under normal operating conditions a “try lever test” must be performed every two months. Under severe service conditions, or if corrosion and/or deposits are noticed within the valve body, testing must be performed more often. A “try lever test” must also be performed at the end of any non-service period.

Test at or near maximum operating pressure by holding the test lever fully open for at least 5 seconds to flush the valve seat free of sediment and debris. Then release the lever and permit the valve to snap shut.

If the lever does not activate, or there is not evidence of discharge, discontinue use of equipment immediately and contact a licensed contractor or qualified service personnel.

If the relief valve does not completely seal, and fluid continues to leak from the discharge pipe - perform the test again to try and flush any debris that may be lodged in the valve. If repeated tries fail to stop the leakage, contact a licensed contractor or qualified service personnel to replace the valve.

While performing a “try lever test”, a quantity of heat transfer fluid will be discharged from the piping system and the system pressure will drop. This fluid must be replaced. It is highly recommended that a system pressurization unit, such as an *Axiom Industries model MF200* be employed to refill and pressurize your system. Capture the discharged fluid in a container and recycle it by returning it to the system feeder unit. This is particularly important when your system contains treatment chemicals or glycol solutions. If the system employs plain water, the boiler auto fill valve must be turned on in order to recharge the lost fluid.

Domestic Hot Water System

Quality of the domestic cold water is very important to the longevity of the boiler. The recommended pH of the domestic water is between 6.5 and 8.5. The internal domestic water heat exchanger tubing and the flow sensor is subject to fouling if exposed to hard water (over 7 grains of hardness) or has a TDS of 500mg/L or higher. *See Table 5.*

DESCRIPTION	MAX	MIN
Water Pressure	150 psi	40 psi
Programmable water temperature	149°F (65°C)	104°F (40°C)
Minimum Flow Rate to Activate DHW Sensor	N/A	0.5 GPM
Acceptable pH range	7.5 pH	6.5 pH
Chloride	250 mg/L	
Iron	0.3mg/L	
Total Dissolved Solids	500mg/L	
Total Hardness	7 grains	

Table 5: Domestic Water Quality Guidelines

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SERVICE RECORD

DATE	LICENSED CONTRACTOR	DESCRIPTION OF WORK DONE

NOTES

The following message is relevant to users in the USA:

IMPORTANT

This Boiler is equipped with a feature that saves energy by reducing the boiler water temperature as the heating load decreases. This feature is equipped with an override which is provided primarily to permit the use of an external energy management system that serves the same function. THIS OVERRIDE MUST NOT BE USED UNLESS AT LEAST ONE OF THE FOLLOWING CONDITIONS IS TRUE:

- An external energy management system is installed that reduces the boiler water temperature as the heating load decreases.
- This boiler is not used for any space heating.
- This boiler is part of a modular or multiple boiler system having a total input of 300,000 BTU/hr or greater.
- This boiler is equipped with a tankless coil (not applicable to IBC's HC boilers).

US installers should contact IBC for any further information required.

REVISION HISTORY

R1 (JULY 2014)	Initial release
R2 (SEPTEMBER 2014)	Addition of the HC 13-50
R3 (AUGUST 2015)	Address Update
R4 (OCTOBER 2015)	Addition of the DC 20-125 and HC 20-125
R5 (MAY 2018)	Removal of the parts diagrams

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