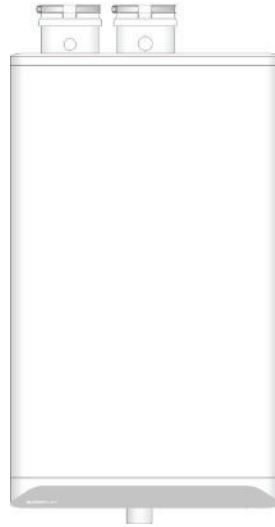


# SFC Series Combi Boilers

(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.

Ce manuel est également disponible en anglais - entrer en communication avec IBC ou visiter notre site Web [www.ibcboiler.com](http://www.ibcboiler.com)



**⚠ 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 units 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 unit.

**⚠ BEST PRACTICES**

Points out recommendations for better installation.

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**⚠ 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 hot 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 a 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.

**⚠ 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 unit 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 unit must 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 unit if any part has been under water. Immediately call a qualified service technician to inspect the unit 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 units if the minimum water temperature is not set high enough to prevent its growth.

! **DANGER**



- Water temperature 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 water heater.
- Feel water before bathing or showering.
- Temperature limiting valves are available, see manual.

**WATER HEATER INSTALLATION GUIDELINES**

**WARNING**

- This water heater 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 with the relief valve spindle installed in the vertical position. Refer to the Water Heater 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 199,000 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**

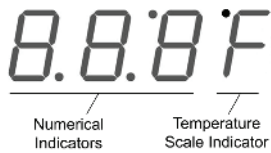
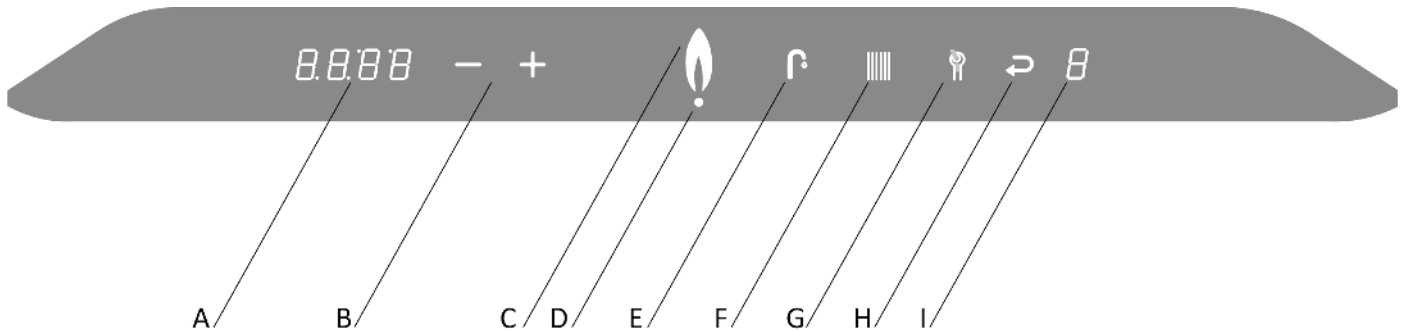
- Hotter water increases the risk of scald injury. Before changing the temperature setting, see instruction manual.

**ADJUSTABLE TEMPERATURE SETTING**

- Touch the panel above the White Dot twice, then touch the Tap. Adjust the water temperature with the Plus + and Minus – then touch the Return button to save the changes.

*PAGE INTENTIONALLY LEFT EMPTY*

# UNIT'S CONTROLLER



ICON	FUNCTION	
<b>A</b>	Numerical Display	Main Display
<b>B</b>	Plus & Minus	Temperature Adjustment
<b>C</b>	Flame	Burner ON Indicator
<b>D</b>	White Dot	Power ON Indicator
<b>E</b>	Tap	DHW Indicator
<b>F</b>	Radiator	Heating Indicator
<b>G</b>	Wrench	Service/Reset
<b>H</b>	Return Arrow	Enter/Save
<b>I</b>	Numerical Display	Service Display

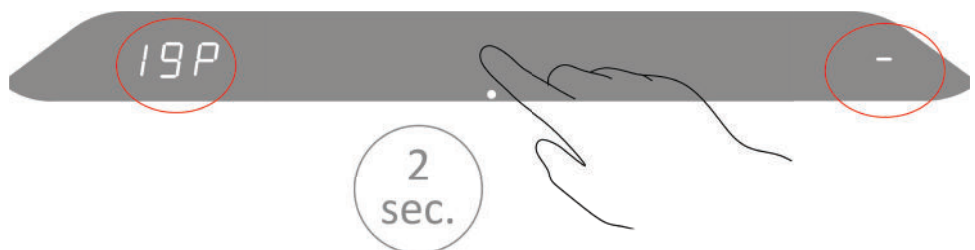
Table 1: Controller Indicators and Buttons

## INSTALLER INTERFACE

### Turning Appliance ON/OFF

To turn on the unit, touch the area above the small white dot for 2 seconds. Now only the white dot is illuminated.

To turn off the unit, touch the area above the small white dot for 2 seconds. A dash appears to the right and the pressure psi displays to the left.



## Programming Mode

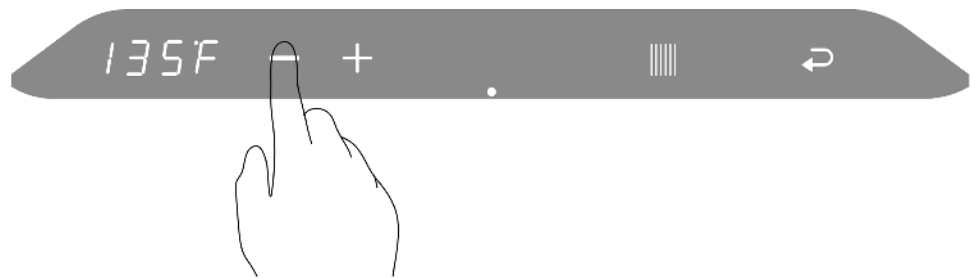
### Adjusting the space heating water temperature

To access the main menu:

1. Touch the area above the white dot twice.
2. Touch the Space Heating button.



3. To change the value, touch the Plus or Minus buttons.



4. To save the changes, touch the Return button.



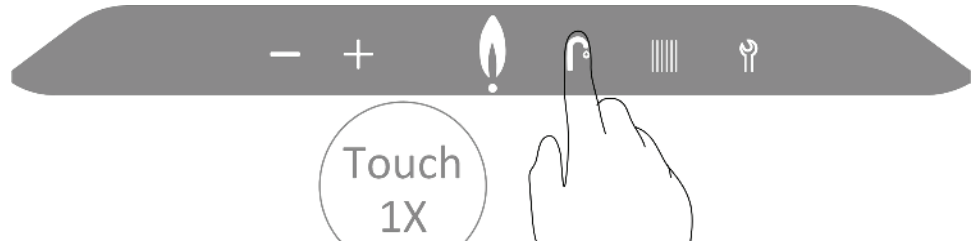
"P" to the right of the screen indicates that the changes have been saved.



**Adjusting the domestic hot water Temperature**

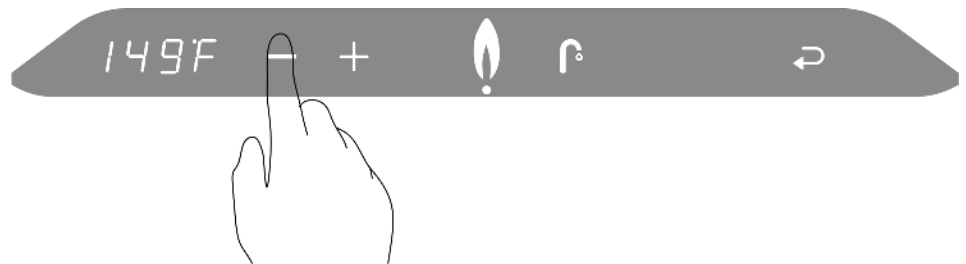
To adjust the DHW:

1. Touch the area above the white dot.
2. Touch the Tap button.



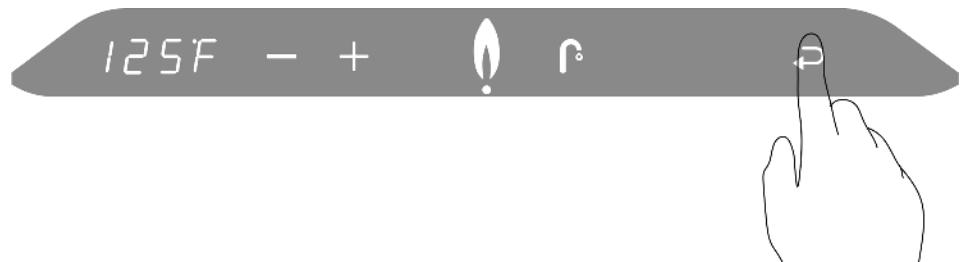
The tankless domestic hot water temperature target appears on the main display.

3. To change the DHW temperature target, touch the Plus or Minus buttons.



**4. To:**

- Save the changes, touch the Return button.
- Exit without saving the changes, touch the On/Off button.



**NOTE**

The domestic hot water thermostat is adjusted to 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.

## TANKLESS DOMESTIC HOT WATER MODES

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

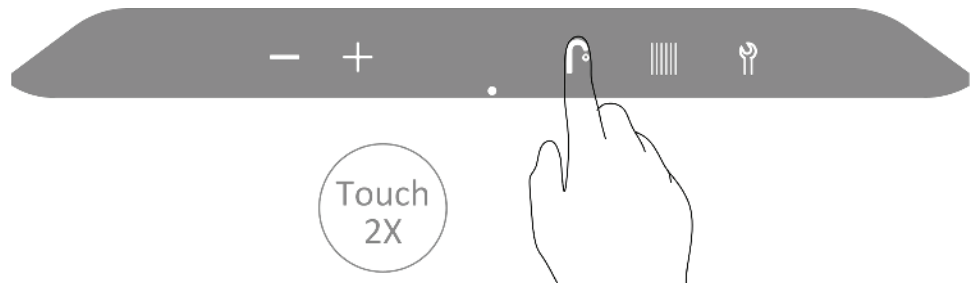
**Standard Mode (OFF):** The unit's heat exchanger will not maintain its domestic hot water temperature between demands for hot water. The unit will respond to a call for domestic hot water as a priority over the space heating demand. When the domestic hot water demand is satisfied the unit will return to the space heating load if the load is still calling.

**Comfort Mode (ON):** The unit's heat exchanger is maintained at the DHW temperature.

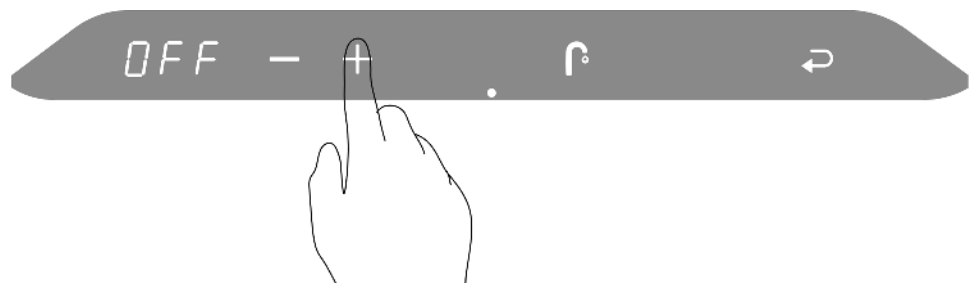
**ECO Comfort Mode (ECO):** This mode operates like the comfort mode but has the added advantage of learning when the domestic hot water is used. During the low use periods, the heat exchanger is allowed to cool.

To switch between the 3 modes:

1. Touch the area above the white dot.
2. Touch the Tap button twice.



3. Touch the Plus or Minus buttons.



**NOTE**

The unit is equipped with a Frost Protection feature. This feature will operate the unit's burner to help protect the unit from freezing. IBC is not responsible for damages to the unit, and/or related components, nor property damages that may result from freezing conditions.

4. To:

- Save the changes, touch the Return button.
- Exit without saving the changes, touch the On/Off button.



## SPACE HEATING

The SFC series unit is designed to be installed in a primary/secondary type piping system. The unit comes complete with a factory installed pump. The pump is guaranteed to circulate heating system water through the unit's heat exchanger and primary loop piping only. The building's distribution piping system may require a dedicated pump or pumps to provide circulation of the space heating water through the heating system. The unit can operate a separate building pump (120V 1.0 AMP max).

Zoning of the space heating system can be accomplished many ways. Several control packages are available from your local wholesaler and offer an easy method of connecting the zoning system to the unit. Example piping and electrical drawing are available at [www.ibcboiler.com](http://www.ibcboiler.com)

The unit supplies heat to the space using an outdoor reset line. With an outdoor sensor installed the unit will automatically adjust its space heating water temperature based on the parameters programmed into the unit. *See separate publication SFC controller manual for parameter information.* If the outdoor sensor is not installed, the unit will use the temperature set in the User Setup menu "Boiler Supply Temperature" to supply hot water to the space heating system.

## SEQUENCE OF OPERATION




The unit operates in a similar way for both a space heating and a domestic hot water call for heat. When the unit is powered up the controller enters a self diagnostic mode and displays 2 in the Service Display.

The sequence of operation is as follows:

1. The unit receives a call for heat from closing terminals X13.1 and X13.2 (24 volts section). The unit can also receive a call from domestic hot water heating from the internal flow sensor, or from a 10KΩ sensor or aquastat (X13.4 and X13.5 in 24V terminal).
2. The unit does a safety check and energizes the fan for a pre-purge (*Service Display = 3*).

**NOTE**

The correct 10KΩ temperature sensor (or aquastat) must be used to operate the indirect unit properly. If the incorrect sensor is used the domestic hot water may overheat causing serious injury or death.

3. Once the 5 second pre-purge is complete, the unit enters a 5 second trial for ignition (*Service Display = 4*). If the unit fails to ignite, the unit will complete a 5 second inter-purge then another 5 second trial for ignition. This is repeated 4 times before a hard lock out occurs. The Return button  must be pressed to reset the controller and allow for another attempt.
4. Once the burner is lit and flame has been proven the unit operates as it is programmed (*Service Display =*  for Space Heating or  for Domestic Hot Water).
5. If the unit reaches its target temperature and there is still a call for heat or hot water. Burner will turn off (integral pump runs unless call is on-demand DHW). (*Service Display = 1*).
6. After the call for heat is satisfied, the pump will operate for an adjustable amount of time (*Service Display = 0*).
7. If the burner is on to maintain the heat exchanger temperature for DHW (*Service Display = 7*).
8. If the burner is on for frost protection (*Service Display = 9*).





MAIN DISPLAY	LIT DISPLAY	DESCRIPTION
(blank)	-	The unit is OFF. Touch the space above the white button to turn on the unit.
(blank)	(blank)	No Call for Heat - Standby
XXX	0	Unit pump running – pump post purge
XXX	1	Unit's water temperature reached target – -pump is energized, call for heat still present
XXX	2	Self-test – When power is applied to the unit 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	 + 	Heating – Space Heating
XXX	 + 	Heating – DHW
XXX	7	Burner on for Comfort mode
XXX	9	Freeze Protection mode

Table 2: Operating Display and Service Display Codes.

# LIGHTING & SHUTTING DOWN THE UNIT

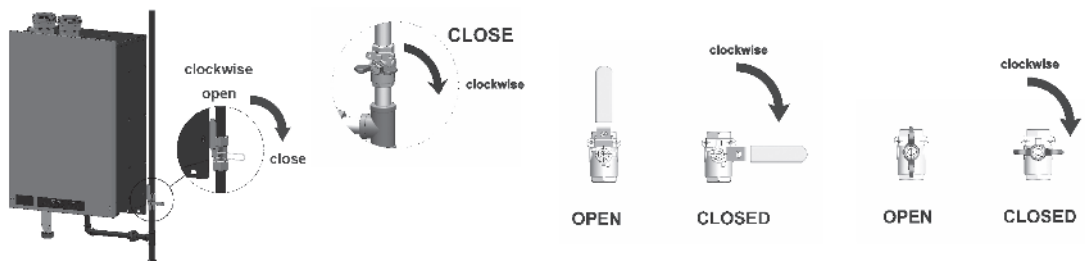
## FOR YOUR SAFETY READ BEFORE OPERATING

**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

## General Care

- Keep combustible materials and flammable liquids and vapours away from the unit.
- Keep vent terminals clear of obstructions (snow, dirt, etc.).

## Daily Maintenance

- Check all the daily maintenance items.
- 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 water temperature with the unit's controller. 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.

## WARNING

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

## Annual Maintenance

The unit 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 unit's interior and vacuum if required.
- Check for water, gas and condensate leaks in the unit and around the unit.
- Check the condensate trap and clean if required. Re-fill the trap and re-install.
- Check the water pressure.
- 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.

**⚠ 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, you must test more often. Also perform a “try lever test” 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 no 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 attempts 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. IBC highly recommends using a system pressurization unit such as an *Axiom Industries model MF200* 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, turn on the unit’s auto fill valve to recharge the lost fluid.

**Domestic Hot Water System**

Quality of the domestic cold water is very important to the longevity of the unit. 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 1.68 grains of hardness) or has a TDS of 500mg/L or higher. See *Table 3*.

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	8.5 pH	6.5 pH
Total Dissolved Solids	500 mg/L	
Total Hardness	200 mg/L 11.68 gr/gal	
Aluminum	0.05 to 0.2 mg/L	
Chlorides	250 mg/L	
Copper	1.0 mg/L	
Iron	0.3 mg/L	
Manganese	0.05 mg/L	
Zinc	5 mg/L	

*Table 3: Domestic Water Quality Guidelines*





## Revision History

R0 DECEMBER 2018	Initial release
R1 NOVEMBER 2019	Table on water quality modified.



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