

INSTOMAX™

instantaneous water heater

Capacity from 4.5kW to 12kW :
208/240 Volts (single phase)

INSTALLATION, USE AND CARE MANUAL



Your *INSTOMAX^{MC} water heater* has been carefully assembled and factory tested to provide years of trouble-free service. This manual contains instructions for the safe and proper installation, operation and maintenance of the boiler, in order to insure your full satisfaction.

Installer and user **MUST** read carefully and understand these instructions.

Any questions regarding the operation, maintenance, service or warranty of this appliance should be directed to the dealer or distributor you purchased it from.

When all installation steps have been completed, replace this installation manual in its original envelope, and keep in a safe place near the appliance, for further reference.

Section 1: Technical specifications

Table 1: Boiler / heater specification 240*V/1PH (2 leads2) :

Model	Input kW/Mbtu	Heating Elements	Current draw à 240v	Suggested conductor size at 240V**		Suggested fuse size**
				cu	al	
INSTOMAX 4.5	4,5 / 15,3	1 x 4,5kW	19	12	10	25
INSTOMAX 6	6 / 20,5	1 x 6kW	25	8	6	40
INSTOMAX 7.5	7,5 / 25,6	1x4.5+1x3kW	31	8	6	40
INSTOMAX 9	9 / 30,7	2x4,5kW	38	8	6	50
INSTOMAX 12	12 / 41	2x6kW	50	6	6	70

*Can also be connected to a 208V/1ph source. This would provide 75% of the nominal capacity at 240V

**Suggested. Local code, regulations and authority having jurisdiction may require different wiring and fuses.

Maximum operating pressure on the tank: 207kPa / 30psi

Tank temperature range : 10°C to 90°C (50°F to 190°F)

Table 2 : Dimensions:

Height : 1537mm (60-1/2")

With : 559mm (22")

Depth : 648mm (25-1/2")

Water connections :

- o Supply fresh water inlet : 3/4"NPT Fem.
- o Domestic hot water outlet : 3/4"NPT Fem.
- o Expansion tank outlet : 1/2"NPT M.



General Safety Precautions

Make sure to read and understand the entire Installation, Use and care Manual before attempting to install or operate this *INSTOMAX^{MC}* water heater. Pay particular attention to the following “**General Safety Precaution**”. Failure to follow these **WARNINGS** may cause death, bodily injuries or property damages. Should you have any problems understanding these instructions STOP and get help from a qualified technician or installer.

Section 2: INTRODUCTION



WARNING

The important safeguards and instructions appearing in this manual are not meant to cover all possible conditions and situations that may occur. It should be understood that common sense, caution and care are factors which cannot be built into every product. These factors must be supplied by the person(s) caring for and operating the unit.

2.1 GÉNÉRAL INFORMATION

The *INSTOMAXTM* is an instantaneous water heater. It is composed of a thermal mass reservoir filled either by water or other liquid and a copper heat exchanger immersed in the thermal fluid. Domestic fresh water passing through the heat exchanger is heated by the thermal fluid. Therefore the *INSTOMAXTM* has two separate hydraulic circuits: The reservoir (thermal mass) side and the domestic hot water side located inside the heat exchanger.

2.2 LOCAL INSTALLATION REGULATIONS

This water heater must be installed in accordance with these instructions and must conform to local codes, with the current edition of the National Plumbing Code and the National Electric Code. In any case where instructions in this manual differ from local or national codes, the local or national codes take precedence.

2.3 CORROSIVE ATMOSPHERE

The water heater should not be located near an air supply containing halogenated hydrocarbons or high humidity. Such localisation would void any water heater warranty.

2.4 SHIPMENT INSPECTION

Upon reception, inspect the water heater for possible shipping damage. The manufacturer's responsibility ceases upon delivery of the goods in good condition to the carrier. Consignee must file any claims for damage, shortage in shipments or non-delivery immediately against the carrier.

2.5 CHECK LIST

CHECK the boiler identification plate to insure that you have received the right model.

Make sure that the following items are included with the water heater:

- Tank 207 kPa (30 psi) pressure relief valve.
- Domestic hot water 860 kPa (125 psi) pressure relief valve.
- Tank and domestic hot water heat exchanger drain valve.
- Thermo manometer (heat and pressure indicator).
- Automatic air vent.
- 83 kPa (12 psi) tank pressure regulator.
- Check valve with vacuum breaker.
- Thermostatic domestic water temperature regulator.
- Electric heating elements and components.
- Aquastats temperature controller.
- Heating circuit expansion tank is supplied with the water heater, but not installed.



WARNING

The *INSTOMAXTM* water heater should not be located in an area where leakage from the tank or water connections will result in damage to the adjacent area or lower floors of the structure. When such areas cannot be avoided, a suitable drain pan or non-flammable catch pan, adequately drained, must be installed under the boiler. The pan must be connected to a drain.

Section 3: INSTALLATION



WARNING

The manufacturer's warranty does not cover any damage or defect caused by installation or attachment or use of any special attachment other than those authorized by the manufacturer into, onto, or in conjunction with the water heater. The use of such unauthorized devices may shorten the life of the water heater and may endanger life and property. The manufacturer disclaims any responsibility for such loss or injury resulting from the use of such unauthorized devices.

3.1 SAFETY MEASURES

All domestic and commercial installations will include a pressure relief valve limiting the operating pressure to 207 kPa (30 psi) for the INSTOMAX's reservoir.

This INSTOMAX™ electric water heater is designed for a maximum operating temperature of 88°C (190°F). Typically, the tank's thermal mass liquid is tap water. If allowed by local authorities and applicable code, a 30 to 50% water and propylene-glycol blend can be used for installation where supply fresh water pressure is above 240 kPa (35 psig). Specific equipment designed to avoid backflow to the main water supply network might be required by local installation codes.

3.2 EMPLACEMENT

The INSTOMAX™ water heater should be installed in a clean, dry location. Long hot water lines should be insulated to conserve water and energy. The water heater and water piping should be protected from exposure to freezing.

INSTOMAX™ water heaters must be installed vertically. Use the adjustable feet to level the unit.

The INSTOMAX™ water heater must be located or protected so as not to be subject to physical damage, for example, by moving vehicles, area flooding, etc..

All models can be installed on combustible floors and in alcoves. If the water heater is to be installed in a restaurant or other location where

the floor is frequently cleaned, it must be elevated to provide at least 150mm (6 inches) of clearance from the floor to comply with NSF International recommendations.

The room temperature must be maintained between 10C (50F) and 33°C (90°F).

3.3 CLEARANCES

Minimum clearances required for inspection and servicing are:

Tableau 4: Minimum clearances

Left side	0mm (0 in.)
Right side	0mm (0 in.)
Top	100mm (4 in.)
Front	400mm (16in)
Back	0mm (0 in.)

3.4 SYSTEM SETUP

Figures 1,2,3 illustrate components location and a typical basic piping diagram. Additional outboard mounted components may be required in order to allow special application or local codes and authorities having jurisdiction requirements.

3.5 PIPING (see figures 1&2 for identification and locations of components)

3.5.1 Tank pressure relief valve

The tank is protected with a pressure relief valve set at 207 KPa (30 psig). **NEVER** replace this pressure relief valve by a higher set pressure one. Connect the supplied relief valve outlet downward to insure that any expelled water will be directed toward a safe location. **NEVER plug the relief valve.**

Piping diameter must not be smaller than the pressure relief valve . The end of the piping must be visible and not exposed to freezing.

3.5.2 Operating pressure control: expansion tank:

The water heater is provided with a combination pressure regulator / check valve allowing the filling and pressurisation of the tank. The initial pressure is generally of 83 kPa (12 psig).

In operation, water expansion will increase the internal INSTOMAX™, pressure. Typical operating pressure should be between 83 and 190 kPa (12 and 28psig) according to the tank temperature.

Figure 1 : Top view, components identification and their location

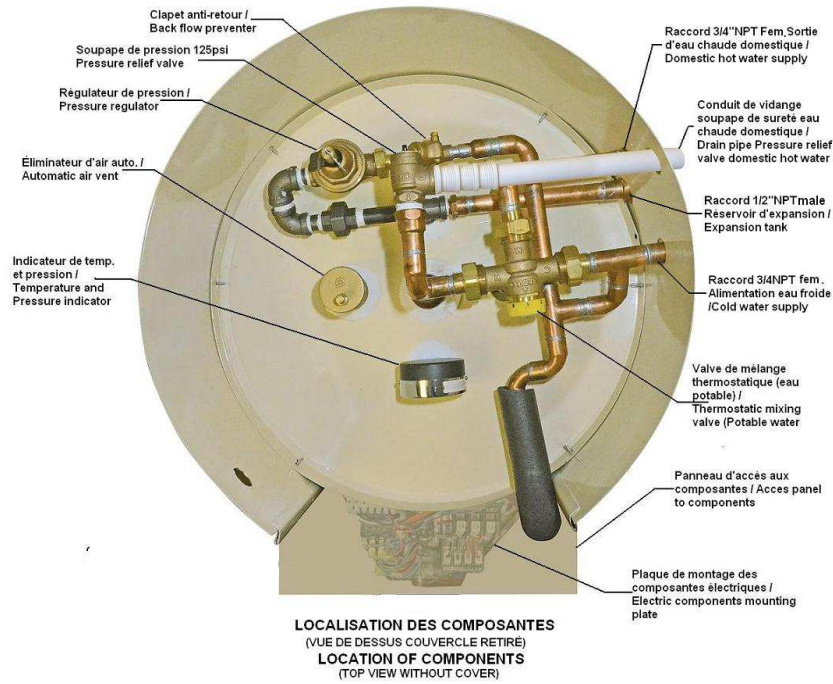


Figure 2 : Front view, components identification and their location :

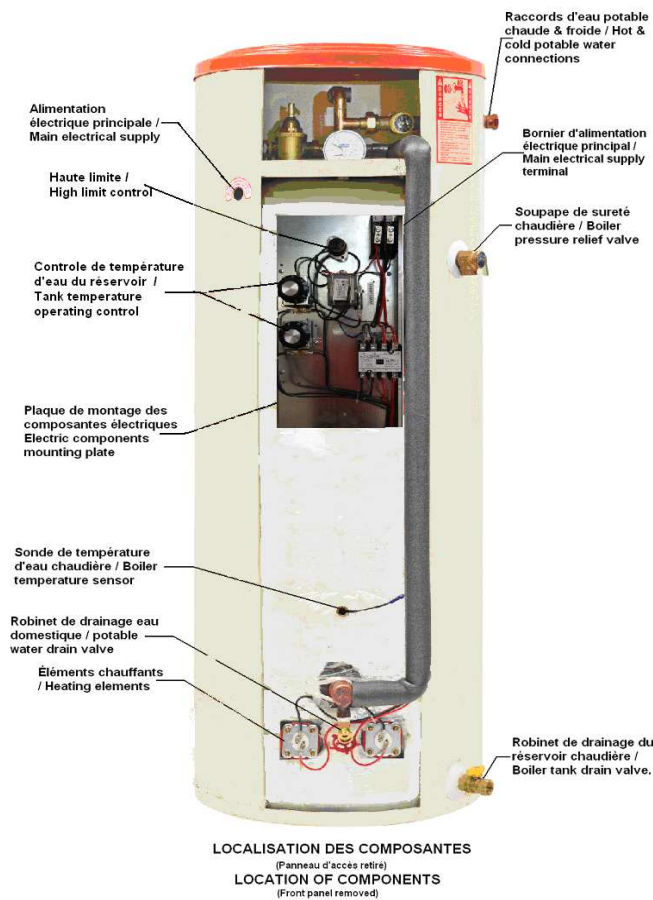
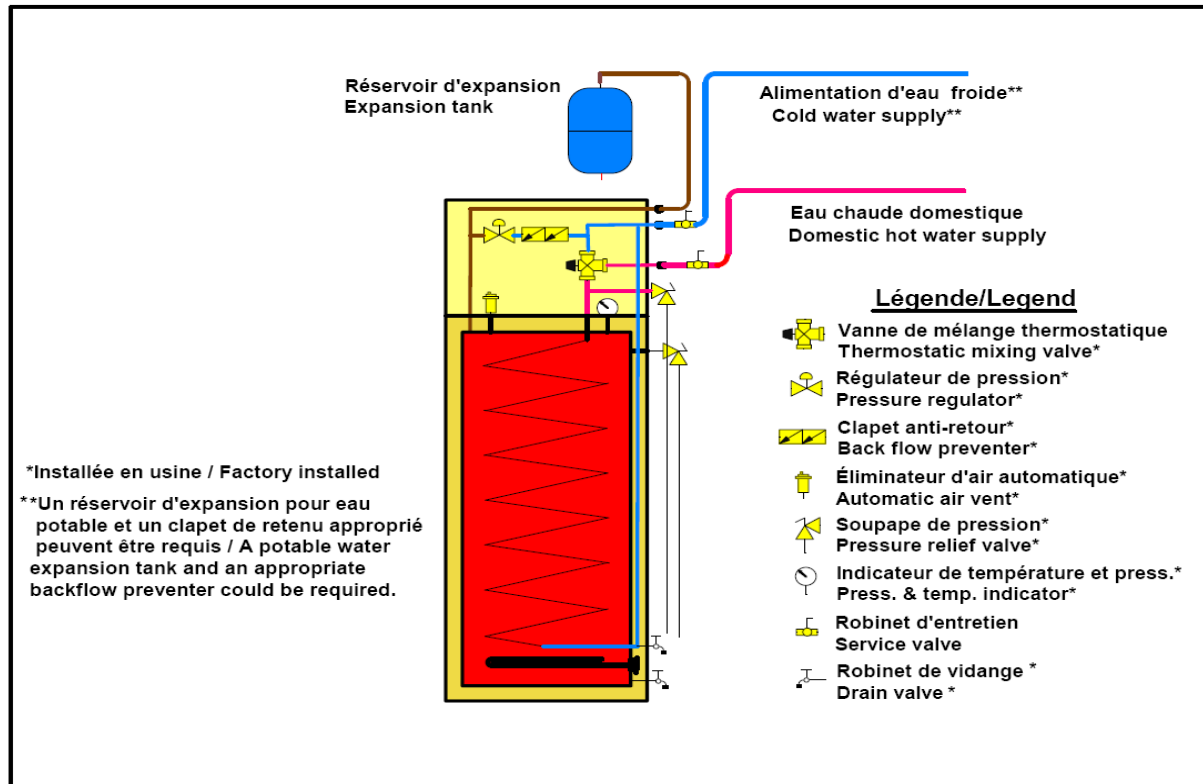


Figure 3 : Basic piping lay-out.



The expansion tank supplied with the water heater is to compensate for the water volume expansion cause by the tank water temperature rise.

Typically, the expansion tank is mounted on an adjoining wall or ceiling and directly connected to the tank 1/2NPT male connector specially provided for this purpose.

3.5.3 Automatic air Vent

An automatic air vent used to eliminate any entrapped air from the tank is provided and factory installed on the INSTOMAX™ DO NOT block or plug the air bleeder outlet. It must be rapidly changed if it keeps leaking.

3.5.4 Domestic hot water connections

Both the domestic fresh water inlet and hot water outlet are well indentified on the water heater right side (HOT WATER OUTLET and COLD WATER INLET). 3/4" NPT FEM fittings are use for connections.

Use only clean new pipe for domestic water connection. Local codes, regulations and authorities having jurisdiction may required

specific pipe material to be used for connections.

Insulate all pipes containing hot water, especially in unheated areas.

A thermometer should be installed to indicate the domestic hot water temperature at or near the INSTOMAX™ domestic hot water outlet.

3.5.5 Expansion tank on the cold water supply line

Determine if an equipment incorporating a flow check valve is present on the cold water supply line.

Such items may create a closed system and prevents the water, as it is being heated, from expanding back into the cold water supply line. Pressure can build up within the water heater, causing the pressure relief valve to operate during a heating cycle. This excessive operation can cause premature failure of the relief valve and possibly of the water heater itself.

Replacing the relief valve will not correct the problem. One method of preventing pressure build-up is to install an expansion tank on the cold water supply line between the INSTOMAX™ unit and flow check valve. Contact your installing contractor, water supplier, local plumbing inspector or plumbing supply house for assistance.

3.5.6 Domestic hot water pressure relief valve

The INSTOMAX™ is provided with a factory installed domestic hot water pressure relief valve factory set at 860 kPa (125 psig). Connect the supplied relief valve outlet downward to insure that any expelled water will be directed toward a safe location.

Relief valve outlet pipe diameter must not be of smaller diameter than the relief valve outlet. The end of the pipe must be visible and protected from freezing.

3.5.7 Thermostatically controlled mixing valve

The INSTOMAX™ is equipped with a factory installed thermostatically controlled mixing valve. This valve allows reducing, setting and regulating the domestic hot water temperature at a safe level. In order to adjust the mixing valve to the desire temperature, create a demand for domestic hot water, measuring the domestic hot water temperature will indicate the adjustment required.

3.6 ELECTRICAL

3.6.1 Main electrical power supply

The water heater electrical wiring and grounding connection must be in accordance with the National Electric Code or the local electric installation code applicable.

It is the electrical technician responsibility to insure that the electrical installation is in accordance with the applicable code and regulation.

Electrical power supply must be of a 240 volts or 208 volts single phase 60 Hz providing two conductors (L1-L2) with a ground wire. The installation must be protected by an appropriate capacity breaker.

Since the INSTOMAX™ is available in different power capacities; it is the electrical technician responsibility to check the amperage rating shown on the equipment identification sticker in order to select the appropriate wiring and breaker capacities. The wiring used can be either of aluminum or copper, but must be rated for a minimum of 90°C (190°F).

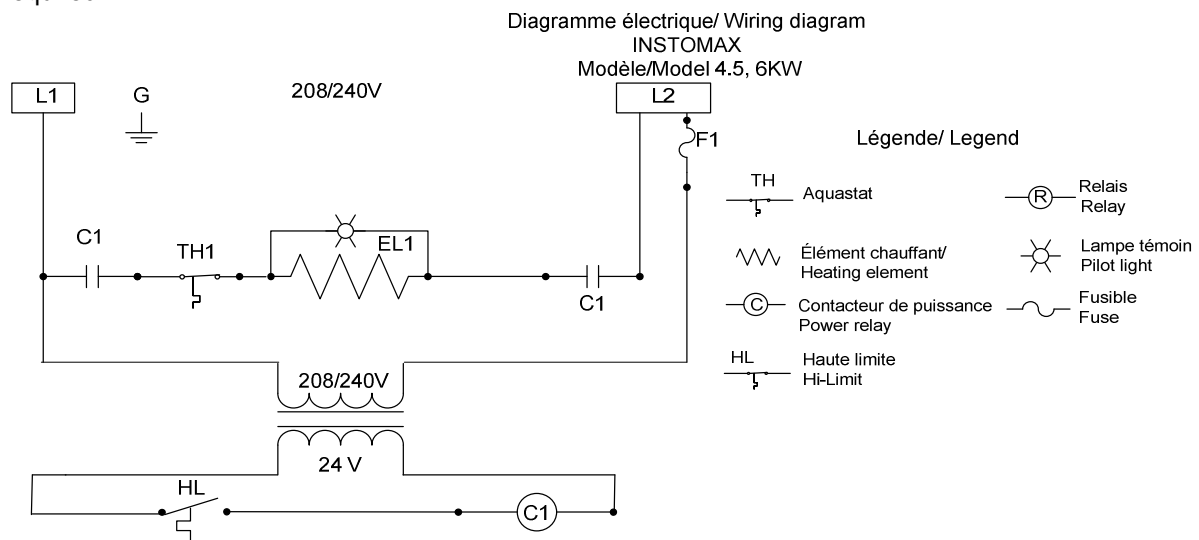


Diagramme électrique/ Wiring diagram
INSTOMAX
Modèle/Model 7.5, 9 KW

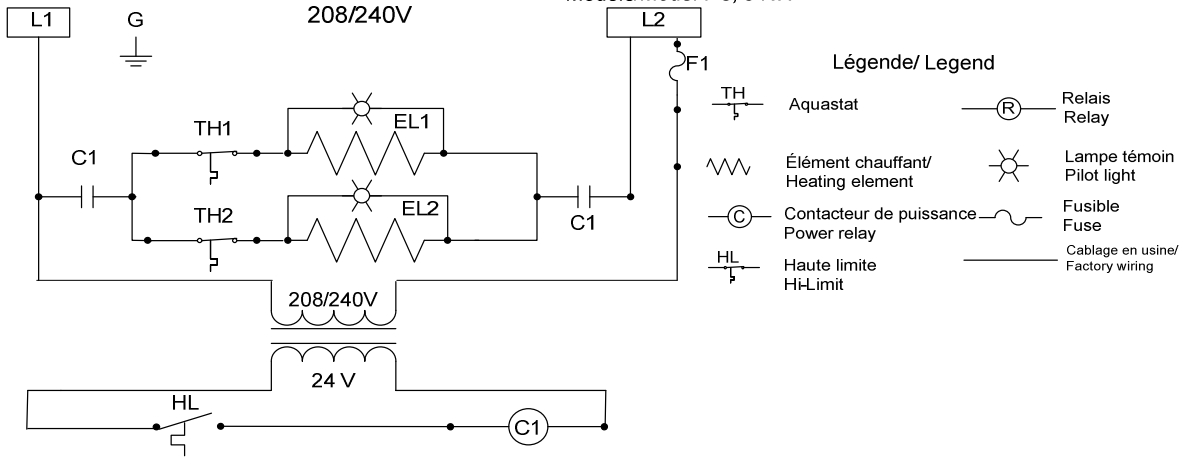
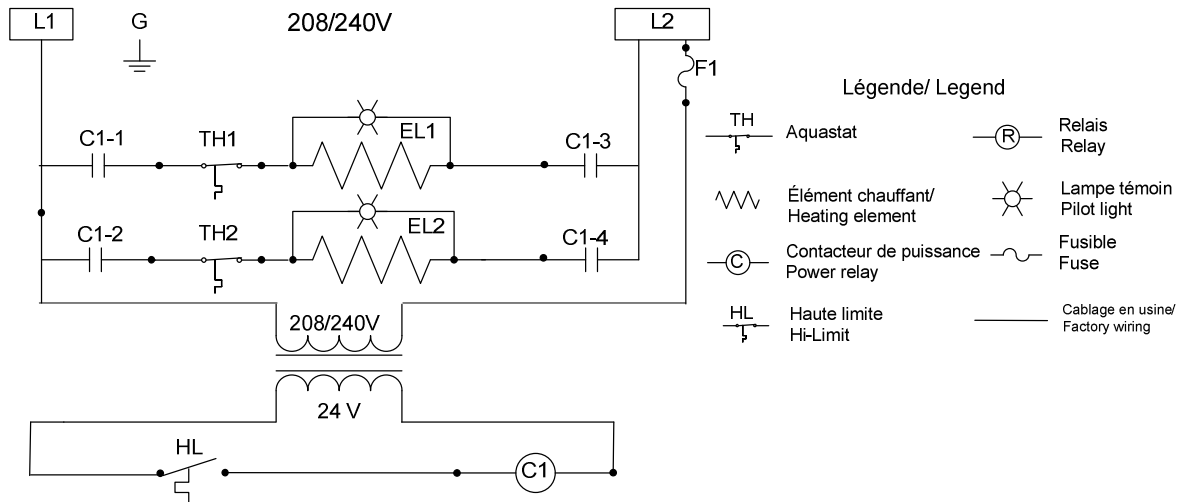


Diagramme électrique/ Wiring diagram
INSTOMAX 12kW



Section 4: OPERATION



SAFETY PRECAUTIONS

Be sure to read and understand the entire Manual before attempting to install or operate this *INSTOMAX™* unit. Pay particular attention to the following “General Safety Precautions”. Failure to follow these warnings could cause property damage, bodily injury or death. Should you have any problems understanding the instructions in this manual, STOP, and get help from a qualified installer or technician.

4.1 GENERA INFORMATION

To meet domestic hot water needs, the aquastat (s) temperature controller on this water is adjustable up to 88°C (190°F) and regulate the temperature of the liquid inside the tank . However, domestic hot water temperature is not controlled by these aquastat(s) but by the thermostatic mixing valve located in the upper section of the unit (see fig.1) Domestic hot water over 52°C (125°F) can cause severe burns instantly or death from scalds. 50°C (120°F) is the recommended starting point for setting the control to supply general-purpose hot water.

Safety and energy conservation are factors to be considered when setting the water temperature of the tank and domestic hot water temperature.. The most energy efficient operation will result when the temperature setting is the lowest that satisfies all the requirements

The following chart details the relationship of water temperature and time with regard to scald injury and may be used as a guide in determining the safest water temperature for your applications

TIME TO SCALDING VS TEMPERATURE RELATIONSHIP	
Temperature	Time to scalding
50°C (120°F)	Over 5 minutes
52°C (125°F)	1-1/2 to 2 minutes
54°C (130°F)	About 30 seconds
57°C (135°F)	About 10 seconds
60°C (140°F)	Less than 5 seconds
63°C (145°F)	Less than 3 seconds
66°C (150°F)	About 1-1/2 second
68°C (155°F)	About 1 second

With kind permission from the Shriners Burn Institute

The thermostatic controlled mixing valve should be adjusted by opening a domestic hot water

tap, measuring the water temperature with a thermometer and by adjusting the thermostatically control mixing valve accordingly.



DANGER

There is a hot water scald potential if the thermostatically controlled mixing valve for reducing point-of-use water temperature is damaged, not properly working removed or by-passed.



WARNING

Do not turn ON the water heater unless it is filled with water. Do not turn ON the water heater if cold water supply shut-off valve is closed.

4.2 FILLING THE WATER HEATER TANK

Make sure the tank drain valves is closed. Open the cold water valve supplying the water heater. Bleed the air from the water heater tank by opening the pressure relief valve located on top the water heater tank while you are filling the tank.

One the reservoir is filled, close the pressure relief valve and allows the water heater tank internal pressure to rise. Tank pressure should stabilise at a value of approximately 83 kPa (12psi).

4.3 FILLING THE DOMESTIC WATER HEATER HEAT EXCHAGER

There is a heat exchanger located in the water heater tank that separate the thermal mass fluid (water) and the domestic hot water. This heat

exchanger containing potable water must be filled.

Make sure that the heat exchanger drain cock is turn off.

Open the nearest domestic hot water tap as well as any control valve on the water heater outlet (the copper tube at top the water heater).

The cold water supply to the unit shall be Open.

Close the domestic hot water tap as soon as water flows out of it. Fix any leaks

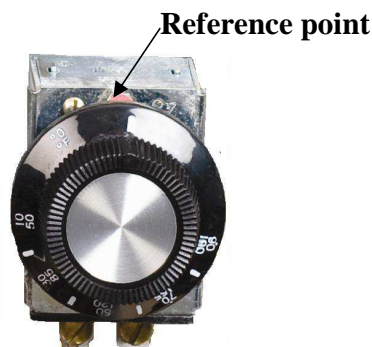
Open every other hot water domestic hot water taps in succession, in order to evacuate air from the distribution system.

4.4 TANK THERMAL MASS FLUID (WATER) AQUASTAT TEMPERATURE SETTING

Consider safety and energy saving while setting the water heater tank temperature aquastat(s). It is more energy efficient to set the tank temperature as low as possible. But lowering the temperature results in less storage of energy to provide domestic hot water heater.

A minimum of 70°C (160°F) tank temperature is recommended as a starting point to insure a good supply of domestic hot water.

To adjust the temperature set point of the aquastat turn the knob until the required value of the desired temperature is aligned with the reference point.



In usage, it may be found that the set tank temperature needs to be increase in order to supply all the domestic water needs. The tank set temperature may be raised up to a maximum of 88°C (190°).

If the unit has two aquastats, set one of them approximately 2C (5F) lower then the other one.

4.5 START UP PROCEDURE

1. Fill tank and heat exchanger as described in sections 4.2 and 4.3.
2. Adjust temperature levels as described in section 4.4
3. Turn ON the water heater electric breaker.
4. The water heater main contactor should close with an audible snap sound, and all elements should turn on, along with their indicator light.
5. Tank temperature should gradually increase. Time required for the INSTOMAX™ to reach the tank water temperature set point vary from 1 to 4 hours according to the water heater power input.
6. Once the temperature set point is reach, heating elements and their indicator light will turn off.

4.6 THERMOSTATICALLY CONTROLLED MIXING VALVE SETTING

A thermostatically controlled mixing valve automatically regulates the mix of very hot and cold water as required to provide safe domestic hot water under variable conditions.

To adjust the mixing valve setting, carefully open a hot water tap. Protect yourself against the scalding. Measure the hot water temperature with a thermometer. Mixing valve adjustment is achieved by turning the mixing valve knob clockwise to reduce the domestic water temperature, contra-clockwise to raise the domestic water temperature,

Unless local regulation requires otherwise, a 50°C (120°F) is considered the best temperature to reduce heat loss through the plumbing and prevent scalding for young kid and senior citizen. Generally residential dishwasher are provided with their own water heating element and don't required hotter water.

Raising the domestic hot water outlet temperature will not provide more domestic hot water. In order to provide more domestic hot water, the amount of energy in the water heater tank need to be increase, this is achieved by increasing the water tank temperature (maximum 88°C /190°).

Section 5: MAINTENANCE

5.1 INTRODUCTION

Regular water heater maintenance will ensure trouble-free service for many years. It is recommended that you set up and follow a maintenance program. All component may fail eventually. The use of incorrect replacement parts or disregarding safety procedures and warnings during repairs may reduce the boiler safety level and shorten its useful life.

The owner should set up the following maintenance program.

5.2 AT ALL TIMES

The water heater should be immediately inspected in case of:

- ❑ Overheating or burn plastic odours are detected.
- ❑ Water leak from the water heater or the domestic hot water system is found.

If the hot water is leaking from the pressure relief valve, it may indicate a problem with some components of the systems. Immediate attention and repair by a qualified technician are required. NEVER CLOSE OR PLUG A PRESSURE RELIEF VALVE.

5.3 YEARLY INSPECTION

DANGER

Make sure that the power supply to the water heater has been turn off at the circuit breaker before attempting any work on the water heater.

- ❑ Visual inspection of the water heater electrical cabinet. Checks for leaks at the heating elements, sign of overheating of electrical components and wiring. Check for t proper operation of the unit temperature control.
- ❑ Check the thermostatic mixing valve proper operation by measuring domestic water temperature at a domestic hot water tap with a thermometer.
- ❑ Check for proper operation of the automatic air vent, located on top of the water heater, by removing its cap and by pressing on the knob, releasing air until water began to be expelled.

- ❑ **Do not open the tank drain tap** unless repair to the water heater is required. Opening the drain tap will eventually force fresh water into the tank. This water will introduce oxygen diluted in the fresh water. This oxygen will cause corrosion of the tank internal surfaces, damaged the reservoir and void the warranty.

- ❑ If repair is required, it should be accomplished as soon as possible, by a qualified technician and using genuine replacement parts.



WARNING

The manufacturer's warranty DOES NOT cover problems caused by improper installation or maintenance. If the safety valve opens periodically, it may be due to the expansion tank. Immediately call a qualified technician to appraise and repair the problem.



INSTOMAX™ LIMITED WARRANTY

Warranty Coverage for Residential Installation.

Thermo 2000 Inc. hereby warrants to the original residential purchaser that the INSTOMAX tank and exchanger installed in a residential setting shall be free of leaks during normal use and service for a period of fifteen (15) years from the date of purchase as long as the original residential purchaser owns the home in which the unit was originally installed. Residential setting shall mean usage in a single-family dwelling in which the consumer resides on a permanent basis. Also, residential setting shall mean use in multiple family dwellings in which one (1) INSTOMAX tank and exchanger is to be used in only one (1) dwelling. In the event that a leak should develop and occur within this limited warranty period due to defective material or workmanship, such leak having been verified by an authorized company representative, Thermo 2000 inc. will repair or replace at our sole option the failed unit with the nearest comparable model at the time of replacement.

The original residential purchaser is responsible for all costs associated with the removal and reinstallation, shipping and handling to and from manufacturing plant. The replacement unit will be warranted for the remaining portion of the original Warranty.

Warranty Coverage for Commercial Installation.

Thermo 2000 Inc. hereby warrants to the original residential purchaser that the INSTOMAX tank and exchanger (coil assembly) installed in a commercial setting shall be free of leaks during normal use and service for a period of ten (10) years from the date of purchase. Commercial setting shall mean use in other than residential setting stated above in the residential setting definition. In the event that a leak should develop and occur within this limited warranty period due to defective material or workmanship, such leak having been verified by an authorized company representative, Thermo 2000 inc. will repair or replace at our sole option the failed unit with the nearest comparable model at the time of replacement.

The original purchaser is responsible for all costs associated with the removal and reinstallation, shipping and handling to and from Manufacturer. The replacement unit will be warranted for the remaining portion of the original Warranty.

Limited two years warranty on all COMBOMAX components & parts

All other INSTOMAX components & parts are warranted for a period of two (2) years against defects due to defective material or workmanship. The original purchaser is responsible for all costs associated with the removal and reinstallation, shipping and handling to and from Manufacturer. The components, repaired or replaced are warranted for the residual period of the initial warranty on the unit.

Exclusions.

This warranty is void and shall not apply if:

- A) Defects or malfunctions resulting from installation, repair, maintenance and/or usage that are not done in conformity with the manufacturer's installation manual; or
- B) Defects or malfunctions resulting from installation, maintenance, or repair that are not done in accordance with regulations in force; or
- C) Defects or malfunctions resulting from improper installation, maintenance or repair done carelessly or resulting from

- consumer damage (improper maintenance, misuse, abuse, accident or alteration); or
- D) Installation in which a relief valve (pressure) is not installed or if it is not functioning properly, or when it is not connected to a drain to avoid damage to the property; or
- E) Installation in which liquid circulating in the tank does not remain in closed circuit or installation in which piping is leaking; or
- F) A polybutylene pipe or radiant panel installation without an oxygen absorption barrier is used; or
- G) Installation where the acidity of water is not within the normal Environmental Protection Agency (EPA) (between pH 6.5 – 8.5) guidelines or the domestic water contains abnormal levels of particulate matter or water exceeding 10.5 gpg; or
- H) Your home contains any type of water softener system and the unit is not installed and maintained in accordance with the manufacturer specifications; or
- I) When installed with a low pressure steam boiler, if sludge is allowed to accumulate in the INSTOMAX tank and boiler water acidity is lower than pH 6.5 or higher than pH 8.5; or
- J) The INSTOMAX unit is being subject to non authorized modifications; or
- K) Defects or malfunction resulting of storing or handling done elsewhere than Thermo 2000's manufacturing plant; or
- L) Units on which the serial number is removed or obliterated.
- A) Numéro de série effacé sur la plaque signalétique.

Limitations.

Thermo 2000 shall not be responsible for any damage, loss, and inconvenience of any nature whatsoever, directly or indirectly, relating to the breakdown or malfunction of the unit. This warranty limits its beneficiary's rights. Nevertheless, the beneficiary may have other rights, which vary from state to state.

This warranty replaces any other expressed or implicit warranty and constitutes the sole obligation of Thermo 2000 towards the consumer. The warranty does not cover cost of removal, reinstallation or shipping to repair or replace the unit, nor administration fees incurred by the original consumer purchaser.

Thermo 2000 reserves its rights to make changes in the details of design, construction, or material, as shall in its judgment constitute an improvement of former practices.

This warranty is valid only for installations made within the territorial limits of Canada and the United States.

Warranty service procedure

Only authorized INSTOMAX dealers are permitted to perform warranty obligations. The owner or its contractor must provide Thermo 2000's head office or authorized depot with defect unit together with the following information: INSTOMAX model and serial number, copy of the original sales receipt and owner's identification certificate.

THERMO 2000 INC.

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