Tank Manual

BUFFER TANKS AND DOMESTIC HOT WATER TANKS

For use with Chiltrix CX-Series air to water heat pumps

Version 3.5

COVERED HEAT PUMPS

CX35 · CX40 · CX40X · CX45 · CX45X
CX50-2 · CX65 · CX65X · CX75 · CX75X

COVERED TANKS

VCT19 · VCT37c · VCT60
DHW40 · DHW80 · DHW105

Tank compatibility

The DHW40 may be used only with the CX35, CX40 and CX45, including the X variants. Larger heat pumps will overpower a tank and coil of this size.

Heating elements

No heating element may ever be installed in any Chiltrix tank except as specified in this manual, and never without a thermostat. Never set the thermostat higher than 140 °F. A temperature-pressure relief valve must also be installed.

This manual covers the Chiltrix all-stainless steel indirect and buffer tank models listed above, and serves as a general guideline for using other brands of tank with the Chiltrix air to water heat pump. Incorrect installation, operation, or service can damage the water tank, your property, other equipment, and present risks including fire, scalding, electric shock, explosion, injury, or death.

Caution

Read the important information that applies to all Chiltrix tanks before proceeding to model specific information. See pages 2 to 6.

Note

Don’t throw away the plastic grommets. They are supplied in a small plastic bag inside the packaging and are needed for the temperature sensors.

Important

Check all tank ports for a watertight plug, including under any element cover.

Note

Chiltrix does not recommend use with recirculating hot water systems.

THERMOSTATS AND ELEMENTS

Use 5500 W model Camco 02932 with thermostat Thermo-disk model 59T. Note that both of these are available under various brand names, so read carefully the actual maker and model number, which will be on the package. For the 3000 W option use Backer model SGI.

Contents

Ports, Plugs and Grommets

Applies to all Chiltrix tanks

Plugs

Some tank ports may be un-used in your application and must be plugged. Any pre-plugged ports must be inspected for tightness. Note that any plugs provided with the tank are finger-tight only and may not be leak-proof. Inspect and verify that all ports, including any ports under the element cover(s), are tight, properly seated, and leak-proof.

Grommets

The plastic wire grommets for the temperature sensors are in a plastic bag within the packaging. Don't accidentally throw them away.

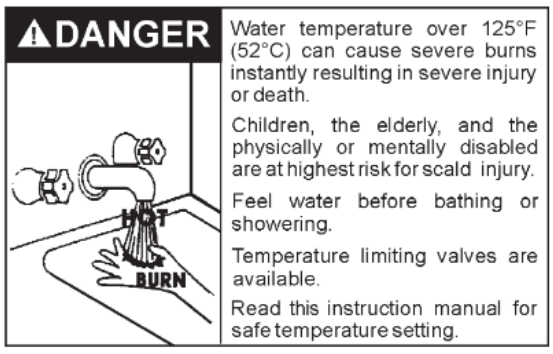
Note

If you are installing any electric resistance elements and/or thermostats, refer to the instructions provided by the manufacturer of such items.

INSTALL VACUUM RELIEF IN COLD WATER INLET LINE AS REQUIRED BY LOCAL CODES.

INSTALL THERMAL EXPANSION TANK OR DEVICE IF WATER HEATER IS INSTALLED IN A CLOSED WATER SYSTEM.

INSTALL SUITABLE METAL DRAIN PANS UNDER HEATERS TO PREVENT DAMAGE DUE TO LEAKAGE. REFER TO WATER HEATER LOCATION, SEE "LOCATING THE SOLAR WATER HEATER" SECTION.



Filling, Local Codes and Relief Valve

Filling

Never operate any electrical heating element without being certain the tank is completely filled with water. If any air is left in the top of the tank, a heating element can burn out. Further, any air in the system when used as a closed-loop buffer tank may cause corrosion problems to occur in the tank or elsewhere in the system.

Local codes

The installation of all tanks must be in accordance with these instructions and all applicable local codes and electric utility requirements. In the absence of local codes, install in accordance with the latest edition of the National Electrical Code (NFPA-70).

Temperature-pressure relief valve

For protection against excessive pressures and temperatures, a temperature-pressure relief valve MUST BE INSTALLED in any tank that contains a heating source. If a tank has a heating element or coil, this section applies to you.

Install temperature-pressure protective equipment required by local codes, but not less than a combination temperature-pressure relief valve certified by a nationally recognized testing laboratory that maintains periodic inspection of production of listed equipment or materials, as meeting the requirements for Relief Valves for Hot Water Supply Systems, the latest edition of ANSI Z21.22. Position the valve downward and provide an all-copper discharge pipe that must terminate a maximum of six inches above a floor drain or external to the building. In cold climates, it is recommended that the discharge pipe be terminated at an adequate drain inside the building. Be certain that no contact is made with any live electrical part.

The discharge opening must not be blocked or reduced in size under any circumstances. Excessive length, over 15 feet, or use of more than two elbows, can cause restriction and reduce the discharge capacity of the valve. No valve or other obstruction is to be placed between the temperature-pressure relief valve and the tank. Do not connect tubing directly to a discharge drain unless a 6” air gap is provided.

To prevent bodily injury, hazard to life or damage to property, the temperature-pressure relief valve must be allowed to discharge very hot water or steam should circumstances demand. If the discharge pipe is not directed to a drain or other suitable means, any discharge may cause injury or property damage.

Relief Valve Discharge Pipe

THE DISCHARGE PIPE

- Shall not be smaller in size than the outlet pipe size of the temperature-pressure relief valve, or have any reducing couplings or other restrictions.
- Shall not be plugged or blocked.
- Shall be of material listed for steam distribution.
- Shall be installed so as to allow complete drainage of both the temperature-pressure relief valve and the discharge pipe.
- Must terminate six inches above a floor drain or external to the building. In cold climates, it is recommended that the discharge pipe be terminated at an adequate drain inside the building.
- Must not have any valve between the relief valve and tank.

When installing the temperature-pressure relief valve, use two or three turns of Teflon® tape or other suitable thread sealer around the threaded end of the valve.

Annual check

The temperature-pressure relief valve should be manually opened once a year. Caution should be taken to ensure that no one is in front of or around the outlet of the temperature-pressure relief valve discharge line, and that the water manually discharged will not cause any bodily injury or property damage, because the water may be extremely hot.

Anode Rod

All Chiltrix DHW tanks contain a magnesium anode rod, which may slowly deplete due to electrolysis, prolonging the life of the water heater by protecting the tank from corrosion. In a closed oxygen-free hydronic system, such as when the tank is used as a buffer tank, the anode should not deplete. In a water heating application, adverse water quality, hotter water temperatures, high hot water usage, and water softening methods can increase the rate of anode rod depletion.

Once the anode rod is depleted, the tank may begin to corrode, eventually developing a leak. Even a stainless steel tank is subject to corrosion due to water quality issues and must have an anode in good condition. Certain water conditions will cause a reaction between the anode rod and the water. The most common complaint associated with the anode rod in a potable water heating tank is a “rotten egg smell” produced from the presence of hydrogen sulfide gas dissolved in the water.

Important

Do not remove this rod permanently as it may void any warranties. A special anode rod may be available if water odor or discoloration occurs. This rod may reduce but not eliminate water odor problems. The water supply system may require special filtration equipment from a water conditioning company to successfully eliminate all water odor problems.

Artificially softened water is exceedingly corrosive because the process substitutes sodium ions for magnesium and calcium ions. The use of a water softener may decrease the life of a water heater tank.

Inspection and replacement

- Inspect the anode rod after a maximum of three years, and annually thereafter until its condition dictates replacement.
- Artificially softened water requires the anode rod to be inspected annually.
- The following is a sign of a depleted anode rod: the majority of the rod’s diameter is less than 3/8”. If the rod shows signs of depletion it should be replaced.
- Whether re-installing or replacing the anode rod, check for any leaks and immediately correct if found.

Chiltrix anode rods use standard threads and can be replaced ONLY AFTER DISCONNECTING POWER TO ALL ELEMENTS OR THERMOSTATS AND PROPERLY DRAINING THE TANK.

Pressure, Temperature and Legionella

PRESSURE

Do not exceed 90 PSI service water pressure.

DRAIN PAN

Always install a proper drain pan with a drain under any tank.

Temperature

Recommended operating temperature setting is 120 °F. Tanks used for potable water may, and should be, periodically set to a higher temperature for a period of time to prevent legionella in a potable water tank.

Never exceed 140 °F

No heating element may ever be installed in any Chiltrix tank except as specified in this manual, and never without a thermostat. Never set the thermostat higher than 140 °F. A temperature-pressure relief valve must also be installed.

Legionella

Consult your local codes or health department for definitive information on temperatures and holding times. In general, some industry guidelines indicate that you must raise the water temperature of any potable water heating tank to above 140 °F and hold it at that temperature for at least four hours on a weekly basis, or heat to 160 °F and hold for at least 30 minutes, to avoid legionella growth in the tank. Higher temperatures and longer holding times increase the effectiveness of preventing legionella.

YOU MUST CONSULT YOUR LOCAL CODE AND/OR HEALTH DEPARTMENT FOR SPECIFIC ANTI-LEGIONELLA REQUIREMENTS. See the manual section on automated anti-legionella procedure available under Option #2.

Anti-scald valves

Install anti-scald valves on the outlet to any potable water heating tank per local code. Skin damage in adult humans occurs in about 5-10 minutes at 120 °F, 15-30 seconds at 130 °F, and 3-5 seconds at 140 °F. Above 140 °F the danger is much higher. Children and others with sensitive skin will be scalded quicker and at lower temperatures. During or after an anti-legionella procedure, tank temperature may be in the 140 °F to 170 °F range and can be very dangerous.

ALWAYS INSTALL AN ANTI-SCALD VALVE ON ANY DHW TANK.

Understanding EnergyGuide Labels

For domestic hot water applications

Note 1

Due to CEC regulations, Chiltrix does not offer EnergyGuide labels, or the associated model numbers, in California. You can however still order and install the same product in California. For example the CX35DHW80NR is the result of pairing a CX35 heat pump with a standard DHW80 tank and connecting it in the normal way.

Note 2

Due to the ambient test conditions required by the U.S. Department of Energy for the certification of water heaters, any backup heating element installed in a Chiltrix tank would never be activated, and therefore the testing is done without any powered heating elements. You may still add heating elements for cold weather, or to meet occasional extreme demand, or to ensure support for our optional anti-legionella feature. If using a backup heating element, make sure to follow the guidance in the heating element section of this manual.

Please note the parameter differences and make the appropriate parameter changes when using a reverse-indirect piping arrangement. See the flow chart at the end of this manual.

MODEL NOMENCLATURE

ENERGYGUIDE MODELS

Model Number	System Configuration
CX35DHW80NR	CX35 with DHW80 Tank, No Backup Element / 71 gal. Tank
CX50DHW80NR	CX50 with DHW80 Tank, No Backup Element / 71 gal. Tank
CX35DHW105NR	CX35 with DHW105 Tank, No Backup Element / 99 gal. Tank
CX50DHW105NR	CX50 with DHW105 Tank, No Backup Element / 99 gal. Tank
CX35DHW105RIDNR	CX35 with DHW105 Tank w/ Reverse Indirect, No Backup Element / 99 gal. Tank
CX50DHW105RIDNR	CX50 with DHW105 Tank w/ Reverse Indirect, No Backup Element / 99 gal. Tank
Hitzewelle CX35DHW105NR	CX35 with DHW105 Tank, No Backup Element / 99 gal. Tank
Hitzewelle CX50DHW105NR	CX50 with DHW105 Tank, No Backup Element / 99 gal. Tank
Hitzewelle CX35DHW105RIDNR	CX35 with DHW105 Tank w/ Reverse Indirect, No Backup Element / 99 gal. Tank
Hitzewelle CX50DHW105RIDNR	CX50 with DHW105 Tank w/ Reverse Indirect, No Backup Element / 99 gal. Tank

Further models will be added as testing completes.

Important Terminology

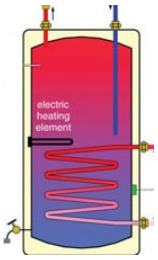
Indirect DHW tank

An indirect tank, also known as a heat exchanger tank or a solar tank, is a tank with a coil inside. Heated fluid from an external source such as a heat pump, boiler, or solar thermal system is circulated through the coil. The coil gets hot and heats the surrounding water in the tank.

> This type of tank should have at least one backup heating element and thermostat, a magnesium anode, a TPV (temperature/pressure valve), and an anti-scald valve installed on the hot water outlet. The backup element may be fully controlled by the element thermostat. Power to the element and thermostat may or may not be controlled by Chiltrix depending on system design. An anti-legionella function, automated or manual, must be employed — see the section on legionella.

Buffer tank

Always required with radiant heating or cooling, a buffer tank is defined as a tank that has at least one set of supply/return ports on the supply side and at least one set of supply/return ports on the load side. A buffer tank serves to hydraulically separate the supply side pump(s) from the load side pump(s) and provides thermal buffering.



> A buffer tank should never be used for backup heat. Electric heating elements may be installed in a buffer tank only for emergency heat. No element without a thermostat, never set higher than 140 °F, TPV required. See “Backup heat and emergency heat are not the same thing” later in this manual.

Volume expander (extra volume) tank

A volume-expander tank is used inline on the supply side with Chiltrix when the total fluid volume is less than 15-20 gallons, to stabilize the system and reduce cycling and hunting.

> While not recommended, backup heat can be installed inside an inline volume expander tank. In this case a tank thermostat and TPV must be installed. No element without a thermostat. Never set higher than 140 °F. TPV required. Contact Chiltrix technical support for instructions. The recommended backup solution is the optional V18 dynamic variable backup heater.

Expansion tank

This type of tank is designed to accept water volume expansion that occurs when water is heated. A 2-litre expansion tank is included inside the Chiltrix heat pump and can handle a system of up to 25 gallons total volume. Systems with larger volumes will need to have an additional expansion tank provided by the installer. Not supplied by Chiltrix.

Backup heat and emergency heat have distinct meanings at Chiltrix. See “Backup Heat and Emergency Heat Are Not the Same Thing” later in this manual.

Do I Need a Buffer Tank?

Hydraulic separation, thermal buffering and cycling mitigation

Small air-to-water heat pump installations, typically under 5 to 10 tons, face challenges from variable loads, low system thermal mass, and mismatched flow requirements between the heat pump and the distribution circuits. A properly sized and piped buffer tank addresses all three.

What happens without one

- In low-load conditions the heat pump's minimum output exceeds instantaneous demand, causing short cycling and rapid temperature swings in the distribution loop.
- Frequent on/off cycling lowers overall efficiency. Stored energy extends both on- and off-cycle durations, reducing cycles per hour.
- Hydraulic mismatches occur because the heat pump requires a specific controlled flow rate for optimal performance, while fan coils or radiant zones may need a different one.

Consequences may include a reduced COP compared with what could otherwise be achieved, increased compressor wear, uneven space temperatures, and reliability issues during defrost in heating or dehumidification in cooling.

Hydraulic separation

The tank serves as a low-head-loss common piping point. Flow velocities inside are very low, under 0.2 to 0.5 ft/s, because of its large cross-sectional area, producing near-zero pressure drop between the supply and return connections. The heat pump maintains its required flow and head regardless of how many zones are active, and distribution pumps can ramp freely without affecting primary flow. Without separation, simultaneous circulator operation can cause reverse flow, dead-heading, unpredictable flow rates and erratic temperatures.

Thermal buffering

The tank acts as an energy buffer, storing hot water in heating and chilled water in cooling. It absorbs excess output during low-load periods and releases it when demand rises or when the heat pump is off, smoothing temperature fluctuations. By increasing system volume it extends run times, and longer intervals between cycles dramatically improve the net average efficiency of the heat pump.

Buffer Tank Sizing

Sizing formula

$V = t \times (Q_{hp} - q_{load}) \div (500 \times \Delta T)$

V is minimum tank volume in gallons, t is the desired on-cycle duration in minutes (typically 5 to 10), Q_{hp} is heat pump output in BTU/h, q_{load} is the simultaneous load extraction rate in BTU/h (often near zero when sizing), 500 is a constant, and ΔT is the allowable tank temperature change in °F (often 10 °F).

Rule of thumb

5 to 10 gallons per ton of heat pump capacity, adjusted for system specifics, with a minimum of 15 gallons of total system volume. Larger tanks allow a narrower ΔT or longer run times.

Systems that “don’t need” one

Modern modulating inverter-driven heat pumps may reduce, but not eliminate, the need for a buffer tank in perfectly matched single-zone systems. Even a system designed to run without one will operate better with a properly sized buffer tank fitted.

This is a summary. The full technical paper, The Role of Buffer Tanks in Small Air-to-Water Heat Pump Hydronic Heating and Cooling Systems, is at https://www.chiltrix.com/miscellaneous/do-i-need-a-buffer-tank.pdf

VCT19

19 gallon multi-purpose buffer tank

The VCT19 is an all-stainless multi-purpose tank that can be used to add additional fluid volume to a hydronic system, or to provide a buffered hydraulic separation between a primary loop (supply side) and a secondary loop (load side) such as a radiant system. Inner and outer tank is SUS 304 stainless steel with 2" poly insulation.

The VCT19 has 4x 1" NPT ports: 2x ports (supply/return) on the supply side, and 2x ports (supply/return) on the load side. Other ports: 1x ¾" TPV, 1x ¾" drain, 1x 1" NPSM (element). There is a thermostat housing, with wire channel and grommet.

The VCT19 is generally used as a buffer tank for connecting a single CX unit to a secondary loop such as for a radiant heating or cooling system. It may also be used for emergency heat, for use in the event that the normal heat source is unavailable. Emergency heat is defined as use during such time as when the Chiltrix unit is totally unavailable, such as if damaged by a falling tree.

It should not be used for backup heat, which is defined as additional heat added to the system to make up for any shortfall of BTUs when the heating load exceeds the compressor capacity. Backup heat in the Chiltrix design should be provided by the V18 dynamically variable backup heater.

If used for emergency heat

If a VCT19 is used inline for emergency heat, the element must be controlled by a standard thermostat, never set higher than 140 °F, and powered by a circuit with a contactor controlled by the CX unit. A TPV must be installed. Contact Chiltrix support department for details.

Installers

Make sure to check every port including those under any thermostat covers. Ensure that unused ports are plugged, plugs properly seated, and tight.

Heating elements

No element without a thermostat. Never set higher than 140 °F. TPV required.

TYPICAL ARRANGEMENTS

Used as a buffer tank

Used as an inline or extra-volume tank

VCT19 Specification

Multi-function stainless steel tank

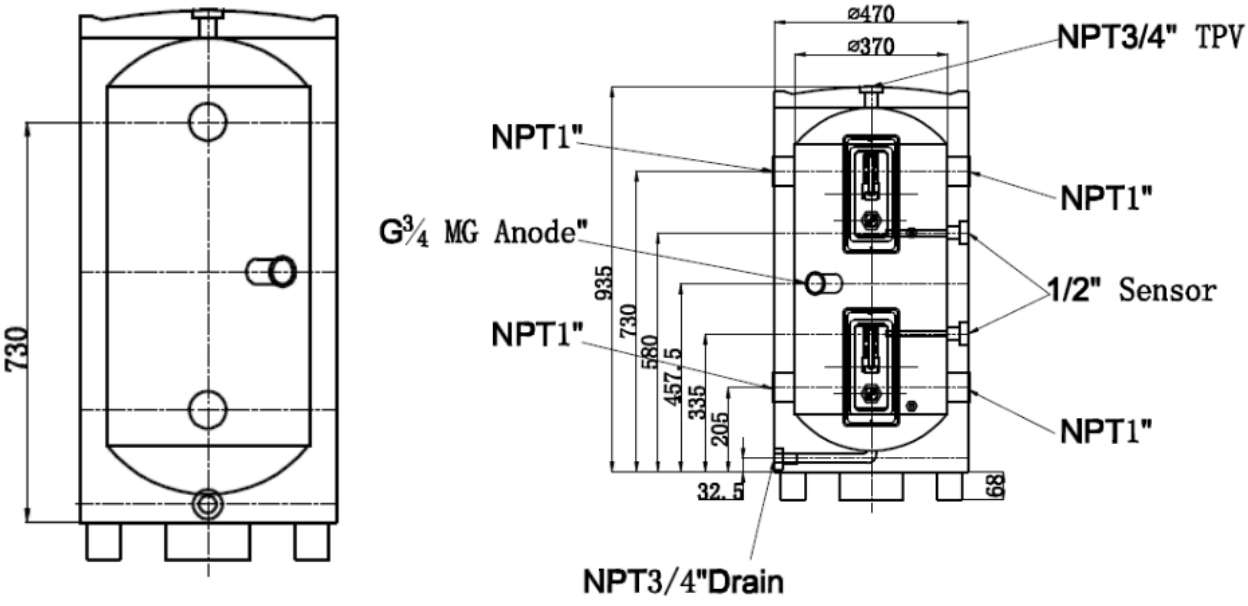
SPECIFICATION

19 gallons / 80 litres
Stainless steel inner tank with stainless steel jacket
2” polyurethane insulation
2x element ports 1” NPSM
2x element / thermostat cavities with covers
Supports up to 2x 5500 W elements
2x inlet ports 1” NPT female
2x outlet ports 1” NPT female
1x drain port ¾” NPT female
2x ½” sensor wells
1x ¾” anode port
Diameter 18.5”
Height 39”
Weight 51 lbs.

APPLICATIONS

Small buffer tank
In-line volume expander
Back-up heat tank

Buffer / Multi-Purpose
All-Stainless Steel Tanks



VCT37c

37 gallon multi-purpose buffer tank

The VCT37c is an all-stainless multi-purpose tank that can be used to combine two or three Chiltrix outdoor units for connection to a hydronic system. It provides hydraulic separation between two or three Chiltrix units to avoid balancing issues, and additionally can provide a buffered hydraulic separation between a primary loop (supply side) and a secondary loop (load side).

The VCT37c has 6x 1" NPT ports and 4x 1.5" NPT ports. The 6x ports (supply/return) on the supply side are configured as three for supply and three for return, for connecting up to three Chiltrix outdoor units. The load side has two 1.5" NPT ports for connection to the load side requirements. Other ports: 1x ¾" TPV, 2x ¾" drain, 2x 1" NPSM (element). There are two thermostat housings, with wire channels and grommets. The additional drain port is configured to allow the tank to properly drain when installed as a horizontal tank.

The VCT37c is generally used as a buffer tank for two or three CX units used together, and/or to separate them from a secondary loop such as for a radiant heating or cooling system. It may also be used for emergency heat, for use in the event that the normal heat source is unavailable. Emergency heat is defined as use during such time as when the Chiltrix units are totally unavailable, such as if damaged by a falling tree.

It should not be used for backup heat, which is defined as additional heat added to the system to make up for any shortfall of BTUs when the heating load exceeds the compressor capacity. Backup heat in the Chiltrix design should be provided by the V18 dynamically variable backup heater.

If used for backup heat

If a VCT37c is used inline for backup heat, the element must be controlled by a standard thermostat never set higher than 140 °F, and powered by a circuit with a contactor controlled by the CX unit. A TPV must be installed. Contact Chiltrix support department for details.

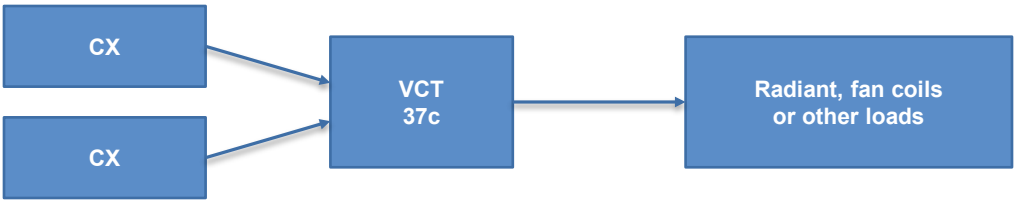
Installers

Make sure to check every port including those under any thermostat covers. Ensure that unused ports are plugged, plugs properly seated, and tight.

Heating elements

No element without a thermostat. Never set higher than 140 °F. TPV required.

EXAMPLE — COMBINING TWO CX UNITS



VCT37c Specification

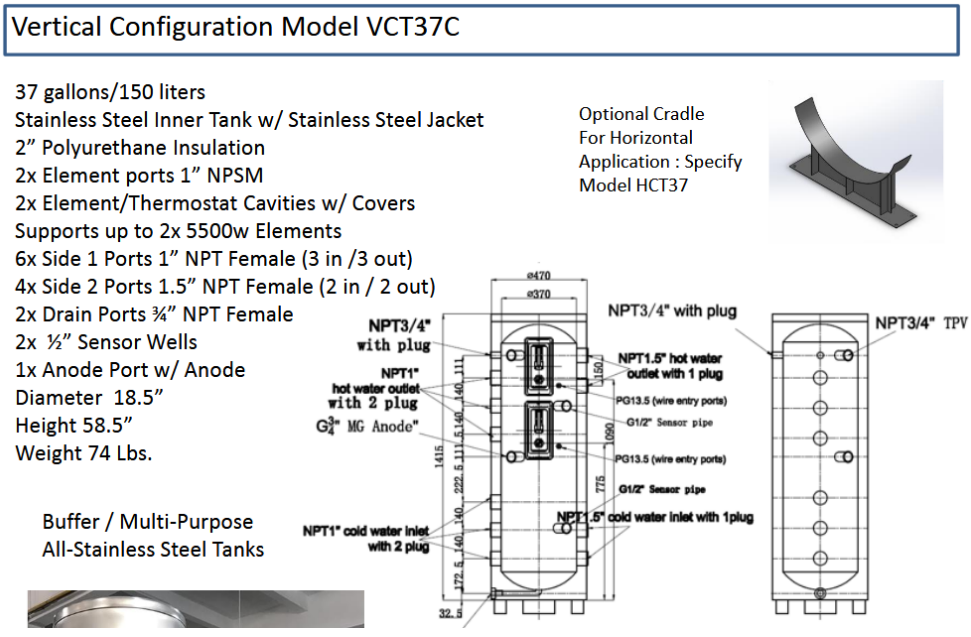
Vertical configuration model VCT37c

Buffer / Multi-Purpose
All-Stainless Steel Tanks

SPECIFICATION

37 gallons / 150 litres
Stainless steel inner tank with stainless steel jacket
2” polyurethane insulation
2x element ports 1” NPSM
2x element / thermostat cavities with covers
Supports up to 2x 5500 W elements
6x side 1 ports 1” NPT female (3 in / 3 out)
4x side 2 ports 1.5” NPT female (2 in / 2 out)
2x drain ports ¾” NPT female
2x ½” sensor wells
1x anode port with anode
Diameter 18.5”
Height 58.5”
Weight 74 lbs.

The HCT37 factory cradle is discontinued. A cradle is simple to make from lumber. Whatever is used, the tank weight must be evenly balanced across at least two contact zones, giving at least 40 square inches of contact area in total.

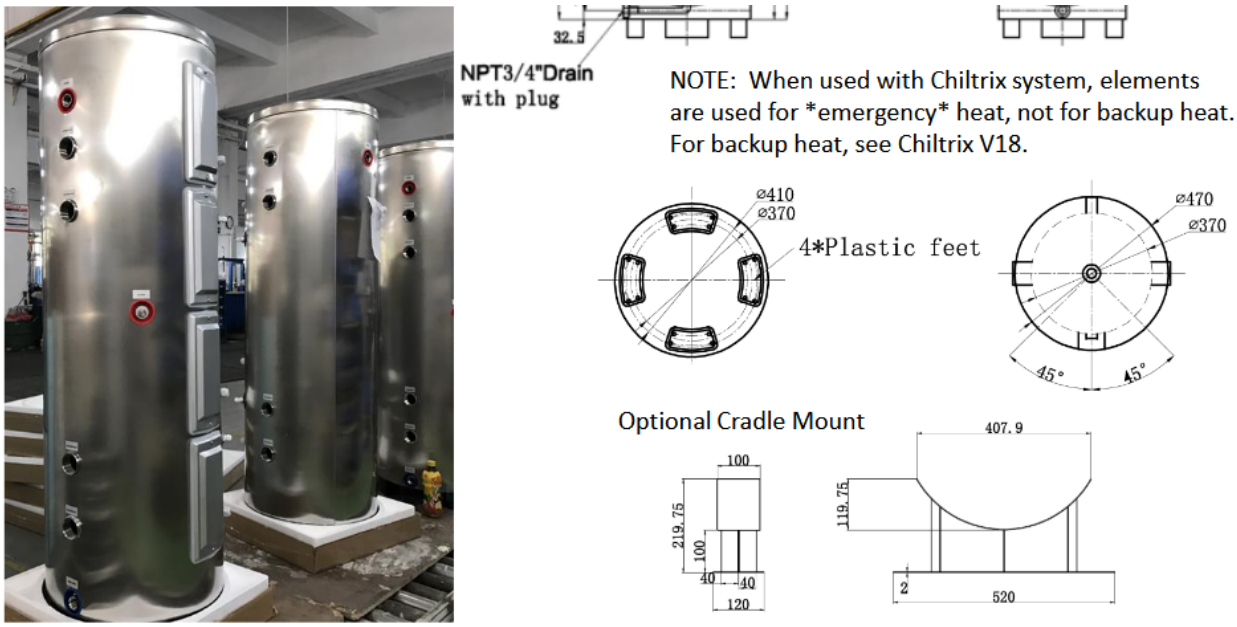


VCT37c Horizontal Mounting

Discontinued
The HCT37 factory cradle is discontinued.

A cradle is simple to make from lumber. The dimensions shown below are from the discontinued factory cradle and are given as a guide for anyone building their own.

Support requirement
The tank weight must be evenly balanced across at least two contact zones, giving at least 40 square inches of contact area in total. Do not support the tank on a single band or point.



Dimensions of the discontinued HCT37 cradle, shown as a guide for a site-built cradle. Plastic feet detail at right.

VCT60

58 gallon multi-purpose buffer tank

The VCT60 is an all-stainless multi-purpose tank that can be used to combine two or three Chiltrix outdoor units for connection to a hydronic system. It provides hydraulic separation between two or three Chiltrix units to avoid balancing issues, and additionally can provide a buffered hydraulic separation between a primary loop (supply side) and a secondary loop (load side).

The VCT60 has 6x 1.25” NPT ports (side 1) and 4x 1.25” NPT ports (side 2). Other ports: 1x ¾” TPV, 2x ¾” drain, 2x 1” NPSM (element). There are two thermostat housings, with wire channels and grommets. The additional drain port is configured to allow the tank to properly drain when installed as a horizontal tank.

The VCT60 is generally used as a buffer tank for two or three CX units used together, and/or to separate them from a secondary loop such as for a radiant heating or cooling system. It may also be used for emergency heat, for use in the event that the normal heat source is unavailable.

It should not be used for backup heat, which is defined as additional heat added to the system to make up for any shortfall of BTUs when the heating load exceeds the compressor capacity. Backup heat in the Chiltrix design should be provided by the V18 dynamically variable backup heater.

If used for emergency heat

If a VCT60 is used inline for emergency heat, the element must be controlled by a standard thermostat, never set higher than 140 °F, and powered by a circuit with a contactor controlled by the CX unit. A TPV must be installed. Contact Chiltrix support department for details.

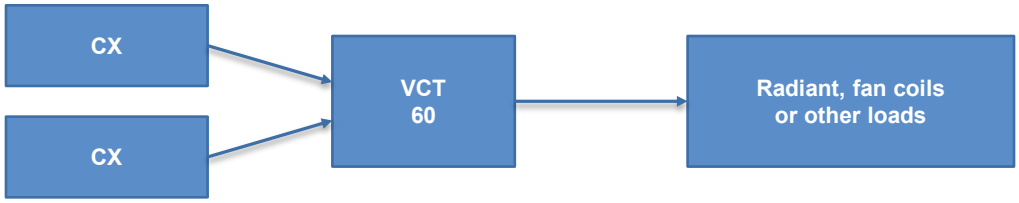
Installers

Make sure to check every port including those under any thermostat covers. Ensure that unused ports are plugged, plugs properly seated, and tight.

Heating elements

No element without a thermostat. Never set higher than 140 °F. TPV required.

EXAMPLE — COMBINING TWO CX UNITS



VCT60 Specification

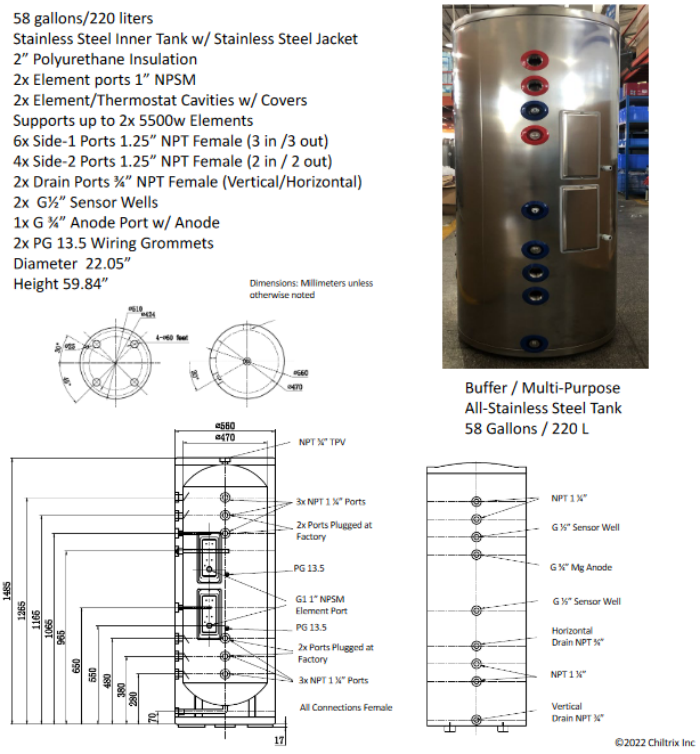
Multi-function stainless steel tank

Buffer / Multi-Purpose
All-Stainless Steel Tanks

SPECIFICATION

58 gallons / 220 litres
Stainless steel inner tank with stainless steel jacket
2” polyurethane insulation
2x element ports 1” NPSM
2x element / thermostat cavities with covers
Supports up to 2x 5500 W elements
6x side 1 ports 1.25” NPT female (3 in / 3 out)
4x side 2 ports 1.25” NPT female (2 in / 2 out)
2x drain ports ¾” NPT female (vertical / horizontal)
2x G½” sensor wells
1x G¾” anode port with anode
2x PG 13.5 wiring grommets
Diameter 22.05”
Height 59.84”

When used with a Chiltrix system, elements are used for emergency heat, not for backup heat. For backup heat, see the Chiltrix V18.



Buffer / Multi-Purpose
All-Stainless Steel Tank
58 Gallons / 220 L

Using a Non-Chiltrix Tank

Minimum coil requirements for a heat pump

If a Chiltrix tank does not meet your requirements, another indirect or solar tank may be used, but the coil must be sized for a heat pump rather than for a boiler.

Minimum coil surface area

The coil must have a minimum of 0.40 sq ft of coil surface area per NET gallon of tank capacity.

Why a heat pump needs a larger coil

A boiler supplies its coil at 160 to 180 °F. A heat pump supplies it at around 120 °F, which is less than half the temperature difference driving heat into the tank. To transfer the same heat with half the difference, the coil needs roughly twice the surface area. A coil sized for a boiler will heat the tank slowly and force the compressor to run at a higher condensing temperature, costing the efficiency the heat pump was bought for.

There is more to it than slow heating. As the indirect tank heats, the difference between the relatively low temperature heat source and the water surrounding the coil shrinks, and heat transfer slows further as the tank approaches setpoint. With an undersized coil this can keep the system stuck in DHW mode long enough for pressures to rise too far, producing a P1 error code. More heat transfer surface alleviates this and gives a faster recovery time.

What causes a P1 error

P1 errors are caused by insufficient coil surface area, insufficient flow rate, persistent parasitic loads such as a recirculation line, or too high a setpoint.

Recirculation

This is why Chiltrix does not recommend use with recirculating hot water systems. A recirculation line is a continuous parasitic load that prevents the tank from reaching setpoint.

Minimum Requirements for a Third-Party Tank

Requirements

- Coil surface area not less than 0.40 sq ft per net gallon of tank capacity.
- A convoluted or wave-wall coil is strongly preferred over a smooth coil.
- The tank must have provision for at least one backup heating element.
- Adequate flow rate through the coil. Check the coil head loss against the pump curve.
- Do not fit a recirculation line.

CHILTRIX TANKS FOR COMPARISON

All three Chiltrix DHW tanks meet the minimum. The DHW40 and DHW80 sit modestly above it, while the DHW105, with its 1.25” × 196 ft convoluted coil, carries roughly two and a half times the required surface area — which is why it is the better choice where recovery time matters or where a recirculation loop is present.

Tank	Net gallons	Coil surface area	Sq ft per net gallon	Minimum required
DHW40	36	16.9 sq ft	0.47	14.4 sq ft
DHW80	71	32 sq ft	0.45	28.4 sq ft
DHW105	99	98 sq ft	0.99	39.6 sq ft

> If in doubt, contact Chiltrix before ordering a third-party tank. A tank with an undersized coil cannot be corrected after installation.

Using Recirculating Domestic Hot Water

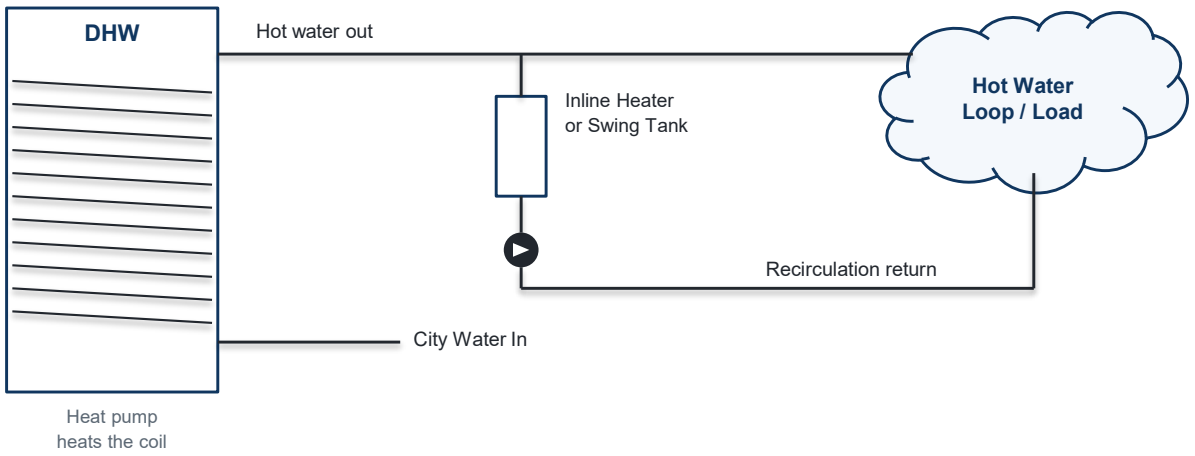
If recirculation cannot be avoided

Generally, efficiency-minded customers don't use re-circulation systems due to wasted electrical energy. They do save water, but the economic balance is generally unfavorable. More concerning, re-circ leaks heat and can cause performance problems with the heat pump, as it must operate continuously under unfavorable conditions, continuously replacing very small amounts of lost heat on an ongoing basis.

If you want to use re-circ with Chiltrix, there are several time-tested ways to do it. In the example below, using a DHW80, all of the hot water used by the customer is heated by the heat pump. The small parasitic loss that occurs in the recirculation piping is handled by a modulating tankless heater, or a swing tank. This option can use a very small modulating heater or small water heater tanks with element.

Other options

A second option uses a larger modulating tankless heater to replace the standby losses, where the heater can also serve as a backup for use in unusual demand conditions. A third approach uses a larger tank with a larger coil, such as the DHW105, whose 98 sq ft of coil surface area and greater volume mitigate the negative effects of continuous standby loss replacement. Contact Chiltrix for these arrangements.



DHW tank and load side. The inline heater or swing tank replaces only the heat lost in the recirculation piping, so the heat pump never sees the recirculation load.

DHW40

36 gallon net domestic hot water tank

The DHW40 is an ultra-high grade all-stainless (Duplex 2205) water tank that can be used to heat water via an indirect source such as a heat pump or boiler. It is the smallest tank in the Chiltrix range and follows the same installation and control procedures as the DHW80.

Tank compatibility

The DHW40 may be used only with the CX35, CX40 and CX45, including the X variants. Larger heat pumps will overpower a tank and coil of this size.

Element limit

The maximum element on the DHW40 is 3500 W, not 5500 W as on the larger tanks. For the 3000 W option use Backer model SGI.

G2 valve required

When used with a Chiltrix hydronic system the DHW40 tank requires a Chiltrix G2 valve. The G2 valve is 240 v primary and requires conduit — install per code.

Heating elements

No element without a thermostat. Never set higher than 140 °F. TPV required.

Sensor placement

Install the tank temperature sensor, included with all Chiltrix outdoor units, in the UPPER sensor well. Don’t use the lower sensor well. Make sure to use thermal paste or thermal grease.

Generally, the tank temperature should be set at 120 °F. There are two options for installation and control, one of which includes an automated anti-legionella function — see the DHW installation and control options later in this manual.

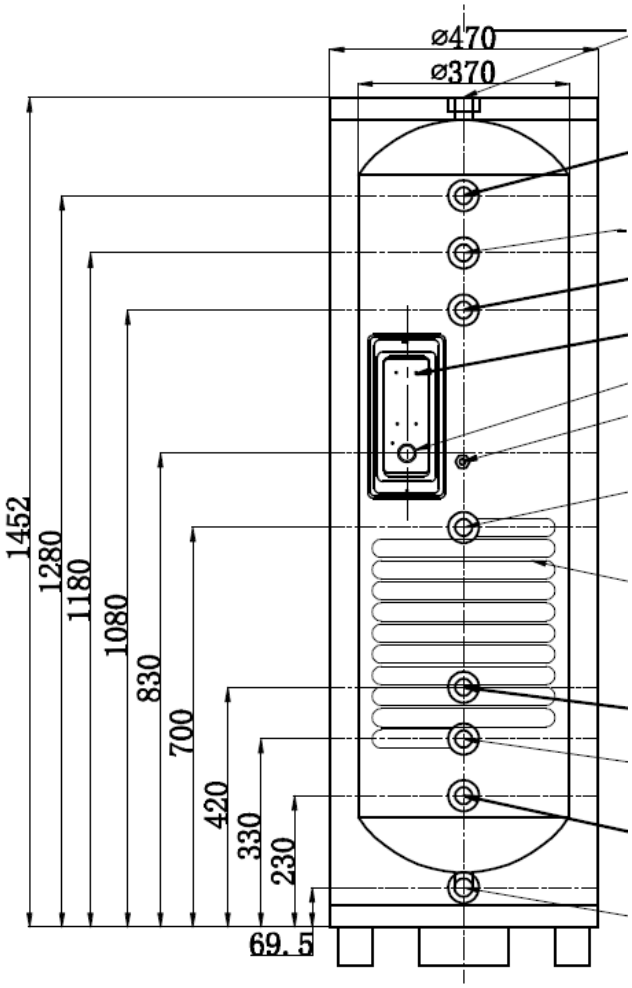
Coil

The DHW40 coil carries 0.47 sq ft of surface area per net gallon, the most generous ratio of the three Chiltrix DHW tanks against the 0.40 minimum. The compatibility restriction is about the heat pump overpowering the tank, not about the coil.

DHW40 Specification

SPECIFICATION

40 gallons gross / 36 gallons net
2205 Duplex stainless steel inner tank
Indirect coil: 1.25” × 33′ convoluted (wave)
16.9 sq ft coil surface area
0.47 sq ft coil face per net gallon
304 stainless steel outer shell
2” thick polyurethane insulation
1x element port, 1” NPSM, up to 3500 W
1x drain port ¾” NPT female
2x ½” sensor wells
1x anode port with magnesium anode
Pressure drop @ 7 GPM 4.35 PSI / 10.04 ft. head
Pressure rating 7 bar (100 psi)
Cold inlet 1” NPT · hot outlet 1” NPT
1” NPT coil connectors
Tank diameter 18.5”
Tank height 57” plus 3” feet
Empty tank weight 80 lbs.



DHW80

71 gallon net domestic hot water tank

The DHW80 is an ultra-high grade all-stainless (Duplex 2205) water tank that can be used to heat water via an indirect source such as a heat pump or boiler. This high grade of stainless steel is very strong and highly resistant to corrosion.

G2 valve required

When used with a Chiltrix hydronic system the DHW80 tank requires a Chiltrix G2 valve. The G2 valve is 240 v primary and requires conduit — install per code. If used with a Chiltrix system of two or more outdoor units, it will need two G2 valves. G2 valves have a Cv of 15 (0.74 ft. head at 5 GPM).

The DHW80 has net 71 gallons of water storage. It has a 1” NPT cold water inlet, a 1” NPT hot water outlet, a ¾” NPT TPV port, a ¾” NPT drain port, and a 1” NPSM element port with a standard thermostat mounting location and cover. Insulation is 50 mm poly.

Elements and thermostats

When used with a Chiltrix system the tank may have a standard heating element and thermostat installed, usually 5500 W. Use 5500 W Camco model 02932 with thermostat Thermo-disk model 59T. Note that both of these are available under various brand names, so read carefully the actual maker and model number, which will be on the package.

Heating elements

No element without a thermostat. Never set higher than 140 °F. TPV required.

Setting up

Generally, the tank temperature should be set at 120 °F. There are two options for installation and control, one of which includes an automated anti-legionella function. The anti-legionella function and backup heat require the addition of a heating element and standard hot water tank thermostat.

Sensor placement

Install the tank temperature sensor, included with all Chiltrix outdoor units, in the UPPER sensor well. Don’t use the lower sensor well. Make sure to use thermal paste or thermal grease, such as Arctic MX or Corsair.

The net 71 gallons of storage at 120 °F contains a similar BTU value to a smaller tank held at 140 °F. With the 120 °F tank, the stored energy difference means that the amount of cold water mixed at the point of use will be lower.

DHW80 Capacity and First Hour Rating

First hour rating

This type of tank, by itself, does not have a first hour rating as there is no way to calculate it. Note that heating water with a heat pump is 2-5x more efficient than a standard tank, however it is not an extremely fast way to heat water. You may consider adding a modulating tankless heater on the outlet side of the tank, such as an Ecosmart unit, which can then offer extremely high first-hour capability if and when needed, and would be inactive when not needed.

Note

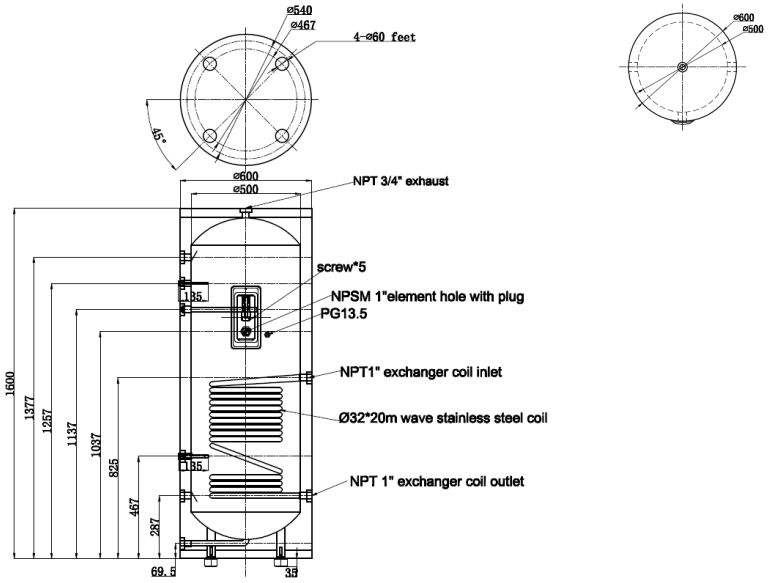
First-hour ratings are available when paired with specific Chiltrix heat pumps. See https://www.chiltrix.com/EnergyGuideLabels/ Note that these ratings are for specific US DOE test conditions and may not reflect real world performance at various conditions of ambient air and entering water temperature.

DHW40

The DHW40 follows the same procedures, except that the maximum element on the DHW40 is 3500 W. The DHW40 may be used only with the CX35, CX40 and CX45, including the X variants.

SPECIFICATION

80 gallons gross / 71 gallons net
2205 Duplex stainless steel inner tank
2205 Duplex stainless steel indirect coil
Indirect coil: 1.25” × 66′ convoluted (wave)
32 sq ft coil surface area
SUS 304 stainless steel outer shell
2” thick polyurethane insulation
1x element port, 1” NPSM, up to 6000 W
1x drain port ¾” NPT female
2x ½” sensor wells
1x anode port with magnesium anode
Pressure drop 4.35 PSI / 10.04 ft. head
Cold inlet 1” NPT · hot outlet 1” NPT
1” NPT coil connectors
Tank diameter 23.6” · height 64”
Empty tank weight 88 lbs.



DHW105 (Hitzewelle)

105 gallon domestic hot water tank · standard or reverse indirect

The DHW105 is an ultra-high grade all-stainless (Duplex 2205) water tank that can be used to heat water via an indirect source such as a heat pump or boiler. This high grade of stainless steel is very strong and highly resistant to corrosion. It can connect to one or two heat pumps.

Suitable for air-to-water heat pumps, geothermal heat pumps, boilers, solar water heating and hydronic systems.

Two ways to use this tank

The DHW105 can be piped in either of two ways. The choice determines which side holds the potable water, and it must be decided before installation.

Standard indirect

The potable water sits in the tank. The heat source circulates through the coil, and the hot coil heats the surrounding potable water. This is the normal method.

Reverse indirect

The potable water flows through the coil. The tank contents are part of the hydronic closed loop that never leaves the closed loop heating system; it serves only as a thermal transfer medium. One or two heat sources heat the tank contents, and the potable water is heated as it passes through the coil.

Why choose reverse indirect

Much higher efficiency, as shown by the official DOE certifications, for users who never need a flow rate higher than 3-4 gallons per minute.

Compatibility

Reverse indirect is for use with any of the Chiltrix heat pumps CX35 and higher, with the exception of the CX50-1. Parameter settings differ between the two methods — see the settings flow chart at the end of this manual.

G2 valve required

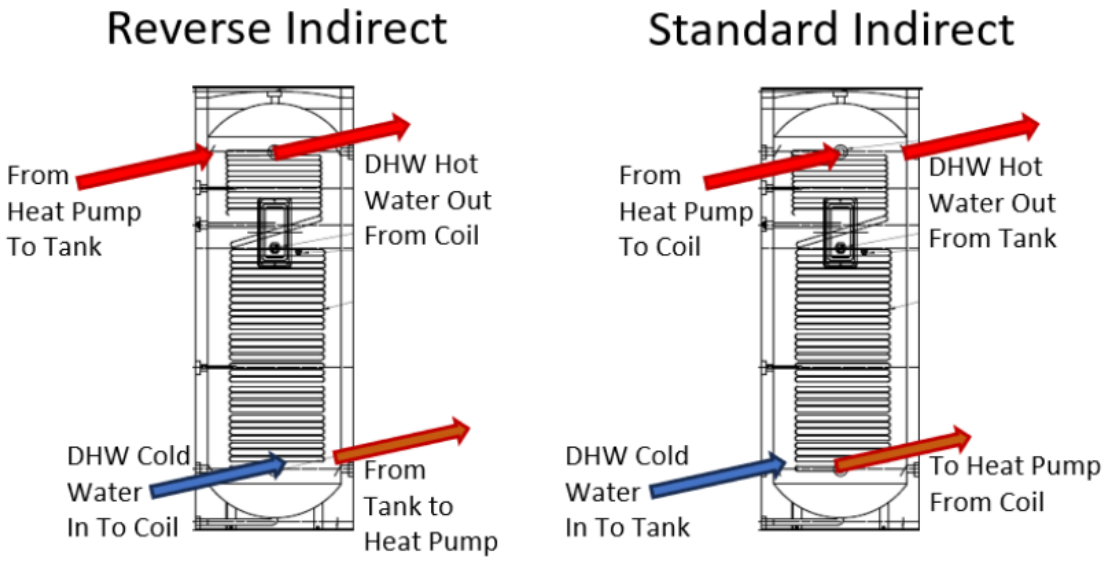
When used with a Chiltrix hydronic system the DHW105 tank requires a Chiltrix G2 valve. The G2 valve is 240 v primary and requires conduit — install per code. If used with a Chiltrix system of two or more outdoor units, it will need two G2 valves. G2 valves have a Cv of 15 (0.74 ft. head at 5 GPM).

Call Chiltrix for design support before using this tank.

DHW105 — Reverse and Standard Indirect

Which side holds the potable water in each mode

In reverse indirect the potable water flows through the coil and the tank contents are the closed hydronic loop. In standard indirect the potable water sits in the tank and the heat source flows through the coil. The choice determines which connections carry potable water and must be decided before installation.



Water paths in each mode.

DHW105 Installation and Specification

The DHW105 has net 99 gallons of water storage. It has a 1” NPT cold water inlet, a 1” NPT hot water outlet, a ¾” NPT TPV port, a ¾” NPT drain port, and a 1” NPSM element port with a standard thermostat mounting location and cover. Insulation is 50 mm poly.

Elements and thermostats

When used with a Chiltrix system the tank may have a standard heating element and thermostat installed. Use 5500 W model Camco 02932 with thermostat Thermo-disk model 59T. Note that both of these are available under various brand names, so read carefully the actual maker and model number, which will be on the package. For the 3000 W option use Backer model SGI.

Heating elements

No element without a thermostat. Never set higher than 140 °F. TPV required.

Setting up

Generally, the tank temperature should be set at 120 °F. There are two options for installation and control, one of which includes an automated anti-legionella function. The anti-legionella function and backup heat require the addition of a heating element and standard hot water tank thermostat.

Sensor placement

Install the tank temperature sensor, included with all Chiltrix outdoor units, in the UPPER sensor well. Don’t use the lower sensor well. Make sure to use thermal paste or thermal grease, such as Arctic MX or Corsair.

Note

First-hour ratings are available when paired with specific Chiltrix heat pumps. See https://www.chiltrix.com/EnergyGuideLabels/ Note that these ratings are for specific US DOE test conditions and may not reflect real world performance at various conditions of ambient air and entering water temperature.

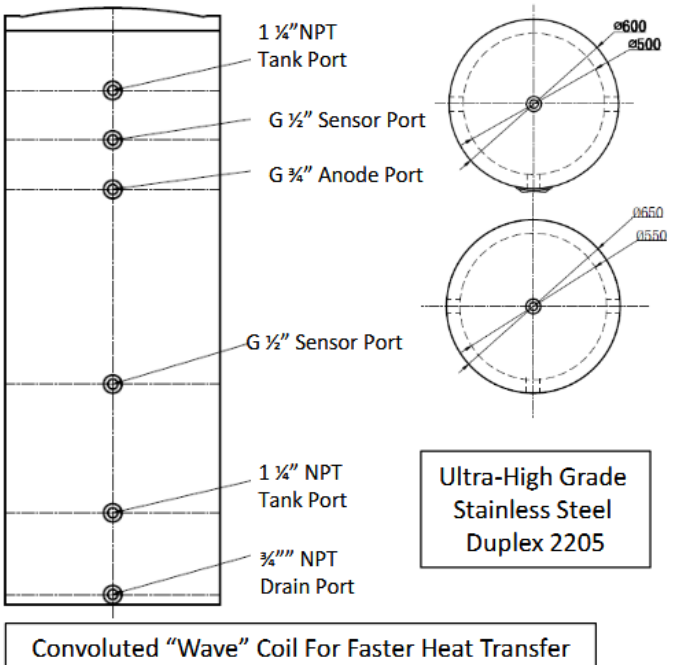
SPECIFICATION

105 gallons gross / 99 gallons net
2205 Duplex stainless steel inner tank
Indirect coil: 1.25” × 196′ convoluted (wave)
98 sq. ft. coil surface area
SUS 304 stainless steel outer shell
2” thick polyurethane insulation
1x element port, 1” NPSM, up to 5500 W
1x drain port ¾” NPT female
2x ½” sensor wells
1x anode port with magnesium anode
Pressure rating 7 bar (101 psi)
2x tank inlets 1.25” NPT
2x tank outlets 1.25” NPT
1 set 1.25” NPT coil connectors
Coil head loss 23.33 ft. at 5 GPM
Tank diameter 25.6”
Tank height 71” (73” with feet)
Empty tank weight 194 lbs.

DHW105 Dimensions and Ports

Hitzewelle

The name pays homage to the German engineers who devised the reverse-indirect water heating method. In German, Hitzewelle means “heat wave”, referencing the expanded heat transfer of the wave-wall coil.



DHW105 port locations and dimensions.

DHW Installation and Control Options

Option 1 — 20th century method (European)

Please don't use this option

We no longer recommend this option. Option #1 has NO automatic anti-legionella function — see Option #2 on the next page.

It is simple to install and has been used this way for decades all over the world. In Option #1, the tank element is controlled solely by its attached standard water heater thermostat.

How it works

The CX unit will work to heat the tank when the tank falls below the set point. The tank has a standard electric backup element and thermostat that works as backup for the heat pump. Install a standard thermostat and element such as from a hardware store. Set the element thermostat for 110 °F, which is 10 °F lower than the CX DHW setting. When the CX cannot keep up and the tank drops below 110 °F, the thermostat will activate the element for backup heating, stopping at 110 °F.

Anti-legionella is manual

Option #1 does NOT have an automated anti-legionella function. The Option #1 user will be REQUIRED to manually set the tank thermostat to 140 °F and hold it at that temperature for at least six hours, once per week. MAKE SURE YOUR CUSTOMER UNDERSTANDS THIS.

G2 valve

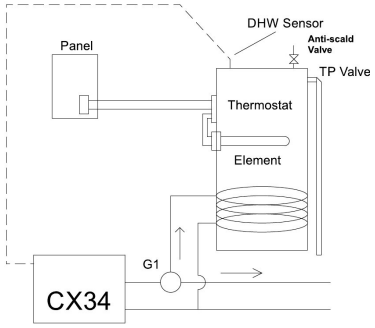
A G2 valve will be installed in the loop as the first device on the loop, before any fan coils or tanks, but after any V18 if installed. The G2 requires a conduit (240 v). Refer to the appropriate CX unit installation manual.

Heating elements

No element without a thermostat. Never set higher than 140 °F. TPV required.

Reminders

Always install the tank sensor in the upper part of the tank. The DHW40 may be used only with the CX35, CX40 and CX45, including the X variants.



DHW Installation and Control Options

Option 2 — preferred method, 21st century, with automatic anti-legionella

Recommended

This is the recommended method. Always install the tank sensor in the upper part of the tank, and always use thermal paste when inserting the sensor into the sensor well.

In this method the standard element and thermostat allows a temperature setting of at least 140 °F (60 °C). As shown on the drawing on the next page, there is a contactor located between the mains power and the element and thermostat. The contactor is controlled by the CX unit, which will allow or deny power to the backup heating element. The thermostat is used as a safety mechanism to stop the element at 140 °F in case of contactor or sensor failure. Set the thermostat to 140 °F.

Operation

The CX unit will activate the element if the compressor cannot meet the DHW target temperature of 120 °F after 15 minutes of running, and will operate the element to reach the tank setpoint of 120 °F before releasing the contactor. In addition, once per week the CX unit can activate automated anti-legionella mode, raising the tank temperature to 140 °F and holding at that temperature for four hours.

DHW tank temperature is controlled by the CX unit and backed up with a heating element. Requires installer-provided heating element, 40 A contactor and 24 vac transformer. If the DHW target is 120 °F, the compressor will start heating if the tank temperature drops to 116 °F, and the backup heater element will only start after the compressor has run for 15 minutes and cannot reach 120 °F. In that case the compressor will work with the element to heat DHW to 120 °F. When the set point is reached the CX unit will stop the backup element by releasing the contactor and exit DHW mode. If the outside temperature is above the P55 setting, the backup is disabled.

DHW PARAMETERS

Parameter	Function
P08	DHW enable. 0 = enabled, 1 = disabled.
P09	Ambient setting, e.g. 20 °C, or as desired
P55	Ambient temperature to activate the E1 DHW electric heater
E1	Backup element control
P60	Virus killing interval, 7-99 days. Day 7 is Sunday
P61	Start virus killing time, 1-24 hours. The source names this P60 also — to be confirmed
P62	Virus killing holding time, 5-99 min. Set this for 60 min

P08 — DHW enable

DHW is enabled when P08 = 0 and disabled when P08 = 1. Confirmed by Chiltrix.

Operating window

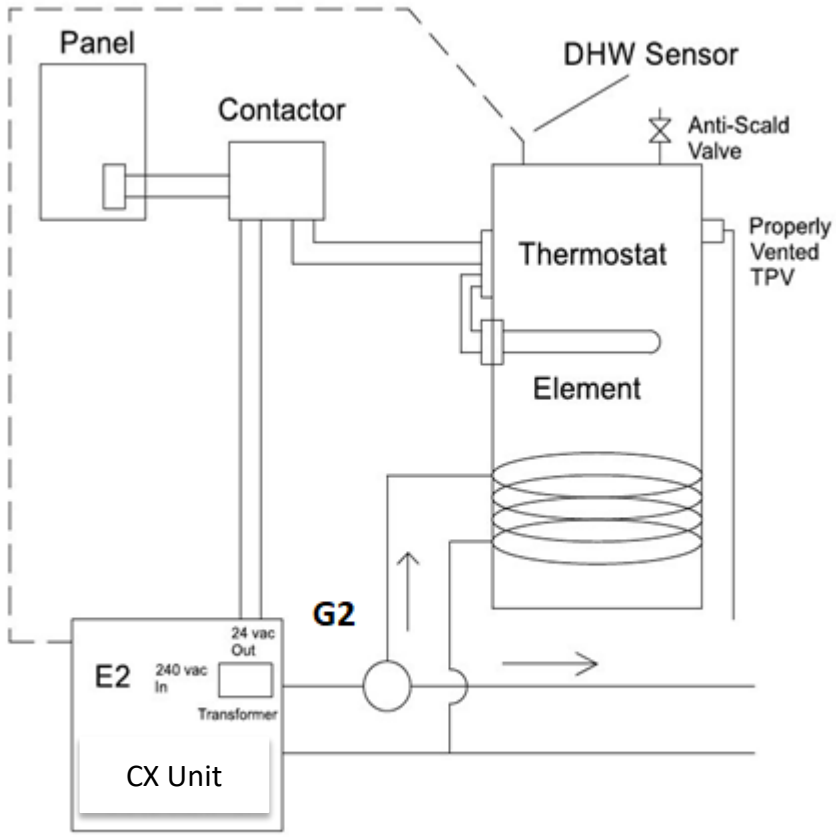
If the DHW tank temperature is set to 49 °C (120 °F) and the tank temperature drops below 47 °C (116 °F), the CX unit will engage DHW mode and the compressor will run at full speed. Once per week the tank should rise to 60 °C (140 °F) and hold for at least one hour. Always set the normal DHW target temperature to 49 °C (120 °F) or lower.

Piping and Wiring Diagram

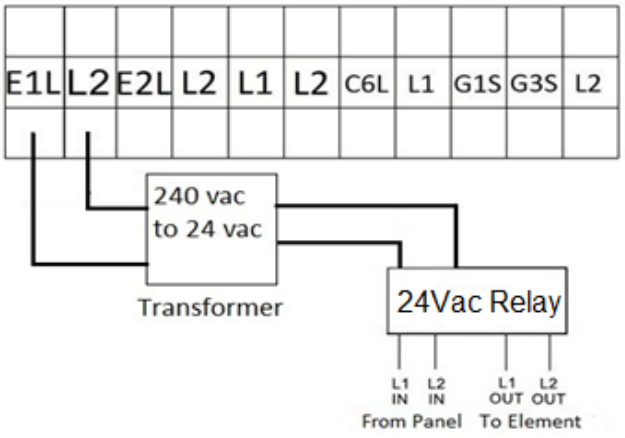
Control

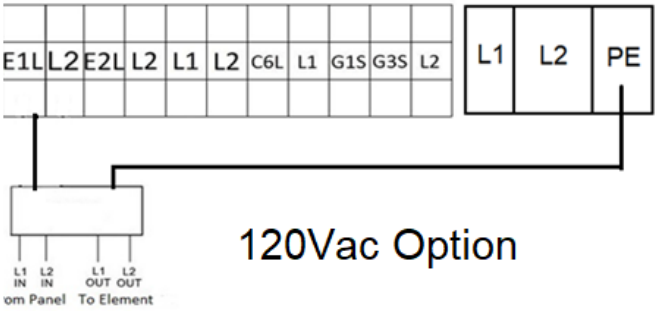
The CX unit controls the tank temperature. The element thermostat is set for 140 °F, which only controls the upper limit. Actual tank temperature setting and element control is by the CX unit.

Required: an anti-scald valve installed per local code, and a properly vented TPV.



Option 2 — Wiring Detail and Notes





Notes

When C31 = 1, the G2 valve is active in DHW mode. Example contactor: a 24 v coil, 40 A, 2-pole, 50 A definite purpose contactor, such as Packard C240A. https://www.homedepot.com/p/203565786

P08 — DHW enable

DHW is enabled when P08 = 0 and disabled when P08 = 1. Confirmed by Chiltrix.

Connecting DHW

See also

Please review the CX unit manual. The detailed high-resolution wiring diagram is at https://www.chiltrix.com/documents/CX Unit-2-wiring-diagram-HIGH-RES.pdf

The tank sensor is to be connected to TH7 as shown below. First, remove the dummy plug.

Sensor placement

Always locate the tank sensor in the upper part of the tank. If no sensor port is available in that location, place it under the insulation and in firm thermal contact with the tank wall. Always use thermal paste to ensure good contact between the sensor and the tank.

G2 valve

To enable DHW, a DN25 or DN32 (as applicable) G2 valve must be installed and enabled. For dual CX units there will be 2x G2 valves wired in parallel. DHW is enabled from the standard controller as Hot Water, Cooling & Hot Water, or Heating & Hot Water.

TH7 tank sensor connection.

Backup Heat and Emergency Heat Are Not the Same Thing

Backup heat supplements a working heat pump. When outdoor temperatures fall far enough that the heat pump alone cannot meet the load, or an unusually high load is present, a backup source makes up the shortfall while the compressor keeps running. This is a normal operating condition and it may happen many times in a winter.

Emergency heat replaces a heat pump that is not working. If the CX unit or its pump is inoperative, emergency heat keeps the building from freezing until the unit is repaired. It is not an efficiency measure and it is not intended for routine use.

The two require completely different equipment and controls. Using one where the other belongs is the most common mistake made with these tanks.

Why the distinction matters

A resistance element has a COP of 1.0. A Chiltrix compressor runs at a COP of roughly 2.5 to 3.5 or higher. Every BTU delivered by an element instead of the compressor costs two to three times as much to produce.

Worse, a crude backup arrangement makes this actively self-defeating. When an element dumps heat into a buffer tank, the heat pump sees the higher return temperature, reads it as a reduced load, and slows down or stops. That creates demand for still more backup heat. Left alone, the backup becomes the primary heat source and the compressor barely runs, on a system bought for its efficiency. Surprisingly, many of our competitors set it up exactly this way.

> This is why elements in a buffer tank should never be used for backup heat.

The right way to do backup heat

The Chiltrix V18-B is the backup heat solution designed for maximum effectiveness and efficiency. It reads the BTU/h shortfall from the heat pump and modulates its output in 1% increments to match it exactly, so the compressor continues to carry as much of the load as it can. Because it targets the shortfall rather than a water temperature, it does not overshoot and it cannot take over from the compressor. When the V18 is active, it keeps the compressor at full speed, doing all that it can do, and only fills in the difference. See the V18-B documentation for details.

Backup heat for DHW is different

Everything above concerns space heating. For DHW, backup heat refers to an electric element in the tank that can provide heat when the CX cannot meet the load due to outdoor conditions, or because of unusual demand. In a DHW tank an element is the correct backup, and it is fitted as standard practice. The prohibition on elements for backup heat applies to buffer tanks, not to DHW tanks.

Gas, propane and oil boilers

A gas, propane or oil boiler can be integrated for emergency heat, and in some cases for backup heat. There are several ways to do this and the right one depends on the boiler, the piping arrangement and the load.

> Contact Chiltrix engineering to approve your design or to have one provided. Do not improvise a boiler tie-in.

Buffer Tank with Emergency Heat

Important
Elements in a buffer tank should never be used for backup heat. The arrangement below is for EMERGENCY HEAT ONLY. For backup heat, see the Chiltrix V18 dynamically variable inline heater.

Emergency heat is manually activated only. Because it is switched on deliberately, it cannot fight the heat pump: it is turned on when the heat pump is out of service and turned off when the unit returns to service.

These requirements apply to buffer tanks. DHW backup is addressed elsewhere in this manual.

- The element must be controlled by a standard water heater thermostat, never wired directly to the CX unit. In some cases it can share a breaker with a V18, since neither is ever to be active at the same time. Discuss a double-pole double-throw switch with your electrician.
- The CX unit should be completely disconnected from all sources of electrical power before emergency heat is activated.
- A properly rated dedicated power circuit must run from the breaker panel to each thermostat used. Mark the breakers clearly and permanently.
- A TPV is always required.
- It should be installed in a true buffer tank with a load side pump engaged, and not in an inline tank.

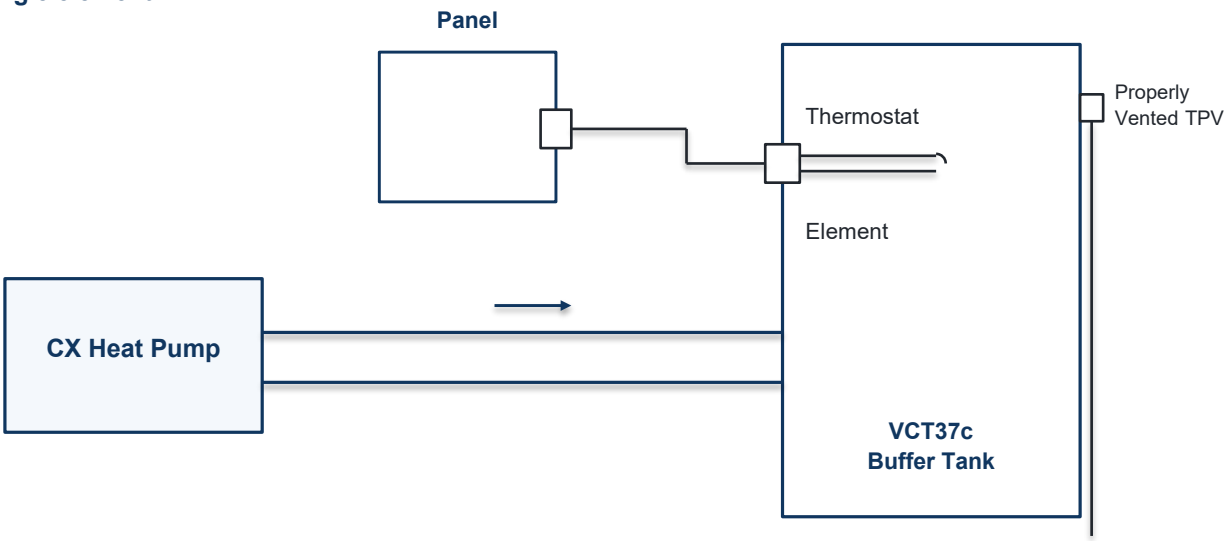
Heating elements
No element without a thermostat. Never set higher than 140 °F. TPV required.

DO NOT TRY TO USE EMERGENCY HEAT IN AN INLINE TANK. For emergency heat to work it must be installed in a true buffer tank and have a load side pump engaged. When emergency heat is active the CX unit must be disconnected from power.

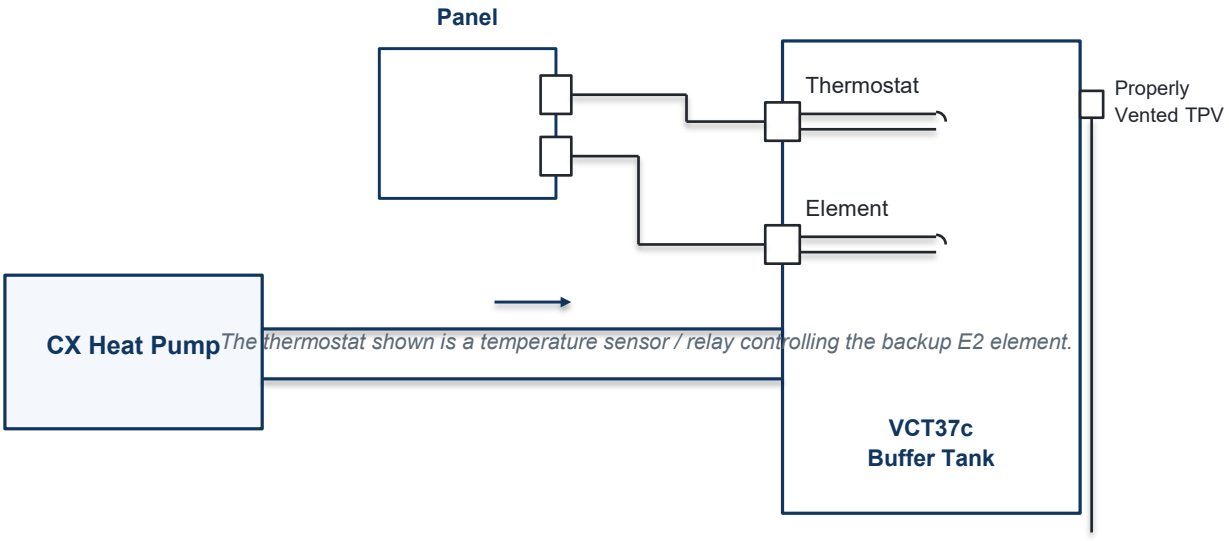
Buffer Tank with Emergency Heat — Wiring

A TPV valve is always required. Emergency heat is manually activated only, and the CX unit must be disconnected from all sources of electrical power before it is used.

Single element



Two elements



The thermostat shown is a temperature sensor / relay controlling the backup E2 element.

VCT37c ports

The VCT37c has a side A with 2x inlet and 2x outlet 1.5” ports, and a side B with 3x 1” inlets and 3x 1” outlets. Either side of the tank can be the supply side or the load side according to your design, but the connections must oppose each other, meaning all supply side connections on one side of the tank and all load side connections on the other side. Supply-side supply inlet should be at the same level as load-side supply outlet. For example, the supply side supply port, connected to the heat pump, should be on the opposite side of the tank from the load side supply to the manifolds or fan coils, and at the same level, upper or lower ports.

Thermostat and element cavities — covers off

Thermostat and element cavities of the VCT37c. The same as the VCT19 and DHW80 cavities, except that the VCT37c and VCT60 have two cavities and covers.

Thermostat and element cavities — covers on

VCT37c 1.5” NPT port

VCT19 1” NPT ports

VCT19 1” NPT load side inlet and outlet ports. Supply side ports are identical.

DHW Control Settings — P08

Rebuilt from the settings flow chart

Software requirement

These settings are only available on the CX50-2 and CX35 with software version P432s10-V109 / HMI version V1.9 and greater. If you are using a prior software version, please use the settings from the normal parameter list in this manual.

The original flow chart is reproduced below as a decision table. Read across from left to right: each row is one complete path through the questions and ends in the P08 value to set.

P08 — DHW enable

DHW is enabled when P08 = 0 and disabled when P08 = 1. Confirmed by Chiltrix.

Tank type	Exit to space heating after P18 min?	E1 stays on until setpoint met?	Re-try compressor after P18 min?	P08
—	No DHW from the Chiltrix heat pump	—	—	1 Invalid
Indirect (standard)	No	—	—	0
Indirect (standard)	Yes	Yes	Yes	2B
Indirect (standard)	Yes	Yes	No	2A
Indirect (standard)	Yes	No	Yes	3B
Indirect (standard)	Yes	No	No	3A
Direct (non-standard)	No	—	—	4 Valid direct tank with E1
Direct (non-standard)	Yes	Yes	Yes	5B
Direct (non-standard)	Yes	Yes	No	5A
Direct (non-standard)	Yes	No	Yes	6B
Direct (non-standard)	Yes	No	No	6A

Direct and indirect

“Indirect” is the normal way of using the heat pump to heat the coil, which then heats the potable water in the tank. “Direct” means you will heat the tank contents directly with the heat pump, and the tank contents will heat the coil — the hot water gains heat as it flows through the coil. “Direct” requires a special tank and coil configuration; it is not the standard method and will not work well with a standard tank.

Related parameters

P15 will disable the compressor for DHW use based on ambient temperature in DHW mode. Below P15 the compressor will NOT run in DHW mode and E1 operates based on the table above. P17 is the delay in minutes before E1 is allowed to activate. P55 is the ambient temperature — only when below this temperature will E1 activate. Don’t forget to set P18: this is the time after which the unit will switch out of DHW mode and back to space heating or cooling.

Some of these settings apply only to the DHW105 (Hitzewelle) reverse indirect tank.