NORTH COUNTRY SAUNAS™

Cold Plunge Division

Cold Plunge Chiller

Operating Manual & User Guide

Model No. NCS Chiller

Available in 1 HP · 1.5 HP · 2 HP — Cooling Only or Cooling + Heating

Water Temperature Range: 37°F – 107°F (varies by model) | Power: 120V Dedicated GFCI-Protected Outlet Required

northcountrysaunas.com | northcountrycoldplunge.com | (617) 201-2386

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Quick Reference — Support Phone: (617) 201-2386 | Support Hours: Mon–Fri, 8 AM–5 PM (Local Time)

1. Safety Instructions & Warnings

⚠ **WARNING:** Read all instructions before operating. Failure to comply may result in serious injury, property damage, or death.

General Safety

- Do not turn the chiller upside-down.
- Do not operate without the filter cartridge installed.
- Maintain at least 24 inches (61 cm) of clearance around all sides of the chiller, including behind the cooling fan, to ensure proper airflow.
- Keep children away from the unit and the plunge tub at all times. Cover the tub when not in use.
- Do not touch the cooling fan during operation.
- Never plunge alone if you are new to cold water immersion. Have someone nearby in case of difficulty.

Electrical Safety

- Plug the chiller directly into a dedicated, GFCI-protected 120V outlet on its own 20-amp circuit. Do not use an extension cord, power strip, or shared circuit.
- Test the GFCI outlet before first use and at least once per week thereafter — press TEST, confirm power cuts off, then press RESET.
- Maintain at least 6 feet (1.8 m) between the chiller and the nearest wall outlet, so the power cord can reach without strain or splicing.
- In the U.S., outlets used to power pool, spa, and similar water-immersion equipment are governed by National Electrical Code (NEC) Article 680. Under typical NEC guidance, a 120V receptacle for this kind of equipment must itself be positioned at least 6 feet from the inside wall of the pool/tub (not from the chiller), and any receptacle within 20 feet of the tub must be GFCI-protected. Have a licensed electrician confirm your specific outlet placement meets local code.

Temperature & Storage

- When water reaches your desired temperature, you may leave the chiller running in maintenance mode, or turn it off and unplug it if storing.
- The chiller must be used and stored above 32°F / 0°C at all times. Freezing damage to internal components is not covered under warranty.

Health Precautions

- Persons with heart disease, diabetes, high or low blood pressure, or who are pregnant should consult a physician before using a cold plunge.
- Do not use alcohol, drugs, or sedating medications before or during cold plunge sessions.

Reference: Working Temperature Range (ambient operating environment): 34°F–113°F (1°C–45°C). Storage Temperature: –4°F to 131°F (–20°C–55°C). Humidity: 20–85% RH, non-condensing.

2. Product Overview & Specifications

The North Country Saunas™ Cold Plunge Chiller is a self-contained cooling and heating system designed for residential and light commercial cold water immersion therapy. The unit includes built-in ozone disinfection, UV sterilization, a self-priming circulation pump, an external micron filter, and Wi-Fi app control. It is available in three power classes — 1 HP, 1.5 HP, and 2 HP — each offered in cooling-only or cooling + heating configurations.

North Country Saunas™ Cold Plunge Chillers — shown with included accessory kits

2.1 Specifications by Model — 120V / 60Hz (U.S. Standard)

Specification	1 HP	1.5 HP	2 HP
Cooling Capacity	8,525 BTU/hr	11,771 BTU/hr	15,464 BTU/hr
Power Input / Amps	870 W / 7.8 A	1,200 W / 10 A	1,300 W / 11 A
Locked Rotor Amps (LRA)	41 A*	41 A*	41 A*
Recommended Breaker	20 A dedicated	20 A dedicated	20 A dedicated
Refrigerant Charge	R-410A, 32 oz (900 g)	R-410A, 35 oz (1,000 g)	R-410A, 39 oz (1,100 g)
Recommended Tank Size	Up to 100 gal	Up to 150 gal	Up to 200 gal
Net Weight	95 lb (43 kg)	101 lb (46 kg)	104 lb (47 kg)

**Locked Rotor Amps (LRA) is the momentary startup current draw. Confirm this figure against the nameplate on your specific unit before sizing breakers or wiring.*

2.2 Specifications Common to All Models

Specification	Value
Water Temperature Range	37°F–107°F (3°C–42°C), varies by model — confirm against nameplate
Heating Function	Available on Cooling/Heat models — see nameplate
Ozone Output	50 mg/hr
UV Sterilization	10 W
Water Pump	Self-priming, 530 gal/hr
Water Filter	External, replaceable cartridge
Inlet / Outlet Fitting Size	1/2 in or 3/4 in (NPT quick-connect)
Remote Control	iOS & Android app (Wi-Fi, 2.4 GHz only)
Ingress Protection	IPX4 (splash-resistant — not submersible, not for direct rain exposure)
Electrical Requirement	Dedicated 120V, 20A, GFCI-protected outlet
Included Accessories	2 connection hoses, replaceable filter cartridge, PTFE thread tape, quick-start card (see photo, Section 2.3)

Important: Exact BTU, amperage, and refrigerant figures are printed on the silver nameplate on your specific unit. Always confirm your model's specifications against its nameplate before electrical installation.

2.3 Component Overview — Front Panel

Front panel — Water Outlet (green), Water Inlet (red), and filter housing

Front panel components:

- Water Outlet (green knob) — chilled/heated water returns to the tub through this port
- Water Inlet (red knob) — water flows from the tub into the chiller through this port
- Filter Housing — clear cartridge housing positioned between the inlet and outlet; contains the replaceable micron filter
- Carry handle — recessed handle above the panel for lifting and positioning
- Power cord — terminates in a standard grounded household plug; connect only to a dedicated GFCI-protected outlet

2.4 Component Overview — Rear / Top Panel

Rear / top panel — touchscreen control panel and cooling fan

Rear / top components:

- Touchscreen control panel — full color display for all temperature and system controls (see Section 4)
- Cooling fan — large axial fan with wire guard; expels hot or cold air depending on mode. Keep clear of obstructions on all sides.
- Two top-mounted recessed carry handles
- Caster wheels — for repositioning the unit; lock when not relocating the chiller

3. Site Preparation & Hose Connections

⚠ **WARNING:** Allow the chiller to stand upright on a level surface for 20 minutes before first power-on, and after any tip-over. Internal compressor fluid must settle before operation. Failure to wait causes irreversible compressor damage not covered by warranty.

3.1 Site Requirements

- Place the chiller on a flat, stable, waterproof surface capable of supporting the unit's weight (up to 104 lb / 47 kg) plus normal operating vibration.
- Outdoor placement: use a smooth, level surface free of sharp debris. Keep the unit out of direct, prolonged rain — the IPX4 rating allows incidental splash exposure only, not submersion or sustained downpour.
- Indoor placement: ensure good ventilation and a nearby floor drain; do not place directly on carpet.
- Install in a location not easily accessible to children.
- Maintain 24+ inches (61+ cm) of clearance on all sides, with extra clearance behind the cooling fan.
- Position so the fan exhaust blows away from the plunge tub, not toward it — this improves cooling efficiency.
- Ensure a standard garden hose and a dedicated, GFCI-protected 120V/20A outlet are both within reach (within 6 feet / 1.8 m, per Section 1).

3.2 Hose Connection Steps

1. Wrap Teflon (PTFE) thread tape clockwise 3 times around the threads of every inlet/outlet port — on both the chiller and the tub — before connecting any fitting.
2. Confirm a rubber gasket is seated inside each hose fitting before connecting it.
3. Connect the chiller's green OUTLET port to the tub's inlet using one of the included hoses. This carries treated water back to the tub.
4. Connect the chiller's red INLET port to the tub's outlet using the second hose. This draws water from the tub into the chiller for treatment.
5. Hand-tighten all quick-connect fittings only. Do not use tools — over-tightening can crack the plastic fitting body.
6. Visually inspect every connection point for gaps or misalignment before filling the tub.
7. Fill the tub with water. With the tub full, check every connection again for drips before powering on the chiller.

Tip: If you are pairing this chiller with a North Country round or oval barrel plunge, route both hoses along the shortest practical path and avoid kinks — a kinked hose restricts flow and can trigger a flow-fault error (Err 003, see Section 10).

4. Control Panel Guide

The chiller is operated through a full-color touchscreen panel labeled “Temperature Controller.” The layout below reflects the actual screen on your unit, with the display set to Fahrenheit (°F). The panel can also be configured to display in Celsius (°C). Both versions are shown below — the Celsius display first, followed by the steps to switch units, then the original Fahrenheit photo for reference.

Touchscreen control panel, shown displaying current temperature in °F

4.1 Display Elements

Element	Description
Cur Temp (center dial)	Displays the current water temperature in °F, shown inside an illuminated ring gauge.
Set Temp	Displays your target temperature, in °F, on the left side of the screen.
Cool / Hot indicator	Shows whether the unit is actively in cooling or heating mode.
Defrost icon (snowflake)	Illuminates automatically during an automatic defrost cycle. This is normal — do not interrupt.
Constant Temp icon	Illuminates once the water has reached and is holding at your set temperature.
Alarm icon (triangle)	Illuminates if a fault is detected. Refer to Section 10 for error codes.
Wi-Fi icon	Solid = connected to your network. Blinking slowly = not connected. Fast blink = pairing in progress.
°F / °C toggle icon	Switches the display between Fahrenheit and Celsius. Ships set to °F for U.S. units.

4.2 Button Functions

Button	Function
PUMP	Turns the circulation pump on or off. The pump must be running before you press RUN.
RUN	Starts or stops active cooling/heating. Only works once the pump is already running.
UP	Increases the set temperature while in temperature-set mode. Also used with DOWN to reset to factory defaults (see below).
SET	Press once to enter temperature-set mode (the set temperature will blink). Press again to confirm and exit.
DOWN	Decreases the set temperature while in temperature-set mode.
OZONE	Turns the ozone disinfection pump on or off.
UV LIGHT	Turns the UV sterilization light on or off.
°F/°C	Double-click to toggle the display between Fahrenheit and Celsius.
UNLOCK	Double-click to lock or unlock the touchscreen, preventing accidental input.

Factory Reset: With the pump OFF, press and hold UP and DOWN together for 5 seconds. All parameters return to factory defaults and the unit beeps four times. Note: a factory reset may also reset the display back to °C — check the °F/°C toggle afterward. See Section 4.4 for the unit-toggle steps.

4.3 Setting Your Temperature

1. Press PUMP to start the circulation pump.
2. Press RUN to begin active temperature control. The Cool or Hot indicator will begin flashing, then turn solid once the mode is confirmed.
3. Press SET once. The Set Temp display will begin blinking.
4. Use UP or DOWN to adjust to your desired temperature, in °F.
5. Press SET again to confirm. The display will stop blinking.
6. The chiller will now work automatically to reach and hold your set temperature.

4.4 Switching Between °C and °F

1. With the panel on and unlocked, double-click UNLOCK. The Set Temp field will show “Pd” and the Cur Temp field will begin scrolling through a series of internal parameter readings (this is a technician diagnostic menu, not a fault).
2. Press UP to step forward through the parameter list (P01, P02, P03…) until the Set Temp field shows “P05”. In the reference unit, P05 is the display-unit parameter.
3. At P05, the Cur Temp field will display either “F” or “C”, showing the current unit setting.
4. Press UP or DOWN once to flip the P05 value between “F” and “C”.

5. Press SET to confirm, or simply stop pressing buttons — the panel returns to the normal Cur Temp / Set Temp display on its own a few seconds after the last button press, now showing your selected unit.
6. Your Set Temp value carries over as a number and is not re-converted — for example, a set point of 3.0 will read as 3.0 in whichever unit you just selected. After switching, check Set Temp and re-enter it in the new unit if needed (see Section 4.3).

NEW — Parameter P05 showing “F”, then after pressing DOWN once, showing “C”

5. Wi-Fi App Setup (Smart Life / Tuya)

Network Requirement: Your router must broadcast on the 2.4 GHz band. The chiller cannot connect to a 5 GHz-only network. If your router broadcasts both bands under one network name, you may need to temporarily split them or use your router's 2.4GHz-specific name.

5.1 Download and Account Setup

1. Download the Smart Life or Tuya Smart app from the App Store (iOS) or Google Play (Android).
2. Open the app and register an account, or continue as a guest.
3. Enable Bluetooth and Location/GPS permissions on your mobile device — both are required for device discovery.

5.2 Pairing the Chiller

1. Turn the chiller on at the touch panel.
2. Press the Settings icon, then press and hold the Wi-Fi icon for 3–5 seconds until you hear a beep and the Wi-Fi icon begins blinking rapidly — this indicates pairing mode.
3. In the app, tap “Add Device” (or the + icon).
4. The app will search for nearby devices. When it finds your chiller, tap to add it.
5. Select your 2.4 GHz Wi-Fi network and enter your password. Tap Next.
6. Wait for the app to confirm the device has been added successfully.
7. Tap Done. The chiller will now appear on your app home screen.

App control panel — live screen showing current temperature (41.0°F) and set temperature (37.0°F)

The app mirrors the unit's current temperature and set temperature in °F by default for U.S. accounts (set your phone's regional units to °F if the app displays °C).

5.3 What You Can Control From the App

- Turn the chiller on or off remotely
- View current water temperature in real time (°F)
- Set and adjust your target temperature using the slider or numeric entry
- Switch between Cooling and Heating (Warm) mode
- View live power status and current work mode
- Access advanced settings and diagnostic information

Note: App screens are provided by the controller manufacturer (Tuya) and may display in different languages or layouts depending on your phone's region settings. The core functions — power, temperature, and mode — remain in the same positions across versions.

6. Startup Procedure

1. Complete all hose connections as described in Section 3.
2. Balance your water chemistry before the first fill, or immediately after filling and before running the pump — see Section 7 for chemical targets. Treating water before the first plunge protects both your health and the chiller's internals.
3. Fill the plunge tub with clean, filtered water. Running your garden hose for 1–2 minutes before filling helps flush out any bacteria that may have accumulated in the hose itself.
4. Fill until the water level is comfortably above both the inlet and outlet connection points inside the tub.
5. Plug the chiller into a dedicated, GFCI-protected 120V/20A outlet. Confirm the GFCI tests correctly (Section 1) before proceeding.
6. Press PUMP, then RUN. You may briefly see bubbles at the outlet as trapped air purges from the lines — this is normal and stops within a few minutes.
7. Set your desired temperature using the SET / UP / DOWN buttons (Section 4.3). For first-time use, we recommend starting at 58–60°F and lowering gradually over subsequent sessions.
8. Allow the system time to reach your target temperature before your first plunge. Cooling rate varies by model, ambient temperature, and tub insulation — expect roughly 1–3°F of change per hour under typical conditions; larger HP units and well-insulated tubs will perform faster.

Tip: An insulated tub cover dramatically improves both cooling speed and running cost. Keep the cover on whenever the plunge is not in use.

7. Water Maintenance Schedule

Clean water protects your health and extends the life of your chiller. The schedule below assumes 1–2 regular users, 3–5 times per week. Increase frequency for heavier use.

Task	Frequency	Details
Fill with filtered water	Initial setup	Use an inline hose filter if available; flush hose first
Balance chemistry	Initial setup, before first power-on	Add oxidizer and sanitizer per label instructions before first use
Test pH & alkalinity	Daily (recommended)	Target pH 7.2–7.8; alkalinity 125–150 ppm
Run ozone / UV	Each session	Leave both running continuously during normal use
Wipe waterline & inlets	Weekly	Use a clean cloth to remove biofilm buildup
Inspect inlet strainer	Weekly	Clear any debris caught at the chiller inlet
Replace filter cartridge	Monthly, or sooner if flow drops	Turn off pump before removing the filter housing
Full drain & clean	Monthly	Use white vinegar or mild soap; rinse thoroughly before refilling
Complete water change	As needed	Do not delay once water appears murky or smells off

7.1 pH & Sanitizer Quick Reference

Reading	Action
pH 7.2–7.8	Ideal — no action needed
pH below 7.2	Add pH increaser per label; retest after 15 minutes
pH above 7.8	Add pH decreaser per label; retest after 15 minutes
Sanitizer low / 0	Add sanitizer per label instructions
Sanitizer in target range	No action needed
Sanitizer far above target range	Drain and refill completely before next use

Always: Add chemicals to the water — never to an empty tub. Wait at least 15 minutes after adding any chemical before retesting or entering the water.

8. Draining & Winter Storage

⚠ **WARNING:** The chiller must be stored above 32°F / 0°C at all times. Freeze damage to internal components is NOT covered under warranty.

1. Unplug the chiller from the electrical outlet.
2. Disconnect both hoses from the chiller's inlet and outlet ports.
3. Remove the filter housing — hand-loosen, or use light tool assistance if needed.
4. Remove the filter cartridge. If it is still clean, you may retain it for future use; otherwise discard and plan to replace.
5. Carefully tilt the chiller backward to drain any remaining water from the internal inlet/outlet plumbing.
6. Reinstall a dry filter cartridge and hand-tighten the housing. Never store the unit with a wet filter — this risks mold growth.
7. Drain the plunge tub itself separately, following the tub manufacturer's drain instructions, before storing or covering it for winter.
8. Store the chiller in a dry, sheltered location above 32°F / 0°C (e.g., a heated garage or basement) until ready for spring startup.

8.1 Spring Restart

1. Inspect all hoses and fittings for cracks or wear from storage; replace any that show damage.
2. Reconnect hoses following Section 3.2.
3. Install a fresh filter cartridge.
4. Fill the tub with fresh water and follow the full Startup Procedure in Section 6.

9. Cold Plunge Protocols & Tips

Disclaimer: The following protocols are general guidelines only. North Country Saunas™ — Cold Plunge Division is not liable for injury, disability, death, or property damage arising from their use. Consult a physician before beginning any cold exposure practice if you have a relevant health condition.

9.1 Beginner Adaptation

- Start around 58–60°F for your first sessions.
- Target 1–3 minutes for your first few weeks.
- Lower the temperature gradually as your tolerance builds, typically over 4–6 weeks.
- In 45–55°F water, acclimated users may safely extend toward 8–10 minutes — listen to your body rather than chasing a fixed number.

9.2 Breathing & Entry

1. Step in slowly — feet first, then lower body, then sit to shoulder depth. Do not jump in.
2. Begin slow, controlled breathing immediately: inhale through the nose for 4 counts, hold for 2, exhale through the mouth for 6.
3. The urge to gasp typically passes within 30–60 seconds. Stay calm and keep breathing steadily.
4. Exit slowly and deliberately. Blood pressure shifts when leaving cold water — move carefully to avoid lightheadedness.

9.3 Energy & Recovery Protocol

1. Spend 15–20 minutes in a sauna beforehand, if available.
2. Enter the cold plunge and submerge to shoulder depth. Stay 60–120 seconds.
3. Exit and move actively for 2–3 minutes — light walking or stretching. Avoid sitting still immediately after.
4. Repeat for 2–3 rounds if doing a full contrast therapy session. End on cold for alertness, or end on heat for relaxation and sleep.

9.4 Benefits of Regular Cold Plunge Sessions

- Reduced joint pain
- Boosted mental & physical resilience
- Improved metabolism
- Less muscle soreness
- Elevated mood
- Increased energy
- Reduced inflammation
- Improved circulation
- Better digestion
- Better sleep quality

10. Troubleshooting & Error Codes

10.1 Common Issues

Symptom	Likely Cause	Solution
Chiller won't turn on	Outlet not powered, GFCI tripped	Press GFCI reset on the outlet; check your home breaker; confirm the outlet is a dedicated circuit
No or poor water flow	Clogged filter, kinked hose, air in lines	Replace or clean the filter; straighten hoses; recheck all fitting connections
Pump runs but RUN won't activate	Pump not detected as running	Confirm PUMP is pressed and the indicator is lit before pressing RUN
Water leaking near the unit	Condensation (normal) or a loose fitting	Mark the water level and recheck in 24 hrs — if level drops, inspect and re-tighten all hose connections
Slow cooling	High ambient temperature, poor airflow, undersized HP for tank	Move to shade, ensure 24"+ clearance around the fan, confirm tank size matches the recommended size for your HP model
Display unresponsive	Touchscreen locked	Double-click UNLOCK to re-enable the touchscreen
Display shows °C instead of °F	Unit reset to default, or factory reset performed	Double-click the °F/°C toggle icon (Section 4.2) to switch back to Fahrenheit — see Section 4.4 for the parameter-menu steps demonstrated on reference units.

10.2 Error Code Reference

Code	Meaning	Next Step
Err 001	Main water temperature sensor fault or disconnection	Power cycle the unit. If the error persists, contact support.
Err 002	Secondary temperature sensor fault	Power cycle the unit. If the error persists, contact support.
Err 003	Water flow fault — no flow detected while pump is running	Check for kinked hoses, a clogged filter, or air trapped in the lines. Clear any obstruction and restart.
Err 004	Low pressure fault	Power off, wait several minutes, and restart. If it recurs, contact support.
Err 005	High pressure fault	Confirm adequate fan clearance and that the unit is not in direct sun. Restart after cooling down.
Err 006	Compressor current overload	Power off and contact support — do not continue operating.
Err 007	Defrost sensor malfunction	Contact support.
Err 008	Temperature difference fault between sensors	Contact support.
Err 009	Water temperature below the safe operating limit	Allow the unit to warm slightly; check that the set temperature is within the rated range for your model.
Err 010	Water temperature above the safe operating limit	Check ambient conditions and fan clearance; allow the unit to cool down.

Locked Faults: Errors 003, 004, 005, and 006 will lock the system and sound a continuous alarm once triggered. After resolving the underlying cause, you must manually power the unit off and back on to clear the locked fault.

11. Warranty & Support

11.1 Limited 1-Year Warranty

North Country Saunas™ — Cold Plunge Division warrants this Cold Plunge Chiller against defects in materials and workmanship under normal residential use for a period of one (1) year from the date of receipt by the original end-user purchaser.

11.2 Warranty Exclusions

- Damage caused by storage or use below 32°F / 0°C (freezing conditions)

- Damage caused by improper water chemistry or failure to perform required maintenance
- Normal wear and tear or cosmetic deterioration
- Damage occurring during transport or due to improper installation
- Labor costs associated with a warranty claim
- Damage resulting from neglect, misuse, or unauthorized modification
- Use on an outlet that is not dedicated and GFCI-protected

11.3 Contact & Support

North Country Saunas™ — Cold Plunge Division

Phone / Text: (617) 201-2386

Email: mail@northcountrysaunas.com

Web: northcountrysaunas.com | northcountrycoldplunge.com

Support Hours: Monday – Friday, 8 AM – 5 PM (Local Time)

Purchaser Name: _____

Date: _____

Purchased From: _____

Model: ☐ 1 HP ☐ 1.5 HP ☐ 2 HP ☐ Cooling Only ☐ Cooling + Heating

Model No.: __North Country Saunas_____

When contacting support, please have your model number (from the nameplate), HP class (1 HP / 1.5 HP / 2 HP), and date of purchase ready — this helps us assist you faster.

12. Quick-Start Checklist

Before You Power On

- ☐ Unit has stood upright for 20+ minutes since unboxing or last tip-over
- ☐ 24”+ clearance on all sides, fan exhaust facing away from the tub
- ☐ Dedicated 120V/20A GFCI outlet confirmed, tested (TEST/RESET), within 6 ft
- ☐ PTFE tape applied to all threaded fittings; gaskets seated
- ☐ Green outlet → tub inlet; red inlet → tub outlet; hoses free of kinks
- ☐ All connections hand-tightened and visually inspected

Filling & Water Treatment

- ☐ Hose flushed 1–2 minutes before filling
- ☐ Tub filled above both inlet and outlet fittings
- ☐ Initial oxidizer/sanitizer dose added per label; 15+ minutes elapsed before powering on

First Power-On

- ☐ Chiller plugged into the tested GFCI outlet
- ☐ PUMP pressed first, then RUN
- ☐ Brief bubbling at outlet observed and subsided (normal air purge)
- ☐ Set temperature to 58–60°F for first-time use (SET → UP/DOWN → SET)
- ☐ Display confirmed in °F (toggle if showing °C — see Section 4.4)
- ☐ Ozone and UV running continuously

Before Your First Plunge

- ☐ Target temperature reached (allow ~1–3°F change per hour)
- ☐ pH 7.2–7.8 and sanitizer in target range confirmed
- ☐ Physician consulted if a relevant health condition applies
- ☐ A second person present if new to cold immersion

Save This Page: Keep this checklist near your chiller for the first several startups, and refer back to it each spring after winter storage (Section 8.1).