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# Frostbite

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Installation Instructions  
08-09 Pontiac G8 GT/GXP  
13-17 Chevy Caprice PPV  
14-17 Chevy SS

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PnP Tech Works, LLC

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## Introduction

Thank you for purchasing the Frostbite Chiller. Please read these instructions carefully before attempting any work to your vehicle. If your vehicle is experiencing no or poor A/C performance, do not install this product until proper diagnosing is performed.

## Required Items (not included)

- PAG46 Oil
- R134A Refrigerant
- Basic hand tools
- Toggle Switch
- Fuse Tap

## Safety Precautions & Warnings

# DANGER

**Personal injury could result in failure to follow this warning. Systems contain oil and refrigerant under high pressure. Proper refrigerant handling techniques should be completed by a qualified technician.**

# WARNING

**Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a qualified installer or service agency.**

# NOTICE

**The Clean Air Act of 1990 bans the intentional venting of (CFC's, HFC's, and CHFC's) as of July 1, 1992. Approved methods of recovery, recycling or reclaiming must be followed. Fines and/or incarceration may be levied for noncompliance.**

## Recovery

Prior to any installation of this product, the vehicle must properly have the refrigerant recovered. It is advised to schedule a service with a well trusted facility with the proper equipment to perform this task. During recovery, have the technician note the amount of oil, if any, recovered from the system. The amount

of oil lost during recovery must be added back in once installation is complete. If possible, have the technician backfill the system with a small (~5psi) charge of dry nitrogen to decrease the amount of moisture that will be exposed to the system.

## Fascia Removal

G8:

The front fascia must be removed from your vehicle to gain proper access for mounting the Frostbite chiller. Remove the two 10mm head bolts and two plastic rivets that fasten the fascia to the upper core support. Remove the four 13mm head bolts that attached the splash pan to front sub-frame. Remove four rivets (eight total) from each fender liner that attach it to front fascia and splash pan. Carefully pull back the fender liners to reveal the fasteners that attach the bumper to fender. There are two 10mm head bolts on each side. Once all of these fasteners have been removed, gently pull the bumper forward. There are two clips under each headlight that retain the fascia. A non-marring tool may assist the clips releasing the fascia. Once the fascia is detached from the clips, unclip the fog light wire harness located on the passenger side near the horn.

## Intake Removal

The intake air assembly will need to be removed in order to gain access to the suction line. This includes factory style intakes located on the drives side of the vehicle. Over-The-Radiator style of intakes may not need to be removed if clear access to the suction line connection is obtainable.

## Suction Tap

The following steps will guide you through the installation process of the suction tap onto the vehicle.

- Locate the bolted connection on the frame rail below the air box.



- Place a rag under this connection as oil may drip out.
- DO NOT PROCEED UNLESS THE VEHICLE REFRIGERANT CHARGE HAS BEEN REMOVED
- Using a 13mm wrench, remove the nut securing the connection. This nut is not needed for reinstallation.
- Separate the connection and inspect the sealing washer for damage or corrosion.
- A replacement sealing washer is provided in the "Spare Parts" kit. Replace if necessary. Coat seal with PAG46 oil prior to installation
- Locate the threaded standoff in the taps box



- Thread on the standoff on the suction line stud starting with the counter bore. The standoff should fully seat on the stud.



- Install the suction tap so that the male boss is pointed towards the firewall.



- Locate one of the M8 bolts in the kit.
- *Firmly* grab the suction line so that it is seated and square with the tap.
- Insert the M8 bolt and thread it into the suction tap *by hand* until a few threads are started.
- Use a wrench to *firmly tighten* the bolt securing the *Suction Tap* assembly.

## Liquid Tap

The following steps will guide you through the installation process of the liquid tap onto the vehicle.

- At the bottom of the condenser on the driver's side, locate the hose that connects to the outlet port. This will be a smaller diameter hose tucked in between the radiator and the frame rail. Use a shallow ¼" drive 13mm socket on a wobble extension or a universal joint to remove the nut securing the liquid hose to the outlet of the condenser. Save this nut for reinstallation.



- Remove the hose from the condenser and inspect the sealing washer.
- Replace if need be with the supplied small diameter sealing washer in the "Spare Parts" bag.
- Slide the liquid tap onto the outlet port of the condenser.
- Using the nut just removed, thread it onto the stud of the condenser outlet. Using the 13mm socket, firmly tighten the nut retaining the liquid tap.
- Install the factory hose into the female side of the liquid tap. Locate the remaining M8 bolt from the kit and thread in by hand. Firmly tighten the bolt.

## Chiller Assembly

The following steps will guide you through the installation process of the Chiller assembly onto the vehicle.

- Orient the chiller so that the ports are facing up.
- Remove the larger shipping cap from the TXV.

- Carefully pour in 1oz (20mL) of PAG 46 refrigeration oil into the large port. Once all oil is installed, reinsert the shipping plug and stand the chiller up on end so that valve is up.
- Allow adequate time for the oil to drain into the chiller assembly.
- With the "L" bracket end of the chiller facing up, insert it in from the bottom of the car in the cavity of the factory intake.
- Tilt the top of the chiller assembly towards the center of the car and hang it on the punch weld seam of the frame.
- Slide the chiller assembly forward until it contacts the core support.
- Locate the lower mounting "Z" bracket from the kit.
- Install the "Z" bracket slot over the stud on the chiller assembly so that the rubber edge catches the bottom pinch weld of the frame. You may need to slightly compress the chiller assembly against the frame rail to get the nut started.



- Using a 13mm wrench, tight the nut down until the chiller assembly feels rigid and secure.



## Lines

The following steps will guide you through the installation process of the AC lines onto the vehicle.

### Liquid Line:

- Locate the smaller diameter liquid line from the kit.
- Remove the shipping caps and inspect the oil rings on the fittings.
- If orings are damaged or missing, replace with new orings found in the "spares parts" kit.
- Remove the shipping caps from the suction tap and from the TXV on the chiller.
- Thread in the fitting into the suction tap. Keep the fitting square to the surface to insure the oring does not pinch and the pilot is properly seated. IT MAY BE NECESSARY TO REMOVE THE BOLT HOLDING THE SUCTION LINE TO THE FRAME RAIL IN ORDER TO INSERT THE SUCTION LINE FITTING.
- The suction line should run towards the front of the car and hug the outside of the frame rail.
- Install the fitting into the TXV onto the chiller
- Once line is routed, insure no kinks and tighten fittings with a 7/8" wrench

### Suction Line:

- Locate the larger diameter suction line from the kit.
- Remove the shipping caps and inspect the oil rings on the fittings.
- If orings are damaged or missing, replace with new orings found in the "spares parts" kit.
- Remove the shipping caps from the liquid tap and from the TXV on the chiller.
- Thread in the fitting into the liquid tap. Keep the fitting square to the surface to insure the oring does not pinch and the pilot is properly seated.
- Route the hose down and back towards the firewall. It should make a an easy 180° back towards the front
- Install the fitting into the TXV onto the chiller
- Once line is routed, insure no kinks and tighten fittings with a 5/8" wrench

## Wiring

The race valve solenoid only draws a maximum of 3 amps of power. The race valve is normally open so both the cabin and chiller will be operational when NO voltage is supplied. When 12vdc is supplied, the race valve will inhibit the flow of refrigerant to the cabin. Use the supplied harness to provide power the coil. Provide switched and fused ignition power the coil. A 10a max fuse is recommended to protect the coil. Use the supplied loop and heat sink tubing to protect and secure the harness. A switch can be installed anywhere on the vehicle. It can even be installed under the hood for access at the track.

## Water Lines

The chiller assembly is equipped with -12AN male ports. The upper port is the inlet with the bottom being the outlet. Reversing the flow will decrease performance. It is recommended running a 50/50 Antifreeze/Water mixture. The freezing point should be at least -10°F. **RUNNING PURE WATER WILL FREEZE IN THE CHILLER POTENTIALLY DAMAGING IT AND THE PUMP.** Water surface tension modifiers can be used only per manufactures recommendations. Too much can cause air to entrain in the water greatly reducing the pump ability to create flow.

## Reassembly

Reinstall the vehicle bumper and air intake system. Bleed the water lines of any air.

## Evacuating

The A/C system must be properly evacuated prior to recharging the refrigerant. It is recommended to have a trusted local shop perform this crucial step as well as recharging. Maintaining a 28-29inHg of vacuum over an extended period of time will insure the system is properly evacuated and all moisture removed.

## Charging

The factory charge of R-134a for the G8 GT/GXP is 20.5oz (580g). The chiller assembly will require an additional 1.1oz of refrigerant for a total of 21.6oz. It is not recommended using any refrigerants with dyes, oils, leak sealers, or conditioners.

## Performance

The vehicle's cooling capacity depends on a few factors which are mainly ambient temperature, humidity, and air flow. Air flow over the condenser is critical to performance. The condenser is responsible for rejecting the heat into the ambient air. Insure it is clean of dirt, dust, and bugs as well as fresh ambient air have a path to the condenser.

Chiller performance is factored on complete system design. Heat travels from hot to cold and greater the temperature differential, the more heat will transfer. Ideally, all of the heat absorbed would be from the intake air tract of the engine. That is not always the case as heat can be absorb "dirty heat" from the lines, tanks, and pump the water travels through. Insulating lines and tanks from engine bay and exhaust heat will increase performance.

Water volume of the system should be considered as well. Excessive amount of water will put an increased load on the A/C system. Consider your pumps flow rate and time under boost when sizing the amount of coolant. Example: A 6 GPM pump running on a car under boost for 15 seconds (5 seconds staging, 10 seconds racing) will only process 1.5 gallons of water. Excessive water capacity will only increase the amount of "dirty" heat that the chiller has to remove.

Cabin A/C performance will be altered in it's time to cool down (not necessarily its temperature). Larger water capacity will slow down the rate the cabin cools. The A/C system has to cool down the water and the cabin now. Putting the car on recirculation mode will aid in how fast the cabin cools.

With the cabin and the chiller running, the chilled water temperature will plane off around 38-40°F. This is strictly due to the vehicles HVAC control module. Once the temperature of the evaporator reaches 37°F, the HVAC control module will disengage the compressor. This protection is to keep the cabin evaporator from freezing over. With the race valve engaged, the water temperature will plane off around 15°F. Optimal water temperature will occur driving. This increases the airflow over the condenser as well as ambient air flushing out the "dirty" heat of the engine bay.

Intake Air Temperature (IAT) depends on the heat exchange in the air tract to absorb heat. Some intake tracks are better than others at exchanging the heating.