



COLD POINT CORPORATION

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IN-WALL CONDENSING UNIT

Installation Operation and Maintenance



Thank You for choosing Cold Point Corp. products! We have designed and manufactured this unit to be safe and trouble free. As the installer of this unit, you play a major role in assuring it's intended performance and customer satisfaction. The important information provided here will help you install the unit correctly and eliminate call-backs. If you are in need of assistance that is not available or provided by your local installer/contractor feel free to give us a call, write us, Fax, or e-mail us at:

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IMPORTANT! Alterations and replacement parts: Altering the product or replacing parts with non authorized factory parts will void the factory warranty and may result in adverse operational performance

and / or a possible hazardous safety condition to service personnel and occupants. If you are in doubt as to how to service this unit or where to find factory replacement parts, call Cold Point Corp. at 315.339.2331 for assistance.

'CIC' PRODUCT DESCRIPTION:

The *Cold Point 'CIC'* series-condensing unit is designed for recessed in-wall applications such as single and multi-floor apartment buildings and condominiums. Available in 1½, 2, & 2½ ton sizes these units are an ideal choice for new construction projects or as a direct replacement for *Dunkirk, National Comfort 3000, EMI 'VCH', and First Company units*. The *CIC* is typically installed through an outside wall on the same floor as the apartment or condo and connects to an air handler or furnace with an evaporator coil. The condensing unit is typically located close to the indoor air handler or furnace simplifying service and routine maintenance. A centrifugal condenser fan with draw-thru airflow

pattern makes coil cleaning easier. The *Rust-Block* system assures a stain-free building exterior. High efficiency compressors provide demonstrated reliability and low sound levels.

As a replacement unit the chassis dimensions and construction details are like the original, so installation is fast and easy and eliminates the need for exterior wall renovation. Add a *Cold Point* architectural louver for enhanced building appearance and unit protection.

Cold Point Corp. backs the 'CIC' with a customer friendly one-year parts and labor warranty and five-year compressor warranty, (see Warranty document for details). Extended warranties available.

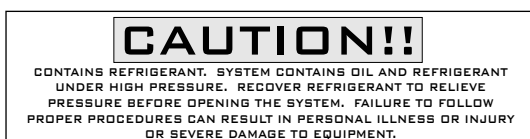
Heat pumps are available and include a thermostatic expansion valve.

OPTIONS/ ACCESSORIES:

Heat Pump
Wall Sleeves
Architectural Louvers
Low ambient controls
Extended Warranty
Wall Thermostat

GENERAL::

These instructions give information relative to Cold Point Corp. 'CIC' model units. Local codes, if different from these instructions, must be followed and supplement or supersede these instructions. A complete installation consists of: CIC condensing unit, indoor air handler or furnace with evaporator coil, interconnecting refrigerant tubes, high and low voltage wiring and thermostat.



UNPACKING AND INSPECTION:

The CIC chassis is shipped completely assembled and in it's own package. All goods are inspected at the factory and released to the freight company in good condition. When received at the site, a visual inspection of all packages should be made immediately. Any evidence of rough handling or apparent damage should be noted on the delivery receipt and the

material inspected in the presence of the carrier's representative. If damage is found a claim should be filed with the freight company immediately.

COOLING OPERATION TEMPERATURE LIMITS:

CIC series units are designed in accordance with ARI standards and will operate in cooling at outside temperatures between 60 degrees and 115 degrees Fahrenheit. If CIC series air conditioners or heat pump units will be used to cool at temperatures below 60 degrees, a low ambient control must be specified or installed. Low ambient control is available as a factory installed option or may be field installed. Contact your Cold Point dealer or call the factory. Operation below 60 degrees without low ambient control will void the Warranty.

HEATING OPERATION:

CIC Heat pumps will heat at outside temperatures down to 35 degrees Fahrenheit but capacity is reduced as outside temperatures fall. To meet the heating needs of the building, or if temperatures below 35 degrees are anticipated, a supplemental heating source is required. Back up heat may be required by local codes. Cold Point indoor units are available with supplemental heat coils. If indoor units are supplied by others be sure to specify a unit with supplemental heating.

INDOOR UNIT USE and SYSTEM EFFICIENCY:

CIC series air conditioners are designed to be compatible with most major brands of domestic or imported ducted or ductless air handlers or furnaces. CIC series Heat Pumps require factory approval for use of indoor units not supplied by *Cold Point*. Failure to get factory approval will void the Warranty.

The U.S. Department of Energy, (D.O.E.), mandates that all systems achieve a minimum efficiency of 10.0 Seasonal Energy Efficiency Rating, (SEER). Indoor units not supplied by *Cold Point* must be selected to meet the minimum 10.0 SEER.

THERMOSTAT:

Thermostats are available from *Cold Point*. Use of thermostats not supplied by *Cold Point* are the responsibility of the installer.

Proper temperature control and unit operation depends on proper thermostat selection and location. Refer to the thermostat manufacturer's installation instructions for specific recommendations. Good practice is to avoid outside walls, locations where the sun may shine directly on the thermostat, and locations where the air from

supply registers or unit outlets blow on the thermostat. Also avoid locations where the thermostat could be jarred by a closing door.

UNIT LOCATION:

The CIC is air cooled and is designed for In-wall installation. When selecting a location, be sure the air flow side, (exterior of the building), is not obstructed by trees, landscape materials, or building structure. Do not locate two units adjacent to each other where, on the outside of the building, they may blow discharge air into each other. Avoid two units on an inside corner of the building.

Heat pumps will drain water from the outdoor unit which may freeze at colder outside temperatures. Avoid areas where this water or ice may cause a nuisance or hazzard or damage building surfaces. Provisions should be made to allow access to the indoor side of the unit for installation, inspection, and service. At least 20" of unobstructed space should be provided to permit removal of the CIC unit should repair or inspection be required.

UNIT SUPPORT PLATFORM:

If the unit is located flush with the floor no platform is needed. If the unit is not located flush with the floor, a platform must be provided for the unit to set on. Make sure the platform top aligns with the bottom of the wall opening. **SHIM IF NECESSARY.**

CIC INSTALLATION IN THE WALL:

Before doing the installation, check for damage. Measure the wall depth and the wall unit. The unit must be positioned at least 1/4" beyond flush with the outside wall for caulking weather tight. *See Fig. 1* Cut and frame the wall opening to 24 1/2"W X 32 1/4"H .

1. Use a diamond-tipped or carborundum blade in a power saw to neatly score the wall opening on the outside wall. Then break through, using care to leave a neat-appearing opening on the interior of the building.
2. Install lintels only if called for in plans and specifications, or if specified in local codes; otherwise they are not required.
3. Apply a layer of mortar or roofing cement to the bottom surface of the wall opening.
4. Slide the unit into the wall and position at least 1/4" beyond flush.

TYPICAL IN-WALL INSTALLATION

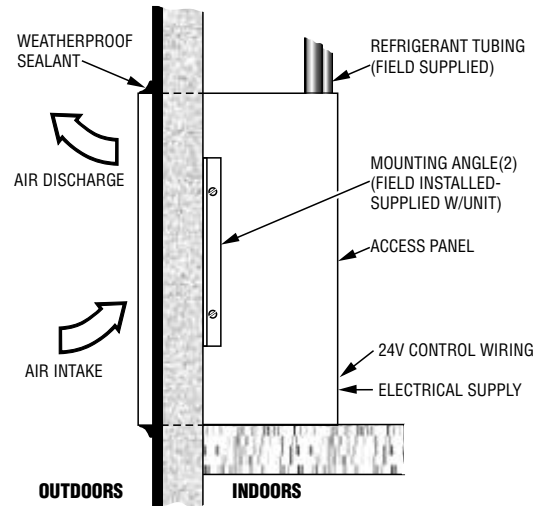


FIG. 1

5. Secure to wall. Use factory provided brackets and attach securely to the wall. **DO NOT** distort the unit cabinet.
6. After anchoring and leveling, fill the remaining gaps around the unit with mortar or caulking so that no outside air can leak in.

IMPORTANT: Make sure a high grade non-hardening sealant approved for exterior use, (silicone is recommended), has been applied between and around the surfaces and edges where the unit contacts the building exterior. This seal prevents air and water from entering the building wall. *Failure of this seal may cause damage to the building structure and allow water to enter the wall.*

ELECTRICAL WIRING and SUPPLY VOLTAGE:

All electrical wiring must be run according to NEC and local codes. Nameplate data indicates the operating voltage, phase, ampacity, maximum over current protection, and minimum voltage.

The contractor is to provide branch circuit over current protection for the unit as required by code. Run power supply wiring through a weatherproof disconnect box and conduit to the unit connection. Disconnects are required to be within sight and easy reach of the unit, (usually within 3 feet).

For low voltage wiring use NEC class 2 wire. Check the unit wiring diagram for the number of conductors required. Route neatly and protect from sharp edges and damage.

CIC series units are rated for use on 208/230V power supply circuits. Unit performance and life depend on a supply voltage that is maintained between 197V and 253V. Inadequate wiring and/or improper electrical supply will likely result in failure of the compressor and

other electrical components and voids the Warranty.

REFRIGERANT PIPING:

The length of refrigerant lines and the number of bends determine the pressure drop which affects capacity and efficiency of the system and oil return to the compressor.

The outdoor unit connections are made using a sweat type connection. Use high temperature brazing alloy for connections.

Tube size should always be the same diameter as the connections provided at the service valves. Up sizing of lines can result in inadequate oil return to the compressor and excessive refrigerant charge and will void the Warranty. See Table 1.

Table 1

Refrig. Line Data.	Model
	18,24,30
Max. Line Length	100
Max. Elevation	35
Max. Number Bends	10
Liq. O.D.	3/8"
Suction O.D.	3/4"
'P' Trap invert	Every 10' of Rise

Choose a location that places the CIC unit as close to the indoor unit as possible. The maximum separation is 100 feet of piping. Use only clean refrigeration grade tubing. Avoid piping on wet or rainy days. Always keep the tube ends capped until you are ready to make the final connections. Remove burrs from cut ends of tubing. Use tube benders to avoid kinking.

Insulate the suction line with Armaflex or equivalent with a wall thickness of at least 3/8". Support the tubing adequately to avoid sags that can trap oil. Isolate the tubing so as not to transmit noise to the building structure. Avoid sharp edges that could cut the tubes.

Maximum vertical lift (compressor above evaporator) is 35 feet. Trap risers with a 'P' trap every 10 feet.

Unit is factory equipped with a filter-drier. DO NOT field install a filter-drier.

LEAK TEST, EVACUATION & RELEASE of REFRIGERANT:

The CIC unit is supplied with R-22 charge sufficient for most matching evaporator units and approximately 10' of interconnecting tubing.

The unit's service valves are shipped in the closed position and should not be opened until final connections and evacuation are completed.

WARNING: It is illegal to discharge refrigerant into the atmosphere. Use proper reclaiming methods and equipment when working on the refrigerant containing parts of the unit. Service should be performed by a **QUALIFIED** service agency and certified technicians.

The recommended procedure for leak test, evacuation, and release of refrigerant is outlined below:

- 1). Complete the final piping connections to the indoor and outdoor units. Pay particular attention to properly tightening the flare connections at the unit's service valves.
- 2). Connect a charging manifold to the service ports provided at the service valves.
- 3). Pressurize the lines and evaporator with nitrogen and leak check all connections with soap bubbles. Repair as necessary any faulty joints. If brazing is required be sure to RELEASE THE NITROGEN FIRST. Re-test as needed.
- 4). Connect a vacuum pump to the manifold center connection, start the pump and open the manifold valves.
- 5). Evacuate to 500 microns or less for a minimum of 30 minutes. Close the valves and shut off the pump. Note the vacuum reading and wait 15 minutes. Take a new vacuum reading. A reading of 800 microns or higher indicates the presence of moisture or a leak.
- 6). Repair as necessary and repeat steps 3, 4 & 5.
- 7). Close the manifold valves and disconnect the vacuum pump.
- 8). Remove the caps from the services valves and open the valves to the fully 'back-seat' position. Replace service valve caps and tighten.

INITIAL START-UP & CHECKS

Operation of the unit is automatic and will provide cooling depending on the setting of the thermostat. Heat pumps also provide heating.

IMPORTANT! All panels must be installed, main power turned on and the thermostat properly connected before operating the unit.

- 1). System check - set thermostat system switch to "Off" position and fan switch to "Auto" position. Turn the power supply breaker on.
- 2). Set the fan switch to "On" , blower should operate.
- 3). Return the fan switch to "Auto". Blower should shut off. Set the system switch to "Cool" and lower thermostat set point to coldest setting. The compressor, condenser fan, and evaporator blower should all come on. Cool air will be produced after a couple of minutes of run time.

4). For *CIC* air conditioning units proceed to the 'FIELD CHARGING' section of these instructions.

For *CIC* HEAT PUMPS complete the following heat cycle checks:

- 1a). Move the system switch to "Heat" and raise the thermostat to a set point higher than room temperature. The compressor, condenser fan, and evaporator blower should all come on. Warm air will be produced after a couple of minutes of run time.
- 2a). Proceed to the 'FIELD CHARGING' section of these instructions.

FIELD CHARGING

Unit performance, efficiency, and life depends, to a large extent, on a proper system charge. Time spent on getting the charge right at start-up will pay off in the long run.

Operating conditions such as voltage, air flow, evaporator coil size, and indoor and outdoor temperature and humidity all have an effect on the system pressures and superheat conditions.

It is preferable to check *CIC* Heat Pump refrigerant charge in cooling in the same manner as for *CIC* Air Conditioners.

The Superheat method is the recommended method for initial field charging or checking the charge in an existing system. For proper superheat readings and calculations you will need a standard manifold gauge and an accurate thermometer for reading indoor and outdoor temperatures and suction line temperature. A mercury or stem type thermometer is not adequate and we recommend an electronic thermocouple thermometer.

PROCEED as FOLLOWS:

- 1). Run the unit for at least 10 minutes to allow the system to stabilize. Then take readings of the indoor and outdoor temperature, suction pressure, and suction line temperature. Write them down.
- 2). On the gauge face, read the equivalent temperature on the R-22 scale next to the suction pressure reading.
- 3). Read the suction line temperature as it enters the service valve. Make certain that the thermocouple is tight to the copper line.
- 4). From the electronic thermocouple thermometer reading subtract the suction pressure equivalent temperature (saturated suction).

5). Proceed to the Superheat chart on page 6.

Add R-22 to achieve the superheat reading indicated by the chart.

IMPORTANT: When connecting the manifold to the charging bottle be sure to purge the hose of air with a small amount of R-22.

Wait at least 5 minutes between charge adjustments to allow the unit to stabilize.

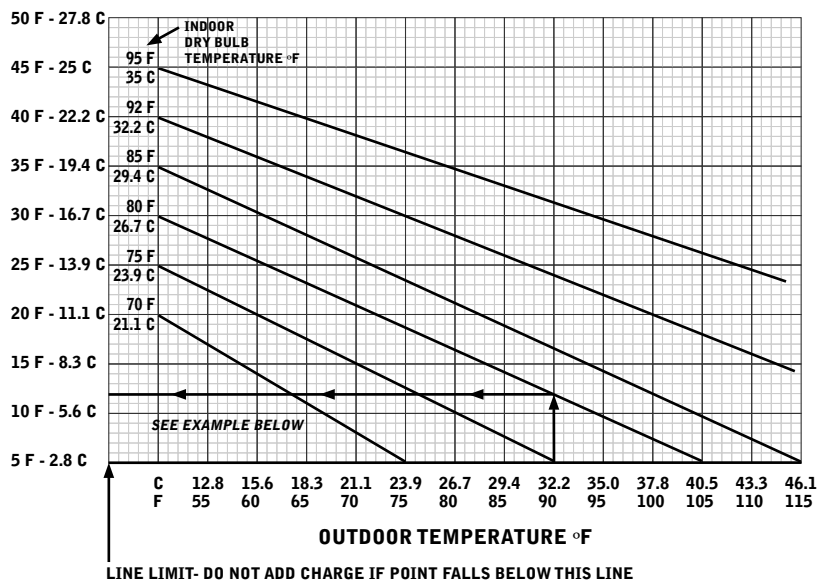
6). Remove the manifold hoses from the service valves and replace and tighten service port caps.

FINAL INSPECTION:

Do a final visual inspection of the entire installation and complete any final details and clean up.

SUPERHEAT CHARGING CHART

Chart based on 360 to 400 cfm/ton indoor airflow and 50% relative humidity, use on systems that cool with capillary.



EXAMPLE:

SUCTION PRESSURE is 65 PSI which equals 38° F / 3.3° C on the R-22 scale of the low side gauge.
 SUCTION LINE temperature taken at the unit is 70° F / 21.1° C minus 38° F / 3.3° C equals 32° F / 17.8° C superheat.

OUTDOOR TEMPERATURE is 90° F/ 32.2° C
indoor temperature is 80° F/ 26.7° C.

INTERSECTION of the indoor temperature and outdoor temperature lines occur on the 12° F/ 6.7° C superheat line.

ADD CHARGE to obtain 12° F/ 6.7° C superheat.

INSTRUCTIONS:

1. Measure suction pressure and determine evaporator refrigerant temperature on R-22 scale of low side gauge.
2. Measure suction line temperature on suction line at the unit.
3. Measure outdoor and indoor temperature.
4. Determine from the table what the superheat should be for the indoor and outdoor temperature. (Example indicates 12° F/6.7° C superheat.)
5. Adjust charge if needed. Be sure unit is running at stabilized condition.

NOTE: if operating superheat is more than 5° F/2.8° C above the chart value, add refrigerant. If below the chart value, remove refrigerant. If below the limit line, remove refrigerant.

OPERATING INSTRUCTIONS

CIC air conditioners and CIC heat pumps are designed to provide comfort cooling at outside temperatures above 60 degrees. Operating the air conditioner below 60 degrees may cause unit failure and will void the Warranty. If you have need for cooling at lower outdoor temperatures a 'low ambient cooling' option is available. Contact your local contractor or call the factory.

TO OPERATE:

- 1). Set the switch on your wall thermostat to the 'cool' position.
- 2). Set the desired temperature you want to maintain by moving the temperature setting lever or dial on your thermostat. If the room is warmer than the setting, the unit will turn on and begin to blow cool air after a few minutes. Note that a warm humid room or building may take several hours of continuous operation to cool to the thermostat set point the first time. Once the set temperature is reached the unit will cycle on and off.
- 3) Set the 'Fan' switch on the thermostat to 'auto' if you want the fan to run only when cooling is needed or to 'on' if you want continuous air circulation. The 'on'

setting of the fan generally provides better temperature control by eliminating stagnant air.

4). For energy conservation reasons you may want to set your thermostat at a higher temperature when you are away. Do not raise the temperature setting by more than 5 degrees. Changing the temperature by more than 5 degrees or shutting the unit 'off' can actually cost more than leaving the setting at a constant temperature.

5). **IMPORTANT!** Wait at least 3 minutes after turning your air conditioner off before trying to restart it. This gives the unit the time needed to stabilize before restarting. Failure to do so may cause unit damage and failure.

6). A properly installed and sized unit will not cycle more than 10 times per hour. If you notice more frequent starts call your service contractor.

HEAT PUMPS:

CIC Series Heat pumps operate in the same manner as CNC Air Conditioners but are designed to also provide heating. Heating operation is activated by setting the thermostat to the 'Heat' position and setting the desired temperature. When heating, the 'Auto' fan position is recommended.

MAINTENANCE:

Only simple periodic maintenance is required:

1). Change or clean the indoor unit air filter monthly or more frequently if unusual conditions are encountered. If you have a disposable type, throw the old one away and install a fresh one of the same size and type. If your unit has a washable type then vacuum and wash with soap and water. Flush thoroughly and dry before re-installing.

2). Keep the coil in the outdoor unit clean. Periodically flush the coil thoroughly with a garden hose. Clean away all foreign materials such as dust, leaves, grass clippings, papers, etc. **Warning:** Turn the power off first! Serious injury or death may result if water spray is directed at live electrical connections or power sources.

Outdoor Temperature: _____
 Indoor Temperature: _____
 Suction Pressure: _____
 Suction Superheat: _____
 Liquid line Pressure: _____
 Voltage @ Contactor: _____
 Amp Reading (clamp on): _____

TROUBLESHOOTING CHART

The troubleshooting chart that follows is provided to serve as an aid for identifying malfunctions that may occur. Within the chart are three columns.

1. The Problems column describes what the unit is doing.
2. The Cause column identifies the most likely sources of the problem.
3. The Correction column describes what should be done to correct the problem.

Problem	Cooling	Cause	Correction
No response to any thermostat setting	X	Main power off	Check fuses/breaker
	X	Defective control transformer	Replace
	X	Broken or loose electrical connection	Repair
	X	Defective thermostat	Replace
Unit short cycles	X	Thermostat or sensor improperly located	Relocate
Blower runs but compressor does not	X	Defective compressor overload	Replace (if external)
	X	Defective compressor contactor/ relay	Replace
	X	Supply voltage too low	Correct
	X	Defective compressor capacitor	Replace
	X	Defective compressor windings	Replace
	X	Limit switches open	Check cause/replace or repair
Inadequate cooling	X	Dirty Filter	Replace/clean
	X	Blower RPM too low	Correct
	X	Conditioned air loss due to ductwork leak	Repair leaks
	X	Introduction of excessively hot return air	Correct
	X	Low on refrigerant charge	Locate leak, repair & recharge
	X	Restricted capillary tube	Replace
	X	Thermostat improperly located	Relocate
	X	Unit undersized	Recalculate heat gains/losses
High head pressure	X	Overcharge of refrigerant	Decrease charge
	X	Non-condensable in system	Evacuate and recharge
	X	Condenser fan damaged/ broken	Repair/ Replace
	X	Dirty/ clogged coil	Clean/replace
	X	Inadequate air flow	Check, clean blower and coil
Low suction pressure	X	Undercharged	Locate leak, repair & recharge
	X	Restricted capillary tube	Repair/replace
	X	Inadequate air flow	Check, clean blower and coil
	X	Dirty filter	Clean/replace



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