COOLPOINT

DELIVERING INNOVATION

Pakistan's Largest

Manufacturers of

Air-Conditioners

PACKAGE TYPE UNIT

FOR MOBILE APPLICATIONS

Provides Turnkey Projects

Conceptual Planning

to Commissioning of HVACR Projects

A Subsidiary of WAVES

COOLPOINT

A Subsidiary of WAVES

THE LARGEST MANUFACTURER OF AIR CONDITIONING EQUIPMENT

Equipment is manufactured on latest CNC machines with prompt deliveries

Clients are welcome to visit our facilities & to discuss technical details

Provides Turnkey Projects, Starting from conceptual planning till the commissioning of HVACR projects

- Heat Load Calculation
- HVAC System Concept & Design
- Supply of HVAC Equipment
- Installation
- Testing & Commissioning
- Operation & Maintenance

Package Mobile AC Plant

Package Type Unit

Double Skinned AHU

Concealed Type AHU

Floor Standing Split AC

Vertical Type AHU

Air Cooled Water Chiller

Floor Standing Cabinet (DX/CW)

Universal Type Split AC

Cassette Type Split AC

Cold Rooms & Reefer Containers

Air Handling Units

Duct Type Split AC Unit

Tube Size 3/8"OD, 1/2"OC, 5/8"OD

COOL POINT (Pvt.) Ltd. Introduces new phenomenon of Water Cooled Air Conditioning System in small capacity units (1-Ton, 1.5-Ton, 2-Ton and 2.5-Ton

INTRODUCTION

The cool point Package Air Conditioner for Mobile Applications provides a quiet, calm, efficient, and reliable solution for applications like wedding ceremonies, catering, outdoor events, instant cooling requirements in remote areas and in industrial processes. Package Type Mobile Air Conditioners are available in vide range of capacities configurations and air patterns with transport trolleys.

Special Applications of Package Air Conditioners

- Instant Cooling Requirement in Remote Areas
- Tents / Canopy Cooling / Heating
- Industrial Processes Cooling
- Submarine / Ships Cooling
- Wedding Ceremonies
- Day Night Outdoor Events
- Air Craft Cooling
- Tunnel Cooling

QUALITY FEATURES

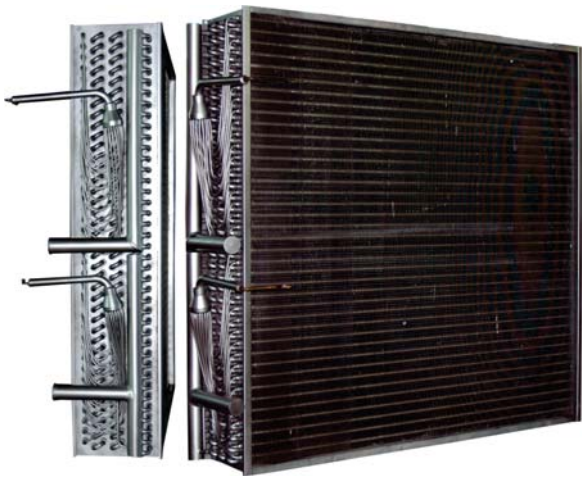
- Weather proof body designed for rouged and tough environments, for their applications outside the building, either on ground level or on rooftop.
- Evaporator units are available in various designs; a flexible duct can be used to transport air from the unit to the target area.
- These units can also be used for heating purposes during the winter season as well. Electrical heaters option available.
- Customized package air conditioners are available in different air supply / return arrangements.
- Package air conditioners for mobile applications are used in flexible foldable ducts to transport the air at any specific targeted area.
- These units can be easily mounted on the trolleys and trucks for the mobilization purpose.
- Safety precaution for the transport purpose are deeply studied before designing of these units. Therefore these units have no any technical problem in running on roads while mounted on trolleys and trucks.
- All the components installed in these units are specially selected to with stand event at high vibrations and jerks.
- These units are designed for high ambient conditions as well as very low ambient conditions suitable for all the provinces of Pakistan.

- Digital temperature controllers are provided as standard features for better control of temperatures.
- Low ambient control kit is provided so that unit can be used in low ambient condition normally.
- Cool Point Unit's have world class Copeland Compressors which are efficient with the Pakistani environment.
- Compressors are incorporated with crank case heater to minimize the flow of refrigerant to the compressor in OFF condition.
- Condenser & Evaporator Coil are made of seamless copper tube and aluminum fins are corrugated to provide the maximum contact with air for the better heat transfer. These coils are tested for leakage in ISO certified system to provided assurance.
- Aluminum washable filter with 40% efficiency are provided as standard feature in all Package Air Conditioner for Mobile Applications.
- Filters are accessible from the front for easy washing and maintenance.
- All the Package Air Conditioners are provided with thermal expansion valves to provide the real time cooling control as per the requirement.
- Additional accessories / features can be provided within the same design and configuration.

Body Manufacturing

Unit casing is made from heavy gage galvanized sheet, after fabrication all parts are phosphate coated and then electro statically dry powder coated to provide excellent anti corrosion protection. Unit casing is provided with access door for service and maintenance.

Cooling Coil

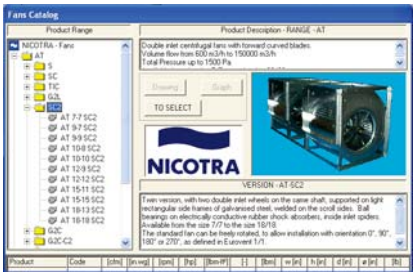


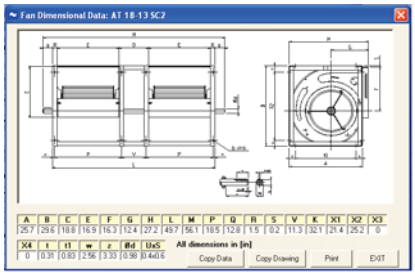
Cool Point Cooling / Evaporator coils are designed and selected on latest engineering software's, therefore, all the coils are designed in accordance with ARI and ASHRAE ratings. The technical data of these selected coils can be provided on request.

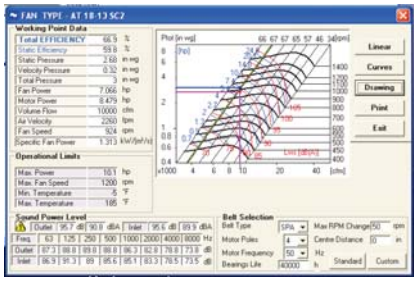
These coils are made of copper tube and aluminum corrugated fins which are mechanically bonded for the better heat transfer. These coils are designed and fitted in such a manner so that moisture can be removed quickly.
All coils are provided with copper inlet/outlet header as standard features. All connections are extended from the casing of unit for easy installation. The coils are tested in water tank with a nitrogen pressure of 325 PSI pressure. Control valves of any sort can be provided with the unit as an optional accessory.

Evaporator Fans

Blower fans are selected on computer software for the purpose of optimized performance. Following is the procedure of fan selection. Fan data is available on request.





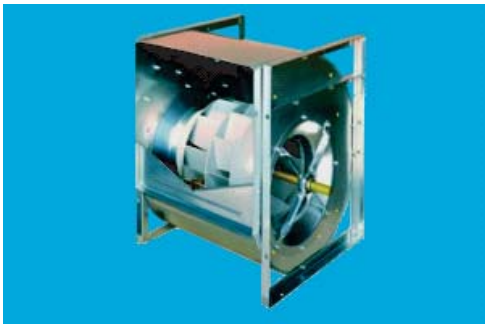


Fan Types:

Forward Curved Centrifugal




Backward Curved Centrifugal




Cool Point provides a variety of fans which are selected on the latest software's in our A/C Units. The selected data including the fan curves can be provided on request also this data is attached with this catalogue as well.

Fan Sections are openable to access the fan drive system. The complete fan supply system is mounted on the rubber mounting to dump the vibrations. These mounting can also be provided in suitable springs. The electrical motors used in Cool Point Split Air Conditioning Systems comply all the necessary international safety and manufacturing standards.

The construction standard used for Cool Point fans is inspired to the maximum strength and reliability, independently from the construction version. Common characteristics of these fans are:

- Superior Quality.
- High Performance.
- Economical.
- Low Sound Level.
- Ease of Assembly.
- Blower / Fans are dynamically and statically Balanced

Refrigeration Operations

These package air conditioners have two independent refrigeration circuit having independent compressors. Both the refrigeration system can run independently as well as simultaneously. Refrigeration components used in every refrigeration circuit is of Danfoss / equivalent. The refrigeration system is controlled by thermal expansion valve to provide the reliable cooling performance.

The refrigeration system is a close loop circuit in which refrigeration is continuously circulated.

There are two pressures existing in a compression system the evaporating or low pressure and the condensing or high pressure.

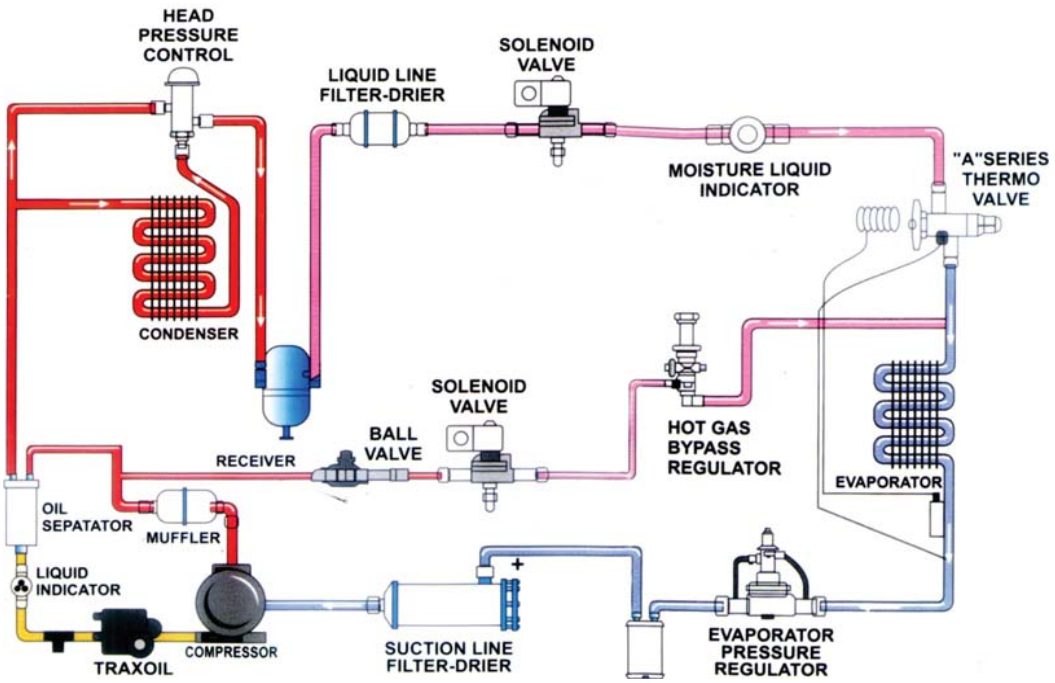
The refrigerant acts as a transportation medium to remove heat from evaporator to condenser where it is given off to ambient air.

High-pressure liquid is fed through liquid line and filter drier to the expansion valve separating high-pressure side of the system from low-pressure side. The thermostatic expansion valve controls the feed of refrigerant to the evaporator, and by means of an orifice reduce the pressure of the refrigerant to the evaporator pressure or low side pressure.

As the low temperature refrigerant pass through the evaporator coil, heat from surroundings air flow through walls of the evaporating tubing to the refrigerant, causing the refrigerant to boil and heat from the surrounding air is extracted by the refrigerant. The refrigerant boils or vaporizes until the refrigerant reach its saturation temperature corresponding to its pressure. The expansion valve regulates the flow through the evaporator as necessary to maintain preset superheat.

The refrigerant vapors leaving the evaporator travels through the suction line to the suction accumulator. The compressor takes the low-pressure vapors from accumulator and compresses it, increasing both the pressure and temperature. The compressor forces high pressure and high temperature vapors into the condenser coil. The ambient air drawn over the condenser coil extracts the heat from high temperature vapors. As the temperature of the refrigerant vapor reaches the saturation temperature corresponding to the high pressure in condenser, the vapors condense into the liquid. The high-pressure liquid flow from condenser coil to expansion valve through liquid line to complete the cycle.
The refrigeration process is continuous as long as compressor operates.

REFRIGERATION CIRCUIT DIAGRAM



Temperature Controller

Digital temperature controller with display is provided on the panel side of the unit for visual information of set temperature as well as current air temperature.

Drain Pans

Evaporator coils are provided with drain pans to remove the condensate from unit. The drain pans have double walled construction with sandwiched insulation, to eliminate the moisture condensation on the outer casing of unit. The drain connections are provided at sides of the unit for ease.

Status Monitoring Options

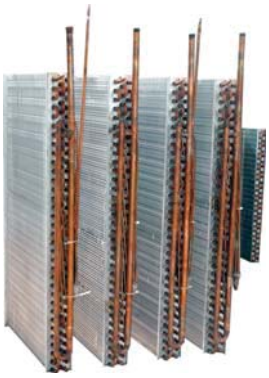
Complete status monitoring is provided at the front of the indoor cabinet, available information includes:

- Digital temperature indications & controls
- Cooling / heating status
- High pressure trip indication
- Low pressure trip indication
- Compressors trip indications
- Condenser motors trip indications
- System running indications
- Power supply on / off indications
- Auto restart *(optional)*

Condenser Coils

Condenser coils are designed for high ambient as well as dusty environmental conditions. These coils are made of copper tube and aluminum corrugated fins which are mechanically bonded for the better heat transfer.

All coils are provided with copper inlet/outlet header as standard features. All connections are extended from the casing of unit for easy installation. The coils are tested in water tank with a nitrogen pressure of 450 PSI pressure in a ISO 9001:2000 Certified Testing facility. Condenser coils are also provided with sub-cooling circuit to assure 100% liquid flow to the expansion valve. Moreover, our condenser coils are also available in different weather protected coatings. Condensers with copper fins are also available for special applications.

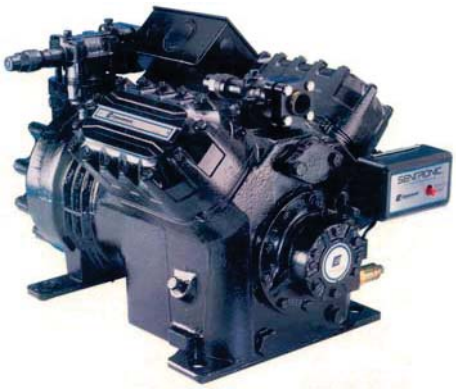


Compressors

These units have 2 independent compressors to run independent as well as parallel. These compressors are fixed upon vibration isolating pads to dump the vibration as well as sound. These compressors have internal thermal protection to avoid any overloading due to voltage fluctuation. Compressors are incorporated with crankcase heaters for the application in very low temperature environment. In order to prevent the transmission of noise and vibration from the compressor through the refrigeration piping, the compressor suction and discharge lines employ with flexible metallic hose (vibration absorber). These hoses reduce transmission of vibration from compressor to other components of the unit. The compressors are also mounted on spring isolators to reduce vibration within the unit. Following compressor options are available for different duty / applications.

Hermetically Sealed Scroll

Semi Sealed



Screw Compressors

Condenser Fans & Motors

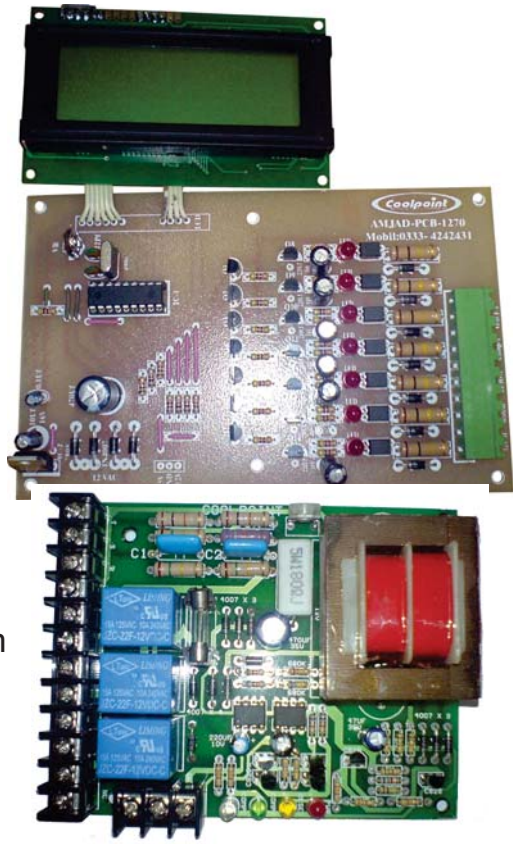
Statically and dynamically balanced impeller fans are used in Cool Point condensing units to provide the smooth and noiseless operations. The Condenser Motors are designed for water proof applications. Condenser motors are also fixed with rubber mountings to avoid any vibration and noise.

Refrigeration Components / Piping

All the components used are of Danfoss or equivalent brand with improved warranty period. The refrigeration system components are selected through latest software provided by OEM so that the exact component suitable for system should be selected. Moreover, computer simulation software is used to check the performance compatibility of the component with rest of the systems. The piping used in the refrigeration circuit is of heavy gauge with stand and high temperature and pressure.

Electrical Panel

Electrical panel of these condensing units have the following standard and optional features.



- Phase Failure Kit
- Phase Sequencer
- 3-Phase under and over volt protection
- Timer (for compressor control)
- Fuse
- Motor Faulty, Motor Belt Faulty, Blower Motor Wire Faulty
- Contactor coil faulty
- Over load trip
- Condenser fan trip display
- Low and high pressure switch trip display
- Compressor trip display
- Power breaker three phase (for system safety)
- Neutral and control breaker single phase
- High Amp control with timer (ON and OFF)
- Auto reset (with system power reset)
- Manual reset on power

Power volt 180 VAC ~ 380 VAC

SAFETY FEATURES / DEVICES

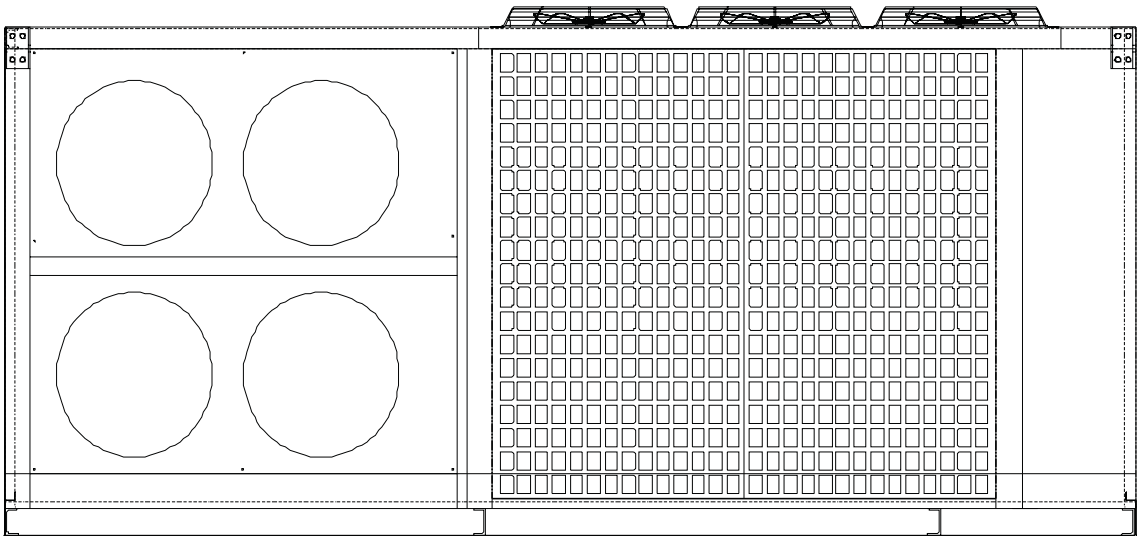
- Compressors are provided with internal safeties as well as external compressor contactors with electronic overload.
- Phase failures and sequence is provided in the main electrical panel to provide safety against the phase reversal.
- Electronic overload relays for compressors, condenser motors and evaporator motors are provided in the electrical panels to protect the motors and compressors against overloading.
- High / low pressure switches (Danfoss) is provided to protect the compressor and refrigeration system.
- Low ambient temperature control kit is provided to protect the compressor even at very low temperature.
- Accumulators are incorporated in refrigeration systems to avoid liquid flooding into the compressor Dom.
- Liquid receivers are used for the even and smooth supply of liquid refrigerant to expansion valves.
- Main circuit breakers are provided in the main electric panel to isolate the system from the main supply.
- Oil separators are standard features to mange the oil economy in the refrigeration systems.
- Emergency stop input *(optional)*
- Liquid and discharge service valves
- Compressors internal thermal protection

ADDITIONAL FEATURES AVAILABLE

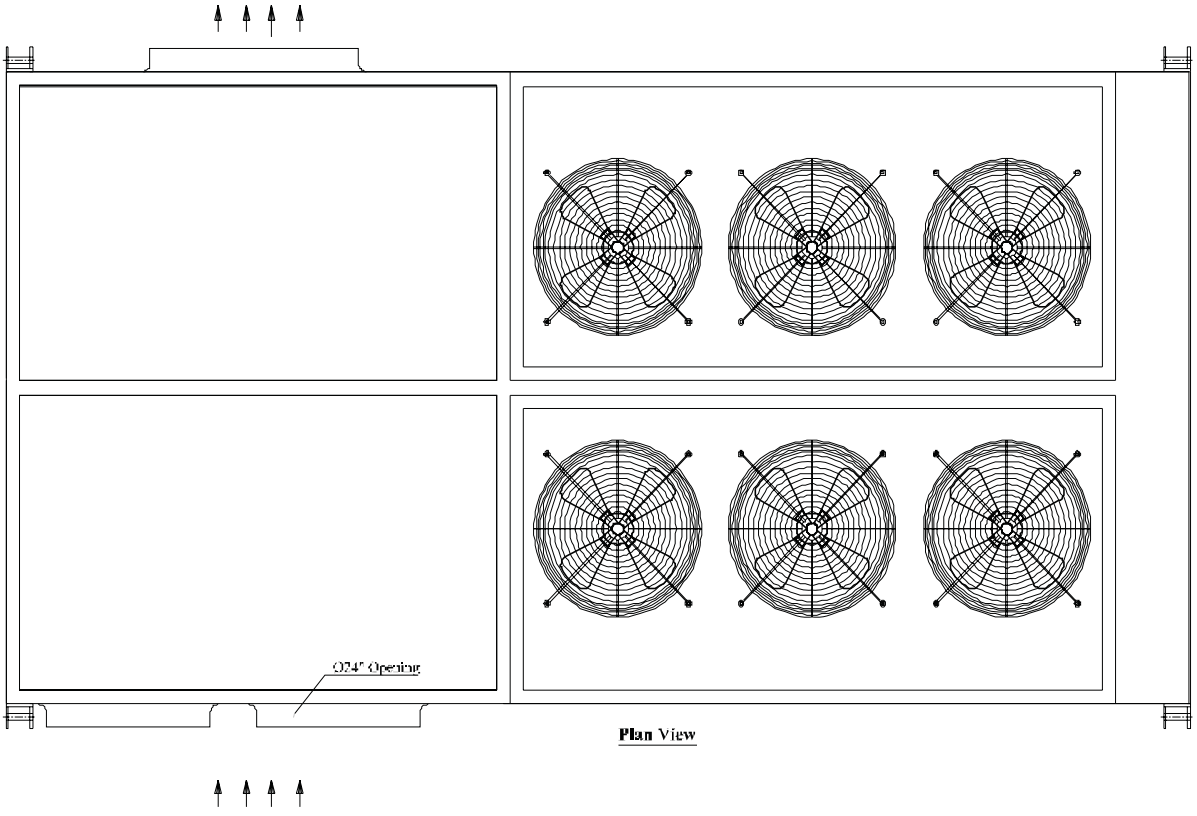
- Package Air Conditioner for Mobile Applications are available in cooling capacities starting from 10 to 100 Ton.
- These units are available in different arrangement and configurations to attached with flexible ducting system.
- Heating options: Electric heating & heat pump (reversible refrigeration system)
- Evaporator fan can be provided with variable frequency drive for the variable speed application.
- Backward curved evaporator fans can be provided for the high static pressure applications.

- Copper evaporator / condenser coils.
- High capacity evaporator coils of capacity 10 to 100 Ton.
- Special evaporator coils are available for low humidity applications.
- Special paints / coatings in different color are available.
- Double wall / single wall evaporator area.
- High efficiency washable aluminum filters.
- Power supply monitoring.
- Energy hour meter.
- Draw through and blow through.
- High and low static pressures units.
- Capacity control steps.
- Microprocessor with communication interface module.
- Sequence controller.
- Computer integrations.
- Heating / cooling.
- Available in refrigerants R-407 CFC free and R-22.

TECHNICAL DRAWINGS

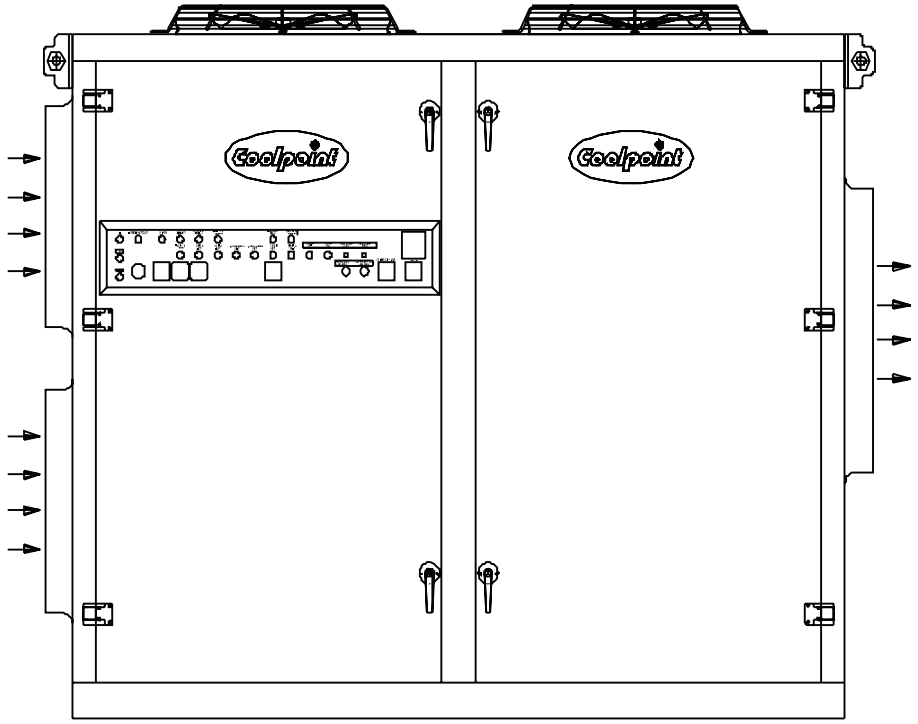


Elevation

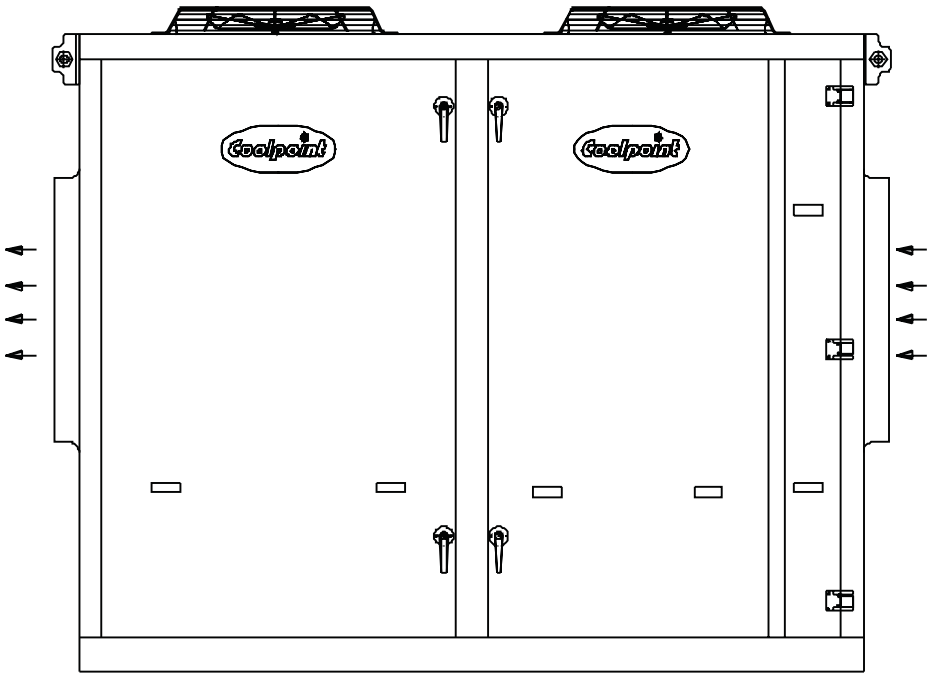


Plan View

TECHNICAL DRAWINGS



Rear View



Front View

Different Models of Mobile Package Type Unit








SAFETY PRECAUTIONS

Caution

This unit employs high voltage precision equipment with rotating components. Exercise extreme care to avoid accidents and ensure proper operation. The components in the unit have been factory adjusted to meet the requirements of operating pressures. The repair technician must be thoroughly familiar with the unit's special design repair or adjustment.

Important

WHEN OPERATING THE UNIT, ENSURE THAT THE CONDENSER AIR INTAKE AND DISCHARGE OPENING ARE COMPLETELY UNOBSTRUCTED.

PREVENT PRESSURE BURSTS	Vent refrigerant pressure from any are of the system to be repaired.
PREVENT PERSONAL INJURY	STAY CLEAR OF ROTATING COMPONENTS. Their automatic controls may start them unexpectedly. Disconnect main power to the unit before performing any service or repairs.

W A R N I N G

PHOSGENE IS A DEADLY POISON GAS GENERATED WHEN REFRIGERANT IS EXPOSED TO A FLAME ENSURE ADEQUATE VENTILATION DURING REPAIRS