

AIR COOLED PACKAGED CHILLER

UNIC sal is equipped to produce a wide range of **COOLER®** Air conditioning and Refrigeration units, conforming to the international standards and works continually to improve its products and facility. As a result, the design and specifications of each product at the time of order may be changed without notice and may not be described herein. Please contact our customer department for specific information on the current design.

Consultancy & Design Our Engineering Dep't is always available to solve special requirements, investigating the client situation and using the most sophisticated available tools. The knowledge and the precious experience of our Engineers is supported by the most advanced computerized calculations and design programs.

Revision AG 16-07



COOLER® is equipped to produce **Air Cooled Packaged Liquid Chillers** which conform to standards set by advancing technologies and use the most sophisticated American and European materials.

APPLICATIONS. Perfectly convenient for Apartments, Offices, Small and Large Industries, Hospitals, Hotels, Sports Halls and Mini or Maxi Store. Units are especially patterned to meet modern design requirements and are suitable for vertical air flow.

Standard COOLER® Air Cooled Packaged Liquid Chillers have the following characteristics:

CAPC Models: from 30 up to 502 Ton (from 87,000 up to 1,500,000 Kcal)

= All Units can be custom tailored on request =



The **COOLER® Air Cooled Packaged Liquid Chillers** is a packaged unit completely factory assembled on a stiff steel structure with panels made from heavy gauge zinc galvanized or zinc or primed sheets with a baked fine enamel finish, making them weather resistant and suitable for outdoor installations. All piping and electrical wiring are ready for external field connection.

Units are factory tested at 28 bar (400 psig), flushed and Freon charged. Compressors have the initial oil charge.

OPERATIONAL TEST are performed to verify that all circuits and safety devices are operating properly with large margins of security.

NOISE TEST are also performed to verify that body panels, fans and motors, air and liquid flow, etc, shall operate according to the highest standard of performance.

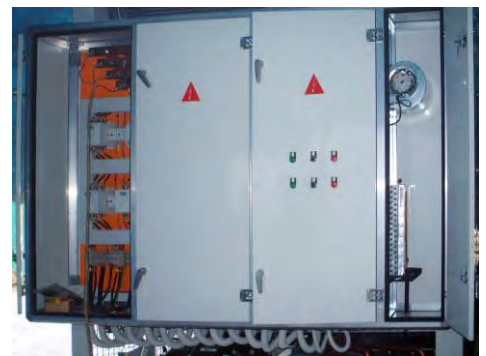
CONTROLS CABINET A weatherproof cabinet harbours all indicator devices, switches, lamps, as well as most of the relays, contactors, circuit breakers, pressure gauges, electric terminals, etc.

Power Compartment controls include:

- -Compressor motor contactors.
- -Fan motor contactors.
- -Fan motor circuit breaker(s).
- -Power terminal blocs 230 & 400V 50Hz.
- -Separate 230V control circuit terminal block (for field wiring).
- -Compressor staging relays.
- -Compressor crankcase heater relays.
- -Control circuit terminals.
- -Control circuit breaker(s).
- -Field auxiliary control terminals.
- -Refrigerant high pressure cut-off manual reset.
- -Refrigerant low pressure cut-off.
- -Electronic digital Thermostat chilled liquid cycling.
- -Freezestat low liquid temperature.
- -Restart compressor time delay.
- -High and low voltage protection.
- -Phase failure protection.
- -Fan cycling controls pressure actuated (optional).
- -Compressor staging (optional).
- -Liquid flow control (optional).
- -Soft start electronic control (optional).
- -Micro-processor programmable controller (optional).

Safety and Operating Controls include:

- -System on-off switch.
- -Oil pressure cut-off manual reset.



PRESSURE GAUGES. Factory mounted suction and discharge pressure gauges for each refrigerant circuit and an oil pressure gauge for each compressor are provided. Each gauge is supplied with its own manual shutoff valve.

FAN CYCLING MEDIUM AMBIENT CONTROL. Fans are automatically cycled in response to gas pressure to maintain adequate head pressure and allow compressor start at 30°F ambient (optional).

COMPRESSOR CIRCUIT BREAKERS OR COMPRESSOR FUSE BLOCKS. Either companion trip, ambient compensated circuit breakers with built-in three leg overload protection; or three leg fuse blocks, with time delay (dual element) fuses, provide additional protection for each compressor (option).

REFRIGERANT PIPING. All circuits are made of brazed seamless copper tubes.

Refrigerant circuits include:

- -Manual liquid line shut-off valve.
- -Automatic liquid line shut-off valve.
- -Refrigerant filter-drier.
- -Liquid sight glass/moisture indicator.
- -Liquid line solenoid valve.
- -Thermal expansion valve.
- -Permanent charging ports.
- -Liquid receiver.
- -Suction accumulator (heat pump).
- -External muffler (optional).

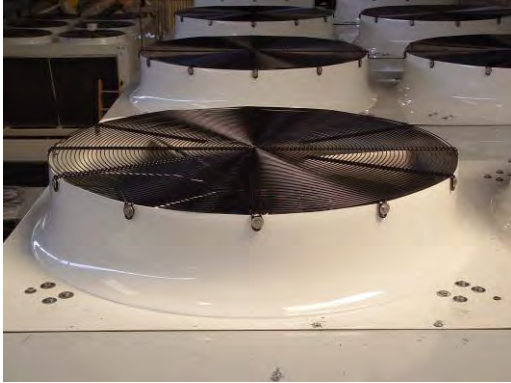


DISCHARGE LINES Formed of pre-bent tubing or elbow fittings with long radius bends to eliminate vibrations and minimize pressure drops.

SUCTION LINES Designed for minimum friction loss and proper oil return. All suction lines are insulated with flexible closed cell hoses.

CONDENSER COILS Made of seamless copper tubes expanded onto aluminum fins. Copper fins and lacquered or anodized fins are also available on request. Size of pipes, number of rows, face area, etc., are in accordance with the compressor capacity, evaluated as per ARI standard code.

CONDENSER FANS are direct driven propeller type. Blades are statically and dynamically balanced and run at low RPM for quiet and vibration-free operation. Fan blades are protected by heavy gauge fan guards. On request a centrifugal forward curved type blower can be supplied, statically and dynamically balanced, with parts made of galvanized steel sheet, driven directly or by belts.



FAN MOTORS are permanent split capacitor induction type or three phase type with inherent thermal protection. Motors have permanently lubricated ball bearings and are of water proof enclosed type designed for service at ambient temperatures up to 60 °C, with additional moisture protection, making them suitable for outdoor conditions. Motors are suitable for horizontal and vertical working positions, and run at low speed, producing low noise, and are manufactured in accordance with most European and American electric norms.

COMPRESSORS. COPELAND semi hermetic compressors are used, refrigerant gas cooled type with built-in thermal protection, crankcase heater and large voltage capacity, suitable for 50 and 60 Hertz application. Each compressor is mounted on isolator pads and connected via flexible — vibration — absorbers to the coil copper tubing to reduce vibration transmission to the rest of the unit. Compressors are designed for high energy efficiency, compact construction , rugged reliability, long-life and are maintenance free. Compressors can be disassembled in the field for service.

Oil level sight glass is standard. Oil electronic pressure control cuts the power to the motor when the pressure drops below acceptable limits. Larger compressors have a built-in relief valve between suction and discharge lines which will open if the maximum permissible pressure differential is reached.



EVAPORATOR is a shell and tube type cooler. The construction is in accordance with most American and European Norms and codes (TEMA — RINA — ISPEL — TUV - SDM). Weather and corrosion resistant suitable for outdoor applications. Gas tubes are made of seamless copper tubes and are tested at 28 bar (400 psig). Shell have standard trade water outlets for thermostat, air vent, drain and water main stream. This liquid cooler is also suitable as liquid heater in Heat pump mode.

ECONOMIZER shell and tube type is available on request, it improves the chilling capacity of the unit, by precooling the chiller, and preheating the gas at the compressor suction line.

ELECTRIC junction board shall be color coded and wires identified for easy field connections and maintenance. It includes compressor and fan motor contactors, thermal overload protection, high/low voltage and phase failure protectio, pressure protection cut of relay with compressor restart delay, compressor crankcase heater relay, circuit fuse beakers, and coded terminals.



WATER PUMP can be included as an accessory according to client specifications. Thermometers and pressure gauges on the liquid inlet and outlet can be provided on request. Air vents are standard.

INSTALLATION of the unit is easy because it needs only to be connected to the outside utilities: liquid line and electric power supply.

ELECTRIC BOARD with remote control and functional display with duty lamps and alarms can be supplied.

24 VAC transformer ready to connect electronic thermostat (optional).

ACCESS to all internal parts for cleaning or maintenance, needs loosening of a few screws only to remove any pane. All parts can be easily removed & replaced.



COOLER® Service Department is always available to serve our customer and ready to solve any problem.

COOLER® Project Department is ready to study cases and to supply the most economic, yet feasible solutions.



QUALITY GUARANTEE

UNIC sal **COOLER®** guarantees contractual free maintenance, availability of all parts and components, and qualified field technicians to carry out the maintenance requirements.

UNIC sal Company is ISO 9001:2015, DQS-UL, IQNet and CE Certified.

UNIC sa Roumieh (Industrial area) Beirut
Tel: +961.1.890111-222 — 1.884579 — 1.878853 — 3.236936
Fax : +961.1.878854 — P.O.Box 90.1701 Beirut, LEBANON
unic@unic-cooler.com - www.unic-cooler.com