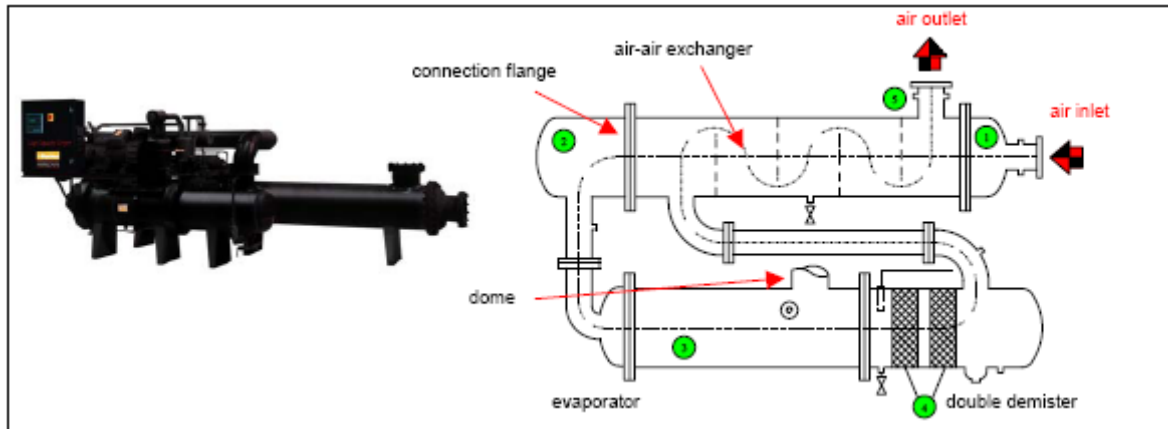


## Large Capacity Dryer (LCD) - GENERAL TECHNICAL SPECIFICATIONS



### COMPRESSED AIR CIRCUIT

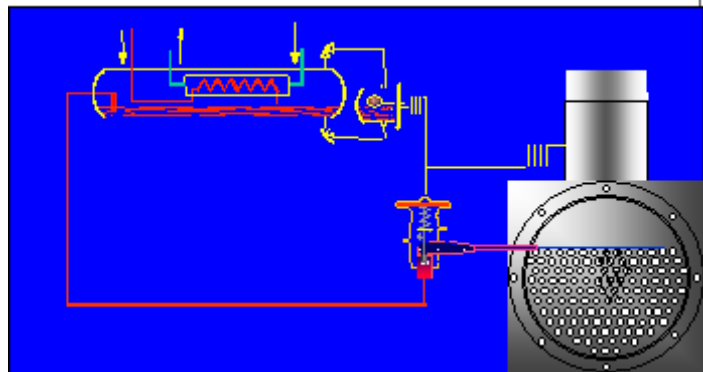
Two very compact pressurised recipients contain all the stages necessary to guarantee perfect treatment of the compressed air. They are arranged in order to guarantee a constant crossing speed and are provided with connection flanges which, arranged in several places, ensure easy access to the internal parts of the circuit. The hot and moist compressed air enters the air-air exchanger [1] and then flows inside the tubes, cooling down. At the air-air exchanger outlet [2] approx. 70% of the total condensate separated by the dryer is discharged. The saturated air then enters the evaporator tubes [3] and is cooled by the liquid refrigerant bath to the design dew point (3°C). The double demister at the evaporator outlet [4] enables separation of the condensate which is then discharged. The saturated air at dew point returns inside the air-air exchanger where it is postheated flowing in the shell side. The outlet is usually 7-10°C lower than the inlet temperature.

*Air-air exchanger:* tube type in aluminium, designed and sized to minimise pressure losses. The exchanger is contained in a recipient-shell which, made from carbon steel treated with sandblasting and protective paint, is PED certified. Other materials are available by request.

*Evaporator:* tube-nest with spiral copper tubes (other types of tubes by request), flooded type and with "dome" configuration to guarantee very high efficiency and careful control of the dew point. In the liquid stage (at low pressure and low temperature) the refrigerant is contained in the shell side and kept constantly at the right level (to wet all the rows of tubes) by means of a sophisticated control and adjustment system.

*Condensate separator:* consisting of a double demister in stainless steel which, thanks to the particular configuration, ensures high efficiency even in operating conditions with variable delivery and low compressed air flow speed.

There are also two timed condensate dischargers (electronic with level sensor also available by request) installed downstream of the air-air exchanger and evaporator and managed by the control microprocessor.



## REFRIGERANT CIRCUIT

*Refrigerant compressor:* semihermetic piston type, able to ensure reduced energy consumption, maximum reliability and easy use. In the presence of low loads the refrigerant compressor can work in part-loading mode (the capacity steps vary according to LCD model), delivering a lower refrigerating capacity and ensuring a considerable reduction in absorbed power. Step modulation occurs by excluding from the compression stage one or more heads equipped with solenoid capacity valves.



The economizer exchanger, contained inside the liquid recipient, enables vaporisation of the liquid refrigerant which, coming from the evaporator dome together with the oil, exchanges heat with the liquid refrigerant coming from the condenser: all this optimises the thermodynamic cycle, ensuring the right compressor infeed overheating and the right condenser outfeed sub-cooling.



*Capacity control:* thanks to the hot gas injection system, in the lack of thermal load and with reduced air loads, the excess refrigerating capacity is dissipated by injecting the hot refrigerant compressor discharge gas in the liquid bath of the evaporator. The hot gas valve is servo controlled and enables very careful adjustments, guaranteeing a constant dew point in all operating conditions.

*Condenser:* very high efficiency tube type, water cooled, with low pressure losses and maintenance, equipped with pressure regulating valve for automatic control of condensation pressure. Various materials are available according to the type of application.

## MANAGEMENT AND CONTROL SYSTEM

The LCD units are controlled and managed by a sophisticated microprocessor (supplied standard) able to provide much information, on the special display, in addition to the dew point and the alarms. All the functions are completely programmable, for customised management of the dryer.

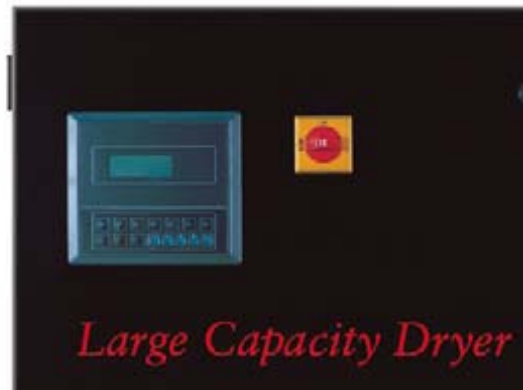
An hour meter connected to the compressor and a programmable function for monitoring technical intervention frequency simplify the scheduling and checking of maintenance operations.

A status report stores the last 8 events, whereas a secondary report stores the sensor readings in case of alarm activation, allowing quick diagnosis in case of malfunction.

The complete series of alarms can be programmed by the user; text messages in clear are supplied if an alarm is activated.

Voltage-free alarm contacts are also provided for signalling machine status and general alarm conditions. The microprocessor's backlit digital display can be installed up to a distance of 60 m from the dryer.

To enable interfacing between the dryer and a BMS (Building Management System) it is possible to install an RS485 interface in the I/O card and utilise a Gateway device for communicating in MODBUS protocol. The RS485 interface and the Gateway are optional by request.



## OPERATING LIMITS

The standard LCD configurations enable a max. working pressure of 10 barg and an inlet air temperature up to 50°C.

### CERTIFIED QUALITY

The high quality standard of the LCD range is certified by the "CE" mark in accordance with directives EN 97/23/EC, form H1 (PED), 2006/95/EC, 2006/42/EC, 2004/108/EC. All the dryers ensure constant quality of the treated compressed air in compliance with Standard ISO 7183, also thanks to the many functional tests each single dryer undergoes in accordance with ISO 9001 quality assurance procedures.

### CONDENSATE DISCHARGERS

The entire LCD range comes standard with two timed dischargers, already installed and connected, whose control is entrusted to the microprocessor provided standard in all models. Electronic dischargers with level sensor are available by request.

### FAST AND EASY MAINTENANCE

The easy and complete access to all the components, including the electrical panel, simplifies and speeds up technical maintenance interventions.

### RESPECTING THE ENVIRONMENT

The sophisticated technological solutions utilised by Parker Hiross, together with the use of ecological refrigerants (R404A standard and R134a by request), offer every user considerable and real advantages in complete respect for the environment.

### SPECIAL VERSIONS

The LCD is a product suitable for adapting to the real application needs of users worldwide, through the use of special materials and treatments, customised electrical panel and controls, applications for low or high pressure, etc. Many special versions have been designed that make the LCD are truly unique dryer. Contact your Parker Hiross partner for a study and appraisal of the best solution for your application.