

# 60kW<sup>1</sup> Packaged Industrial Chiller

## LPA 41 BT



### FEATURES:

Air cooled packaged glycol chiller designed for industrial process cooling, including:  
Highly energy efficient, low noise, hermetic scroll compressor  
Refrigerant - R410a  
Electronic expansion valve  
Integral High Performance 2.8 Bar pump  
Integral pressurised/closed loop buffer tank  
Suitable for indoor or outdoor siting  
Three phase power supply

### Specification Overview<sup>4</sup>

Model	LPA41 BT
Cooling Duty @ 15°C Fluid, 30°C Ambient	49.3 kW <sup>1</sup>
Cooling Duty @ -4°C Fluid, 30°C Ambient	28.4 kW <sup>1</sup>
Settable Temperature Range	-4°C to +15°C
Refrigerant	R410a
Refrigerant Charge	7.0kg
Fluid	Water/Glycol 30%
Fluid Flow Rate	3,600 to 9,600 Litres/Hour <sup>2</sup>
Ambient Air Temperature	30°C <sup>1</sup>
Internal Pump Maximum Pressure	2.8 Bar <sup>2</sup>
Internal Pressurised Tank Capacity	180 Litres
Connection Sizes	1.25" BSP
Power	400V/3Ph/50Hz
Full Load Amps	36.6 Amps
Dimensions (mm)	1,402 (H) x 1,910 (L) x 950 (W)
Net Weight	520 Kg <sup>3</sup>
Suitable for Indoor or Outdoor Siting	Fully Weatherproof

<sup>1</sup> Correction Factors, Page 5

<sup>2</sup> Pump Performance Graph, Page 3

<sup>3</sup> Including Packaging and Refrigerant, Tank Empty

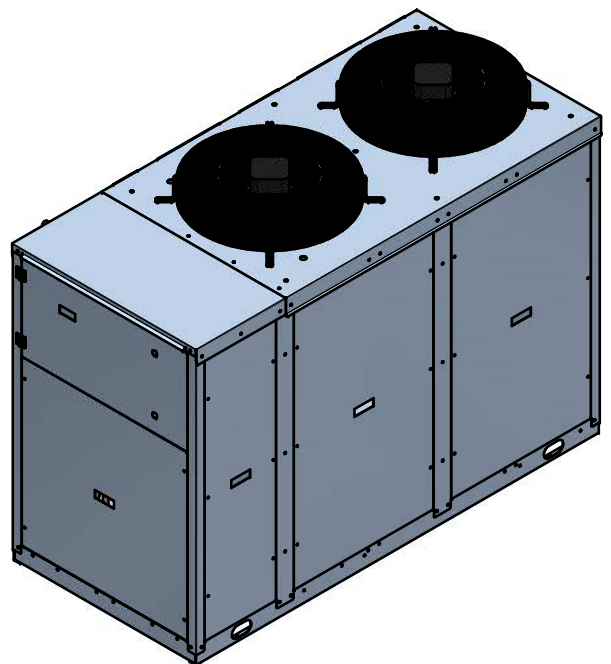
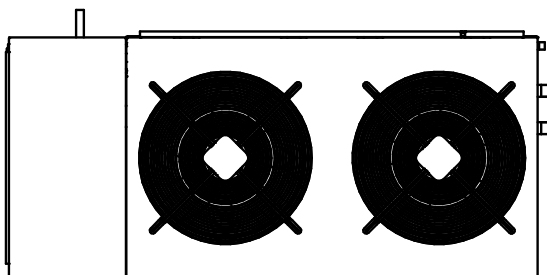
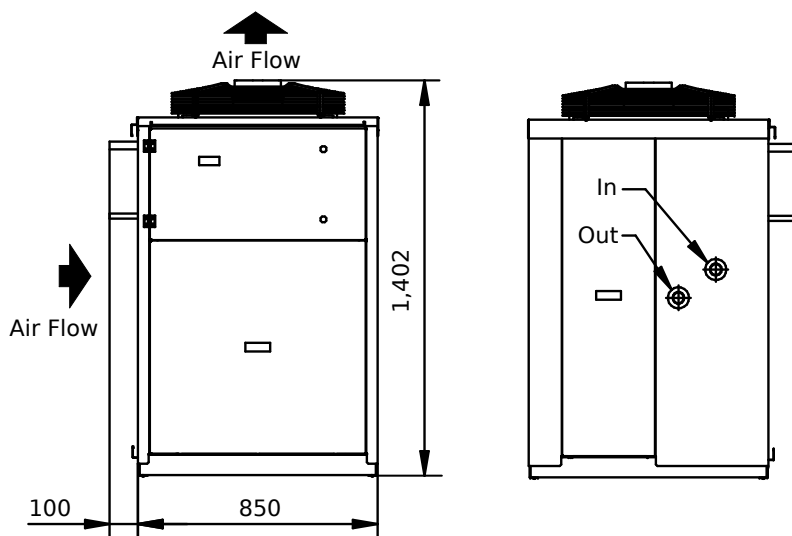
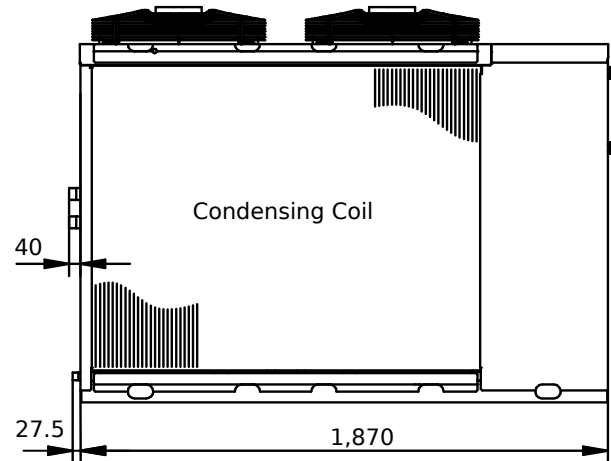
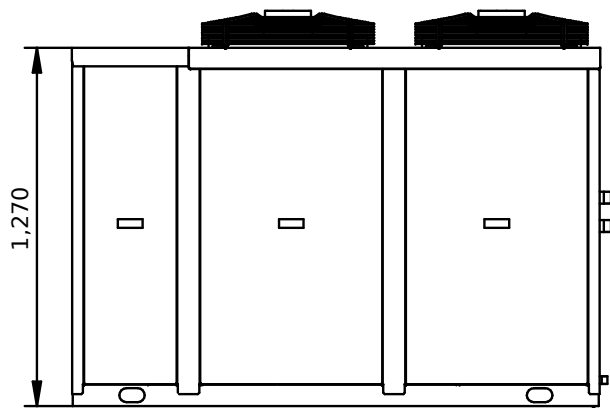
<sup>4</sup> Due to the continuous development of our products, all information is subject to change without notice

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## Dimensions



## **LPA SERIES AIR COOLED GLYCOL INDUSTRIAL PROCESS CHILLERS**

### **GENERAL DESCRIPTION**

The LPA series are efficient, reliable and versatile air cooled glycol chillers, intended for cooling industrial processes in a pressurised closed loop system

### **FRAME**

All frames are made from hot-galvanised sheet steel, painted with polyurethane powder enamel and stoved at 180°C to provide the maximum protection against corrosion. The frame is self-supporting with removable panels. The standard colour of the units is RAL 9018.

### **REFRIGERANT CIRCUIT**

The refrigerant utilised is R410A. The refrigerant circuit is assembled using internationally recognised brand name components with all brazing and welding being performed in accordance with ISO 97/23. The refrigerant circuit includes: sight glass, filter drier, Schraeder valves for maintenance and control, and pressure safety device (for compliance with PED regulations).

### **COMPRESSORS**

All versions use highly efficient hermetic scroll compressors, with a crankcase heater and thermal overload warning. They are mounted in a separate compartment within the casing in order to isolate them from the condenser air stream. The crankcase heater is always energised when the compressor is in stand-by. Access to the compressor compartment is by removal of a front panel and, because they are isolated from the main airstream, maintenance of the compressors is possible whilst the unit is operating.

### **ELECTRONIC EXPANSION VALVE**

The electronic expansion valve minimises the time taken to react to load variations, and optimises the superheat to the evaporator to ensure the best possible energy efficiency.

### **CONDENSER**

The condenser is made from 3/8" copper pipes and 0.1mm thick aluminium fins, with the tubes mechanically expanded into the aluminium fins in order to maximise heat transfer. The design guarantees a low air side pressure drop thus enabling the use of low rotation speed (low noise) fans. The thin heat exchanger fins are covered by a metallic shield to ensure user safety.

### **EVAPORATOR**

The evaporator is a braze welded, plate type heat exchanger, manufactured from AISI 316 stainless steel. Utilisation of this type of heat exchanger results in a large reduction of the refrigerant charge of the unit compared to a traditional shell in tube type. A further advantage is a reduction in the overall dimensions of the unit. The heat exchangers are factory insulated with flexible close cell material and are fitted with a temperature sensor on the discharge water side for antifreeze protection. A strainer must be fitted within the fluid circuit, and a fill point to charge the system with glycol and water.

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### **FANS**

The fans are variable speed, direct drive axial type with aluminium aerofoil blades, statically and dynamically balanced, and are supplied with a safety fan guard complying with the requirements of EN 60335. They are fixed to the unit frame via rubber anti-vibration mountings. The electric motors are 6 pole type rotating at approximately 900 rpm, are fitted with integrated thermal overload protection, and have a moisture protection rating of IP 54.

The fans use automatic speed control to permit operation in ambient temperatures below 20°C, by reducing the condenser air flow and thus maintaining the correct operating parameters. This may also be used to reduce noise at night time when the ambient temperature is low. base and the support structure to prevent the transmission of vibration and noise.

### **INTEGRAL PUMP AND TANK**

This includes a factory insulated, pressurised water tank and 2.3 Bar recirculation pump suitable for use with glycol antifreeze. The tank is fitted on the outlet water side in order to maintain, for a period of time, constant water temperature when the compressors are cycling at periods of low load. Also included is a centrifugal water pump which is directly controlled by the microprocessor. The hydraulic circuit also includes an expansion vessel, a safety valve and drain points with isolating valves.

### **ELECTRIC ENCLOSURE**

The enclosure is manufactured in order to comply with the requirements of the electromagnetic compatibility standards CEE 73/23 and 89/336. Access to the enclosure is achieved by removing the front panel of the unit. The following components are supplied as standard on all units: main switch, thermal overloads (protection of pumps and fans), compressor fuses, control circuit automatic breakers, compressor contactors, fan contactors and pump contactors. The terminal board has volt free contacts for remote ON-OFF and general alarm.

### **MICROPROCESSOR**

All units are supplied with microprocessor controls loaded with ACTIVE auto-adaptive strategy. The microprocessor controls the following functions: control of the water temperature, antifreeze protection, compressor timing, compressor automatic starting sequence, alarm reset, volt free contact for remote general alarm, alarms and operation LEDs. The microprocessor can be connected via an RS485/Modbus interface, thus enabling remote control and management. The auto-adaptive control system is an advanced strategy that continuously monitors the temperature of the inlet and outlet water thereby determining the variation of the thermal load. By adjusting the outlet water temperature set point the compressor start/stop cycle can be accurately controlled thus optimizing efficiency and maximizing the operational life of the unit.

### **CONTROL AND PROTECTION DEVICES**

All units are supplied with the following control and protection devices: Return water temperature sensor on the return water line, antifreeze protection sensor on the water outlet, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection and flow switch.

### **RUBBER VIBRATION DAMPERS**

These are installed between the unit base and the support structure to prevent the transmission of vibration and noise.

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