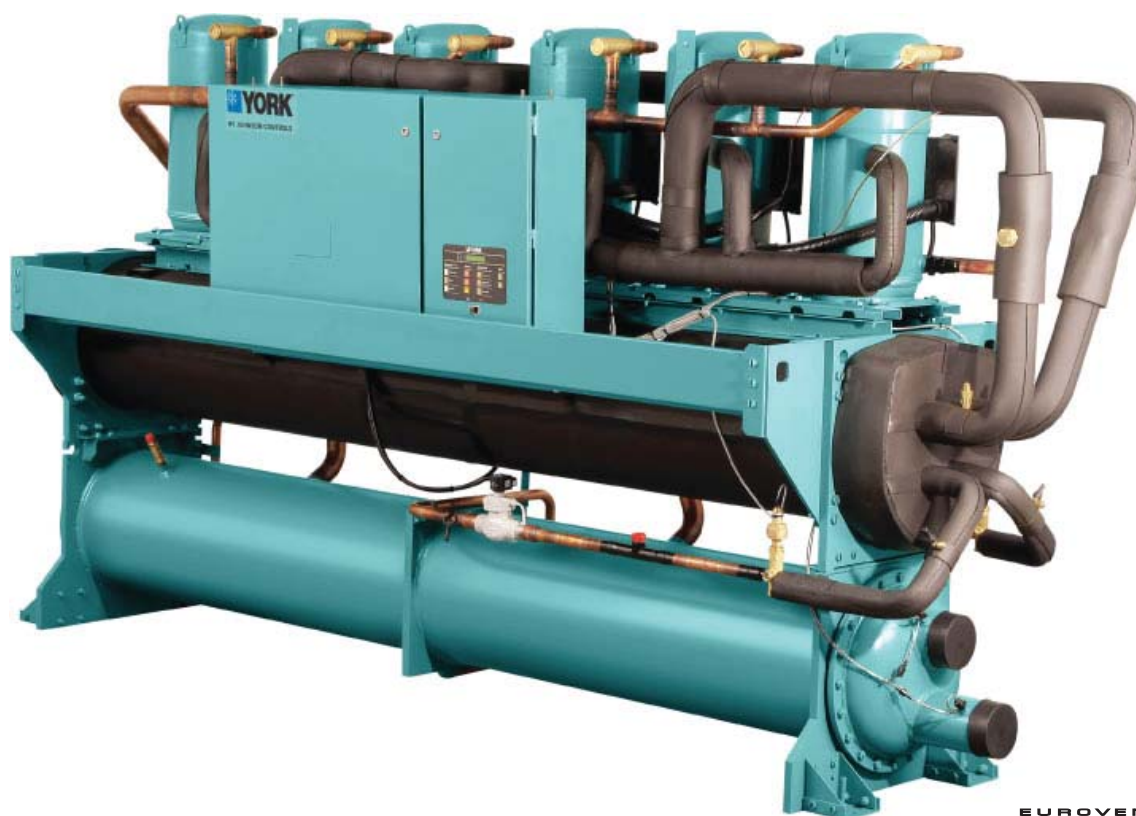


<b>YCWL0240SE-YCWL0396SE YCWL0200HE-YCWL0611HE, YCRL0200HE-YCRL0610HE</b>		
<b>ENGINEERING GUIDE</b>	<b>Revision 1</b>	<b>Form 150.26-EG2.EN.CE (0713)</b>

**WATER COOLED AND REMOTE AIR COOLED CHILLERS  
WITH SCROLL COMPRESSORS  
STYLE A**

**(188 - 598 KW - 50 Hz)**

**SE - STANDARD EFFICIENCY & HE - HIGH EFFICIENCY**



**HFC-410A**

## CONTENTS

Features.....	3
Nominal Data.....	4
Specification .....	4
Accessories and Options .....	7
Refrigerant Flow Diagram .....	8
Application Data .....	9
Condenserless Unit Refrigerant Piping.....	12
Electrical Connection.....	12
Connection Diagram .....	14
Operating Limitations - YCWL .....	15
Operating Limitations - YCRL.....	16
Evaporator Pressure Drop Graph and Condenser Pressure Drop Graph .....	17
Fouling Factors.....	17
Cooling Capacities YCWL-SE Models.....	18
Cooling Capacities YCWL-HE Models .....	19
Cooling Capacities YCRL-HE Models .....	21
ESEER Data YCWL-SE Models .....	22
ESEER Data YCWL-HE Models.....	23

Physical Data - YCWL-SE Models .....	26
Physical Data - YCWL-HE Models .....	27
Physical Data - YCRL-HE Models .....	29
Electrical Data YCWL-SE Models .....	30
Electrical Data YCWL-HE Models .....	31
Electrical Data YCRL-HE Models.....	32
Sound Data YCWL-SE Models .....	33
Sound Data YCWL-HE and YCRL-HE Models.....	34
DIMENSIONS - YCWL0240SE, YCWL0290SE, YCWL0345SE, YCWL0395SE, YCWL0396SE, YCWL0200HE, YCWL0230HE, YCWL0260HE, YCWL0300HE, YCWL0345HE, YCWL0347HE , YCWL0425HE, YCWL0426HE .....	35
DIMENSIONS - YCWL0385HE, YCWL0386HE, YCWL0445HE, YCWL0447HE, YCWL0530HE, YCWL0532HE, YCWL0610HE, YCWL0611HE .....	36
DIMENSIONS - YCRL0200HE, YCRL0230HE, YCRL0260HE, YCRL0300HE, YCRL0345HE .....	38
DIMENSIONS - YCRL0385HE, YCRL0445HE, YCRL0530HE, YCRL0610HE.....	40

All data in this document is subject to change without prior notice.

## FEATURES

YORK YCWL / YCRL are a series of highly efficient water cooled and remote air cooled chillers, fitted with scroll compressors and shell and tube heat exchanger(s). They can provide chilled water for all air conditioning applications that use central station air handling or terminal units, glycol chilling for ice making and thermal storage applications, and non-reversing heat pump duty. They are designed for inside installation within a plant room. The series comprises a range of sizes from 188 kW to 597 kW and two levels of operating efficiency (Standard efficiency SE and High efficiency HE)

### Low Operating Costs

YCWL is the first HFC-410A water-cooled chiller using scroll compressors to obtain A-Class certification from Eurovent. By combining the latest available technology in scroll compression with YORK state-of-the-art heat exchanger design, YCWL reaches unmatched Full Load COP values as high as 5.33.

Additionally, the incorporation of multiple scroll compressors results in high part load efficiencies. Having its compressors always running at full load, YCWL does not suffer efficiency reduction at part load. With ESEER (European Seasonal Energy Efficiency Ratio) values as high as 8.19, YCWL operates at efficiency levels never reached before with similar technology.

### Minimum Installation Costs

YCWL / YCRL is also designed to reduce the installation costs to a minimum. With its compact design, YCWL / YCRL delivers up to 173 kW/m<sup>2</sup>, making the most of your available space.

Equally important, YCWL / YCRL can fit through a standard single door with no disassembly required, making it the ideal chiller for both new and retrofit installations.

YCWL / YCRL has a single point electrical power connection onto a disconnect switch for ease of both installation and isolation for servicing.

YCWL / YCRL water connections are fully accessible and simplified with the use of victaulic connections for both the evaporator and the condenser.

## Low Sound Operation

YCWL / YCRL is equipped with ultra quiet scroll compressors, which can be fitted with optional compressor acoustic blankets to further reduce sound levels.

Special attention has been paid to YCWL / YCRL piping design to get the maximum performance with the minimum of vibration.

### Reliability

Every YCWL / YCRL chiller is fully factory tested before being shipped in order to ensure trouble free installed operation.

YCWL / YCRL dual refrigerant circuits and multiple scroll compressors provide system standby security.

When reaching a safety threshold, the YCWL / YCRL controller special load limiting feature will unload the chiller but maintain continuous chilled water production until the situation is back to normal.

### Communication

YCWL / YCRL has a microprocessor controller with a 40-character display available in 5 languages for easy operation and maintenance.

YCWL / YCRL has a standard built-in connectivity with BACnet and Modbus for immediate integration into Building Management System.

### Environmental Friendly

YCWL / YCRL uses refrigerant HFC-410A, with zero Ozone Depletion Potential and no phase-out date.

Every YCWL / YCRL chiller is fully pressure and leak tested in the factory in order to reduce the risk of leakage on site.

Above all, YCWL / YCRL is highly efficient, saves energy and contributes to reduce global warming.

### One Chiller, Many Applications

YCWL / YCRL has been designed to operate in a very wide range of conditions. It can produce chilled water from +15 °C down to -12 °C while working with condenser water temperatures ranging from +18 °C to +52 °C (YCWL only). Air conditioning, process cooling, heat pump, heat recovery, YCWL / YCRL is built-in with versatility.

## NOMINAL DATA

Standard Efficiency (SE) Models	YCWL	YCWL	YCWL	YCWL	YCWL
	0240	0290	0345	0395	0396
Cooling Capacity (kW) <sup>Note 1</sup>	229	274	324	373	372
Energy Efficiency Ratio (EER)	4.74	4.94	4.84	4.82	4.91
Efficiency Class	B	B	B	B	B
ESEER	6.52	6.57	6.58	6.51	7.45
Sound Pressure (EN 292-1991) (dB[A])	67	67	70	70	70

High Efficiency (HE) Models	YCWL	YCWL	YCWL	YCWL	YCWL	YCWL	YCWL	YCWL
	0200	0230	0260	300	345	0347	0385	0386
Cooling Capacity (kW) <sup>Note 1</sup>	188	220	250	287	354	354	380	393
Energy Efficiency Ratio (EER)	5.08	5.06	5.20	5.16	5.19	5.19	5.20	5.32
Efficiency Class	A	A	A	A	A	A	A	A
ESEER	6.59	6.38	6.89	6.83	7.77	7.36	6.9	8.1
Sound Pressure (EN 292-1991) (dB[A])	64	65	67	73	70	70	68	69

High Efficiency (HE) Models	YCWL	YCWL	YCWL	YCWL	YCWL	YCWL	YCWL	YCWL
	0425	0426	0445	0447	0530	0532	0610	0611
Cooling Capacity (kW) <sup>Note 1</sup>	414	412	446	446	508	500	585	598
Energy Efficiency Ratio (EER)	5.21	5.31	5.14	5.14	5.01	5.23	4.97	5.16
Efficiency Class	A	A	A	A	B	A	B	A
ESEER	6.92	7.75	7.28	6.93	6.67	7.56	6.62	7.36
Sound Pressure (EN 292-1991) (dB[A])	70	70	72	72	76	71	73	72

Note 1: At 35°C leaving condenser liquid temperature and 7°C leaving chilled liquid temperature

Condenserless Models	YCRL	YCRL	YCRL	YCRL	YCRL
	0200	0230	0260	0300	0345
Cooling Capacity (kW) <sup>Note 2</sup>	178	207	233	273	325
Energy Efficiency Ratio (EER)	4.00	4.00	4.12	4.20	4.16
Sound Pressure (EN 292-1991) (dB[A])	64	65	67	67	70

Condenserless Models	YCRL	YCRL	YCRL	YCRL
	0385	0445	0530	0610
Cooling Capacity (kW) <sup>Note 2</sup>	356	415	485	556
Energy Efficiency Ratio (EER)	4.11	4.17	4.06	3.99
Sound Pressure (EN 292-1991) (dB[A])	68	69	71	73

Note 2: At 45°C saturated discharge temperature at the unit and 7°C leaving chilled liquid temperature

## SPECIFICATION

YORK YCWL / YCRL HFC-410A chillers are designed for water or water-glycol cooling. They are designed for indoor installation in a plant room.

The YCWL unit is completely factory assembled with all interconnecting refrigerant piping and wiring ready for field installation. The unit is pressure tested, evacuated, and fully factory charged with refrigerant HFC-410A and oil in each of the independent refrigerant circuits.

After assembly, an operational test is performed with water flowing through the evaporator and condenser to ensure that each refrigerant circuit operates correctly.

The YCRL unit is completely factory assembled with all interconnecting refrigerant piping and internal wiring, ready for field connection to a remote condenser. The unit is pressure-tested, evacuated, and charged with a nitrogen holding charge and oil in each of the independent refrigerant circuits.

The unit structure is manufactured from heavy-gauge, galvanised steel coated with baked-on 'Caribbean Blue' powder paint.

YCWL and YCRL chillers are designed and built within an EN ISO 9001 accredited organisation and in conformity with the following European Directives:

EMC Directive (2004/108/EC).

Pressure Equipment Directive (97/23/EC).

Safety Code for Mechanical Refrigeration.

EN378-2 (2008)/A2 (2012) [Safety accessories according to essential requirements in PED paragraph 2.11.1 have been calculated according to EN13136:2001/A1:2005 and are not following the requirements in EN378-2:2008 paragraph 6.2.6.2, unless dual relief valves are fitted].

Safety of machinery - Electrical Equipment of Machine EN 60204-1 (2006).

Generic emissions and immunity standards for industrial environment EN61000-6-4:2007 & 61000-6-2:2005.

ISO 9614 – Determination of sound power levels of noise sources using sound intensity.

Conform to CE Testing Services for construction of chillers and provide CE Listed Mark.

### **Fluorinated Greenhouse Gases**

- This equipment contains fluorinated greenhouse gases covered by the Kyoto Protocol.
- The global warming potential of the refrigerant (R410A) used in this unit is 1720.
- The refrigerant quantity is stated in the Physical Data table of this document.
- The fluorinated greenhouse gases in this equipment may not be vented to the atmosphere.
- This equipment should only be serviced by qualified technicians.

### **Compressors**

The unit has suction-cooled, hermetic scroll compressors. High efficiency is achieved through a controlled orbit and the use of advanced scroll geometry. The compressors incorporate a compliant scroll design in both the axial and radial directions. All rotating parts are statically and dynamically balanced. The compressor motors have integral protection against overloads. The overload protection will automatically reset. Starting is direct on line, but soft start is available as an option.

The compressors are switched On and Off by the unit microprocessor to provide capacity control. Each compressor is fitted with a crankcase strap heater. All compressors are mounted on isolator pads to reduce transmission of vibration to the rest of the unit.

### **Refrigerant Circuits**

Two independent refrigerant circuits are provided on each unit. Each circuit uses copper refrigerant pipe formed on computer controlled bending machines to reduce the number of brazed joints resulting in a reliable and leak resistant system.

Liquid line components include: a service valve with charging port, a high absorption removable core filter-drier, a solenoid valve, a sight glass with moisture indicator and a thermal or electronic expansion valve. Liquid lines between the expansion valve and the cooler are covered with flexible, closed-cell insulation.

Suction line components include: a pressure relief valve, a pressure transducer and a service valve. Optional isolation ball valves are available. Suction lines are covered with flexible, closed-cell insulation.

Discharge lines include service and isolation (ball) valves, one or two high pressure cutout switches depending on the model, a pressure transducer and a pressure relief valve (YCWL units only).

### **Evaporator**

The 2-pass dual circuit shell and tube type direct expansion (DX) evaporator has refrigerant in the tubes and chilled liquid flowing through the baffled shell. The waterside (shell) design working pressure of the cooler is 10.3 bar g. The refrigerant side (tubes) design working pressure is 27.58 bar g. The refrigerant side is protected by pressure relief valve(s).

The evaporator shall have water pass baffles fabricated from galvanised steel to resist corrosion. Removable heads are provided for access to internally enhanced, seamless, copper tubes. Water vent and drain connections are included. The cooler is insulated with flexible closed-cell foam.

Water Connection to the evaporator is via victaulic-grooved connections. Flange connections are available as an option.

### **Condenser (YCWL units only)**

The twin-refrigerant circuit water-cooled condenser is cleanable shell and tubes type with seamless externally finned copper tubes rolled into tubes sheets, removable water heads and built-in subcooler. The waterside (tubes) design working pressure is 10 bar g. The refrigerant side (shell) design working pressure is 38.61 bar g. The refrigerant side is protected by pressure relief valve(s).

Water Connection to the condenser is via victaulic-grooved connections. Flange connections are available as an option.

### **Power and Control Panels**

All power and controls are contained in a IP32 cabinet with hinged, latched and gasket sealed outer doors.

#### **The power panel includes:**

- A factory mounted non-fused disconnect switch with external, lockable handle to enable connection of the unit power supply. The disconnect switch can be used to isolate the power for servicing.
- Factory mounted compressor contactors and manual motor starters to provide overload and short circuit protection.
- Factory mounted control transformer to convert the unit supply voltage to 110 V - 1 Ø - 50 Hz for the control system.
- Control supply fuses and connections for a remote emergency stop device.

#### **The control panel includes:**

- A Liquid Crystal Display (two display lines of twenty characters per line) with Light Emitting Diode backlighting for easy viewing.
- A Colour coded 12-button keypad.
- Customer terminal block for control inputs and liquid flow switch.



**The microprocessor control includes:**

- Automatic control of compressor start/stop, anti-coincidence and anti-recycle timers, automatic pumpdown on shutdown, evaporator pump and unit alarm contacts. Automatic reset to normal chiller operation after power failure.
- Remote water temperature reset via a pulse width modulated (PWM) input signal or up to two steps of demand (load) limiting
- Software is loaded into the microprocessor controller via a SD card, with programmed setpoints retained in a lithium battery backed real time clock (RTC) memory..
- Forty character liquid crystal display, with description available in five languages (English, French, German, Spanish or Italian)

**Programmable setpoints:**

- Chilled liquid temperature setpoint and range
- Remote reset temperature range
- Set daily schedule/holiday for start/stop
- Manual override for servicing
- Low liquid temperature cutout
- Low suction pressure cutout
- High discharge pressure cutout
- Anti-recycle timer (compressor start cycle time)
- Anti-coincident timer (delay compressor starts)

**Displayed Data:**

- Return and leaving liquid temperature
- Low leaving liquid temperature cutout setting
- Metric or Imperial data
- Discharge and suction pressure cutout settings
- System discharge and suction pressures
- Anti-recycle timer status for each compressor
- Anti-coincident system start timer condition
- Compressor run status
- No cooling load condition
- Day, date and time
- Daily start/stop times
- Holiday status
- Automatic or manual system lead/lag control
- Lead system definition
- Compressor starts & operating hours (each compressor)
- Run permissive status

- Number of compressors running
- Liquid solenoid valve status
- Load & unload timer status
- Water pump status

**System Safeties:**

Cause individual compressors to perform auto shut down and require manual reset in the event of 3 trips in a 90-minute time period:

- High discharge pressure
- Low suction pressure
- High pressure switches
- Motor protector
- Unit Safeties:
  - Are automatic reset and cause compressor to shut down
- Low leaving chilled liquid temperature
- Under voltage
- Loss of liquid flow (through flow switch)

**Alarm Contacts:**

- Low leaving chilled liquid temperature
- Low voltage
- Low battery
- High discharge pressure (per system)
- Low suction pressure (per system)

## ACCESSORIES AND OPTIONS

### Soft Starters

Factory mounted soft starters reduce the inrush current to the last compressor on each refrigerant circuit. They are preset so that no field adjustment is required.

### Power Factor Correction

Factory mounted passive (static) power factor correction capacitors to correct unit compressor power factors to a target of 0.9 (depending on operating conditions).

### Language LCD and Keypad

English, French, German, Italian and Spanish unit LCD read-out and keypad available. Standard language is English.

### Non-reversible Heat Pump

Allows the chiller to control the leaving condenser liquid temperature (LCLT). The unit will load and unload to maintain fixed LCLT.

### 38 mm Evaporator Insulation

Double thickness insulation provided for enhanced efficiency, and low temperature applications.

### Dual Pressure Relief Valves

Two pressure relief valves mounted on a 3-way valve in parallel of which one is operational and the other one assist during maintenance.

### Suction Service Valves

A ball valve is added to each suction line pipework for isolation.

### Victaulic Flange Kit

Victaulic PN10 Flange joint kit supplied loose for field installation. Includes flange and companion flange and all necessary nuts, bolts and gaskets.

### Compressor Acoustic Blankets

Each compressor is individually enclosed in an acoustic sound blanket. The sound blankets are made with one layer of acoustical absorbent textile fibre of 15 mm thickness and one layer of anti vibrating heavy material thickness of 3 mm. Both are closed by two sheets of welded PVC, reinforced for temperature and UV resistance.

### Flow switch

Vapour Proof, paddle-type, 10.3 barg DWP, -29°C to 121°C with 1"NPT connection for upright mounting in horizontal pipe. This flow switch or its equivalent must be supplied with each unit to protect vessels from loss of liquid flow (Field Mounted)

### Differential Pressure Switch

Alternative to the paddle type flow switch. 0-3 bar range with ¼" NPTE pressure connections (field mounted).

### Neoprene Pad Isolators

Recommended for normal installations (field mounted).

### 25 mm Spring Isolators

Level adjustable, spring and cage type isolators for mounting under the unit base rails (field mounted).

### Electronic Expansion Valve

Factory fitted Electronic Expansion Valve to provide a flexible and reliable range of operation from brine to comfort cooling conditions. Mandatory option for application below -1°C chilled water temperature

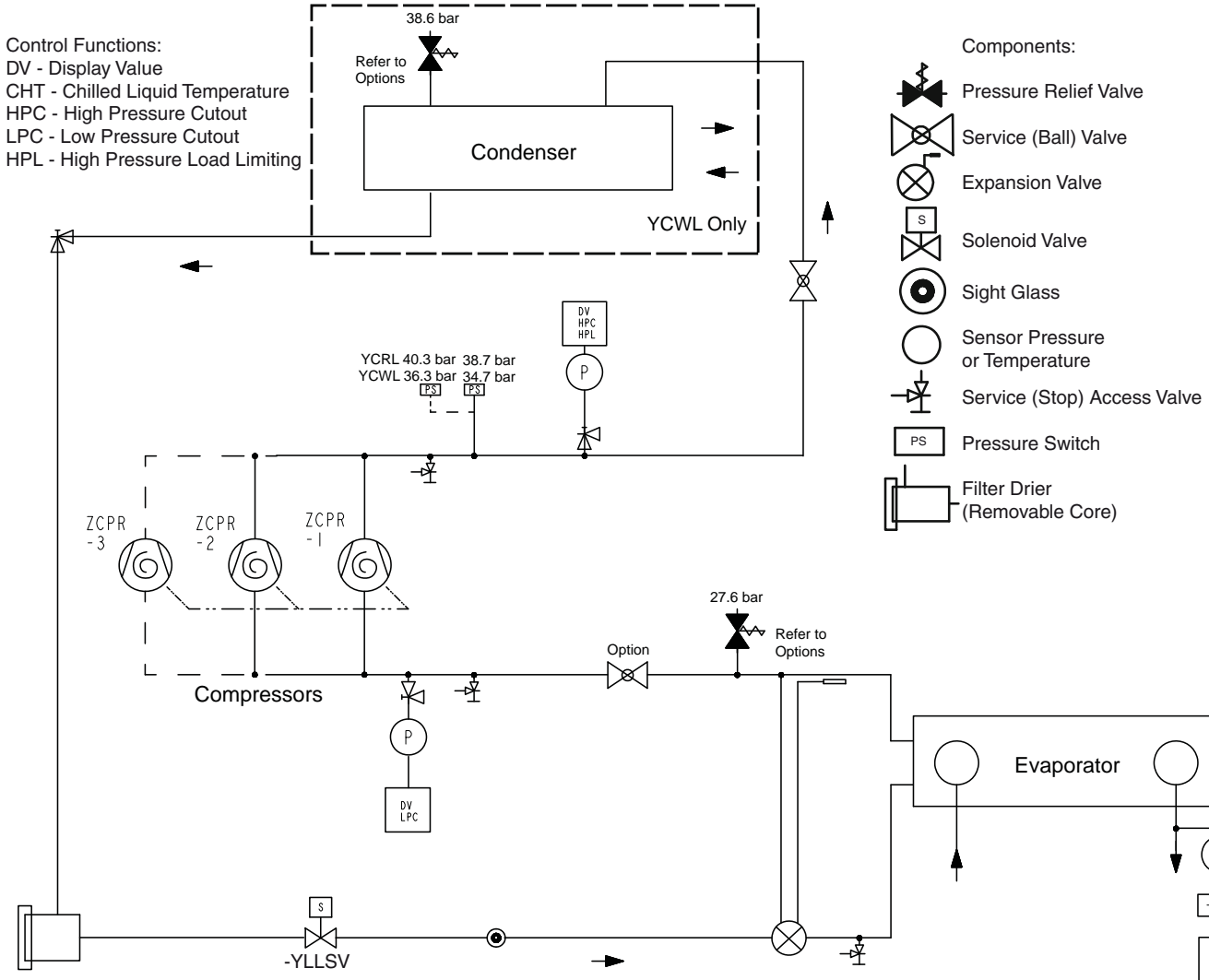
## REFRIGERANT FLOW DIAGRAM

### YCWL

Low-pressure liquid refrigerant enters the cooler tubes and is evaporated and superheated by the heat energy absorbed from the chilled liquid passing through the cooler shell. Low-pressure vapour enters the compressors where pressure and superheat are increased. High pressure superheated refrigerant enters the condenser shell where heat is rejected to the condenser water passing through the tubes. The fully condensed and subcooled liquid leaves the condenser and enters the expansion valve, where pressure reduction and further cooling takes place. The low-pressure liquid refrigerant then returns to the cooler.

### YCRL

Low-pressure liquid refrigerant enters the cooler tubes and is evaporated and superheated by the heat energy absorbed from the chilled liquid passing through the cooler shell. Low-pressure vapour enters the compressor where pressure and superheat are increased. The high pressure superheat refrigerant enters the remote air cooled condenser where heat is rejected via the condenser coil & fans. The fully condensed and subcooled liquid leaves the remote air cooled condenser and enters the expansion valve, where pressure reduction and further cooling takes place. The low-pressure liquid refrigerant then returns to the cooler.

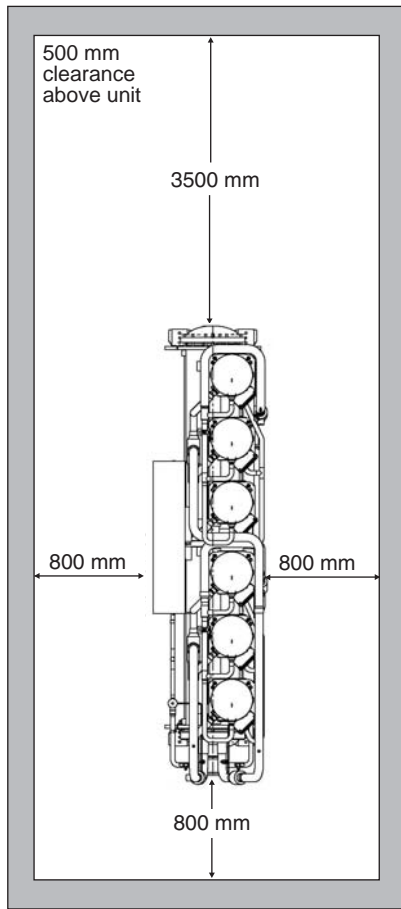




## APPLICATION DATA

### Location Requirements

To achieve optimum performance and trouble-free service, it is essential that the proposed installation site meet with the location and space requirements for the model being installed.



The clearances recommended are nominal for the safe operation and maintenance of the unit and power and control panels. Local health and safety regulations, or practical considerations for service replacement of large components, may require larger clearances than those given in this manual.

Units are designed for indoor installation and not intended for wet, corrosive or explosive atmospheres. Installation should allow for water drain, ventilation and sufficient clearance for service, including tube cleaning/removal.

For installation in equipment rooms near noise-critical areas, common walls should be of adequate sound attenuating construction, all doors should be tightly gasketed, and the unit should have vibration isolators fitted.

The concrete base must be capable of supporting 150% of the operating weight. In case of upper floors, the unit and piping should be isolated from walls and ceiling. The unit may be bolted to the foundation using XX mm Ø holes. When lower transmitted vibration levels are required optional anti-vibration isolators can be supplied loose for site installation.

### Installation of Vibration Isolators

An optional set of spring type vibration isolators can be supplied loose with each unit.

### Pipework Connection

The following piping recommendations are intended to ensure satisfactory operation of the unit. Failure to follow these recommendations could cause damage to the unit, or loss of performance, and may invalidate the warranty.

The maximum flow rate and pressure drop for the cooler and condenser must not be exceeded at any time.

The water must enter the heat exchangers by the inlet connection.

A flow switch must be installed in the customer pipework at the outlet of the exchangers as shown in the arrangement diagrams, and wired back to the control panel using screened cable. This is to prevent damage to the exchangers caused by inadequate liquid flow.

The liquid pumps installed in the pipework systems should discharge directly into the unit heat exchanger sections of the system. The pumps require an auto-starter (by others) to be wired to the control panel.

Pipework and fittings must be separately supported to prevent any loading on the heat exchangers. Flexible connections are recommended which will also minimize transmission of vibrations to the building. Flexible connections must be used if the unit is mounted on anti-vibration mounts as some movement of the unit can be expected in normal operation.

Pipework and fittings immediately next to the heat exchangers should be readily de-mountable to enable cleaning prior to operation, and to facilitate visual inspection of the exchanger nozzles.

Each heat exchanger must be protected by a strainer, preferably of 20 microns, fitted as close as possible to the liquid inlet connection, and provided with a means of local isolation.

The heat exchangers must not be exposed to flushing velocities or debris released during flushing. It is recommended that a suitably sized by-pass and valve arrangement be installed to allow flushing of the pipework system. The by-pass can be used during maintenance to isolate the heat exchanger without disrupting flow to other units.

Thermometer and pressure gauge connections should be provided on the inlet and outlet connections of each heat exchanger.

Drain and air vent connections should be provided at all low and high points in the pipework to permit drainage of the system, and to vent any air in the pipes.

Liquid systems at risk of freezing, due to low ambient temperatures, should be protected using insulation and heater tape and/or a suitable glycol solution. The liquid pumps must also be used to ensure liquid is circulated when the ambient temperature approaches freezing point. Insulation should also be installed around the heat exchanger nozzles.

### Water Treatment

The unit performance given in the Design Guide is based on a fouling factor of 0.044 m<sup>2</sup> °C/kW. Dirt, scale, grease and certain types of water treatment will adversely affect the heat exchanger surfaces and therefore unit performance. Foreign matter in the water system(s) can increase the heat exchanger pressure drop, reducing the flow rate and causing potential damage to the heat exchanger tubes.

Aerated, brackish or salt water is not recommended for use in the water systems. JCI recommends that a water treatment specialist be consulted to determine that the proposed water composition will not affect the evaporator materials of carbon steel and copper. The pH value of the water flowing through the heat exchangers must be kept between 7 and 8.5.

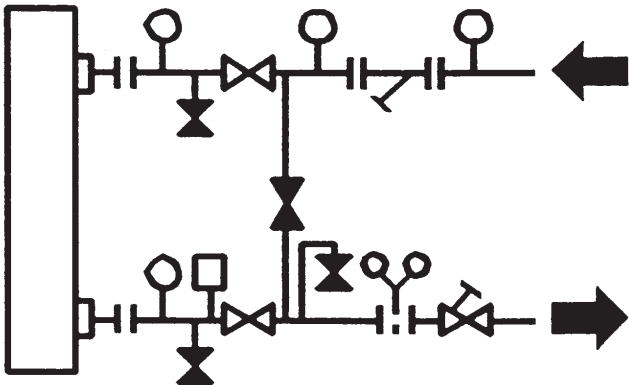
For unit operation with chilled liquid temperatures leaving the cooler at below 4.5°C, glycol solutions should be used to help prevent freezing. This manual gives recommended solution strength with water, as a percentage by weight, for the most common types of glycol. It is important to check glycol concentration regularly to ensure adequate concentration and avoid possible freeze-up in the cooler.

### Pipework Arrangement

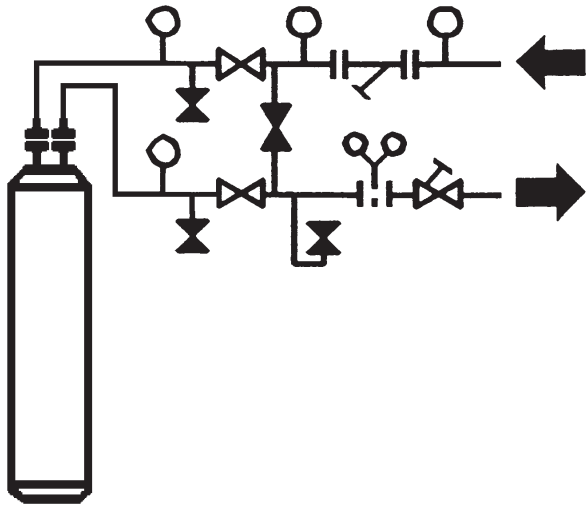
The following are suggested pipework arrangements for single unit installations. For multiple unit installations, each unit should be piped as shown.

### Recommendations of the Building Services Research Association

#### Chilled Liquid System



#### Condenser Cooling Liquid System



- Isolating Valve - Normally Open
- Isolating Valve - Normally Closed
- Flow Regulating Valve
- Flow Measurement Device
- Strainer
- Pressure Tapping
- Flow Switch
- Victualic/Flanged Connection
- Pipework

### Connection Types & Sizes

For connection sizes relevant to individual models refer to the physical data tables in this manual

## Refrigerant Relief Valve Piping

The compressor, cooler and condensers are each protected against internal refrigerant over-pressure and fire by refrigerant relief valves. The pressure relief valve is set at the design pressure of the system and has discharge capacity required by the relevant standard.

It is recommended that each valve should be piped to the exterior of the building so that when the valve is activated the release of high pressure gas and liquid cannot be a danger or cause injury.

The size of any pipework attached to a relief valve must be of sufficient diameter so as not to cause resistance to the operation of the valve. For critical or complex installations refer to EN13136.

Unless otherwise specified by local regulations, the internal diameter depends on the length of pipe required and can be estimated with the following formula:

$$D^5 = 1.447 \times L$$

Where:

D = minimum pipe internal diameter (cm)

L = length of pipe (m).

If relief pipework is common to more than one valve its cross sectional area must be at least the total required by each valve. Valve types should not be mixed on a common pipe. Precautions should be taken to ensure that the exit of relief valves/vent pipe remain clear of obstructions at all times.

## Condenser Cooling Liquid Systems

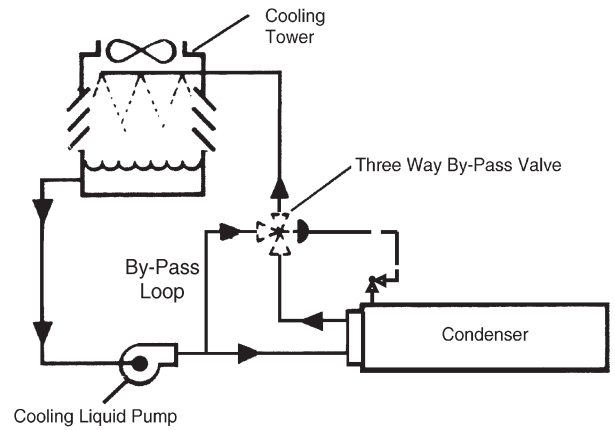
For primary cooling of units, condensers are usually piped in conjunction with a cooling tower or a dry cooler, although in some cases they can be cooled by well water.

With liquid cooled units it is necessary to control coolant flow and / or temperature into the condenser to maintain refrigerant pressure as constant as possible to ensure satisfactory operation of the expansion valves.

### Direct Pressure Control (by others)

With YCWL units it is possible, if desired, to control the condenser cooling liquid inlet temperature / flow directly from the unit refrigerant pressure.

The refrigerant pressure can either be used to control cooling tower / dry cooler effectiveness by controlling fans or dampers on the tower, or to control condenser flow using a three way bypass valve.

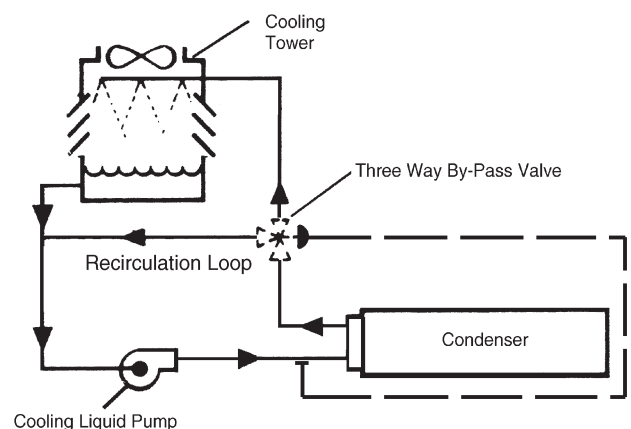


The aim is to maintain a stable discharge pressure as low as possible, but at least 4.8 bar above suction pressure. This can be done at a fixed value above the highest expected suction pressure, or by also measuring suction pressure and using differential control. In either case condenser cooling liquid flow and temperature limits must also be observed.

### Inlet Temperature Control (by others)

For a cooling tower / dry cooler system, the simplest forms of control are to use fan cycling, fan speed control, or air damper control, with the tower having a thermostat in its sump. This will ensure stable condenser cooling liquid temperature sensing at design conditions and should be adjusted to ensure a condenser cooling liquid entering temperature of not lower than 18°C at lower ambient conditions.

If these methods are not available, or a cooling tower is not the source of cooling water, then a three way valve recirculation system can be used with control based on condenser inlet liquid temperature. In this case the objective is to maintain the inlet cooling liquid temperature as low as possible, although still observing the minimum limit of 18°C.



## CONDENSERLESS UNIT REFRIGERANT PIPING

### General

When the unit has been located in its final position, the unit piping may be connected. Normal installation precautions should be observed in order to receive maximum operating efficiencies. All piping design and installation is the responsibility of the user.

JOHNSON CONTROLS ASSUMES NO WARRANTY RESPONSIBILITY FOR SYSTEM OPERATION OR FAILURES DUE TO IMPROPER PIPING OR PIPING DESIGN.

All filter driers, sight glasses, expansion valves and liquid line solenoid valves are factory installed on each refrigerant circuit. Interconnecting refrigerant piping and refrigerant charge are supplied and installed by others.

### Refrigerant Line Sizing

Refrigerant piping systems must be designed to provide practical line sizes without excessive pressure drops, prevent compressor oil from being “trapped” in the refrigerant piping, and ensure proper flow of liquid refrigerant to the thermal expansion valve. Considerations should be given to:

- 1) Discharge line pressure drop due to refrigerant flow.
- 2) Discharge line refrigerant velocity for oil return.
- 3) Liquid line pressure drop due to refrigerant flow.
- 4) Liquid line pressure drop (or gain) due to vertical rise of the liquid line.

To ensure a solid column of liquid refrigerant to the expansion valve, the total liquid line pressure drop should never exceed 275 kPa. Refrigerant vapour in the liquid line will measurably reduce valve capacity and poor system performance can be expected.

To allow adequate oil return to the compressor, discharge risers should be sized for a minimum of 5.1 m/s while the system is operating at minimum capacity to ensure oil return up the suction riser.

### Chiller Below Condenser

On a system where the chiller is located below the condenser, the discharge line must be sized for both pressure drop and oil return. In some cases a double discharge riser must be installed to ensure reliable oil return at reduced loads.

### Condenser Below Chiller

When the condenser is located below the chiller, the liquid line must be designed for both friction loss and static head loss due the vertical rise. The value of static head loss of 11.3 kPa/m must be added to the friction loss pressure drop in addition to all pressure drops due to driers, valves, etc.

### Oil traps

All horizontal discharge lines should be pitched at least 2 cm/m in the direction of the refrigerant flow to aid in the return of oil to the chiller. All discharge lines with a vertical rise exceeding 90 cm should have a “P” trap at the bottom and top of the riser. Discharge lines with a vertical rise exceeding 7.5 m should be trapped every 4.5 m.

### Refrigerant Charge

The chiller is charged and shipped with a dry nitrogen holding charge. The operating charge for the chiller, remote condenser and refrigerant piping must be weighed in after all refrigerant piping is installed, leak checked, and evacuated. Final adjustment of refrigerant charge should be verified by subcooling values (refer to IOM section on Pre-Startup for checking subcooling).

## ELECTRICAL CONNECTION

The following connection recommendations are intended to ensure safe and satisfactory operation of the unit. Failure to follow these recommendations could cause harm to persons, or damage to the unit, and may invalidate the warranty.

No additional controls (relays, etc.) should be mounted in the control panel. Power and control wiring not connected to the control panel should not be run through the control panel. If these precautions are not followed it could lead to a risk of electrocution. In addition, electrical noise could cause malfunctions or damage the unit and its controls.

### Power Wiring

These units are suitable for 380 or 400 V, 3 phase, 50 Hz nominal supplies only.

All electrical wiring should be carried out in accordance with local regulations. Route properly sized cables to the cable entries in the top of the power panel.

In accordance with EN 60204 it is the responsibility of the user to install over current protection devices between the supply conductors and the power supply terminals on the unit.

To ensure that no eddy currents are set up in the power panel, the cables forming each 3 phase power supply must enter via the same cable entry.

All sources of supply to the unit must be taken via a common point of isolation (not supplied by JCI).

### Single Point Power Supply Wiring

All models require one field provided 400 V, 3Ø, 50 Hz + PE (Protected Earth) supply to the unit with circuit protection.

Connect the 3 phase supply to the non-fused disconnect switch located in the power panel using M10 lugs

Connect the earth wire to the main protective earth terminal located in the power panel.

## Remote Emergency Stop Device

If required, a remote emergency stop device may be wired into the unit. This device should be rated at 16 amps, 110 V, AC-15. The device should be wired into terminals L and 5 in the power panel after removing the factory fitted link.

## Control Wiring - Voltage Free Contacts

All wiring to the voltage free contact terminal block requires a supply provided by the customer maximum voltage 254 Vac, 28 Vdc.

The customer must take particular care deriving the supplies for the voltage free terminals with regard to a common point of isolation. Thus, these circuits when used must be fed via the common point of isolation so the voltage to these circuits is removed when the common point of isolation to the unit is opened. This common point of isolation is not supplied by JCI.

In accordance with EN 60204 it is recommended that the customer wiring to these terminals uses orange wires. This will ensure that circuits not switched off by the units supply disconnecting device are distinguished by colour, so that they can easily be identified as live even when the unit disconnecting devices are off. The YORK voltage free contacts are rated at 125 VA.

All inductive devices (relays) switched by the YORK voltage free contacts must have their coil suppressed using standard RC suppressors. If these precautions are not followed, electrical noise could cause malfunctions or damage to the unit and its controls.

## Chilled Liquid Pump Starter

Terminals 23 and 24 close to start the liquid pump. This contact is closed if there is a 'Leaving Liquid Temperature Cutout' or any of the compressors are running or the daily schedule is not calling for a shutdown with the unit switch on.

The contact must be used to ensure that the pump is running in the event of a 'Leaving Liquid Temperature Cutout'.

The pump contact will not close to run the pump if the unit has been powered up for less than 30 seconds, or if the pump has run in the last 30 seconds, to prevent pump motor overheating.

## Run Contacts

Terminals 25 and 26 close to indicate that refrigerant system 1 is running and terminals 27 and 28 close to indicate that refrigerant system 2 is running.

## Alarm Contacts

Each refrigerant system has a voltage-free normally open contact that will close when control power is applied to the panel, if no fault conditions are present. When a fault occurs which locks a system out, or there is a power failure the contact opens. To obtain a system alarm signal, connect the alarm circuit to terminals 29 and 30 for No. 1 system and terminals 31 and 32 for No. 2 system.

## Control Wiring - System Inputs

All wiring to the control terminal block (nominal 30 Vdc) must be run in screened cable, with the screen earthed at the panel end only. Run screened cable separately from mains cable to avoid electrical noise pick-up.

The voltage free contacts must be suitable for 30 Vdc (gold contacts recommended). If the voltage free contacts form part of a relay or contactor, the coil of the device must be suppressed using a standard RC suppressor. The above precautions must be taken to avoid electrical noise which could cause a malfunction or damage to the unit and its controls.

## Flow Switch

A chilled liquid flow switch of suitable type must be connected to terminals 13 and 14 to provide adequate protection against loss of liquid flow.

## Remote Start/Stop

Connect a remote switch to terminals 13 and 51 to provide remote start/stop control if required.

## Remote Reset of Chilled Liquid Setpoint

The PWM input (terminals 13 and 20) allows reset of the chilled liquid setpoint by supplying a 'timed' contact closure. Refer to Section 6 for details.

## Remote Load Limiting

Load limiting prevents the unit from loading beyond a desired value. The unit % load limit depends on the number of compressors on the unit. The load limit inputs to terminals 13 and 21 work in conjunction with the PWM input to terminals 13 and 20.

## Heat Pump Kit

When the Non-reversible Heat Pump Option is fitted the heat pump mode is selected by closing a voltage free contact between terminals 13 and 50.

## EMS Analogue Input

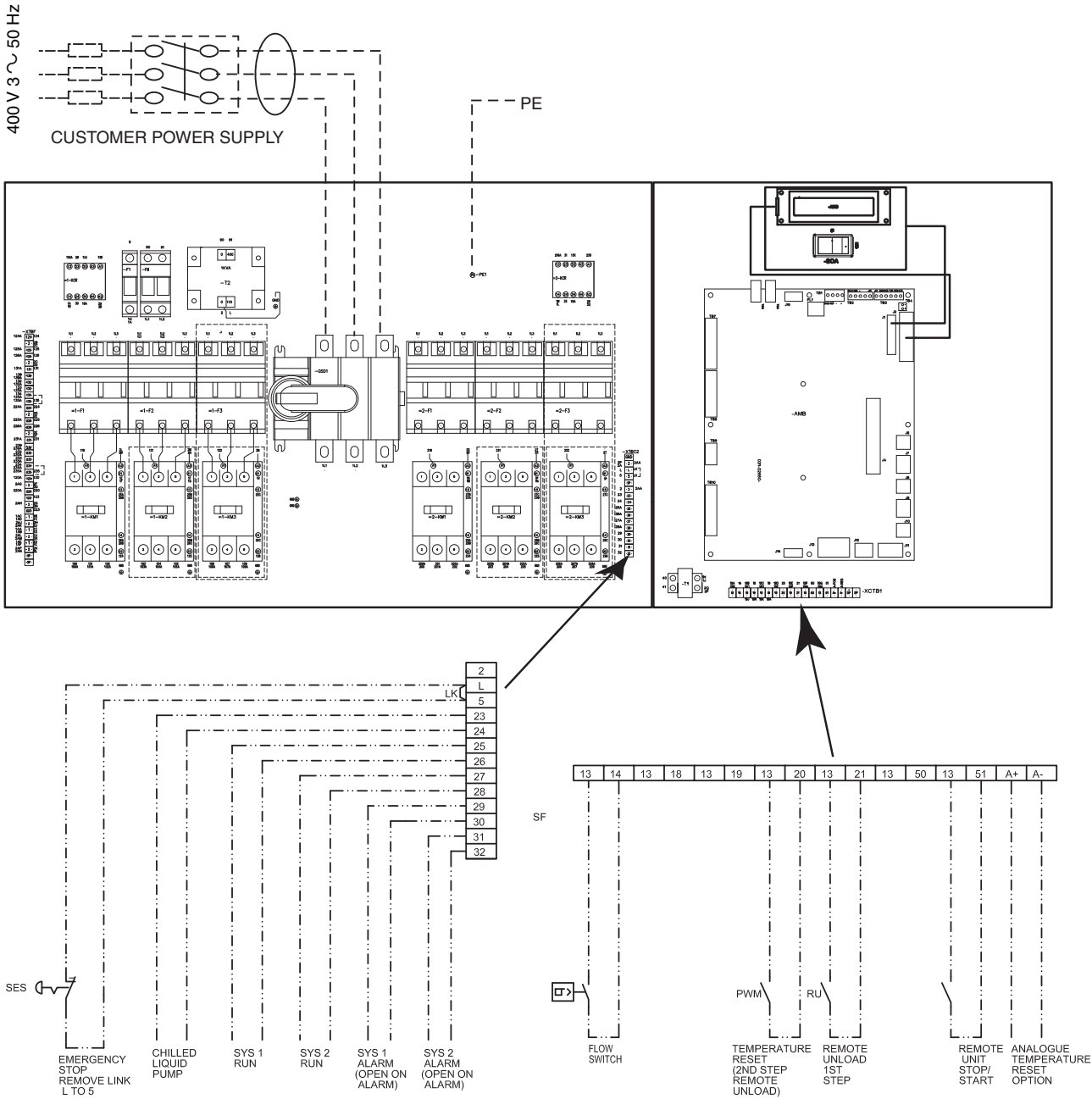
Provides a means of resetting the leaving chilled liquid temperature from the BAS/EMS. Accepts 4 to 20 mA, 0 to 20 mA, 0 to 10 Vdc or 2-10 Vdc. Connect to terminal A+ and A-. Disabled when using Modbus or BACnet MS/TP communications.

## Modbus and BACnet MS/TP

Enable communications with building protocol systems using Modbus or BACnet protocol. Connect through standard RS485 port. Disabled when using EMS Analogue Input.



CONNECTION DIAGRAM





## OPERATING LIMITATIONS - YCWL

YCWL Standard Efficiency (SE) Models			0240		0290		0345		0395		0396	
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Chilled Liquid	Liquid Outlet Temperature (Water)	°C	4.5 to 15									
	Liquid Outlet Temperature (Glycol)	°C	-12 to 15									
	Liquid Outlet Temperature Range	°C	3 to 8									
	Evaporator Flow Rate	l/s	3.8	18.0	6.3	22.4	6.3	24.3	6.3	24.3	6.3	24.3
	Evaporator Pressure Drop	kPa	9.2	172.8	10.4	104.8	7.6	90.7	7.6	90.7	7.6	90.7
	Maximum Water Side Pressure	bar	10									
Cooling Liquid	Liquid Outlet Temperature	°C	18 to 52									
	Liquid Outlet Temperature Range	°C	3 to 10									
	Condenser Flow Rate	l/s	5.7	22.7	9.2	28.4	9.2	28.4	11.4	44.2	11.4	44.2
	Condenser Pressure Drop	kPa	13.4	144.0	14.1	98.2	14.1	98.2	13.9	142.9	13.9	142.9
	Maximum Water Side Pressure	bar	10									
Maximum Refrigerant Side Pressure		bar	38.6									
Power Supply Voltage 400V, 3 ~, 50 Hz (nominal)		V	360 to 440									
Recommended Minimum System Water Volume		l	749		901		1063		1218		1218	
Minimum Ambient Air Temperature		°C	4.5									
Maximum Ambient Air Temperature		°C	46									

YCWL High Efficiency (HE) Models			0200		0230		0260		0300		0345		0347		0385		0386	
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Chilled Liquid	Liquid Outlet Temperature (Water)	°C	4.5 to 15															
	Liquid Outlet Temperature (Glycol)	°C	-12 to 15															
	Liquid Outlet Temperature Range	°C	3 to 8															
	Evaporator Flow Rate	l/s	6.3	22.4	8.8	39.4	6.3	24.3	6.3	24.3	8.8	39.4	8.8	39.4	9.5	39.4	9.5	39.4
	Evaporator Pressure Drop	kPa	10.4	104.8	11.8	180.0	7.6	90.7	7.6	90.7	11.8	180.0	11.8	180.0	11.3	154.6	11.3	154.6
	Maximum Water Side Pressure	bar	10															
Cooling Liquid	Liquid Outlet Temperature	°C	18 to 52															
	Liquid Outlet Temperature Range	°C	3 to 10															
	Condenser Flow Rate	l/s	9.2	28.4	9.2	28.4	9.2	28.4	9.2	28.4	14.2	44.2	11.4	44.2	14.2	44.2	14.2	44.2
	Condenser Pressure Drop	kPa	14.1	98.2	14.1	98.2	14.1	98.2	14.1	98.2	13.9	97.0	13.9	142.9	16.8	117.6	16.8	117.6
	Maximum Water Side Pressure	bar	10															
Maximum Refrigerant Side Pressure		bar	38.6															
Power Supply Voltage 400V, 3 ~, 50 Hz (nominal)		V	360 to 440															
Recommended Minimum System Water Volume		l	620		726		818		944		1129		1353		1244		1244	
Minimum Ambient Air Temperature		°C	4.5															
Maximum Ambient Air Temperature		°C	46															

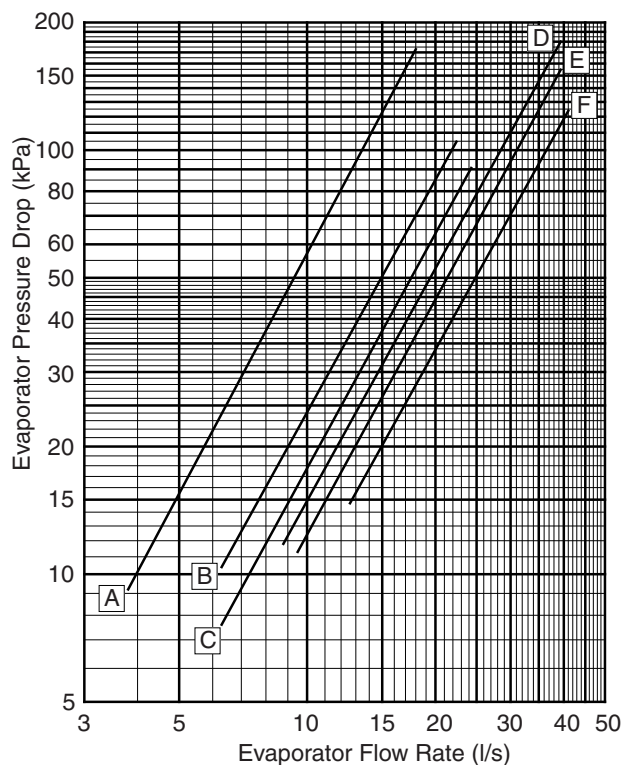
YCWL High Efficiency (HE) Models			0425		0426		0445		0447		0530		0532		0610		0611	
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Chilled Liquid	Liquid Outlet Temperature (Water)	°C	4.5 to 15															
	Liquid Outlet Temperature (Glycol)	°C	-12 to 15															
	Liquid Outlet Temperature Range	°C	3 to 8															
	Evaporator Flow Rate	l/s	8.8	39.4	8.8	39.4	12.6	41.0	12.6	41.0	12.6	41.0	12.6	41.0	12.6	41.0	12.6	41.0
	Evaporator Pressure Drop	kPa	11.8	180.0	11.8	180.0	14.7	123.9	14.7	123.9	14.7	123.9	14.7	123.9	14.7	123.9	14.7	123.9
	Maximum Water Side Pressure	bar	10															
Cooling Liquid	Liquid Outlet Temperature	°C	18 to 52															
	Liquid Outlet Temperature Range	°C	3 to 10															
	Condenser Flow Rate	l/s	11.4	44.2	11.4	44.2	16.4	44.2	16.4	44.2	16.4	44.2	16.4	44.2	16.4	44.2	16.4	44.2
	Condenser Pressure Drop	kPa	13.9	142.9	13.9	142.9	16.8	92.0	16.8	92.0	16.8	92.0	16.8	92.0	16.8	92.0	16.8	92.0
	Maximum Water Side Pressure	bar	10															
Maximum Refrigerant Side Pressure		bar	38.6															
Power Supply Voltage 400V, 3 ~, 50 Hz (nominal)		V	360 to 440															
Recommended Minimum System Water Volume		l	1353		1353		1432		1432		1670		1670		1914		1914	
Minimum Ambient Air Temperature		°C	4.5															
Maximum Ambient Air Temperature		°C	46															

## OPERATING LIMITATIONS - YCRL

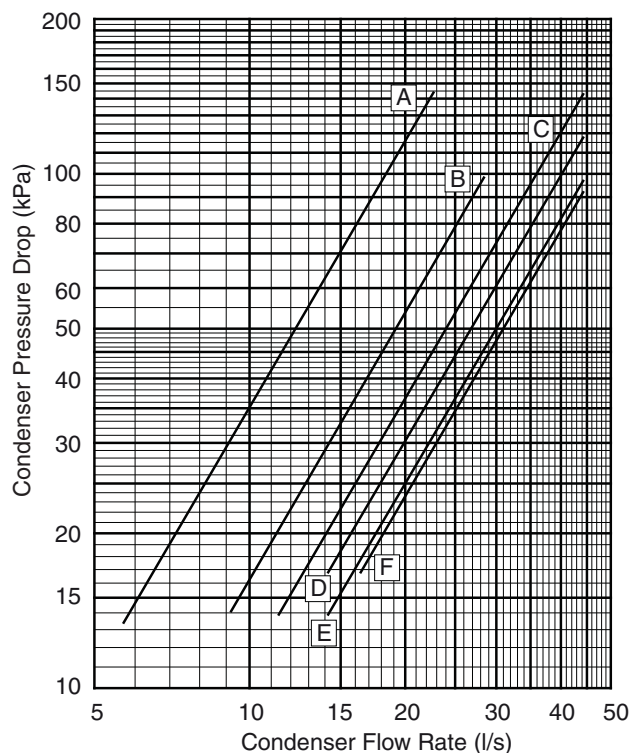
YCRL Condenserless Models			0200		0230		0260		0300		0345	
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Chilled Liquid	Liquid Outlet Temperature (Water)	°C	4.5 to 15									
	Liquid Outlet Temperature Range	°C	3 to 8									
	Evaporator Flow Rate	l/s	6.3	22.4	8.8	39.4	6.3	24.3	6.3	24.3	8.8	39.4
	Evaporator Pressure Drop	kPa	10.4	104.8	11.8	180.0	7.6	90.7	7.6	90.7	11.8	180.0
	Maximum Water Side Pressure	bar	10									
Saturated Discharge Temperature		°C	26 to 55									
Maximum Refrigerant Side Pressure		bar	38.6									
Power Supply Voltage 400V, 3 ~, 50 Hz (nominal)		V	360 to 440									
Recommended Minimum System Water Volume		l	620		726		818		944		1129	
Minimum Ambient Air Temperature		°C	4.5									
Maximum Ambient Air Temperature		°C	46									

YCRLCondenserless Models			0385		0445		0530		0610	
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Chilled Liquid	Liquid Outlet Temperature (Water)	°C	4.5 to 15							
	Liquid Outlet Temperature Range	°C	3 to 8							
	Evaporator Flow Rate	l/s	9.5	39.4	12.6	41.0	12.6	41.0	12.6	41.0
	Evaporator Pressure Drop	kPa	11.3	154.6	14.7	123.9	14.7	123.9	14.7	123.9
	Maximum Water Side Pressure	bar	10							
Saturated Discharge Temperature		°C	26 to 55							
Maximum Refrigerant Side Pressure		bar	38.6							
Power Supply Voltage 400V, 3 ~, 50 Hz (nominal)		V	360 to 440							
Recommended Minimum System Water Volume		l	1244		1432		1670		1914	
Minimum Ambient Air Temperature		°C	4.5							
Maximum Ambient Air Temperature		°C	46							

## EVAPORATOR PRESSURE DROP GRAPH



## CONDENSER PRESSURE DROP GRAPH



Standard Efficiency (SE) Models	Evaporator Pressure Drop (kPa)	Line	Condenser Pressure Drop (kPa)	Line
YCWL0240	$P = 0.7623 \times \text{Flow Rate (l/s)}^{1.8771}$	A	$P = 0.6822 \times \text{Flow Rate (l/s)}^{1.714}$	A
YCWL0290	$P = 0.3651 \times \text{Flow Rate (l/s)}^{1.8204}$	B	$P = 0.3173 \times \text{Flow Rate (l/s)}^{1.714}$	B
YCWL0345	$P = 0.2542 \times \text{Flow Rate (l/s)}^{1.8425}$	C	$P = 0.3173 \times \text{Flow Rate (l/s)}^{1.714}$	B
YCWL0395, YCWL0396	$P = 0.2542 \times \text{Flow Rate (l/s)}^{1.8425}$	C	$P = 0.2165 \times \text{Flow Rate (l/s)}^{1.714}$	C

High Efficiency (HE) Models	Evaporator Pressure Drop (kPa)	Line	Condenser Pressure Drop (kPa) (YCWL Units Only)	Line
YCWL0200, YCRL0200	$P = 0.3651 \times \text{Flow Rate (l/s)}^{1.8204}$	B	$P = 0.3173 \times \text{Flow Rate (l/s)}^{1.7140}$	B
YCWL0230, YCRL0230	$P = 0.2240 \times \text{Flow Rate (l/s)}^{1.8204}$	D	$P = 0.3173 \times \text{Flow Rate (l/s)}^{1.7140}$	B
YCWL0260, YCRL0260	$P = 0.2542 \times \text{Flow Rate (l/s)}^{1.8425}$	C	$P = 0.3173 \times \text{Flow Rate (l/s)}^{1.7140}$	B
YCWL0300, YCRL0300	$P = 0.2542 \times \text{Flow Rate (l/s)}^{1.8425}$	C	$P = 0.3173 \times \text{Flow Rate (l/s)}^{1.7140}$	B
YCWL0345, YCRL0345	$P = 0.2240 \times \text{Flow Rate (l/s)}^{1.8204}$	D	$P = 0.1470 \times \text{Flow Rate (l/s)}^{1.7140}$	E
YCWL0385, YCWL0386, YCRL0385	$P = 0.1844 \times \text{Flow Rate (l/s)}^{1.8320}$	E	$P = 0.1778 \times \text{Flow Rate (l/s)}^{1.7146}$	D
YCWL0347, YCWL0425, YCWL0426	$P = 0.2240 \times \text{Flow Rate (l/s)}^{1.8204}$	D	$P = 0.2165 \times \text{Flow Rate (l/s)}^{1.714}$	C
YCWL0445, YCWL0447, YCRL0445	$P = 0.1287 \times \text{Flow Rate (l/s)}^{1.8061}$	F	$P = 0.1391 \times \text{Flow Rate (l/s)}^{1.7146}$	F
YCWL0530, YCWL0532, YCRL0530	$P = 0.1287 \times \text{Flow Rate (l/s)}^{1.8061}$	F	$P = 0.1391 \times \text{Flow Rate (l/s)}^{1.7146}$	F
YCWL0610, YCWL0611, YCRL0610	$P = 0.1287 \times \text{Flow Rate (l/s)}^{1.8061}$	F	$P = 0.1391 \times \text{Flow Rate (l/s)}^{1.7146}$	F

## FOULING FACTORS

COOLER		
Fouling Factor $\text{m}^2 \text{ } ^\circ\text{C/kW}$	Capacity Factor	Comp. Input Factor
0.044	1.000	1.000
0.088	0.987	0.995
0.176	0.964	0.985
0.352	0.915	0.962

CONDENSER		
Fouling Factor $\text{m}^2 \text{ } ^\circ\text{C/kW}$	Capacity Factor	Comp. Input Factor
0.044	1.000	1.000
0.088	0.987	1.023
0.176	0.955	1.068
0.308	0.910	1.135

# COOLING CAPACITIES YCWL-SE MODELS - WATER COOLING

YCWL SE	LCLT °C	Condenser Leaving Water Temperature °C																				
		23			25			30			35			40			45			50		
		Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW
0240	4.5	237	39	275	233	40	273	222	44	266	212	48	259	201	53	253	189	58	247	177	65	242
	5	241	39	279	237	40	276	226	44	269	215	48	263	204	53	256	192	58	250	181	65	245
	6	249	39	287	244	40	284	233	44	277	222	48	270	211	53	263	199	59	257	187	65	251
	7	256	39	295	252	41	292	241	44	285	229	48	277	218	53	270	206	59	264	193	65	258
	8	265	39	303	260	41	300	249	44	292	237	49	285	225	53	278	212	59	271	199	65	264
	10	281	40	320	276	41	317	264	45	309	252	49	300	239	54	292	226	59	285	213	66	278
	12							281	45	325	268	49	317	255	54	308	241	60	300	227	66	292
0290	15							307	46	352	293	50	342	279	55	333	264	60	324	249	67	315
	4.5	280	44	324	276	46	321	265	50	314	254	55	308	242	61	302	229	67	296	215	75	290
	5	284	44	328	280	46	325	269	50	319	257	55	312	246	61	306	233	67	300	219	75	293
	6	294	45	338	289	46	335	278	50	328	266	55	321	254	61	314	241	68	307	226	75	301
	7	303	45	347	298	46	344	286	51	337	274	56	329	262	61	322	248	68	316	234	75	309
	8	312	45	357	308	47	354	295	51	346	283	56	338	270	61	331	256	68	324	242	75	316
	10	332	46	377	327	48	374	314	52	365	301	56	357	287	62	349	273	68	340	258	76	333
0345	12							333	52	385	319	57	376	305	62	367	290	69	358	274	76	349
	15							364	54	417	349	58	406	333	63	396	317	69	386	300	77	376
	4.5	330	53	383	325	55	380	313	60	372	299	66	365	285	73	357	270	81	350	253	90	342
	5	336	53	389	331	55	385	318	61	378	304	66	370	290	73	362	274	81	355	257	90	347
	6	346	54	400	341	56	396	328	61	388	314	67	380	299	73	372	283	81	364	266	90	356
	7	357	54	411	352	56	407	338	61	399	324	67	390	309	74	382	292	81	373	275	90	365
	8	369	54	423	363	56	419	349	61	410	334	67	401	318	74	392	302	82	383	284	91	374
0395	10	392	55	447	386	57	442	371	62	432	355	68	422	339	74	412	321	82	403	302	91	393
	12							394	63	456	377	68	445	360	75	434	341	83	423	322	91	412
	15							430	64	494	412	70	481	393	76	468	373	84	456	352	92	443
	4.5	380	62	441	374	64	438	360	70	429	345	77	421	329	84	412	311	93	404	293	104	396
	5	386	62	447	380	64	444	366	70	435	350	77	426	334	85	418	316	94	409	297	104	401
	6	398	62	460	392	64	456	377	70	447	361	77	438	345	85	429	326	94	420	307	104	411
	7	411	62	473	405	65	469	389	71	459	373	77	450	355	85	440	337	94	430	317	104	421
0396	8	424	63	486	417	65	482	401	71	472	385	78	462	367	85	451	348	94	441	327	105	431
	10	450	63	513	444	66	509	427	71	498	409	78	486	390	86	475	370	95	464	348	105	453
	12							453	72	525	434	79	512	414	87	500	392	95	487	370	106	475
	15							495	73	568	474	80	553	452	87	539	429	96	525	404	107	510
	4.5	386	56	441	379	59	438	362	68	429	344	78	421	325	89	414	305	102	406	284	116	399
	5	392	56	447	385	59	443	368	68	435	349	78	427	330	89	419	310	101	411	289	116	404
	6	404	56	459	397	59	455	379	68	446	361	77	438	341	89	429	320	101	421	298	116	413
0396	7	416	56	471	409	59	467	391	68	458	372	77	449	352	88	440	331	101	431	308	115	423
	8	429	56	484	421	59	480	403	67	470	384	77	460	363	88	451	342	101	442	318	115	433
	10	455	55	509	447	58	505	428	67	494	408	77	484	386	88	473	364	100	463	340	114	453
	12							454	67	520	433	76	508	410	87	497	387	99	486	362	114	475
	15							495	66	560	472	76	547	448	86	534	423	99	521	396	113	509

LCLT: Leaving Chilled Liquid Temperature

Data based on 5°C chilled water temperature difference and 0.044 m² °C/kW

# COOLING CAPACITIES YCWL-HE MODELS - WATER COOLING

YCWL HE	LCLT °C	Condenser Leaving Water Temperature °C																				
		23			25			30			35			40			45			50		
		Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW
0200	4.5	191	30	220	188	31	219	181	33	214	173	37	210	165	41	205	156	46	201	146	51	196
	5	194	30	223	191	31	222	184	34	217	176	37	213	168	41	208	159	46	204	149	51	199
	6	200	30	230	198	31	228	190	34	223	182	37	219	174	41	214	164	46	209	154	51	204
	7	207	31	237	204	31	235	197	34	230	188	37	225	179	41	220	170	46	215	159	51	210
	8	213	31	244	210	32	241	203	34	236	194	37	231	185	41	226	175	46	221	165	51	215
	10	227	32	258	224	32	256	216	35	250	207	38	244	198	41	238	187	46	232	176	51	226
	12							229	35	264	220	38	258	211	42	251	200	46	245	188	51	238
0230	4.5	227	35	261	223	36	258	213	39	252	203	43	245	192	48	239	180	53	233	169	59	227
	5	230	35	265	227	36	262	216	40	255	206	43	249	195	48	242	184	53	236	172	59	230
	6	238	35	273	234	37	270	224	40	263	213	43	256	202	48	249	190	53	242	178	59	236
	7	246	36	281	242	37	278	231	40	271	220	44	263	209	48	256	197	53	249	184	59	242
	8	254	36	290	250	37	286	239	40	279	228	44	271	216	48	263	203	53	256	190	59	249
	10	271	36	307	267	38	304	255	41	295	243	44	287	231	48	278	218	53	270	204	59	263
	12							272	41	312	259	44	303	246	49	294	232	54	285	218	60	277
0260	4.5	259	39	297	254	40	294	242	44	285	229	48	276	216	52	268	203	58	260	190	64	253
	5	263	39	302	259	40	298	246	44	289	233	48	280	220	52	272	207	58	264	193	64	257
	6	272	39	310	267	40	307	255	44	298	241	48	289	228	53	280	214	58	272	200	64	264
	7	281	39	319	276	40	316	263	44	307	250	48	297	236	53	288	222	58	279	207	65	271
	8	290	39	329	285	41	325	272	44	315	258	48	306	244	53	297	230	58	287	215	65	279
	10	309	40	348	303	41	344	290	45	334	276	49	324	261	53	314	246	59	304	230	65	295
	12							308	45	353	294	49	342	278	54	332	263	59	321	246	65	311
0300	4.5	293	44	337	289	46	334	277	50	327	265	55	320	252	61	313	239	67	305	224	75	298
	5	298	44	342	293	46	339	282	50	331	270	55	324	257	61	317	243	67	310	228	75	302
	6	308	45	352	303	46	348	291	51	341	278	55	333	265	61	326	251	68	318	236	75	310
	7	317	45	362	312	47	358	300	51	350	287	56	342	274	61	335	260	68	327	244	75	319
	8	327	45	372	322	47	369	309	51	360	296	56	352	283	62	343	268	68	335	252	75	327
	10	348	46	394	343	48	390	329	52	380	315	57	371	301	62	362	285	68	353	269	76	344
	12							350	53	402	335	57	391	319	63	381	303	69	372	286	76	362
0345	4.5	367	49	416	360	52	412	344	60	403	326	69	395	308	79	386	288	91	378	266	104	369
	5	373	49	422	366	52	418	349	60	409	332	69	400	313	79	391	293	90	382	271	104	374
	6	385	49	433	378	52	430	361	60	420	343	69	411	323	79	402	303	90	392	281	103	383
	7	397	49	445	390	52	442	373	59	432	354	68	422	334	78	412	313	90	403	291	103	393
	8	410	49	458	403	51	454	385	59	443	366	68	433	345	78	423	324	89	413	301	102	403
	10	435	48	483	428	51	479	409	59	468	389	67	456	368	77	445	346	89	434	322	102	423
	12							435	58	493	414	67	480	392	77	468	369	88	456	344	101	444
0347	4.5	367	49	416	360	52	412	344	60	403	326	69	395	308	79	386	288	91	378	266	104	369
	5	373	49	422	366	52	418	349	60	409	332	69	400	313	79	391	293	90	382	271	104	374
	6	385	49	433	378	52	430	361	60	420	343	69	411	323	79	402	303	90	392	281	103	383
	7	397	49	445	390	52	442	373	59	432	354	68	422	334	78	412	313	90	403	291	103	393
	8	410	49	458	403	51	454	385	59	443	366	68	433	345	78	423	324	89	413	301	102	403
	10	435	48	483	428	51	479	409	59	468	389	67	456	368	77	445	346	89	434	322	102	423
	12							435	58	493	414	67	480	392	77	468	369	88	456	344	101	444
0385	4.5	394	59	452	387	61	447	368	66	434	349	72	421	329	80	408	310	88	397	289	98	387
	5	401	59	459	393	61	453	374	66	440	355	73	427	335	80	414	315	88	403	295	98	392
	6	414	59	473	406	61	467	387	67	453	367	73	439	347	80	426	326	88	414	305	98	403
	7	428	59	487	420	61	481	400	67	467	380	73	452	359	80	439	338	88	426	316	98	414
	8	442	59	501	434	62	495	414	67	480	393	73	466	372	80	451	350	89	438	327	98	425
	10	470	60	530	462	62	524	441	68	508	420	74	493	397	81	478	374	89	463	351	99	449
	12							470	68	537	447	74	521	424	81	505	400	90	489	375	99	474
0386	4.5	419	55	473	411	58	469	392	67	458	372	77	448	351	88	438	329	100	429	306	115	420
	5	426	55	480	418	58	475	398	67	465	378	76	454	357	88	444	335	100	434	311	115	425
	6	439	55	493	432	58	489	412	66	478	391	76	467	369	87	456	346	100	445	322	114	436
	7	453	54	507	445	58	502	425	66	491	404	76	479	382	87	468	358	99	457	333	114	447
	8	467	54	521	459	57	516	439	66	504	417	76	492	394	86	480	370	99	469	345	113	458
	10	497	54	550	488	57	545	467	65	532	444	75	519	421	86	506	395	98	493	369	112	481
	12							496	65	560	472	74	546	448	85	532	422	97	519	394	112	505
	15							542	64	605	517	73	590	490	84	574	463	96	559	434	110	544

LCLT: Leaving Chilled Liquid Temperature

Data based on 5°C chilled water temperature difference and 0.044 m<sup>2</sup> °C/kW

# COOLING CAPACITIES YCWL-HE MODELS - WATER COOLING (CONTINUED)

YCWL HE	LCLT °C	Condenser Leaving Water Temperature °C																				
		23			25			30			35			40			45			50		
		Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW
0425	4.5	422	63	485	416	66	481	399	72	470	382	79	460	364	87	450	344	96	439	322	106	428
	5	429	63	492	422	66	488	406	72	477	388	79	466	369	87	456	350	96	445	328	107	434
	6	443	64	506	436	66	502	419	72	490	401	79	479	381	87	468	361	96	457	339	107	445
	7	457	64	521	450	66	516	432	72	504	414	79	492	394	87	481	373	96	469	350	107	457
	8	471	64	535	464	67	530	446	73	518	427	80	506	406	88	493	385	97	481	361	107	468
	10	501	65	566	494	67	561	474	73	547	454	80	534	432	88	520	409	97	506	385	108	492
	12							504	74	577	482	81	562	459	89	548	435	98	532	409	108	517
0426	4.5	428	57	485	421	61	481	401	70	470	381	80	460	360	91	450	337	104	440	312	119	430
	5	435	57	491	427	61	487	408	69	477	387	79	466	366	91	456	343	104	446	318	118	436
	6	448	57	505	441	60	500	421	69	489	400	79	478	378	90	468	354	103	457	329	118	447
	7	462	57	519	454	60	514	434	69	502	412	79	491	390	90	480	366	103	469	340	118	458
	8	476	57	533	468	60	528	447	69	516	426	79	504	402	90	492	378	103	480	352	117	469
	10	506	57	562	497	60	556	475	68	543	452	78	530	428	89	517	403	102	504	375	117	492
	12							504	68	572	480	78	558	455	89	544	429	102	530	400	116	516
0445	4.5	461	64	525	453	67	520	432	77	509	411	87	498	388	100	487	364	113	477	337	129	466
	5	469	64	532	461	67	527	439	77	516	418	87	504	395	99	494	370	113	483	343	129	472
	6	484	64	547	476	67	542	454	76	530	431	87	518	408	99	507	383	113	495	356	129	484
	7	500	63	563	491	67	557	469	76	544	446	87	532	421	99	520	396	112	508	368	128	496
	8	516	63	579	507	67	573	484	76	559	460	87	546	435	98	533	409	112	521	381	128	509
	10	549	63	612	540	66	605	515	76	590	490	86	576	464	98	561	437	111	548	408	127	534
	12							548	75	623	522	85	607	494	97	591	465	111	576	435	126	561
0447	4.5	461	64	525	453	67	520	432	77	509	411	87	498	388	100	487	364	113	477	337	129	466
	5	469	64	532	461	67	527	439	77	516	418	87	504	395	99	494	370	113	483	343	129	472
	6	484	64	547	476	67	542	454	76	530	431	87	518	408	99	507	383	113	495	356	129	484
	7	500	63	563	491	67	557	469	76	544	446	87	532	421	99	520	396	112	508	368	128	496
	8	516	63	579	507	67	573	484	76	559	460	87	546	435	98	533	409	112	521	381	128	509
	10	549	63	612	540	66	605	515	76	590	490	86	576	464	98	561	437	111	548	408	127	534
	12							548	75	623	522	85	607	494	97	591	465	111	576	435	126	561
0530	4.5	519	81	599	511	84	594	490	92	581	469	101	569	446	111	556	422	123	544	395	136	531
	5	527	81	607	519	84	602	498	92	589	476	101	576	453	111	564	429	123	551	402	136	538
	6	544	81	625	536	84	620	514	92	606	492	101	592	468	111	579	443	123	566	416	137	552
	7	562	82	643	553	85	637	531	93	623	508	101	609	484	112	595	458	123	581	430	137	567
	8	580	82	662	571	85	656	548	93	640	524	102	626	499	112	611	473	124	596	445	137	581
	10	617	84	700	608	86	694	583	94	677	558	103	660	532	113	644	504	124	627	474	138	611
	12							620	95	715	593	104	696	565	114	678	536	125	660	505	138	643
0532	4.5	518	69	587	509	73	582	486	84	569	461	97	557	435	111	545	407	127	533	377	146	523
	5	526	69	595	517	73	590	494	84	577	469	96	565	442	111	552	0	0	520	384	145	529
	6	543	69	611	534	73	606	510	84	593	484	96	580	457	110	567	428	126	554	398	145	542
	7	560	68	628	551	72	622	526	83	609	500	96	595	472	110	582	443	126	568	411	144	555
	8	577	68	645	568	72	639	543	83	625	516	95	611	488	109	597	458	126	583	426	144	569
	10	613	67	680	603	71	674	577	82	659	549	95	643	520	109	628	488	125	612	455	143	597
	12							613	82	694	584	94	677	553	108	660	520	124	644	486	142	627
0610	4.5	597	94	690	588	97	684	564	106	670	540	117	656	514	129	643	487	142	629	457	158	615
	5	606	94	700	597	97	694	574	107	680	549	117	665	523	129	651	495	143	637	465	158	623
	6	626	95	720	617	98	714	592	107	699	567	117	683	540	129	669	511	143	653	480	159	638
	7	646	95	741	636	98	734	611	107	718	585	118	702	557	130	686	528	143	670	496	159	654
	8							631	108	738	604	118	721	575	130	704	545	144	688	512	159	671
	10							671	109	779	642	119	761	612	131	742	580	144	724	545	160	705
	12							713	110	823	683	120	802	650	132	782	616	145	761	580	161	740
0611	4.5	619	84	702	608	89	696	581	102	682	552	117	668	521	134	655	489	154	642	454	176	630
	5	629	83	711	618	88	706	590	102	691	561	117	677	530	134	663	497	153	650	462	176	637
	6	648	83	731	637	88	725	609	101	710	579	116	695	547	133	680	514	153	666	478	175	653
	7	668	83	750	657	88	744	628	101	728	597	116	713	565	133	697	531	152	683	494	174	668
	8							648	101	748	616	116	731	583	133	715	548	152	700	511	174	684
	10							688	100	787	655	115	770	621	132	752	584	151	735	545	173	718
	12							730	99	829	696	114	810	660	131	790	622	150	771	581	172	752
	15							797	98	894	761	113	873	722	129	851	681	148	829	638	170	807

LCLT: Leaving Chilled Liquid Temperature

Data based on 5°C chilled water temperature difference and 0.044 m<sup>2</sup> °C/kW



# COOLING CAPACITIES YCRL-HE MODELS - WATER COOLING

YCRL HE	LCLT °C	Saturated Discharge Temperature °C																	
		30			35			40			45			50			55		
		Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW	Cool kW	Power kW	HR kW
0200	4.5	188	33	219	181	36	215	172	40	210	164	45	206	154	50	201	144	56	196
	5	191	33	222	184	36	218	175	40	213	166	45	209	157	50	204	146	56	199
	6	197	33	229	190	36	224	181	40	219	172	45	214	162	50	209	152	56	204
	8	210	33	242	202	36	237	193	40	231	184	45	226	174	50	221	162	56	215
	10	224	34	256	215	37	250	206	40	244	196	45	239	185	50	233	174	56	227
	12	238	34	270	229	37	264	220	41	258	209	45	252	198	50	245	186	56	238
	15	260	35	293	251	38	287	241	41	280	230	45	273	218	50	265	205	56	258
0230	4.5	221	38	257	211	42	251	200	46	244	189	51	238	178	57	232	166	64	226
	5	225	38	261	215	42	255	204	46	248	193	51	241	181	57	235	169	64	229
	6	233	39	269	222	42	262	211	47	255	199	52	248	187	57	242	175	64	235
	8	248	39	285	237	43	278	226	47	270	214	52	263	201	58	255	188	64	248
	10	265	39	303	254	43	294	241	47	286	229	52	278	215	58	270	201	64	262
	12	283	40	321	270	43	311	258	47	302	244	52	294	230	58	285	215	64	276
	15	311	41	349	297	44	339	284	48	329	269	53	319	254	58	309	237	65	298
0260	4.5	251	42	291	239	46	283	226	51	274	213	56	266	200	63	259	186	70	253
	5	256	42	296	243	46	287	230	51	278	217	56	270	204	63	263	190	70	256
	6	265	43	305	252	47	296	238	51	287	225	56	278	211	63	270	197	70	263
	8	283	43	323	269	47	314	255	51	304	241	57	295	226	63	286	211	70	278
	10	301	43	342	288	47	332	273	52	322	258	57	312	243	63	303	227	70	294
	12	321	44	362	306	48	351	291	52	341	276	57	330	260	63	320	243	71	310
	15	352	44	393	336	48	382	320	53	370	304	58	358	287	64	347	269	71	336
0300	4.5	288	49	336	276	53	329	263	59	322	250	65	315	236	73	308	220	81	301
	5	292	49	340	281	54	334	268	59	326	254	65	319	240	73	312	224	81	305
	6	302	49	350	290	54	343	277	59	336	263	66	328	248	73	321	232	81	313
	8	321	49	370	309	54	362	295	60	354	281	66	346	266	73	338	249	81	330
	10	342	50	391	328	55	382	314	60	374	299	66	365	284	73	357	267	82	348
	12	363	51	413	349	55	403	334	60	394	318	67	384	302	74	375	285	82	366
	15	397	52	449	381	56	437	365	61	426	348	67	415	331	74	404	312	82	394
0345	4.5	343	58	401	329	64	393	314	71	384	298	78	376	281	87	367	262	97	358
	5	349	58	407	335	64	398	319	71	390	303	78	381	286	87	372	266	97	363
	6	361	59	419	346	64	409	330	71	400	313	78	391	295	87	382	276	97	372
	8	385	59	443	369	65	433	352	71	423	335	79	413	316	87	403	296	97	392
	10	410	60	469	393	65	458	375	72	446	357	79	435	337	88	424	316	97	413
	12	436	60	496	418	66	483	400	72	471	380	79	459	359	88	447	337	98	434
	15	477	61	538	458	67	524	438	73	510	417	80	496	394	89	482	370	98	468
0385	4.5	384	65	446	365	71	433	346	78	420	327	86	408	306	96	397	286	107	388
	5	391	65	452	372	71	439	352	78	426	332	86	414	312	96	403	291	107	393
	6	404	65	466	384	71	452	364	78	439	344	86	426	323	96	414	302	107	404
	8	432	66	494	411	72	479	390	79	465	369	87	451	346	96	438	324	108	426
	10	460	66	523	439	72	507	417	79	492	394	87	477	371	97	463	347	108	449
	12	490	67	553	468	73	537	445	80	521	421	88	504	396	97	489	371	108	474
	15	537	67	601	513	74	583	488	81	565	463	89	547	437	98	530	410	109	513
0445	4.5	437	75	512	420	82	501	400	90	490	380	100	480	358	111	469	334	124	458
	5	445	75	519	426	82	508	407	91	497	386	100	486	364	111	475	340	124	464
	6	459	75	534	440	82	522	421	91	511	400	101	500	377	112	488	353	124	477
	8	489	76	565	469	83	552	449	91	540	427	101	527	404	112	515	378	125	502
	10	521	77	597	500	84	583	478	92	569	455	102	556	431	112	543	405	125	529
	12	554	78	632	531	85	616	508	93	601	484	102	586	459	113	571	432	125	557
	15	607	80	686	582	86	668	556	94	650	530	103	633	503	114	616	475	126	600
0530	4.5	512	89	601	491	98	589	469	108	577	446	120	565	420	133	553	393	148	541
	5	520	89	609	499	98	597	477	108	585	453	120	572	427	133	560	400	148	548
	6	537	90	627	516	98	614	493	108	601	469	120	588	442	133	575	414	148	562
	8	572	90	662	549	99	648	525	109	634	500	120	620	472	134	605	443	149	591
	10	609	91	700	585	100	684	559	110	668	532	121	653	503	134	637	473	149	621
	12	648	92	739	622	101	722	594	110	704	566	122	687	536	135	670	503	150	653
	15	709	94	802	680	102	782	651	112	762	619	123	742	587	136	722	552	150	702
0610	4.5	589	104	687	565	114	673	540	126	659	513	139	645	484	154	631	453	172	617
	5	598	104	697	574	114	682	549	126	668	522	139	654	493	155	639	461	172	624
	6	617	104	716	593	114	701	567	126	686	539	139	671	509	155	656	476	172	640
	8	657	105	757	631	115	740	604	127	724	574	140	707	543	155	690	508	173	672
	10	699	106	800	672	116	782	642	127	763	611	141	744	578	156	726	542	173	706
	12	743	107	845	714	117	824	683	128	804	650	141	784	614	156	763	576	174	742
	15	814	108	916	781	118	893	747	129	869	711	142	846	672	158	822	631	175	797

LCLT: Leaving Chilled Liquid Temperature

Data based on 5°C chilled water temperature difference and 0.044 m<sup>2</sup> °C/kW

## ESEER DATA YCWL-SE MODELS

YCWL0240SE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4
CC	30	229	173	117	57
IP		48	34	22	11
CC	26	239	180	122	59
IP		45	31	20	10
CC	22	248	188	128	62
IP		42	29	19	9
CC	18	257	195	133	65
IP		40	28	18	9

YCWL0290SE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4
CC	30	274	204	135	66
IP		56	39	25	12
CC	26	284	212	140	68
IP		52	36	23	11
CC	22	294	220	146	71
IP		48	34	22	11
CC	18	304	227	151	74
IP		45	31	20	10

YCWL0345SE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4
CC	30	324	233	161	66
IP		67	43	30	12
CC	26	336	242	168	68
IP		62	41	28	11
CC	22	347	251	174	71
IP		58	38	26	11
CC	18	359	259	181	73
IP		54	35	24	10

YCWL0395SE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4
CC	30	373	280	188	92
IP		77	54	35	17
CC	26	386	290	195	95
IP		72	50	32	16
CC	22	399	301	203	99
IP		67	47	30	15
CC	18	412	311	210	102
IP		63	44	28	14

YCWL0396SE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4
CC	30	372	280	188	92
IP		76	52	33	16
CC	26	388	292	197	96
IP		68	47	30	15
CC	22	403	304	206	100
IP		61	42	27	13
CC	18	417	315	214	104
IP		55	38	24	12

Data at 7°C Leaving Chilled Water Temperature with constant flow rates

Flow Rates are set at 12/7°C Chilled Water Temperatures and 30/35°C Cooling Water Temperatures

## ESEER DATA YCWL-HE MODELS

YCWL0200HE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4
CC	30	188	138	90	44
IP		37	27	17	9
CC	26	195	143	93	46
IP		35	25	16	8
CC	22	202	148	96	47
IP		32	24	15	8
CC	18	208	153	99	48
IP		31	23	15	7

YCWL0230HE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4
CC	30	220	154	108	48
IP		44	30	21	9
CC	26	230	161	113	50
IP		41	28	19	8
CC	22	239	167	117	51
IP		38	26	18	8
CC	18	248	173	121	53
IP		36	25	17	7

YCWL0260HE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4
CC	30	250	184	120	59
IP		48	33	22	11
CC	26	261	193	126	62
IP		45	31	20	10
CC	22	272	201	132	64
IP		42	29	19	9
CC	18	282	209	138	67
IP		39	27	18	9

YCWL0300HE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4
CC	30	287	213	140	68
IP		56	39	25	12
CC	26	298	221	145	71
IP		52	36	23	11
CC	22	308	229	151	74
IP		48	34	22	11
CC	18	318	237	157	76
IP		45	32	20	10

YCWL0345HE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4
CC	30	354	254	172	74
IP		68	44	30	13
CC	26	370	266	180	77
IP		61	40	27	11
CC	22	385	277	188	80
IP		55	36	24	10
CC	18	399	288	196	83
IP		49	32	21	9

YCWL0347HE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4
CC	30	354	254	172	74
IP		68	47	31	13
CC	26	369	265	180	77
IP		61	42	28	12
CC	22	384	277	188	80
IP		55	38	25	11
CC	18	399	288	196	83
IP		49	33	22	9

Data at 7°C Leaving Chilled Water Temperature with constant flow rates

Flow Rates are set at 12/7°C Chilled Water Temperatures and 30/35°C Colling Water Temperatures

**ESEER DATA YCWL-HE MODELS (CONTINUED)**

YCWL0385HE	Condenser Water	Full Load	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
	Entering Temp. (°C)						
CC	30	380	314	248	182	118	61
IP		73	57	45	33	21	11
CC	26	397	329	260	190	124	62
IP		68	53	42	31	20	10
CC	22	413	343	272	199	130	64
IP		64	50	39	29	19	9
CC	18	429	357	284	208	135	73
IP		60	47	36	27	17	9

YCWL0386HE	Condenser Water	Full Load	Stage 2	Stage 3	Stage 4	Stage 5
	Entering Temp. (°C)					
CC	30	393	329	221	157	58
IP		74	58	39	27	10
CC	26	411	345	233	165	62
IP		66	52	34	24	9
CC	22	430	361	245	174	65
IP		59	46	30	21	8
CC	18	449	378	258	182	72
IP		52	41	27	19	7

YCWL0425HE	Condenser Water	Full Load	Stage 2	Stage 3	Stage 4
	Entering Temp. (°C)				
CC	30	414	307	203	99
IP		79	55	35	17
CC	26	429	319	211	103
IP		74	51	33	16
CC	22	444	331	219	107
IP		69	48	31	15
CC	18	459	342	227	110
IP		65	45	29	14

YCWL0426HE	Condenser Water	Full Load	Stage 2	Stage 3	Stage 4
	Entering Temp. (°C)				
CC	30	412	307	203	99
IP		78	55	35	17
CC	26	430	321	213	104
IP		70	49	31	15
CC	22	447	334	222	108
IP		63	44	28	14
CC	18	464	347	232	113
IP		57	39	25	12

YCWL0445HE	Condenser Water	Full Load	Stage 2	Stage 3	Stage 4
	Entering Temp. (°C)				
CC	30	446	328	213	104
IP		87	60	38	19
CC	26	465	343	223	109
IP		78	54	35	17
CC	22	484	357	233	114
IP		71	49	31	15
CC	18	502	372	243	118
IP		64	44	28	14

Data at 7°C Leaving Chilled Water Temperature with constant flow rates

Flow Rates are set at 12/7°C Chilled Water Temperatures and 30/35°C Colling Water Temperatures

## ESEER DATA YCWL-HE MODELS (CONTINUED)

YCWL0447HE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4
CC	30	446	328	213	104
IP		87	63	41	20
CC	26	465	343	223	109
IP		78	57	37	18
CC	22	484	357	233	114
IP		71	52	33	16
CC	18	502	372	243	118
IP		64	46	29	14

YCWL0530HE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
CC	30	508	412	335	232	161	67
IP		101	76	62	43	30	12
CC	26	527	429	349	242	169	69
IP		94	71	58	40	28	11
CC	22	546	445	363	251	173	74
IP		88	66	54	37	26	11
CC	18	564	461	376	261	180	75
IP		82	62	50	35	24	10

YCWL0532HE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4	Stage 5
CC	30	500	404	295	193	95
IP		96	72	53	34	17
CC	26	521	423	309	202	99
IP		86	65	48	31	15
CC	22	542	441	323	214	103
IP		77	58	43	27	13
CC	18	563	458	336	219	107
IP		69	52	38	24	12

YCWL0610HE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
CC	30	585	488	390	286	187	93
IP		118	92	72	53	34	17
CC	26	607	507	407	298	194	97
IP		110	86	67	49	32	16
CC	22	628	525	422	310	202	100
IP		102	80	63	46	30	15
CC	18	648	543	438	321	209	103
IP		96	75	59	43	28	14

YCWL0611HE	Condenser Water Entering Temp. (°C)	Full Load	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
CC	30	598	499	401	295	193	95
IP		116	94	73	54	35	17
CC	26	622	521	420	308	202	99
IP		104	85	66	48	31	15
CC	22	647	543	438	322	210	104
IP		94	76	59	43	28	14
CC	18	671	563	456	335	219	108
IP		84	68	52	38	25	12

Data at 7°C Leaving Chilled Water Temperature with constant flow rates

Flow Rates are set at 12/7°C Chilled Water Temperatures and 30/35°C Colling Water Temperatures

## PHYSICAL DATA - YCWL-SE

Standard Efficiency (SE) YCWL Models			0240	0290
Number of refrigerant circuits			2	
Refrigerant Charge	Circuit 1 / Circuit 2	kg	27/27	29.5/29.5
Oil Charge	Circuit 1 / Circuit 2	kg	9.3/9.3	11.8/11.8
Compressor	Number of Compressors		4	
	Type		Scroll	
	Capacity Control	%	100/76/ 51/25	100 /76/ 50/24
Evaporator	Number of Evaporator		1	
	Type		Shell and Tubes	
	Water Volume	l	153	185
	Water Connections	Inch	6	6
Condenser	Number of Condenser		1	
	Type		Shell and Tubes	
	Water Volume	l	74	102
	Water Connections	Inch	4	4
Dimensions	Length	mm	3199	3199
	Width	mm	859	859
	Height	mm	1751	1834
Weight	Shipping Weight	kg	1925	2342
	Operating Weight	kg	1985	2484

Standard Efficiency (SE) YCWL Models			0345	0395	0396
Number of refrigerant circuits			2		
Refrigerant Charge	Circuit 1 / Circuit 2	kg	36.5/36.5	60/60	60/60
Oil Charge	Circuit 1 / Circuit 2	kg	12.6/11.8	12.6/12.6	12.6/12.6
Compressor	Number of Compressors		4		
	Type		Scroll		
	Capacity Control	%	100/72/ 50/21	100/75/ 51/25	100/75/ 51/25
Evaporator	Number of Evaporator		1		
	Type		Shell and Tubes		
	Water Volume	l	194	194	194
	Water Connections	Inch	6	6	6
Condenser	Number of Condenser		1		
	Type		Shell and Tubes		
	Water Volume	l	102	133	133
	Water Connections	Inch	4	5	5
Dimensions	Length	mm	3153	3153	3153
	Width	mm	859	859	859
	Height	mm	1825	1819	1819
Weight	Shipping Weight	kg	2262	2389	2453
	Operating Weight	kg	2483	2564	2564



# PHYSICAL DATA - YCWL-HE

High Efficiency (HE) YCWL Models			0200	0230	0260	300
Number of refrigerant circuits			2			
Refrigerant Charge	Circuit 1 / Circuit 2	kg	29.5/29.5	41/41	36.5/36.5	36.5/36.5
Oil Charge	Circuit 1 / Circuit 2	kg	8.3/8.3	12.4/12.4	9.3/8.3	14/12.4
Compressor	Number of Compressors		4			
	Type		Scroll			
	Capacity Control	%	100/74/ 48/23	100/71/ 49/22	100/74/ 49/24	100/74/ 49/24
Evaporator	Number of Evaporator		1			
	Type		Shell and Tubes			
	Water Volume	l	183	292	134	134
	Water Connections	Inch	6	8	6	6
Condenser	Number of Condenser		1			
	Type		Shell and Tubes			
	Water Volume	l	102	102	102	102
	Water Connections	Inch	4	4	4	4
Dimensions	Length	mm	3159	3132	3153	3153
	Width	mm	859	859	859	859
	Height	mm	1717	1895	1825	1825
Weight	Shipping Weight	kg	2058	2230	2220	2342
	Operating Weight	kg	2201	2454	2363	2484

High Efficiency (HE) YCWL Models			345	0347	0385	0386
Number of refrigerant circuits			2			
Refrigerant Charge	Circuit 1 / Circuit 2	kg	70.5/70.5	59/59	77/77	77/77
Oil Charge	Circuit 1 / Circuit 2	kg	9.3/9.3	12.6/12.6	14/14	15.6/10.4
Compressor	Number of Compressors		4	4	6	5
	Type		Scroll			
	Capacity Control	%	100/71/ 49/20	100/72/ 50/22	100/83/66 /49/33/17	100/84/58/ 42/16
Evaporator	Number of Evaporator		1			
	Type		Shell and Tubes			
	Water Volume	l	292	292	251	251
	Water Connections	Inch	8	8	8	8
Condenser	Number of Condenser		1			
	Type		Shell and Tubes			
	Water Volume	l	167	133	198	198
	Water Connections	Inch	5	5	5	5
Dimensions	Length	mm	3132	3132	3689	3689
	Width	mm	859	859	885	885
	Height	mm	1943	1893	1977	1977
Weight	Shipping Weight	kg	2681	2467	3082	2925
	Operating Weight	kg	2971	2723	3412	3255

**PHYSICAL DATA - YCWL-HE (CONTINUED)**

High Efficiency (HE) YCWL Models			0425	0426	0445	0447
Number of refrigerant circuits			2			
Refrigerant Charge	Circuit 1 / Circuit 2	kg	59/59	59/59	88.5/88.5	88.5/88.5
Oil Charge	Circuit 1 / Circuit 2	kg	12.6/12.6	12.6/12.6	17.7/17.7	10.4/10.4
Compressor	Number of Compressors		4	4	6	4
	Type		Scroll			
	Capacity Control	%	100/74/ 49/24	100/75/ 50/25	100/83/65 /48/32/17	100/75/ 50/25
Evaporator	Number of Evaporator		1			
	Type		Shell and Tubes			
	Water Volume	l	220	220	293	293
	Water Connections	Inch	8	8	8	8
Condenser	Number of Condenser		1			
	Type		Shell and Tubes			
	Water Volume	l	133	133	224	224
	Water Connections	Inch	5	5	5	5
Dimensions	Length	mm	3132	3132	3643	3643
	Width	mm	859	859	885	885
	Height	mm	1893	1893	1969	1969
Weight	Shipping Weight	kg	2544	2480	3582	3116
	Operating Weight	kg	2467	2736	3907	3544

High Efficiency (HE) YCWL Models			530	0532	0610	0611
Number of refrigerant circuits			2			
Refrigerant Charge	Circuit 1 / Circuit 2	kg	88.5/88.5	88.5/88.5	88.5/88.5	88.5/88.5
Oil Charge	Circuit 1 / Circuit 2	kg	18.9/17.7	15.6/10.4	18.9/18.9	15.6/15.6
Compressor	Number of Compressors		6	5	6	6
	Type		Scroll			
	Capacity Control	%	100/82/66 /46/32/13	100/80/ 60/40/20	100/84/67 /49/32/16	100/83/ 67 /50/13/17
Evaporator	Number of Evaporator		1			
	Type		Shell and Tubes			
	Water Volume	l	293	293	293	293
	Water Connections	Inch	8	8	8	8
Condenser	Number of Condenser		1			
	Type		Shell and Tubes			
	Water Volume	l	224	224	224	224
	Water Connections	Inch	5	5	5	5
Dimensions	Length	mm	3643	3643	3643	3643
	Width	mm	885	885	885	885
	Height	mm	1969	1969	1969	1969
Weight	Shipping Weight	kg	3581	3323	3579	3484
	Operating Weight	kg	4009	3751	4007	3912

Condenserless YCRL-HE Models			0200	0230	0260	0300	0345
Number of refrigerant circuits			2				
Oil Charge	Circuit 1 / Circuit 2	kg	8.3/8.3	12.4/12.4	9.3/8.3	14/12.4	9.3/9.3
Compressor	Number of Compressors		4				
	Type		Scroll				
	Capacity Control	%	100/74/ 48/23	100/71/ 49/22	100/74/ 49/24	100/74/ 49/24	100/71/ 49/20
Evaporator	Number of Evaporator		1				
	Type		Shell and Tubes				
	Water Volume	l	183	292	134	134	292
	Water Connections	Inch	6	8	6	6	8
Connection Sizes	Discharge Line (circuit 1 - circuit 2)	Inch	1 3/8-1 3/8	1 5/8-1 3/8	1 5/8-1 5/8	1 5/8-1 5/8	1 5/8-1 5/8
	Liquid Line (circuit 1 - circuit 2)	Inch	7/8-7/8	1 1/8-7/8	1 1/8-1 1/8	1 1/8-1 1/8	1 1/8-1 1/8
Dimensions	Length	mm	3086	3061	3076	3076	3061
	Width	mm	826	856	843	843	856
	Height	mm	1438	1615	1547	1544	1608
Weight	Shipping Weight	kg	1309	1481	1471	1593	1683

Condenserless YCRL-HE Models			0385	0445	0530	0610
Number of refrigerant circuits			2			
Oil Charge	Circuit 1 / Circuit 2	kg	14/14	17.7/17.7	18.9/17.7	18.9/18.9
Compressor	Number of Compressors		6			
	Type		Scroll			
	Capacity Control	%	100/83/66 /49/33/17	100/83/65 /48/32/17	100/82/66 /46/32/13	100/84/67 /49/32/16
Evaporator	Number of Evaporator		1			
	Type		Shell and Tubes			
	Water Volume	l	233	293	293	293
	Water Connections	Inch	8	8	8	8
Connection Sizes	Discharge Line (circuit 1 - circuit 2)	Inch	2 1/8-2 1/8	2 1/8-2 1/8	2 1/8-2 1/8	2 1/8-2 1/8
	Liquid Line (circuit 1 - circuit 2)	Inch	1 1/8-1 1/8	1 1/8-1 1/8	1 3/8-1 1/8	1 3/8-1 3/8
Dimensions	Length	mm	3617	3576	3576	3576
	Width	mm	965	965	965	902
	Height	mm	1641	1638	1641	1641
Weight	Shipping Weight	kg	1947	2266	2264	2263

## ELECTRICAL DATA YCWL-SE MODELS

Standard Efficiency Units							
YCWL	Nominal Running Conditions		Maximum Running Conditions			Start up Amps	Start up Amps
	kW	Amps <sup>(1)</sup> at 400 V	kW	Amps <sup>(2)</sup> at 360V	Amps <sup>(2)</sup> at 400V	Direct on Line	Optional Soft Start
	without Power Factor Correction						
	with Optional Power Factor Correction Fitted, <sup>(5)</sup>						
0240	50	93	66	116	114	295	227
	50	83	66	110	105	287	222
0290	63	118	83	147	142	360	279
0345	80	146	106	185	181	419	301
0395	80	146	106	185	181	419	301
	80	130	106	176	167	408	294
0396	79	132	107	184	172	329	214
	79	124	107	179	165	325	210

(1) For YCWL units, nominal running amps at 37.8°C saturated discharge temperature and 4.4°C saturated suction temperature. This approximates a 35°C leaving condenser liquid temperature and a 7°C leaving chilled liquid temperature.

(2) Maximum running amps at maximum operating conditions

(3) Start-up amps is the largest compressor starting with all other compressors operating at nominal conditions at 400V

(4) Soft Start is only fitted on the largest compressor in each system

(5) Nominal and maximum running currents are for units without soft start option

## ELECTRICAL DATA YCWL-HE MODELS

High Efficiency Units							
YCWL	Nominal Running Conditions		Maximum Running Conditions			Start up Amps	Start up Amps
	kW	Amps <sup>(1)</sup> at 400 V	kW	Amps <sup>(2)</sup> at 360V	Amps <sup>(2)</sup> at 400V	Direct on Line	Optional Soft Start
	without Power Factor Correction						
	with Optional Power Factor Correction Fitted, <sup>(5)</sup>						
0200	37	72	50	90	88	252	194
	37	61	50	84	79	244	189
0230	44	82	58	103	101	284	217
	44	72	58	97	92	276	211
0260	50	93	66	116	114	295	227
	50	83	66	110	105	287	222
0300	63	118	83	147	142	360	279
0345	71	132	94	166	161	405	288
0347	70	118	99	170	160	315	200
	70	110	99	165	153	311	196
0385	75	139	99	173	171	341	274
	75	124	99	165	158	328	263
0386	77	132	110	189	178	328	213
	77	121	110	183	169	322	207
0425	80	146	106	185	181	419	301
	80	130	106	176	167	408	294
0426	79	132	107	184	172	329	214
	79	124	107	179	165	325	210
0445	94	177	124	220	213	419	338
0447	89	158	119	207	199	385	252
	89	143	119	198	186	378	244
0530	91	168	121	212	207	471	353
0532	99	165	134	230	215	362	247
	99	155	134	223	206	356	241
0610	120	218	159	277	271	492	374
	120	195	159	264	251	473	359
0611	119	198	161	276	258	395	280
	119	186	161	268	248	387	272

(1) For YCWL units, nominal running amps at 37.8°C saturated discharge temperature and 4.4°C saturated suction temperature. This approximates a 35°C leaving condenser liquid temperature and a 7°C leaving chilled liquid temperature.

(2) Maximum running amps at maximum operating conditions

(3) Start-up amps is the largest compressor starting with all other compressors operating at nominal conditions at 400V

(4) Soft Start is only fitted on the largest compressor in each system

(5) Nominal and maximum running currents are for units without soft start option

## ELECTRICAL DATA YCRL-HE MODELS

High Efficiency Units							
YCRL	Nominal Running Conditions		Maximum Running Conditions			Start up Amps	Start up Amps
	kW	Amps <sup>(1)</sup> at 400 V	kW	Amps <sup>(2)</sup> at 360V	Amps <sup>(2)</sup> at 400V	Direct on Line	Optional Soft Start
	without Power Factor Correction						
	with Optional Power Factor Correction Fitted, <sup>(5)</sup>						
0200	43	79	50	90	88	257	200
	43	70	50	84	79	250	195
0230	50	91	58	103	101	290	223
	50	81	58	97	92	283	218
0260	57	103	66	116	114	302	235
	57	93	66	110	105	295	230
0300	72	129	83	147	142	369	287
0345	82	146	94	166	161	415	297
0385	86	154	99	173	171	353	286
	86	140	99	165	158	342	276
0445	108	194	124	220	213	433	352
0530	105	186	121	212	207	488	370
0610	139	243	159	277	271	512	395
	139	221	159	264	251	494	380

(1) For YCRL units, nominal running amps at 45°C saturated discharge temperature and 4.4°C saturated suction temperature.

(2) Maximum running amps at maximum operating conditions

(3) Start-up amps is the largest compressor starting with all other compressors operating at nominal conditions at 400V

(4) Soft Start is only fitted on the largest compressor in each system

(5) Nominal and maximum running currents are for units without soft start option



## SOUND DATA YCWL-SE MODELS WITHOUT COMPRESSOR ENCLOSURE

Standard Efficiency (SE) Models												
YCWL		Mean SWL	Band Levels - Frequency Hz								SPL at 10 metres	SPL EN 292-1991
			63	125	250	500	1000	2000	4000	8000		
0240	LWA	86	47	46	63	75	78	83	78	70	58	72
	LW	86	73	62	72	78	78	82	77	72		
0290	LWA	86	48	50	68	77	81	82	78	69	58	72
	LW	87	74	66	77	80	81	80	77	70		
0345	LWA	88	51	55	75	80	81	85	80	67	60	74
	LW	90	77	71	83	83	81	84	79	68		
0395 / 0396	LWA	90	52	57	77	82	82	87	82	64	62	76
	LW	91	78	73	86	85	82	85	81	65		

Notes:

1. Sound Power tolerance as per Eurovent Specification.
2. Frequency band tolerances range from +/- 5 dB in each frequency band.
3. Sound Pressure values to ISO 3744 in dB(A)
4. Sound Pressure values for EN 292-1991, 1 metre from Control Panel and 1.5 metres from Ground Level in dB(A)

## SOUND DATA YCWL-SE MODELS WITH COMPRESSOR ENCLOSURE

Standard Efficiency (SE) Models												
YCWL		Mean SWL	Band Levels - Frequency Hz								SPL at 10 metres	SPL EN 292-1991
			63	125	250	500	1000	2000	4000	8000		
0240	LWA	81	47	46	62	73	73	77	72	65	53	67
	LW	82	73	62	71	76	73	76	71	67		
0290	LWA	81	48	50	67	75	76	76	72	64	53	67
	LW	83	74	66	76	78	76	74	71	65		
0345	LWA	84	51	55	74	78	76	79	74	62	56	70
	LW	87	77	71	82	81	76	78	73	63		
0395 / 0396	LWA	85	52	57	76	80	77	81	76	59	57	71
	LW	89	78	73	85	83	77	79	75	60		

Notes:

1. Sound Power tolerance as per Eurovent Specification.
2. Frequency band tolerances range from +/- 5 dB in each frequency band.
3. Sound Pressure values to ISO 3744 in dB(A)
4. Sound Pressure values for EN 292-1991, 1 metre from Control Panel and 1.5 metres from Ground Level in dB(A)

## SOUND DATA YCWL-HE AND YCRL-HE MODELS WITHOUT COMPRESSOR ENCLOSURE

High Efficiency (HE) Models												
YCWL / YCRL		Mean SWL	Band Levels - Frequency Hz								SPL at 10 metres	SPL EN 292-1991
			63	125	250	500	1000	2000	4000	8000		
0200	LWA	82	46	41	54	75	77	78	71	62	54	68
	LW	83	72	58	63	78	77	77	70	63		
0230	LWA	84	46	44	61	75	78	81	76	68	56	70
	LW	85	73	60	69	78	78	80	75	69		
0260	LWA	86	47	46	63	75	78	83	78	70	58	72
	LW	86	73	62	72	78	78	82	77	72		
0300	LWA	86	48	50	68	77	81	82	78	69	58	72
	LW	87	74	66	77	80	81	80	77	70		
0345 / 0347	LWA	88	51	55	75	80	81	85	80	67	60	74
	LW	90	77	71	83	83	81	84	79	68		
0385 / 0386	LWA	88	49	47	65	77	80	85	79	72	60	74
	LW	88	75	63	74	80	80	84	78	73		
0425 / 0426	LWA	90	52	57	77	82	82	87	82	64	62	76
	LW	91	78	73	86	85	82	85	81	65		
0445 / 0447	LWA	88	50	52	70	78	83	83	80	71	60	74
	LW	89	76	68	79	82	83	82	79	72		
0530 / 0532	LWA	90	52	57	76	82	83	87	82	69	62	76
	LW	92	79	73	85	85	83	85	81	70		
0610 / 0611	LWA	92	54	59	79	84	83	88	84	66	64	78
	LW	93	80	75	87	87	83	87	83	67		

Notes:

1. Sound Power tolerance as per Eurovent Specification.
2. Frequency band tolerances range from +/- 5 dB in each frequency band.
3. Sound Pressure values to ISO 3744 in dB(A)
4. Sound Pressure values for EN 292-1991, 1 metre from Control Panel and 1.5 metres from Ground Level in dB(A)

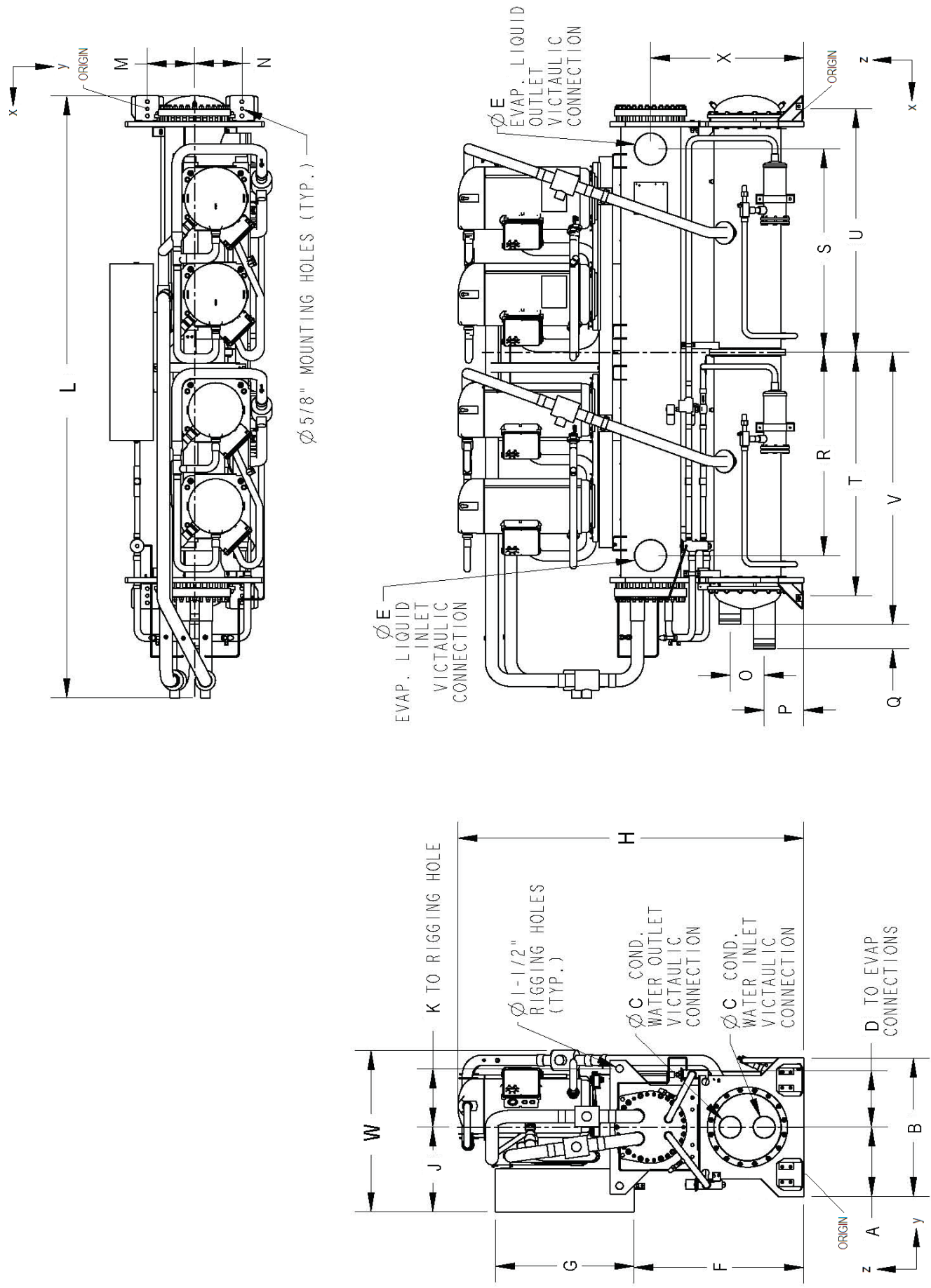
## SOUND DATA YCWL-HE AND YCRL-HE MODELS WITH COMPRESSOR ENCLOSURE

High Efficiency (HE) Models												
YCWL / YCRL		Mean SWL	Band Levels - Frequency Hz								SPL at 10 metres	SPL EN 292-1991
			63	125	250	500	1000	2000	4000	8000		
0200	LWA	78	46	41	53	73	72	72	65	57	50	64
	LW	80	72	58	62	76	72	71	64	58		
0230	LWA	79	46	44	60	73	73	75	70	63	51	65
	LW	81	73	60	68	76	73	74	69	64		
0260	LWA	81	47	46	62	73	73	77	72	65	53	67
	LW	82	73	62	71	76	73	76	71	67		
0300	LWA	81	48	50	67	75	76	76	72	64	53	67
	LW	83	74	66	76	78	76	74	71	65		
0345 / 0347	LWA	84	51	55	74	78	76	79	74	62	56	70
	LW	87	77	71	82	81	76	78	73	63		
0385 / 0386	LWA	82	49	47	64	75	75	79	73	67	54	68
	LW	84	75	63	73	78	75	78	72	68		
0425 / /0426	LWA	85	52	57	76	80	77	81	76	59	57	71
	LW	89	78	73	85	83	77	79	75	60		
0445 / 0447	LWA	83	50	52	69	76	78	77	74	66	55	69
	LW	85	76	68	78	80	78	76	73	67		
0530 / 0532	LWA	85	52	57	75	80	78	81	76	64	57	71
	LW	89	79	73	84	83	78	79	75	65		
0610 / 0611	LWA	87	54	59	78	82	78	82	78	61	59	73
	LW	91	80	75	86	85	78	81	77	62		

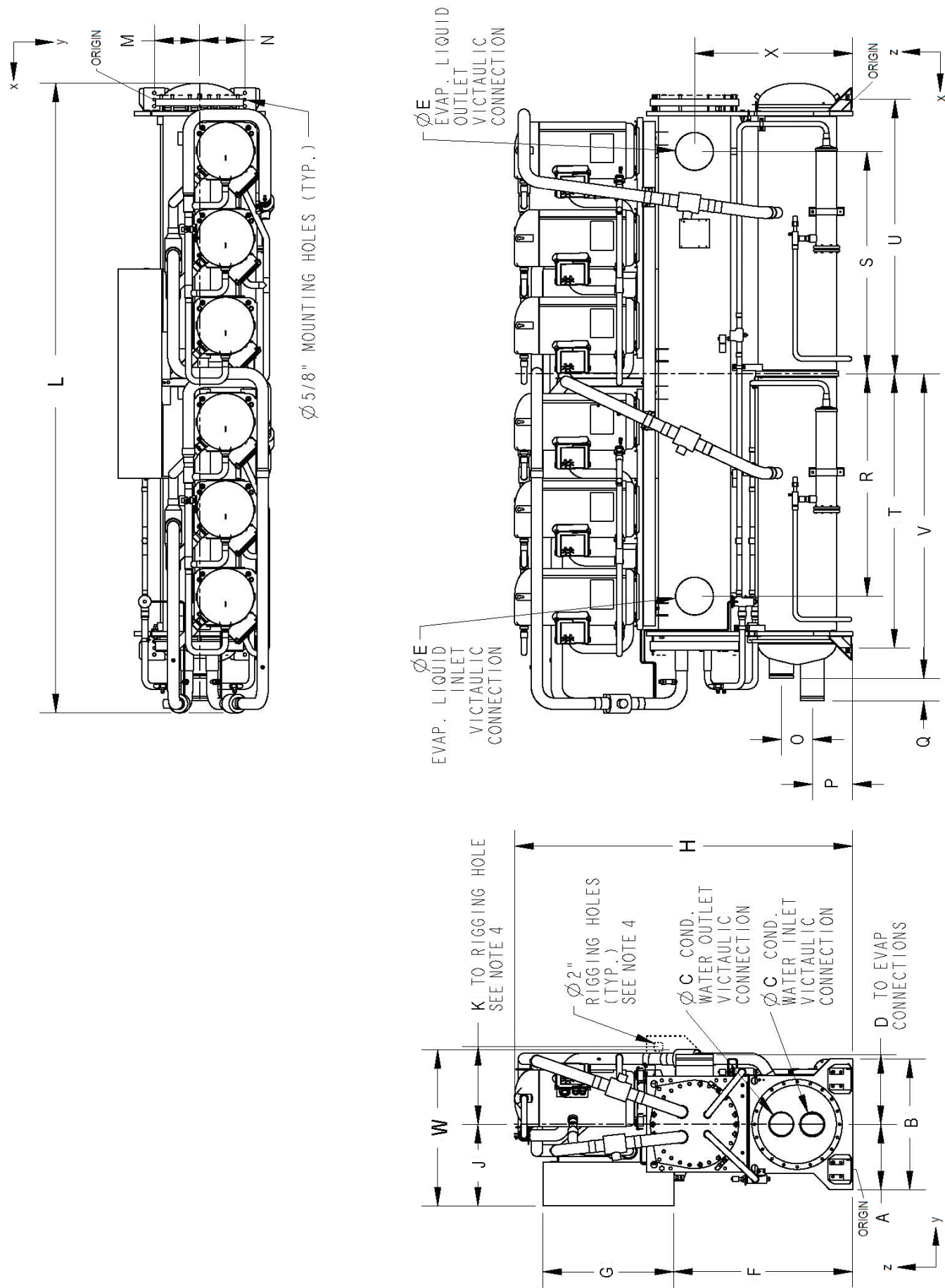
Notes:

1. Sound Power tolerance as per Eurovent Specification.
2. Frequency band tolerances range from +/- 5 dB in each frequency band.
3. Sound Pressure values to ISO 3744 in dB(A)
4. Sound Pressure values for EN 292-1991, 1 metre from Control Panel and 1.5 metres from Ground Level in dB(A)

**DIMENSIONS - YCWL0240SE, YCWL0290SE, YCWL0345SE, YCWL0395SE, YCWL0396SE, YCWL0200HE, YCWL0230HE, YCWL0260HE, YCWL0300HE, YCWL0345HE, YCWL0347HE, YCWL0425HE, YCWL0426HE**

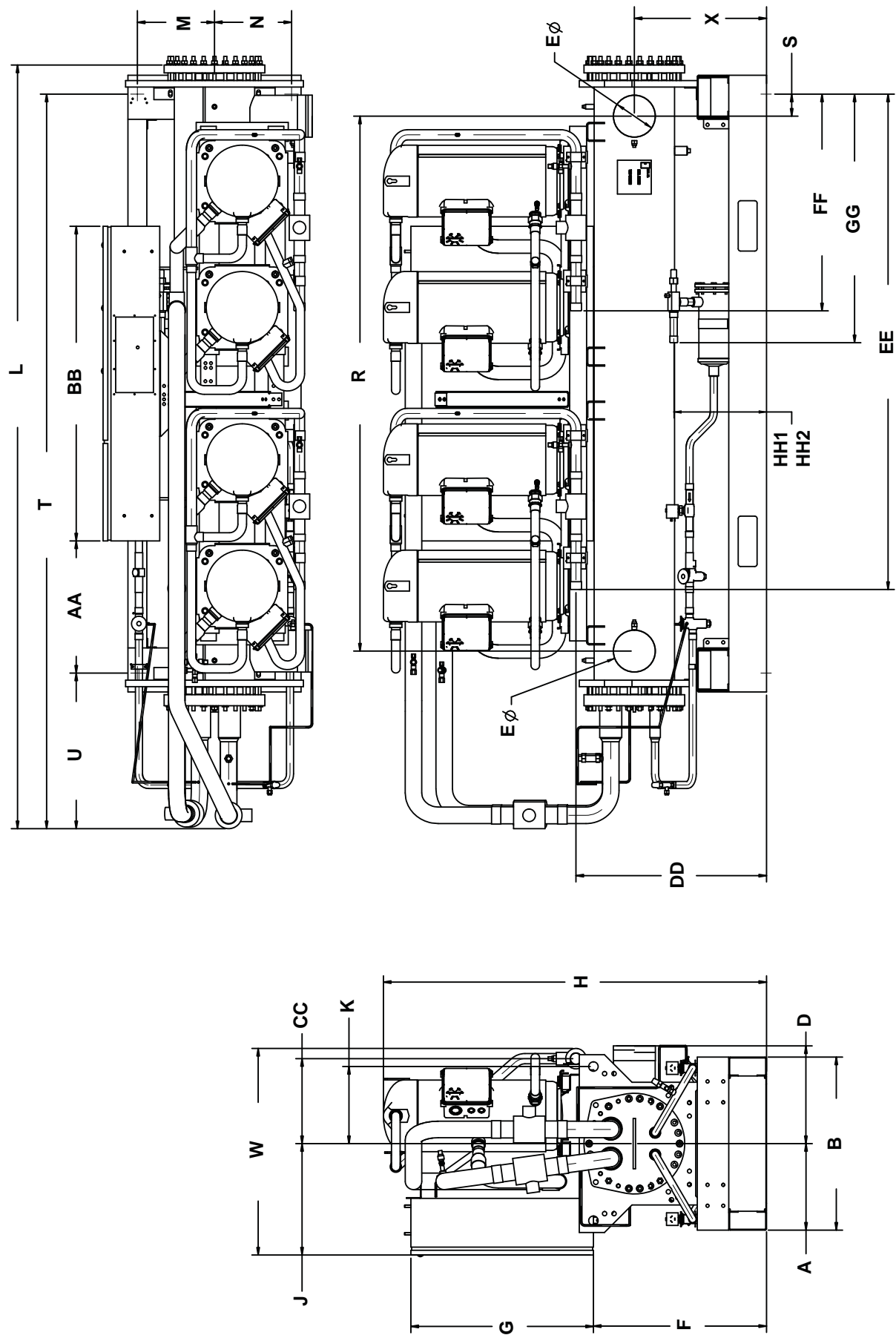


DIMENSIONS - YCWL0385HE, YCWL0386HE, YCWL0445HE, YCWL0447HE, YCWL0530HE, YCWL0532HE, YCWL0610HE, YCWL0611HE



YCWL	0240SE	0290SE	0345SE	0395SE	0396SE	0200HE	0230HE	0260HE	0300HE	0345HE	0347HE	0425HE	0426HE
Dim.	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
W	859	859	859	859	859	859	859	859	859	860	860	859	859
H	1751	1834	1825	1819	1819	1717	1895	1825	1825	1943	1943	1893	1893
L	3199	3199	3153	3153	3153	3159	3132	3153	3153	3132	3132	3132	3132
A	368	368	368	368	368	368	368	368	368	381	381	368	368
B	737	737	737	737	737	737	737	737	737	762	762	737	737
C	102	102	102	127	127	102	102	102	102	127	127	127	127
D	394	299	394	394	394	299	407	394	394	407	407	407	407
E	152	152	152	152	152	152	203	152	152	203	203	203	203
F	901	901	978	978	978	901	1016	978	978	1067	1067	1016	1016
G	737	737	737	737	737	737	737	737	737	737	737	737	737
J	450	450	450	450	450	450	450	450	450	450	450	450	450
K	227	311	311	311	311	311	324	311	311	324	324	324	324
M	251	251	251	251	251	251	251	251	251	251	251	251	251
N	251	251	251	251	251	251	251	251	251	251	251	251	251
O	140	181	181	181	181	181	181	181	181	181	181	181	181
P	230	210	210	210	210	210	210	210	210	235	235	210	210
Q	130	130	130	133	133	130	130	130	130	132	132	133	133
R	1073	1080	1080	1080	1080	1080	1054	1080	1080	1054	1054	1054	1054
S	1073	1080	1080	1080	1080	1080	1054	1080	1080	1054	1054	1054	1054
T	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293
U	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293	1293
V	1445	1445	1445	1445	1445	1445	1445	1445	1445	1470	1470	1455	1455
X	772	813	813	813	813	813	845	813	813	895	895	845	845
CG-X	1293	1294	1294	1293	1293	1294	1294	1294	1294	1294	1294	1293	1293
CG-Y	232	229	229	232	232	241	238	235	229	251	251	232	232
CG-Z													
Shipping Weight (kg)	1759	2101	2098	2130	2130	1771	1948	1954	2051	2410	2410	2204	2480
Operating Weight (kg)	1895	2297	2303	2366	2366	1967	2180	2159	2256	2707	2707	2468	2736

YCWL	0385HE	0386HE	0445HE	0447HE	0530HE	0532HE	0610HE	0611HE
Dim.	mm	mm	mm	mm	mm	mm	mm	mm
W	885	885	885	885	885	885	885	885
H	1977	1977	1969	1969	1969	1969	1969	1969
L	3689	3689	3643	3643	3643	3643	3643	3643
A	381	381	381	381	381	381	381	381
B	762	762	762	762	762	762	762	762
C	127	127	127	127	127	127	127	127
D	407	407	406	406	406	406	406	406
E	203	203	203	203	203	203	203	203
F	1041	1041	1041	1041	1041	1041	1041	1041
G	737	737	737	737	737	737	737	737
J	450	450	450	450	450	450	450	450
K	452	452	452	452	452	452	452	452
M	264	264	264	264	264	264	264	264
N	264	264	264	264	264	264	264	264
O	181	181	181	181	181	181	181	181
P	235	235	235	235	235	235	235	235
Q	132	132	132	132	132	132	132	132
R	1295	1295	1295	1295	1295	1295	1295	1295
S	1295	1295	1295	1295	1295	1295	1295	1295
T	1598	1598	1598	1598	1598	1598	1598	1598
U	1598	1598	1598	1598	1598	1598	1598	1598
V	1774	1774	1774	1774	1774	1774	1774	1774
X	921	921	921	921	921	921	921	921
CG-X	1597	1597	1597	1597	1597	1597	1597	1597
CG-Y	235	235	229	229	229	229	232	232
CG-Z								
Shipping Weight (kg)	2707	2707	3066	3066	3030	3030	2993	3484
Operating Weight (kg)	3065	3065	3491	3491	3454	3454	3418	3912

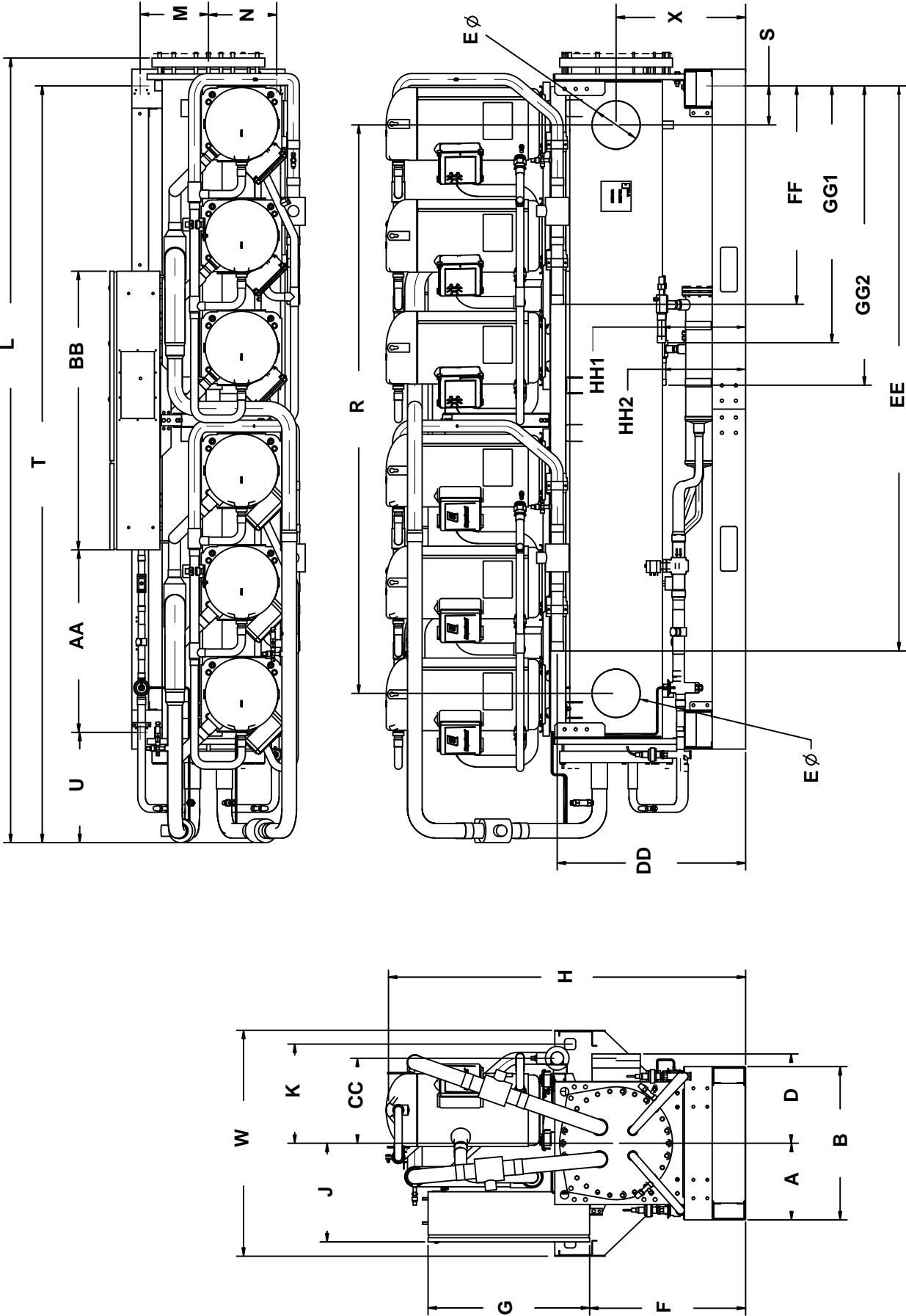




YCR	0200HE	0230HE	0260HE	0300HE	0345HE
Dim.	mm	mm	mm	mm	mm
W	824	834	834	834	846
H	1437	1616	1546	1544	1613
L	3085	3062	3082	3082	3062
A	349	349	349	349	349
B	699	692	699	699	699
D	299	407	394	394	407
E	219	219	168	168	219
F	622	737	699	699	737
G	737	737	737	737	737
J	450	450	450	450	450
K	311	324	311	311	324
M	311	311	311	311	311
N	311	311	311	311	311
R	2159	2108	2159	2159	2108
S	89	114	89	89	114
T	2965	2938	2965	2965	2938
U	628	601	628	628	601
X	533	565	533	533	565
AA	533	533	533	533	533
BB	1270	1270	1270	1270	1270
CC	343	343	343	343	356
DD	780	838	769	769	838
EE	2059	2085	1999	1999	2008
FF	947	886	875	875	883
GG-1	1003	1003	1003	965	1040
GG-2	1003	1003	1003	965	1040
HH-1	466	375	375	375	378
HH-2	466	375	375	375	378

W =	Unit width
H =	Unit height
L =	Unit length
A =	Unit centreline to base frame front edge
B =	Unit base frame width
D =	Unit centreline to evaporator liquid connection face
E =	Evaporator liquid connection diameter
F =	Unit base to control panel base
G =	Control panel height
J =	Unit centreline to control panel face
K =	Unit centreline to lifting eye
M =	Unit centreline to AVM mounting hole centreline
N =	Unit centreline to AVM mounting hole centreline
R =	Distance between centrelines of evaporator connections
S =	AVM mounting hole centreline to evaporator outlet centreline
T =	End of unit to AVM mounting hole centreline
U =	End of unit to AVM mounting hole centreline
X =	Unit base to evaporator connections centreline
AA =	Centreline to AVM mounting hole to control panel edge
BB =	Control panel width
CC =	Unit centreline to centrelines of discharge connections
DD =	Unit base to centrelines of discharge connections
EE =	AVM mounting hole centreline to Sys 2 discharge connection face
FF =	AVM mounting hole centreline to Sys 1 discharge connection face
GG-1 =	AVM mounting hole centreline to Sys 1 liquid connection face
GG-2 =	AVM mounting hole centreline to Sys 2 liquid connection face
HH-1 =	Reference point to centrelines of Sys 1 liquid connection
HH-2 =	Reference point to centrelines of Sys 2 liquid connection

DIMENSIONS - YCRL0385HE, YCRL0445HE, YCRL0530HE AND YCRL0610HE



YCRL	0385HE	0445HE	0530HE	0610HE
Dim.	mm	mm	mm	mm
W	1030	1030	965	902
H	1641	1628	1641	1641
L	3633	3576	3576	3576
A	349	349	349	349
B	699	699	699	699
D	406	407	407	407
E	219	219	219	219
F	711	711	711	711
G	737	737	737	737
J	450	450	450	450
K	452	452	452	452
M	311	311	311	311
N	311	311	311	311
R	2591	2591	2591	2591
S	178	178	178	178
T	3509	3449	3449	3449
U	563	502	502	502
X	591	591	592	587
AA	832	832	832	832
BB	1270	1270	1270	1270
CC	387	387	387	387
DD	859	859	859	859
EE	2499	2575	2575	2575
FF	919	995	995	995
GG-1	1466	1171	1171	1171
GG-2	1466	1364	1364	1364
HH-1	378	383	383	383
HH-2	378	379	379	379

W =	Unit width
H =	Unit height
L =	Unit length
A =	Unit centreline to base frame front edge
B =	Unit base frame width
D =	Unit centreline to evaporator liquid connection face
E =	Evaporator liquid connection diameter
F =	Unit base to control panel base
G =	Control panel height
J =	Unit centreline to control panel face
K =	Unit centreline to lifting eye
M =	Unit centreline to AVM mounting hole centreline
N =	Unit centreline to AVM mounting hole centreline
R =	Distance between centrelines of evaporator connections
S =	AVM mounting hole centreline to evaporator outlet centreline
T =	End of unit to AVM mounting hole centreline
U =	End of unit to AVM mounting hole centreline
X =	Unit base to evaporator connections centreline
AA =	Centreline to AVM mounting hole to control panel edge
BB =	Control panel width
CC =	Unit centreline to centreline of discharge connections
DD =	Unit base to centreline of discharge connections
EE =	AVM mounting hole centreline to Sys 2 discharge connection face
FF =	AVM mounting hole centreline to Sys 1 discharge connection face
GG-1 =	AVM mounting hole centreline to Sys 1 liquid connection face
GG-2 =	AVM mounting hole centreline to Sys 2 liquid connection face
HH-1 =	Reference point to centreline of Sys 1 liquid connection
HH-2 =	Reference point to centreline of Sys 2 liquid connection



[www.johnsoncontrols.com](http://www.johnsoncontrols.com)