



PRO-DIALOG

AQUAFORCE.

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Quality and Environment Management Systems Approval

30XA 252-1702

Nominal cooling capacity 270-1700 kW

The Aquaforce liquid chillers are the premium solution for industrial and commercial applications where installers, consultants and building owners require optimal performances and maximum quality.

The Aquaforce liquid chillers are designed to meet current and future requirements in terms of energy efficiency and operating sound levels. They use the best technologies available today:

- Twin-rotor screw compressors with a variable capacity valve.
- Single refrigerant R134a.
- Low-noise generation IV Flying Bird fans made of composite material.
- Aluminium micro-channel heat exchangers (MCHX).
- Pro-Dialog control system.

To meet to all environmental and economic requirements, the Aquaforce is available in two versions:

One offers an extremely low noise level while at the same time boasting superior energy efficiency.

The other offers unequalled energy efficiency to satisfy the most stringent demands of building owners wanting to reduce operating costs to the minimum. This version is also recommended for applications in geographical zones where the air temperature is very high.

Features and advantages

Very economical operation

- Extremely high full load and part load energy efficiency:
 - Eurovent energy efficiency class "A", average EER above 3.10 kW/kW (high-efficiency option)
 - Average ESEER above 4 kW/kW
 - New twin-rotor screw compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
 - All aluminium condenser with micro-channels that is more efficient than a copper/aluminium coil.
 - Flooded shell-and-tube evaporator to increase the heat exchange efficiency.
 - Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface (superheat control).
 - Economizer system with electronic expansion device for increased cooling capacity

Low operating sound levels

- Compressors
 - Discharge dampers integrated in the oil separator (Carrier patent).
 - Silencer on the economiser return line.
 - Acoustic compressor and oil separator enclosure reducing radiated noise
- Condenser section
 - Condenser coils in V-shape with an open angle, allowing quieter air flow across the coil
 - Low-noise 4th generation Flying Bird fans, made of a composite material (Carrier patent) are now even quieter and do not generate intrusive low-frequency noise
 - Rigid fan mounting preventing start-up noise (Carrier patent)

Easy and fast installation

- Integrated hydronic module (option)
 - Centrifugal low or high-pressure water pump (as required), based on the pressure loss of the hydronic installation
 - Single or dual pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops
 - Water filter protecting the water pump against circulating debris
 - High-capacity membrane expansion tank ensures pressurisation of the water circuit
 - Thermal insulation and aluminium protection
 - Pressure sensor to check filter pollution and for direct numerical display of the water flow rate with an estimate of the instantaneous cooling capacity at the control interface
 - Water flow control valve
- Simplified electrical connections
 - Main disconnect switch with high trip capacity
 - Transformer to supply the integrated control circuit (400/24 V)
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, expansion devices, fans and compressors

Environmental care

- R134a refrigerant
 - Refrigerant of the HFC group with zero ozone depletion potential
 - 30% reduction in the refrigerant charge through the use of micro-channel heat exchangers
- Leak-tight refrigerant circuit
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - Liquid line service valve for simplified maintenance

Absolute reliability

- Screw compressors
 - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
 - All compressor components are easily accessible on site minimising down-time.
 - Protection increased by an electronic board.
- Air condenser
 - All aluminium micro-channel heat exchanger (MCHX) with a corrosion resistance that is 3.5 times higher than for a traditional coil. The all aluminium design eliminates the formation of galvanic currents between aluminium and copper that cause coil corrosion in saline or corrosive environments.
- Evaporator
 - Thermal insulation with aluminium sheet finish for perfect resistance to external aggression (mechanical and UV protection).
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure. If condenser coil fouling or fan failure occurs, the Aquaforce continues to operate, but at reduced capacity
- Exceptional endurance tests
 - Partnerships with specialised laboratories and use of limit simulation tools (finite element calculation) for the design of critical components.
 - Transport simulation test in the laboratory on a vibrating table. The test is based on a military standard and equivalent to 4000 km by truck.
 - Salt mist corrosion resistance test in the laboratory for increased corrosion resistance

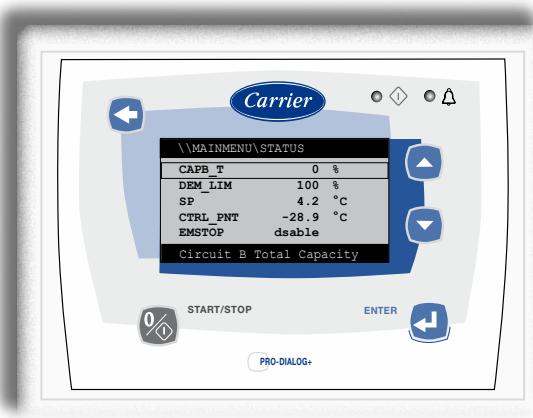
Pro-Dialog control

Pro-Dialog combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, electronic expansion devices, fans and of the evaporator water pump for optimum energy efficiency.

- Energy management
 - Internal time schedule clock: controls chiller on/off times and operation at a second set-point
 - Set-point reset based on the outside air temperature or the return water temperature
 - Master/slave control of two chillers operating in parallel with operating time equalisation and automatic change-over in case of a unit fault
- Pro-Dialog+-Interface
 - The new backlit LCD interface includes a manual control potentiometer to ensure legibility under any lighting conditions.
 - The information is displayed clearly in English, French, German, Italian and Spanish (for other languages please consult Carrier).
 - The Pro-Dialog+ navigation uses intuitive tree-structure menus. They are user-friendly and permit quick access to the principal operating parameters: compressor operation, suction/discharge pressure, compressor operating hours, set point, air temperature, entering/leaving water temperature

Interfaces available for 30XA 252 to 1702 units

Pro-Dialog+



■ Pro-Dialog + interface (standard)

The standard interface for 30XA 252 to 1702 units has five buttons that permit navigation via intuitive tree-structure menus. In this way all information is very quickly accessible.

Note: The 30XA 1702 unit has two interfaces.

Pro-Dialog Touch Screen



■ Pro-Dialog Touch Screen interface (option 158)

This user interface for 30XA 252 to 1702 units with its touch screen is very user-friendly. It is a large-format touch-screen, and the information is easily accessible: clear text in the selected language allows monitoring of all operating parameters. Up to eight screens can be personalised.

Note: The 30XA 1702 unit has two interfaces.

Remote management (standard)

Aquaforce is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

Aquaforce also communicates with other building management systems via optional communication gateways. A connection terminal allows remote control of the Aquaforce by wired cable:

- Start/stop: opening of this contact will shut down the unit
- Dual set-point: closing of this contact activates a second set-point (example: unoccupied mode)
- Demand limit: closing of this contact limits the maximum chiller capacity to a predefined value
- Heat reclaim (option): closing of this contact allows heat reclaim mode operation
- Water pump 1 and 2 control*: these outputs control the contactors of one or two evaporator water pumps
- Water pump on reversal*: these contacts are used to detect a water pump operation fault and automatically change over to the other pump
- Operation indication: this volt-free contact indicates that the chiller is operating (cooling load) or that it is ready to operate (no cooling load)
- Alert indication: this volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault
- Alarm indication: this volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits

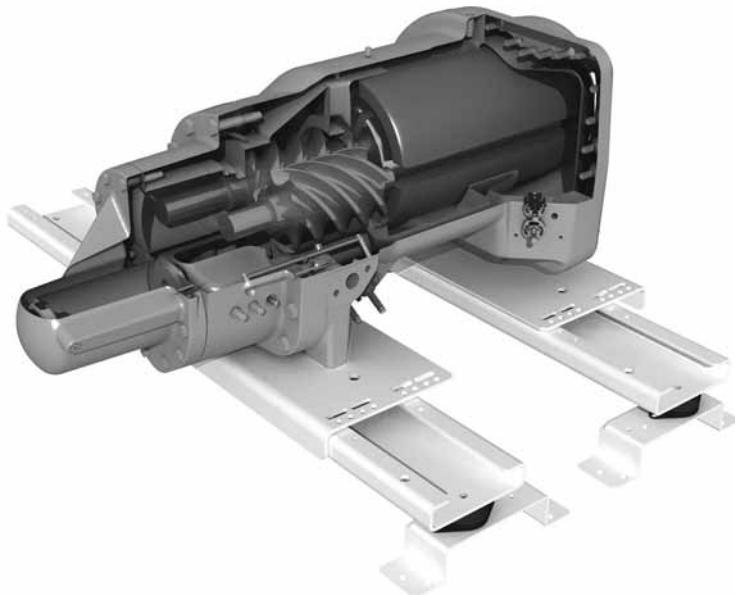
* not available for units with the hydronic module option

Remote management (EMM option)

■ The Energy Management Module offers extended remote control possibilities:

- Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
- Set point reset: ensures reset of the cooling set-point based on a 4-20 mA or 0-5 V signal
- Demand limit: permits limitation of the maximum chiller power or current based on a 0-10 V signal
- Demand limit 1 and 2: closing of these contacts limits the maximum chiller power or current to two predefined values.
- User safety: this contact can be used for any customer safety loop; opening of the contact generates a specific alarm
- Ice storage end: when ice storage has finished, this input permits return to the second set-point (unoccupied mode)
- Time schedule override: closing of this contact cancels the time schedule effects
- Out of service: this signal indicates that the chiller is completely out of service
- Chiller capacity: this analogue output (0-10 V) gives an immediate indication of the chiller capacity

New generation 06T screw compressor



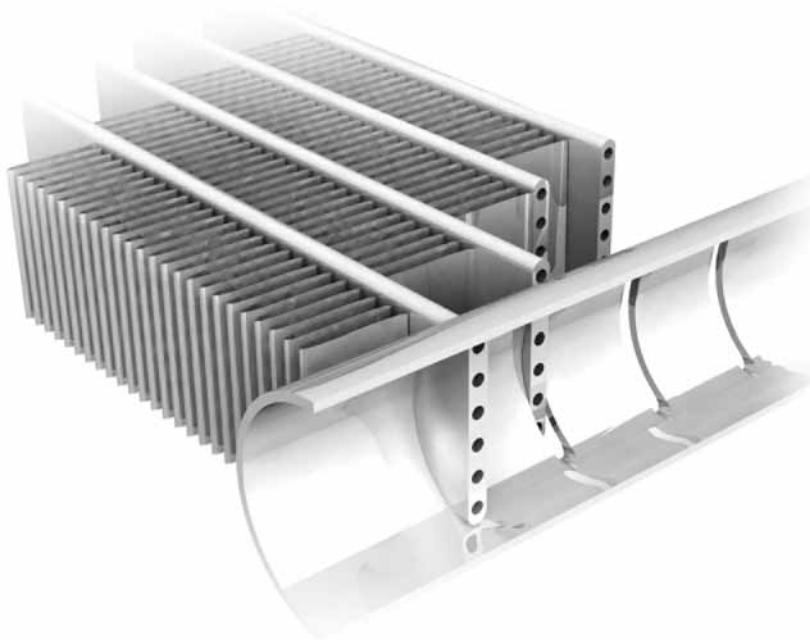
The Carrier 06T screw compressor benefits from Carrier's long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor cooling capacity and ensures exceptionally high stability of the chilled water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high outside temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The compressor is equipped with a separate oil separator that minimises the amount of oil in circulation in the refrigerant circuit and with its integrated silencer considerably reduces discharge gas pulsations for much quieter operation.

All-aluminium micro-channel heat exchanger (MCHX)



Already utilised in the automobile and aeronautical industries for many years, the MCHX used in the Aquaforce is entirely made of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in traditional heat exchangers. Unlike traditional heat exchangers the MCHX heat exchanger can be used in moderate marine and urban environments.

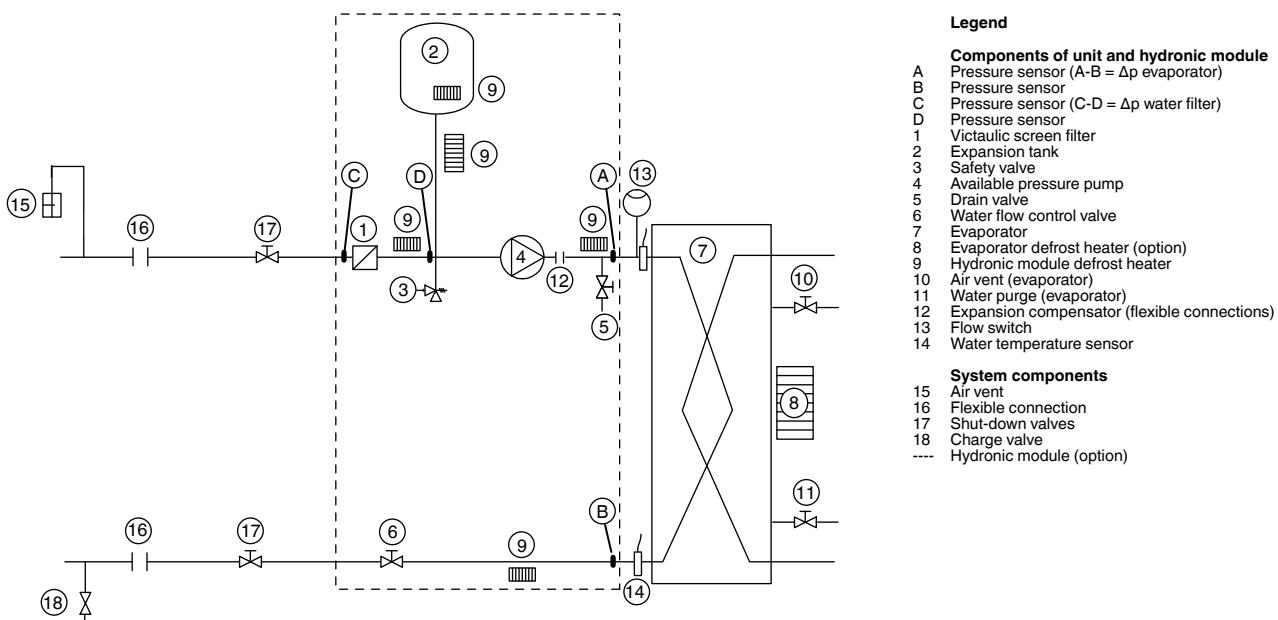
From an energy efficiency point-of-view the MCHX heat exchanger is approximately 10% more efficient than a traditional coil and allows a 30% reduction in the amount of refrigerant used in the chiller. The low thickness of the MCHX reduces air pressure losses by 50% and makes it less susceptible to fouling (e.g. by sand) than a traditional coil. Cleaning of the MCHX heat exchanger is very fast using a high-pressure washer.

Options and accessories

Options	No.	Description	Advantages	Use in 30XA
Corrosion protection, traditional coils	2B	Factory application of Blygold Polual treatment on the copper/ aluminium coils	Improved corrosion resistance, recommended for industrial, rural and marine environments	252-1702
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminium (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	252-1702
Low temperature glycol solution	5	Low temperature chilled water production down to -6°C with ethylene glycol and -3°C with propylene glycol	Covers specific applications such as ice storage and industrial processes	252-1702
Very low temperature glycol solution	6	Low temperature chilled water production down to -12°C with ethylene glycol (limited to -10°C for certain sizes) and -8°C with propylene glycol (limited to -6°C for certain sizes)	Covers specific applications such as ice storage and industrial processes	252-1702
Unit equipped for air discharge ducting	10	Fans with available pressure equipped with discharge connection flanges - maximum available pressure = 60 Pa	Facilitates connection to the discharge ducts	252-1702
IP 54 control box	20A	Increased leak tightness of control boxes	Increased control box protection	252-1702
Tropical applications	22	Unit control box suitable for tropical applications	Reduced relative humidity in the control box for operation in tropical environments (hot and humid)	252-1702
Grilles and enclosure panels	23	Metal grilles on the unit front, rear and sides (includes option 23A)	Enhanced aesthetics, protection against intrusion to the unit interior	252-1702
Enclosure panels	23A	Side panels at each end of the coil	Enhanced aesthetics	252-1702
Winter operation	28	Fan speed control via frequency converter	Stable unit operation for air temperature down to -20°C	252-1702
Evaporator frost protection	41A	Electric resistance heater on the evaporator	Evaporator frost protection down to -20°C outside temp.	252-1702
Evaporator and hydronic module frost protection	41B	Electric resistance heater on evaporator and hydronic module	Evaporator and hydronic module frost protection down to -20°C outside temperature	252-1502
Heat reclaim	50	Complete recovery of the heat rejected by the condenser	Free hot-water production as well as cold-water production	252-1002
Single power connection point	81	Machine power connection via one main supply connection	Quick and easy installation	252-1502
Service valves	92	Shut-off valves on the compressor suction piping, the economiser line, the evaporator inlet and the compressor discharge piping	Simplified maintenance	252-1702
Discharge valve	93A	Shut-off valves on the compressor discharge piping	Simplified maintenance	252-1702
Evaporator with one pass more	100A	Evaporator with one pass more, water-side	Increased water inlet and outlet pressure loss on opposite sides	252-1702
Evaporator with one pass less	100C	Evaporator with one pass less, water-side	Reduced water inlet and outlet pressure loss on opposite sides	252-1002
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure range to 21 bar	Covers applications with a high water column (high buildings)	252-1702
Reversed water connections	107	Evaporator with reversed water inlet/outlet	Simplification of the water piping	252-1702
High-pressure single-pump hydronic module	116B	See chapter "Available static pressure (options 116B, C, F, G)", page 6	Easy and fast installation	252-502
High-pressure dual-pump hydronic module	116C	See chapter "Available static pressure (options 116B, C, F, G)", page 6	Easy and fast installation, operating safety	252-502
Low-pressure single-pump hydronic module	116F	See chapter "Available static pressure (options 116B, C, F, G)", page 6	Easy and fast installation	252-502
Low-pressure dual-pump hydronic module	116G	See chapter "Available static pressure (options 116B, C, F, G)", page 6	Easy and fast installation, operating safety	252-502
Direct-expansion free-cooling system	118A	Chilled water production without the use of the compressors, using direct-expansion heat exchange on the condensers	Very economical chilled water production at low outdoor temperatures	252-1002
High energy efficiency	119	Improved condenser performance	Energy cost reduction, full load operation at higher air temperatures	252-1702
JBus/ModBus gateway	148B	Two-directional communications board, complies with JBus/ ModBus protocol	Easy connection by communication bus to a building management system	252-1702
BacNet gateway	148C	Two-directional communications board, complies with BacNet protocol	Easy connection by communication bus to a building management system	252-1702
LON gateway	148D	Two-directional communications board, complies with LON protocol	Easy connection by communication bus to a building management system	252-1702
Energy Management Module EMM	156	See chapter "Remote management (EMM option)" and the relevant references in the Controls Manual	Easy connection by wired connection to a building management system	252-1702
Pro-Dialog Touch Screen	158	Touch screen interface	Large touch screen with clear text and system diagram for fast parameter setting	252-1702
High pressure switch to comply with German (VBG 20) and Dutch (RLK) standards	193	One PZH/PZHH high-pressure switch per compressor	Conformance with German and Dutch regulations	252-1702
Dual relief valve installed with three-way valve	194	Three-way valve upstream of the safety valves on the evaporator and the oil separator	Valve replacement and inspection facilitated without refrigerant loss. Conforms to European standard EN378/BGVD4	252-1702
Swiss code compliance in addition to PED code	197	Additional tests on the water heat exchangers. Additional supply of PED documents, supplementary certificates and test certificates.	Conformance with Swiss regulations in addition to PED code	252-1702
Russian code compliance (GOST)	199	GOST certification	Conformance with Russian regulations (GOST)	252-1702
Australian code compliance	200	Heat exchanger approved in accordance with the Australian code.	Conformance with Australian regulations	252-1702
Unit without enclosure	253	Compressors not equipped with acoustic enclosure	More economical	252-1702
Traditional coils (Cu/Al)	254	Coils made of copper tubes with aluminium fins	Possibility to add specialised condenser treatment	252-1702
Traditional coils (Cu/Al) without slots	255	Coils made of copper tubes with aluminium fins without slots	Recommended for the Middle East, sand storms. Possibility to add specialised condenser treatment.	252-1702
Insulation of the evaporator entering/leaving refrigerant lines	256	Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, anti-UV insulant	Prevents condensation on the evaporator entering/leaving refrigerant lines	252-1702
Low sound level	257	Sound insulation of certain unit refrigerant circuit components (suction, evaporator and economiser piping)	Unit sound power level reduction of -2 to -3 dB(A)	252-1702
Very low sound level (second attenuation level)	258	Additional sound insulation	Unit sound power level reduction of -1 to -3 dB(A), depending on unit size, compared to option 257	252-1702
MCHX anti-corrosion protection	263	Carrier factory treatment of the MCHX heat exchanger for applications in aggressive environments	The Super Enviro-Shield option was developed to extend the application range of MCHX heat exchangers in severe environmental conditions: this option is compulsory in industrial and coastal environments.	252-1702
Accessories		Description	Advantages	Use in 30XA
Connection sleeve		Piping to be welded with Victaulic connection	Ease-of-installation	252-1702
Energy Management Module EMM		See controls manual	Easy connection by wired connection to a BMS system	252-1702
Lead-lag kit		Additional water outlet temperature sensor kit, field-installed, allows master/slave operation of two chillers connected in parallel.	Optimised operation of two chillers connected in parallel with operating time balancing.	252-1502

Hydronic module (options 116B, C, F, G)

Typical hydronic circuit diagram



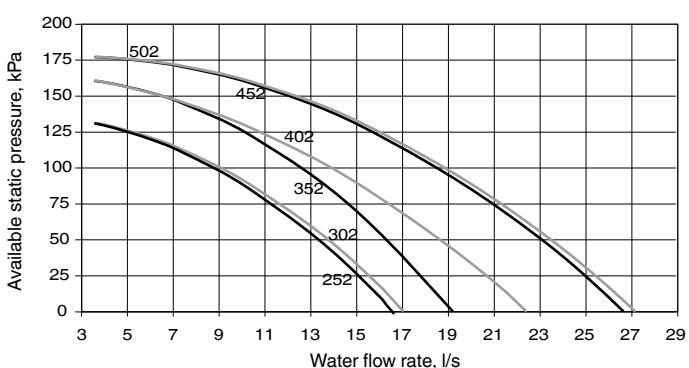
Electrical data (options 116B, C, F, G)

The pumps that are factory-installed in these units have motors with efficiency class IE2. The additional electrical data required by regulation 640/2009 is given in the installation, operation and maintenance manual.

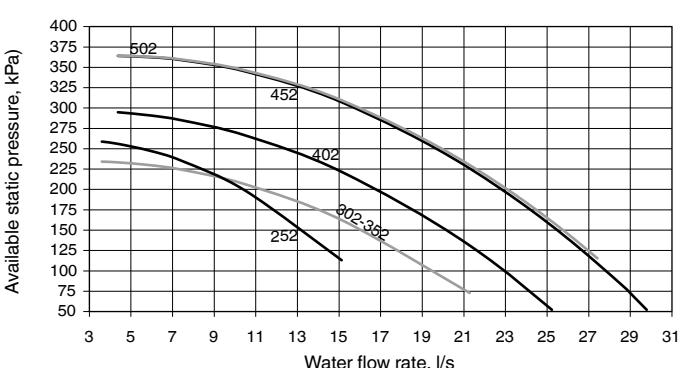
This regulation concerns the application of directive 2005/32/EC on the eco-design requirements for electric motors.

Available static pressure (options 116B, C, F, G)

Low-pressure pump (hydronic module option)



High-pressure pump (hydronic module option)



Total heat reclaim (option 50)

Suitable for heating, domestic hot water preparation, agriculture and food industry, industrial processes and other hot-water requirements.

With the total heat reclaim option it is possible to reduce the energy consumption bill considerably compared to conventional heating equipment such as fossil fuel boilers or electric water tanks.

Operating principle

If hot water production is required, the compressor discharge gases are directed towards the heat reclaim condenser. The refrigerant releases its heat to the hot water that leaves the condenser at a temperature of up to 60°C. In this way 100% of the heat rejected by the liquid chiller can be used to produce hot water. When the demand for heat is satisfied, the hot gas is again directed towards the air condenser where the heat is rejected to the outside air by the fans. Hot water temperature control is ensured by the chiller Pro-Dialog control that independently controls the reclaim operation of each refrigerant circuit.

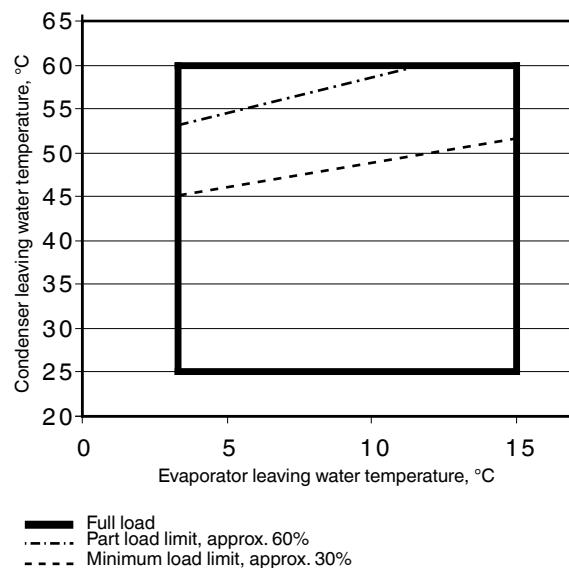
Note: Heat reclaim is only possible, if the unit produces cold water at the same time.

Condenser water temperature (°C)	Minimum	Maximum
Entering temperature at start-up	12.5*	55
Entering temperature during operation	20	55
Leaving temperature during operation	25	60
Evaporator water temperature (°C)		
Entering temperature at start-up	-	45
Entering temperature during operation	6.8	21

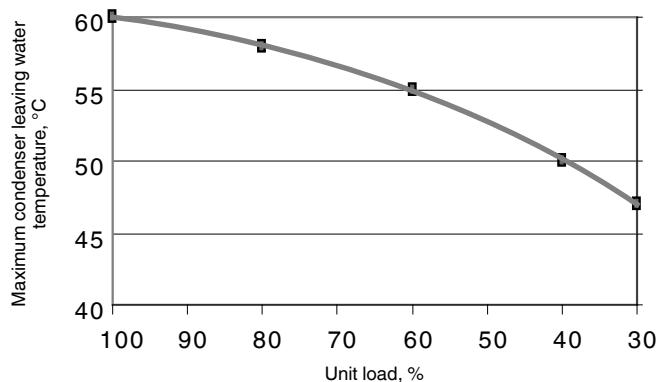
* The entering water temperature at start-up must not fall below 12.5°C.
For installations with a lower temperature a three-way valve must be used.

Note: If the evaporator leaving water temperature is below 4°C, a glycol-water solution or the frost protection option must be used.

In part-load operation, the limitation of the condenser leaving water temperature is due to the operating range of the screw compressor. If the condenser leaving water temperature is above the limit value given in the curves on the right, the unit will automatically change over to the mode without heat recovery:



Part load operating limits (evaporator leaving water temperature = 7°C)



Physical data (option 50)

These are the same as for the standard unit except:

30XA heat reclaim mode	252	302	352	402	452	502	602	702	752	802	852	902	1002	
Cooling capacity*	kW	265	296	318	386	446	502	618	681	723	791	833	893	992
Heating capacity in heat reclaim mode	kW	340	377	406	487	562	630	775	847	911	991	1045	1124	1249
Total power input (unit)*	kW	81.4	89.1	97.4	111.5	127.4	139.0	169.7	181.1	203.6	216.5	230.5	249.9	279.1
Total energy efficiency ratio (EER)	kW/kW	3.26	3.32	3.26	3.46	3.50	3.61	3.64	3.76	3.55	3.65	3.61	3.58	3.55
Total energy efficiency ratio (COP)	kW/kW	4.17	4.23	4.17	4.37	4.41	4.53	4.57	4.68	4.47	4.58	4.53	4.50	4.48
Operating weight**	kg	4230	4270	4280	5260	5380	5880	7000	7100	7470	7680	8320	8670	9280
Refrigerant charge														
Circuit A	kg	37	35	35	51	52	59	58	58	65	69	72	69	91
Circuit B	kg	39	37	37	37	37	36	59	62	58	65	63	76	89
Heat reclaim condenser		Flooded shell-and-tube condenser												
Water volume	l	38	38	38	55	68	68	55 + 55	55 + 55	55 + 68	55 + 68	55 + 68	68 + 68	68 + 68
Water connection		Victaulic												
Nominal diameter	in	3	3	3	4	4	4	4	4	4	4	4	4	4
Actual outside diameter	mm	88.9	88.9	88.9	114.3	114.3	114.3	114.3	114.3	114.3	114.3	114.3	114.3	114.3

* Entering and leaving water temperature: evaporator 12°C/7°C; heat reclaim condenser: 40°C/45°C

** Weights are for guidance only

DX free cooling system (option 118A)

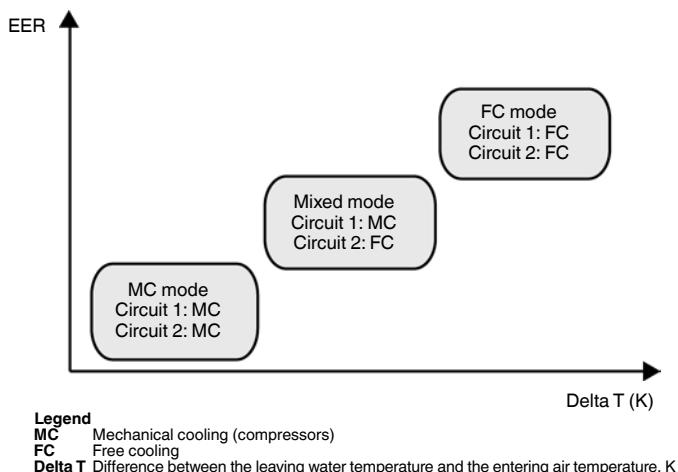
The DX free cooling option permits significant energy savings for all applications that require cooling in winter. In the free cooling mode the compressors are stopped and only the fan and cooling micro-pump are running. The changeover from compressor cooling mode to free cooling mode is automatically controlled by the Pro-Dialog control, based on the chiller heat load and the temperature difference between chilled water and ambient air.

Important: In order to optimise chiller performances, it is recommended to use the leaving water set point reset function.

Operating principle

When the chilled water-air temperature difference exceeds a threshold value, the Pro-Dialog control carries out a comparison between the instantaneous chiller cooling capacity and the available free cooling capacity. If the operating conditions allow free cooling operation, the compressors are stopped, a set of valves on the suction piping connects the evaporator with the condenser, allowing the migration of the refrigerant vapours to the condenser. The refrigerant condenses in the condenser coils, and the cooling micro-pump transports the liquid to the evaporator. The cooling capacity in free cooling mode is controlled by the opening of the electronic expansion valve (EXV).

Operation in combined FC (free-cooling) and MC (mechanical cooling) mode is possible in the two independent refrigerant circuits. This can optimise the free-cooling operations and at the same time ensures that the cooling requirements of the system are met.



Advantages of the DX free cooling system

- Operation without glycol
Unlike traditional hydronic free-cooling systems that require the use of a glycol solution, the Aquaforce DX free cooling chiller works with pure water. The evaporator is protected against frost down to -20°C by an electric resistance heater (option).
- Low water pressure losses
The Aquaforce DX free cooling chiller does not include a three-way valve nor free cooling coils connected in series with the evaporator. The Aquaforce free cooling chiller has the same water pressure losses as a standard chiller.
- Weight and dimensions gain
 - The DX free cooling option has practically no impact on the weight of the liquid chiller.
 - The Aquaforce free cooling chiller has the same dimensions as a standard chiller.
- Increased energy efficiency
 - In free cooling mode only the fans and the cooling micro-pump run. At an air-water temperature difference of 10 K for example the average chiller energy efficiency (EER) is 23 (kW/kW).
 - In the mechanical cooling mode chiller thermal and energy performances are not reduced by the use of a water-glycol solution.
 - As the pressure losses of the water circuit are low, the water pumps use less energy.

Cooling capacities

30XA 252-1002 in free-cooling mode

30XA	LWT	Condenser entering air temperature, °C								
		0			-5			-10		
		Cap kW	Unit kW	EER	Cap kW	Unit kW	EER	Cap kW	Unit kW	EER
°C		kW	kW	kW/kW	kW	kW	kW/kW	kW	kW	kW/kW
252	10	144	6.1	23.7	184	6.1	29.9	187	6.2	30.2
302		144	5.9	24.4	183	5.9	30.8	186	6.0	31.0
352		144	5.9	24.4	183	5.9	30.8	186	6.0	31.0
402		184	8.0	23.1	256	8.0	31.9	276	8.1	34.0
452		184	7.8	23.5	256	7.9	32.4	276	8.0	34.5
502		204	8.8	23.2	286	8.9	32.2	308	8.9	34.5
602		255	10.8	23.6	375	10.9	34.3	418	11.0	37.8
702		278	11.9	23.4	409	12.0	34.1	456	12.1	37.6
752		274	11.7	23.5	402	11.8	34.2	448	11.9	37.7
802		277	12.0	23.1	407	12.1	33.7	453	12.2	37.1
852		326	14.0	23.3	479	14.1	33.9	533	14.3	37.3
902		330	13.8	23.9	486	14.0	34.7	541	14.1	38.3
1002		371	15.4	24.1	545	15.5	35.0	606	15.7	38.6

Legend
 LWT Leaving water temperature
 Cap kW Cooling capacity
 Unit kW Unit power input (compressors, fans, control)
 EER kW/kW Energy efficiency ratio

Operating limits

	Free-cooling mode	Mechanical cooling mode (compressors)
Evaporator water temperature, °C		
Minimum leaving water temperature	3.3	3.3
Maximum leaving water temperature	25	15
Condenser air temperature, °C		
Minimum leaving air temperature	-20	-20*
Maximum leaving air temperature	20	55

* For operation at an air temperature below -10°C option 28 (winter operation) is required.

Fan with available pressure (option 10)

This option allows a duct connection at the discharge side of the condenser fan. The unit is supplied with axial fans with a speed of 15.8 r/s (same for option 119), each equipped with a duct connection frame. The chiller can operate at a static discharge pressure of up to 60 Pa with reduced performance. The performances can be estimated using the coefficients below, applicable at the conditions shown in the curve below.

■ Selection method

The base performances for the calculation are those of option 119 (pages 22 to 24 of this manual). To obtain the capacities at the static duct pressure, apply the coefficients shown in the tables on the right.

30XA option 10

Fan pressure drop Air flow Cooling capacity EER Power input	Pa	Correction factors			
		0	20	40	60
Air flow	%	0	-3.5	-7.5	-12.1
Cooling capacity	%	0	-0.5	-1.0	-1.5
EER	%	0	-1.5	-3.5	-5.0
Power input	%	0	+1.0	+2.5	+3.5

Note: All fans must be individually ducted.

■ Example

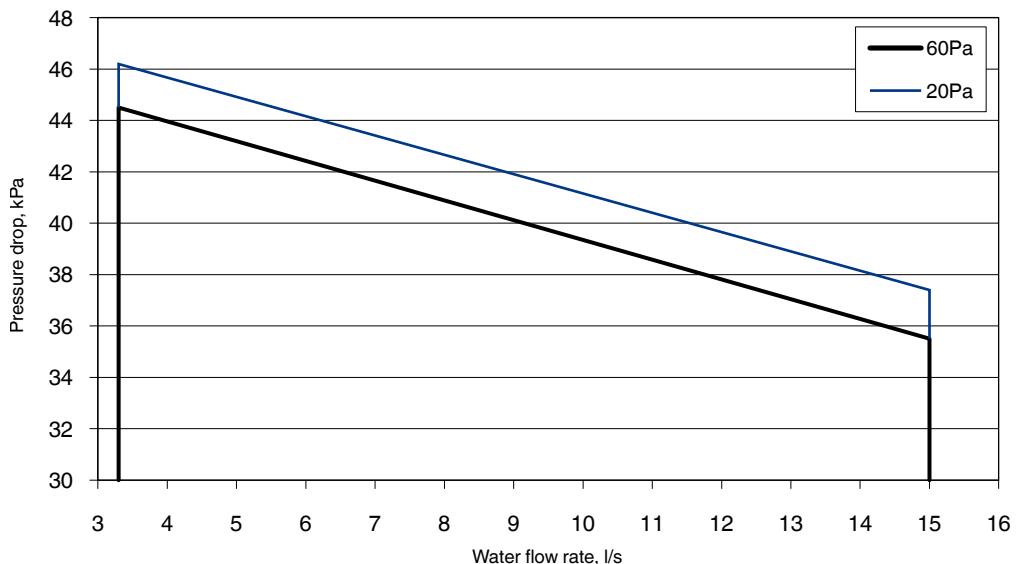
30XA 802 with 40 Pa pressure drop

Performances option 119 at the following conditions:

- 35°C outside air temperature
- 12/7°C entering/leaving water temperature

	0 Pa for option 119	Correction factors	40 Pa
Air flow	l/s	54167	-7.5% 50119
Cooling capacity	kW	787	-1.0% 779
EER	kW/kW	3.13	-3.5% 3
Power input	kW	251	+2.5% 258

Application limits for correction factors for high air temperatures



Physical data

* Standard Eurovent LCP/A/P/C/AC conditions in cooling mode: evaporator entering/leaving water temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 (m² K)/W.

**** Weights are guidelines only. The refrigerant charge is also given on the unit nameplate.**

** Options: 119 = high energy efficiency; 254 = traditional Cu/Al coils.

** In accordance with ISO 9614-1 and certified by Eurovent

† Average sound pressure level, unit in a free field on a reflective surface

† Evaporator 1 and 2 connection diameters for sizes 1352 to 1502.

Notes:
1. Units since 2014A-1400 to 1700 are supplied in two-field assembled mode.

1. Unit sizes 30XA 1402 to 1702 are supplied in two field-assembled configurations.
2. Option 110 (high energy efficiency) can be used together with option 111.

2. Option 119 (high energy efficiency can be used together with option 118)
3. Contact your Carrier representative to obtain the performances.

3. Contact your Carrier representative to obtain the performances

Electrical data

30XA	252	302	352	402	452	502	602	702	752	802	852	902	1002	1102	1202	1302	1352	1402	1502	1702
Power circuit																				
Nominal power supply	V-ph-Hz	400-3-50																		
Voltage range	V	360-440																		
Maximum supply cable section per phase																				
Circuits A + B	mm ²	2 x 240	2 x 240	2 x 240	2 x 240	2 x 240	4 x 240	6 x 240	4 x 240	4 x 240	4 x 240	6 x 240	6 x 240	6 x 240	4 x 240					
Circuits C + D†	mm ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2 x 240	2 x 240	2 x 240	2 x 240	
Option 81	mm ²	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8 x 240	8 x 240	8 x 240	8 x 240	
Short circuit holding current (TN system)*																				
Circuits A + B	kA	38	38	38	38	38	50	50	50	50	50	50	50	50	50	50	50	50	50	
Circuits C + D†	kA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	50	50	50	
Option 81	kA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	50	50	50	
Control circuit																				
Standard unit																				
Maximum start-up current**																				
Circuits A + B	A	269	269	287	402	505	505	574	606	773	803	805	893	941	574	773	803	891	893	941
Circuits C + D†	A	-	-	-	-	-	-	-	-	-	-	-	-	-	587	587	587	587	587	805
Option 81	A	-	-	-	-	-	-	-	-	-	-	-	-	-	991	1079	1155	1242	1248	1294
Nominal start-up current***																				
Circuits A + B	A	245	245	262	378	480	480	536	562	735	759	761	845	865	536	735	759	859	845	865
Circuits C + D†	A	-	-	-	-	-	-	-	-	-	-	-	-	-	587	587	587	587	587	761
Option 81	A	-	-	-	-	-	-	-	-	-	-	-	-	-	909	993	1036	1156	1125	1143
Cosine Phi (maximum)****																				
Cosine Phi (nominal)††		0.85	0.85	0.84	0.84	0.86	0.86	0.87	0.87	0.84	0.85	0.85	0.83	0.84	0.85	0.84	0.85	0.83	0.84	0.85
Maximum power input‡																				
Circuits A + B	kW	121	131	141	165	185	204	247	267	293	312	343	359	420	247	293	342	388	390	420
Circuits C + D†	kW	-	-	-	-	-	-	-	-	-	-	-	-	-	210	210	209	210	210	343
Option 81	kW	-	-	-	-	-	-	-	-	-	-	-	-	-	457	503	552	597	600	630
Nominal unit current draw††																				
Circuits A + B	A	151	167	184	210	240	266	322	349	406	431	452	516	556	322	406	449	569	538	556
Circuits C + D†	A	-	-	-	-	-	-	-	-	-	-	-	-	-	278	278	278	292	278	452
Option 81	A	-	-	-	-	-	-	-	-	-	-	-	-	-	600	684	727	861	816	834
Maximum unit current draw (Un)‡																				
Circuits A + B	A	198	215	233	270	303	335	404	436	492	522	572	611	707	404	492	568	655	661	707
Circuits C + D†	A	-	-	-	-	-	-	-	-	-	-	-	-	-	354	354	352	354	354	572
Option 81	A	-	-	-	-	-	-	-	-	-	-	-	-	-	758	845	922	1007	1015	1061
Maximum unit current draw (Un - 10%)****																				
Circuits A + B	A	208	232	251	290	326	360	435	469	529	561	615	657	760	435	529	611	705	711	760
Circuits C + D†	A	-	-	-	-	-	-	-	-	-	-	-	-	-	380	380	380	378	380	615
Option 81	A	-	-	-	-	-	-	-	-	-	-	-	-	-	815	909	991	1083	1091	1141
High energy efficiency version (option 119)																				
Maximum start-up current**																				
Circuits A + B	A	274	274	292	407	510	510	583	616	782	812	815	905	954	583	782	812	901	905	954
Circuits C + D†	A	-	-	-	-	-	-	-	-	-	-	-	-	-	587	587	587	587	587	815
Option 81	A	-	-	-	-	-	-	-	-	-	-	-	-	-	1010	1099	1175	1265	1275	1321
Nominal start-up current***																				
Circuits A + B	A	246	246	261	379	479	479	535	561	734	757	760	845	860	535	734	757	846	845	860
Circuits C + D†	A	-	-	-	-	-	-	-	-	-	-	-	-	-	587	587	587	587	587	760
Option 81	A	-	-	-	-	-	-	-	-	-	-	-	-	-	907	991	1026	1124	1122	1133
Cosine Phi (maximum)****																				
Cosine Phi (nominal)††		0.88	0.87	0.87	0.88	0.88	0.88	0.88	0.88	0.88	0.86	0.86	0.86	0.85	0.86	0.88	0.86	0.87	0.85	0.86
Maximum power input‡																				
Circuits A + B	kW	126	136	147	172	192	212	257	278	304	323	356	372	435	257	304	353	400	405	435
Circuits C + D†	kW	-	-	-	-	-	-	-	-	-	-	-	-	-	217	217	216	217	217	356
Option 81	kW	-	-	-	-	-	-	-	-	-	-	-	-	-	475	522	570	615	622	652
Nominal unit current draw††																				
Circuits A + B	A	151	167	182	210	237	264	320	346	404	427	446	516	546	320	404	439	537	535	546
Circuits C + D†	A	-	-	-	-	-	-	-	-	-	-	-	-	-	273	273	275	273	273	446
Option 81	A	-	-	-	-	-	-	-	-	-	-	-	-	-	593	678	712	812	808	893
Maximum unit current draw (Un)‡																				
Circuits A + B	A	208	226	243	284	316	350	423	457	512	542	596	635	734	423	512	588	678	688	734
Circuits C + D†	A	-	-	-	-	-	-	-	-	-	-	-	-	-	367	367	364	367	367	596
Option 81	A	-	-	-	-	-	-	-	-	-	-	-	-	-	790	879	956	1041	1056	1191
Maximum unit current draw (Un - 10%)****																				
Circuits A + B	A	219	243	262	305	340	376	455	491	551	583	640	683	790	455	551	633	729	740	790
Circuits C + D†	A	-	-	-	-	-	-	-	-	-	-	-	-	-	395	395	391	395	395	640
Option 81	A	-	-	-	-	-	-	-	-	-	-	-	-	-	850	946	1028	1120	1135	1185

* kA eff: efficiency value: rms for English version

** RA en: efficiency value. rms for English version
 ** Instantaneous start-up current (operating current of the smallest compressor + fan current + locked rotor current in star connection of the largest compressor). Values obtained at operation with maximum unit power input.

** Instantaneous start-up current (operating current of the smallest compressor + fan current + locked rotor current in star connection of the largest compressor). Values obtained at standard Eurovent unit operating conditions: air 35°C, water 12/7°C

** Values obtained at operation with maximum unit power input.

† Circuit D for size 1702 only

[†] Values obtained at standard Eurovent unit operating conditions: air 35°C, water 12/7°C
[‡] Values obtained at operation with maximum unit power input. Values given on the unit p-

‡ Values obtained at operation with maximum unit power input. Values given on the unit name plate

Notes:

Motor and fan electrical data if the unit operates at Eurovent conditions (motor ambient temperature 50°C); 1.9 A for standard unit; 3.6 A for unit with option 119. Start-up current: 9.4 A for standard unit; 20.9 A for unit with option 119.

Start-up current: 8.4 A for standard unit; 20 A for unit with option 119
Running at 700 W for standard unit; 1250 W for unit with option 119

Power input: 760 W for standard unit; 1650 W for unit with option 119

Unit sizes 30XA 1102 to 1702 have two power

Part load performances

With the rapid increase in energy costs and the care about environmental impacts of electricity production, power consumption of air conditioning equipment has become an important topic. The energy efficiency of a liquid chiller at full load is rarely representative of the actual performance of the units, as on average a chiller works less than 5% of the time at full load.

IPLV (in accordance with ARI 550/590-3)

The IPLV (integrated part load value) allows evaluation of the average energy efficiency based on four operating conditions defined by the ARI (American Refrigeration Institute). The IPLV is the average weighted value of the energy efficiency ratios (EER) at different operating conditions, weighted by the operating time.

IPLV (integrated part load value)

Load %	Air temperature °C	Energy efficiency	Operating time %
100	35	EER ₁	1
75	26.7	EER ₂	42
50	18.3	EER ₃	45
25	12.8	EER ₄	12
ESEER = EER ₁ x 1% + EER ₂ x 42% + EER ₃ x 45% + EER ₄ x 12%			

The heat load of a building depends on many factors, such as the outside air temperature, the exposure to the sun and the building occupancy.

Consequently it is preferable to use the average energy efficiency, calculated at several operating points that are representative for the unit utilisation.

ESEER (in accordance with EUROVENT)

The ESEER (European seasonal energy efficiency ratio) permits evaluation of the average energy efficiency at part load, based on four operating conditions defined by Eurovent. The ESEER is the average value of energy efficiency ratios (EER) at different operating conditions, weighted by the operating time.

ESEER (European seasonal energy efficiency ratio)

Load %	Air temperature °C	Energy efficiency	Operating time %
100	35	EER ₁	3
75	30	EER ₂	33
50	25	EER ₃	41
25	20	EER ₄	23
ESEER = EER ₁ x 3% + EER ₂ x 33% + EER ₃ x 41% + EER ₄ x 23%			

Part load performances

30XA	252	302	352	402	452	502	602	702	752	802	852	902	1002	1102	1202	1302	1352	1402	1502	1702
Standard unit																				
IPLV kW/kW	4.41	4.50	4.77	4.73	4.75	4.77	4.54	4.67	4.58	4.55	4.66	4.35	4.39	4.66	4.54	4.54	4.29	4.57	4.43	4.33
ESEER kW/kW	4.03	4.30	4.31	4.26	4.30	4.25	4.25	4.25	4.14	4.19	4.25	3.93	3.93	4.20	4.08	4.03	3.82	4.10	4.00	3.97
High-efficiency unit (option 119)																				
IPLV kW/kW	4.31	4.37	4.57	4.38	4.51	4.51	4.35	4.64	4.40	4.47	4.55	4.32	4.25	4.62	4.40	4.56	4.62	4.52	4.50	4.42
ESEER kW/kW	3.97	4.04	4.10	4.03	4.08	4.08	4.00	4.22	4.01	4.05	4.18	3.94	3.85	4.24	4.01	4.17	4.18	4.13	4.12	4.05
High-efficiency unit (options 119 + 255)																				
IPLV kW/kW	4.18	4.16	4.49	4.23	4.27	4.27	4.33	4.49	4.27	4.36	4.40	4.21	4.09	4.44	4.26	4.42	4.53	4.37	4.35	4.27
ESEER kW/kW	3.83	3.78	4.03	3.88	3.86	3.87	3.97	4.08	3.90	3.96	4.04	3.84	3.70	4.07	3.88	4.04	4.10	3.99	3.98	3.91

Electrical data notes and operating conditions 30XA

- 30XA 252-1002 units have a single power connection point located immediately upstream of the two main disconnect switches.
- 30XA 1102-1702 units have two power connection points located upstream of the main disconnect switches.
- The control box includes:**
 - One main disconnect switch per circuit
 - Starter and motor protection devices for each compressor, the fans and the pump
 - Control devices
- Field connections:**
 - All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 30XA units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60 204-1 (corresponds to IEC 60204-1) (machine safety - electrical machine components - part 1: general regulations) are specifically taken into account, when designing the electrical equipment.

Notes:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives. Conformance with EN 60204 is the best means of ensuring compliance with the Machines Directive § 1.5.1.
- Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.
- The operating environment for the 30XA units is specified below:
- Environment* Environment as classified in EN 60721 (corresponds to IEC 60721):
 - outdoor installation*
 - ambient temperature range: minimum temperature 20°C to +55°C, class 4K4H*

- altitude: lower than or equal to 2000 m (for hydronic kit see chapter 4-10 of the installation manual)
- presence of hard solids, class 4S2 (no significant dust present)
- presence of corrosive and polluting substances, class 4C2 (negligible)
- Power supply frequency variation: ± 2 Hz.
- The neutral (N) line must not be connected directly to the unit (if necessary use a transformer).
- Overcurrent protection of the power supply conductors is not provided with the unit.
- The factory installed disconnect switch(es)/circuit breaker(s) is (are) of a type suitable for power interruption in accordance with EN 60947-3 (corresponds to IEC 60947-3).
- The units are designed for simplified connection on TN(s) networks (IEC 60364). For IT networks provide a local earth and consult competent local organisations to complete the electrical installation.
- Derived currents: If protection by monitoring of derived currents is necessary to ensure the safety of the installation, the control of the cut-out value must take the presence of leak currents into consideration that result from the use of optional frequency converters in the unit. A value of at least 150 mA is recommended to control differential protection devices.

NOTE: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

- * The required protection level for this class is IP43B (according to reference document IEC 60529). All 30XA units are protected to IP44CW and fulfil this protection condition.

Sound spectra

30XA - standard unit

	Octave bands, Hz	Sound power level						
		125	250	500	1k	2k	4k	
252	dB	88.7	92.7	82.5	85.8	75.8	66.7	dB(A) 89.0
302	dB	88.7	92.7	82.5	85.8	75.8	66.7	dB(A) 89.0
352	dB	88.7	92.7	82.5	85.8	75.8	66.7	dB(A) 89.0
402	dB	89.4	94.5	89.8	85.9	82.7	73.3	dB(A) 91.8
452	dB	99.9	98.3	87.8	86.3	79.2	72.3	dB(A) 93.1
502	dB	99.9	98.3	87.8	86.3	79.2	72.3	dB(A) 93.1
602	dB	101.1	99.5	91.4	88.2	83.4	77.0	dB(A) 95.1
702	dB	92.8	95.0	92.0	88.5	84.9	78.6	dB(A) 93.9
752	dB	100.7	99.2	90.6	91.7	81.8	75.2	dB(A) 95.7
802	dB	101.2	99.7	91.1	92.2	82.3	75.7	dB(A) 96.2
852	dB	95.6	96.2	93.0	91.1	85.1	80.4	dB(A) 95.4
902	dB	94.0	96.5	91.9	95.1	83.2	76.5	dB(A) 97.0
1002	dB	97.1	96.4	93.1	92.4	83.7	81.3	dB(A) 96.0
1102	dB	101.5	100.1	92.8	90.6	84.5	79.4	dB(A) 96.4
1202	dB	101.7	100.0	92.5	91.2	83.2	79.6	dB(A) 96.4
1302	dB	96.5	96.7	93.6	92.1	85.1	81.3	dB(A) 96.1
1352	dB	96.4	97.0	93.2	94.6	83.9	80.5	dB(A) 97.1
1402	dB	98.4	97.7	94.3	93.7	85.0	82.5	dB(A) 97.2
1502	dB	96.9	97.4	93.4	94.6	84.3	80.6	dB(A) 97.3
1702	dB	97.6	98.2	95.1	93.1	87.1	82.5	dB(A) 97.4

30XA - standard unit with option 119*

	Octave bands, Hz	Sound power level						
		125	250	500	1k	2k	4k	
252	dB	95.5	94.6	91.0	91.0	83.5	78.7	dB(A) 94.3
302	dB	95.5	94.6	91.0	91.0	83.5	78.7	dB(A) 94.3
352	dB	96.2	94.9	91.6	91.4	84.2	79.4	dB(A) 94.9
402	dB	96.5	95.7	93.2	92.2	86.3	80.8	dB(A) 96.0
452	dB	96.5	94.8	92.9	92.1	87.4	81.3	dB(A) 96.0
502	dB	96.7	94.7	93.9	91.8	86.7	81.7	dB(A) 96.0
602	dB	97.0	97.5	95.0	94.2	89.7	83.4	dB(A) 98.2
702	dB	97.7	95.6	94.7	92.7	87.4	82.3	dB(A) 96.8
752	dB	102.2	99.8	94.7	94.6	86.7	81.8	dB(A) 98.4
802	dB	99.0	97.1	95.7	95.6	88.1	83.1	dB(A) 98.7
852	dB	99.6	96.7	95.9	94.5	88.3	83.9	dB(A) 98.3
902	dB	99.6	97.7	96.0	97.0	88.1	83.3	dB(A) 99.6
1002	dB	100.3	96.7	96.1	95.2	88.1	84.4	dB(A) 98.7
1102	dB	102.9	100.4	96.4	94.9	88.6	84.0	dB(A) 99.3
1202	dB	104.1	101.3	97.4	96.3	89.3	85.3	dB(A) 100.4
1302	dB	101.1	98.2	97.4	96.2	89.6	85.4	dB(A) 99.9
1352	dB	101.1	98.4	97.3	97.2	89.3	85.2	dB(A) 100.3
1402	dB	102.9	99.5	98.9	97.9	90.9	87.0	dB(A) 101.4
1502	dB	101.8	98.9	97.9	97.7	90.0	85.8	dB(A) 100.8
1702	dB	102.5	99.7	98.9	97.5	91.2	86.8	dB(A) 101.3

30XA - standard unit with option 257*

	Octave bands, Hz	Sound power level						
		125	250	500	1k	2k	4k	
252	dB	88.0	89.0	82.8	83.5	76.1	67.5	dB(A) 87.0
302	dB	88.0	89.0	82.8	83.5	76.1	67.5	dB(A) 87.0
352	dB	88.0	89.0	82.8	83.5	76.1	67.5	dB(A) 87.0
402	dB	89.4	92.2	87.3	85.7	79.6	70.7	dB(A) 90.1
452	dB	90.1	96.4	87.4	85.6	79.9	68.8	dB(A) 91.4
502	dB	91.9	93.6	88.5	86.8	81.0	71.9	dB(A) 91.3
602	dB	90.4	96.0	90.8	87.8	81.0	76.5	dB(A) 93.0
702	dB	92.1	94.3	89.6	87.1	81.9	72.7	dB(A) 92.0
752	dB	91.3	96.5	91.2	89.3	80.3	69.7	dB(A) 93.6
802	dB	92.4	94.3	92.3	90.4	81.3	72.3	dB(A) 94.0
852	dB	95.5	95.5	92.1	88.5	81.1	74.4	dB(A) 93.6
902	dB	92.8	94.0	93.6	92.0	80.3	71.4	dB(A) 95.1
1002	dB	96.8	95.7	93.0	89.0	79.3	75.0	dB(A) 94.0
1102	dB	95.4	98.1	92.3	89.0	82.3	74.2	dB(A) 94.5
1202	dB	96.3	97.8	92.9	89.1	80.9	74.6	dB(A) 94.6
1302	dB	96.8	96.4	93.3	89.6	81.2	75.5	dB(A) 94.6
1352	dB	98.8	96.3	94.4	91.3	80.5	75.3	dB(A) 95.6
1402	dB	99.2	96.4	94.3	91.3	80.9	75.3	dB(A) 95.6
1502	dB	100.2	97.3	94.5	90.5	80.9	76.6	dB(A) 95.7
1702	dB	97.5	97.5	94.1	90.5	83.1	76.4	dB(A) 95.6

30XA - unit with option 119 + 257*

	Octave bands, Hz	Sound power level						
		125	250	500	1k	2k	4k	
252	dB	94.5	91.5	90.1	89.6	82.9	77.9	dB(A) 93.0
302	dB	94.5	91.5	90.1	89.6	82.9	77.9	dB(A) 93.0
352	dB	94.5	91.5	90.1	89.6	82.9	77.9	dB(A) 93.0
402	dB	96.0	94.2	92.5	91.2	84.9	79.6	dB(A) 95.0
452	dB	95.8	96.6	92.1	90.8	84.5	79.1	dB(A) 95.0
502	dB	96.4	93.8	92.4	91.3	85.0	79.8	dB(A) 95.0
602	dB	96.9	97.1	95.5	93.7	85.9	82.0	dB(A) 97.5
702	dB	97.3	95.0	93.6	92.2	86.1	80.8	dB(A) 96.0
752	dB	97.4	97.4	94.7	93.2	85.9	80.7	dB(A) 97.0
802	dB	97.7	95.2	94.9	93.5	86.2	81.1	dB(A) 97.0
852	dB	98.9	96.0	95.0	93.1	86.4	81.7	dB(A) 97.0
902	dB	98.4	95.5	96.0	94.7	86.5	81.7	dB(A) 98.0
1002	dB	100.2	97.0	96.1	94.0	86.9	82.6	dB(A) 98.0
1102	dB	100.4	99.3	96.6	94.8	88.4	83.3	dB(A) 99.0
1202	dB	100.7	99.3	96.9	94.8	87.9	83.3	dB(A) 99.0
1302	dB	100.9	98.1	97.0	95.0	88.1	83.5	dB(A) 99.0
1352	dB	100.6	97.7	97.2	95.3	87.6	83.2	dB(A) 99.0
1402	dB	101.6	98.5	98.1	96.2	88.7	84.3	dB(A) 100
1502	dB	102.1	99.0	98.1	96.0	88.8	84.5	dB(A) 100
1702	dB	101.8	99.0	97.9	96.0	89.3	84.6	dB(A) 100

* Options: 119 = high energy efficiency; 257 = low noise level; 258 = very low noise level

	Octave bands, Hz	Sound power level						
		125	250	500	1k	2k	4k	
252	dB	-	-	-	-	-	-	dB(A) -
302	dB	-	-	-	-	-	-	dB(A) -
352	dB	-	-	-	-	-	-	dB(A) -
402	dB	-	-	-	-	-	-	dB(A) -
452	dB	88.8	93.3	83.8	84.7	76.4	67.0	dB(A) 89.0
502	dB	89.8	92.0	84.5	85.1	77.1	69.6	dB(A) 88.9
602	dB	90.5	93.2	88.3	86.5	78.5	76.5	dB(A) 90.9
702	dB	91.7	92.1	87.0	85.4	79.2	72.5	dB(A) 89.9
752	dB	92.3	93.8	89.0	87.0	78.8	73.4	dB(A) 91.4
802	dB	93.2	92.2	89.9	88.0	79.6	75.1	dB(A) 91.9
852	dB	93.3	91.9	90.1	86.7	79.4	74.1	dB(A) 91.4
902	dB	94.1	91.7	91.3	89.3	79.5	76.4	dB(A) 92.9
1002	dB	93.8	91.1	91.4	87.1	78.8	74.6	dB(A) 91.9
1102	dB	93.9	94.8	90.5	87.5	80.4	74.2	dB(A) 92.4
1202	dB	-	-	-	-	-	-	dB(A) -
1302	dB	94.1	92.3	91.5	87.7	79.8	75.2	dB(A) 92.4
1352	dB	94.9	92.1	92.7	89.1	79.9	76.5	dB(A) 93.4
1402	dB	95.1	92.6	92.6	89.0	80.3	76.4	dB(A) 93.4
1502	dB	95.3	92.6	92.9	88.6	80.3	76.1	dB(A) 93.4
1702	dB	95.3	93.9	92.1	88.7	81.4	76.1	dB(A) 93.4

Operating limits

Evaporator water temperature	°C	Minimum	Maximum
Water entering temperature at start-up	-	45*	
Water entering temperature during operation	6.8	21	
Water leaving temperature during operation	3.3	15	

Note: If the leaving water temperature is below 4°C, a glycol/water solution or the frost protection option must be used.

Condenser air temperature	°C	Minimum	Maximum
Storage	-20	68	
Operation:			
Standard unit	-10	55**	
With winter operation option (option 28)	-20	55**	
With high energy efficiency option (option 119)***	-10	55****	

Note: If the air temperature is below 0°C, a glycol/water solution or the frost protection option must be used.

* Based on the installation type and the air temperature

** Part load, based on the water temperature

*** Recommended for operation above 46°C

**** Part-load operation

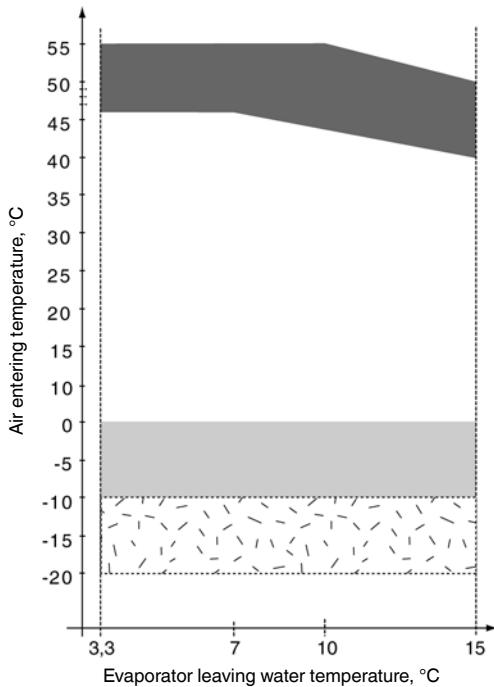
Evaporator water flow rate (l/s)*	Minimum	Maximum**
30XA		
252	3.6	37.5
302	4.0	40.5
352	4.3	40.5
402	5.3	34.1
452	6.0	36.9
502	6.7	42.0
602	8.1	45.0
702	8.9	56.1
752	9.6	59.1
802	10.4	67.1
852	11.0	67.1
902	11.8	73.9
1002	13.1	83.9
1102	15.1	87.8
1202	16.4	92.9
1302	17.5	96.1
1352	18.8	107.4
1402	19.3	107.4
1502	19.9	109.4
1702	22.0	107.4

* Standard evaporators with water as the heat transfer fluid.

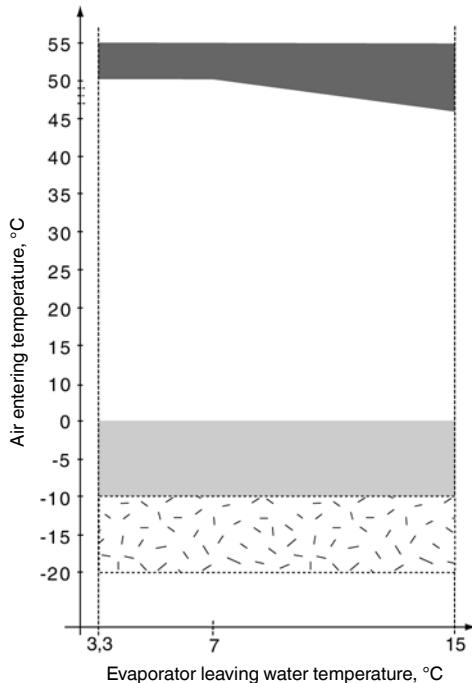
** The maximum water flow rate corresponds to a pressure drop of 100 kPa.

Operating range

30XA standard unit



30XA high-energy efficiency unit or unit with option 119



Legend

Operating range, unit equipped with option 28 (winter operation)

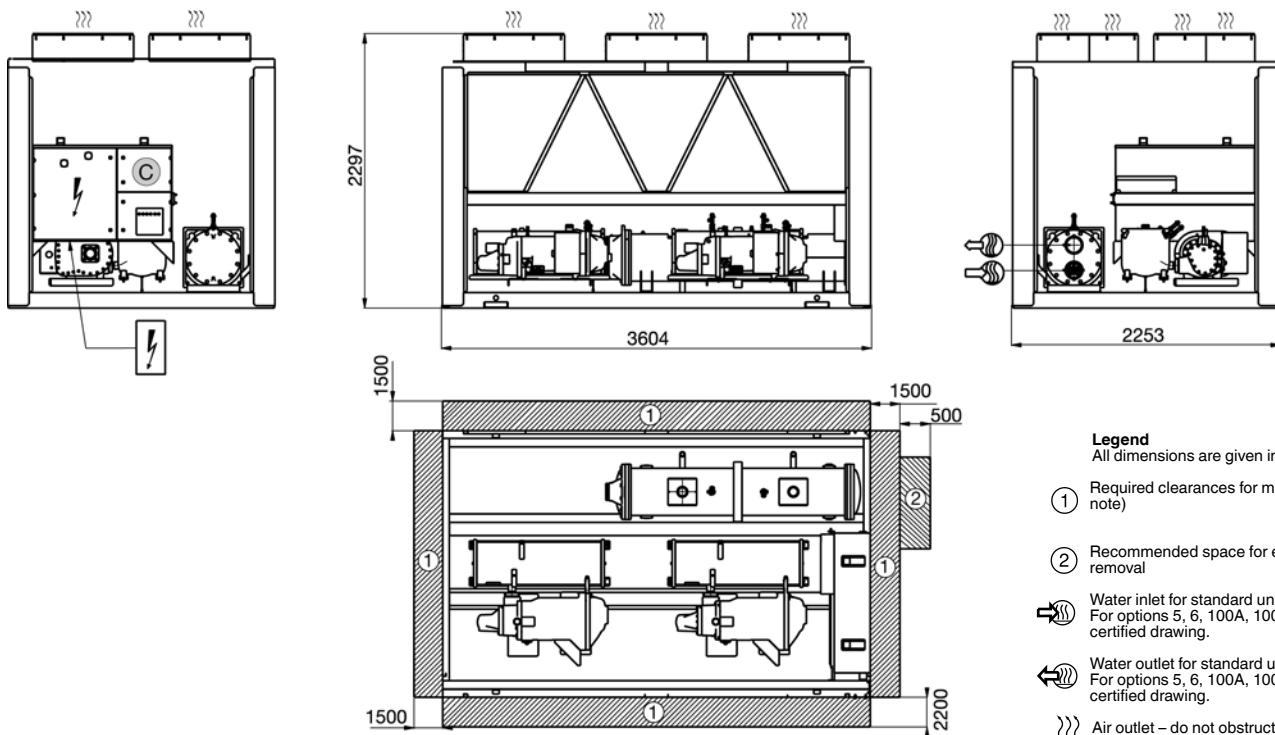
Below 0°C air temperature the unit must either be equipped with the evaporator frost protection option (41A or 41B), or the water loop must be protected against frost by using a frost protection solution (by the installer).

Part load average

Dimensions/clearances

30XA 252-352 - MCHX heat exchanger (standard)

30XA 252-302 - Cu/Al heat exchanger (option 254/255)



Legend
All dimensions are given in mm.

① Required clearances for maintenance (see note)

② Recommended space for evaporator tube removal

Water inlet for standard unit
For options 5, 6, 100A, 100C, 107 refer to the certified drawing.

Water outlet for standard unit
For options 5, 6, 100A, 100C, 107 refer to the certified drawing.

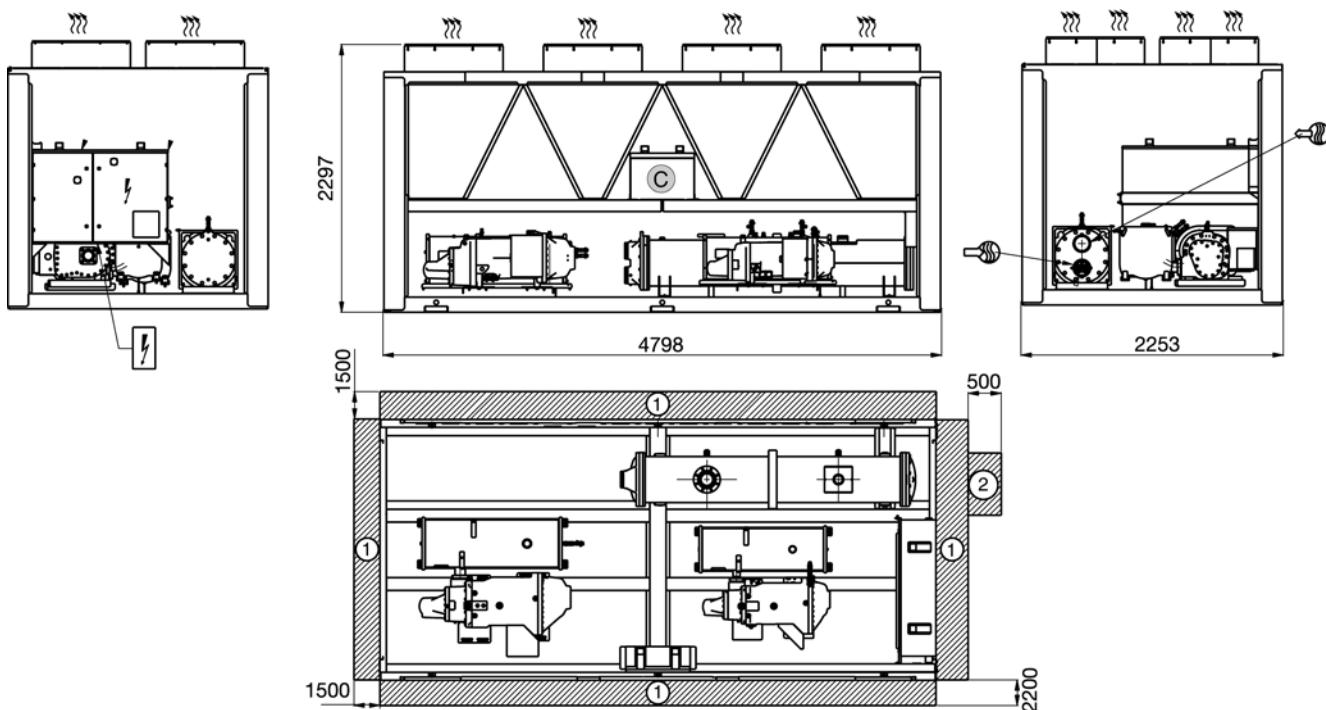
Air outlet – do not obstruct

Power supply and control connection

Control circuit connection for option 158

30XA 402-452 - MCHX heat exchanger (standard)

30XA 352-452 - Cu/Al heat exchanger (option 254/255)

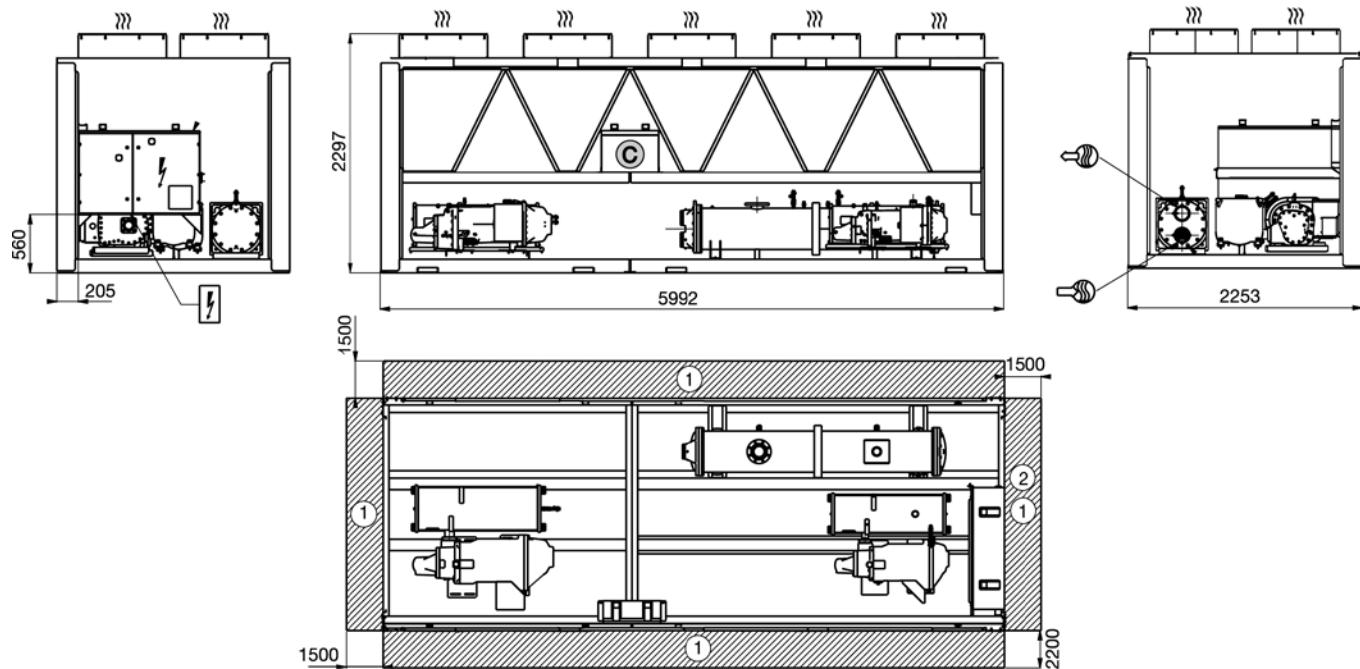


NOTES:

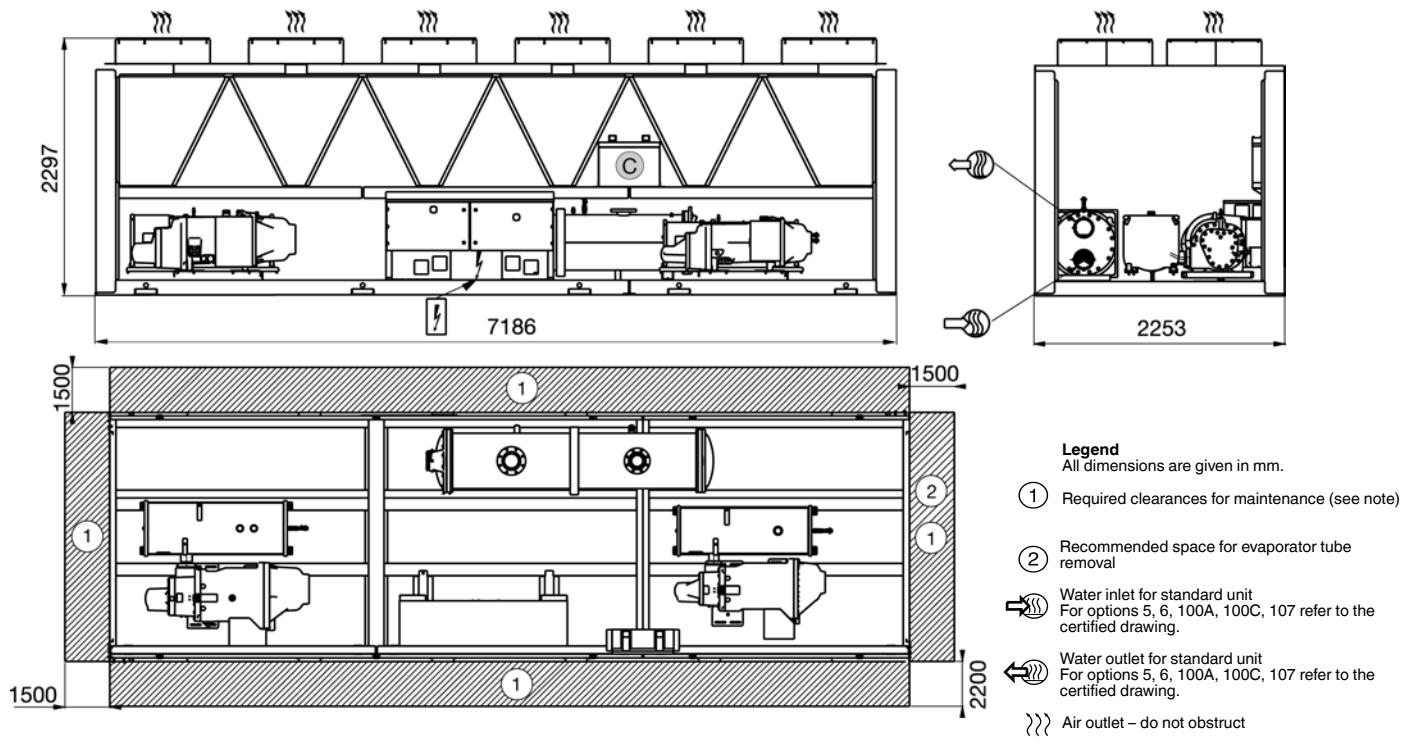
- Drawings are not contractually binding.
- Before designing an installation, consult the certified dimensional drawings, available on request.
- If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.12 - "Multiple chiller installation" and 3.13 - "Distance to the wall" of the installation manual to determine the space required.

Dimensions/clearances

30XA 502 - MCHX heat exchanger (standard)
30XA 502 - Cu/Al heat exchanger (option 254/255)



30XA 602-802 - MCHX heat exchanger (standard)
30XA 602-702 - Cu/Al heat exchanger (option 254/255)



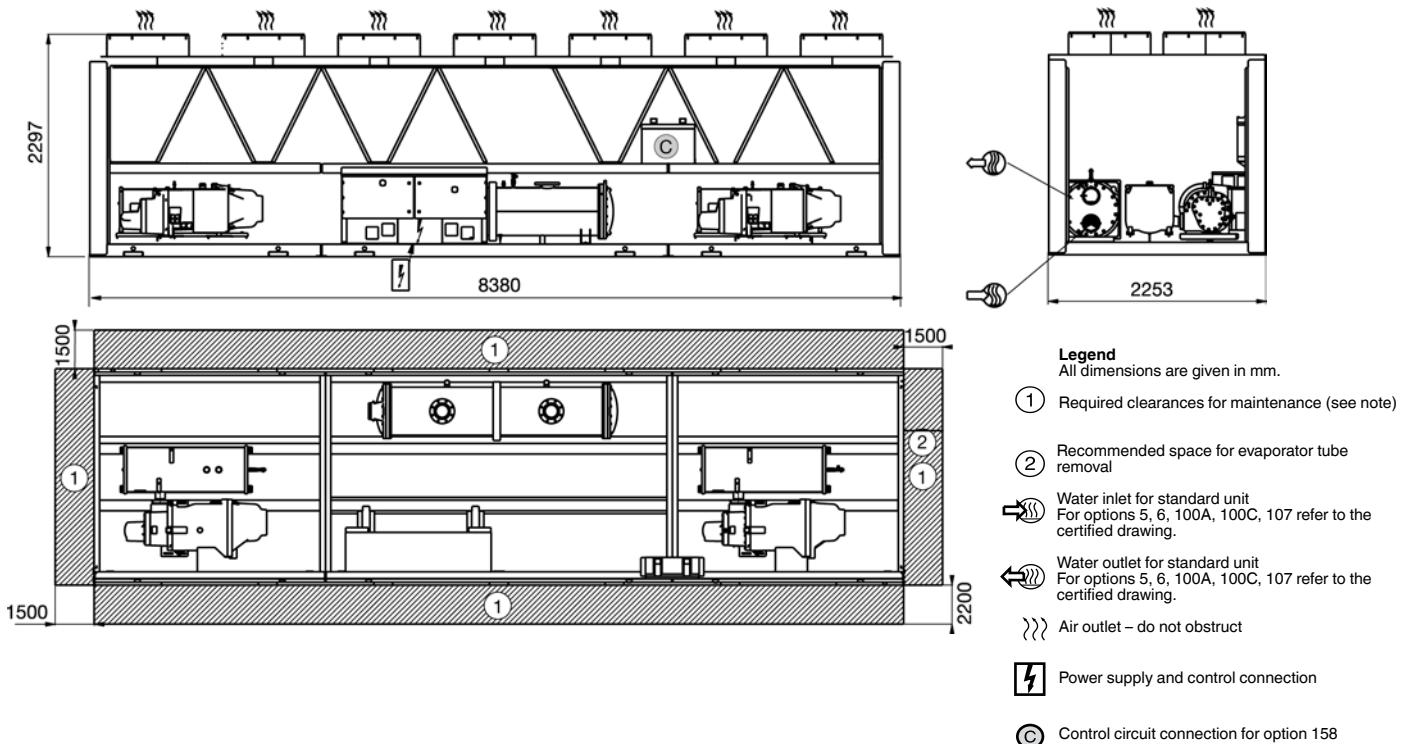
NOTES:

- Drawings are not contractually binding.
- Before designing an installation, consult the certified dimensional drawings, available on request.
- If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.12 - "Multiple chiller installation" and 3.13 - "Distance to the wall" of the installation manual to determine the space required.

Dimensions/clearances

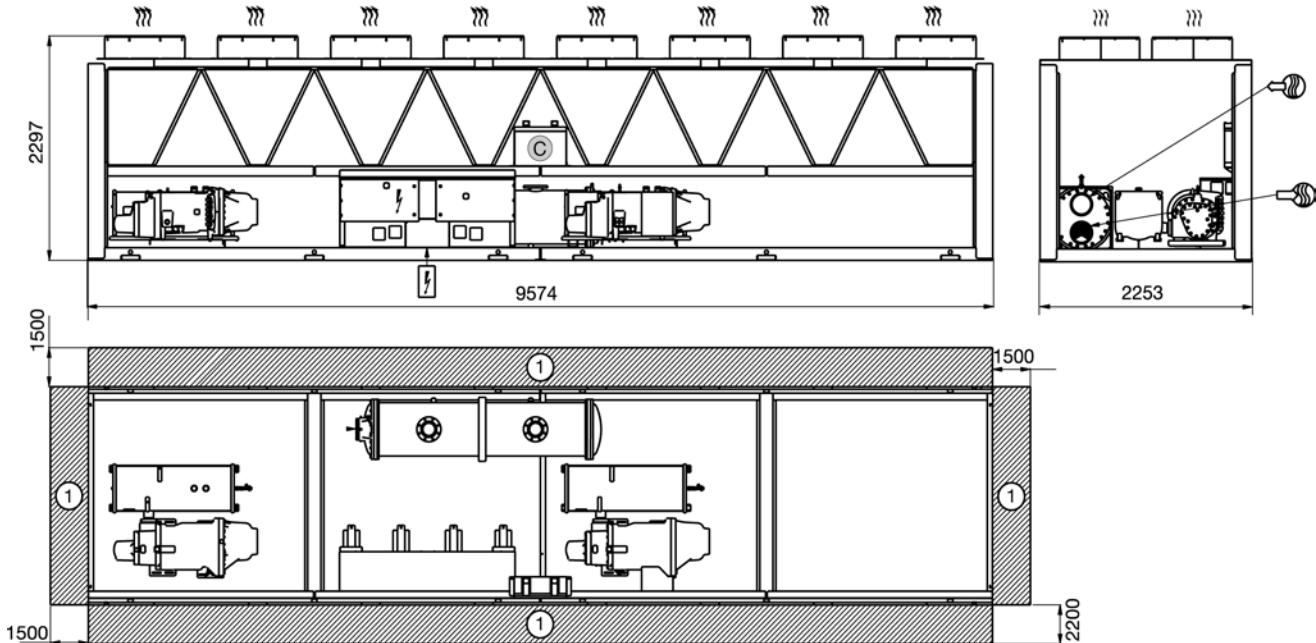
30XA 852-902 - MCHX heat exchanger (standard)

30XA 752-852 - Cu/Al heat exchanger (option 254/255)



30XA 1002 - MCHX heat exchanger (standard)

30XA 902-1002 - Cu/Al heat exchanger (option 254/255)



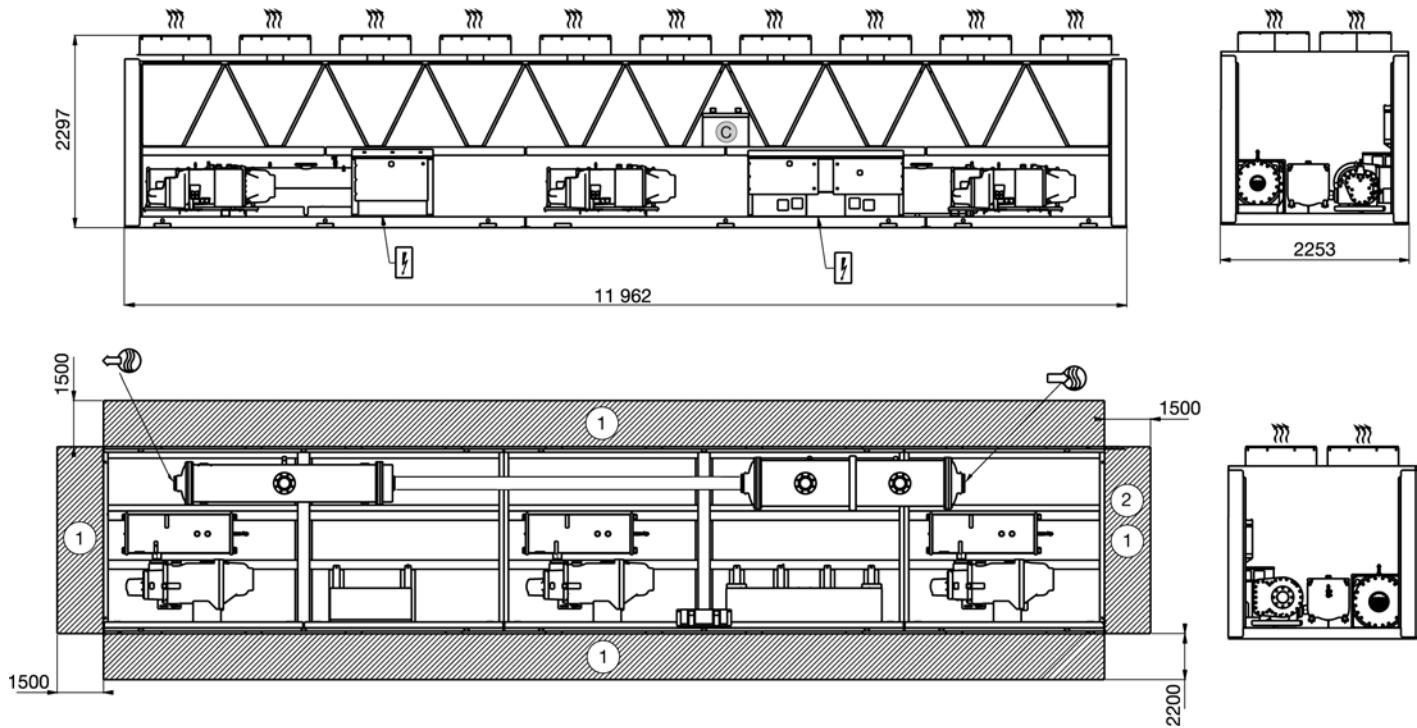
NOTES:

- Drawings are not contractually binding.
- Before designing an installation, consult the certified dimensional drawings, available on request.
- If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.12 - "Multiple chiller installation" and 3.13 - "Distance to the wall" of the installation manual to determine the space required.

Dimensions/clearances

30XA 1102-1352 - MCHX heat exchanger (standard)

30XA 1102-1352 - Cu/Al heat exchanger (option 254/255)



Legend

All dimensions are given in mm.

① Required clearances for maintenance (see note)

② Recommended space for evaporator tube removal

→ Water inlet for standard unit
For options 5, 6, 100A, 100C, 107 refer to the certified drawing.

← Water outlet for standard unit
For options 5, 6, 100A, 100C, 107 refer to the certified drawing.

→ Air outlet – do not obstruct

⚡ Power supply and control connection

Ⓐ Control circuit connection for option 158

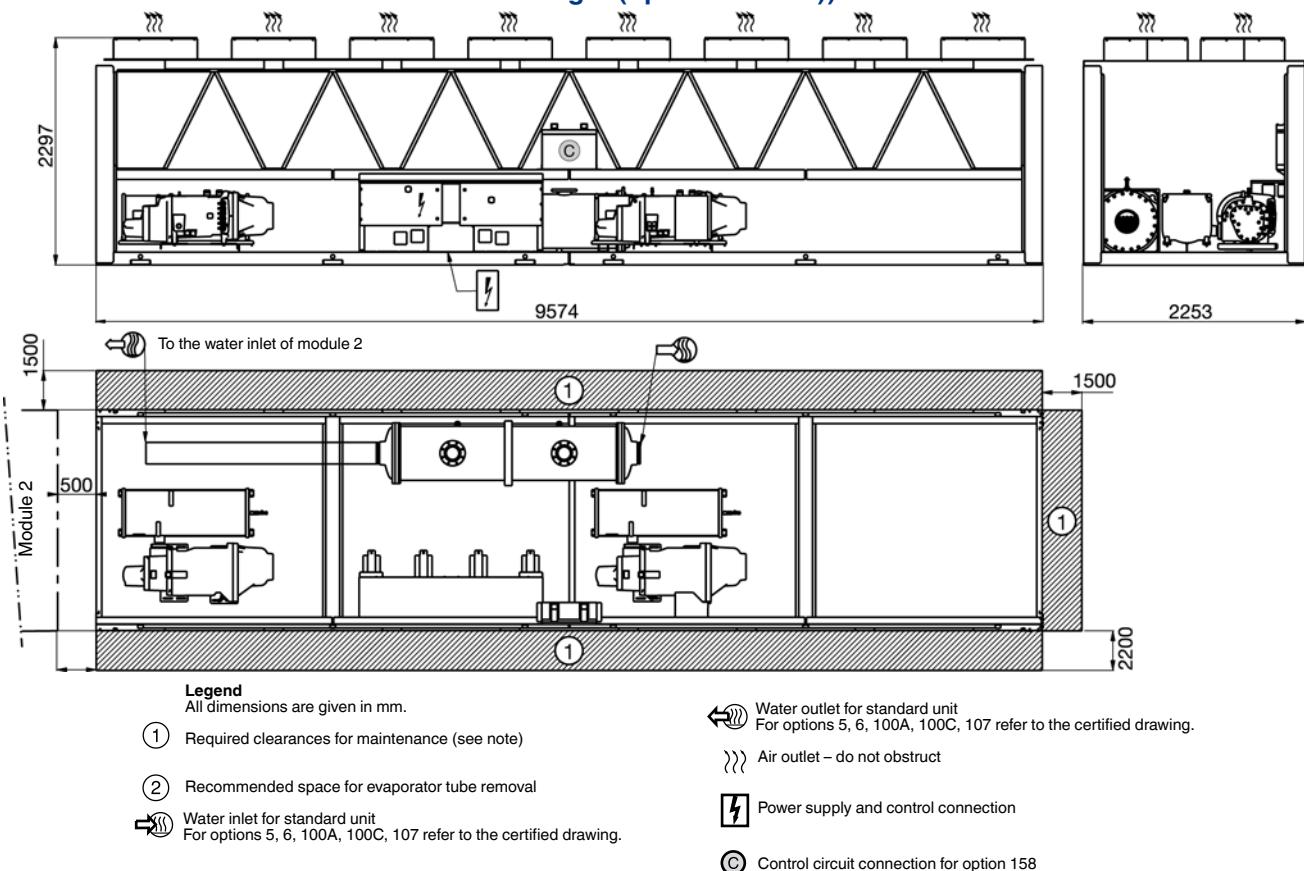
NOTES:

- Drawings are not contractually binding.
- Before designing an installation, consult the certified dimensional drawings, available on request.
- If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.12 - "Multiple chiller installation" and 3.13 - "Distance to the wall" of the installation manual to determine the space required.

Dimensions/clearances

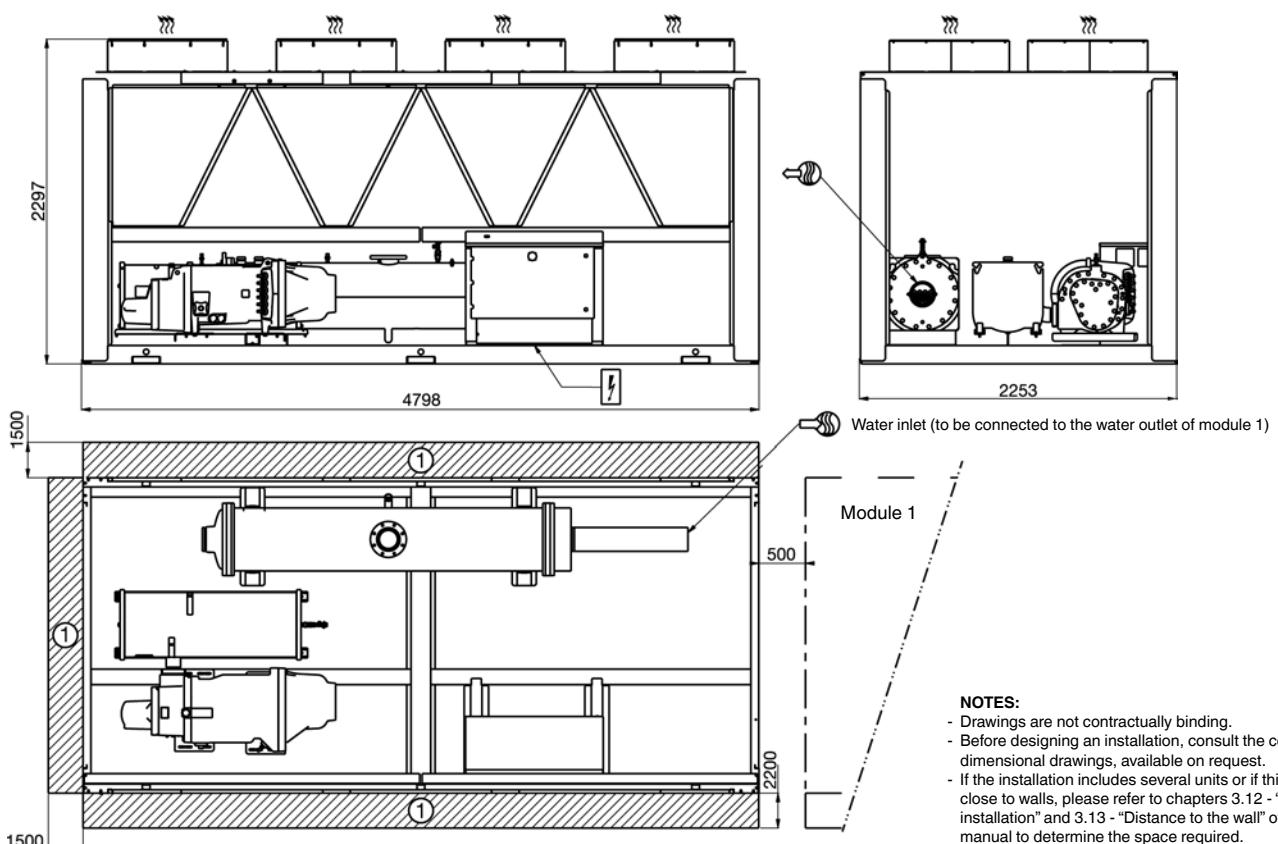
30XA 1402-1502 module 1/2 - MCHX heat exchanger (standard)

30XA 1402-1502 module 1/2 - Cu/Al heat exchanger (option 254/255)



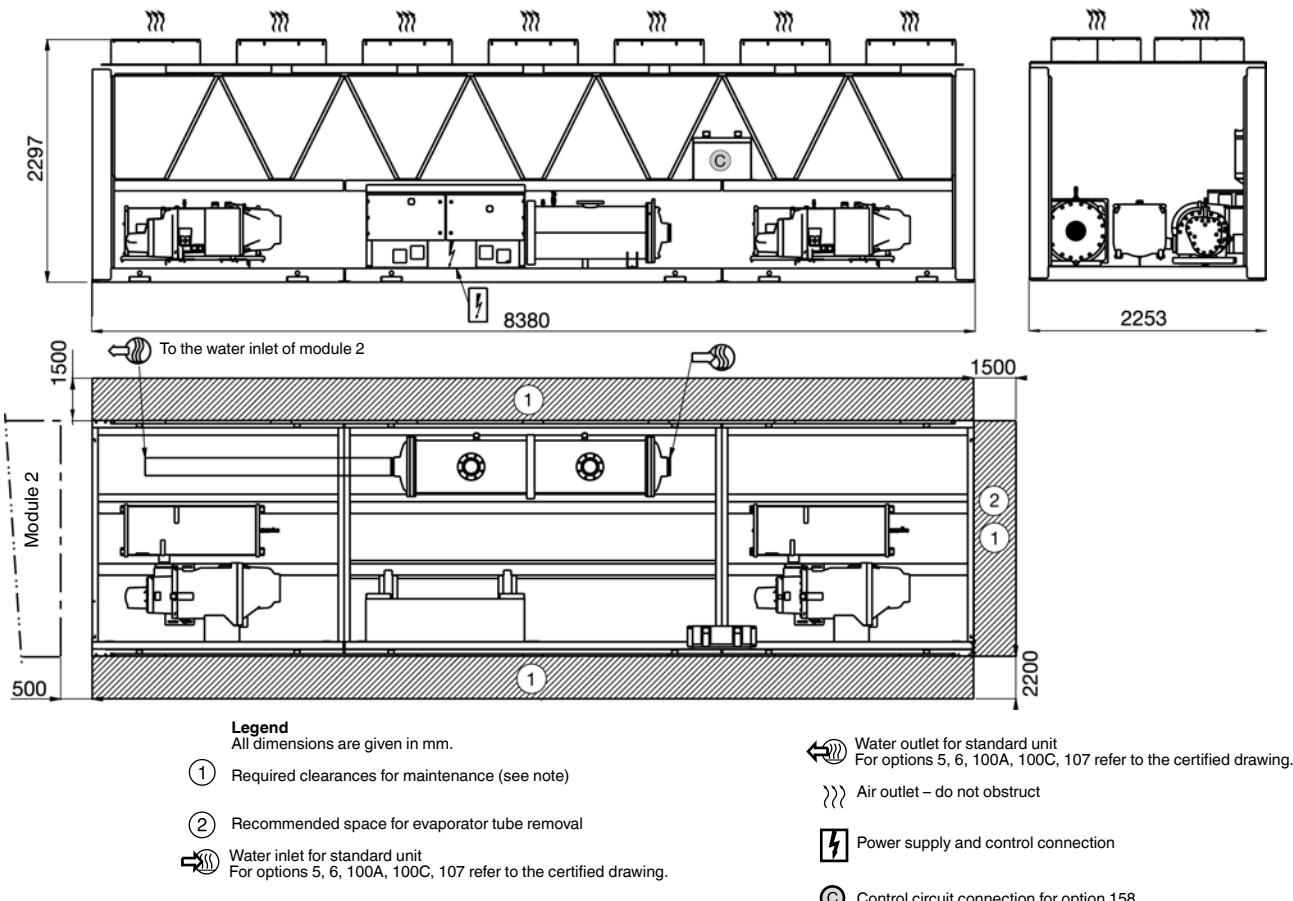
30XA 1402-1502 module 2/2 - MCHX heat exchanger (standard)

30XA 1402-1502 module 2/2 - Cu/Al heat exchanger (option 254/255)

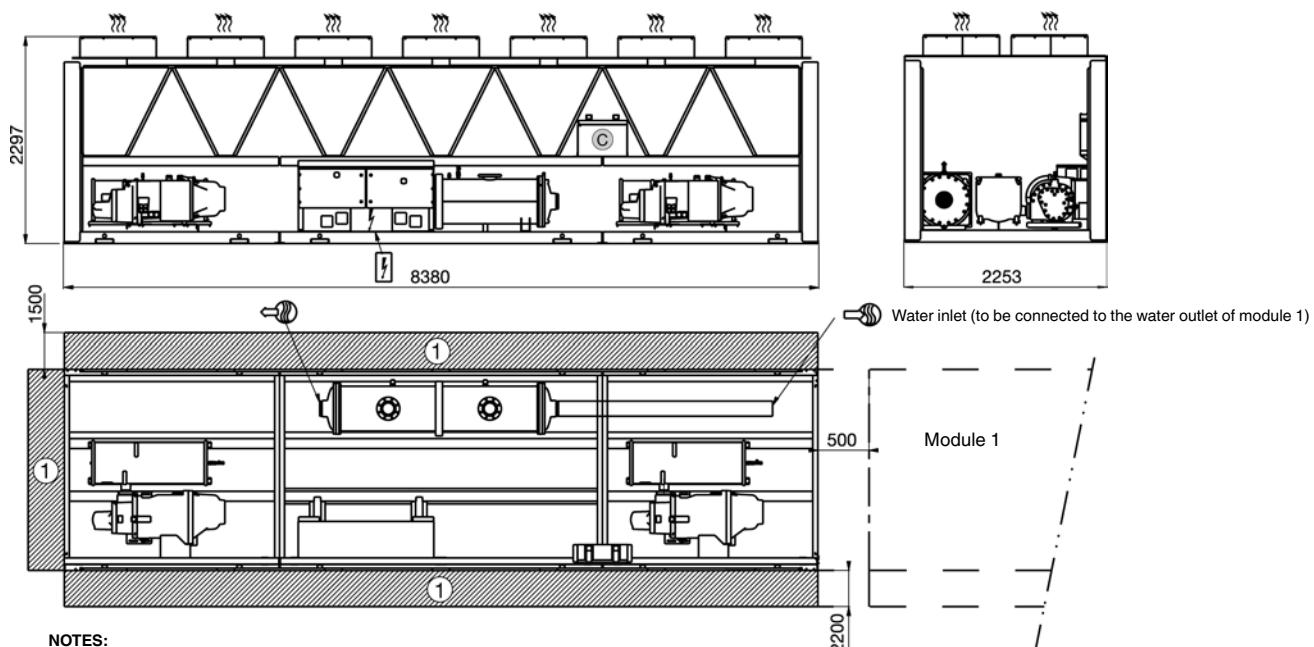


Dimensions/clearances

30XA 1702 module 1/2 - MCHX heat exchanger (standard)
30XA 1702 module 1/2 - Cu/Al heat exchanger (option 254/255)



30XA 1702 module 2/2 - MCHX heat exchanger (standard)
30XA 1702 module 2/2 - Cu/Al heat exchanger (option 254/255)



NOTES:

- Drawings are not contractually binding.
- Before designing an installation, consult the certified dimensional drawings, available on request.
- If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.12 - "Multiple chiller installation" and 3.13 - "Distance to the wall" of the installation manual to determine the space required.

Cooling capacities, SI system

Standard unit

30XA	LWT °C	Entering air temperature, condenser, °C																								
		25						30						35						40						
		CAP kW	UNIT kW	EER kW	COOL l/s	COOL kPa	CAP kW	UNIT kW	EER kW	COOL l/s	COOL kPa	CAP kW	UNIT kW	EER kW	COOL l/s	COOL kPa	CAP kW	UNIT kW	EER kW	COOL l/s	COOL kPa	CAP kW	UNIT kW	EER kW	COOL l/s	COOL kPa
252	5	268	72.0	3.72	12.8	15	259	78.5	3.29	12.3	14	248	85.6	2.90	11.8	13	238	93.3	2.55	11.3	12	224	103.4	2.16	10.6	10
302		295	78.8	3.74	14.0	15	284	86.0	3.30	13.5	14	272	93.9	2.89	12.9	13	259	102.4	2.53	12.3	12	243	113.9	2.13	11.6	11
352		324	84.8	3.82	15.4	18	311	92.7	3.36	14.8	17	298	101.3	2.94	14.2	15	283	110.4	2.56	13.5	14	264	123.2	2.15	12.6	12
402		378	98.8	3.83	18.0	34	366	107.6	3.40	17.4	32	353	117.2	3.01	16.8	30	339	127.8	2.65	16.1	28	321	141.6	2.27	15.3	25
452		428	117.4	3.65	20.4	37	414	128.2	3.23	19.7	35	398	140.0	2.85	19.0	32	382	152.7	2.50	18.2	30	360	170.0	2.12	17.2	27
502		476	128.7	3.70	22.7	36	460	140.4	3.27	21.9	34	442	153.2	2.89	21.1	32	423	167.2	2.53	20.2	29	399	186.5	2.14	19.0	26
602		602	158.3	3.80	28.7	46	581	172.5	3.37	27.7	43	559	187.9	2.98	26.6	40	536	204.8	2.62	25.5	37	506	227.4	2.22	24.1	33
702		657	168.3	3.90	31.3	36	635	183.3	3.46	30.2	34	611	199.8	3.06	29.1	32	585	217.7	2.69	27.9	29	552	242.3	2.28	26.3	26
752		695	190.2	3.66	33.1	38	672	207.2	3.24	32.0	35	647	225.9	2.86	30.8	33	620	246.6	2.51	29.5	30	566	260.8	2.17	26.9	26
802		769	211.2	3.64	36.6	35	741	230.0	3.22	35.5	33	713	250.7	2.84	33.9	30	682	273.7	2.49	32.5	28	614	285.0	2.15	29.2	23
852		813	216.8	3.75	38.7	38	785	236.1	3.33	37.4	36	756	257.5	2.93	36.0	33	724	281.1	2.58	34.5	31	673	305.7	2.20	32.0	27
902		887	241.5	3.67	42.2	37	856	262.9	3.25	40.7	34	823	286.7	2.87	39.2	32	789	313.0	2.52	37.6	29	701	320.7	2.19	33.4	24
1002		970	260.8	3.72	46.2	35	936	283.9	3.30	44.6	33	901	309.7	2.91	42.9	31	863	338.5	2.55	41.1	29	786	358.6	2.19	37.4	24
1102		1124	295.8	3.80	53.5	42	1086	321.9	3.37	51.7	39	1045	350.8	2.98	49.8	37	1002	382.6	2.62	47.7	34	926	412.9	2.24	44.1	29
1202		1224	328.8	3.72	58.3	44	1182	357.9	3.30	56.3	41	1138	390.2	2.92	54.2	38	1091	426.0	2.56	52.0	35	984	443.3	2.22	46.8	29
1302		1309	358.2	3.65	62.3	47	1263	390.4	3.23	60.1	44	1213	426.1	2.85	57.8	41	1162	465.9	2.49	55.3	37	984	447.7	2.20	46.9	27
1352		1402	415.7	3.37	66.8	43	1351	453.5	2.98	64.3	41	1297	495.5	2.62	61.8	38	1241	542.3	2.29	59.1	35	915	443.5	2.06	43.6	20
1402		1452	387.1	3.75	69.2	46	1401	421.2	3.33	66.7	43	1348	459.2	2.93	64.2	40	1292	501.4	2.62	61.5	37	1107	490.2	2.26	52.7	28
1502		1459	400.9	3.64	69.5	47	1408	436.5	3.23	67.0	44	1354	476.2	2.84	64.5	41	1297	520.2	2.49	61.8	38	1116	514.4	2.17	53.1	29
1702		1622	428.2	3.79	77.2	56	1566	466.3	3.36	74.6	53	1507	508.6	2.96	71.8	49	1445	555.3	2.60	68.8	45	1343	603.9	2.22	63.9	39
252	7	285	74.2	3.84	13.6	16	275	80.8	3.40	13.1	15	264	88.0	3.00	12.6	14	253	95.9	2.63	12.0	13	237	106.1	2.24	11.3	12
302		313	81.7	3.83	14.9	17	301	89.1	3.38	14.4	15	288	97.1	2.97	13.7	14	275	105.9	2.59	13.1	13	258	117.8	2.19	12.3	12
352		343	88.4	3.89	16.4	20	330	96.5	3.42	15.7	18	315	105.1	3.00	15.0	17	299	114.7	2.61	14.3	15	280	128.0	2.19	13.4	14
402		402	102.1	3.94	19.2	37	389	111.0	3.50	18.5	35	375	120.8	3.10	17.9	33	360	131.6	2.73	17.1	31	341	145.6	2.34	16.2	28
452		454	121.9	3.72	21.6	40	438	133.0	3.30	20.9	38	422	145.0	2.91	20.1	35	404	158.1	2.56	19.3	33	382	175.9	2.17	18.2	30
502		505	133.4	3.79	24.1	40	488	145.5	3.35	23.2	37	469	158.7	2.95	22.3	35	448	173.3	2.59	21.4	32	423	193.3	2.19	20.2	29
602		639	164.4	3.89	30.5	51	618	178.8	3.45	29.4	48	594	194.7	3.05	28.3	44	570	212.1	2.69	27.2	41	538	235.5	2.28	25.6	37
702		697	174.6	3.99	33.3	40	673	189.9	3.55	32.1	37	648	206.8	3.13	30.9	35	621	225.4	2.75	29.6	32	585	250.7	2.34	27.9	29
752		738	197.6	3.73	35.2	41	712	214.9	3.31	34.0	39	685	234.1	2.93	32.7	36	657	255.2	2.57	31.3	33	584	260.3	2.24	27.8	27
802		814	219.4	3.71	38.8	38	785	238.6	3.29	37.4	36	754	259.9	2.90	35.9	33	721	283.6	2.54	34.4	31	626	279.2	2.24	29.8	24
852		863	225.1	3.83	41.1	42	832	244.9	3.40	39.7	39	801	266.9	3.00	38.2	37	767	291.2	2.63	36.6	34	693	304.7	2.28	33.1	28
902		939	250.9	3.74	44.8	40	906	272.6	3.32	43.2	38	870	297.1	2.93	41.5	35	834	324.2	2.57	39.7	32	710	312.7	2.27	33.9	24
1002		1029	270.9	3.80	49.0	39	992	294.7	3.37	47.3	36	953	321.4	2.97	45.5	34	913	350.8	2.60	43.5	31	744	324.1	2.30	35.5	22
1102		1193	307.2	3.88	56.9	46	1151	334.1	3.45	54.9	43	1108	363.7	3.05	52.8	40	1061	396.4	2.68	50.6	37	954	410.3	2.32	45.5	31
1202		1298	341.6	3.80	61.9	49	1253	371.5	3.37	59.7	45	1205	404.6	2.98	57.4	42	1155	441.3	2.62	55.1	39	964	414.1	2.33	46.0	28
1302		1387	372.8	3.72	66.1	51	1336	405.9	3.29	63.7	48	1284	442.6	2.90	61.2	45	1228	483.7	2.54	58.5	41	1016	444.8	2.28	48.4	29
1352		1484	433.4	3.42	70.7	48	1429	472.3	3.03	68.1	44	1371	515.5	2.66	65.4	41	1291	551.0	2.34	61.6	37	962	447.8	2.15	45.9	21
1402		1539	402.3	3.83	73.4	51	1484	437.4	3.39	70.8	48	1426	476.6	2.99	68.0	44	1366	519.8	2.63	65.1	41	1087	459.8	2.36	51.8	27
1502		1547	416.8	3.71	73.7	52	1491	453.4	3.29	71.1	49	1433	494.1	2.90	68.3	45	1372	539.5	2.54	65.4	42	1099	484.1	2.27	52.4	28
1702		1871	444.4	3.87	81.9	56	1693	485.6	3.43	79.1	58	1596	527.0	3.03	76.1	54	1530	575.1	2.66	73.0	50	1347	581.9	2.31	64.2	39
252	10	312	84.0	4.01	14.9	19	300	84.4	3.56	14.3	17	288	91.9	3.14	13.8	16	276	100.0	2.76	13.2	15	259	110.4	2.35	12.4	13
302		342	85.8	3.99	16.3	19	329	93.5	3.52	15.7	18	314	101.9	3.09	15.0	16	300	111.3	2.69	14.3	15	280	123.8	2.27	13.4	13
352		376	93.0																							

Cooling capacities, SI system

Unit with option 119 (high energy efficiency)

30XA °C	LWT °C	Entering air temperature, condenser, °C										46														
		25					30					35					40					46				
		CAP kW	UNIT kW	EER	COOL kW/ l/s	COOL kPa	CAP kW	UNIT kW	EER	COOL kW/ l/s	COOL kPa	CAP kW	UNIT kW	EER	COOL kW/ l/s	COOL kPa	CAP kW	UNIT kW	EER	COOL kW/ l/s	COOL kPa	CAP kW	UNIT kW	EER	COOL kW/ l/s	COOL kPa
252	5	272	71.5	3.81	13.0	15	263	77.5	3.40	12.5	14	253	84.0	3.02	12.1	13	243	91.2	2.66	11.6	12	229	100.7	2.28	10.9	11
302		300	78.3	3.83	14.3	16	289	85.1	3.40	13.8	15	277	92.5	3.00	13.2	13	265	100.5	2.63	12.6	12	249	111.2	2.24	11.8	11
352		328	84.8	3.87	15.6	18	316	92.3	3.42	15.0	17	302	100.5	3.01	14.4	16	288	109.2	2.63	13.7	14	269	121.1	2.22	12.8	13
402		389	99.7	3.90	18.5	35	377	107.9	3.49	17.9	33	364	117.0	3.11	17.3	31	350	127.0	2.76	16.7	29	333	140.1	2.38	15.8	27
452		441	115.8	3.81	21.0	38	427	125.9	3.39	20.3	36	412	136.9	3.01	19.6	34	396	148.8	2.66	18.8	32	375	164.7	2.28	17.9	29
502		498	128.0	3.89	23.7	38	482	139.0	3.47	23.0	36	465	151.0	3.08	22.1	33	446	164.0	2.72	21.2	31	422	181.6	2.33	20.1	28
602		609	158.1	3.85	29.0	47	589	171.5	3.44	28.1	44	568	186.2	3.05	27.1	41	547	202.2	2.70	26.0	38	518	223.4	2.32	24.7	35
702		677	166.7	4.06	32.2	38	655	180.7	3.63	31.2	36	632	195.9	3.23	30.1	34	608	212.6	2.86	28.9	31	576	234.8	2.45	27.4	28
752		722	190.7	3.79	34.4	39	699	206.6	3.38	33.3	37	675	224.3	3.01	32.1	34	649	243.9	2.66	30.9	32	617	270.0	2.28	29.4	29
802		786	206.5	3.81	37.4	37	760	223.7	3.40	36.2	35	734	242.9	3.02	34.9	32	706	264.1	2.67	33.6	30	670	292.5	2.29	31.9	27
852		841	211.0	3.99	40.1	41	814	228.4	3.56	38.8	38	785	247.7	3.17	37.4	36	755	269.1	2.80	35.9	34	716	297.7	2.41	34.1	30
902		889	231.9	3.84	42.3	38	860	250.8	3.43	41.0	36	830	272.1	3.05	39.5	34	798	295.6	2.70	38.0	31	758	327.4	2.31	36.1	29
1002		978	257.1	3.80	46.6	38	946	278.0	3.40	45.0	36	912	301.3	3.03	43.4	34	877	327.4	2.68	41.8	31	832	362.3	2.30	39.6	28
1102		1144	287.5	3.98	54.5	44	1107	311.3	3.56	52.7	41	1069	337.5	3.17	50.9	38	1028	366.5	2.80	48.9	36	975	405.1	2.41	46.4	32
1202		1233	324.5	3.80	58.7	45	1193	351.2	3.40	56.8	43	1151	381.0	3.02	54.8	40	1108	413.9	2.68	52.8	37	1052	458.1	2.30	50.1	34
1302		1318	344.8	3.82	62.8	50	1275	373.8	3.41	60.7	47	1230	406.2	3.03	58.6	44	1182	442.0	2.68	56.3	41	1122	490.3	2.29	53.4	37
1352		1441	374.5	3.85	68.6	46	1393	406.2	3.43	66.3	43	1343	441.9	3.04	63.9	40	1290	481.6	2.68	61.4	38	1222	535.0	2.28	58.2	34
1402		1482	376.3	3.94	70.6	48	1434	407.0	3.52	68.3	43	1383	441.0	3.14	65.9	42	1330	479.1	2.78	63.3	39	1263	530.2	2.38	60.1	36
1502		1531	388.4	3.94	72.9	49	1480	420.1	3.52	70.5	46	1427	455.6	3.13	68.0	43	1372	495.3	2.77	65.3	40	1301	548.4	2.37	62.0	37
1702		1681	423.6	3.97	80.1	60	1627	458.6	3.55	77.5	57	1570	497.3	3.16	74.7	53	1509	540.3	2.79	71.9	49	1432	597.8	2.40	68.2	45
252	7	290	73.4	3.95	13.8	17	280	79.5	3.53	13.4	16	270	86.1	3.13	12.9	15	259	93.5	2.77	12.3	14	244	103.1	2.37	11.6	12
302		319	80.7	3.95	15.2	17	307	87.6	3.51	14.7	16	295	95.1	3.10	14.1	15	281	103.3	2.73	13.4	14	265	114.3	2.31	12.6	12
352		349	87.6	3.98	16.6	20	336	95.3	3.52	16.0	19	321	103.6	3.10	15.3	17	306	112.5	2.72	14.6	16	286	125.0	2.29	13.6	14
402		414	102.3	4.05	19.7	39	401	110.6	3.62	19.1	37	387	119.9	3.23	18.5	35	373	130.0	2.87	17.8	32	354	143.3	2.47	16.9	32
452		468	119.5	3.92	22.3	42	453	129.8	3.49	21.6	40	437	141.0	3.10	20.8	37	420	153.2	2.74	20.0	35	398	169.6	2.35	19.0	32
502		529	132.1	4.00	25.2	42	512	143.4	3.57	24.4	39	493	155.6	3.17	23.5	37	473	168.9	2.80	22.6	34	448	187.1	2.40	21.4	31
602		648	163.3	3.97	30.9	52	627	177.0	3.54	29.9	49	605	191.9	3.15	28.9	46	582	208.3	2.80	27.8	43	552	230.0	2.40	26.3	39
702		720	172.0	4.19	34.3	42	696	186.3	3.74	33.2	40	672	201.8	3.33	32.0	37	646	218.8	2.95	30.8	35	612	241.7	2.53	29.2	31
752		768	196.9	3.90	36.6	43	743	213.2	3.49	35.4	41	717	231.2	3.10	34.2	38	689	251.2	2.74	32.9	35	654	277.9	2.36	31.2	32
802		835	213.0	3.92	39.8	41	808	230.7	3.50	38.5	38	779	250.2	3.11	37.1	36	749	271.8	2.76	35.7	33	711	300.8	2.36	33.9	30
852		894	217.9	4.10	42.6	45	864	235.7	3.67	41.2	42	834	255.4	3.26	39.7	40	801	277.3	2.89	38.2	37	760	306.6	2.48	36.2	34
902		944	239.4	3.95	45.0	42	913	258.8	3.53	43.5	40	880	280.4	3.14	42.0	37	846	304.6	2.78	40.3	35	803	337.0	2.38	38.3	31
1002		1039	256.6	3.91	49.5	42	1005	287.0	3.50	47.9	40	968	310.9	3.12	46.2	37	931	337.5	2.76	44.4	35	883	373.3	2.36	42.1	31
1102		1216	297.0	4.09	58.0	48	1176	321.3	3.66	56.1	45	1135	348.1	3.26	54.1	43	1091	377.8	2.89	52.0	40	1035	417.4	2.48	49.4	36
1202		1310	335.2	3.91	62.5	50	1267	362.5	3.50	60.4	47	1223	392.9	3.11	58.3	44	1175	426.7	2.75	56.0	41	1116	471.8	2.37	53.2	37
1302		1400	356.4	3.93	66.8	55	1354	386.2	3.51	64.6	52	1305	419.3	3.11	62.2	48	1254	456.1	2.75	59.8	45	1183	501.8	2.36	56.4	40
1352		1530	388.1	3.94	73.0	51	1478	420.9	3.51	70.5	48	1424	457.4	3.11	67.9	45	1367	498.1	2.74	65.2	41	1253	529.4	2.37	59.8	35
1402		1575	388.8	4.05	75.1	53	1523	420.1	3.63	72.6	50	1468	455.1	3.23	70.0	47	1411	494.0	2.86	67.3	43	1339	546.3	2.45	63.8	39
1502		1626	401.4	4.07	77.5	55	1571	434.0	3.62	74.9	51	1514	470.3	3.22	72.2	48	1454	510.8	2.85	69.3	44	1379	565.3	2.44	65.7	40
1702		1785	437.3	4.08	85.1	67	1727	473.1	3.65	82.3	63	1666	512.7	3.25	79.4	59	1601	556.7	2.88	76.3	54	1519	615.7	2.47	72.4	49
252	10	318	76.3	4.17	15.2	19	307	82.6	3.72	14.7	18	295	89.5	3.30	14.1	17	283	97.0	2.92	13.5	16	267	106.8	2.50	12.7	14
302		349	84.5	4.13	16.7	20	336	91.6	3.67	16.1	19	322	99.3	3.25	15.4	17	308	10								

Cooling capacities, SI system

Unit with high energy efficiency, option 119 for Middle East conditions

		Entering air temperature, condenser, °C												Leaving water temperature, condenser, °C																	
		25						30						35						40						46					
30XA °C	LWT °C	CAP kW		UNIT kW		EER		COOL kW		COOL kPa		CAP kW		UNIT kW		EER		COOL kW		COOL kPa		CAP kW		UNIT kW		EER		COOL kW		COOL kPa	
		kW	kW	kW/ kW	I/s	kPa	kW	kW	kW/ kW	I/s	kPa	kW	kW	kW/ kW	I/s	kPa	kW	kW	kW/ kW	I/s	kPa	kW	kW	kW/ kW	I/s	kPa	kW	kW	kW/ kW	I/s	kPa
252	5	253	84.0	3.02	12.1	13	243	91.2	2.66	11.6	12	229	100.7	2.28	10.9	11	222	105.6	2.10	10.6	10	214	110.8	1.93	10.2	10	228	120.4	1.89	10.8	9
302	277	92.5	3.00	13.2	13	265	100.5	2.63	12.6	12	249	111.2	2.24	11.8	11	240	117.0	2.05	11.4	10	243	129.5	1.88	11.6	11	243	129.5	1.88	11.6	11	
352	302	100.5	3.01	14.4	16	288	109.2	2.63	13.7	14	269	121.1	2.22	12.8	13	260	127.8	2.03	12.4	12	240	138.1	1.87	12.4	12	240	142.5	1.87	12.4	12	
402	364	117.0	3.11	17.3	31	350	127.0	2.76	16.7	29	333	140.1	2.38	15.8	27	324	147.1	2.20	15.4	25	314	154.5	2.03	14.9	24	314	154.5	2.03	14.9	24	
452	412	136.9	3.01	19.6	34	396	148.8	2.66	18.8	32	375	164.7	2.28	17.9	29	364	173.5	2.10	17.3	27	339	172.7	1.96	16.1	24	339	172.7	1.96	16.1	24	
502	465	151.0	3.08	22.1	33	446	164.0	2.72	21.2	31	422	181.6	2.33	20.1	28	410	191.4	2.14	19.5	27	385	195.0	1.98	18.3	24	385	195.0	1.98	18.3	24	
602	568	186.2	3.05	27.1	41	547	202.2	2.70	26.0	38	518	223.4	2.32	24.7	35	503	234.9	2.14	24.0	33	480	242.5	1.98	22.8	30	480	242.5	1.98	22.8	30	
702	632	195.9	3.23	30.1	34	608	212.6	2.86	28.9	31	576	234.8	2.45	27.4	28	560	247.1	2.26	26.6	27	534	255.2	2.09	25.4	25	534	255.2	2.09	25.4	25	
752	675	224.3	3.01	32.1	34	649	243.9	2.66	30.9	32	617	270.0	2.28	29.4	29	600	284.3	2.11	28.6	28	485	247.2	1.96	23.1	19	485	247.2	1.96	23.1	19	
802	734	242.9	3.02	34.9	32	706	264.1	2.67	33.6	30	670	295.2	2.29	31.9	27	652	308.0	2.12	31.0	26	543	274.7	1.98	25.8	19	543	274.7	1.98	25.8	19	
852	785	247.7	3.17	37.4	36	755	269.1	2.80	35.9	34	716	297.7	2.41	34.1	30	696	313.5	2.22	33.1	29	573	281.1	2.04	27.3	20	573	281.1	2.04	27.3	20	
902	830	272.1	3.05	39.5	34	798	295.6	2.70	38.0	31	758	327.4	2.31	36.1	29	737	344.8	2.14	35.1	27	535	270.1	1.98	25.5	15	535	270.1	1.98	25.5	15	
1002	912	301.3	3.03	43.4	34	877	327.4	2.68	41.8	31	832	362.3	2.30	39.6	28	809	381.5	2.12	38.5	27	606	314.3	1.93	28.9	16	606	314.3	1.93	28.9	16	
1102	1069	337.5	3.17	50.9	38	1028	366.5	2.80	48.9	36	975	405.1	2.41	46.4	32	947	426.3	2.22	45.1	31	787	384.4	2.05	37.5	22	787	384.4	2.05	37.5	22	
1202	1151	381.0	3.02	54.8	40	1108	413.9	2.68	52.8	37	1052	458.1	2.30	50.1	34	1023	482.3	2.12	48.7	32	785	400.8	1.96	37.4	20	785	400.8	1.96	37.4	20	
1302	1230	406.2	3.03	58.6	44	1182	442.0	2.68	56.3	41	1122	490.3	2.29	53.4	37	1011	471.4	2.15	48.2	30	862	440.8	1.96	41.1	22	862	440.8	1.96	41.1	22	
1352	1343	441.9	3.04	63.9	40	1290	481.6	2.68	61.4	38	1222	535.0	2.28	58.2	34	934	428.9	2.18	44.5	21	830	423.2	1.96	39.5	17	830	423.2	1.96	39.5	17	
1402	1383	441.0	3.14	65.9	42	1330	479.1	2.78	63.3	39	1263	530.2	2.38	60.1	36	1221	554.1	2.20	58.1	34	914	452.4	2.02	43.5	20	914	452.4	2.02	43.5	20	
1502	1427	455.6	3.13	68.0	43	1372	495.3	2.77	65.3	40	1301	548.4	2.37	62.0	37	1258	574.2	2.19	59.9	34	941	472.6	1.99	44.8	20	941	472.6	1.99	44.8	20	
1702	1570	497.3	3.16	74.7	53	1509	540.3	2.79	71.9	49	1432	597.8	2.40	68.2	45	1391	629.5	2.21	66.3	42	1153	564.6	2.04	54.9	30	1153	564.6	2.04	54.9	30	
252	5.5	257	84.5	3.05	12.3	14	247	91.8	2.69	11.8	13	233	101.3	2.30	11.1	11	225	106.3	2.12	10.7	11	217	111.4	1.95	10.4	10	217	111.4	1.95	10.4	10
302	282	93.1	3.02	13.4	14	269	101.2	2.66	12.6	13	253	112.0	2.26	12.0	11	244	117.8	2.07	11.6	11	231	121.2	1.91	11.0	10	231	121.2	1.91	11.0	10	
352	307	101.3	3.03	14.6	16	292	110.0	2.65	13.9	15	273	122.1	2.24	13.0	13	264	128.8	2.05	12.6	12	244	127.7	1.91	11.6	11	244	127.7	1.91	11.6	11	
402	370	117.7	3.14	17.6	32	356	127.7	2.79	17.0	30	338	140.9	2.40	16.1	27	329	147.9	2.22	15.7	26	319	155.3	2.05	15.2	25	319	155.3	2.05	15.2	25	
452	418	137.9	3.03	19.9	35	402	149.9	2.68	19.1	32	381	165.9	2.29	18.1	29	370	174.7	2.12	17.6	28	333	166.6	2.00	15.8	23	333	166.6	2.00	15.8	23	
502	472	152.1	3.10	22.5	34	453	165.2	2.74	21.6	32	429	183.0	2.34	20.4	29	416	192.8	2.16	19.8	27	383	191.3	2.00	18.2	23	383	191.3	2.00	18.2	23	
602	578	187.6	3.08	27.5	42	556	203.7	2.73	26.5	39	527	225.0	2.34	25.1	36	512	236.7	2.16	24.4	34	488	244.3	2.00	23.2	31	488	252.1	2.12	25.4	25	
702	642	197.3	3.25	30.6	34	617	214.2	2.88	29.4	32	585	236.5	2.47	27.9	29	560	248.9	2.28	27.1	28	534	252.1	2.12	25.4	25	534	252.1	2.12	25.4	25	
752	685	226.1	3.03	32.6	35	659	245.7	2.68	31.4	33	626	272.0	2.30	29.8	30	609	286.3	2.13	29.0	28	485	244.1	1.99	23.1	19	485	244.1	1.99	23.1	19	
802	784	250.9	3.12	37.4	36	754	272.7	2.76	35.9	34	715	301.7	2.37	34.1	31	680	308.5	2.20	32.4	28	585	282.7	2.07	27.9	21	585	282.7	2.07	27.9	21	
852	838	256.2	3.27	40.0	40	806	278.1	2.90	38.4	37	764	307.5	2.48	36.4	34	736	320.1	2.30	35.1	32	608	283.9	2.14	29.0	22	608	283.9	2.14	29.0	22	
902	886	281.2	3.15	42.2	38	851	305.6	2.79	40.6	35	808	338.0	2.39	38.5	32	761	342.8	2.22	36.3	28	581	277.6	2.09	27.7	17	581	322.8	2.03	31.3	18	
1002	974	311.8	3.12	46.4	37	936	338.6	2.76	44.6	35	888	374.4	2.37	42.3	32	850	387.0	2.20	40.5	29	657	322.8	2.03	31.3	18	657	322.8	2.03	31.3	18	
1102	1142	349.2	3.27	54.4	43	1097	378.9	2.90	52.3	40	1041	418.6	2.49	49.6	36	1005	436.8	2.30	47.9	34	819	380.1	2.16	39.1	23	819	380.1	2.16	39.1	23	
1202	1230	394.1	3.12																												

Cooling capacities, Imperial system

Unit with high energy efficiency, option 119 for Middle East conditions

30XA °F	LWT °F	Entering air temperature, condenser, °F										Application data:														
		95					105					115					120					125				
		CAP tons	UNIT kW	EER (Btu/h)W	COOL gpm	COOL ft WG	CAP tons	UNIT kW	EER (Btu/h)W	COOL gpm	COOL ft WG	CAP tons	UNIT kW	EER (Btu/h)W	COOL gpm	COOL ft WG	CAP tons	UNIT kW	EER (Btu/h)W	COOL gpm	COOL ft WG	CAP tons	UNIT kW	EER (Btu/h)W	COOL gpm	COOL ft WG
252	41	72.0	84.0	10.28	172	3.6	68.6	92.0	8.95	164	3.3	64.9	100.7	7.73	155	3.0	62.9	105.3	7.17	150	2.8	60.7	110.0	6.62	145	2.7
302	-	78.8	92.4	10.22	188	3.7	74.7	101.3	8.85	178	3.4	70.3	111.2	7.59	168	3.0	68.0	116.6	7.00	163	2.8	65.6	122.2	6.45	157	2.6
352	-	85.9	100.4	10.27	205	4.3	81.2	110.2	8.85	194	3.9	76.3	121.3	7.55	182	3.5	73.8	127.4	6.95	176	3.3	70.2	131.2	6.42	168	3.0
402	103.5	117.0	10.61	247	8.6	99.2	128.1	9.29	237	8.0	94.6	140.4	8.08	226	7.3	92.1	146.9	7.52	220	7.0	89.5	153.6	6.99	214	6.6	
452	117.1	136.9	10.27	280	9.4	111.9	150.2	8.95	267	8.6	106.5	165.0	7.74	254	7.9	103.6	173.2	7.18	248	7.5	97.6	174.4	6.72	233	6.7	
502	132.2	151.0	10.50	316	9.2	126.2	165.6	9.15	302	8.4	120.0	182.0	7.91	287	7.7	116.6	191.0	7.33	279	7.3	110.8	196.5	6.77	265	6.7	
602	161.7	186.2	10.42	386	11.4	154.7	204.1	9.10	370	10.5	147.3	223.8	7.90	352	9.6	143.3	234.5	7.33	342	9.1	139.2	245.8	6.79	333	8.6	
702	179.8	195.9	11.01	430	12.0	172.0	214.6	9.62	411	8.5	163.7	235.3	8.35	391	7.8	159.3	246.7	7.75	381	7.4	154.7	258.7	7.17	370	7.0	
752	192.0	224.4	10.27	459	9.5	183.9	246.2	8.96	439	8.8	175.2	270.6	7.77	419	8.0	170.7	283.8	7.22	408	7.6	153.3	271.2	6.78	366	6.3	
802	208.8	243.0	10.31	499	8.9	199.9	266.7	9.00	478	8.2	190.5	293.1	7.80	455	7.5	185.6	307.5	7.24	443	7.2	155.1	273.3	6.81	371	5.2	
852	223.3	247.7	10.82	534	9.9	213.7	271.6	9.44	511	9.2	203.5	298.3	8.19	486	8.4	198.1	312.9	7.60	473	8.0	166.2	284.5	7.01	397	5.8	
902	236.1	272.1	10.41	564	9.3	226.6	298.5	9.08	540	8.6	215.3	328.1	7.88	515	7.9	209.8	344.2	7.32	501	7.5	167.6	293.2	6.86	400	5.0	
1002	259.5	301.4	10.33	620	9.3	248.3	330.5	9.02	593	8.6	236.6	363.1	7.82	565	7.8	230.4	380.9	7.26	550	7.5	189.7	338.1	6.73	453	5.2	
1102	304.5	337.9	10.81	728	10.6	291.5	370.3	9.45	696	9.8	277.5	406.3	8.20	663	8.9	270.2	425.9	7.61	646	8.5	225.2	382.7	7.06	538	6.1	
1202	328.2	381.4	10.33	784	11.0	314.3	418.3	9.02	751	10.1	299.6	459.5	7.82	716	9.3	291.9	481.9	7.27	698	8.8	224.8	399.2	6.76	537	5.4	
1302	350.7	406.6	10.35	838	12.0	335.6	446.8	9.01	802	11.1	319.5	491.8	7.80	763	10.1	288.8	471.1	7.36	690	8.4	246.8	438.9	6.75	590	6.2	
1352	382.4	442.4	10.37	914	11.1	365.6	486.7	9.01	873	10.3	347.8	536.5	7.83	831	9.3	265.6	428.0	7.45	635	5.7	236.9	420.9	6.76	566	4.6	
1402	394.4	441.6	10.72	942	11.7	377.5	484.3	9.35	902	10.8	358.9	531.9	8.12	860	9.6	334.8	553.8	7.55	832	9.3	278.2	475.1	7.03	665	6.1	
1502	406.8	456.2	10.70	972	12.0	389.2	500.6	9.33	930	11.0	370.6	550.2	8.08	908	10.1	359.8	573.8	7.51	858	9.5	269.0	470.5	6.86	643	5.6	
1702	447.5	498.0	10.78	1069	14.6	428.3	546.1	9.41	1023	13.4	407.9	599.8	8.16	975	12.2	397.1	629.2	7.57	949	11.6	333.0	567.4	7.04	796	8.3	
252	42	73.3	84.6	10.39	175	3.7	69.9	92.6	9.05	167	3.4	66.1	101.4	7.82	158	3.1	64.1	106.0	7.25	153	2.9	61.9	110.8	6.71	148	2.7
302	-	80.2	93.2	10.32	192	3.8	76.1	102.1	8.94	182	3.5	71.7	112.1	7.67	171	3.1	69.4	117.6	7.08	166	2.9	65.9	120.4	6.57	158	2.7
352	-	87.4	101.3	10.35	209	4.5	82.6	111.1	8.93	197	4.0	77.7	122.4	7.62	186	3.6	75.2	128.6	7.01	180	3.4	70.5	129.6	6.53	169	3.0
402	105.3	117.8	10.73	252	8.9	100.9	129.0	9.39	241	8.2	96.2	141.3	8.18	230	7.5	93.7	147.8	7.61	224	7.2	91.1	154.6	7.08	218	6.8	
452	119.1	138.0	10.36	285	9.6	113.9	151.4	9.03	272	8.9	108.3	166.4	7.81	259	8.1	105.4	174.5	7.25	227	7.7	98.3	173.4	6.82	235	6.8	
502	134.4	152.3	10.59	321	9.4	128.4	166.9	9.23	307	8.7	120.0	183.5	7.98	292	7.9	118.6	192.6	7.39	284	7.5	111.7	195.3	6.87	267	6.7	
602	164.6	187.8	10.52	393	11.7	157.6	205.8	9.19	377	10.8	150.0	225.6	7.98	359	9.9	146.0	236.5	7.41	349	9.4	139.4	243.1	6.88	333	8.6	
702	182.9	197.5	11.11	437	9.5	175.0	216.3	9.71	418	8.8	166.6	237.2	8.43	398	8.0	162.0	248.6	7.82	387	7.6	155.0	255.7	7.27	370	7.0	
752	195.3	223.3	10.36	467	9.7	187.0	248.3	9.04	447	9.0	178.2	272.7	7.84	426	8.2	173.7	286.0	7.29	415	7.9	141.2	247.7	6.84	337	5.4	
802	212.4	245.0	10.40	508	9.2	203.3	268.8	9.08	486	8.5	193.7	295.4	7.87	463	7.8	188.7	309.9	7.31	451	7.4	158.0	275.3	6.89	378	5.3	
852	227.2	249.9	10.91	543	10.2	217.4	273.9	9.52	520	9.4	206.9	300.8	8.26	495	8.6	201.4	315.5	7.66	481	8.2	169.3	286.6	7.09	405	6.0	
902	240.1	274.4	10.50	574	9.6	229.7	301.0	9.16	549	8.8	218.9	330.8	7.94	523	8.1	213.3	346.5	7.38	510	7.7	170.7	295.3	6.94	408	5.1	
1002	264.0	304.0	10.42	631	9.5	252.5	333.3	9.09	604	8.8	240.5	366.1	7.88	575	8.1	232.4	384.0	7.32	560	7.7	176.9	314.9	6.74	423	4.6	
1102	309.6	340.8	10.90	740	10.9	296.4	373.4	9.53	708	10.1	283.2	409.7	8.27	675	9.2	274.8	429.4	7.68	657	8.7	229.6	385.5	7.15	549	6.3	
1202	333.7	384.7	10.41	781	11.3	319.6	421.8	9.09	764	10.4	304.6	463.2	7.89	728	9.5	296.8	485.8	7.33	709	9.1	229.5	402.0	6.85	548	5.6	
1302	356.5	410.2	10.43	852	12.4	341.1	450.6	9.08	815	11.4	324.8	496.0	7.86	776	10.4	293.9	474.8	7.43	702	8.6	251.8	442.1	6.84	602	5.5	
1352	388.8	446.6	10.45	929	11.5	371.7	491.3	9.08	888	10.5	349.8	533.7	7.87	836	9.4	271.4	431.4	7.55	649	5.9	242.2	423.9	6.86	579	4.8	
1402	401.1	445.5	10.80	959	12.0	383.9	484.8	9.43	918	11.1	365.8	536.4	8.18	874	10.1	352.0	554.1	7.62	841	9.4	267.2	453.6	7.07	639	5.7	
1502	413.7	460.3	10.79	989	12.3	395.7	504.9	9.40	946	11.3	376.7	549.5	8.15	900	10.4	363.3	575.2	7.58	868	9.7	274.8	473.3	6.96	657	5.8	
1702	477.4	515.3	11.13	1144	16.3	457.3	564.6	9.72	1094	15.0	435.4	619.8	8.43	1042	13.7	416.6	635.8	7.86	997	12.6	350.3	568.1	7.40	838	9.1	
252	50	83.9	89.5	11.25	201	4.7	80.0	97.9	9.80	192	4.3	75.7	107.0	8.49	181	3.9	73.4	111.8	7.88	176	3.7	71.0</td				



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