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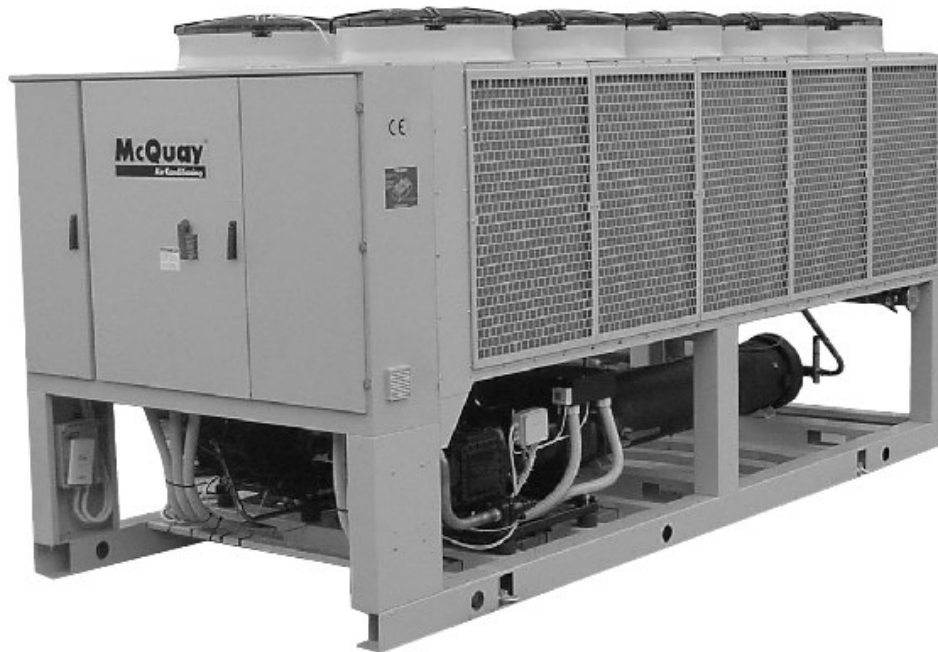
Air cooled screw chillers

ALS “E” 163.2÷460.4

Standard Efficiency – Cooling capacity from 584 to 1641 kW

High Efficiency – Cooling capacity from 616 to 1736 kW

50Hz – Refrigerant: HFC 134a



McQuay is participating in the Eurovent Certification Programme. Product are as listed in the Eurovent Directory of Certified Products and on the web site www.eurovent-certification.com



McQuay[®]
Air Conditioning

New air cooled screw chillers McQuay ALS “E”

McQuay International introduces their newest air cooled screw chillers equipped with new single screw compressors.

McQuay air cooled ALS “E” are a new range of chillers using the last generation of McQuay StarGate™ Frame 4 single screw compressors. They are manufactured by McQuay to satisfy the requirements of the consultants and the end user. McQuay ALS “E” units are designed to minimise energy costs while maximising the refrigeration capacities. Once again McQuay has developed a line of chillers unsurpassed in performance and quality that will meet the most stringent requirements of comfort cooling, ice storage and process applications.

McQuay’s chiller design experience, combined with outstanding features makes the ALS “E” chiller unmatched in the industry.

Lower noise – higher flexibility

The McQuay original compressor design with a single screw and twin rotors allows a constant gas flow. This compression process completely eliminates gas pulsations. The oil injection also results in significant mechanical noise reduction.

The twin gas compressor discharge chambers are designed to act as attenuators, based on the harmonic wave principle with destructive interference, thus always resulting almost equal to zero. The extremely low noise compressor performance allows the use of ALS chiller for all applications.

The reduced level of vibrations produced from the ALS chillers offers a surprisingly quiet operation eliminating the noise transmission through the structure and the chilled water piping system.

Code requirements

All ALS units are designed and manufactured in accordance with applicable selections of the following which are equivalent to American Air-conditioning industry applicable codes:

Rating of chillers: EN 12055.

Construction of pressure vessel: TUV Standards (on request).

Electrical codes: IEC 204-1 CEI 44-5 Elect. & Safety Codes

Safety Codes: CEI-EN 60204–1 Codes.

Manufacturing Quality Stds: ISO 9001:2000.

Infinitely variable capacity control

Cooling capacity control is infinitely variable by means of a capacity slide controlled by microprocessor system. Each unit has infinitely variable capacity control from 100% down to 6.25% (four compressors units), to 8.3% (three compressors units) to 12.5% (two compressors units). This modulation allows the compressor capacity to exactly match the building cooling load. The result is a decrease in chiller energy costs, particularly at the part-load conditions at which the chiller operates most of the time.

Additionally, in some case there should be the possibility to avoid inertial tank in the water circuit.

8 different lines

New ALS line is available with two different efficiencies in order to satisfy every kind of requirements.

Acoustic flexibility up to 65 dBA thanks to different noise level versions:

- **SE Standard Efficiency** with COP up to **3,1** (nominal condition-only compressor power input).
 - **ST** Standard noise – 79,0 ÷ 80,5 dBA
 - **LN** Low noise – 73,5 ÷ 76,0 dBA
 - **XN** Extra low noise – 71,5 ÷ 72,0 dBA
 - **XXN** Super quiet – 65,0 ÷ 66,5 dBA

- **XE High Efficiency** with COP up to **3,4** (nominal condition-only compressor power input).
Also suitable for all high ambient application.
 - **ST** Standard noise – 79,0 ÷ 80,5 dBA
 - **LN** Low noise – 73,5 ÷ 76,0 dBA
 - **XN** Extra low noise – 71,5 ÷ 72,0 dBA
 - **XXN** Super quiet – 65,0 ÷ 66,5 dBA

ST – Standard version with additional base frame for compressors and oil separators installed on rubber isolators to eliminate the vibrations.

LN – Version with additional base frame for compressors and oil separators installed on rubber isolators to eliminate the vibrations. Discharge flexible pipes and condenser fans rotating at fixed low speed.

XN – The main components are the same of LN version (same cooling capacity) but to reduce the sound level the compressors, the oil separators and delivery and suction pipes are located inside a cabinet which is sound insulated with highly absorbent acoustic material. Discharge flexible pipes and condenser fans rotating at fixed low speed are supplied as standard.

XXN The main components are the same of LN version (same cooling capacity) but to reduce the sound level the compressors, the oil separators and delivery and suction pipes are located inside a cabinet which is sound insulated with highly absorbent acoustic material. Discharge flexible pipes, condenser fans rotating at extremely low speed and fan speed control device are supplied as standard.

Unmatched serviceability

Field serviceability has not been sacrificed. Inspection covers allows visual inspection of the main screw and gaterotors.

Outstanding reliability features

Full factory testing of all the units ensures a trouble free start-up. Extensive test makes certain that each safety and operating control is properly adjusted, and operates correctly.

General characteristics

Cabinet and structure

The cabinet of ALS units is made of galvanized steel sheet and painted to provide a high resistance to corrosion. The unit base frame has holes to lift the unit with ropes for an easy installation. The weight is uniformly distributed along the profiles of the base and this facilitates the arrangement of the unit. For the units XN & XXN the compressors and the oil separators are located inside a cabinet that is sound insulated in order to reduce their noise.

Screw compressors

The newest Stargate™ single-screw compressor has a well balanced compression mechanism which cancels the screw rotor load in both the radial and axial directions. Inherent to the basic single-screw compressor design is the virtually load-free operation, that gives main bearing design life of 3-4 times greater than twin-screws, and eliminates expensive and complicated thrust balancing schemes. The two exactly opposed gaterotors create two exactly opposed compression cycles. Compression is made at the lower and upper parts of the screw rotor at the same time, thus cancelling the radial loads. Also, both ends of the screw rotor are subjected to suction pressure only, which cancels the axial loads and eliminates the huge thrust loads inherent in twin-screw compressors.

Oil injection is used for these compressors in order to get high COP at high condensing pressure. ALS units are provided with an high efficiency oil separator to maximise oil extraction. Compressors have an infinitely variable capacity control down to 25% of its total capacity. This control is made by means of capacity slides controlled by microprocessors.

Standard start is star-delta type; Soft start type is available (as option) in order to have lower inrush current.

Ecological HFC 134a refrigerant

McQuay has designed and optimized Stargate™ compressors to operate with HFC 134a, ecological refrigerant with zero ODP (Ozone Depletion Potential) and very low GWP (Global Warming Potential) that means low TEWI (Total Equivalent Warming Impact).

Evaporator

The units is supplied with new optimised counter-flow evaporator single refrigerant pass. It is direct expansion (2 evaporators for units with 4 compressors) with refrigerant inside the tubes and water outside (shell side) with carbon steel tube sheets, with straight copper tubes that are spirally wound internally for higher efficiencies, expanded on the tube plates. The external shell, is linked with an electrical heater to prevent freezing to -28 C ambient temperature, commanded by a thermostat and is covered with a closed cell insulation material. Each evaporator have 2 or 3 refrigerant circuits one for each compressor. Each evaporator is manufactured in accordance to PED approval.

Condenser coils

The new ALS units are constructed with internally enhanced seamless copper tubes arranged in a staggered row pattern and mechanically expanded into McQuay lanced and rippled aluminium condenser fins with full fin collars. An integral subcooler circuit provides sub-cooling to effectively eliminate liquid flashing and increases in cooling capacity without increasing the power input.

Condenser coil fans

The condenser fans are helical type with wing-profile blades to achieve a better performance. The direct coupling with the electrical motor eliminates any problems with regard to the application of transmission devices reducing vibrations caused by the functioning. The three-phase type motors are supplied as standard with IP54 protection (Insulation class F); they are protected against overloading and short circuits by circuit breakers located inside the electrical control panel.

Electronic expansion valve

ALS air cooled chiller is equipped with the most advanced electronic expansion valve to achieve precise control of refrigerant mass flow. As today's system requires improved energy efficiency, tighter temperature control, wider range of operating conditions and incorporate new features like remote monitoring and diagnostics, the application of electronic expansion valves becomes mandatory. ALS's electronic expansion valve proposes features that makes it unique: short opening and closing time, high resolution, positive shut-off function to eliminate use of additional solenoid valve, highly linear flow capacity, continuous modulation of mass flow without stress in the refrigerant circuit and corrosion resistance stainless steel body.

Electrical control panel

Power and control are located into two sections of the main panel that is manufactured to insure protection for all weather conditions.

The power panel is fitted with an interlocked door main isolator to prevent access while power supply is on. Electrical panel is IP54.

Power section includes - The power section includes contactors, all compressors fuses, fans magneto-thermal relays, and control circuit transformer. Additional space is provided for an easy installation of the various optional accessories provided to enhance the ALS units capabilities.

Certifications

All the ALS units are CE marked (89/392). McQuay Italia obtained ISO 9001:2000.

Water content in cooling circuits

The cooled water distribution circuits should have a minimum water content to avoid excessive compressors start and stop.

In fact, each time the compressor starts up, an excessive quantity of oil goes from the compressor sump and simultaneously there is a rise in the temperature of the compressor motor's stator due to the inrush current during the start-up. To prevent damage to the compressors, McQuay has envisaged the application of a device to limit frequent stops and restarts.

During the span of one hour there will be no more than 6 starts of the compressor. The plant side should therefore ensure that the overall water content allows a more constant functioning of the unit and consequently greater environmental comfort. The minimum installation water content envisaged should be calculated with a certain approximation using this simplified formula:

$$(1) \quad Q = 35,83 \times \frac{P \text{ (kW)}}{\Delta T \text{ (}^\circ\text{C)}} \times \frac{1}{N}$$

where:

Q = Minimum content of the plant expressed in litres

P = Cooling capacity of the plant expressed in kW

ΔT = Entering/leaving water temperature difference of the evaporator expressed in $^\circ\text{C}$

N = Number of compressors.

For a more accurate determination of the quantity of water, it is advisable to contact the designer of the plant.

MicroTech II C Plus controller

MicroTech II C Plus controller is installed as standard on all the units; it can be used to modify unit set points and check control parameters. A display illustrates the machine's operating status, programable values and setpoints e.g. temperatures, and pressures of fluids (water, refrigerant). Device controls maximise the McQuay chillers energy efficiency and reliability characteristics. It uses sophisticated software with predictive logic to select the most energy efficient combination of compressor, EEXV and condenser fan to keep stable operating conditions and maximise energy efficiency. The compressors are automatically rotated to ensure equal operating hours. MicroTech II protects critical components in response to external signals from its system sensors measuring: motor temperatures, refrigerant gas and oil pressures, correct phases sequence and phase loss.

Control section - main features:

- Management of the compressor capacity slide and the EEX valve according to the distributed multiprocessor logic system
- Chillers enabled to work in partial failure condition thanks to the distributed multiprocessor logic system
- Full routine operation at condition of:
 - High ambient temperature value
 - High thermal load
 - High evaporator entering water temperature (start-up)
- Display of evaporator entering/leaving water temperature
- Display of condensing-evaporating temperature and pressure, suction and discharge superheat temperature for each circuit
- Leaving water cooled temperature regulation. Temperature tolerance $\pm 0,1$ °C
- Compressors and evaporator/condenser pumps hours counter
- Display of Status Safety Devices
- Start up numbers and compressors working hours equalization
- Excellent management of compressors load
- Cooling tower's fans management according to condensing pressure
- Automatic re-start in case of power supply interruption (adjustable)
- Soft Load
- Return Reset
- AOT Reset
- Setpoint Reset
- Demand limit or Current limit (optional)
- Speedtrol control (optional)

Safety for each refrigerant circuit

High pressure (pressure switch)

Low pressure (pressure switch)

Compressor overload (optional)

Condensation fan Magneto-thermal

High Discharge Temperature on the compressor

Phase Monitor

Star / Delta Transition Failed

Low Delta Pressure between Suction and Discharge

Low pressure ratio

High oil pressure drop

Low oil pressure

System security

Phase monitor
Freeze protection
An evaporator's flow controller input (stops the unit)
Remote on/off input.

Regulation type

Proportional + integral + derivative regulation on the input probe of the evaporator water leaving temperature.

Condensation

The condensation can be carried out according to temperature or pressure. The fans can be managed according to ON/OFF mode or with a 0/10 V modulating signal.

MicroTech II C Plus terminal

The MicroTech II C Plus terminal has following features:

- 4-lines by 20-character liquid crystal display back lighted
- Key-pad consisting of 15 keys "clear language display"
- Memory to protect the data
- General faults alarm led
- 4-level password access to modify the setting
- Service report displaying all running hours and general conditions
- Memorized alarm history to facilitate the fault's analysis.

MicroPlant™:

Solution for: tele-maintenance and supervisory systems

MicroTech II C Plus can be monitored locally or via modem by MicroPlant™ supervision program, that runs on PC systems under Windows '95 – '98.

MicroPlant™ is the best solution:

- To centralise all the information in just one local and/or remote PC
- To check all the parameters for each unit connected
- Data logging of temperature - pressure
- Printouts of alarms, parameters and graphs
- To control several plants located in different geographical areas from a central station
- To manage the Service centers



MicroPlant™ allows:

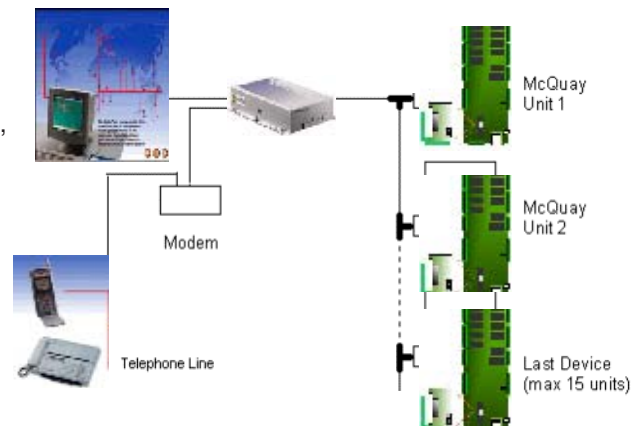
- Visualization of all working conditions for each controller
- Visualization of their graphics
- Display, print-out of the actual alarms
- Connection between local and remote computer via telephone line (Modem)
- Units ON / OFF
- Set point change.



MicroTech II C Plus remote control

Compatibility with supervisory systems is becoming increasingly important in HVAC. MicroTech II C Plus allows easy interfacing with BMS (Building Management Systems), the external world that can be:

- Full compatible Siemens, Johnson;
- Every MODBUS compatible system;
(Satchwell, Honeywell)
- BacNet point to point, ECHELON FTT10
(available on request)



Standard Accessories (furnished on basic unit)

Star Delta Compressors starter – For low inrush current and reduced starting torque.

Thermal relays fans – Safety devices against fans motor overloading.

Phase monitor – The phase monitor controls that phases sequence is correct and controls the phase loss.

Evaporator electric heater – Electric heater controlled by a thermostat to protect the evaporator from freezing down to -28°C ambient temperature.

Evaporator connection water side Victaulic – Hydraulic joint with gasket for an easy and quick water connection.

Alarm from external device – Microprocessor is able to receive an alarm signal from an external device (pump etc...). User can decide if this alarm signal will stop or not the unit.

General fault relay – Contactor for the alarm warning.

Discharge line shut off valves.

Options (on request)

100% total heat recovery (R) – Produced with shell and tube heat exchangers to produce hot water up to +55° C. The heat exchangers are mounted on the refrigerant circuits parallel to the condenser coils to remove all the condensation heat.

25% partial heat recovery (D) – Produced with plate to plate heat exchangers installed between the compressor discharge and the condenser coil. These allow hot water to be produced up to a maximum temperature of +55°C.

Brine double set point version (CB) - Dual leaving glycol mixture temperature setpoints. The lower setpoint can go down to -8°C. This function allows to change the Set Point between 2 preimposed values. In case of evaporator leaving water temperature below 4°C is recommended to choice also the 20mm thicked evaporator insulation option.

Compressor thermal overload relays – Safety devices against compressor motor overloading in addition to the normal protection envisaged by the electrical windings.

Ammeter and voltmeter - Digital meters of unit drawn amperes and voltage values, installed on the electrical control panel.

Absorbed Current Limit / Display – This options allows to monitor the chiller absorbed current with possibility to set a limit value. This option excludes the Demand Limit.

Condenser power factor correction - Installed on the electrical control panel to ensure it conforms to the plant rules. (McQuay advises maximum 0,9).

100 Pa lift fans – For all the applications where a higher fans lift is required (not available for LN, XN and XXN version).

250 Pa lift fans – For all the applications where a higher fans lift is required (not available for LN, XN and XXN version).

Fan speed control device - This device allows the continuous variation of the fan speed, modifying the air flow according to the external temperature conditions. It allows the unit working with air temperature down to -10°C .

Fan Silent Mode - The microprocessor clock switches the fan at low speed according to the client setting (i.e. Night & Day), providing that the ambient temperature/condensing pressure is allowing the speed change. It allows a perfect condensing control down to -10°C .

Speedtrol – Continuous fan speed modulation on the first fan of each circuit. It allows the unit working with air temperature down to -18°C .

Condenser coil guards - Metal protection guards fixed on all the external surface of the condenser coils.

Evaporator area guards – Metal protection guards around evaporator area.

Cu-Cu condensing coils - To give better protection against corrosion by aggressive environments.

Cu-Cu-Sn condensing coils - To give better protection against corrosion in aggressive environments and by salty air.

Alucoat condensing coils - Fins are protected by a special acrylic paint with a high resistance to corrosion.

20mm thicked evaporator insulation – Useful in really heavy operating conditions.

Flow switch - Supplied separately to be wired and installed on the evaporator water piping (by the customer).

Suction line shut off valve – Suction shut-off valve installed on the suction port of the compressor to facilitate maintenance operation.

Spreader bars - Facilitate the lifting of the units keeping the ropes away from the unit's casing.

Rubber type antivibration mounts - Supplied separately, these are positioned under the base of the unit during installation. Ideal to reduce the vibrations when the unit is floor mounted.

Witness tests - The units are normally tested at the test bench prior to the shipment. On request, a second test can be carried out, at customer's presence, in accordance with the procedures indicated on the test form. (Not available for units with Glycol mixtures).

Soft start – Electronic starting device to reduce inrush current. An overload protection is included (no need of compressors thermal relays).

Over / Under Voltage – Phase monitor to control the minimum and maximum voltage value.

Water circulation pump – The pump is unit mounted. Hydronic kit consists of: one centrifugal pump direct driven, expansion tank, water feed circuit with pressure gauge, safety valve. The pump motor is protected by a circuit breaker installed in control panel. The kit is assembled and wired to the control panel.

Two water circulation pumps – Pumps units are unit mounted. Hydronic kit consists of: two centrifugal pumps direct driven, expansion tank, water feed circuit with pressure gauge, safety valve, check valves, shut-off valves. The pumps motors are protected by circuit breakers installed in control panel. The kit is assembled and wired to the control panel.

Note: Spring type isolators (usually used with reciprocating chillers) are not recommended for the new ALS chiller because McQuay Frame 4 screw compressors do not generate low frequency vibrations.

Installation notes

Handling

Care should be taken to avoid rough handling or shock due to dropping the unit. Do not push or pull the unit from anything other than the base, and block the pushing vehicle away from the unit to prevent damage to the cabinet. Never allow the unit fall during unloading or moving as this may result in serious damage. To lift the unit, holes are provided in the base of the unit. Spreader bar and cables should be arranged to prevent damage to the condenser coil or unit cabinet.

Location

The ALS units are produced for outside installation on roofs, floors or below ground level on condition that the area is free from obstacles for the passage of the condenser air. The unit should be positioned on solid foundations and perfectly level; in the case of installation on roofs or floors, it may be advisable to arrange the use of suitable weight distribution beams. When the units are installed on the ground, a concrete base at least 250 mm wider and

longer than the unit's footprint should be laid. Furthermore, this base should withstand the unit weight mentioned in the technical data table. When the units are positioned in areas which are easily accessible by persons or animals, it is advisable to fit guards to protect the condenser coil guards and, when necessary, also guards to protect the evaporator area.

Space requirements

The ALS units are air-cooled, hence it is important to observe the minimum distances which guarantee the best ventilation of the condenser coils. Limitations of space reducing the air flow could cause significant reductions in cooling capacity and an increase in electricity consumption.

To determinate unit placement, careful consideration must be given to assure a sufficient air flow across the condenser heat transfer surface. Two conditions must be avoided to achieve the best performance: warm air recirculation and coil starvation.

Both these conditions cause an increase of condensing pressures that results in reductions in unit efficiency and capacity. The ALS chiller performance is less affected in poor air flow situations because of its special condensing coil geometry.

Moreover McQuay's unique microprocessor has the ability to calculate the operating environment of the chiller and the capacity to optimize its performance staying on-line during abnormal conditions.

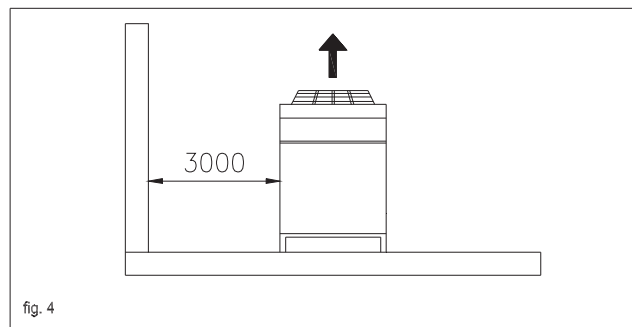
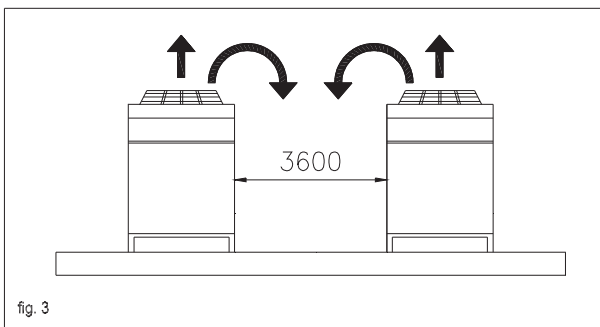
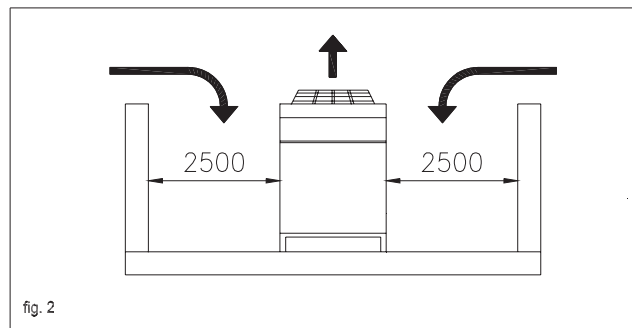
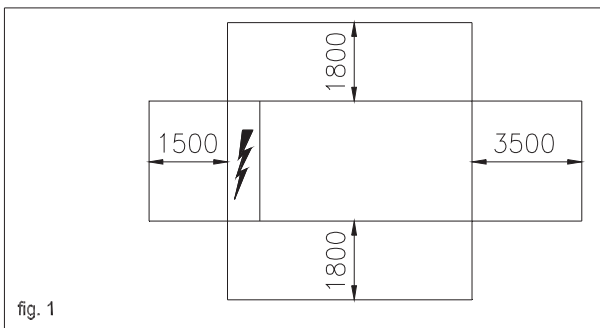
Each side of the unit must be accessible after installation for periodic service. Fig.1 shows you minimum recommended clearance requirements.

Vertical condenser air discharge must be unobstructed because the unit would have its capacity and efficiency significantly reduced.

If the units are positioned in places surrounded by walls or obstacles of the same height as the units, the units should be at least 2500 mm from obstacles (fig.2). In the event the obstacles are higher than the units, the units should be at least 3000 mm from the obstacle (fig.4). Units installed closer than the minimum recommended distance to a wall or other vertical riser may experience a combination of coil starvation and warm air recirculation, thus causing reduction in unit capacity and efficiency reductions. Once again, the microprocessor will allow the chiller to stay on line, producing the maximum available capacity, even at less than recommended lateral clearances.

When two or more units are positioned side by side it is recommended that the condenser coils are at least 3600 mm distance from one another (fig.3); strong wind could be the cause of air warm recirculation.

For other installation solutions, consult McQuay technicians.



Acoustic protection

The low noise levels of the ALS units means that they meet the most restrictive regulations, thanks to the availability of four versions with different sound levels. When the noise level must meet special requirements it will be necessary to pay the maximum attention to ensure the perfect insulation of the unit from the support base by applying appropriate vibration-dampening devices, applying vibration-dampening mounts on the water pipes and on the electrical connections.

Table 1 – Operating limits – ALS “E” SE

| Unit version | | ST | LN | XN | XXN |
|---|----|---------|---------|---------|---------|
| Max ambient temperature | °C | +44 | +40 | +40 | +40 (1) |
| Min ambient temperature | °C | +10 (2) | +10 (2) | +10 (2) | -10 (3) |
| Max leaving evaporator water temperature | °C | +10 | +10 | +10 | +10 |
| Min leaving evap. water temp.(without glycol) | °C | +4 | +4 | +4 | +4 |
| Min leaving evap. water temp.(with glycol) | °C | -8 | -8 | -8 | -8 |
| Max evaporator ΔT | °C | 8 | 8 | 8 | 8 |
| Min evaporator ΔT | °C | 4 | 4 | 4 | 4 |

- Note:** (1) When air temperature is higher than +32°C fan speed control device (standard on XXN units) sets up speed rotation increasing cooling capacity and sound pressure level.
(2) When air temperature is lower than +10°C you need the fan speed control device. It allows the unit working with air temperature down to -10°C. Speedtrol allows to reach -18°C.
(3) Fan speed control device is standard furnished on the XXN units.

Table 2 – Operating limits – ALS “E” XE

| Unit version | | ST | LN | XN | XXN |
|---|----|---------|---------|---------|---------|
| Max ambient temperature | °C | +48 | +44 | +44 | +40 |
| Min ambient temperature | °C | +10 (2) | +10 (2) | +10 (2) | -10 (3) |
| Max leaving evaporator water temperature | °C | +10 | +10 | +10 | +10 |
| Min leaving evap. water temp.(without glycol) | °C | +4 | +4 | +4 | +4 |
| Min leaving evap. water temp.(with glycol) | °C | -8 | -8 | -8 | -8 |
| Max evaporator ΔT | °C | 8 | 8 | 8 | 8 |
| Min evaporator ΔT | °C | 4 | 4 | 4 | 4 |

- Note:** (2) When air temperature is lower than +10°C you need the fan speed control device. It allows the unit working with air temperature down to -10°C. Speedtrol allows to reach -18°C.
(3) Fan speed control device is standard furnished on the XXN units.

Table 3 – Evaporator fouling factors

| Fouling factors m ² °C / kW | Cooling capacity correction factor | Power input correction factor | COP correction factor |
|---|---------------------------------------|----------------------------------|--------------------------|
| 0,0176 | 1,000 | 1,000 | 1,000 |
| 0,0440 | 0,978 | 0,986 | 0,992 |
| 0,0880 | 0,957 | 0,974 | 0,983 |
| 0,1320 | 0,938 | 0,962 | 0,975 |

Table 4 – Altitude correction factors

| Elvation above sea level (m) | 0 | 300 | 600 | 900 | 1200 | 1500 | 1800 |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Barometric pressure (mbar) | 1013 | 977 | 942 | 908 | 875 | 843 | 812 |
| Cooling cap.correction factor | 1,000 | 0,993 | 0,986 | 0,979 | 0,973 | 0,967 | 0,960 |
| Power input correction factor | 1,000 | 1,005 | 1,009 | 1,015 | 1,021 | 1,026 | 1,031 |

Table 5 – Ethylene glycol and low ambient temperature correction factors

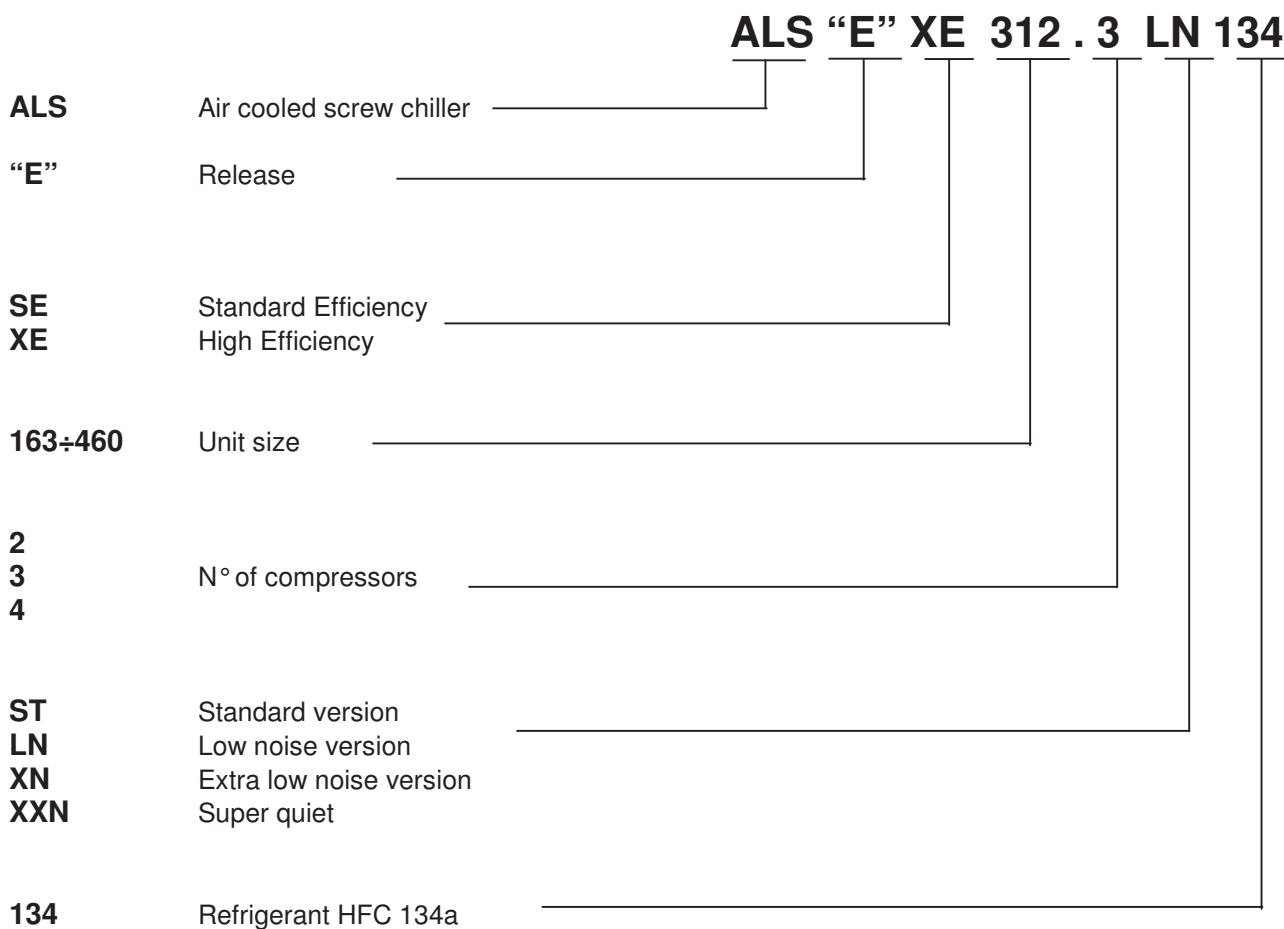
| Air ambient temperature °C | -3 | -8 | -15 | -23 | -35 |
|--|-------|-------|-------|-------|-------|
| % of ethylene glycol by weight | 10 | 20 | 30 | 40 | 50 |
| Cooling capacity correction factor | 0,991 | 0,982 | 0,972 | 0,961 | 0,946 |
| Power input correction factor | 0,996 | 0,992 | 0,986 | 0,976 | 0,966 |
| Flow rate correction factor | 1,013 | 1,040 | 1,074 | 1,121 | 1,178 |
| Water pressure drops correction factor | 1,070 | 1,129 | 1,181 | 1,263 | 1,308 |

Table 6 – Low temperature operation performance factors

| Ethylene glycol/water leaving temperature °C | 2 | 0 | -2 | -4 | -6 | -8 |
|--|-------|-------|-------|-------|-------|-------|
| Max air ambient temperature °C (SE-ST) | 40 | 39 | 38 | 37 | 36 | 35 |
| Max air ambient temp. °C (SE-LN/XN/XXN) | 36 | 35 | 34 | 33 | 32 | 31 |
| Max air ambient temperature °C (XE-ST) | 44 | 43 | 42 | 41 | 40 | 39 |
| Max air ambient temperature °C (XE-LN/XN) | 40 | 39 | 38 | 37 | 36 | 35 |
| Max air ambient temperature °C (XE-XXN) | 36 | 35 | 34 | 33 | 32 | 31 |
| Cooling capacity correction factor | 0,842 | 0,785 | 0,725 | 0,670 | 0,613 | 0,562 |
| Power input compressors correction factor | 0,95 | 0,94 | 0,92 | 0,89 | 0,87 | 0,84 |
| Min. % of ethylene glycol | 10 | 20 | 20 | 30 | 30 | 30 |

Low temperature operation performance factors must be applied to the nominal performance data to have the adjusted value (12/7°C, design ambient temperature).

Nomenclature



Physical data ALS “E” SE ST HFC 134a

| | | | | | | | |
|------------------------------------|------------|--------------|--------------|--------------|--------------|--------------|------------------|
| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 212.2 | 229.2 | 240.3 (*) |
| Cooling capacity (1) | kW | 584 | 640 | 700 | 761 | 817 | 884 |
| Power input (1) | kW | 195 | 211 | 225 | 244 | 263 | 294 |
| COP | | 3,00 | 3,03 | 3,12 | 3,12 | 3,11 | 3,01 |
| McQuay Screw compressors | No. | 2 | 2 | 2 | 2 | 2 | 3 |
| Refrigerant circuits | No. | 2 | 2 | 2 | 2 | 2 | 3 |
| Refrigerant charge HFC 134a | kg | 90 | 99 | 108 | 118 | 128 | 135 |
| Oil charge | l | 28 | 28 | 28 | 28 | 28 | 42 |
| Min % of capacity reduction | % | 12,5% | 12,5% | 12,5% | 12,5% | 12,5% | 8,3% |

Condenser fans

| | | | | | | | |
|--|------------------------|-------|-------|--------|--------|--------|--------|
| No. of fans / nominal power fan | kW | 8/1,7 | 9/1,7 | 10/1,7 | 11/1,7 | 12/1,7 | 12/1,7 |
| Fan speed | rpm | 860 | 860 | 860 | 860 | 860 | 860 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m³/s | 42,2 | 47,5 | 52,8 | 58,1 | 63,3 | 63,3 |

Evaporator

| | | | | | | | |
|-----------------------------------|--------------|-------|-------|-------|-------|-------|-------|
| Evaporators / water volume | No./l | 1/261 | 1/254 | 1/254 | 1/246 | 1/246 | 1/424 |
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 168,3 | 168,3 | 168,3 | 168,3 | 168,3 | 219,1 |

Condenser coil

| | |
|------------------|---|
| Coil type | Lanced fins – Internally spiral wound tubes |
|------------------|---|

Weight and dimensions

| | | | | | | | |
|---------------------------------------|-----------|------|------|------|------|------|------|
| Standard unit shipping weight | kg | 4350 | 4510 | 4650 | 4916 | 5140 | 6646 |
| Standard unit operating weight | kg | 4560 | 4730 | 4860 | 5180 | 5394 | 7086 |
| Unit length | mm | 5310 | 5310 | 5310 | 6210 | 6210 | 7400 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 |

| | | | | | | |
|------------------------------------|------------|--------------|--------------|--------------|--------------|--------------|
| ALS Unit Size | | 260.3 | 279.3 | 296.3 | 312.3 | 327.3 |
| Cooling capacity (1) | kW | 937 | 988 | 1057 | 1109 | 1165 |
| Power input (1) | kW | 307 | 324 | 335 | 357 | 375 |
| COP | | 3,05 | 3,05 | 3,15 | 3,11 | 3,11 |
| McQuay Screw compressors | No. | 3 | 3 | 3 | 3 | 3 |
| Refrigerant circuits | No. | 3 | 3 | 3 | 3 | 3 |
| Refrigerant charge HFC 134a | kg | 144 | 153 | 162 | 172 | 182 |
| Oil charge | l | 42 | 42 | 42 | 42 | 42 |
| Min % of capacity reduction | % | 8,3% | 8,3% | 8,3% | 8,3% | 8,3% |

Condenser fans

| | | | | | | |
|--|------------------------|--------|--------|--------|--------|--------|
| No. of fans / nominal power fan | kW | 14/1,7 | 14/1,7 | 16/1,7 | 16/1,7 | 18/1,7 |
| Fan speed | rpm | 860 | 860 | 860 | 860 | 860 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m³/s | 73,9 | 73,9 | 86,0 | 84,5 | 89,7 |

Evaporator

| | | | | | | |
|-----------------------------------|--------------|-------|-------|-------|-------|-------|
| Evaporators / water volume | No./l | 1/415 | 1/415 | 1/415 | 1/402 | 1/402 |
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 219,1 | 219,1 | 219,1 | 219,1 | 219,1 |

Condenser coil

| | |
|------------------|---|
| Coil type | Lanced fins – Internally spiral wound tubes |
|------------------|---|

Weight and dimensions

| | | | | | | |
|---------------------------------------|-----------|------|------|------|------|------|
| Standard unit shipping weight | kg | 6940 | 6785 | 7120 | 7120 | 7430 |
| Standard unit operating weight | kg | 7360 | 7200 | 7540 | 7540 | 7870 |
| Unit length | mm | 8300 | 7400 | 8300 | 8300 | 9200 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 |

Note: (1) Nominal cooling capacity and power input are based on: 12/7 °C entering/leaving evaporator water temperature; 35 °C ambient temperature. The power input is for compressor only.

(*) In absence of foot-print limitations, ALS XE 229.2 ST guarantees the same cooling capacity at lower price.

Physical data ALS “E” SE ST HFC 134a

| ALS Unit Size | | 344.3 | 355.4 (*) | 393.4 | 426.4 | 460.4 |
|-----------------------------|-----|-------|-----------|-------|-------|-------|
| Cooling capacity (1) | kW | 1226 | 1264 | 1403 | 1520 | 1641 |
| Power input (1) | kW | 394 | 421 | 451 | 488 | 527 |
| COP | | 3,11 | 3,00 | 3,11 | 3,11 | 3,12 |
| McQuay Screw compressors | No. | 3 | 4 | 4 | 4 | 4 |
| Refrigerant circuits | No. | 3 | 4 | 4 | 4 | 4 |
| Refrigerant charge HFC 134a | kg | 192 | 198 | 216 | 236 | 256 |
| Oil charge | l | 42 | 56 | 56 | 56 | 56 |
| Min % of capacity reduction | % | 8,3% | 6,25% | 6,25% | 6,25% | 6,25% |

Condenser fans

| No. of fans / nominal power fan | kW | 18/1,7 | 18/1,7 | 20/1,7 | 22/1,7 | 24/1,7 |
|---------------------------------|-------------------|--------|--------|--------|--------|--------|
| Fan speed | rpm | 860 | 860 | 860 | 860 | 860 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m ³ /s | 95,0 | 95,0 | 105,6 | 116,1 | 126,7 |

Evaporator

| Evaporators / water volume | No./l | 1/402 | 2/261+254 | 2/254+254 | 2/254+246 | 2/246+246 |
|----------------------------|-------|-------|-----------|-----------|-----------|-----------|
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 219,1 | 168,3 | 168,3 | 168,3 | 168,3 |

Condenser coil

| | | | | | | |
|-----------|---|--|--|--|--|--|
| Coil type | Lanced fins – Internally spiral wound tubes | | | | | |
|-----------|---|--|--|--|--|--|

Weight and dimensions

| | | | | | | |
|--------------------------------|----|------|-------|-------|-------|-------|
| Standard unit shipping weight | kg | 7430 | 9062 | 9172 | 9552 | 10632 |
| Standard unit operating weight | kg | 7870 | 9478 | 9588 | 10024 | 11140 |
| Unit length | mm | 9200 | 10100 | 10100 | 11000 | 11900 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 |

Note: (1) Nominal cooling capacity and power input are based on: 12/7 °C entering/leaving evaporator water temperature; 35°C ambient temperature. The power input is for compressor only.

(*) In absence of foot-print limitations, ALS XE 344.3 ST guarantees the same cooling capacity at lower price.

Electrical data ALS “E” SE ST HFC 134a

| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 212.2 | 229.2 | 240.3 |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|-------|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 392 | 414 | 436 | 471 | 502 | 588 |
| Max compressor current (3) | A | 410 | 435 | 460 | 501 | 542 | 618 |
| Fans current | A | 32 | 36 | 40 | 44 | 48 | 48 |
| Max unit current (3) | A | 442 | 471 | 500 | 545 | 590 | 666 |
| Max unit inrush current (4) | A | 810 | 814 | 834 | 838 | 867 | 973 |
| Max unit current for wires sizing (5) | A | 478 | 530 | 582 | 625 | 668 | 717 |

| ALS Unit Size | | 260.3 | 279.3 | 296.3 | 312.3 | 327.3 | |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|--|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 614 | 632 | 658 | 688 | 726 | |
| Max compressor current (3) | A | 641 | 664 | 687 | 730 | 773 | |
| Fans current | A | 56 | 56 | 64 | 64 | 72 | |
| Max unit current (3) | A | 697 | 720 | 751 | 794 | 845 | |
| Max unit inrush current (4) | A | 981 | 998 | 1022 | 1022 | 1055 | |
| Max unit current for wires sizing (5) | A | 773 | 821 | 877 | 916 | 963 | |

| ALS Unit Size | | 344.3 | 355.4 | 393.4 | 426.4 | 460.4 | |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|--|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 756 | 828 | 872 | 938 | 1004 | |
| Max compressor current (3) | A | 816 | 870 | 920 | 1002 | 1084 | |
| Fans current | A | 72 | 72 | 80 | 88 | 96 | |
| Max unit current (3) | A | 888 | 942 | 1000 | 1090 | 1180 | |
| Max unit inrush current (4) | A | 1079 | 1227 | 1251 | 1284 | 1292 | |
| Max unit current for wires sizing (5) | A | 1002 | 1060 | 1164 | 1250 | 1336 | |

Notes: (1) Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.

(2) Nominal current are based on: 12/7 °C entering/leaving evaporator water temperature and 35°C ambient temp.

(3) Maximum current are based on: 14/9 °C entering/leaving evaporator water temperature and 44°C ambient temp.

(4) Inrush current of biggest compressor + 75 % of nominal absorbed current of the other compressor + fans current.

(5) Compressor FLA + fans current.

Physical data ALS “E” SE LN HFC 134a

| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 212.2 | 229.2 | 240.3 (*) |
|-----------------------------|-----|-------|-------|-------|-------|-------|-----------|
| Cooling capacity (1) | kW | 542 | 606 | 670 | 730 | 784 | 820 |
| Power input (1) | kW | 211 | 226 | 240 | 262 | 283 | 317 |
| COP | | 2,58 | 2,68 | 2,79 | 2,78 | 2,77 | 2,59 |
| McQuay Screw compressors | No. | 2 | 2 | 2 | 2 | 2 | 3 |
| Refrigerant circuits | No. | 2 | 2 | 2 | 2 | 2 | 3 |
| Refrigerant charge HFC 134a | kg | 90 | 99 | 108 | 118 | 128 | 135 |
| Oil charge | l | 28 | 28 | 28 | 28 | 28 | 42 |
| Min % of capacity reduction | % | 12,5% | 12,5% | 12,5% | 12,5% | 12,5% | 8,3% |

Condenser fans

| | | | | | | | |
|---------------------------------|-------------------|------|------|------|------|------|------|
| No. of fans / nominal power fan | kW | 8/1 | 9/1 | 10/1 | 11/1 | 12/1 | 12/1 |
| Fan speed | rpm | 680 | 680 | 680 | 680 | 680 | 680 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m ³ /s | 32,4 | 36,4 | 40,5 | 44,5 | 48,6 | 48,6 |

Evaporator

| | | | | | | | |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|
| Evaporators / water volume | No./l | 1/261 | 1/254 | 1/254 | 1/246 | 1/246 | 1/424 |
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 168,3 | 168,3 | 168,3 | 168,3 | 168,3 | 219,1 |

Condenser coil

| | | | | | | | |
|-----------|---|--|--|--|--|--|--|
| Coil type | Lanced fins – Internally spiral wound tubes | | | | | | |
|-----------|---|--|--|--|--|--|--|

Weight and dimensions

| | | | | | | | |
|--------------------------------|----|------|------|------|------|------|------|
| Standard unit shipping weight | kg | 4350 | 4510 | 4650 | 4916 | 5140 | 6646 |
| Standard unit operating weight | kg | 4560 | 4730 | 4860 | 5180 | 5394 | 7086 |
| Unit length | mm | 5310 | 5310 | 5310 | 6210 | 6210 | 7400 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 |

| ALS Unit Size | | 260.3 | 279.3 | 296.3 | 312.3 | 327.3 |
|-----------------------------|-----|-------|-------|-------|-------|-------|
| Cooling capacity (1) | kW | 890 | 945 | 1016 | 1062 | 1116 |
| Power input (1) | kW | 326 | 346 | 356 | 383 | 403 |
| COP | | 2,73 | 2,73 | 2,85 | 2,77 | 2,77 |
| McQuay Screw compressors | No. | 3 | 3 | 3 | 3 | 3 |
| Refrigerant circuits | No. | 3 | 3 | 3 | 3 | 3 |
| Refrigerant charge HFC 134a | kg | 144 | 153 | 162 | 172 | 182 |
| Oil charge | l | 42 | 42 | 42 | 42 | 42 |
| Min % of capacity reduction | % | 8,3% | 8,3% | 8,3% | 8,3% | 8,3% |

Condenser fans

| | | | | | | |
|---------------------------------|-------------------|------|------|------|------|------|
| No. of fans / nominal power fan | kW | 14/1 | 14/1 | 16/1 | 16/1 | 18/1 |
| Fan speed | rpm | 680 | 680 | 680 | 680 | 680 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m ³ /s | 57,9 | 56,7 | 66,0 | 64,8 | 68,8 |

Evaporator

| | | | | | | |
|----------------------------|-------|-------|-------|-------|-------|-------|
| Evaporators / water volume | No./l | 1/415 | 1/415 | 1/415 | 1/402 | 1/402 |
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 219,1 | 219,1 | 219,1 | 219,1 | 219,1 |

Condenser coil

| | | | | | | |
|-----------|---|--|--|--|--|--|
| Coil type | Lanced fins – Internally spiral wound tubes | | | | | |
|-----------|---|--|--|--|--|--|

Weight and dimensions

| | | | | | | |
|--------------------------------|----|------|------|------|------|------|
| Standard unit shipping weight | kg | 6940 | 6785 | 7120 | 7120 | 7430 |
| Standard unit operating weight | kg | 7360 | 7200 | 7540 | 7540 | 7870 |
| Unit length | mm | 8300 | 7400 | 8300 | 8300 | 9200 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 |

Note: (1) Nominal cooling capacity and power input are based on: 12/7 °C entering/leaving evaporator water temperature; 35 °C ambient temperature. The power input is for compressor only.

(*) In absence of foot-print limitations, ALS XE 229.2 LN guarantees the same cooling capacity at lower price.

Physical data ALS “E” SE LN HFC 134a

| ALS Unit Size | | 344.3 | 355.4 (*) | 393.4 | 426.4 | 460.4 |
|-----------------------------|-----|-------|-----------|-------|-------|-------|
| Cooling capacity (1) | kW | 1175 | 1210 | 1343 | 1457 | 1573 |
| Power input (1) | kW | 425 | 450 | 483 | 524 | 568 |
| COP | | 2,77 | 2,69 | 2,78 | 2,78 | 2,77 |
| McQuay Screw compressors | No. | 3 | 4 | 4 | 4 | 4 |
| Refrigerant circuits | No. | 3 | 4 | 4 | 4 | 4 |
| Refrigerant charge HFC 134a | kg | 192 | 198 | 216 | 236 | 256 |
| Oil charge | l | 42 | 56 | 56 | 56 | 56 |
| Min % of capacity reduction | % | 8,3% | 6,25% | 6,25% | 6,25% | 6,25% |

Condenser fans

| No. of fans / nominal power fan | kW | 18/1 | 18/1 | 20/1 | 22/1 | 24/1 |
|---------------------------------|-------------------|------|------|------|------|------|
| Fan speed | rpm | 680 | 680 | 680 | 680 | 680 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m ³ /s | 72,9 | 72,9 | 80,9 | 89,0 | 97,1 |

Evaporator

| Evaporators / water volume | No./l | 1/402 | 2/261+254 | 2/254+254 | 2/254+246 | 2/246+246 |
|----------------------------|-------|-------|-----------|-----------|-----------|-----------|
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 219,1 | 168,3 | 168,3 | 168,3 | 168,3 |

Condenser coil

| | | | | | | |
|-----------|---|--|--|--|--|--|
| Coil type | Lanced fins – Internally spiral wound tubes | | | | | |
|-----------|---|--|--|--|--|--|

Weight and dimensions

| | | | | | | |
|--------------------------------|----|------|-------|-------|-------|-------|
| Standard unit shipping weight | kg | 7430 | 9062 | 9172 | 9552 | 10632 |
| Standard unit operating weight | kg | 7870 | 9478 | 9588 | 10024 | 11140 |
| Unit length | mm | 9200 | 10100 | 10100 | 11000 | 11900 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 |

Note: (1) Nominal cooling capacity and power input are based on: 12/7 °C entering/leaving evaporator water temperature; 35°C ambient temperature. The power input is for compressor only.

(*) In absence of foot-print limitations, ALS XE 344.3 ST guarantees the same cooling capacity at lower price.

Electrical data ALS “E” SE LN HFC 134a

| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 212.2 | 229.2 | 240.3 |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|-------|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 394 | 416 | 438 | 474 | 510 | 594 |
| Max compressor current (3) | A | 416 | 443 | 470 | 504 | 538 | 624 |
| Fans current | A | 16 | 18 | 20 | 22 | 24 | 24 |
| Max unit current (3) | A | 432 | 461 | 490 | 526 | 562 | 648 |
| Max unit inrush current (4) | A | 795 | 797 | 815 | 817 | 846 | 951 |
| Max unit current for wires sizing (5) | A | 462 | 512 | 562 | 603 | 644 | 693 |

| ALS Unit Size | | 260.3 | 279.3 | 296.3 | 312.3 | 327.3 | |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|--|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 618 | 638 | 662 | 701 | 733 | |
| Max compressor current (3) | A | 651 | 678 | 705 | 739 | 773 | |
| Fans current | A | 28 | 28 | 32 | 32 | 34 | |
| Max unit current (3) | A | 679 | 706 | 737 | 771 | 807 | |
| Max unit inrush current (4) | A | 955 | 971 | 992 | 992 | 1021 | |
| Max unit current for wires sizing (5) | A | 745 | 793 | 845 | 884 | 925 | |

| ALS Unit Size | | 344.3 | 355.4 | 393.4 | 426.4 | 460.4 | |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|--|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 765 | 832 | 876 | 948 | 1020 | |
| Max compressor current (3) | A | 807 | 886 | 940 | 1008 | 1076 | |
| Fans current | A | 36 | 36 | 40 | 44 | 48 | |
| Max unit current (3) | A | 843 | 922 | 980 | 1052 | 1124 | |
| Max unit inrush current (4) | A | 1050 | 1197 | 1218 | 1249 | 1253 | |
| Max unit current for wires sizing (5) | A | 966 | 1024 | 1124 | 1206 | 1288 | |

Notes: (1) Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.

(2) Nominal current are based on: 12/7 °C entering/leaving evaporator water temperature and 35°C ambient temp.

(3) Maximum current are based on: 14/9 °C entering/leaving evaporator water temperature and 40°C ambient temp.

(4) Inrush current of biggest compressor + 75 % of nominal absorbed current of the other compressor + fans current.

(5) Compressor FLA + fans current.

Physical data ALS “E” SE XN HFC 134a

| | | | | | | | |
|------------------------------------|------------|--------------|--------------|--------------|--------------|--------------|------------------|
| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 212.2 | 229.2 | 240.3 (*) |
| Cooling capacity (1) | kW | 542 | 606 | 670 | 730 | 784 | 820 |
| Power input (1) | kW | 211 | 226 | 240 | 262 | 283 | 317 |
| COP | | 2,58 | 2,68 | 2,79 | 2,78 | 2,77 | 2,59 |
| McQuay Screw compressors | No. | 2 | 2 | 2 | 2 | 2 | 3 |
| Refrigerant circuits | No. | 2 | 2 | 2 | 2 | 2 | 3 |
| Refrigerant charge HFC 134a | kg | 90 | 99 | 108 | 118 | 128 | 135 |
| Oil charge | l | 28 | 28 | 28 | 28 | 28 | 42 |
| Min % of capacity reduction | % | 12,5% | 12,5% | 12,5% | 12,5% | 12,5% | 8,3% |

Condenser fans

| | | | | | | | |
|--|------------------------|------|------|------|------|------|------|
| No. of fans / nominal power fan | kW | 8/1 | 9/1 | 10/1 | 11/1 | 12/1 | 12/1 |
| Fan speed | rpm | 680 | 680 | 680 | 680 | 680 | 680 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m³/s | 32,4 | 36,4 | 40,5 | 44,5 | 48,6 | 48,6 |

Evaporator

| | | | | | | | |
|-----------------------------------|--------------|-------|-------|-------|-------|-------|-------|
| Evaporators / water volume | No./l | 1/261 | 1/254 | 1/254 | 1/246 | 1/246 | 1/424 |
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 168,3 | 168,3 | 168,3 | 168,3 | 168,3 | 219,1 |

Condenser coil

| | |
|------------------|---|
| Coil type | Lanced fins – Internally spiral wound tubes |
|------------------|---|

Weight and dimensions

| | | | | | | | |
|---------------------------------------|-----------|------|------|------|------|------|------|
| Standard unit shipping weight | kg | 4590 | 4810 | 4890 | 5156 | 5380 | 7036 |
| Standard unit operating weight | kg | 4800 | 5030 | 5100 | 5420 | 5634 | 7476 |
| Unit length | mm | 5310 | 5310 | 5310 | 6210 | 6210 | 7400 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 |

| | | | | | | |
|------------------------------------|------------|--------------|--------------|--------------|--------------|--------------|
| ALS Unit Size | | 260.3 | 279.3 | 296.3 | 312.3 | 327.3 |
| Cooling capacity (1) | kW | 890 | 945 | 1016 | 1062 | 1116 |
| Power input (1) | kW | 326 | 346 | 356 | 383 | 403 |
| COP | | 2,73 | 2,73 | 2,85 | 2,77 | 2,77 |
| McQuay Screw compressors | No. | 3 | 3 | 3 | 3 | 3 |
| Refrigerant circuits | No. | 3 | 3 | 3 | 3 | 3 |
| Refrigerant charge HFC 134a | kg | 144 | 153 | 162 | 172 | 182 |
| Oil charge | l | 42 | 42 | 42 | 42 | 42 |
| Min % of capacity reduction | % | 8,3% | 8,3% | 8,3% | 8,3% | 8,3% |

Condenser fans

| | | | | | | |
|--|------------------------|------|------|------|------|------|
| No. of fans / nominal power fan | kW | 14/1 | 14/1 | 16/1 | 16/1 | 18/1 |
| Fan speed | rpm | 680 | 680 | 680 | 680 | 680 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m³/s | 57,9 | 56,7 | 66,0 | 64,8 | 68,8 |

Evaporator

| | | | | | | |
|-----------------------------------|--------------|-------|-------|-------|-------|-------|
| Evaporators / water volume | No./l | 1/415 | 1/415 | 1/415 | 1/402 | 1/402 |
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 219,1 | 219,1 | 219,1 | 219,1 | 219,1 |

Condenser coil

| | |
|------------------|---|
| Coil type | Lanced fins – Internally spiral wound tubes |
|------------------|---|

Weight and dimensions

| | | | | | | |
|---------------------------------------|-----------|------|------|------|------|------|
| Standard unit shipping weight | kg | 7390 | 7235 | 7570 | 7570 | 7880 |
| Standard unit operating weight | kg | 7810 | 7650 | 7990 | 7990 | 8320 |
| Unit length | mm | 8300 | 7400 | 8300 | 8300 | 9200 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 |

Note: (1) Nominal cooling capacity and power input are based on: 12/7 °C entering/leaving evaporator water temperature; 35°C ambient temperature. The power input is for compressor only.

(*) In absence of foot-print limitations, ALS XE 229.2 XN guarantees the same cooling capacity at lower price.

Physical data ALS “E” SE XN HFC 134a

| ALS Unit Size | | 344.3 | 355.4 (*) | 393.4 | 426.4 | 460.4 |
|-----------------------------|-----|-------|-----------|-------|-------|-------|
| Cooling capacity (1) | kW | 1175 | 1210 | 1343 | 1457 | 1573 |
| Power input (1) | kW | 425 | 450 | 483 | 524 | 568 |
| COP | | 2,77 | 2,69 | 2,78 | 2,78 | 2,77 |
| McQuay Screw compressors | No. | 3 | 4 | 4 | 4 | 4 |
| Refrigerant circuits | No. | 3 | 4 | 4 | 4 | 4 |
| Refrigerant charge HFC 134a | kg | 192 | 198 | 216 | 236 | 256 |
| Oil charge | l | 42 | 56 | 56 | 56 | 56 |
| Min % of capacity reduction | % | 8,3% | 6,25% | 6,25% | 6,25% | 6,25% |

Condenser fans

| No. of fans / nominal power fan | kW | 18/1 | 18/1 | 20/1 | 22/1 | 24/1 |
|---------------------------------|-------------------|------|------|------|------|------|
| Fan speed | rpm | 680 | 680 | 680 | 680 | 680 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m ³ /s | 72,9 | 72,9 | 80,9 | 89,0 | 97,1 |

Evaporator

| Evaporators / water volume | No./l | 1/402 | 2/261+254 | 2/254+254 | 2/254+246 | 2/246+246 |
|----------------------------|-------|-------|-----------|-----------|-----------|-----------|
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 219,1 | 168,3 | 168,3 | 168,3 | 168,3 |

Condenser coil

| | | | | | | |
|-----------|---|--|--|--|--|--|
| Coil type | Lanced fins – Internally spiral wound tubes | | | | | |
|-----------|---|--|--|--|--|--|

Weight and dimensions

| | | | | | | |
|--------------------------------|----|------|-------|-------|-------|-------|
| Standard unit shipping weight | kg | 7880 | 9542 | 9652 | 10032 | 11112 |
| Standard unit operating weight | kg | 8320 | 9958 | 10068 | 10504 | 11620 |
| Unit length | mm | 9200 | 10100 | 10100 | 11000 | 11900 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 |

Note: (1) Nominal cooling capacity and power input are based on: 12/7 °C entering/leaving evaporator water temperature; 35°C ambient temperature. The power input is for compressor only.

(*) In absence of foot-print limitations, ALS XE 344.3 ST guarantees the same cooling capacity at lower price.

Electrical data ALS “E” SE XN HFC 134a

| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 212.2 | 229.2 | 240.3 |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|-------|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 394 | 416 | 438 | 474 | 510 | 594 |
| Max compressor current (3) | A | 416 | 443 | 470 | 504 | 538 | 624 |
| Fans current | A | 16 | 18 | 20 | 22 | 24 | 24 |
| Max unit current (3) | A | 432 | 461 | 490 | 526 | 562 | 648 |
| Max unit inrush current (4) | A | 795 | 797 | 815 | 817 | 846 | 951 |
| Max unit current for wires sizing (5) | A | 462 | 512 | 562 | 603 | 644 | 693 |

| ALS Unit Size | | 260.3 | 279.3 | 296.3 | 312.3 | 327.3 | |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|--|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 618 | 638 | 662 | 701 | 733 | |
| Max compressor current (3) | A | 651 | 678 | 705 | 739 | 773 | |
| Fans current | A | 28 | 28 | 32 | 32 | 34 | |
| Max unit current (3) | A | 679 | 706 | 737 | 771 | 807 | |
| Max unit inrush current (4) | A | 955 | 971 | 992 | 992 | 1021 | |
| Max unit current for wires sizing (5) | A | 745 | 793 | 845 | 884 | 925 | |

| ALS Unit Size | | 344.3 | 355.4 | 393.4 | 426.4 | 460.4 | |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|--|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 765 | 832 | 876 | 948 | 1020 | |
| Max compressor current (3) | A | 807 | 886 | 940 | 1008 | 1076 | |
| Fans current | A | 36 | 36 | 40 | 44 | 48 | |
| Max unit current (3) | A | 843 | 922 | 980 | 1052 | 1124 | |
| Max unit inrush current (4) | A | 1050 | 1197 | 1218 | 1249 | 1253 | |
| Max unit current for wires sizing (5) | A | 966 | 1024 | 1124 | 1206 | 1288 | |

Notes: (1) Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.

(2) Nominal current are based on: 12/7 °C entering/leaving evaporator water temperature and 35°C ambient temp.

(3) Maximum current are based on: 14/9 °C entering/leaving evaporator water temperature and 40°C ambient temp.

(4) Inrush current of biggest compressor + 75 % of nominal absorbed current of the other compressor + fans current.

(5) Compressor FLA + fans current.

Physical data ALS “E” SE XXN HFC 134a

| | | | | | | | |
|------------------------------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|
| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 212.2 | 229.2 | 240.3 |
| Cooling capacity (1) | kW | 554 | 612 | 666 | 728 | 779 | 844 |
| Power input (1) | kW | 220 | 237 | 253 | 280 | 305 | 322 |
| COP | | 2,51 | 2,58 | 2,64 | 2,60 | 2,56 | 2,62 |
| McQuay Screw compressors | No. | 2 | 2 | 2 | 2 | 2 | 3 |
| Refrigerant circuits | No. | 2 | 2 | 2 | 2 | 2 | 3 |
| Refrigerant charge HFC 134a | kg | 98 | 107 | 116 | 126 | 136 | 147 |
| Oil charge | l | 28 | 28 | 28 | 28 | 28 | 42 |
| Min % of capacity reduction | % | 12,5% | 12,5% | 12,5% | 12,5% | 12,5% | 8,3% |

Condenser fans

| | | | | | | | |
|--|------------------------|--------|--------|--------|--------|--------|--------|
| No. of fans / nominal power fan | kW | 10/0,3 | 11/0,3 | 12/0,3 | 13/0,3 | 14/0,3 | 16/0,3 |
| Fan speed | rpm | 500 | 500 | 500 | 500 | 500 | 500 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m³/s | 25,6 | 28,2 | 30,8 | 33,3 | 35,9 | 42,1 |

Evaporator

| | | | | | | | |
|-----------------------------------|--------------|-------|-------|-------|-------|-------|-------|
| Evaporators / water volume | No./l | 1/261 | 1/254 | 1/254 | 1/246 | 1/246 | 1/424 |
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 168,3 | 168,3 | 168,3 | 168,3 | 168,3 | 219,1 |

Condenser coil

| | | | | | | | |
|------------------|---|--|--|--|--|--|--|
| Coil type | Lanced fins – Internally spiral wound tubes | | | | | | |
|------------------|---|--|--|--|--|--|--|

Weight and dimensions

| | | | | | | | |
|---------------------------------------|-----------|------|------|------|------|------|------|
| Standard unit shipping weight | kg | 4890 | 5105 | 5319 | 5410 | 5530 | 7570 |
| Standard unit operating weight | kg | 5100 | 5310 | 5524 | 5664 | 5784 | 7990 |
| Unit length | mm | 5310 | 6210 | 6210 | 7110 | 7110 | 8300 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 |

| | | | | | | | |
|------------------------------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|
| ALS Unit Size | | 260.3 | 279.3 | 296.3 | 312.3 | 327.3 | 344.3 |
| Cooling capacity (1) | kW | 884 | 940 | 993 | 1082 | 1121 | 1154 |
| Power input (1) | kW | 346 | 362 | 377 | 398 | 433 | 440 |
| COP | | 2,56 | 2,60 | 2,63 | 2,72 | 2,59 | 2,62 |
| McQuay Screw compressors | No. | 3 | 3 | 3 | 3 | 3 | 3 |
| Refrigerant circuits | No. | 3 | 3 | 3 | 3 | 3 | 3 |
| Refrigerant charge HFC 134a | kg | 156 | 165 | 174 | 184 | 194 | 204 |
| Oil charge | l | 42 | 42 | 42 | 42 | 42 | 42 |
| Min % of capacity reduction | % | 8,3% | 8,3% | 8,3% | 8,3% | 8,3% | 8,3% |

Condenser fans

| | | | | | | | |
|--|------------------------|--------|--------|--------|--------|--------|--------|
| No. of fans / nominal power fan | kW | 16/0,3 | 18/0,3 | 18/0,3 | 20/0,3 | 20/0,3 | 22/0,3 |
| Fan speed | rpm | 500 | 500 | 500 | 500 | 500 | 500 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m³/s | 41,0 | 43,6 | 46,1 | 51,3 | 51,3 | 56,4 |

Evaporator

| | | | | | | | |
|-----------------------------------|--------------|-------|-------|-------|-------|-------|-------|
| Evaporators / water volume | No./l | 1/415 | 1/415 | 1/415 | 1/402 | 1/402 | 1/402 |
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 219,1 | 219,1 | 219,1 | 219,1 | 219,1 | 219,1 |

Condenser coil

| | | | | | | | |
|------------------|---|--|--|--|--|--|--|
| Coil type | Lanced fins – Internally spiral wound tubes | | | | | | |
|------------------|---|--|--|--|--|--|--|

Weight and dimensions

| | | | | | | | |
|---------------------------------------|-----------|------|------|------|-------|-------|-------|
| Standard unit shipping weight | kg | 7570 | 7880 | 7880 | 8334 | 8334 | 8660 |
| Standard unit operating weight | kg | 7990 | 8320 | 8320 | 8724 | 8724 | 9100 |
| Unit length | mm | 8300 | 9200 | 9200 | 10100 | 10100 | 11000 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 |

Note: (1) Nominal cooling capacity and power input are based on: 12/7 °C entering/leaving evaporator water temperature; 32 °C ambient temperature. The power input is for compressor only.

Electrical data ALS “E” SE XXN HFC 134a

| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 212.2 | 229.2 | 240.3 |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|-------|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 414 | 439 | 468 | 512 | 556 | 605 |
| Max compressor current (3) | A | 440 | 473 | 506 | 558 | 610 | 660 |
| Fans current | A | 10 | 11 | 12 | 13 | 14 | 16 |
| Max unit current (3) | A | 450 | 484 | 518 | 571 | 624 | 676 |
| Max unit inrush current (4) | A | 796 | 797 | 819 | 820 | 854 | 958 |
| Max unit current for wires sizing (5) | A | 456 | 505 | 554 | 594 | 634 | 685 |

| ALS Unit Size | | 260.3 | 279.3 | 296.3 | 312.3 | 327.3 | 344.3 |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|-------|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 640 | 666 | 702 | 733 | 791 | 818 |
| Max compressor current (3) | A | 693 | 726 | 759 | 811 | 863 | 895 |
| Fans current | A | 16 | 18 | 18 | 20 | 20 | 22 |
| Max unit current (3) | A | 709 | 744 | 777 | 831 | 883 | 917 |
| Max unit inrush current (4) | A | 958 | 980 | 1000 | 1002 | 1035 | 1070 |
| Max unit current for wires sizing (5) | A | 733 | 783 | 831 | 872 | 911 | 952 |

- Notes:** (1) Allowed voltage tolerance $\pm 10\%$. Voltage unbalance between phases must be within $\pm 3\%$.
(2) Nominal current are based on: 12/7 °C entering/leaving evaporator water temperature and 35°C ambient temp.
(3) Maximum current are based on: 14/9 °C entering/leaving evaporator water temperature and 40°C ambient temp.
(4) Inrush current of biggest compressor + 75 % of nominal absorbed current of the other compressor + fans current.
(5) Compressor FLA + fans current.

Physical data ALS “E” XE ST HFC 134a

| | | | | | | | |
|------------------------------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|
| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 212.2 | 229.2 | 240.3 |
| Cooling capacity (1) | kW | 616 | 677 | 737 | 808 | 864 | 926 |
| Power input (1) | kW | 190 | 204 | 217 | 237 | 254 | 283 |
| COP | | 3,24 | 3,32 | 3,39 | 3,42 | 3,40 | 3,27 |
| McQuay Screw compressors | No. | 2 | 2 | 2 | 2 | 2 | 3 |
| Refrigerant circuits | No. | 2 | 2 | 2 | 2 | 2 | 3 |
| Refrigerant charge HFC 134a | kg | 98 | 107 | 116 | 126 | 136 | 147 |
| Oil charge | l | 28 | 28 | 28 | 28 | 28 | 42 |
| Min % of capacity reduction | % | 12,5% | 12,5% | 12,5% | 12,5% | 12,5% | 8,3% |

Condenser fans

| | | | | | | | |
|--|------------------------|--------|--------|--------|--------|--------|--------|
| No. of fans / nominal power fan | kW | 10/1,7 | 11/1,7 | 12/1,7 | 13/1,7 | 14/1,7 | 16/1,7 |
| Fan speed | rpm | 860 | 860 | 860 | 860 | 860 | 860 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m³/s | 52,8 | 58,1 | 63,3 | 68,6 | 73,9 | 86,7 |

Evaporator

| | | | | | | | |
|-----------------------------------|--------------|-------|-------|-------|-------|-------|-------|
| Evaporators / water volume | No./l | 1/261 | 1/254 | 1/254 | 1/246 | 1/246 | 1/424 |
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 168,3 | 168,3 | 168,3 | 168,3 | 168,3 | 219,1 |

Condenser coil

| | |
|------------------|---|
| Coil type | Lanced fins – Internally spiral wound tubes |
|------------------|---|

Weight and dimensions

| | | | | | | | |
|---------------------------------------|-----------|------|------|------|------|------|------|
| Standard unit shipping weight | kg | 4650 | 4865 | 5079 | 5170 | 5290 | 7120 |
| Standard unit operating weight | kg | 4860 | 5070 | 5284 | 5424 | 5544 | 7540 |
| Unit length | mm | 5310 | 6210 | 6210 | 7110 | 7110 | 8300 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 |

| | | | | | | |
|------------------------------------|------------|--------------|--------------|--------------|--------------|--------------|
| ALS Unit Size | | 260.3 | 279.3 | 296.3 | 312.3 | 327.3 |
| Cooling capacity (1) | kW | 981 | 1043 | 1103 | 1188 | 1250 |
| Power input (1) | kW | 298 | 312 | 324 | 343 | 365 |
| COP | | 3,29 | 3,34 | 3,40 | 3,46 | 3,42 |
| McQuay Screw compressors | No. | 3 | 3 | 3 | 3 | 3 |
| Refrigerant circuits | No. | 3 | 3 | 3 | 3 | 3 |
| Refrigerant charge HFC 134a | kg | 156 | 165 | 174 | 184 | 194 |
| Oil charge | l | 42 | 42 | 42 | 42 | 42 |
| Min % of capacity reduction | % | 8,3% | 8,3% | 8,3% | 8,3% | 8,3% |

Condenser fans

| | | | | | | |
|--|------------------------|--------|--------|--------|--------|--------|
| No. of fans / nominal power fan | kW | 16/1,7 | 18/1,7 | 18/1,7 | 20/1,7 | 20/1,7 |
| Fan speed | rpm | 860 | 860 | 860 | 860 | 860 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m³/s | 84,5 | 100,6 | 95,0 | 105,6 | 105,6 |

Evaporator

| | | | | | | |
|-----------------------------------|--------------|-------|-------|-------|-------|-------|
| Evaporators / water volume | No./l | 1/415 | 1/415 | 1/415 | 1/402 | 1/402 |
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 219,1 | 219,1 | 219,1 | 219,1 | 219,1 |

Condenser coil

| | |
|------------------|---|
| Coil type | Lanced fins – Internally spiral wound tubes |
|------------------|---|

Weight and dimensions

| | | | | | | |
|---------------------------------------|-----------|------|------|------|-------|-------|
| Standard unit shipping weight | kg | 7120 | 7430 | 7430 | 7894 | 7894 |
| Standard unit operating weight | kg | 7540 | 7870 | 7870 | 8284 | 8284 |
| Unit length | mm | 8300 | 9200 | 9200 | 10100 | 10100 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 |

Note: (1) Nominal cooling capacity and power input are based on: 12/7 °C entering/leaving evaporator water temperature; 35 °C ambient temperature. The power input is for compressor only.

Physical data ALS “E” XE ST HFC 134a

| ALS Unit Size | | 344.3 | 355.4 | 393.4 | 426.4 | 460.4 |
|-----------------------------|-----|-------|-------|-------|-------|-------|
| Cooling capacity (1) | kW | 1266 | 1350 | 1477 | 1605 | 1736 |
| Power input (1) | kW | 372 | 407 | 434 | 471 | 510 |
| COP | | 3,41 | 3,32 | 3,40 | 3,41 | 3,40 |
| McQuay Screw compressors | No. | 3 | 4 | 4 | 4 | 4 |
| Refrigerant circuits | No. | 3 | 4 | 4 | 4 | 4 |
| Refrigerant charge HFC 134a | kg | 204 | 214 | 232 | 252 | 272 |
| Oil charge | l | 42 | 56 | 56 | 56 | 56 |
| Min % of capacity reduction | % | 8,3% | 6,25% | 6,25% | 6,25% | 6,25% |

Condenser fans

| No. of fans / nominal power fan | kW | 22/1,7 | 22/1,7 | 24/1,7 | 26/1,7 | 28/1,7 |
|---------------------------------|-------------------|--------|--------|--------|--------|--------|
| Fan speed | rpm | 860 | 860 | 860 | 860 | 860 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m ³ /s | 116,1 | 116,1 | 126,7 | 137,2 | 147,8 |

Evaporator

| Evaporators / water volume | No./l | 1/402 | 2/261+254 | 2/254+254 | 2/254+246 | 2/246+246 |
|----------------------------|-------|-------|-----------|-----------|-----------|-----------|
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 219,1 | 168,3 | 168,3 | 168,3 | 168,3 |

Condenser coil

| | | | | | | |
|-----------|---|--|--|--|--|--|
| Coil type | Lanced fins – Internally spiral wound tubes | | | | | |
|-----------|---|--|--|--|--|--|

Weight and dimensions

| | | | | | | |
|--------------------------------|----|-------|-------|-------|-------|-------|
| Standard unit shipping weight | kg | 9300 | 9500 | 10510 | 10960 | 11168 |
| Standard unit operating weight | kg | 9740 | 9920 | 10920 | 11420 | 11678 |
| Unit length | mm | 11000 | 11000 | 11900 | 12800 | 13700 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 |

Note: (1) Nominal cooling capacity and power input are based on: 12/7 °C entering/leaving evaporator water temperature; 35°C ambient temperature. The power input is for compressor only.

Electrical data ALS “E” XE ST HFC 134a

| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 212.2 | 229.2 | 240.3 |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|-------|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 390 | 412 | 434 | 464 | 494 | 583 |
| Max compressor current (3) | A | 416 | 442 | 468 | 511 | 554 | 618 |
| Fans current | A | 40 | 44 | 48 | 52 | 56 | 64 |
| Max unit current (3) | A | 456 | 486 | 516 | 563 | 610 | 682 |
| Max unit inrush current (4) | A | 817 | 821 | 842 | 846 | 872 | 988 |
| Max unit current for wires sizing (5) | A | 486 | 538 | 590 | 633 | 676 | 733 |

| ALS Unit Size | | 260.3 | 279.3 | 296.3 | 312.3 | 327.3 | |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|--|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 603 | 631 | 651 | 686 | 713 | |
| Max compressor current (3) | A | 644 | 670 | 696 | 742 | 788 | |
| Fans current | A | 64 | 72 | 72 | 80 | 80 | |
| Max unit current (3) | A | 708 | 742 | 768 | 822 | 868 | |
| Max unit inrush current (4) | A | 988 | 1012 | 1029 | 1037 | 1059 | |
| Max unit current for wires sizing (5) | A | 781 | 837 | 885 | 932 | 971 | |

| ALS Unit Size | | 344.3 | 355.4 | 393.4 | 426.4 | 460.4 | |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|--|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 748 | 824 | 868 | 928 | 988 | |
| Max compressor current (3) | A | 834 | 884 | 936 | 1022 | 1108 | |
| Fans current | A | 88 | 88 | 96 | 104 | 112 | |
| Max unit current (3) | A | 922 | 972 | 1032 | 1126 | 1220 | |
| Max unit inrush current (4) | A | 1090 | 1236 | 1260 | 1291 | 1299 | |
| Max unit current for wires sizing (5) | A | 1018 | 1076 | 1180 | 1266 | 1352 | |

Notes: (1) Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.

(2) Nominal current are based on: 12/7 °C entering/leaving evaporator water temperature and 35°C ambient temp.

(3) Maximum current are based on: 14/9 °C entering/leaving evaporator water temperature and 48°C ambient temp.

(4) Inrush current of biggest compressor + 75 % of nominal absorbed current of the other compressor + fans current.

(5) Compressor FLA + fans current.

Physical data ALS “E” XE LN HFC 134a

| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 212.2 | 229.2 | 240.3 |
|-----------------------------|-----|-------|-------|-------|-------|-------|-------|
| Cooling capacity (1) | kW | 594 | 654 | 711 | 779 | 834 | 895 |
| Power input (1) | kW | 201 | 216 | 229 | 251 | 271 | 298 |
| COP | | 2,95 | 3,03 | 3,11 | 3,10 | 3,08 | 3,01 |
| McQuay Screw compressors | No. | 2 | 2 | 2 | 2 | 2 | 3 |
| Refrigerant circuits | No. | 2 | 2 | 2 | 2 | 2 | 3 |
| Refrigerant charge HFC 134a | kg | 98 | 107 | 116 | 126 | 136 | 147 |
| Oil charge | l | 28 | 28 | 28 | 28 | 28 | 42 |
| Min % of capacity reduction | % | 12,5% | 12,5% | 12,5% | 12,5% | 12,5% | 8,3% |

Condenser fans

| | | | | | | | |
|---------------------------------|-------------------|------|------|------|------|------|------|
| No. of fans / nominal power fan | kW | 10/1 | 11/1 | 12/1 | 13/1 | 14/1 | 16/1 |
| Fan speed | rpm | 680 | 680 | 680 | 680 | 680 | 680 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m ³ /s | 40,5 | 44,5 | 48,6 | 52,6 | 56,7 | 66,5 |

Evaporator

| | | | | | | | |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|
| Evaporators / water volume | No./l | 1/261 | 1/254 | 1/254 | 1/246 | 1/246 | 1/424 |
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 168,3 | 168,3 | 168,3 | 168,3 | 168,3 | 219,1 |

Condenser coil

| | | | | | | | |
|-----------|---|--|--|--|--|--|--|
| Coil type | Lanced fins – Internally spiral wound tubes | | | | | | |
|-----------|---|--|--|--|--|--|--|

Weight and dimensions

| | | | | | | | |
|--------------------------------|----|------|------|------|------|------|------|
| Standard unit shipping weight | kg | 4650 | 4865 | 5079 | 5170 | 5290 | 7120 |
| Standard unit operating weight | kg | 4860 | 5070 | 5284 | 5424 | 5544 | 7540 |
| Unit length | mm | 5310 | 6210 | 6210 | 7110 | 7110 | 8300 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 |

| ALS Unit Size | | 260.3 | 279.3 | 296.3 | 312.3 | 327.3 |
|-----------------------------|-----|-------|-------|-------|-------|-------|
| Cooling capacity (1) | kW | 946 | 1006 | 1063 | 1153 | 1203 |
| Power input (1) | kW | 315 | 328 | 343 | 362 | 389 |
| COP | | 3,01 | 3,06 | 3,10 | 3,19 | 3,10 |
| McQuay Screw compressors | No. | 3 | 3 | 3 | 3 | 3 |
| Refrigerant circuits | No. | 3 | 3 | 3 | 3 | 3 |
| Refrigerant charge HFC 134a | kg | 156 | 165 | 174 | 184 | 194 |
| Oil charge | l | 42 | 42 | 42 | 42 | 42 |
| Min % of capacity reduction | % | 8,3% | 8,3% | 8,3% | 8,3% | 8,3% |

Condenser fans

| | | | | | | |
|---------------------------------|-------------------|------|------|------|------|------|
| No. of fans / nominal power fan | kW | 16/1 | 18/1 | 18/1 | 20/1 | 20/1 |
| Fan speed | rpm | 680 | 680 | 680 | 680 | 680 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m ³ /s | 64,8 | 77,1 | 72,8 | 80,9 | 80,9 |

Evaporator

| | | | | | | |
|----------------------------|-------|-------|-------|-------|-------|-------|
| Evaporators / water volume | No./l | 1/415 | 1/415 | 1/415 | 1/402 | 1/402 |
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 219,1 | 219,1 | 219,1 | 219,1 | 219,1 |

Condenser coil

| | | | | | | |
|-----------|---|--|--|--|--|--|
| Coil type | Lanced fins – Internally spiral wound tubes | | | | | |
|-----------|---|--|--|--|--|--|

Weight and dimensions

| | | | | | | |
|--------------------------------|----|------|------|------|-------|-------|
| Standard unit shipping weight | kg | 7120 | 7430 | 7430 | 7894 | 7894 |
| Standard unit operating weight | kg | 7540 | 7870 | 7870 | 8284 | 8284 |
| Unit length | mm | 8300 | 9200 | 9200 | 10100 | 10100 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 |

Note: (1) Nominal cooling capacity and power input are based on: 12/7 °C entering/leaving evaporator water temperature; 35 °C ambient temperature. The power input is for compressor only.

Physical data ALS “E” XE LN HFC 134a

| ALS Unit Size | | 344.3 | 355.4 | 393.4 | 426.4 | 460.4 |
|-----------------------------|-----|-------|-------|-------|-------|-------|
| Cooling capacity (1) | kW | 1224 | 1302 | 1426 | 1548 | 1674 |
| Power input (1) | kW | 395 | 429 | 459 | 501 | 544 |
| COP | | 3,10 | 3,03 | 3,10 | 3,09 | 3,08 |
| McQuay Screw compressors | No. | 3 | 4 | 4 | 4 | 4 |
| Refrigerant circuits | No. | 3 | 4 | 4 | 4 | 4 |
| Refrigerant charge HFC 134a | kg | 204 | 214 | 232 | 252 | 272 |
| Oil charge | l | 42 | 56 | 56 | 56 | 56 |
| Min % of capacity reduction | % | 8,3% | 6,25% | 6,25% | 6,25% | 6,25% |

Condenser fans

| No. of fans / nominal power fan | kW | 22/1 | 22/1 | 24/1 | 26/1 | 28/1 |
|---------------------------------|-------------------|------|------|------|-------|-------|
| Fan speed | rpm | 680 | 680 | 680 | 680 | 680 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m ³ /s | 89,0 | 89,0 | 97,1 | 105,2 | 113,3 |

Evaporator

| Evaporators / water volume | No./l | 1/402 | 2/261+254 | 2/254+254 | 2/254+246 | 2/246+246 |
|----------------------------|-------|-------|-----------|-----------|-----------|-----------|
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 219,1 | 168,3 | 168,3 | 168,3 | 168,3 |

Condenser coil

| | | | | | | |
|-----------|---|--|--|--|--|--|
| Coil type | Lanced fins – Internally spiral wound tubes | | | | | |
|-----------|---|--|--|--|--|--|

Weight and dimensions

| | | | | | | |
|--------------------------------|----|-------|-------|-------|-------|-------|
| Standard unit shipping weight | kg | 9300 | 9500 | 10510 | 10960 | 11168 |
| Standard unit operating weight | kg | 9740 | 9920 | 10920 | 11420 | 11678 |
| Unit length | mm | 11000 | 11000 | 11900 | 12800 | 13700 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 |

Note: (1) Nominal cooling capacity and power input are based on: 12/7 °C entering/leaving evaporator water temperature; 35°C ambient temperature. The power input is for compressor only.

Electrical data ALS “E” XE LN HFC 134a

| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 212.2 | 229.2 | 240.3 |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|-------|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 382 | 403 | 428 | 459 | 490 | 572 |
| Max compressor current (3) | A | 416 | 443 | 470 | 510 | 550 | 624 |
| Fans current | A | 20 | 22 | 24 | 26 | 28 | 32 |
| Max unit current (3) | A | 436 | 465 | 494 | 536 | 578 | 656 |
| Max unit inrush current (4) | A | 794 | 796 | 815 | 817 | 843 | 949 |
| Max unit current for wires sizing (5) | A | 466 | 516 | 566 | 607 | 648 | 701 |

| ALS Unit Size | | 260.3 | 279.3 | 296.3 | 312.3 | 327.3 | |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|--|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 591 | 614 | 633 | 669 | 705 | |
| Max compressor current (3) | A | 651 | 678 | 705 | 745 | 785 | |
| Fans current | A | 32 | 36 | 36 | 40 | 40 | |
| Max unit current (3) | A | 683 | 714 | 741 | 785 | 825 | |
| Max unit inrush current (4) | A | 949 | 971 | 988 | 992 | 1015 | |
| Max unit current for wires sizing (5) | A | 749 | 801 | 849 | 892 | 931 | |

| ALS Unit Size | | 344.3 | 355.4 | 393.4 | 426.4 | 460.4 | |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|--|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 729 | 810 | 856 | 918 | 980 | |
| Max compressor current (3) | A | 825 | 886 | 940 | 1020 | 1100 | |
| Fans current | A | 44 | 44 | 48 | 52 | 56 | |
| Max unit current (3) | A | 869 | 930 | 988 | 1072 | 1156 | |
| Max unit inrush current (4) | A | 1043 | 1186 | 1207 | 1234 | 1238 | |
| Max unit current for wires sizing (5) | A | 974 | 1032 | 1132 | 1214 | 1296 | |

Notes: (1) Allowed voltage tolerance $\pm 10\%$. Voltage unbalance between phases must be within $\pm 3\%$.

(2) Nominal current are based on: 12/7 °C entering/leaving evaporator water temperature and 35°C ambient temp.

(3) Maximum current are based on: 14/9 °C entering/leaving evaporator water temperature and 44°C ambient temp.

(4) Inrush current of biggest compressor + 75 % of nominal absorbed current of the other compressor + fans current.

(5) Compressor FLA + fans current.

Physical data ALS “E” XE XN HFC 134a

| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 212.2 | 229.2 | 240.3 |
|-----------------------------|-----|-------|-------|-------|-------|-------|-------|
| Cooling capacity (1) | kW | 594 | 654 | 711 | 779 | 834 | 895 |
| Power input (1) | kW | 201 | 216 | 229 | 251 | 271 | 298 |
| COP | | 2,95 | 3,03 | 3,11 | 3,10 | 3,08 | 3,01 |
| McQuay Screw compressors | No. | 2 | 2 | 2 | 2 | 2 | 3 |
| Refrigerant circuits | No. | 2 | 2 | 2 | 2 | 2 | 3 |
| Refrigerant charge HFC 134a | kg | 98 | 107 | 116 | 126 | 136 | 147 |
| Oil charge | l | 28 | 28 | 28 | 28 | 28 | 42 |
| Min % of capacity reduction | % | 12,5% | 12,5% | 12,5% | 12,5% | 12,5% | 8,3% |

Condenser fans

| | | | | | | | |
|---------------------------------|-------------------|------|------|------|------|------|------|
| No. of fans / nominal power fan | kW | 10/1 | 11/1 | 12/1 | 13/1 | 14/1 | 16/1 |
| Fan speed | rpm | 680 | 680 | 680 | 680 | 680 | 680 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m ³ /s | 40,5 | 44,5 | 48,6 | 52,6 | 56,7 | 66,5 |

Evaporator

| | | | | | | | |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|
| Evaporators / water volume | No./l | 1/261 | 1/254 | 1/254 | 1/246 | 1/246 | 1/424 |
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 168,3 | 168,3 | 168,3 | 168,3 | 168,3 | 219,1 |

Condenser coil

| | | | | | | | |
|-----------|---|--|--|--|--|--|--|
| Coil type | Lanced fins – Internally spiral wound tubes | | | | | | |
|-----------|---|--|--|--|--|--|--|

Weight and dimensions

| | | | | | | | |
|--------------------------------|----|------|------|------|------|------|------|
| Standard unit shipping weight | kg | 4890 | 5105 | 5319 | 5410 | 5530 | 7570 |
| Standard unit operating weight | kg | 5100 | 5310 | 5524 | 5664 | 5784 | 7990 |
| Unit length | mm | 5310 | 6210 | 6210 | 7110 | 7110 | 8300 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 |

| ALS Unit Size | | 260.3 | 279.3 | 296.3 | 312.3 | 327.3 |
|-----------------------------|-----|-------|-------|-------|-------|-------|
| Cooling capacity (1) | kW | 946 | 1006 | 1063 | 1153 | 1203 |
| Power input (1) | kW | 315 | 328 | 343 | 362 | 389 |
| COP | | 3,01 | 3,06 | 3,10 | 3,19 | 3,10 |
| McQuay Screw compressors | No. | 3 | 3 | 3 | 3 | 3 |
| Refrigerant circuits | No. | 3 | 3 | 3 | 3 | 3 |
| Refrigerant charge HFC 134a | kg | 156 | 165 | 174 | 184 | 194 |
| Oil charge | l | 42 | 42 | 42 | 42 | 42 |
| Min % of capacity reduction | % | 8,3% | 8,3% | 8,3% | 8,3% | 8,3% |

Condenser fans

| | | | | | | |
|---------------------------------|-------------------|------|------|------|------|------|
| No. of fans / nominal power fan | kW | 16/1 | 18/1 | 18/1 | 20/1 | 20/1 |
| Fan speed | rpm | 680 | 680 | 680 | 680 | 680 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m ³ /s | 64,8 | 77,1 | 72,8 | 80,9 | 80,9 |

Evaporator

| | | | | | | |
|----------------------------|-------|-------|-------|-------|-------|-------|
| Evaporators / water volume | No./l | 1/415 | 1/415 | 1/415 | 1/402 | 1/402 |
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 219,1 | 219,1 | 219,1 | 219,1 | 219,1 |

Condenser coil

| | | | | | | |
|-----------|---|--|--|--|--|--|
| Coil type | Lanced fins – Internally spiral wound tubes | | | | | |
|-----------|---|--|--|--|--|--|

Weight and dimensions

| | | | | | | |
|--------------------------------|----|------|------|------|-------|-------|
| Standard unit shipping weight | kg | 7570 | 7880 | 7880 | 8334 | 8334 |
| Standard unit operating weight | kg | 7990 | 8320 | 8320 | 8724 | 8724 |
| Unit length | mm | 8300 | 9200 | 9200 | 10100 | 10100 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 |

Note: (1) Nominal cooling capacity and power input are based on: 12/7 °C entering/leaving evaporator water temperature; 35 °C ambient temperature. The power input is for compressor only.

Physical data ALS “E” XE XN HFC 134a

| ALS Unit Size | | 344.3 | 355.4 | 393.4 | 426.4 | 460.4 |
|-----------------------------|-----|-------|-------|-------|-------|-------|
| Cooling capacity (1) | kW | 1224 | 1302 | 1426 | 1548 | 1674 |
| Power input (1) | kW | 395 | 429 | 459 | 501 | 544 |
| COP | | 3,10 | 3,03 | 3,10 | 3,09 | 3,08 |
| McQuay Screw compressors | No. | 3 | 4 | 4 | 4 | 4 |
| Refrigerant circuits | No. | 3 | 4 | 4 | 4 | 4 |
| Refrigerant charge HFC 134a | kg | 204 | 214 | 232 | 252 | 272 |
| Oil charge | l | 42 | 56 | 56 | 56 | 56 |
| Min % of capacity reduction | % | 8,3% | 6,25% | 6,25% | 6,25% | 6,25% |

Condenser fans

| No. of fans / nominal power fan | kW | 22/1 | 22/1 | 24/1 | 26/1 | 28/1 |
|---------------------------------|-------------------|------|------|------|-------|-------|
| Fan speed | rpm | 680 | 680 | 680 | 680 | 680 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m ³ /s | 89,0 | 89,0 | 97,1 | 105,2 | 113,3 |

Evaporator

| Evaporators / water volume | No./l | 1/402 | 2/261+254 | 2/254+254 | 2/254+246 | 2/246+246 |
|----------------------------|-------|-------|-----------|-----------|-----------|-----------|
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 219,1 | 168,3 | 168,3 | 168,3 | 168,3 |

Condenser coil

| | | | | | | |
|-----------|---|--|--|--|--|--|
| Coil type | Lanced fins – Internally spiral wound tubes | | | | | |
|-----------|---|--|--|--|--|--|

Weight and dimensions

| | | | | | | |
|--------------------------------|----|-------|-------|-------|-------|-------|
| Standard unit shipping weight | kg | 9690 | 9980 | 10990 | 11440 | 11648 |
| Standard unit operating weight | kg | 10130 | 10400 | 11400 | 11900 | 12158 |
| Unit length | mm | 11000 | 11000 | 11900 | 12800 | 13700 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 |

Note: (1) Nominal cooling capacity and power input are based on: 12/7 °C entering/leaving evaporator water temperature; 35°C ambient temperature. The power input is for compressor only.

Electrical data ALS “E” XE XN HFC 134a

| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 212.2 | 229.2 | 240.3 |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|-------|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 382 | 403 | 428 | 459 | 490 | 572 |
| Max compressor current (3) | A | 416 | 443 | 470 | 510 | 550 | 624 |
| Fans current | A | 20 | 22 | 24 | 26 | 28 | 32 |
| Max unit current (3) | A | 436 | 465 | 494 | 536 | 578 | 656 |
| Max unit inrush current (4) | A | 794 | 796 | 815 | 817 | 843 | 949 |
| Max unit current for wires sizing (5) | A | 466 | 516 | 566 | 607 | 648 | 701 |

| ALS Unit Size | | 260.3 | 279.3 | 296.3 | 312.3 | 327.3 | |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|--|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 591 | 614 | 633 | 669 | 705 | |
| Max compressor current (3) | A | 651 | 678 | 705 | 745 | 785 | |
| Fans current | A | 32 | 36 | 36 | 40 | 40 | |
| Max unit current (3) | A | 683 | 714 | 741 | 785 | 825 | |
| Max unit inrush current (4) | A | 949 | 971 | 988 | 992 | 1015 | |
| Max unit current for wires sizing (5) | A | 749 | 801 | 849 | 892 | 931 | |

| ALS Unit Size | | 344.3 | 355.4 | 393.4 | 426.4 | 460.4 | |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|--|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | |
| Nominal unit current (2) | A | 729 | 810 | 856 | 918 | 980 | |
| Max compressor current (3) | A | 825 | 886 | 940 | 1020 | 1100 | |
| Fans current | A | 44 | 44 | 48 | 52 | 56 | |
| Max unit current (3) | A | 869 | 930 | 988 | 1072 | 1156 | |
| Max unit inrush current (4) | A | 1043 | 1186 | 1207 | 1234 | 1238 | |
| Max unit current for wires sizing (5) | A | 974 | 1032 | 1132 | 1214 | 1296 | |

Notes: (1) Allowed voltage tolerance ± 10%. Voltage unbalance between phases must be within ± 3%.

(2) Nominal current are based on: 12/7 °C entering/leaving evaporator water temperature and 35°C ambient temp.

(3) Maximum current are based on: 14/9 °C entering/leaving evaporator water temperature and 44°C ambient temp.

(4) Inrush current of biggest compressor + 75 % of nominal absorbed current of the other compressor + fans current.

(5) Compressor FLA + fans current.

Physical data ALS “E” XE XXN HFC 134a

| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 240.3 | 260.3 | 279.3 | 296.3 |
|-----------------------------|-----|-------|-------|-------|-------|-------|-------|-------|
| Cooling capacity (1) | kW | 569 | 631 | 681 | 840 | 914 | 952 | 1013 |
| Power input (1) | kW | 221 | 240 | 256 | 327 | 341 | 363 | 374 |
| COP | | 2,57 | 2,63 | 2,66 | 2,57 | 2,68 | 2,62 | 2,71 |
| McQuay Screw compressors | No. | 2 | 2 | 2 | 3 | 3 | 3 | 3 |
| Refrigerant circuits | No. | 2 | 2 | 2 | 3 | 3 | 3 | 3 |
| Refrigerant charge HFC 134a | kg | 106 | 115 | 124 | 159 | 168 | 177 | 186 |
| Oil charge | l | 28 | 28 | 28 | 42 | 42 | 42 | 42 |
| Min % of capacity reduction | % | 12,5% | 12,5% | 12,5% | 8,3% | 8,3% | 8,3% | 8,3% |

Condenser fans

| No. of fans / nominal power fan | kW | 12/0,3 | 13/0,3 | 14/0,3 | 18/0,3 | 20/0,3 | 20/0,3 | 22/0,3 |
|---------------------------------|-------------------|--------|--------|--------|--------|--------|--------|--------|
| Fan speed | rpm | 500 | 500 | 500 | 500 | 500 | 500 | 500 |
| Diameter | mm | 800 | 800 | 800 | 800 | 800 | 800 | 800 |
| Total air flow | m ³ /s | 30,8 | 33,3 | 35,9 | 46,1 | 51,3 | 51,3 | 56,4 |

Evaporator

| | | | | | | | | |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Evaporators / water volume | No./l | 1/254 | 1/246 | 1/246 | 1/415 | 1/402 | 1/402 | 1/402 |
| Max operating pressure | bar | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| Water connection diameter | mm | 168,3 | 168,3 | 168,3 | 219,1 | 219,1 | 219,1 | 219,1 |

Condenser coil

| | | | | | | | | |
|-----------|---|--|--|--|--|--|--|--|
| Coil type | Lanced fins – Internally spiral wound tubes | | | | | | | |
|-----------|---|--|--|--|--|--|--|--|

Weight and dimensions

| | | | | | | | | |
|--------------------------------|----|------|------|------|------|-------|-------|-------|
| Standard unit shipping weight | kg | 5319 | 5410 | 5530 | 7880 | 8334 | 8334 | 8660 |
| Standard unit operating weight | kg | 5524 | 5664 | 5784 | 8320 | 8724 | 8724 | 9100 |
| Unit length | mm | 6210 | 7110 | 7110 | 9200 | 10100 | 10100 | 11000 |
| Unit width | mm | 2230 | 2230 | 2230 | 2230 | 2230 | 2230 | 2230 |
| Unit height | mm | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 |

Note: (1) Nominal cooling capacity and power input are based on: 12/7 °C entering/leaving evaporator water temperature; 32 °C ambient temperature. The power input is for compressor only.

Electrical data ALS “E” XE XXN HFC 134a

| ALS Unit Size | | 163.2 | 178.2 | 196.2 | 240.3 | 260.3 | 279.3 | 296.3 |
|---------------------------------------|---|---------------------|-------|-------|-------|-------|-------|-------|
| Standard voltage (1) | | 400 V – 3ph – 50 Hz | | | | | | |
| Nominal unit current (2) | A | 392 | 420 | 444 | 585 | 604 | 636 | 652 |
| Max compressor current (3) | A | 416 | 447 | 474 | 618 | 640 | 678 | 705 |
| Fans current | A | 12 | 13 | 14 | 18 | 20 | 20 | 22 |
| Max unit current (3) | A | 428 | 460 | 488 | 636 | 660 | 698 | 727 |
| Max unit inrush current (4) | A | 790 | 791 | 812 | 943 | 945 | 965 | 986 |
| Max unit current for wires sizing (5) | A | 458 | 507 | 556 | 687 | 737 | 785 | 835 |

Notes: (1) Allowed voltage tolerance $\pm 10\%$. Voltage unbalance between phases must be within $\pm 3\%$.

(2) Nominal current are based on: 12/7 °C entering/leaving evaporator water temperature and 35 °C ambient temp.

(3) Maximum current are based on: 14/9 °C entering/leaving evaporator water temperature and 40 °C ambient temp.

(4) Inrush current of biggest compressor + 75 % of nominal absorbed current of the other compressor + fans current.

(5) Compressor FLA + fans current.

Sound pressure level ALS “E” SE, XE ST

| ALS Unit size | Sound pressure level at 1 m from the unit in free field (rif. 2×10^{-5}) | | | | | | | | |
|------------------|---|--------|--------|--------|---------|---------|---------|---------|------|
| | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz | dBA |
| 163.2 | 77,0 | 77,5 | 79,0 | 75,0 | 74,5 | 71,5 | 63,0 | 54,5 | 79,0 |
| 178.2 | 77,0 | 77,5 | 79,0 | 75,0 | 74,5 | 72,0 | 63,0 | 54,5 | 79,0 |
| 196.2 | 77,5 | 78,0 | 79,0 | 75,5 | 75,0 | 72,0 | 63,0 | 54,5 | 79,0 |
| 212.2 | 77,5 | 78,0 | 79,5 | 75,5 | 75,0 | 72,5 | 63,5 | 55,0 | 79,5 |
| 229.2 | 78,0 | 78,5 | 80,0 | 76,0 | 75,5 | 73,0 | 64,0 | 55,5 | 80,0 |
| 240.3 | 77,5 | 78,0 | 79,5 | 75,5 | 75,0 | 72,0 | 63,5 | 54,5 | 79,5 |
| 260.3 | 77,5 | 78,0 | 79,5 | 75,5 | 75,0 | 72,0 | 63,5 | 55,0 | 79,5 |
| 279.3 | 77,5 | 78,0 | 79,5 | 75,5 | 75,0 | 72,5 | 63,5 | 55,0 | 79,5 |
| 296.3 | 77,5 | 78,0 | 79,5 | 75,5 | 75,0 | 72,5 | 63,5 | 55,0 | 79,5 |
| 312.3 | 78,0 | 78,5 | 80,0 | 76,0 | 75,5 | 72,5 | 64,0 | 55,5 | 80,0 |
| 327.3 | 78,0 | 78,5 | 80,0 | 76,0 | 75,5 | 73,0 | 64,0 | 55,5 | 80,0 |
| 344.3 | 78,5 | 79,0 | 80,5 | 76,5 | 76,0 | 73,0 | 64,5 | 56,0 | 80,5 |
| 355.4 | 78,0 | 78,5 | 79,5 | 76,0 | 75,5 | 72,5 | 63,5 | 55,0 | 79,5 |
| 393.4 | 78,0 | 78,5 | 80,0 | 76,0 | 75,5 | 72,5 | 64,0 | 55,0 | 80,0 |
| 426.4 | 78,5 | 79,0 | 80,5 | 76,5 | 76,0 | 73,0 | 64,5 | 55,5 | 80,5 |
| 460.4 | 79,0 | 79,5 | 80,5 | 77,0 | 76,5 | 73,5 | 64,5 | 56,0 | 80,5 |

Sound pressure level ALS “E” SE, XE LN

| ALS Unit size | Sound pressure level at 1 m from the unit in free field (rif. 2×10^{-5}) | | | | | | | | |
|------------------|---|--------|--------|--------|---------|---------|---------|---------|------|
| | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz | dBA |
| 163.2 | 73,5 | 70,5 | 73,5 | 70,0 | 68,5 | 66,5 | 57,5 | 50,0 | 73,5 |
| 178.2 | 74,0 | 70,5 | 73,5 | 70,0 | 69,0 | 66,5 | 58,0 | 50,5 | 73,5 |
| 196.2 | 74,0 | 71,0 | 74,0 | 70,5 | 69,0 | 67,0 | 58,0 | 50,5 | 74,0 |
| 212.2 | 74,5 | 71,5 | 74,5 | 71,0 | 69,5 | 67,5 | 58,5 | 51,0 | 74,5 |
| 229.2 | 75,0 | 72,0 | 75,0 | 71,5 | 70,0 | 68,0 | 59,0 | 52,0 | 75,0 |
| 240.3 | 74,5 | 71,0 | 74,0 | 70,5 | 69,5 | 67,0 | 58,5 | 51,0 | 74,0 |
| 260.3 | 74,5 | 71,0 | 74,0 | 70,5 | 69,5 | 67,0 | 58,5 | 51,0 | 74,0 |
| 279.3 | 74,5 | 71,5 | 74,0 | 71,0 | 69,5 | 67,5 | 58,5 | 51,0 | 74,5 |
| 296.3 | 74,5 | 71,5 | 74,0 | 71,0 | 69,5 | 67,5 | 58,5 | 51,0 | 74,5 |
| 312.3 | 75,0 | 72,0 | 75,0 | 71,5 | 70,0 | 68,0 | 59,0 | 51,5 | 75,0 |
| 327.3 | 75,5 | 72,0 | 75,0 | 71,5 | 70,5 | 68,0 | 59,5 | 52,0 | 75,0 |
| 344.3 | 76,0 | 72,5 | 75,5 | 72,0 | 71,0 | 68,5 | 60,0 | 52,5 | 75,5 |
| 355.4 | 75,0 | 72,0 | 74,5 | 71,5 | 70,0 | 68,0 | 59,0 | 51,5 | 74,5 |
| 393.4 | 75,0 | 72,0 | 74,5 | 71,5 | 70,0 | 68,0 | 59,0 | 51,5 | 75,0 |
| 426.4 | 75,5 | 72,5 | 75,5 | 72,0 | 70,5 | 68,5 | 59,5 | 52,0 | 75,5 |
| 460.4 | 76,0 | 73,0 | 76,0 | 72,5 | 71,0 | 69,0 | 60,0 | 52,5 | 76,0 |

Sound pressure level ALS “E” SE, XE XN

| ALS Unit size | Sound pressure level at 1 m from the unit in free field (rif. 2×10^{-5}) | | | | | | | | |
|------------------|---|--------|--------|--------|---------|---------|---------|---------|------|
| | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz | dBA |
| 163.2 | 75,0 | 72,5 | 72,0 | 69,5 | 66,5 | 61,5 | 54,5 | 46,5 | 71,5 |
| 178.2 | 75,0 | 72,5 | 72,0 | 69,5 | 66,5 | 61,5 | 54,5 | 46,5 | 71,5 |
| 196.2 | 75,0 | 73,0 | 72,0 | 69,5 | 66,5 | 62,0 | 54,5 | 46,5 | 71,5 |
| 212.2 | 75,0 | 73,0 | 72,5 | 69,5 | 66,5 | 62,0 | 54,5 | 46,5 | 71,5 |
| 229.2 | 75,0 | 73,0 | 72,5 | 70,0 | 66,5 | 62,0 | 55,0 | 47,0 | 71,5 |
| 240.3 | 75,0 | 73,0 | 72,0 | 69,5 | 66,5 | 62,0 | 54,5 | 46,5 | 71,5 |
| 260.3 | 75,0 | 73,0 | 72,0 | 69,5 | 66,5 | 62,0 | 54,5 | 46,5 | 71,5 |
| 279.3 | 75,0 | 73,0 | 72,5 | 69,5 | 66,5 | 62,0 | 54,5 | 46,5 | 71,5 |
| 296.3 | 75,0 | 73,0 | 72,5 | 69,5 | 66,5 | 62,0 | 54,5 | 46,5 | 71,5 |
| 312.3 | 75,0 | 73,0 | 72,5 | 70,0 | 66,5 | 62,0 | 55,0 | 47,0 | 71,5 |
| 327.3 | 75,0 | 73,0 | 72,5 | 70,0 | 66,5 | 62,0 | 55,0 | 47,0 | 71,5 |
| 344.3 | 75,5 | 73,0 | 72,5 | 70,0 | 67,0 | 62,0 | 55,0 | 47,0 | 72,0 |
| 355.4 | 75,0 | 73,0 | 72,5 | 70,0 | 66,5 | 62,0 | 55,0 | 47,0 | 71,5 |
| 393.4 | 75,0 | 73,0 | 72,5 | 70,0 | 66,5 | 62,0 | 55,0 | 47,0 | 71,5 |
| 426.4 | 75,5 | 73,0 | 72,5 | 70,0 | 67,0 | 62,0 | 55,0 | 47,0 | 72,0 |
| 460.4 | 75,5 | 73,5 | 72,5 | 70,0 | 67,0 | 62,5 | 55,0 | 47,0 | 72,0 |

Note: Average sound pressure level rated in accordance to ISO 3744, free field semispheric conditions.

Note: Sound pressure levels are referred to ALS Units furnished without water pump and/or high lift fans.

Sound pressure level ALS “E” SE, XE XXN

| ALS Unit size | Sound pressure level at 1 m from the unit in free field (rif. 2×10^{-5}) | | | | | | | | |
|------------------|---|--------|--------|--------|---------|---------|---------|---------|------|
| | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz | dBA |
| 163.2 (*) | 61,5 | 63,5 | 66,0 | 64,5 | 57,5 | 54,0 | 50,0 | 42,5 | 65,0 |
| 178.2 (*) | 61,5 | 64,0 | 66,0 | 64,5 | 58,0 | 54,5 | 50,0 | 43,0 | 65,0 |
| 196.2 (*) | 62,0 | 64,0 | 66,0 | 65,0 | 58,0 | 54,5 | 50,5 | 43,0 | 65,0 |
| 212.2 | 62,5 | 64,5 | 66,5 | 65,5 | 58,5 | 55,0 | 50,5 | 43,5 | 65,5 |
| 229.2 | 62,5 | 65,0 | 67,0 | 65,5 | 59,0 | 55,5 | 51,0 | 44,0 | 66,0 |
| 240.3 (*) | 62,0 | 64,0 | 66,5 | 65,0 | 58,0 | 54,5 | 50,5 | 43,0 | 65,5 |
| 260.3 (*) | 62,0 | 64,0 | 66,5 | 65,0 | 58,0 | 54,5 | 50,5 | 43,0 | 65,5 |
| 279.3 (*) | 62,0 | 64,5 | 66,5 | 65,0 | 58,5 | 55,0 | 50,5 | 43,5 | 65,5 |
| 296.3 (*) | 62,0 | 64,5 | 66,5 | 65,0 | 58,5 | 55,0 | 50,5 | 43,5 | 65,5 |
| 312.3 | 62,5 | 64,5 | 67,0 | 65,5 | 59,0 | 55,5 | 51,0 | 44,0 | 66,0 |
| 327.3 | 63,0 | 65,0 | 67,0 | 66,0 | 59,0 | 55,5 | 51,0 | 44,0 | 66,0 |
| 344.3 | 63,0 | 65,5 | 67,5 | 66,0 | 59,5 | 56,0 | 51,5 | 44,5 | 66,5 |

Note: Average sound pressure level rated in accordance to ISO 3744, free field semispheric conditions.

Note: ALS SE XXN sound pressure levels are referred to air ambient temperature up to 32 °C.

Note: Sound pressure levels are referred to ALS Units furnished without water pump.

(*) ALS XE XXN available only for these sizes.

Sound pressure level correction factor for different distances ALS “E” SE ST, LN, XN

| ALS Unit size | Distance (m) | | | | | |
|------------------|--------------|-----|------|------|------|------|
| | 1 | 5 | 10 | 15 | 20 | 25 |
| 163.2 | 0 | 7,3 | 11,9 | 14,9 | 17,1 | 18,9 |
| 178.2 | 0 | 7,3 | 11,9 | 14,9 | 17,1 | 18,9 |
| 196.2 | 0 | 7,3 | 11,9 | 14,9 | 17,1 | 18,9 |
| 212.2 | 0 | 7,1 | 11,7 | 14,6 | 16,8 | 18,6 |
| 229.2 | 0 | 7,1 | 11,7 | 14,6 | 16,8 | 18,6 |
| 240.3 | 0 | 6,8 | 11,4 | 14,2 | 16,4 | 18,2 |
| 260.3 | 0 | 6,8 | 11,4 | 14,2 | 16,4 | 18,2 |
| 279.3 | 0 | 6,8 | 11,4 | 14,2 | 16,4 | 18,2 |
| 296.3 | 0 | 6,7 | 11,1 | 13,9 | 16,1 | 17,9 |
| 312.3 | 0 | 6,7 | 11,1 | 13,9 | 16,1 | 17,9 |
| 327.3 | 0 | 6,5 | 10,9 | 13,7 | 15,9 | 17,7 |
| 344.3 | 0 | 6,5 | 10,9 | 13,7 | 15,9 | 17,7 |
| 355.4 | 0 | 6,4 | 10,8 | 13,5 | 15,7 | 17,5 |
| 393.4 | 0 | 6,4 | 10,8 | 13,5 | 15,7 | 17,5 |
| 426.4 | 0 | 6,3 | 10,6 | 13,2 | 15,4 | 17,2 |
| 460.4 | 0 | 6,2 | 10,5 | 13,0 | 15,2 | 17,0 |

Sound pressure level correction factor for different distances ALS “E” SE XXN; ALS “E” XE ST, LN, XN, XXN

| ALS Unit size | Distance (m) | | | | | |
|------------------|--------------|-----|------|------|------|------|
| | 1 | 5 | 10 | 15 | 20 | 25 |
| 163.2 | 0 | 7,3 | 11,9 | 14,9 | 17,1 | 18,9 |
| 178.2 | 0 | 7,1 | 11,7 | 14,6 | 16,8 | 18,6 |
| 196.2 | 0 | 7,1 | 11,7 | 14,6 | 16,8 | 18,6 |
| 212.2 | 0 | 6,9 | 11,5 | 14,3 | 16,5 | 18,3 |
| 229.2 | 0 | 6,9 | 11,5 | 14,3 | 16,5 | 18,3 |
| 240.3 | 0 | 6,7 | 11,1 | 13,9 | 16,1 | 17,9 |
| 260.3 | 0 | 6,7 | 11,1 | 13,9 | 16,1 | 17,9 |
| 279.3 | 0 | 6,5 | 10,9 | 13,7 | 15,9 | 17,7 |
| 296.3 | 0 | 6,5 | 10,9 | 13,7 | 15,9 | 17,7 |
| 312.3 | 0 | 6,4 | 10,8 | 13,5 | 15,7 | 17,5 |
| 327.3 | 0 | 6,4 | 10,8 | 13,5 | 15,7 | 17,5 |
| 344.3 | 0 | 6,3 | 10,6 | 13,2 | 15,4 | 17,2 |
| 355.4 | 0 | 6,3 | 10,6 | 13,2 | 15,4 | 17,2 |
| 393.4 | 0 | 6,2 | 10,5 | 13,0 | 15,2 | 17,0 |
| 426.4 | 0 | 6,1 | 10,4 | 12,9 | 15,1 | 16,9 |
| 460.4 | 0 | 6,0 | 10,3 | 12,8 | 15,0 | 16,8 |

Standard ratings ALS “E” SE 163.2 ÷ 279.3 ST

| ALS Unit size | Evaporator leaving water temp. (°C) | AIR AMBIENT TEMPERATURE - °C | | | | | | | | | |
|---------------|-------------------------------------|------------------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|
| | | 25 | | 30 | | 35 | | 40 | | 44 | |
| | | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) |
| 163.2 | 4 | 587,3 | 159,6 | 561,4 | 171,0 | 535,6 | 184,5 | 508,7 | 204,5 | 477,0 | 220,2 |
| | 5 | 603,4 | 162,5 | 577,5 | 173,9 | 551,7 | 188,3 | 523,7 | 207,5 | 490,7 | 223,0 |
| | 6 | 620,5 | 165,4 | 594,8 | 177,8 | 567,9 | 191,2 | 538,9 | 210,4 | 505,5 | 226,0 |
| | 7 | 638,8 | 169,2 | 611,9 | 181,6 | 584,0 | 194,9 | 555,0 | 214,3 | 521,3 | 228,9 |
| | 8 | 656,0 | 172,0 | 628,0 | 184,5 | 600,1 | 197,8 | 571,1 | 217,2 | 536,1 | 231,8 |
| | 9 | 674,3 | 175,8 | 646,4 | 188,3 | 617,3 | 201,7 | 587,3 | 221,1 | 552,0 | 234,8 |
| 178.2 | 4 | 643,0 | 172,2 | 615,5 | 185,6 | 586,9 | 201,2 | 556,4 | 218,5 | 532,1 | 235,0 |
| | 5 | 661,9 | 176,0 | 633,4 | 189,5 | 603,9 | 204,1 | 574,3 | 221,4 | 549,0 | 237,9 |
| | 6 | 680,9 | 179,0 | 652,4 | 192,4 | 621,9 | 208,0 | 591,2 | 225,3 | 564,8 | 240,8 |
| | 7 | 699,9 | 182,8 | 670,4 | 196,3 | 639,7 | 210,9 | 608,0 | 228,2 | 581,7 | 243,7 |
| | 8 | 718,9 | 186,6 | 689,4 | 200,2 | 657,7 | 214,7 | 626,0 | 232,1 | 599,6 | 247,6 |
| | 9 | 739,0 | 190,5 | 708,3 | 204,1 | 676,7 | 218,5 | 644,0 | 235,0 | 616,6 | 250,4 |
| 196.2 | 4 | 703,2 | 183,2 | 673,0 | 197,7 | 640,6 | 214,0 | 608,3 | 233,3 | 581,2 | 250,7 |
| | 5 | 724,1 | 187,1 | 692,8 | 201,5 | 660,5 | 217,0 | 627,0 | 236,3 | 600,0 | 253,6 |
| | 6 | 743,9 | 190,0 | 712,6 | 204,4 | 680,3 | 220,8 | 645,9 | 240,1 | 617,7 | 256,5 |
| | 7 | 765,8 | 193,8 | 733,5 | 208,2 | 700,1 | 224,6 | 665,6 | 242,9 | 636,5 | 260,3 |
| | 8 | 786,7 | 197,7 | 753,4 | 212,1 | 719,9 | 228,5 | 684,5 | 246,8 | 655,2 | 263,2 |
| | 9 | 808,7 | 201,5 | 775,2 | 216,0 | 739,8 | 232,4 | 704,3 | 250,7 | 675,1 | 267,1 |
| 212.2 | 4 | 765,2 | 196,9 | 731,7 | 214,2 | 697,2 | 233,5 | 661,7 | 255,8 | 632,5 | 277,0 |
| | 5 | 787,2 | 200,8 | 753,7 | 217,2 | 718,1 | 236,5 | 682,6 | 258,7 | 652,3 | 279,9 |
| | 6 | 810,2 | 204,6 | 775,7 | 221,0 | 740,1 | 240,3 | 702,5 | 262,5 | 672,2 | 282,8 |
| | 7 | 833,1 | 207,6 | 797,6 | 224,9 | 761,0 | 244,2 | 723,4 | 266,4 | 692,1 | 285,7 |
| | 8 | 856,2 | 211,3 | 820,6 | 228,8 | 783,0 | 248,1 | 745,3 | 269,2 | 713,0 | 289,5 |
| | 9 | 880,2 | 215,2 | 843,6 | 232,6 | 804,9 | 251,9 | 766,2 | 273,1 | 733,9 | 293,4 |
| 229.2 | 4 | 821,3 | 210,2 | 785,9 | 229,4 | 748,4 | 251,6 | 710,9 | 277,6 | 678,5 | 301,7 |
| | 5 | 845,3 | 213,9 | 808,9 | 233,2 | 771,3 | 255,5 | 732,8 | 280,5 | 700,5 | 304,6 |
| | 6 | 869,3 | 216,9 | 832,9 | 237,1 | 794,3 | 259,3 | 754,6 | 284,4 | 721,4 | 307,5 |
| | 7 | 894,3 | 220,7 | 856,9 | 241,0 | 817,2 | 263,1 | 776,6 | 288,2 | 743,2 | 311,3 |
| | 8 | 919,4 | 224,6 | 880,8 | 244,8 | 841,2 | 267,0 | 799,5 | 291,1 | 765,1 | 314,2 |
| | 9 | 944,4 | 228,5 | 904,7 | 248,7 | 864,1 | 270,9 | 822,5 | 294,9 | 788,0 | 318,1 |
| 240.3 (*) | 4 | 889,3 | 241,2 | 849,3 | 258,4 | 809,5 | 278,6 | 767,6 | 302,5 | 732,0 | 325,4 |
| | 5 | 915,1 | 246,0 | 875,2 | 263,2 | 834,3 | 283,3 | 791,3 | 307,3 | 755,7 | 329,2 |
| | 6 | 942,0 | 250,7 | 901,0 | 269,0 | 859,1 | 289,0 | 814,9 | 312,1 | 778,4 | 334,0 |
| | 7 | 968,9 | 255,5 | 926,9 | 273,8 | 883,9 | 293,8 | 838,6 | 316,8 | 802,0 | 337,9 |
| | 8 | 995,8 | 261,3 | 953,9 | 279,5 | 909,7 | 299,6 | 863,4 | 321,6 | 825,7 | 342,7 |
| | 9 | 1023,8 | 267,0 | 979,6 | 285,2 | 935,5 | 304,4 | 888,1 | 327,3 | 850,5 | 348,4 |
| 260.3 | 4 | 941,2 | 250,9 | 898,9 | 270,2 | 856,7 | 291,4 | 812,4 | 316,6 | 775,5 | 339,7 |
| | 5 | 969,7 | 256,7 | 926,3 | 275,1 | 883,1 | 296,3 | 837,8 | 321,4 | 799,7 | 344,5 |
| | 6 | 998,1 | 261,6 | 954,8 | 279,9 | 909,5 | 301,1 | 863,0 | 326,2 | 825,1 | 348,4 |
| | 7 | 1026,6 | 266,3 | 982,2 | 285,6 | 936,9 | 306,9 | 889,4 | 331,0 | 850,4 | 353,2 |
| | 8 | 1056,1 | 272,1 | 1010,7 | 291,4 | 964,4 | 312,7 | 915,8 | 335,9 | 875,7 | 358,1 |
| | 9 | 1085,7 | 278,0 | 1039,3 | 297,3 | 991,8 | 318,5 | 943,3 | 341,6 | 902,1 | 363,8 |
| 279.3 | 4 | 993,2 | 264,7 | 949,2 | 285,1 | 903,2 | 308,2 | 857,2 | 335,3 | 817,4 | 360,4 |
| | 5 | 1022,5 | 269,5 | 977,5 | 289,8 | 931,5 | 313,0 | 883,3 | 340,0 | 843,6 | 364,2 |
| | 6 | 1052,9 | 275,4 | 1006,9 | 295,6 | 959,7 | 318,8 | 910,5 | 344,9 | 869,7 | 369,0 |
| | 7 | 1083,3 | 281,2 | 1036,1 | 301,4 | 988,0 | 323,7 | 937,8 | 349,7 | 896,9 | 373,9 |
| | 8 | 1113,5 | 286,0 | 1065,4 | 307,3 | 1016,2 | 329,5 | 966,0 | 355,6 | 924,1 | 378,7 |
| | 9 | 1144,9 | 291,7 | 1095,8 | 313,0 | 1045,6 | 335,3 | 994,3 | 361,3 | 951,4 | 384,6 |

Note: The power input is for compressor only; cooling cap. and power input referred to evap. fouling factor=0,0176m² °C/kW.

(*) In absence of foot-print limitations, ALS XE 229.2 ST guarantees the same cooling capacity at lower price.

Standard ratings ALS “E” SE 296.3 ÷ 460.4 ST

| ALS Unit size | Evaporator leaving water temp. (°C) | AIR AMBIENT TEMPERATURE - °C | | | | | | | | | |
|---------------|-------------------------------------|------------------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|
| | | 25 | | 30 | | 35 | | 40 | | 44 | |
| | | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) |
| 296.3 | 4 | 1060,8 | 273,9 | 1015,6 | 295,2 | 966,5 | 319,3 | 917,3 | 353,1 | 859,9 | 380,5 |
| | 5 | 1092,6 | 278,5 | 1045,5 | 299,7 | 996,3 | 323,9 | 946,1 | 357,6 | 887,3 | 385,0 |
| | 6 | 1124,5 | 283,9 | 1076,4 | 305,2 | 1026,3 | 329,3 | 975,0 | 363,1 | 914,8 | 388,8 |
| | 7 | 1156,8 | 288,7 | 1107,7 | 310,9 | 1056,5 | 335,1 | 1004,3 | 369,1 | 943,4 | 393,7 |
| | 8 | 1190,3 | 294,6 | 1140,1 | 316,8 | 1087,9 | 340,9 | 1034,6 | 374,0 | 971,1 | 399,5 |
| | 9 | 1223,7 | 300,4 | 1172,6 | 322,6 | 1119,2 | 346,7 | 1064,9 | 379,9 | 1000,9 | 404,5 |
| 312.3 | 4 | 1114,6 | 289,1 | 1066,5 | 313,4 | 1015,2 | 340,4 | 962,9 | 372,4 | 919,1 | 402,3 |
| | 5 | 1148,0 | 294,0 | 1097,8 | 318,1 | 1046,6 | 345,3 | 993,3 | 377,2 | 948,3 | 407,2 |
| | 6 | 1181,5 | 299,8 | 1130,2 | 324,0 | 1077,9 | 351,0 | 1023,6 | 382,9 | 977,6 | 411,1 |
| | 7 | 1216,0 | 305,6 | 1163,7 | 329,8 | 1109,3 | 356,8 | 1053,9 | 387,8 | 1007,9 | 415,8 |
| | 8 | 1249,5 | 311,4 | 1197,2 | 335,6 | 1141,8 | 362,7 | 1085,2 | 393,6 | 1038,2 | 421,6 |
| | 9 | 1285,0 | 317,2 | 1230,6 | 342,4 | 1174,2 | 368,5 | 1116,6 | 399,4 | 1069,6 | 427,4 |
| 327.3 | 4 | 1170,7 | 300,8 | 1119,6 | 327,8 | 1066,4 | 357,7 | 1011,1 | 393,4 | 965,2 | 426,1 |
| | 5 | 1205,2 | 306,6 | 1153,0 | 333,6 | 1098,7 | 363,5 | 1042,4 | 398,2 | 996,5 | 431,0 |
| | 6 | 1240,6 | 312,4 | 1187,3 | 339,4 | 1132,1 | 369,3 | 1074,7 | 404,0 | 1026,7 | 435,8 |
| | 7 | 1276,1 | 318,2 | 1221,8 | 345,2 | 1165,5 | 375,0 | 1107,0 | 408,8 | 1059,1 | 440,6 |
| | 8 | 1312,5 | 323,9 | 1257,3 | 351,0 | 1198,9 | 380,9 | 1139,4 | 414,6 | 1090,4 | 445,4 |
| | 9 | 1349,1 | 329,7 | 1292,8 | 356,7 | 1233,3 | 386,7 | 1172,8 | 420,4 | 1122,7 | 451,3 |
| 344.3 | 4 | 1231,4 | 314,6 | 1177,1 | 343,6 | 1121,7 | 377,4 | 1064,1 | 416,0 | 1016,1 | 452,6 |
| | 5 | 1268,0 | 320,4 | 1212,6 | 349,3 | 1156,2 | 382,2 | 1096,6 | 420,8 | 1047,5 | 456,5 |
| | 6 | 1304,6 | 326,3 | 1249,2 | 355,2 | 1190,7 | 388,0 | 1130,0 | 426,6 | 1080,9 | 461,4 |
| | 7 | 1342,2 | 331,0 | 1284,8 | 361,0 | 1226,2 | 393,8 | 1164,5 | 431,4 | 1113,3 | 466,2 |
| | 8 | 1379,9 | 336,8 | 1321,3 | 366,8 | 1261,7 | 399,6 | 1199,0 | 437,2 | 1146,7 | 471,0 |
| | 9 | 1418,5 | 343,6 | 1359,0 | 373,5 | 1297,2 | 406,4 | 1233,5 | 443,0 | 1180,2 | 476,8 |
| 355.4 (*) | 4 | 1271,7 | 344,1 | 1216,4 | 370,2 | 1159,1 | 400,1 | 1100,8 | 435,6 | 1051,8 | 468,4 |
| | 5 | 1308,2 | 350,9 | 1251,8 | 376,9 | 1194,6 | 406,7 | 1134,0 | 441,5 | 1084,1 | 474,2 |
| | 6 | 1345,7 | 357,6 | 1288,4 | 383,7 | 1229,0 | 413,5 | 1167,4 | 448,3 | 1117,5 | 480,1 |
| | 7 | 1383,2 | 364,4 | 1324,8 | 391,3 | 1264,4 | 421,2 | 1201,9 | 454,9 | 1150,7 | 486,8 |
| | 8 | 1421,8 | 372,0 | 1362,4 | 399,1 | 1300,8 | 428,0 | 1237,3 | 461,7 | 1184,1 | 492,6 |
| | 9 | 1460,3 | 378,8 | 1399,9 | 405,8 | 1337,4 | 435,6 | 1272,7 | 469,4 | 1218,5 | 499,3 |
| 393.4 | 4 | 1410,1 | 367,5 | 1348,4 | 396,5 | 1285,6 | 429,4 | 1219,7 | 467,1 | 1165,3 | 502,9 |
| | 5 | 1450,9 | 374,3 | 1389,1 | 403,3 | 1324,3 | 436,2 | 1257,4 | 473,9 | 1202,0 | 508,7 |
| | 6 | 1492,7 | 382,1 | 1428,9 | 411,1 | 1363,0 | 443,0 | 1295,0 | 480,7 | 1239,6 | 515,4 |
| | 7 | 1534,6 | 388,7 | 1469,8 | 418,7 | 1402,7 | 450,6 | 1333,8 | 487,4 | 1276,2 | 521,2 |
| | 8 | 1577,4 | 396,5 | 1511,6 | 426,5 | 1443,6 | 458,4 | 1372,5 | 495,1 | 1314,9 | 529,0 |
| | 9 | 1621,4 | 404,3 | 1553,5 | 434,2 | 1484,4 | 466,1 | 1412,2 | 502,9 | 1352,6 | 535,8 |
| 426.4 | 4 | 1527,7 | 393,8 | 1460,8 | 427,5 | 1392,9 | 466,1 | 1321,9 | 511,5 | 1263,4 | 553,0 |
| | 5 | 1571,6 | 400,5 | 1504,7 | 435,3 | 1434,7 | 472,9 | 1362,6 | 517,2 | 1302,0 | 558,7 |
| | 6 | 1617,5 | 408,2 | 1548,6 | 442,0 | 1477,5 | 480,6 | 1403,4 | 524,0 | 1342,8 | 564,6 |
| | 7 | 1662,5 | 415,0 | 1592,5 | 449,7 | 1520,4 | 488,3 | 1445,2 | 531,8 | 1382,5 | 571,3 |
| | 8 | 1709,5 | 422,7 | 1637,4 | 457,5 | 1564,3 | 496,1 | 1487,0 | 538,5 | 1424,3 | 578,0 |
| | 9 | 1756,5 | 430,4 | 1683,4 | 465,1 | 1608,2 | 503,7 | 1529,8 | 546,2 | 1465,0 | 585,8 |
| 460.4 | 4 | 1649,4 | 421,2 | 1577,2 | 459,9 | 1503,9 | 504,3 | 1427,5 | 556,5 | 1363,7 | 604,8 |
| | 5 | 1697,6 | 428,0 | 1624,3 | 467,6 | 1548,9 | 512,0 | 1471,5 | 563,2 | 1406,6 | 610,5 |
| | 6 | 1745,7 | 435,8 | 1671,4 | 475,3 | 1595,0 | 518,8 | 1515,4 | 570,0 | 1449,6 | 616,4 |
| | 7 | 1794,9 | 443,4 | 1719,5 | 482,1 | 1641,0 | 526,6 | 1560,4 | 576,8 | 1492,4 | 623,2 |
| | 8 | 1845,1 | 450,2 | 1768,7 | 490,8 | 1688,1 | 534,3 | 1605,4 | 584,6 | 1537,5 | 629,9 |
| | 9 | 1896,4 | 458,0 | 1817,9 | 498,5 | 1736,3 | 542,0 | 1651,5 | 592,2 | 1581,4 | 637,6 |

Note: The power input is for compressor only; cooling cap. and power input referred to evap. fouling factor=0,0176m² °C/kW.

(*) In absence of foot-print limitations, ALS XE 344.3 ST guarantees the same cooling capacity at lower price.

Standard ratings ALS “E” SE 163.2 ÷ 279.3 LN, XN

| ALS Unit size | Evaporator leaving water temp. (°C) | AIR AMBIENT TEMPERATURE - °C | | | | | | | |
|---------------|-------------------------------------|------------------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|
| | | 25 | | 30 | | 35 | | 40 | |
| | | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) |
| 163.2 | 4 | 549,7 | 170,9 | 524,6 | 184,5 | 498,5 | 199,9 | 471,3 | 223,4 |
| | 5 | 565,3 | 174,8 | 539,3 | 187,4 | 513,1 | 203,8 | 484,9 | 226,4 |
| | 6 | 581,1 | 178,7 | 554,9 | 191,3 | 527,8 | 206,7 | 499,5 | 229,3 |
| | 7 | 596,7 | 181,6 | 569,6 | 195,0 | 542,4 | 210,6 | 513,1 | 232,2 |
| | 8 | 612,4 | 185,4 | 585,2 | 198,9 | 557,0 | 214,4 | 527,8 | 236,2 |
| | 9 | 629,2 | 189,3 | 600,9 | 202,8 | 572,6 | 218,2 | 542,4 | 240,2 |
| 178.2 | 4 | 613,7 | 183,7 | 586,5 | 198,3 | 557,3 | 214,7 | 526,9 | 235,0 |
| | 5 | 631,5 | 186,6 | 603,3 | 201,2 | 572,9 | 218,5 | 542,7 | 237,9 |
| | 6 | 649,3 | 190,5 | 620,0 | 205,0 | 589,7 | 222,4 | 558,3 | 241,8 |
| | 7 | 667,0 | 195,3 | 637,8 | 208,9 | 606,4 | 226,3 | 574,0 | 245,7 |
| | 8 | 684,9 | 199,2 | 654,5 | 213,8 | 623,2 | 230,2 | 590,8 | 248,6 |
| | 9 | 703,7 | 203,1 | 672,3 | 217,6 | 639,9 | 234,0 | 607,4 | 252,4 |
| 196.2 | 4 | 678,2 | 194,7 | 646,9 | 210,2 | 615,6 | 228,5 | 582,2 | 250,7 |
| | 5 | 698,1 | 198,6 | 665,6 | 214,0 | 633,3 | 232,4 | 598,9 | 253,6 |
| | 6 | 716,8 | 202,5 | 684,5 | 218,9 | 651,1 | 236,3 | 616,6 | 257,4 |
| | 7 | 736,7 | 207,3 | 704,3 | 222,8 | 669,9 | 240,1 | 635,5 | 261,3 |
| | 8 | 756,5 | 211,1 | 723,1 | 226,6 | 688,6 | 244,9 | 653,2 | 265,2 |
| | 9 | 777,4 | 215,0 | 742,9 | 231,4 | 707,4 | 248,8 | 670,9 | 269,0 |
| 212.2 | 4 | 738,0 | 210,4 | 704,5 | 228,8 | 670,0 | 250,9 | 633,5 | 276,0 |
| | 5 | 758,9 | 214,2 | 725,5 | 232,6 | 688,9 | 254,8 | 652,3 | 279,9 |
| | 6 | 780,9 | 219,1 | 745,3 | 237,4 | 709,8 | 258,7 | 671,2 | 282,8 |
| | 7 | 801,8 | 223,0 | 766,2 | 241,3 | 729,6 | 262,5 | 690,9 | 286,7 |
| | 8 | 823,7 | 226,9 | 787,2 | 246,2 | 749,5 | 266,4 | 710,8 | 290,5 |
| | 9 | 845,7 | 231,6 | 809,1 | 249,9 | 770,4 | 271,2 | 730,7 | 295,3 |
| 229.2 | 4 | 793,2 | 225,6 | 756,8 | 246,7 | 719,2 | 271,8 | 679,7 | 300,7 |
| | 5 | 815,2 | 229,4 | 778,6 | 250,6 | 740,1 | 275,7 | 700,5 | 304,6 |
| | 6 | 838,0 | 233,2 | 800,5 | 254,5 | 761,9 | 279,5 | 721,4 | 308,4 |
| | 7 | 862,0 | 238,1 | 823,5 | 259,3 | 783,9 | 283,4 | 742,2 | 312,3 |
| | 8 | 885,0 | 242,0 | 846,4 | 263,1 | 805,8 | 288,2 | 763,0 | 316,2 |
| | 9 | 909,0 | 246,7 | 869,3 | 268,0 | 827,6 | 292,0 | 784,9 | 320,0 |
| 240.3 (*) | 4 | 831,7 | 258,2 | 792,9 | 278,6 | 753,2 | 301,7 | 711,3 | 328,8 |
| | 5 | 855,6 | 264,0 | 815,9 | 283,3 | 775,1 | 306,6 | 732,2 | 333,7 |
| | 6 | 879,7 | 269,8 | 839,0 | 289,1 | 797,1 | 311,4 | 754,2 | 338,5 |
| | 7 | 903,8 | 275,7 | 863,1 | 295,0 | 820,1 | 317,2 | 775,1 | 344,3 |
| | 8 | 928,9 | 281,5 | 887,0 | 300,8 | 843,2 | 323,0 | 798,2 | 349,1 |
| | 9 | 954,1 | 287,2 | 911,1 | 306,6 | 866,1 | 328,8 | 820,1 | 354,9 |
| 260.3 | 4 | 899,7 | 265,4 | 859,0 | 285,6 | 815,0 | 309,8 | 770,1 | 337,8 |
| | 5 | 926,8 | 271,2 | 884,0 | 291,4 | 840,1 | 314,6 | 794,2 | 342,6 |
| | 6 | 953,0 | 277,0 | 910,1 | 297,3 | 865,2 | 320,4 | 818,2 | 348,4 |
| | 7 | 980,1 | 282,8 | 936,3 | 303,0 | 890,3 | 326,2 | 842,2 | 353,2 |
| | 8 | 1007,3 | 288,5 | 962,4 | 308,8 | 915,4 | 332,0 | 867,3 | 359,0 |
| | 9 | 1035,5 | 294,4 | 988,5 | 315,6 | 941,5 | 337,8 | 891,3 | 364,8 |
| 279.3 | 4 | 956,6 | 281,2 | 912,7 | 303,4 | 865,5 | 329,5 | 818,5 | 360,4 |
| | 5 | 984,8 | 286,9 | 938,8 | 309,2 | 891,7 | 334,3 | 842,6 | 365,2 |
| | 6 | 1012,0 | 292,7 | 966,0 | 314,9 | 917,8 | 340,0 | 868,7 | 370,0 |
| | 7 | 1041,4 | 299,5 | 993,2 | 320,7 | 945,1 | 345,9 | 893,8 | 375,8 |
| | 8 | 1069,6 | 305,3 | 1021,5 | 327,5 | 971,2 | 352,7 | 920,0 | 381,7 |
| | 9 | 1098,9 | 312,0 | 1049,7 | 334,3 | 998,4 | 358,5 | 946,1 | 387,4 |

Note: The power input is for compressor only; cooling cap. and power input referred to evap. fouling factor=0,0176m² °C/kW.

(*) In absence of foot-print limitations, ALS XE 229.2 LN, XN guarantees the same cooling capacity at lower price.

Standard ratings ALS “E” SE 296.3 ÷ 460.4 LN, XN

| ALS Unit size | Evaporator leaving water temp. (°C) | AIR AMBIENT TEMPERATURE - °C | | | | | | | |
|---------------|-------------------------------------|------------------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|
| | | 25 | | 30 | | 35 | | 40 | |
| | | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) |
| 296.3 | 4 | 1026,3 | 288,7 | 979,2 | 311,9 | 930,1 | 339,0 | 880,0 | 376,9 |
| | 5 | 1055,5 | 294,6 | 1008,5 | 317,7 | 958,3 | 343,8 | 907,1 | 382,8 |
| | 6 | 1085,8 | 300,4 | 1037,7 | 323,6 | 986,5 | 349,6 | 934,2 | 387,8 |
| | 7 | 1117,2 | 307,1 | 1067,0 | 330,2 | 1015,8 | 356,3 | 961,4 | 393,7 |
| | 8 | 1147,4 | 312,9 | 1097,3 | 336,1 | 1044,0 | 362,2 | 989,6 | 399,5 |
| | 9 | 1178,8 | 319,7 | 1127,6 | 342,9 | 1073,2 | 368,9 | 1017,8 | 405,4 |
| 312.3 | 4 | 1075,9 | 308,5 | 1025,7 | 334,6 | 974,5 | 365,6 | 920,1 | 401,4 |
| | 5 | 1106,2 | 314,4 | 1056,0 | 340,4 | 1002,7 | 370,4 | 948,3 | 407,2 |
| | 6 | 1137,5 | 320,1 | 1086,4 | 346,3 | 1033,0 | 377,2 | 976,5 | 412,0 |
| | 7 | 1170,0 | 326,9 | 1116,6 | 353,0 | 1062,3 | 382,9 | 1005,9 | 417,7 |
| | 8 | 1202,4 | 333,7 | 1148,0 | 359,7 | 1092,7 | 389,7 | 1035,1 | 423,6 |
| | 9 | 1234,8 | 339,5 | 1179,3 | 366,5 | 1122,9 | 395,5 | 1064,3 | 430,4 |
| 327.3 | 4 | 1130,0 | 322,1 | 1077,8 | 351,0 | 1023,5 | 385,7 | 967,2 | 425,2 |
| | 5 | 1162,3 | 328,8 | 1109,1 | 357,7 | 1053,8 | 391,4 | 996,5 | 431,0 |
| | 6 | 1195,7 | 334,6 | 1141,4 | 363,5 | 1085,1 | 397,2 | 1026,7 | 435,8 |
| | 7 | 1229,1 | 341,3 | 1173,9 | 370,3 | 1116,4 | 403,1 | 1057,0 | 441,6 |
| | 8 | 1262,5 | 348,1 | 1206,2 | 377,0 | 1147,7 | 409,8 | 1087,3 | 447,4 |
| | 9 | 1296,9 | 353,9 | 1239,5 | 383,8 | 1180,0 | 416,5 | 1117,4 | 454,2 |
| 344.3 | 4 | 1188,5 | 337,8 | 1134,3 | 369,6 | 1076,7 | 407,3 | 1017,1 | 450,7 |
| | 5 | 1223,1 | 343,6 | 1166,6 | 375,4 | 1109,1 | 413,1 | 1048,5 | 456,5 |
| | 6 | 1257,6 | 350,3 | 1201,1 | 382,2 | 1141,6 | 418,9 | 1079,9 | 461,4 |
| | 7 | 1293,1 | 357,1 | 1234,5 | 388,9 | 1174,9 | 424,7 | 1111,2 | 467,2 |
| | 8 | 1328,6 | 362,9 | 1269,0 | 395,7 | 1207,4 | 431,4 | 1143,6 | 473,9 |
| | 9 | 1365,2 | 369,6 | 1304,6 | 402,5 | 1241,8 | 438,2 | 1176,1 | 479,7 |
| 355.4 (*) | 4 | 1225,8 | 365,3 | 1169,6 | 394,2 | 1112,2 | 428,0 | 1051,8 | 468,4 |
| | 5 | 1260,2 | 373,0 | 1204,0 | 402,0 | 1144,5 | 435,6 | 1083,0 | 475,2 |
| | 6 | 1295,7 | 380,8 | 1237,3 | 409,7 | 1176,9 | 442,4 | 1114,3 | 481,9 |
| | 7 | 1331,1 | 388,4 | 1271,7 | 417,4 | 1210,1 | 450,1 | 1146,6 | 488,7 |
| | 8 | 1366,5 | 396,2 | 1306,1 | 425,1 | 1243,5 | 457,9 | 1178,9 | 496,5 |
| | 9 | 1403,0 | 404,8 | 1341,5 | 433,8 | 1278,0 | 466,5 | 1211,3 | 504,1 |
| 393.4 | 4 | 1359,9 | 390,7 | 1298,1 | 422,6 | 1233,3 | 459,4 | 1166,4 | 502,9 |
| | 5 | 1398,6 | 398,4 | 1335,8 | 430,4 | 1269,9 | 466,1 | 1202,0 | 509,7 |
| | 6 | 1437,3 | 407,2 | 1373,5 | 438,1 | 1306,6 | 473,9 | 1237,5 | 516,4 |
| | 7 | 1477,1 | 414,9 | 1412,2 | 446,8 | 1343,1 | 482,5 | 1273,1 | 524,1 |
| | 8 | 1517,8 | 423,6 | 1450,9 | 454,5 | 1380,8 | 490,3 | 1309,7 | 531,9 |
| | 9 | 1557,6 | 432,3 | 1489,6 | 463,2 | 1419,5 | 499,0 | 1346,3 | 539,7 |
| 426.4 | 4 | 1474,4 | 420,7 | 1406,5 | 457,5 | 1337,5 | 500,8 | 1264,4 | 552,0 |
| | 5 | 1516,2 | 428,5 | 1447,3 | 466,1 | 1376,2 | 508,6 | 1302,0 | 558,7 |
| | 6 | 1559,1 | 437,2 | 1489,1 | 473,9 | 1415,9 | 516,4 | 1340,7 | 566,5 |
| | 7 | 1601,9 | 444,9 | 1530,9 | 482,5 | 1456,6 | 524,0 | 1379,3 | 573,3 |
| | 8 | 1644,7 | 453,6 | 1572,7 | 491,2 | 1497,4 | 532,7 | 1419,0 | 580,9 |
| | 9 | 1689,6 | 462,2 | 1615,5 | 499,9 | 1538,2 | 541,4 | 1458,7 | 589,7 |
| 460.4 | 4 | 1591,8 | 452,2 | 1519,7 | 494,6 | 1444,3 | 543,9 | 1365,8 | 603,9 |
| | 5 | 1638,0 | 459,9 | 1563,6 | 502,4 | 1487,2 | 551,7 | 1406,6 | 610,5 |
| | 6 | 1684,0 | 468,6 | 1608,6 | 511,0 | 1530,1 | 560,3 | 1448,5 | 617,3 |
| | 7 | 1730,0 | 477,3 | 1653,6 | 519,8 | 1573,0 | 568,1 | 1490,3 | 625,1 |
| | 8 | 1777,1 | 485,9 | 1698,6 | 528,5 | 1617,0 | 576,8 | 1532,2 | 632,9 |
| | 9 | 1825,2 | 494,6 | 1744,6 | 537,1 | 1661,9 | 585,4 | 1575,2 | 641,5 |

Note: The power input is for compressor only; cooling cap. and power input referred to evap. fouling factor=0,0176m² °C/kW.

(*) In absence of foot-print limitations, ALS XE 344.3 LN, XN guarantees the same cooling capacity at lower price.

Standard ratings ALS “E” SE 163.2 ÷ 240.3 XXN

| ALS Unit size | Evaporator leaving water temp. (°C) | AIR AMBIENT TEMPERATURE - °C | | | | | | | | | |
|---------------|-------------------------------------|------------------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|
| | | 25 | | 30 | | 32 | | 35 (*) | | 40 (*) | |
| | | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) |
| 163.2 | 4 | 548,7 | 186,4 | 521,5 | 200,9 | 509,9 | 207,7 | 508,4 | 200,7 | 471,7 | 220,1 |
| | 5 | 564,3 | 191,3 | 536,1 | 205,7 | 524,6 | 211,5 | 523,3 | 204,5 | 485,4 | 223,0 |
| | 6 | 580,0 | 195,0 | 551,7 | 209,6 | 539,3 | 216,3 | 538,3 | 207,5 | 500,0 | 225,8 |
| | 7 | 595,7 | 199,9 | 566,5 | 213,5 | 553,9 | 220,2 | 553,3 | 211,3 | 513,5 | 228,8 |
| | 8 | 611,4 | 203,8 | 581,1 | 218,2 | 569,6 | 225,0 | 568,2 | 215,2 | 528,3 | 232,6 |
| | 9 | 627,0 | 208,6 | 596,7 | 223,1 | 584,2 | 228,9 | 584,1 | 219,1 | 542,9 | 236,5 |
| 178.2 | 4 | 605,4 | 200,2 | 575,1 | 216,6 | 562,5 | 224,3 | 568,5 | 211,5 | 537,5 | 231,5 |
| | 5 | 622,2 | 205,0 | 591,8 | 221,4 | 579,2 | 228,2 | 584,4 | 215,3 | 553,5 | 234,3 |
| | 6 | 638,8 | 209,9 | 607,4 | 225,3 | 595,0 | 232,1 | 601,4 | 219,1 | 569,5 | 238,2 |
| | 7 | 656,6 | 213,8 | 624,2 | 230,2 | 611,7 | 237,0 | 618,5 | 222,9 | 585,5 | 242,0 |
| | 8 | 673,3 | 218,5 | 640,9 | 234,0 | 628,3 | 241,8 | 635,7 | 226,7 | 602,6 | 244,9 |
| | 9 | 691,1 | 223,4 | 657,7 | 238,9 | 644,1 | 246,7 | 652,7 | 230,5 | 619,6 | 248,7 |
| 196.2 | 4 | 658,3 | 213,1 | 626,0 | 231,4 | 612,5 | 239,2 | 628,0 | 225,0 | 593,8 | 246,9 |
| | 5 | 677,2 | 217,9 | 643,8 | 235,3 | 630,2 | 242,9 | 646,0 | 228,9 | 610,8 | 249,8 |
| | 6 | 695,9 | 222,8 | 661,5 | 240,1 | 647,9 | 247,8 | 664,1 | 232,7 | 629,0 | 253,6 |
| | 7 | 714,8 | 227,5 | 679,2 | 244,9 | 665,6 | 252,6 | 683,3 | 236,5 | 648,1 | 257,3 |
| | 8 | 733,5 | 232,4 | 698,1 | 249,7 | 683,5 | 257,4 | 702,4 | 241,2 | 666,3 | 261,1 |
| | 9 | 752,3 | 237,2 | 716,8 | 254,6 | 702,2 | 262,2 | 721,6 | 245,0 | 684,3 | 265,0 |
| 212.2 | 4 | 721,3 | 234,5 | 684,8 | 255,8 | 670,0 | 265,5 | 683,4 | 247,2 | 646,2 | 271,9 |
| | 5 | 741,2 | 239,4 | 703,5 | 260,6 | 688,9 | 270,2 | 702,6 | 250,9 | 665,4 | 275,7 |
| | 6 | 761,0 | 244,2 | 723,4 | 265,5 | 707,7 | 275,1 | 724,0 | 254,8 | 684,6 | 278,5 |
| | 7 | 781,9 | 249,9 | 743,2 | 270,2 | 727,6 | 279,9 | 744,2 | 258,6 | 704,7 | 282,4 |
| | 8 | 802,8 | 254,8 | 763,1 | 276,0 | 747,5 | 284,8 | 764,5 | 262,4 | 725,0 | 286,2 |
| | 9 | 823,7 | 259,6 | 784,0 | 280,9 | 767,3 | 289,5 | 785,8 | 267,2 | 745,3 | 290,9 |
| 229.2 | 4 | 771,3 | 253,5 | 732,8 | 278,5 | 716,1 | 290,2 | 733,6 | 267,7 | 693,2 | 296,2 |
| | 5 | 793,2 | 259,3 | 753,6 | 283,4 | 736,9 | 294,0 | 754,9 | 271,6 | 714,5 | 300,0 |
| | 6 | 815,2 | 264,1 | 774,5 | 288,2 | 757,8 | 298,8 | 777,2 | 275,4 | 735,7 | 303,8 |
| | 7 | 837,0 | 268,9 | 795,3 | 294,0 | 778,6 | 304,6 | 799,6 | 279,1 | 757,0 | 307,6 |
| | 8 | 858,9 | 274,8 | 817,2 | 298,8 | 799,5 | 309,4 | 821,8 | 283,9 | 778,2 | 311,4 |
| | 9 | 881,9 | 280,5 | 838,0 | 304,6 | 820,3 | 315,2 | 844,2 | 287,7 | 800,6 | 315,2 |
| 240.3 | 4 | 833,7 | 273,7 | 792,9 | 295,0 | 776,2 | 304,7 | 768,2 | 297,2 | 725,5 | 323,9 |
| | 5 | 857,8 | 280,5 | 815,9 | 300,8 | 798,2 | 310,5 | 790,6 | 302,0 | 746,9 | 328,6 |
| | 6 | 881,8 | 286,2 | 839,0 | 306,6 | 821,2 | 316,2 | 813,1 | 306,8 | 769,3 | 333,4 |
| | 7 | 905,9 | 293,0 | 861,9 | 313,4 | 844,2 | 322,0 | 836,5 | 312,5 | 790,6 | 339,1 |
| | 8 | 931,0 | 298,8 | 886,0 | 320,1 | 867,2 | 328,8 | 860,0 | 318,1 | 814,1 | 343,9 |
| | 9 | 956,1 | 305,6 | 910,1 | 326,9 | 891,3 | 335,6 | 883,5 | 323,9 | 836,5 | 349,6 |

Note: The power input is for compressor only; cooling cap. and power input referred to evap. fouling factor=0,0176m² °C/kW.

(*) When air temperature is higher then +32°C fan speed control device sets up fan speed increasing cooling capacity.

Standard ratings ALS “E” SE 260.3 ÷ 344.3 XXN

| ALS Unit size | Evaporator leaving water temp. (°C) | AIR AMBIENT TEMPERATURE - °C | | | | | | | | | |
|---------------|-------------------------------------|------------------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|
| | | 25 | | 30 | | 32 | | 35 (*) | | 40 (*) | |
| | | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) |
| 260.3 | 4 | 874,7 | 292,6 | 830,9 | 315,8 | 813,0 | 326,5 | 831,5 | 311,2 | 770,9 | 339,3 |
| | 5 | 899,7 | 299,4 | 854,8 | 322,6 | 836,0 | 332,2 | 857,0 | 316,0 | 795,0 | 344,2 |
| | 6 | 924,9 | 305,2 | 878,8 | 328,3 | 860,1 | 339,0 | 882,6 | 321,8 | 819,0 | 349,9 |
| | 7 | 950,0 | 311,9 | 902,9 | 335,1 | 884,1 | 345,8 | 908,2 | 327,6 | 843,1 | 354,8 |
| | 8 | 976,0 | 319,7 | 928,0 | 341,9 | 908,2 | 352,5 | 933,7 | 333,5 | 868,2 | 360,6 |
| | 9 | 1001,1 | 326,5 | 953,1 | 349,6 | 932,2 | 359,2 | 960,4 | 339,3 | 892,3 | 366,5 |
| 279.3 | 4 | 930,5 | 306,6 | 883,5 | 331,7 | 864,7 | 342,4 | 881,9 | 324,8 | 834,0 | 355,3 |
| | 5 | 956,7 | 313,4 | 908,6 | 337,5 | 888,7 | 349,1 | 908,6 | 329,6 | 858,5 | 360,1 |
| | 6 | 982,8 | 320,1 | 934,7 | 344,3 | 914,9 | 355,9 | 935,3 | 335,3 | 885,2 | 364,8 |
| | 7 | 1010,0 | 326,9 | 959,8 | 351,0 | 940,0 | 361,7 | 963,0 | 341,1 | 910,7 | 370,6 |
| | 8 | 1037,2 | 333,7 | 986,0 | 358,8 | 966,1 | 369,4 | 989,7 | 347,7 | 937,4 | 376,3 |
| | 9 | 1064,3 | 341,4 | 1013,2 | 365,6 | 991,1 | 376,2 | 1017,4 | 353,4 | 964,0 | 382,0 |
| 296.3 | 4 | 982,9 | 318,2 | 933,9 | 345,2 | 913,0 | 356,7 | 947,2 | 333,4 | 896,1 | 363,7 |
| | 5 | 1010,0 | 324,9 | 959,9 | 352,0 | 940,1 | 363,5 | 975,9 | 338,1 | 923,8 | 369,5 |
| | 6 | 1038,2 | 332,7 | 987,1 | 358,6 | 966,2 | 370,3 | 1004,7 | 343,8 | 951,4 | 374,1 |
| | 7 | 1066,4 | 339,4 | 1014,2 | 365,4 | 993,3 | 377,0 | 1034,5 | 350,5 | 979,2 | 379,9 |
| | 8 | 1095,6 | 347,1 | 1042,4 | 373,1 | 1020,4 | 384,7 | 1063,1 | 356,2 | 1007,8 | 385,6 |
| | 9 | 1124,7 | 353,9 | 1070,5 | 379,9 | 1047,5 | 391,4 | 1093,0 | 362,8 | 1036,6 | 391,2 |
| 312.3 | 4 | 1069,4 | 334,9 | 1016,1 | 363,9 | 994,1 | 376,4 | 993,8 | 359,4 | 938,3 | 394,5 |
| | 5 | 1099,7 | 341,7 | 1045,3 | 370,6 | 1022,3 | 383,2 | 1022,5 | 364,1 | 967,1 | 400,2 |
| | 6 | 1131,1 | 349,3 | 1074,6 | 377,4 | 1052,7 | 389,9 | 1053,5 | 370,7 | 995,9 | 405,0 |
| | 7 | 1162,5 | 357,1 | 1104,9 | 385,1 | 1082,0 | 397,6 | 1083,3 | 376,5 | 1025,8 | 410,7 |
| | 8 | 1193,8 | 363,9 | 1136,3 | 392,8 | 1112,2 | 405,4 | 1114,3 | 383,1 | 1055,6 | 416,4 |
| | 9 | 1226,2 | 372,5 | 1166,6 | 400,6 | 1142,6 | 413,1 | 1145,1 | 388,8 | 1085,4 | 423,1 |
| 327.3 | 4 | 1110,2 | 362,4 | 1052,8 | 396,2 | 1029,8 | 410,6 | 1043,0 | 379,8 | 985,6 | 418,7 |
| | 5 | 1142,4 | 370,2 | 1084,1 | 402,9 | 1060,1 | 417,4 | 1073,8 | 385,5 | 1015,3 | 424,4 |
| | 6 | 1173,7 | 377,8 | 1114,3 | 410,6 | 1090,3 | 425,1 | 1105,7 | 391,1 | 1046,2 | 429,2 |
| | 7 | 1206,0 | 385,6 | 1145,6 | 418,3 | 1120,6 | 432,8 | 1137,6 | 396,9 | 1077,1 | 434,8 |
| | 8 | 1239,4 | 394,2 | 1176,9 | 426,0 | 1151,9 | 440,5 | 1169,6 | 403,5 | 1107,8 | 440,5 |
| | 9 | 1271,7 | 402,0 | 1208,1 | 434,7 | 1182,0 | 449,2 | 1202,5 | 410,2 | 1138,7 | 447,2 |
| 344.3 | 4 | 1140,2 | 367,5 | 1083,7 | 403,3 | 1060,7 | 419,7 | 1099,0 | 402,0 | 1038,1 | 444,9 |
| | 5 | 1172,6 | 374,3 | 1115,1 | 410,1 | 1091,1 | 426,5 | 1132,1 | 407,7 | 1070,2 | 450,5 |
| | 6 | 1205,1 | 381,1 | 1146,5 | 416,8 | 1122,4 | 433,3 | 1165,2 | 413,5 | 1102,2 | 455,3 |
| | 7 | 1237,5 | 388,7 | 1177,9 | 424,5 | 1153,8 | 440,1 | 1199,3 | 419,1 | 1134,2 | 461,0 |
| | 8 | 1271,0 | 395,5 | 1210,3 | 432,3 | 1185,2 | 447,8 | 1232,3 | 425,8 | 1167,3 | 467,7 |
| | 9 | 1304,4 | 403,3 | 1241,7 | 439,1 | 1216,6 | 455,5 | 1267,6 | 432,5 | 1200,3 | 473,5 |

Note: The power input is for compressor only; cooling cap. and power input referred to evap. fouling factor=0,0176m² °C/kW.

(*) When air temperature is higher then +32°C fan speed control device sets up fan speed increasing cooling capacity.

Standard ratings ALS “E” XE 163.2 ÷ 279.3 ST

| ALS Unit size | Evaporator leaving water temp. (°C) | AIR AMBIENT TEMPERATURE - °C | | | | | | | | | | | |
|---------------|-------------------------------------|------------------------------|------------------|---------------------|------------------|---------------------|------------------|---------------------|------------------|---------------------|------------------|---------------------|------------------|
| | | 25 | | 30 | | 35 | | 40 | | 45 | | 48 | |
| | | Cooling capac. (kW) | Power input (kW) | Cooling capac. (kW) | Power input (kW) | Cooling capac. (kW) | Power input (kW) | Cooling capac. (kW) | Power input (kW) | Cooling capac. (kW) | Power input (kW) | Cooling capac. (kW) | Power input (kW) |
| 163.2 | 4 | 615,6 | 157,4 | 589,4 | 168,1 | 562,2 | 180,6 | 534,0 | 194,1 | 504,8 | 211,5 | 487,0 | 223,1 |
| | 5 | 634,3 | 160,3 | 607,1 | 171,9 | 580,0 | 183,5 | 550,7 | 198,0 | 521,5 | 214,4 | 502,6 | 225,0 |
| | 6 | 653,2 | 163,2 | 626,0 | 174,8 | 596,7 | 187,4 | 568,5 | 200,9 | 538,2 | 217,3 | 519,4 | 227,9 |
| | 7 | 672,0 | 166,1 | 643,8 | 177,7 | 615,6 | 190,3 | 585,2 | 203,8 | 554,9 | 220,2 | 536,1 | 230,8 |
| | 8 | 691,9 | 169,9 | 662,5 | 181,6 | 633,3 | 194,1 | 603,0 | 207,7 | 571,6 | 223,1 | 551,7 | 233,7 |
| | 9 | 711,6 | 172,8 | 682,4 | 185,4 | 652,1 | 198,0 | 620,7 | 211,5 | 589,4 | 227,0 | 569,6 | 237,6 |
| 178.2 | 4 | 677,5 | 167,3 | 649,3 | 179,9 | 619,0 | 193,4 | 588,7 | 209,9 | 556,3 | 228,2 | 537,4 | 240,8 |
| | 5 | 698,4 | 171,2 | 669,2 | 183,7 | 638,8 | 197,3 | 607,4 | 212,8 | 575,1 | 231,1 | 554,1 | 243,7 |
| | 6 | 719,3 | 174,1 | 689,0 | 186,6 | 657,7 | 200,2 | 626,3 | 215,7 | 592,8 | 234,0 | 571,9 | 245,7 |
| | 7 | 740,2 | 178,0 | 710,0 | 190,5 | 677,5 | 204,1 | 645,1 | 219,5 | 611,7 | 237,0 | 590,8 | 249,5 |
| | 8 | 761,1 | 180,9 | 729,8 | 194,4 | 697,4 | 208,0 | 664,0 | 223,4 | 629,5 | 240,8 | 608,6 | 252,4 |
| | 9 | 783,1 | 184,7 | 750,7 | 197,3 | 718,3 | 211,8 | 683,8 | 226,3 | 649,3 | 243,7 | 627,3 | 255,3 |
| 196.2 | 4 | 736,7 | 177,4 | 705,4 | 190,9 | 673,0 | 206,4 | 640,6 | 222,8 | 605,2 | 242,9 | 584,3 | 257,4 |
| | 5 | 759,5 | 180,3 | 727,2 | 194,7 | 693,9 | 209,2 | 660,5 | 226,6 | 625,0 | 245,9 | 603,0 | 260,3 |
| | 6 | 781,5 | 184,2 | 749,1 | 197,7 | 715,8 | 213,1 | 680,3 | 229,5 | 644,8 | 249,7 | 622,9 | 263,2 |
| | 7 | 804,4 | 187,1 | 771,1 | 201,5 | 736,7 | 217,0 | 701,2 | 233,3 | 664,6 | 252,6 | 642,7 | 266,1 |
| | 8 | 827,4 | 190,9 | 794,0 | 205,4 | 758,5 | 220,8 | 722,1 | 237,2 | 685,5 | 256,5 | 662,6 | 269,0 |
| | 9 | 851,4 | 194,7 | 816,0 | 209,2 | 780,4 | 224,6 | 743,9 | 241,0 | 705,4 | 259,3 | 682,4 | 272,9 |
| 212.2 | 4 | 809,1 | 192,0 | 773,6 | 207,6 | 738,0 | 225,9 | 701,4 | 246,2 | 662,7 | 270,2 | 638,7 | 286,7 |
| | 5 | 833,1 | 194,9 | 797,6 | 211,3 | 761,0 | 228,8 | 723,4 | 249,0 | 684,8 | 273,1 | 659,6 | 289,5 |
| | 6 | 858,2 | 198,8 | 821,7 | 215,2 | 784,0 | 232,6 | 745,3 | 252,8 | 705,7 | 276,0 | 681,6 | 291,4 |
| | 7 | 883,4 | 201,7 | 845,7 | 219,1 | 808,1 | 236,5 | 768,4 | 256,7 | 727,6 | 279,9 | 702,5 | 295,3 |
| | 8 | 908,4 | 205,6 | 870,8 | 223,0 | 832,1 | 240,3 | 791,3 | 260,6 | 750,5 | 282,8 | 724,4 | 298,2 |
| | 9 | 934,5 | 209,4 | 895,9 | 226,9 | 856,2 | 244,2 | 815,4 | 264,5 | 773,6 | 286,7 | 747,5 | 302,1 |
| 229.2 | 4 | 865,2 | 204,3 | 828,7 | 222,7 | 790,1 | 242,9 | 750,5 | 267,0 | 708,8 | 294,9 | 683,8 | 314,2 |
| | 5 | 891,3 | 207,3 | 853,7 | 226,6 | 814,1 | 246,7 | 774,5 | 269,9 | 731,8 | 297,8 | 705,7 | 316,2 |
| | 6 | 918,3 | 211,1 | 878,7 | 230,3 | 839,2 | 250,6 | 798,5 | 273,8 | 755,8 | 300,7 | 728,6 | 319,1 |
| | 7 | 944,4 | 214,9 | 904,7 | 233,2 | 864,1 | 254,5 | 822,5 | 277,6 | 778,6 | 303,7 | 751,5 | 322,0 |
| | 8 | 972,5 | 217,8 | 931,8 | 237,1 | 890,2 | 258,4 | 847,4 | 281,4 | 802,6 | 307,5 | 775,5 | 324,8 |
| | 9 | 999,7 | 221,7 | 959,0 | 241,0 | 916,3 | 262,1 | 872,4 | 285,3 | 826,6 | 311,3 | 798,5 | 328,7 |
| 240.3 | 4 | 925,8 | 234,0 | 886,0 | 250,4 | 844,2 | 268,9 | 802,3 | 289,1 | 758,5 | 314,4 | 731,2 | 330,7 |
| | 5 | 954,1 | 238,9 | 913,2 | 255,3 | 871,4 | 273,7 | 828,5 | 294,0 | 783,5 | 318,1 | 755,3 | 334,6 |
| | 6 | 983,3 | 243,7 | 941,5 | 260,1 | 898,6 | 278,6 | 854,6 | 298,8 | 808,6 | 323,0 | 780,4 | 339,5 |
| | 7 | 1012,6 | 248,6 | 969,7 | 265,0 | 925,8 | 283,3 | 880,8 | 303,7 | 834,7 | 327,8 | 805,5 | 343,4 |
| | 8 | 1042,9 | 253,3 | 999,0 | 270,8 | 954,1 | 289,1 | 907,9 | 309,5 | 859,9 | 332,7 | 830,6 | 348,2 |
| | 9 | 1073,3 | 258,2 | 1028,3 | 275,7 | 982,3 | 294,0 | 935,2 | 314,4 | 887,0 | 337,5 | 856,8 | 353,0 |
| 260.3 | 4 | 981,2 | 245,1 | 938,3 | 262,5 | 895,5 | 282,8 | 850,6 | 304,9 | 803,6 | 332,0 | 774,3 | 350,3 |
| | 5 | 1011,5 | 249,9 | 967,6 | 268,3 | 923,7 | 287,6 | 877,7 | 309,8 | 829,7 | 335,9 | 800,4 | 354,2 |
| | 6 | 1041,8 | 254,8 | 998,0 | 273,1 | 951,9 | 292,4 | 904,9 | 314,6 | 856,8 | 340,7 | 826,5 | 359,0 |
| | 7 | 1073,1 | 259,6 | 1027,2 | 278,9 | 981,2 | 298,2 | 933,1 | 320,4 | 883,0 | 345,5 | 852,7 | 362,8 |
| | 8 | 1104,5 | 265,4 | 1058,5 | 283,7 | 1010,4 | 304,0 | 961,3 | 325,2 | 911,2 | 350,3 | 879,9 | 367,7 |
| | 9 | 1135,8 | 270,2 | 1088,9 | 289,5 | 1040,8 | 308,8 | 990,6 | 331,0 | 938,3 | 356,1 | 907,0 | 372,5 |
| 279.3 | 4 | 1043,4 | 255,1 | 998,4 | 274,4 | 952,4 | 295,6 | 904,2 | 319,8 | 855,0 | 348,8 | 824,7 | 368,1 |
| | 5 | 1074,8 | 260,9 | 1028,8 | 280,2 | 981,7 | 300,5 | 933,6 | 324,6 | 882,3 | 352,7 | 851,9 | 372,0 |
| | 6 | 1107,2 | 265,7 | 1060,2 | 285,1 | 1012,0 | 306,3 | 962,9 | 330,4 | 910,5 | 357,5 | 879,1 | 376,8 |
| | 7 | 1140,8 | 270,5 | 1092,6 | 290,8 | 1043,4 | 312,0 | 992,1 | 335,3 | 939,8 | 362,3 | 907,4 | 380,7 |
| | 8 | 1174,3 | 275,4 | 1125,1 | 295,6 | 1074,8 | 316,9 | 1022,5 | 341,0 | 969,2 | 367,1 | 935,6 | 385,5 |
| | 9 | 1207,7 | 281,2 | 1157,5 | 301,4 | 1106,2 | 322,7 | 1052,9 | 346,8 | 998,4 | 372,9 | 965,0 | 391,3 |

Note: The power input is for compressor only; cooling cap. and power input referred to evap. fouling factor=0,0176m² °C/kW.

Standard ratings ALS “E” XE 296.3 ÷ 460.4 ST

| ALS Unit size | Evaporator leaving water temp. (°C) | AIR AMBIENT TEMPERATURE - °C | | | | | | | | | | | |
|---------------|-------------------------------------|------------------------------|------------------|---------------------|------------------|---------------------|------------------|---------------------|------------------|---------------------|------------------|---------------------|------------------|
| | | 25 | | 30 | | 35 | | 40 | | 45 | | 48 | |
| | | Cooling capac. (kW) | Power input (kW) | Cooling capac. (kW) | Power input (kW) | Cooling capac. (kW) | Power input (kW) | Cooling capac. (kW) | Power input (kW) | Cooling capac. (kW) | Power input (kW) | Cooling capac. (kW) | Power input (kW) |
| 296.3 | 4 | 1102,6 | 265,6 | 1054,5 | 285,8 | 1006,4 | 308,0 | 955,1 | 334,1 | 904,0 | 365,1 | 871,5 | 385,3 |
| | 5 | 1135,9 | 270,4 | 1087,9 | 290,7 | 1037,7 | 313,9 | 986,5 | 339,0 | 933,2 | 368,9 | 899,7 | 390,2 |
| | 6 | 1170,4 | 275,3 | 1120,3 | 296,5 | 1069,1 | 318,7 | 1016,8 | 344,8 | 962,4 | 373,7 | 929,1 | 394,1 |
| | 7 | 1204,9 | 281,1 | 1153,7 | 302,3 | 1102,6 | 324,5 | 1048,2 | 349,6 | 992,8 | 378,5 | 959,3 | 398,8 |
| | 8 | 1239,4 | 285,8 | 1188,2 | 308,0 | 1134,9 | 330,2 | 1080,5 | 355,4 | 1024,1 | 384,4 | 988,6 | 403,7 |
| | 9 | 1274,9 | 291,6 | 1222,7 | 312,9 | 1168,3 | 336,1 | 1113,0 | 361,2 | 1055,5 | 389,2 | 1020,0 | 408,5 |
| 312.3 | 4 | 1186,9 | 279,1 | 1135,9 | 302,3 | 1083,0 | 326,6 | 1027,9 | 354,6 | 971,8 | 388,6 | 936,4 | 410,9 |
| | 5 | 1224,2 | 283,9 | 1171,2 | 307,2 | 1117,3 | 332,4 | 1061,1 | 360,4 | 1004,0 | 392,5 | 967,5 | 414,8 |
| | 6 | 1261,7 | 289,7 | 1207,7 | 313,0 | 1152,6 | 337,3 | 1095,4 | 365,3 | 1036,1 | 397,3 | 999,8 | 419,6 |
| | 7 | 1299,1 | 294,6 | 1244,0 | 317,9 | 1187,9 | 343,1 | 1129,7 | 371,1 | 1069,4 | 403,1 | 1032,0 | 424,5 |
| | 8 | 1337,5 | 300,4 | 1281,4 | 323,7 | 1224,2 | 348,9 | 1164,0 | 376,9 | 1102,6 | 408,0 | 1065,3 | 429,3 |
| | 9 | 1377,1 | 305,3 | 1319,9 | 329,5 | 1260,6 | 354,6 | 1199,3 | 382,8 | 1136,9 | 413,8 | 1098,5 | 434,2 |
| 327.3 | 4 | 1251,1 | 295,0 | 1195,7 | 320,1 | 1139,4 | 348,1 | 1081,0 | 379,9 | 1020,4 | 417,5 | 982,9 | 443,5 |
| | 5 | 1289,7 | 299,9 | 1233,3 | 325,9 | 1175,9 | 353,9 | 1115,4 | 385,7 | 1053,8 | 422,4 | 1016,2 | 447,4 |
| | 6 | 1329,3 | 305,7 | 1270,8 | 331,7 | 1212,5 | 359,6 | 1150,9 | 390,5 | 1088,3 | 427,1 | 1049,7 | 452,2 |
| | 7 | 1369,0 | 311,4 | 1309,5 | 337,5 | 1249,9 | 365,4 | 1187,3 | 396,3 | 1122,7 | 432,0 | 1083,0 | 456,0 |
| | 8 | 1409,6 | 316,3 | 1349,1 | 343,2 | 1287,5 | 371,3 | 1223,9 | 402,1 | 1158,2 | 437,8 | 1117,4 | 461,8 |
| | 9 | 1450,3 | 322,1 | 1388,7 | 349,0 | 1326,1 | 377,0 | 1261,5 | 407,8 | 1193,6 | 443,5 | 1153,0 | 466,7 |
| 344.3 | 4 | 1264,9 | 297,3 | 1211,6 | 325,3 | 1157,2 | 356,1 | 1099,7 | 391,8 | 1040,2 | 433,3 | 1003,5 | 462,3 |
| | 5 | 1303,5 | 302,1 | 1249,2 | 330,0 | 1192,7 | 361,0 | 1134,3 | 395,7 | 1074,6 | 437,2 | 1037,0 | 465,2 |
| | 6 | 1342,2 | 307,0 | 1286,8 | 334,9 | 1229,3 | 365,8 | 1169,8 | 400,6 | 1108,1 | 441,1 | 1070,4 | 469,0 |
| | 7 | 1380,9 | 311,7 | 1324,4 | 340,7 | 1265,9 | 371,6 | 1205,3 | 406,4 | 1142,6 | 445,9 | 1103,9 | 472,9 |
| | 8 | 1420,7 | 317,5 | 1363,1 | 345,6 | 1303,5 | 376,4 | 1241,8 | 411,1 | 1178,1 | 450,7 | 1138,4 | 477,8 |
| | 9 | 1461,4 | 322,4 | 1402,9 | 351,3 | 1341,2 | 382,2 | 1278,5 | 416,9 | 1213,6 | 455,5 | 1172,9 | 481,6 |
| 355.4 | 4 | 1349,9 | 333,5 | 1292,5 | 358,5 | 1233,1 | 385,6 | 1172,7 | 417,4 | 1109,1 | 454,0 | 1069,5 | 479,1 |
| | 5 | 1390,5 | 340,2 | 1332,1 | 365,3 | 1271,7 | 392,3 | 1209,1 | 423,1 | 1144,5 | 459,8 | 1104,9 | 484,8 |
| | 6 | 1432,2 | 347,0 | 1371,8 | 372,0 | 1310,2 | 400,1 | 1246,7 | 429,9 | 1181,0 | 465,5 | 1140,3 | 490,6 |
| | 7 | 1473,9 | 353,8 | 1412,4 | 378,8 | 1349,9 | 406,7 | 1284,2 | 437,6 | 1217,4 | 472,3 | 1175,7 | 496,5 |
| | 8 | 1516,7 | 360,5 | 1454,1 | 386,5 | 1389,5 | 413,5 | 1323,8 | 444,4 | 1255,0 | 479,1 | 1212,3 | 502,2 |
| | 9 | 1559,4 | 367,3 | 1495,8 | 393,3 | 1430,2 | 421,2 | 1362,4 | 452,0 | 1292,5 | 485,8 | 1248,7 | 509,0 |
| 393.4 | 4 | 1478,1 | 355,9 | 1415,3 | 382,9 | 1350,4 | 413,0 | 1283,5 | 447,8 | 1214,5 | 488,4 | 1171,6 | 516,4 |
| | 5 | 1522,1 | 362,7 | 1458,2 | 389,7 | 1392,3 | 419,7 | 1324,3 | 454,5 | 1253,1 | 494,2 | 1210,3 | 521,2 |
| | 6 | 1567,0 | 369,4 | 1502,2 | 396,5 | 1434,1 | 427,4 | 1365,2 | 461,3 | 1293,0 | 500,0 | 1249,0 | 527,1 |
| | 7 | 1613,1 | 376,2 | 1546,0 | 404,3 | 1477,1 | 434,2 | 1407,0 | 468,1 | 1332,7 | 506,8 | 1287,7 | 533,8 |
| | 8 | 1659,1 | 382,9 | 1591,0 | 412,0 | 1521,0 | 442,0 | 1448,9 | 475,8 | 1373,5 | 513,6 | 1327,5 | 539,7 |
| | 9 | 1706,1 | 389,7 | 1637,1 | 418,7 | 1564,9 | 449,7 | 1491,7 | 483,5 | 1415,3 | 521,2 | 1368,2 | 546,5 |
| 426.4 | 4 | 1606,1 | 382,1 | 1537,1 | 414,0 | 1466,1 | 449,7 | 1392,9 | 490,3 | 1317,6 | 538,5 | 1270,7 | 572,3 |
| | 5 | 1654,1 | 388,9 | 1584,1 | 420,7 | 1512,0 | 456,5 | 1436,8 | 497,1 | 1359,4 | 544,3 | 1312,5 | 577,1 |
| | 6 | 1703,2 | 395,7 | 1631,1 | 428,5 | 1558,0 | 464,2 | 1481,7 | 503,7 | 1403,4 | 551,1 | 1354,3 | 582,9 |
| | 7 | 1752,3 | 402,4 | 1680,2 | 435,3 | 1605,0 | 471,0 | 1526,6 | 511,5 | 1446,2 | 557,8 | 1397,1 | 588,7 |
| | 8 | 1803,6 | 409,2 | 1728,3 | 442,9 | 1652,0 | 478,6 | 1572,7 | 519,2 | 1491,1 | 564,6 | 1439,9 | 595,4 |
| | 9 | 1854,8 | 416,9 | 1778,5 | 450,7 | 1700,1 | 487,4 | 1619,6 | 526,9 | 1536,1 | 571,3 | 1483,8 | 602,2 |
| 460.4 | 4 | 1737,3 | 409,7 | 1663,1 | 446,3 | 1586,6 | 487,9 | 1507,1 | 535,3 | 1424,4 | 591,2 | 1373,2 | 629,0 |
| | 5 | 1789,7 | 416,4 | 1714,3 | 454,1 | 1635,8 | 494,6 | 1554,2 | 542,0 | 1470,5 | 597,1 | 1418,2 | 634,8 |
| | 6 | 1843,0 | 423,2 | 1765,6 | 460,8 | 1685,0 | 502,4 | 1602,3 | 548,8 | 1516,5 | 602,9 | 1464,2 | 639,5 |
| | 7 | 1897,5 | 430,0 | 1817,9 | 468,6 | 1736,3 | 510,2 | 1651,5 | 556,5 | 1563,6 | 609,7 | 1510,2 | 645,4 |
| | 8 | 1951,9 | 437,6 | 1871,2 | 476,3 | 1787,5 | 517,8 | 1701,8 | 563,2 | 1611,7 | 616,4 | 1556,3 | 652,2 |
| | 9 | 2007,3 | 444,4 | 1924,7 | 484,1 | 1839,9 | 525,6 | 1752,0 | 571,9 | 1660,9 | 624,1 | 1604,4 | 658,9 |

Note: The power input is for compressor only; cooling cap. and power input referred to evap. fouling factor=0,0176m² °C/kW.

Standard ratings ALS “E” XE 163.2 ÷ 279.3 LN, XN

| ALS Unit size | Evaporator leaving water temp. (°C) | AIR AMBIENT TEMPERATURE - °C | | | | | | | | | |
|---------------|-------------------------------------|------------------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|
| | | 25 | | 30 | | 35 | | 40 | | 44 | |
| | | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) |
| 163.2 | 4 | 596,7 | 165,2 | 570,6 | 176,7 | 542,4 | 190,3 | 514,2 | 205,7 | 491,2 | 220,2 |
| | 5 | 614,4 | 168,1 | 587,4 | 180,6 | 559,1 | 193,1 | 530,8 | 208,6 | 506,9 | 223,1 |
| | 6 | 632,3 | 171,9 | 605,1 | 183,5 | 575,8 | 197,0 | 546,6 | 212,5 | 522,5 | 226,0 |
| | 7 | 650,1 | 175,7 | 621,8 | 187,4 | 593,5 | 200,9 | 563,3 | 215,3 | 538,2 | 229,9 |
| | 8 | 668,8 | 178,7 | 639,6 | 191,3 | 610,3 | 204,7 | 580,0 | 219,2 | 553,9 | 232,8 |
| | 9 | 687,6 | 182,5 | 658,4 | 195,0 | 628,0 | 208,6 | 596,7 | 223,1 | 570,6 | 236,7 |
| 178.2 | 4 | 657,7 | 176,0 | 628,3 | 189,5 | 598,1 | 204,1 | 566,7 | 221,4 | 541,6 | 237,9 |
| | 5 | 676,5 | 179,9 | 647,2 | 193,4 | 616,9 | 208,0 | 584,5 | 225,3 | 558,3 | 240,8 |
| | 6 | 696,4 | 183,7 | 666,0 | 197,3 | 634,6 | 211,8 | 602,3 | 228,2 | 576,1 | 243,7 |
| | 7 | 716,3 | 187,6 | 685,9 | 201,2 | 653,5 | 215,7 | 620,0 | 232,1 | 592,8 | 247,6 |
| | 8 | 737,2 | 191,5 | 704,7 | 205,0 | 672,3 | 219,5 | 638,8 | 236,0 | 610,6 | 251,4 |
| | 9 | 757,0 | 195,3 | 724,6 | 208,9 | 692,2 | 223,4 | 657,7 | 239,9 | 628,3 | 254,3 |
| 196.2 | 4 | 714,8 | 187,1 | 683,5 | 201,5 | 651,1 | 217,0 | 616,6 | 236,3 | 589,6 | 254,6 |
| | 5 | 736,7 | 190,9 | 704,3 | 204,4 | 670,9 | 220,8 | 636,5 | 240,1 | 607,3 | 257,4 |
| | 6 | 757,5 | 193,8 | 724,1 | 209,2 | 690,8 | 224,6 | 655,2 | 242,9 | 626,0 | 260,3 |
| | 7 | 779,4 | 197,7 | 745,0 | 213,1 | 710,5 | 228,5 | 675,1 | 246,8 | 645,9 | 264,2 |
| | 8 | 801,3 | 202,5 | 766,9 | 217,0 | 731,4 | 233,3 | 694,9 | 250,7 | 664,6 | 268,1 |
| | 9 | 823,3 | 206,4 | 787,8 | 220,8 | 752,3 | 237,2 | 714,8 | 255,6 | 684,5 | 271,9 |
| 212.2 | 4 | 784,0 | 202,7 | 748,5 | 220,1 | 713,0 | 239,4 | 675,3 | 261,6 | 644,0 | 282,8 |
| | 5 | 807,0 | 206,6 | 771,4 | 223,9 | 734,9 | 243,2 | 696,2 | 265,5 | 664,9 | 285,7 |
| | 6 | 831,1 | 210,4 | 794,5 | 227,8 | 756,8 | 247,1 | 717,1 | 269,2 | 684,8 | 289,5 |
| | 7 | 855,1 | 215,2 | 817,5 | 232,6 | 778,8 | 250,9 | 739,1 | 273,1 | 705,7 | 293,4 |
| | 8 | 879,1 | 219,1 | 840,4 | 236,5 | 801,8 | 255,8 | 761,0 | 277,0 | 727,6 | 297,3 |
| | 9 | 903,2 | 223,0 | 864,5 | 240,3 | 824,8 | 259,6 | 783,0 | 280,9 | 748,5 | 301,1 |
| 229.2 | 4 | 839,2 | 216,9 | 801,6 | 237,1 | 763,0 | 259,3 | 722,4 | 285,3 | 689,0 | 309,4 |
| | 5 | 864,1 | 220,7 | 825,6 | 241,0 | 785,9 | 263,1 | 745,3 | 289,2 | 710,9 | 313,3 |
| | 6 | 889,1 | 224,6 | 849,6 | 244,8 | 809,9 | 267,0 | 767,2 | 293,0 | 732,8 | 316,2 |
| | 7 | 914,1 | 229,4 | 874,6 | 248,7 | 833,9 | 270,9 | 790,1 | 296,9 | 755,8 | 320,0 |
| | 8 | 940,2 | 233,2 | 899,6 | 253,5 | 857,9 | 275,7 | 814,1 | 300,7 | 777,6 | 323,8 |
| | 9 | 966,3 | 237,1 | 924,6 | 257,4 | 881,9 | 279,5 | 837,0 | 304,6 | 800,5 | 327,7 |
| 240.3 | 4 | 899,6 | 244,7 | 858,8 | 262,1 | 818,1 | 281,5 | 775,1 | 304,7 | 739,6 | 325,9 |
| | 5 | 926,8 | 249,5 | 885,0 | 266,9 | 843,2 | 286,2 | 799,2 | 309,5 | 763,6 | 329,8 |
| | 6 | 954,1 | 255,3 | 912,2 | 272,7 | 869,3 | 292,0 | 824,3 | 314,4 | 787,7 | 334,6 |
| | 7 | 982,3 | 260,1 | 939,3 | 278,6 | 895,5 | 297,9 | 849,4 | 319,1 | 811,8 | 339,5 |
| | 8 | 1010,5 | 266,0 | 966,5 | 283,3 | 921,6 | 302,7 | 874,5 | 324,9 | 836,9 | 345,3 |
| | 9 | 1039,8 | 271,8 | 994,8 | 289,1 | 948,8 | 308,5 | 900,6 | 330,7 | 861,9 | 350,0 |
| 260.3 | 4 | 950,9 | 257,7 | 908,1 | 276,0 | 864,2 | 297,3 | 819,2 | 322,3 | 781,6 | 346,4 |
| | 5 | 980,1 | 263,4 | 936,3 | 281,8 | 891,3 | 303,0 | 844,3 | 328,1 | 805,6 | 350,3 |
| | 6 | 1008,4 | 268,3 | 964,5 | 287,6 | 918,5 | 308,8 | 870,4 | 333,0 | 831,8 | 355,2 |
| | 7 | 1038,6 | 274,1 | 992,7 | 293,4 | 945,7 | 314,6 | 896,5 | 338,8 | 856,8 | 360,9 |
| | 8 | 1068,0 | 279,9 | 1020,9 | 299,2 | 973,9 | 320,4 | 923,7 | 343,5 | 883,0 | 365,7 |
| | 9 | 1098,2 | 285,6 | 1050,2 | 304,9 | 1002,1 | 326,2 | 950,9 | 349,3 | 909,1 | 371,6 |
| 279.3 | 4 | 1012,0 | 268,6 | 966,0 | 288,8 | 920,0 | 312,0 | 870,8 | 338,1 | 831,0 | 363,2 |
| | 5 | 1042,4 | 274,4 | 995,3 | 294,7 | 948,2 | 316,9 | 899,0 | 343,9 | 858,2 | 368,1 |
| | 6 | 1072,8 | 280,2 | 1025,7 | 300,5 | 976,5 | 322,7 | 926,3 | 348,8 | 884,4 | 372,9 |
| | 7 | 1104,2 | 286,0 | 1056,0 | 306,3 | 1005,7 | 328,5 | 954,5 | 354,6 | 911,5 | 378,7 |
| | 8 | 1135,6 | 291,7 | 1086,3 | 312,0 | 1035,1 | 334,3 | 982,8 | 360,4 | 939,8 | 383,6 |
| | 9 | 1167,0 | 297,6 | 1116,7 | 317,8 | 1065,4 | 341,0 | 1012,0 | 366,1 | 967,0 | 389,3 |

Note: The power input is for compressor only; cooling cap. and power input referred to evap. fouling factor=0,0176m² °C/kW.

Standard ratings ALS “E” XE 296.3 ÷ 460.4 LN, XN

| ALS Unit size | Evaporator leaving water temp. (°C) | AIR AMBIENT TEMPERATURE - °C | | | | | | | | | |
|---------------|-------------------------------------|------------------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|
| | | 25 | | 30 | | 35 | | 40 | | 44 | |
| | | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) |
| 296.3 | 4 | 1069,1 | 280,1 | 1021,0 | 301,3 | 971,9 | 325,5 | 920,6 | 354,4 | 878,8 | 380,5 |
| | 5 | 1101,4 | 284,9 | 1052,3 | 307,1 | 1002,2 | 331,2 | 950,0 | 359,2 | 907,1 | 385,3 |
| | 6 | 1133,9 | 290,7 | 1083,7 | 312,9 | 1032,5 | 337,0 | 979,2 | 365,1 | 935,4 | 390,2 |
| | 7 | 1166,3 | 296,5 | 1115,0 | 318,7 | 1062,8 | 342,9 | 1008,5 | 369,9 | 963,6 | 396,0 |
| | 8 | 1199,7 | 303,3 | 1147,4 | 324,5 | 1094,1 | 348,7 | 1038,7 | 375,6 | 992,8 | 400,8 |
| | 9 | 1233,1 | 309,0 | 1179,9 | 331,2 | 1125,5 | 355,4 | 1069,1 | 382,4 | 1022,0 | 406,6 |
| 312.3 | 4 | 1159,5 | 294,0 | 1107,3 | 317,2 | 1052,9 | 344,3 | 997,4 | 375,3 | 951,5 | 404,3 |
| | 5 | 1194,1 | 299,8 | 1140,7 | 323,0 | 1086,4 | 350,0 | 1028,8 | 380,1 | 982,8 | 409,1 |
| | 6 | 1229,6 | 305,6 | 1175,2 | 329,8 | 1119,8 | 355,9 | 1061,3 | 385,8 | 1013,2 | 414,0 |
| | 7 | 1266,1 | 311,4 | 1210,7 | 335,6 | 1153,3 | 361,7 | 1093,7 | 391,7 | 1045,6 | 419,7 |
| | 8 | 1302,8 | 317,2 | 1246,3 | 341,4 | 1187,8 | 368,5 | 1127,1 | 398,4 | 1076,9 | 424,5 |
| | 9 | 1340,4 | 324,0 | 1281,9 | 348,2 | 1222,3 | 374,3 | 1160,6 | 404,3 | 1110,4 | 431,3 |
| 327.3 | 4 | 1211,3 | 313,4 | 1156,0 | 339,4 | 1098,7 | 369,3 | 1040,2 | 405,0 | 991,2 | 437,8 |
| | 5 | 1247,9 | 319,2 | 1191,6 | 345,2 | 1133,1 | 376,0 | 1072,6 | 410,7 | 1022,5 | 442,5 |
| | 6 | 1285,5 | 324,9 | 1228,1 | 352,0 | 1167,6 | 381,8 | 1106,0 | 416,5 | 1054,8 | 448,4 |
| | 7 | 1323,0 | 331,7 | 1263,5 | 358,6 | 1203,0 | 388,6 | 1140,4 | 422,4 | 1088,3 | 453,2 |
| | 8 | 1361,7 | 337,5 | 1301,1 | 364,5 | 1238,5 | 394,3 | 1174,9 | 428,1 | 1121,7 | 458,9 |
| | 9 | 1400,3 | 344,2 | 1338,7 | 371,3 | 1275,1 | 401,1 | 1209,3 | 434,9 | 1155,0 | 465,7 |
| 344.3 | 4 | 1230,4 | 315,6 | 1176,1 | 344,6 | 1120,7 | 378,3 | 1062,1 | 416,9 | 1014,0 | 453,6 |
| | 5 | 1267,0 | 321,4 | 1211,6 | 350,3 | 1154,0 | 383,2 | 1095,5 | 421,8 | 1046,4 | 458,5 |
| | 6 | 1303,5 | 326,3 | 1247,1 | 356,1 | 1189,6 | 388,9 | 1129,0 | 427,6 | 1078,8 | 462,3 |
| | 7 | 1341,2 | 332,0 | 1283,6 | 362,0 | 1224,1 | 394,7 | 1162,5 | 432,4 | 1112,2 | 467,2 |
| | 8 | 1378,8 | 337,8 | 1320,3 | 367,8 | 1259,7 | 400,6 | 1197,0 | 438,2 | 1144,7 | 472,9 |
| | 9 | 1417,5 | 343,6 | 1357,9 | 373,5 | 1296,2 | 407,3 | 1231,4 | 444,0 | 1179,1 | 477,8 |
| 355.4 | 4 | 1309,2 | 350,9 | 1251,8 | 376,9 | 1191,4 | 406,7 | 1129,9 | 441,5 | 1078,9 | 473,3 |
| | 5 | 1347,8 | 358,5 | 1289,4 | 384,6 | 1227,9 | 413,5 | 1164,3 | 448,3 | 1112,2 | 480,1 |
| | 6 | 1387,4 | 365,3 | 1326,9 | 392,3 | 1264,4 | 421,2 | 1199,7 | 454,9 | 1146,6 | 485,8 |
| | 7 | 1427,0 | 373,0 | 1365,5 | 400,1 | 1301,9 | 429,0 | 1236,3 | 462,7 | 1181,0 | 492,6 |
| | 8 | 1467,6 | 380,8 | 1404,0 | 407,7 | 1339,5 | 436,6 | 1271,7 | 469,4 | 1216,4 | 500,2 |
| | 9 | 1508,3 | 388,4 | 1443,7 | 415,5 | 1378,0 | 444,4 | 1309,2 | 477,2 | 1251,8 | 507,0 |
| 393.4 | 4 | 1434,1 | 374,3 | 1370,3 | 403,3 | 1305,5 | 436,2 | 1237,5 | 473,9 | 1181,0 | 509,7 |
| | 5 | 1476,0 | 382,1 | 1411,2 | 411,1 | 1344,2 | 443,9 | 1275,2 | 480,7 | 1218,7 | 515,4 |
| | 6 | 1518,9 | 389,7 | 1453,0 | 418,7 | 1385,0 | 450,6 | 1313,9 | 488,4 | 1256,3 | 522,2 |
| | 7 | 1561,8 | 397,5 | 1494,9 | 426,5 | 1425,8 | 459,4 | 1353,6 | 496,1 | 1294,0 | 530,0 |
| | 8 | 1605,8 | 405,2 | 1537,7 | 435,2 | 1466,6 | 467,1 | 1393,4 | 503,9 | 1332,7 | 536,8 |
| | 9 | 1650,7 | 413,0 | 1580,6 | 443,0 | 1508,5 | 475,8 | 1433,1 | 511,6 | 1371,4 | 544,5 |
| 426.4 | 4 | 1557,0 | 404,3 | 1488,0 | 438,2 | 1417,0 | 476,8 | 1342,8 | 522,1 | 1281,1 | 564,6 |
| | 5 | 1602,9 | 412,1 | 1532,9 | 445,8 | 1459,8 | 484,4 | 1383,5 | 528,9 | 1320,8 | 570,4 |
| | 6 | 1650,0 | 419,8 | 1577,9 | 454,6 | 1502,6 | 492,2 | 1426,4 | 536,5 | 1361,6 | 577,1 |
| | 7 | 1697,0 | 427,5 | 1623,8 | 462,2 | 1547,5 | 500,8 | 1468,2 | 544,3 | 1403,4 | 584,8 |
| | 8 | 1745,0 | 436,2 | 1669,8 | 471,0 | 1592,5 | 508,6 | 1512,0 | 552,0 | 1445,2 | 591,6 |
| | 9 | 1793,1 | 443,9 | 1716,8 | 479,6 | 1637,4 | 517,2 | 1555,9 | 560,7 | 1488,0 | 599,3 |
| 460.4 | 4 | 1685,0 | 435,8 | 1609,6 | 474,4 | 1532,2 | 519,8 | 1450,6 | 571,9 | 1383,6 | 621,2 |
| | 5 | 1735,2 | 443,4 | 1657,8 | 483,1 | 1578,2 | 527,5 | 1495,6 | 579,7 | 1427,5 | 627,0 |
| | 6 | 1785,5 | 451,2 | 1706,9 | 490,8 | 1625,4 | 535,3 | 1541,6 | 586,4 | 1471,5 | 633,8 |
| | 7 | 1836,8 | 459,0 | 1756,1 | 499,5 | 1673,5 | 543,9 | 1587,7 | 594,2 | 1516,5 | 641,5 |
| | 8 | 1888,0 | 467,6 | 1806,4 | 508,2 | 1721,7 | 552,6 | 1634,8 | 602,9 | 1561,5 | 648,3 |
| | 9 | 1940,3 | 476,3 | 1857,7 | 516,9 | 1770,9 | 561,3 | 1681,8 | 611,5 | 1607,6 | 657,0 |

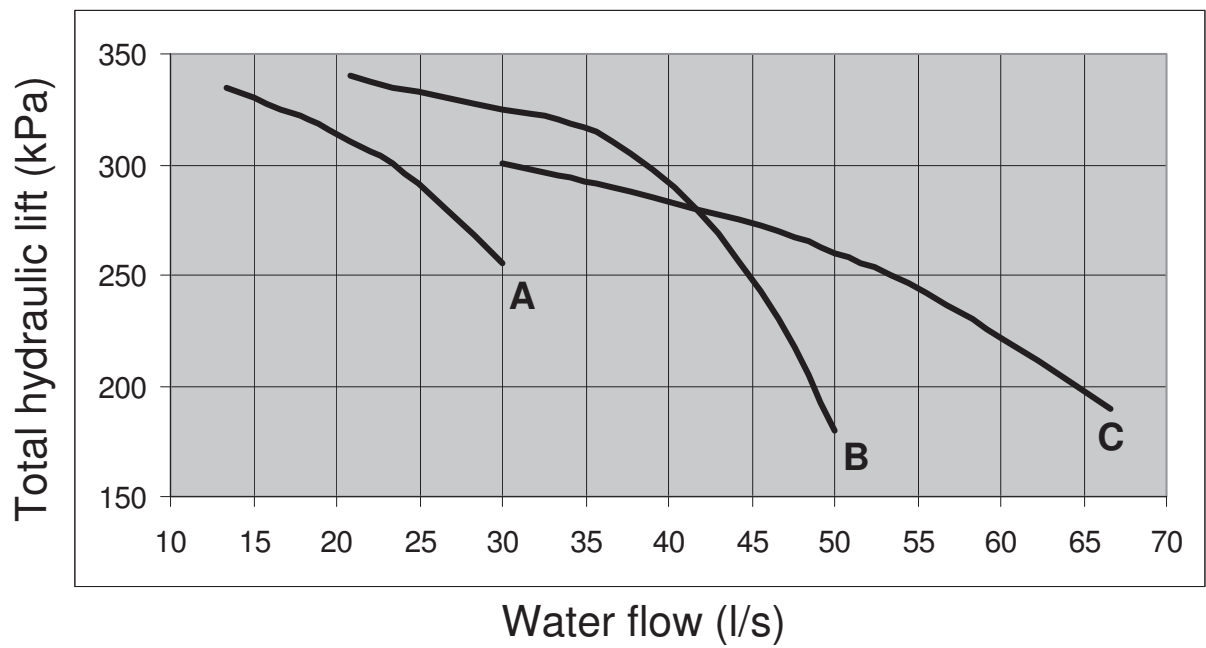
Note: The power input is for compressor only; cooling cap. and power input referred to evap. fouling factor=0,0176m² °C/kW.

Standard ratings ALS “E” XE 163.2 ÷ 296.3 XXN

| ALS Unit size | Evaporator leaving water temp. (°C) | AIR AMBIENT TEMPERATURE - °C | | | | | | | | | |
|---------------|-------------------------------------|------------------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|-----------------------|------------------|
| | | 25 | | 30 | | 32 | | 35 | | 40 | |
| | | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) | Cooling capacity (kW) | Power input (kW) |
| 163.2 | 4 | 576,7 | 180,0 | 549,9 | 193,4 | 539,0 | 199,3 | 522,2 | 209,0 | 493,3 | 227,7 |
| | 5 | 593,2 | 183,9 | 565,9 | 197,2 | 554,7 | 203,1 | 537,6 | 212,7 | 508,1 | 231,0 |
| | 6 | 610,0 | 187,8 | 582,1 | 201,2 | 570,7 | 207,0 | 553,2 | 216,5 | 523,1 | 234,6 |
| | 7 | 626,9 | 191,9 | 598,4 | 205,2 | 586,8 | 211,1 | 568,9 | 220,5 | 538,2 | 238,3 |
| | 8 | 644,1 | 196,0 | 615,0 | 209,4 | 603,1 | 215,2 | 584,9 | 224,5 | 553,5 | 242,2 |
| | 9 | 661,4 | 200,3 | 631,7 | 213,7 | 619,5 | 219,5 | 601,0 | 228,8 | 569,0 | 246,2 |
| 178.2 | 4 | 639,8 | 195,2 | 609,8 | 210,1 | 597,5 | 216,7 | 578,7 | 227,4 | 546,4 | 248,1 |
| | 5 | 658,2 | 199,4 | 627,6 | 214,2 | 615,0 | 220,8 | 595,8 | 231,4 | 562,8 | 251,8 |
| | 6 | 676,8 | 203,6 | 645,5 | 218,5 | 632,7 | 225,0 | 613,1 | 235,5 | 579,4 | 255,6 |
| | 7 | 695,6 | 208,0 | 663,7 | 222,8 | 650,6 | 229,3 | 630,6 | 239,8 | 596,3 | 259,6 |
| | 8 | 714,7 | 212,4 | 682,1 | 227,3 | 668,7 | 233,8 | 648,3 | 244,2 | 613,3 | 263,7 |
| | 9 | 734,0 | 217,0 | 700,6 | 231,9 | 687,0 | 238,4 | 666,2 | 248,7 | 630,5 | 268,1 |
| 196.2 | 4 | 691,1 | 207,6 | 658,8 | 224,2 | 645,6 | 231,6 | 625,4 | 243,6 | 590,6 | 266,6 |
| | 5 | 710,8 | 211,9 | 677,8 | 228,5 | 664,4 | 235,8 | 643,7 | 247,6 | 608,3 | 270,3 |
| | 6 | 730,7 | 216,3 | 697,1 | 232,8 | 683,3 | 240,1 | 662,3 | 251,9 | 626,2 | 274,2 |
| | 7 | 750,8 | 220,8 | 716,5 | 237,3 | 702,5 | 244,6 | 681,1 | 256,2 | 644,2 | 278,3 |
| | 8 | 771,2 | 225,4 | 736,2 | 242,0 | 721,9 | 249,2 | 700,0 | 260,7 | 662,5 | 282,6 |
| | 9 | 791,8 | 230,1 | 756,1 | 246,7 | 741,5 | 253,9 | 719,2 | 265,4 | 681,0 | 287,0 |
| 240.3 | 4 | 851,3 | 266,9 | 811,8 | 286,9 | 795,6 | 295,9 | 770,8 | 310,5 | 728,0 | 338,8 |
| | 5 | 875,9 | 272,6 | 835,5 | 292,6 | 819,0 | 301,5 | 793,6 | 315,9 | 750,0 | 343,8 |
| | 6 | 900,8 | 278,4 | 859,6 | 298,4 | 842,7 | 307,2 | 816,8 | 321,5 | 772,2 | 348,9 |
| | 7 | 926,0 | 284,4 | 883,9 | 304,4 | 866,6 | 313,2 | 840,2 | 327,4 | 794,7 | 354,4 |
| | 8 | 951,6 | 290,5 | 908,5 | 310,6 | 890,9 | 319,3 | 863,9 | 333,4 | 817,5 | 360,0 |
| | 9 | 977,3 | 296,8 | 933,4 | 316,9 | 915,4 | 325,6 | 887,9 | 339,6 | 840,6 | 365,9 |
| 260.3 | 4 | 924,9 | 278,1 | 882,0 | 299,1 | 864,5 | 308,4 | 837,7 | 323,6 | 791,5 | 352,8 |
| | 5 | 951,8 | 284,0 | 908,1 | 305,0 | 890,2 | 314,2 | 862,8 | 329,2 | 815,7 | 357,9 |
| | 6 | 979,2 | 290,0 | 934,5 | 311,0 | 916,2 | 320,2 | 888,2 | 335,1 | 840,1 | 363,3 |
| | 7 | 1006,8 | 296,2 | 961,2 | 317,2 | 942,5 | 326,4 | 913,9 | 341,1 | 864,9 | 369,0 |
| | 8 | 1034,8 | 302,5 | 988,2 | 323,6 | 969,1 | 332,7 | 940,0 | 347,4 | 890,0 | 374,9 |
| | 9 | 1063,1 | 309,0 | 1015,5 | 330,1 | 996,1 | 339,2 | 966,3 | 353,8 | 915,3 | 381,1 |
| 279.3 | 4 | 965,9 | 294,7 | 920,7 | 318,0 | 902,2 | 328,4 | 873,9 | 345,3 | 825,1 | 378,0 |
| | 5 | 993,7 | 300,9 | 947,6 | 324,1 | 928,7 | 334,4 | 899,8 | 351,1 | 850,0 | 383,3 |
| | 6 | 1021,9 | 307,2 | 974,8 | 330,4 | 955,5 | 340,6 | 926,0 | 357,2 | 875,2 | 388,8 |
| | 7 | 1050,4 | 313,6 | 1002,3 | 336,8 | 982,6 | 347,0 | 952,5 | 363,4 | 900,7 | 394,6 |
| | 8 | 1079,2 | 320,3 | 1030,1 | 343,5 | 1010,0 | 353,6 | 979,3 | 369,9 | 926,5 | 400,7 |
| | 9 | 1108,3 | 327,0 | 1058,2 | 350,3 | 1037,7 | 360,4 | 1006,4 | 376,6 | 952,6 | 407,0 |
| 296.3 | 4 | 1025,0 | 302,6 | 977,8 | 327,1 | 958,4 | 337,9 | 928,8 | 355,6 | 877,9 | 389,6 |
| | 5 | 1054,5 | 308,8 | 1006,3 | 333,1 | 986,6 | 343,9 | 956,4 | 361,4 | 904,5 | 394,8 |
| | 6 | 1084,4 | 315,0 | 1035,2 | 339,4 | 1015,1 | 350,1 | 984,3 | 367,4 | 931,4 | 400,4 |
| | 7 | 1114,6 | 321,5 | 1064,5 | 345,9 | 1043,9 | 356,5 | 1012,5 | 373,7 | 958,6 | 406,2 |
| | 8 | 1145,2 | 328,1 | 1094,0 | 352,5 | 1073,1 | 363,1 | 1041,1 | 380,2 | 986,1 | 412,3 |
| | 9 | 1176,2 | 334,8 | 1123,9 | 359,3 | 1102,6 | 369,9 | 1069,9 | 386,9 | 1013,9 | 418,7 |

Note: The power input is for compressor only; cooling cap. and power input referred to evap. fouling factor=0,0176m² °C/kW.

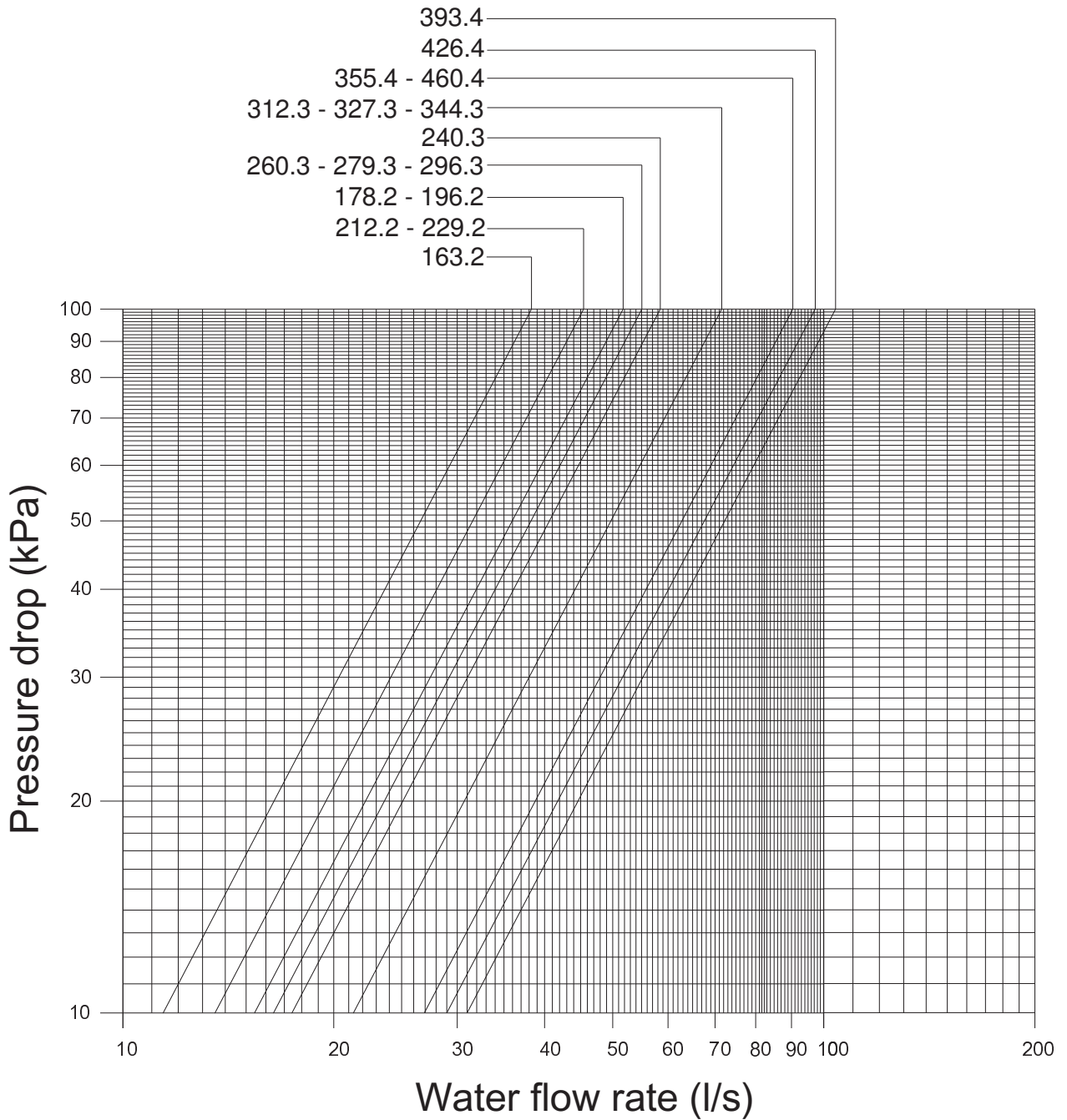
Water pump diagram



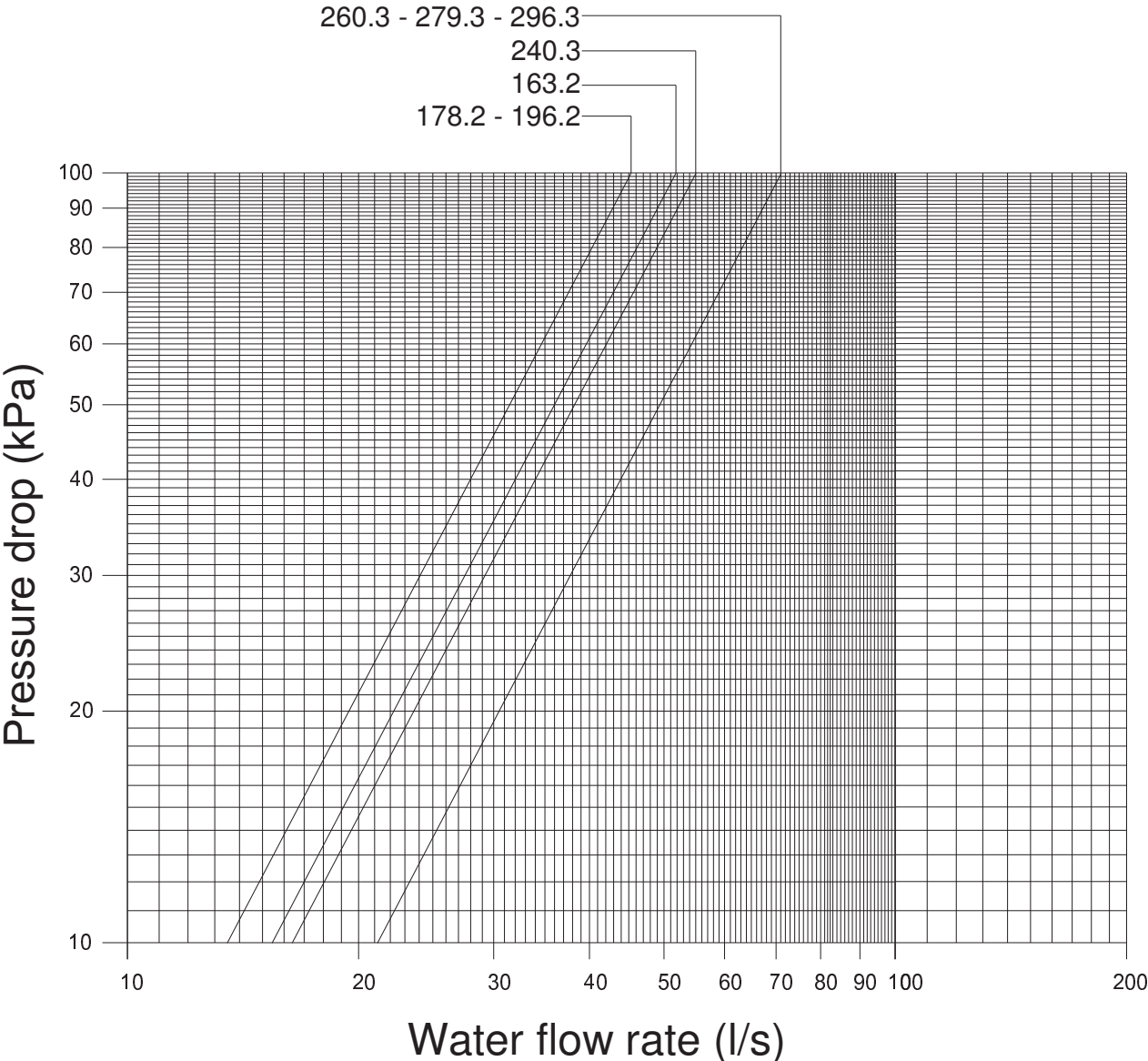
| Type pump | Unit models | Motor power | AMPS | Electric protection | Voltage |
|-----------|--------------------------------|-------------|------|---------------------|----------|
| | | kW | A | | V / Hz |
| A | 163.2 - 178.2 | 11 | 22,5 | IP54 | 400/3/50 |
| B | 196.2 ÷ 229.2 240.3 ÷ 279.3 | 15 | 30,0 | IP54 | 400/3/50 |
| C | 296.3 - 312.3 327.3 - 344.3 | 18,5 | 32,0 | IP54 | 400/3/50 |

NOTE: to have the useful hydraulic lift is necessary to subtract the evaporator pressure drop to the total hydraulic lift

**Evaporator pressure drop – ALS “E” SE ST, LN, XN, XXN;
ALS “E” XE ST, LN, XN**



Evaporator pressure drop – ALS “E” XE XXN

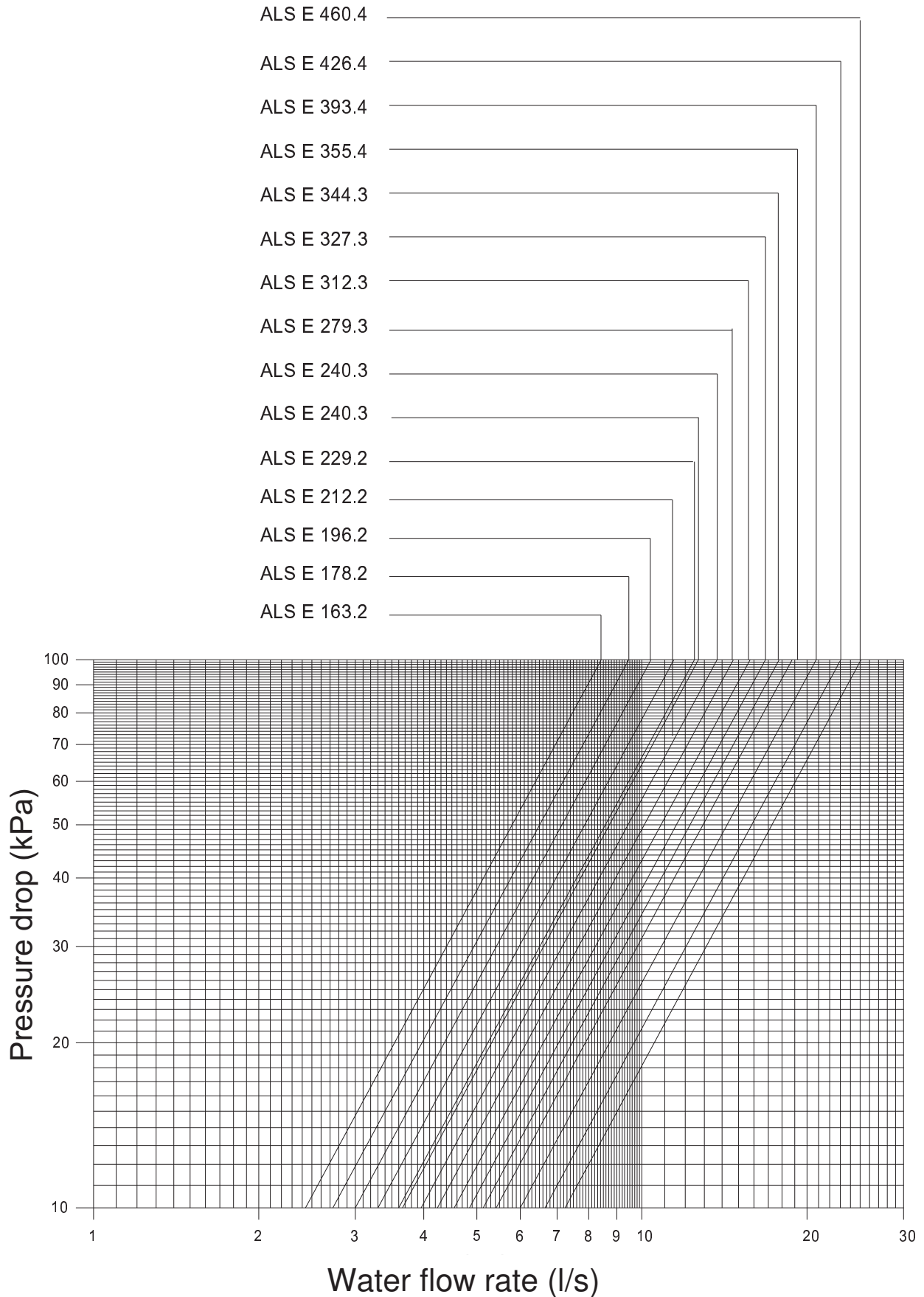


Partial heat recovery ratings ALS “E” 163.2 ÷ 460.4

| ALS Unit size | | LEAVING DESUPERHEATERS WATER TEMPERATURE - °C | | |
|---------------|--|---|-----------------------|-----------------------|
| | | 45 | 50 | 55 |
| | | Heating capacity (kW) | Heating capacity (kW) | Heating capacity (kW) |
| 163.2 | Leaving chilled water temperature 7°C ΔT 5°C – Air temperature 35°C | 110 | 94 | 77 |
| 178.2 | | 122 | 104 | 86 |
| 196.2 | | 134 | 114 | 94 |
| 212.2 | | 145 | 123 | 102 |
| 229.2 | | 157 | 133 | 110 |
| 240.3 | | 165 | 141 | 116 |
| 260.3 | | 177 | 151 | 124 |
| 279.3 | | 189 | 161 | 132 |
| 296.3 | | 201 | 171 | 141 |
| 312.3 | | 212 | 180 | 149 |
| 327.3 | | 224 | 190 | 156 |
| 344.3 | | 235 | 200 | 164 |
| 355.4 | | 212 | 180 | 148 |
| 393.4 | | 268 | 228 | 188 |
| 426.4 | | 291 | 247 | 203 |
| 460.4 | | 313 | 266 | 219 |

Pressure drop for partial heat recovery

ALS "E" 163.2 ÷ 460.4



Total heat recovery ratings ALS "E" SE 163.2 ÷ 279.3

| ALS Unit size | Leaving chilled water temperature °C | LEAVING HEAT RECOVERY CONDENSER WATER TEMPERATURE - °C | | | | | | | | | | | |
|---------------|--------------------------------------|--|------------------|---------------------|-------------------|------------------|---------------------|-------------------|------------------|---------------------|-------------------|------------------|---------------------|
| | | 40 | | | 45 | | | 50 | | | 55 | | |
| | | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) |
| 163.2 | 4 | 551,1 | 171,1 | 722,2 | 525,6 | 184,3 | 709,9 | 499,2 | 199,5 | 698,7 | 471,9 | 217,7 | 689,6 |
| | 5 | 569,1 | 173,7 | 742,8 | 543,0 | 186,8 | 729,8 | 516,1 | 201,8 | 717,9 | 488,2 | 219,5 | 707,7 |
| | 6 | 587,4 | 176,3 | 763,7 | 560,7 | 189,4 | 750,1 | 533,2 | 204,2 | 737,4 | 504,8 | 221,5 | 726,3 |
| | 7 | 606,0 | 179,0 | 785,0 | 578,8 | 192,1 | 770,9 | 550,7 | 206,7 | 757,4 | 521,7 | 223,7 | 745,4 |
| | 8 | 624,9 | 181,7 | 806,6 | 597,2 | 194,8 | 792,0 | 568,5 | 209,4 | 777,9 | 538,9 | 226,0 | 764,9 |
| 178.2 | 4 | 609,6 | 182,2 | 791,8 | 581,5 | 196,8 | 778,3 | 552,5 | 213,6 | 766,1 | 522,5 | 233,3 | 755,8 |
| | 5 | 629,4 | 184,9 | 814,3 | 600,7 | 199,4 | 800,1 | 571,0 | 215,9 | 786,9 | 540,5 | 235,2 | 775,7 |
| | 6 | 649,5 | 187,6 | 837,1 | 620,2 | 202,1 | 822,3 | 590,0 | 218,4 | 808,4 | 558,8 | 237,3 | 796,1 |
| | 7 | 669,9 | 190,3 | 860,2 | 640,1 | 204,8 | 844,9 | 609,2 | 221,0 | 830,2 | 577,4 | 239,5 | 816,9 |
| | 8 | 690,7 | 193,1 | 883,8 | 660,3 | 207,7 | 868,0 | 628,9 | 223,7 | 852,6 | 596,4 | 242,0 | 838,4 |
| 196.2 | 4 | 656,8 | 193,4 | 850,2 | 626,8 | 209,6 | 836,4 | 595,7 | 228,2 | 823,9 | 563,7 | 250,2 | 813,9 |
| | 5 | 677,9 | 196,1 | 874,0 | 647,2 | 212,1 | 859,3 | 615,6 | 230,5 | 846,1 | 582,9 | 252,0 | 834,9 |
| | 6 | 699,3 | 198,8 | 898,1 | 668,0 | 214,8 | 882,8 | 635,7 | 232,9 | 868,6 | 602,4 | 254,0 | 856,4 |
| | 7 | 721,0 | 201,5 | 922,5 | 689,2 | 217,6 | 906,8 | 656,3 | 235,5 | 891,8 | 622,3 | 256,2 | 878,5 |
| | 8 | 743,2 | 204,3 | 947,5 | 710,7 | 220,4 | 931,1 | 677,2 | 238,2 | 915,4 | 642,5 | 258,5 | 901,0 |
| 212.2 | 4 | 732,9 | 212,2 | 945,1 | 698,6 | 231,1 | 929,7 | 663,3 | 252,8 | 916,1 | 626,8 | 278,3 | 905,1 |
| | 5 | 756,9 | 214,9 | 971,8 | 721,9 | 233,7 | 955,6 | 685,8 | 255,1 | 940,9 | 648,5 | 280,0 | 928,5 |
| | 6 | 781,2 | 217,6 | 998,8 | 745,5 | 236,4 | 981,9 | 708,7 | 257,6 | 966,3 | 670,6 | 282,0 | 952,6 |
| | 7 | 806,0 | 220,5 | 1026,5 | 769,6 | 239,3 | 1008,9 | 732,0 | 260,2 | 992,2 | 693,2 | 284,2 | 977,4 |
| | 8 | 831,2 | 223,3 | 1054,5 | 794,1 | 242,2 | 1036,3 | 755,7 | 263,0 | 1018,7 | 716,2 | 286,6 | 1002,8 |
| 229.2 | 4 | 767,4 | 226,0 | 993,4 | 732,2 | 248,1 | 980,3 | 695,8 | 273,7 | 969,5 | 658,1 | 303,7 | 961,8 |
| | 5 | 792,0 | 228,5 | 1020,5 | 756,1 | 250,5 | 1006,6 | 719,0 | 275,6 | 994,6 | 680,5 | 305,0 | 985,5 |
| | 6 | 817,0 | 231,0 | 1048,0 | 780,4 | 252,9 | 1033,3 | 742,5 | 277,7 | 1020,2 | 703,3 | 306,5 | 1009,8 |
| | 7 | 842,4 | 233,6 | 1076,0 | 805,1 | 255,4 | 1060,5 | 766,5 | 280,0 | 1046,5 | 726,5 | 308,3 | 1034,8 |
| | 8 | 868,2 | 236,3 | 1104,5 | 830,2 | 258,1 | 1088,3 | 790,9 | 282,4 | 1073,3 | 750,1 | 310,3 | 1060,4 |
| 240.3 | 4 | 806,2 | 256,6 | 1062,8 | 768,5 | 276,8 | 1045,3 | 729,5 | 300,3 | 1029,8 | 689,2 | 328,4 | 1017,6 |
| | 5 | 832,4 | 260,5 | 1092,9 | 793,9 | 280,5 | 1074,4 | 754,1 | 303,7 | 1057,8 | 712,9 | 331,0 | 1043,9 |
| | 6 | 859,0 | 264,5 | 1123,5 | 819,7 | 284,5 | 1104,2 | 779,1 | 307,2 | 1086,3 | 737,1 | 334,0 | 1071,1 |
| | 7 | 886,1 | 268,6 | 1154,7 | 846,0 | 288,5 | 1134,5 | 804,6 | 311,0 | 1115,6 | 761,7 | 337,2 | 1098,9 |
| | 8 | 913,7 | 272,8 | 1186,5 | 872,8 | 292,7 | 1165,5 | 830,5 | 314,9 | 1145,4 | 786,7 | 340,6 | 1127,3 |
| 260.3 | 4 | 854,3 | 270,1 | 1124,4 | 813,8 | 292,0 | 1105,8 | 772,0 | 317,6 | 1089,6 | 728,7 | 348,2 | 1076,9 |
| | 5 | 882,2 | 274,2 | 1156,4 | 840,8 | 295,9 | 1136,7 | 798,1 | 321,0 | 1119,1 | 754,0 | 350,8 | 1104,8 |
| | 6 | 910,6 | 278,3 | 1188,9 | 868,4 | 299,9 | 1168,3 | 824,8 | 324,6 | 1149,4 | 779,7 | 353,8 | 1133,5 |
| | 7 | 939,5 | 282,6 | 1222,1 | 896,4 | 304,1 | 1200,5 | 851,9 | 328,5 | 1180,4 | 805,9 | 357,0 | 1162,9 |
| | 8 | 968,8 | 286,9 | 1255,7 | 924,9 | 308,4 | 1233,3 | 879,5 | 332,5 | 1212,0 | 832,5 | 360,5 | 1193,0 |
| 279.3 | 4 | 902,3 | 283,6 | 1185,9 | 859,6 | 307,3 | 1166,9 | 815,6 | 335,1 | 1150,7 | 770,1 | 368,2 | 1138,3 |
| | 5 | 931,4 | 287,7 | 1219,1 | 887,9 | 311,2 | 1199,1 | 842,9 | 338,5 | 1181,4 | 796,5 | 370,8 | 1167,3 |
| | 6 | 961,0 | 291,9 | 1252,9 | 916,6 | 315,3 | 1231,9 | 870,7 | 342,1 | 1212,8 | 823,3 | 373,7 | 1197,0 |
| | 7 | 991,1 | 296,3 | 1287,4 | 945,8 | 319,5 | 1265,3 | 899,0 | 346,0 | 1245,0 | 850,7 | 376,9 | 1227,6 |
| | 8 | 1021,6 | 300,7 | 1322,3 | 975,5 | 323,9 | 1299,4 | 927,8 | 350,0 | 1277,8 | 878,5 | 380,3 | 1258,8 |
| | 9 | 1052,7 | 305,1 | 1357,8 | 1005,7 | 328,4 | 1334,1 | 957,1 | 354,3 | 1311,4 | 906,8 | 384,0 | 1290,8 |

Total heat recovery ratings ALS “E” SE 296.3 ÷ 460.4

| ALS Unit size | Leaving chilled water temperature °C | LEAVING HEAT RECOVERY CONDENSER WATER TEMPERATURE - °C | | | | | | | | | | | |
|---------------|--------------------------------------|--|------------------|---------------------|-------------------|------------------|---------------------|-------------------|------------------|---------------------|-------------------|------------------|---------------------|
| | | 40 | | | 45 | | | 50 | | | 55 | | |
| | | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) |
| 296.3 | 4 | 950,2 | 297,1 | 1247,3 | 905,4 | 322,7 | 1228,1 | 859,2 | 352,6 | 1211,8 | 811,4 | 388,3 | 1199,7 |
| | 5 | 980,5 | 301,3 | 1281,8 | 934,9 | 326,6 | 1261,5 | 887,7 | 356,0 | 1243,7 | 838,9 | 390,8 | 1229,7 |
| | 6 | 1011,3 | 305,5 | 1316,8 | 964,8 | 330,7 | 1295,5 | 916,7 | 359,6 | 1276,3 | 867,0 | 393,6 | 1260,6 |
| | 7 | 1042,6 | 309,9 | 1352,5 | 995,2 | 334,9 | 1330,1 | 946,2 | 363,4 | 1309,6 | 895,5 | 396,7 | 1292,2 |
| | 8 | 1074,4 | 314,4 | 1388,8 | 1026,1 | 339,3 | 1365,4 | 976,1 | 367,5 | 1343,6 | 924,5 | 400,2 | 1324,7 |
| | 9 | 1106,8 | 319,0 | 1425,8 | 1057,5 | 343,9 | 1401,4 | 1006,6 | 371,8 | 1378,4 | 954,0 | 403,9 | 1357,9 |
| 312.3 | 4 | 1034,8 | 305,9 | 1340,7 | 986,8 | 333,2 | 1320,0 | 937,1 | 364,6 | 1301,7 | 885,9 | 401,8 | 1287,7 |
| | 5 | 1068,5 | 309,9 | 1378,4 | 1019,4 | 336,9 | 1356,3 | 968,8 | 367,9 | 1336,7 | 916,5 | 404,2 | 1320,7 |
| | 6 | 1102,7 | 313,9 | 1416,6 | 1052,7 | 340,8 | 1393,5 | 1001,0 | 371,4 | 1372,4 | 947,7 | 406,9 | 1354,6 |
| | 7 | 1137,5 | 318,0 | 1455,5 | 1086,5 | 344,9 | 1431,4 | 1033,8 | 375,1 | 1408,9 | 979,5 | 409,9 | 1389,4 |
| | 8 | 1172,9 | 322,1 | 1495,0 | 1120,9 | 349,0 | 1469,9 | 1067,2 | 379,0 | 1446,2 | 1011,8 | 413,3 | 1425,1 |
| | 9 | 1208,8 | 326,4 | 1535,2 | 1155,9 | 353,3 | 1509,2 | 1101,2 | 383,1 | 1484,3 | 1044,6 | 416,8 | 1461,4 |
| 327.3 | 4 | 1079,4 | 321,1 | 1400,5 | 1029,6 | 351,5 | 1381,1 | 978,1 | 386,6 | 1364,7 | 924,8 | 428,1 | 1352,9 |
| | 5 | 1114,3 | 324,9 | 1439,2 | 1063,4 | 355,0 | 1418,4 | 1010,9 | 389,6 | 1400,5 | 956,6 | 430,1 | 1386,7 |
| | 6 | 1149,7 | 328,8 | 1478,5 | 1097,9 | 358,7 | 1456,6 | 1044,3 | 392,8 | 1437,1 | 988,9 | 432,5 | 1421,4 |
| | 7 | 1185,8 | 332,7 | 1518,5 | 1133,0 | 362,6 | 1495,6 | 1078,3 | 396,2 | 1474,5 | 1021,9 | 435,2 | 1457,1 |
| | 8 | 1222,4 | 336,7 | 1559,1 | 1168,6 | 366,5 | 1535,1 | 1112,9 | 399,9 | 1512,8 | 1055,3 | 438,2 | 1493,5 |
| | 9 | 1259,7 | 340,8 | 1600,5 | 1204,8 | 370,7 | 1575,5 | 1148,1 | 403,8 | 1551,9 | 1089,4 | 441,5 | 1530,9 |
| 344.3 | 4 | 1124,0 | 336,4 | 1460,4 | 1072,4 | 369,8 | 1442,2 | 1019,0 | 408,6 | 1427,6 | 963,7 | 454,4 | 1418,1 |
| | 5 | 1160,1 | 339,9 | 1500,0 | 1107,5 | 373,1 | 1480,6 | 1053,0 | 411,3 | 1464,3 | 996,7 | 456,0 | 1452,7 |
| | 6 | 1196,8 | 343,6 | 1540,4 | 1143,1 | 376,6 | 1519,7 | 1087,6 | 414,2 | 1501,8 | 1030,2 | 458,1 | 1488,3 |
| | 7 | 1234,1 | 347,4 | 1581,5 | 1179,4 | 380,3 | 1559,7 | 1122,8 | 417,4 | 1540,2 | 1064,3 | 460,5 | 1524,8 |
| | 8 | 1272,0 | 351,3 | 1623,3 | 1216,3 | 384,1 | 1600,4 | 1158,6 | 420,9 | 1579,5 | 1098,9 | 463,2 | 1562,1 |
| | 9 | 1310,5 | 355,2 | 1665,7 | 1253,7 | 388,0 | 1641,7 | 1195,0 | 424,5 | 1619,5 | 1134,2 | 466,2 | 1600,4 |
| 355.4 | 4 | 1210,5 | 363,2 | 1573,7 | 1154,9 | 392,5 | 1547,4 | 1097,6 | 426,1 | 1523,7 | 1038,4 | 465,9 | 1504,3 |
| | 5 | 1249,5 | 368,5 | 1618,0 | 1192,9 | 397,5 | 1590,4 | 1134,4 | 430,7 | 1565,1 | 1073,9 | 469,6 | 1543,5 |
| | 6 | 1289,3 | 373,8 | 1663,1 | 1231,5 | 402,8 | 1634,3 | 1171,8 | 435,6 | 1607,4 | 1110,1 | 473,6 | 1583,7 |
| | 7 | 1329,7 | 379,2 | 1708,9 | 1270,7 | 408,3 | 1679,0 | 1209,9 | 440,7 | 1650,6 | 1146,9 | 478,0 | 1624,9 |
| | 8 | 1370,7 | 384,7 | 1755,4 | 1310,7 | 413,8 | 1724,5 | 1248,6 | 446,0 | 1694,6 | 1184,5 | 482,7 | 1667,2 |
| | 9 | 1412,5 | 390,3 | 1802,8 | 1351,3 | 419,6 | 1770,9 | 1288,0 | 451,6 | 1739,6 | 1222,6 | 487,8 | 1710,4 |
| 393.4 | 4 | 1313,7 | 386,8 | 1700,5 | 1253,5 | 419,2 | 1672,7 | 1191,4 | 456,5 | 1647,9 | 1127,4 | 500,5 | 1627,9 |
| | 5 | 1355,8 | 392,1 | 1747,9 | 1294,4 | 424,3 | 1718,7 | 1231,1 | 461,0 | 1692,1 | 1165,7 | 504,1 | 1669,8 |
| | 6 | 1398,6 | 397,5 | 1796,1 | 1336,0 | 429,6 | 1765,6 | 1271,5 | 465,9 | 1737,4 | 1204,8 | 508,0 | 1712,8 |
| | 7 | 1442,1 | 403,0 | 1845,1 | 1378,4 | 435,1 | 1813,5 | 1312,6 | 471,0 | 1783,6 | 1244,6 | 512,4 | 1757,0 |
| | 8 | 1486,3 | 408,6 | 1894,9 | 1421,4 | 440,8 | 1862,2 | 1354,3 | 476,4 | 1830,7 | 1285,1 | 517,0 | 1802,1 |
| | 9 | 1531,3 | 414,3 | 1945,6 | 1465,1 | 446,6 | 1911,7 | 1396,8 | 481,9 | 1878,7 | 1326,2 | 522,0 | 1848,2 |
| 426.4 | 4 | 1424,3 | 419,4 | 1843,7 | 1359,0 | 457,7 | 1816,7 | 1291,5 | 501,9 | 1793,4 | 1221,8 | 553,9 | 1775,7 |
| | 5 | 1469,9 | 424,6 | 1894,5 | 1403,3 | 462,6 | 1865,9 | 1334,5 | 506,1 | 1840,6 | 1263,4 | 557,0 | 1820,4 |
| | 6 | 1516,3 | 429,8 | 1946,1 | 1448,4 | 467,7 | 1916,1 | 1378,3 | 510,7 | 1889,0 | 1305,7 | 560,6 | 1866,3 |
| | 7 | 1563,4 | 435,1 | 1998,5 | 1494,3 | 473,0 | 1967,3 | 1422,8 | 515,5 | 1938,3 | 1348,8 | 564,5 | 1913,3 |
| | 8 | 1611,4 | 440,6 | 2052,0 | 1540,9 | 478,5 | 2019,4 | 1468,0 | 520,6 | 1988,6 | 1392,7 | 568,8 | 1961,5 |
| | 9 | 1660,1 | 446,1 | 2106,2 | 1588,3 | 484,1 | 2072,4 | 1514,0 | 525,9 | 2039,9 | 1437,3 | 573,4 | 2010,7 |
| 460.4 | 4 | 1534,9 | 452,1 | 1987,0 | 1464,4 | 496,3 | 1960,7 | 1391,6 | 547,4 | 1939,0 | 1316,2 | 607,4 | 1923,6 |
| | 5 | 1584,0 | 457,0 | 2041,0 | 1512,2 | 500,9 | 2013,1 | 1437,9 | 551,2 | 1989,1 | 1361,0 | 610,0 | 1971,0 |
| | 6 | 1634,0 | 462,1 | 2096,1 | 1560,8 | 505,8 | 2066,6 | 1485,0 | 555,5 | 2040,5 | 1406,7 | 613,1 | 2019,8 |
| | 7 | 1684,8 | 467,3 | 2152,1 | 1610,2 | 510,9 | 2121,1 | 1533,0 | 560,0 | 2093,0 | 1453,1 | 616,6 | 2069,7 |
| | 8 | 1736,4 | 472,5 | 2208,9 | 1660,4 | 516,1 | 2176,5 | 1581,7 | 564,8 | 2146,5 | 1500,3 | 620,5 | 2120,8 |
| | 9 | 1788,9 | 477,9 | 2266,8 | 1711,4 | 521,6 | 2233,0 | 1631,3 | 569,9 | 2201,2 | 1548,3 | 624,8 | 2173,1 |

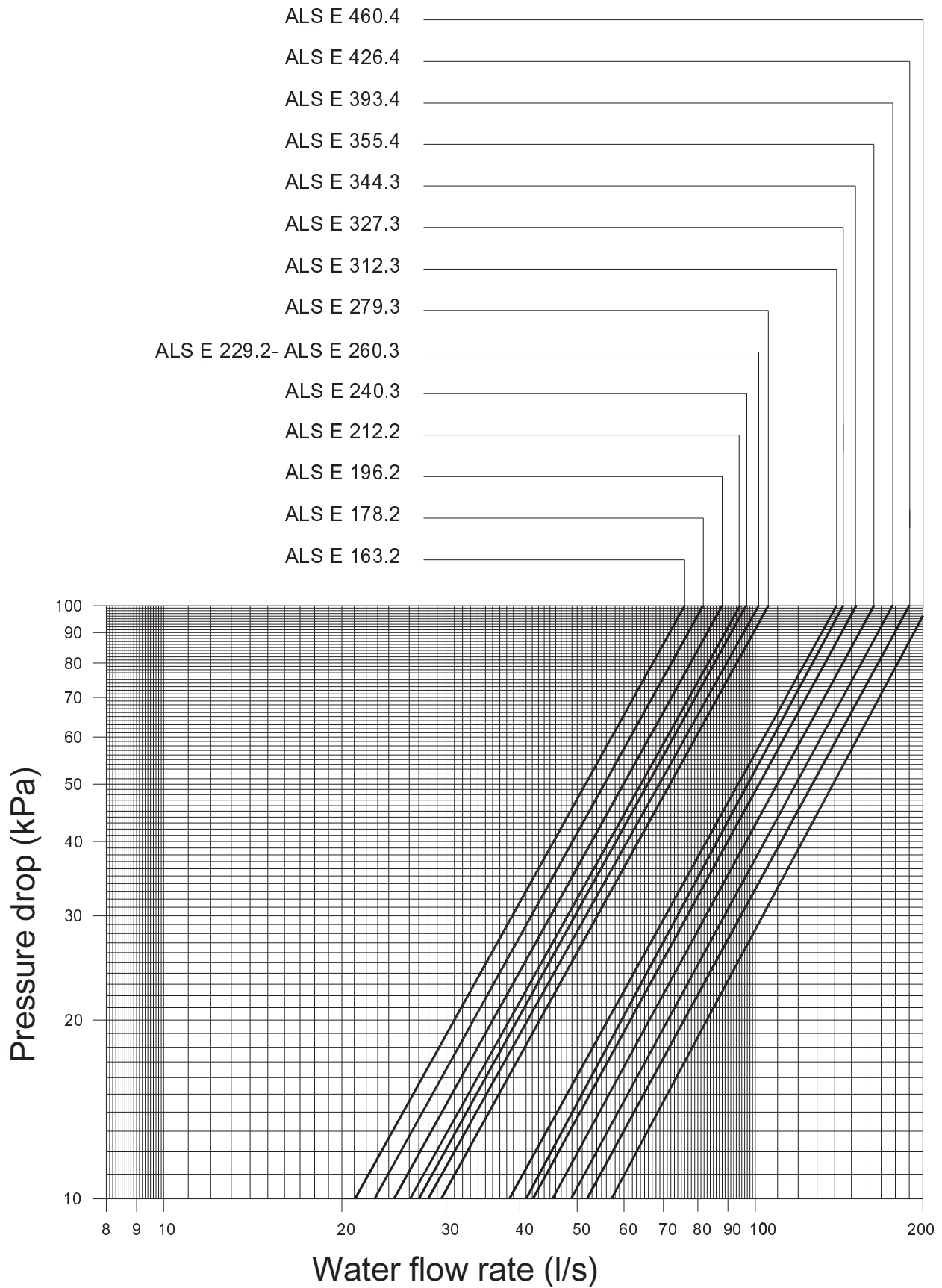
Total heat recovery ratings ALS “E” XE 163.2 ÷ 279.3

| ALS Unit size | Leaving chilled water temperature °C | LEAVING HEAT RECOVERY CONDENSER WATER TEMPERATURE - °C | | | | | | | | | | | |
|---------------|--------------------------------------|--|------------------|---------------------|-------------------|------------------|---------------------|-------------------|------------------|---------------------|-------------------|------------------|---------------------|
| | | 40 | | | 45 | | | 50 | | | 55 | | |
| | | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) |
| 163.2 | 4 | 559,8 | 172,3 | 732,1 | 532,8 | 185,3 | 718,1 | 505,0 | 200,3 | 705,3 | 476,5 | 218,1 | 694,6 |
| | 5 | 579,0 | 175,1 | 754,1 | 551,4 | 188,0 | 739,4 | 523,0 | 202,8 | 725,8 | 493,7 | 220,1 | 713,8 |
| | 6 | 598,6 | 177,9 | 776,5 | 570,3 | 190,8 | 761,1 | 541,3 | 205,4 | 746,7 | 511,3 | 222,3 | 733,6 |
| | 7 | 618,6 | 180,8 | 799,4 | 589,7 | 193,7 | 783,4 | 560,0 | 208,1 | 768,1 | 529,3 | 224,7 | 754,0 |
| | 8 | 639,1 | 183,7 | 822,8 | 609,5 | 196,7 | 806,2 | 579,0 | 210,9 | 789,9 | 547,7 | 227,2 | 774,9 |
| | 9 | 659,9 | 186,6 | 846,5 | 629,7 | 199,7 | 829,4 | 598,5 | 213,9 | 812,4 | 566,4 | 230,0 | 796,4 |
| 178.2 | 4 | 622,0 | 185,6 | 807,6 | 592,6 | 200,2 | 792,8 | 562,2 | 216,9 | 779,1 | 531,0 | 236,6 | 767,6 |
| | 5 | 642,6 | 188,4 | 831,0 | 612,5 | 202,9 | 815,4 | 581,5 | 219,4 | 800,9 | 549,6 | 238,6 | 788,2 |
| | 6 | 663,5 | 191,2 | 854,7 | 632,8 | 205,7 | 838,5 | 601,1 | 222,0 | 823,1 | 568,5 | 240,8 | 809,3 |
| | 7 | 684,8 | 194,1 | 878,9 | 653,4 | 208,6 | 862,0 | 621,2 | 224,7 | 845,9 | 587,8 | 243,2 | 831,0 |
| | 8 | 706,4 | 197,0 | 903,4 | 674,5 | 211,6 | 886,1 | 641,5 | 227,6 | 869,1 | 607,5 | 245,8 | 853,3 |
| | 9 | 728,5 | 199,9 | 928,4 | 695,9 | 214,6 | 910,5 | 662,3 | 230,5 | 892,8 | 627,6 | 248,5 | 876,1 |
| 196.2 | 4 | 676,7 | 197,8 | 874,5 | 644,7 | 213,9 | 858,6 | 611,8 | 232,4 | 844,2 | 577,8 | 254,2 | 832,0 |
| | 5 | 699,0 | 200,7 | 899,7 | 666,3 | 216,7 | 883,0 | 632,7 | 234,9 | 867,6 | 598,0 | 256,2 | 854,2 |
| | 6 | 721,6 | 203,5 | 925,1 | 688,3 | 219,6 | 907,9 | 653,9 | 237,5 | 891,4 | 618,5 | 258,4 | 876,9 |
| | 7 | 744,6 | 206,5 | 951,1 | 710,6 | 222,5 | 933,1 | 675,6 | 240,3 | 915,9 | 639,5 | 260,8 | 900,3 |
| | 8 | 768,0 | 209,4 | 977,4 | 733,4 | 225,5 | 958,9 | 697,6 | 243,2 | 940,8 | 660,8 | 263,3 | 924,1 |
| | 9 | 791,9 | 212,4 | 1004,3 | 756,5 | 228,6 | 985,1 | 720,1 | 246,2 | 966,3 | 682,5 | 266,1 | 948,6 |
| 212.2 | 4 | 740,7 | 215,2 | 955,9 | 705,4 | 234,2 | 939,6 | 669,0 | 256,0 | 925,0 | 631,5 | 281,6 | 913,1 |
| | 5 | 765,2 | 217,9 | 983,1 | 729,2 | 236,9 | 966,1 | 692,0 | 258,4 | 950,4 | 653,7 | 283,4 | 937,1 |
| | 6 | 790,1 | 220,8 | 1010,9 | 753,3 | 239,7 | 993,0 | 715,4 | 260,9 | 976,3 | 676,3 | 285,5 | 961,8 |
| | 7 | 815,5 | 223,7 | 1039,2 | 778,0 | 242,6 | 1020,6 | 739,2 | 263,6 | 1002,8 | 699,3 | 287,7 | 987,0 |
| | 8 | 841,4 | 226,6 | 1068,0 | 803,0 | 245,6 | 1048,6 | 763,5 | 266,5 | 1030,0 | 722,7 | 290,2 | 1012,9 |
| | 9 | 867,6 | 229,6 | 1097,2 | 828,5 | 248,6 | 1077,1 | 788,2 | 269,4 | 1057,6 | 746,6 | 292,8 | 1039,4 |
| 229.2 | 4 | 794,4 | 231,2 | 1025,6 | 756,6 | 253,2 | 1009,8 | 717,6 | 278,6 | 996,2 | 677,4 | 308,3 | 985,7 |
| | 5 | 820,5 | 233,8 | 1054,3 | 782,0 | 255,8 | 1037,8 | 742,2 | 280,7 | 1022,9 | 701,1 | 309,8 | 1010,9 |
| | 6 | 847,1 | 236,6 | 1083,7 | 807,8 | 258,4 | 1066,2 | 767,2 | 283,1 | 1050,3 | 725,2 | 311,6 | 1036,8 |
| | 7 | 874,2 | 239,4 | 1113,6 | 834,1 | 261,2 | 1095,3 | 792,6 | 285,6 | 1078,2 | 749,8 | 313,6 | 1063,4 |
| | 8 | 901,8 | 242,2 | 1144,0 | 860,8 | 264,1 | 1124,9 | 818,5 | 288,3 | 1106,8 | 774,9 | 315,8 | 1090,7 |
| | 9 | 929,8 | 245,1 | 1174,9 | 888,1 | 267,0 | 1155,1 | 844,9 | 291,0 | 1135,9 | 800,4 | 318,2 | 1118,6 |
| 240.3 | 4 | 845,9 | 259,4 | 1105,3 | 805,2 | 278,8 | 1084,0 | 763,4 | 301,3 | 1064,7 | 720,2 | 327,8 | 1048,0 |
| | 5 | 874,4 | 263,5 | 1137,9 | 832,9 | 282,9 | 1115,8 | 790,1 | 304,9 | 1095,0 | 745,9 | 330,8 | 1076,7 |
| | 6 | 903,5 | 267,7 | 1171,2 | 861,1 | 287,0 | 1148,1 | 817,3 | 308,8 | 1126,1 | 772,2 | 334,1 | 1106,3 |
| | 7 | 933,2 | 271,9 | 1205,1 | 889,8 | 291,3 | 1181,1 | 845,1 | 312,9 | 1158,0 | 798,9 | 337,7 | 1136,6 |
| | 8 | 963,4 | 276,2 | 1239,6 | 919,1 | 295,8 | 1214,9 | 873,4 | 317,1 | 1190,5 | 826,2 | 341,5 | 1167,7 |
| | 9 | 994,1 | 280,5 | 1274,6 | 948,9 | 300,3 | 1249,2 | 902,2 | 321,6 | 1223,8 | 854,1 | 345,6 | 1199,7 |
| 260.3 | 4 | 891,0 | 270,2 | 1161,2 | 848,1 | 291,3 | 1139,4 | 803,9 | 315,6 | 1119,5 | 758,4 | 344,5 | 1102,9 |
| | 5 | 921,1 | 274,4 | 1195,5 | 877,2 | 295,3 | 1172,5 | 832,1 | 319,3 | 1151,4 | 785,5 | 347,4 | 1132,9 |
| | 6 | 951,7 | 278,6 | 1230,3 | 906,9 | 299,5 | 1206,4 | 860,8 | 323,1 | 1183,9 | 813,2 | 350,6 | 1163,8 |
| | 7 | 983,0 | 282,9 | 1265,9 | 937,2 | 303,8 | 1241,0 | 890,0 | 327,1 | 1217,1 | 841,4 | 354,1 | 1195,5 |
| | 8 | 1014,7 | 287,2 | 1301,9 | 968,0 | 308,2 | 1276,2 | 919,8 | 331,4 | 1251,2 | 870,1 | 357,8 | 1227,9 |
| | 9 | 1047,1 | 291,6 | 1338,7 | 999,4 | 312,8 | 1312,2 | 950,2 | 335,8 | 1286,0 | 899,5 | 361,8 | 1261,3 |
| 279.3 | 4 | 950,3 | 283,1 | 1233,4 | 904,6 | 305,7 | 1210,3 | 857,6 | 331,8 | 1189,4 | 809,2 | 362,6 | 1171,8 |
| | 5 | 982,1 | 287,3 | 1269,4 | 935,5 | 309,8 | 1245,3 | 887,4 | 335,4 | 1222,8 | 838,0 | 365,5 | 1203,5 |
| | 6 | 1014,6 | 291,6 | 1306,2 | 966,9 | 314,1 | 1281,0 | 917,9 | 339,3 | 1257,2 | 867,3 | 368,8 | 1236,1 |
| | 7 | 1047,6 | 296,0 | 1343,6 | 999,0 | 318,4 | 1317,4 | 948,9 | 343,4 | 1292,3 | 897,2 | 372,3 | 1269,5 |
| | 8 | 1081,3 | 300,4 | 1381,7 | 1031,6 | 322,9 | 1354,5 | 980,5 | 347,7 | 1328,2 | 927,8 | 376,1 | 1303,9 |
| | 9 | 1115,6 | 304,9 | 1420,5 | 1064,9 | 327,6 | 1392,5 | 1012,7 | 352,2 | 1364,9 | 958,9 | 380,1 | 1339,0 |

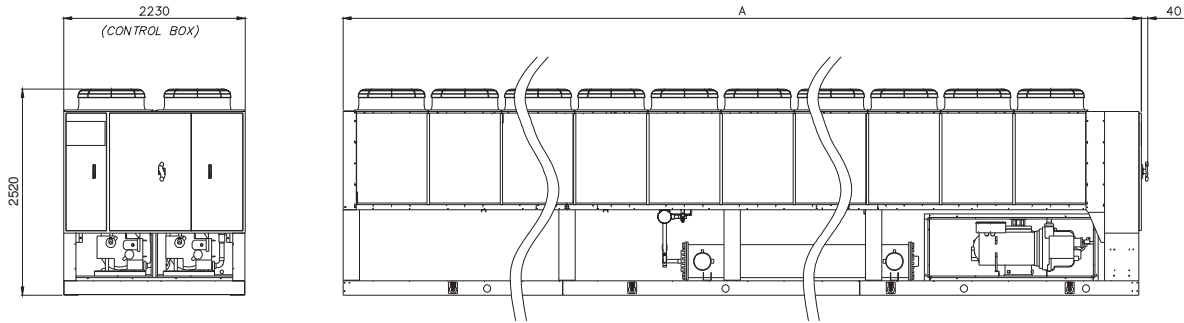
Total heat recovery ratings ALS “E” XE 296.3 ÷ 460.4

| ALS Unit size | Leaving chilled water temperature °C | LEAVING HEAT RECOVERY CONDENSER WATER TEMPERATURE - °C | | | | | | | | | | | |
|---------------|--------------------------------------|--|------------------|---------------------|-------------------|------------------|---------------------|-------------------|------------------|---------------------|-------------------|------------------|---------------------|
| | | 40 | | | 45 | | | 50 | | | 55 | | |
| | | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) | Cool. capac. (kW) | Power input (kW) | Heating capac. (kW) |
| 296.3 | 4 | 1009,5 | 296,0 | 1305,5 | 961,1 | 320,2 | 1281,3 | 911,3 | 347,9 | 1259,2 | 860,0 | 380,7 | 1240,7 |
| | 5 | 1043,1 | 300,3 | 1343,4 | 993,7 | 324,3 | 1318,0 | 942,8 | 351,6 | 1294,4 | 890,4 | 383,6 | 1274,0 |
| | 6 | 1077,4 | 304,7 | 1382,1 | 1026,9 | 328,6 | 1355,5 | 975,0 | 355,6 | 1330,6 | 921,5 | 386,9 | 1308,4 |
| | 7 | 1112,3 | 309,1 | 1421,4 | 1060,8 | 333,1 | 1393,9 | 1007,8 | 359,8 | 1367,6 | 953,1 | 390,5 | 1343,6 |
| | 8 | 1147,8 | 313,6 | 1461,4 | 1095,3 | 337,7 | 1433,0 | 1041,1 | 364,1 | 1405,2 | 985,4 | 394,3 | 1379,7 |
| | 9 | 1184,0 | 318,2 | 1502,2 | 1130,4 | 342,3 | 1472,7 | 1075,1 | 368,7 | 1443,8 | 1018,2 | 398,4 | 1416,6 |
| 312.3 | 4 | 1086,4 | 314,9 | 1401,3 | 1033,5 | 341,8 | 1375,3 | 979,1 | 372,6 | 1351,7 | 923,1 | 408,9 | 1332,0 |
| | 5 | 1123,1 | 319,2 | 1442,3 | 1069,0 | 346,0 | 1415,0 | 1013,4 | 376,3 | 1389,7 | 956,2 | 411,8 | 1368,0 |
| | 6 | 1160,5 | 323,6 | 1484,1 | 1105,3 | 350,3 | 1455,6 | 1048,5 | 380,3 | 1428,8 | 990,0 | 415,0 | 1405,0 |
| | 7 | 1198,6 | 328,1 | 1526,7 | 1142,2 | 354,9 | 1497,1 | 1084,2 | 384,6 | 1468,8 | 1024,4 | 418,6 | 1443,0 |
| | 8 | 1237,5 | 332,7 | 1570,2 | 1179,9 | 359,5 | 1539,4 | 1120,6 | 389,0 | 1509,6 | 1059,5 | 422,5 | 1482,0 |
| | 9 | 1277,0 | 337,3 | 1614,3 | 1218,2 | 364,3 | 1582,5 | 1157,7 | 393,6 | 1551,3 | 1095,3 | 426,6 | 1521,9 |
| 327.3 | 4 | 1147,1 | 331,6 | 1478,7 | 1091,1 | 361,5 | 1452,6 | 1033,4 | 395,7 | 1429,1 | 974,1 | 435,9 | 1410,0 |
| | 5 | 1185,9 | 335,9 | 1521,8 | 1128,7 | 365,6 | 1494,3 | 1069,8 | 399,3 | 1469,1 | 1009,1 | 438,6 | 1447,7 |
| | 6 | 1225,5 | 340,3 | 1565,8 | 1167,0 | 369,9 | 1536,9 | 1106,8 | 403,2 | 1510,0 | 1044,8 | 441,7 | 1486,5 |
| | 7 | 1265,8 | 344,7 | 1610,5 | 1206,1 | 374,3 | 1580,4 | 1144,6 | 407,3 | 1551,9 | 1081,2 | 445,1 | 1526,3 |
| | 8 | 1306,9 | 349,2 | 1656,1 | 1245,9 | 378,9 | 1624,8 | 1183,1 | 411,6 | 1594,7 | 1118,3 | 448,8 | 1567,1 |
| | 9 | 1348,7 | 353,7 | 1702,4 | 1286,4 | 383,6 | 1670,0 | 1222,3 | 416,1 | 1638,4 | 1156,2 | 452,8 | 1609,0 |
| 344.3 | 4 | 1207,9 | 348,4 | 1556,3 | 1148,8 | 381,2 | 1530,0 | 1087,9 | 418,8 | 1506,7 | 1025,2 | 462,9 | 1488,1 |
| | 5 | 1248,9 | 352,6 | 1601,5 | 1188,4 | 385,2 | 1573,6 | 1126,2 | 422,3 | 1548,5 | 1062,1 | 465,4 | 1527,5 |
| | 6 | 1290,6 | 356,9 | 1647,5 | 1228,8 | 389,4 | 1618,2 | 1165,3 | 426,0 | 1591,3 | 1099,7 | 468,3 | 1568,0 |
| | 7 | 1333,1 | 361,3 | 1694,4 | 1270,0 | 393,8 | 1663,8 | 1205,1 | 430,0 | 1635,1 | 1138,1 | 471,6 | 1609,7 |
| | 8 | 1376,5 | 365,7 | 1742,2 | 1312,0 | 398,3 | 1710,3 | 1245,6 | 434,3 | 1679,9 | 1177,2 | 475,1 | 1652,3 |
| | 9 | 1420,6 | 370,2 | 1790,8 | 1354,7 | 403,0 | 1757,7 | 1287,0 | 438,7 | 1725,7 | 1217,1 | 479,0 | 1696,1 |
| 355.4 | 4 | 1225,5 | 368,7 | 1594,2 | 1166,0 | 397,8 | 1563,8 | 1104,8 | 431,3 | 1536,1 | 1041,9 | 471,2 | 1513,1 |
| | 5 | 1268,0 | 374,4 | 1642,4 | 1207,0 | 403,3 | 1610,3 | 1144,4 | 436,3 | 1580,7 | 1079,9 | 475,1 | 1555,0 |
| | 6 | 1311,3 | 380,3 | 1691,6 | 1248,9 | 409,1 | 1658,0 | 1184,8 | 441,6 | 1626,4 | 1118,8 | 479,5 | 1598,3 |
| | 7 | 1355,6 | 386,2 | 1741,8 | 1291,7 | 415,0 | 1706,7 | 1226,1 | 447,1 | 1673,2 | 1158,5 | 484,2 | 1642,7 |
| | 8 | 1400,8 | 392,3 | 1793,1 | 1335,4 | 421,2 | 1756,6 | 1268,2 | 453,0 | 1721,2 | 1199,1 | 489,4 | 1688,5 |
| | 9 | 1446,9 | 398,4 | 1845,3 | 1380,0 | 427,5 | 1807,5 | 1311,3 | 459,1 | 1770,4 | 1240,5 | 494,9 | 1735,4 |
| 393.4 | 4 | 1353,5 | 395,7 | 1749,2 | 1289,5 | 427,9 | 1717,4 | 1223,6 | 464,9 | 1688,5 | 1155,7 | 508,5 | 1664,2 |
| | 5 | 1397,9 | 401,3 | 1799,2 | 1332,6 | 433,4 | 1766,0 | 1265,3 | 469,8 | 1735,1 | 1196,0 | 512,4 | 1708,4 |
| | 6 | 1443,2 | 407,1 | 1850,3 | 1376,5 | 439,1 | 1815,6 | 1307,8 | 475,1 | 1782,9 | 1237,1 | 516,8 | 1753,9 |
| | 7 | 1489,2 | 412,9 | 1902,1 | 1421,2 | 445,0 | 1866,2 | 1351,2 | 480,6 | 1831,8 | 1278,9 | 521,6 | 1800,5 |
| | 8 | 1536,1 | 418,9 | 1955,0 | 1466,7 | 451,1 | 1917,8 | 1395,2 | 486,4 | 1881,6 | 1321,5 | 526,7 | 1848,2 |
| | 9 | 1583,7 | 424,9 | 2008,6 | 1513,0 | 457,2 | 1970,2 | 1440,1 | 492,4 | 1932,5 | 1365,0 | 532,1 | 1897,1 |
| 426.4 | 4 | 1471,1 | 429,0 | 1900,1 | 1401,3 | 467,2 | 1868,5 | 1329,4 | 511,0 | 1840,4 | 1255,2 | 562,5 | 1817,7 |
| | 5 | 1519,5 | 434,5 | 1954,0 | 1448,3 | 472,5 | 1920,8 | 1374,8 | 515,7 | 1890,5 | 1299,1 | 566,0 | 1865,1 |
| | 6 | 1568,7 | 440,1 | 2008,8 | 1496,0 | 478,0 | 1974,0 | 1421,1 | 520,6 | 1941,7 | 1343,8 | 570,0 | 1913,8 |
| | 7 | 1618,8 | 445,8 | 2064,6 | 1544,7 | 483,7 | 2028,4 | 1468,2 | 525,9 | 1994,1 | 1389,3 | 574,4 | 1963,7 |
| | 8 | 1669,8 | 451,6 | 2121,4 | 1594,2 | 489,6 | 2083,8 | 1516,2 | 531,5 | 2047,7 | 1435,6 | 579,2 | 2014,8 |
| | 9 | 1721,7 | 457,5 | 2179,2 | 1644,6 | 495,6 | 2140,2 | 1565,0 | 537,3 | 2102,3 | 1482,8 | 584,3 | 2067,1 |
| 460.4 | 4 | 1588,7 | 462,4 | 2051,1 | 1513,2 | 506,5 | 2019,7 | 1435,2 | 557,1 | 1992,3 | 1354,8 | 616,5 | 1971,3 |
| | 5 | 1641,0 | 467,7 | 2108,7 | 1563,9 | 511,5 | 2075,4 | 1484,3 | 561,5 | 2045,8 | 1402,2 | 619,6 | 2021,8 |
| | 6 | 1694,3 | 473,2 | 2167,5 | 1615,6 | 516,9 | 2132,5 | 1534,3 | 566,2 | 2100,5 | 1450,5 | 623,2 | 2073,7 |
| | 7 | 1748,5 | 478,7 | 2227,2 | 1668,1 | 522,4 | 2190,5 | 1585,3 | 571,2 | 2156,5 | 1499,6 | 627,2 | 2126,8 |
| | 8 | 1803,6 | 484,4 | 2288,0 | 1721,7 | 528,1 | 2249,8 | 1637,1 | 576,5 | 2213,6 | 1549,7 | 631,7 | 2181,4 |
| | 9 | 1859,7 | 490,1 | 2349,8 | 1776,1 | 534,0 | 2310,1 | 1689,8 | 582,1 | 2271,9 | 1600,7 | 636,5 | 2237,2 |

Pressure drop for total heat recovery ALS "E" 163.2 ÷ 460.4

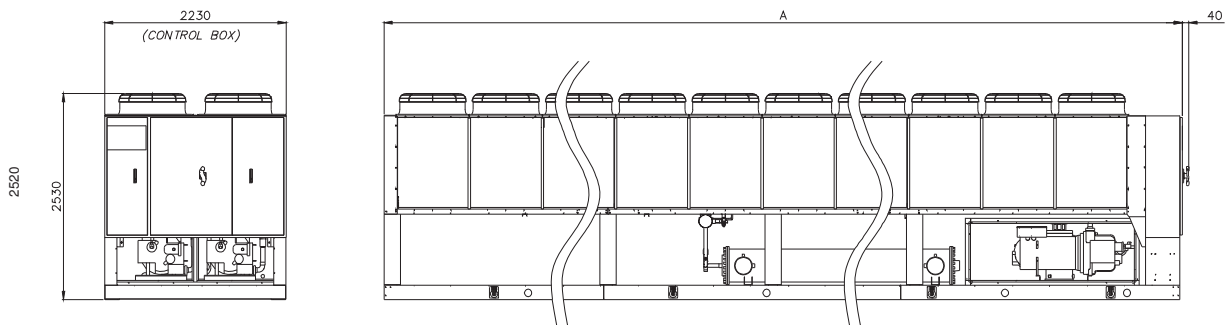


Dimensions ALS “E” SE, XE 163.2 ÷ 229.2 ST, LN, XN, XXN



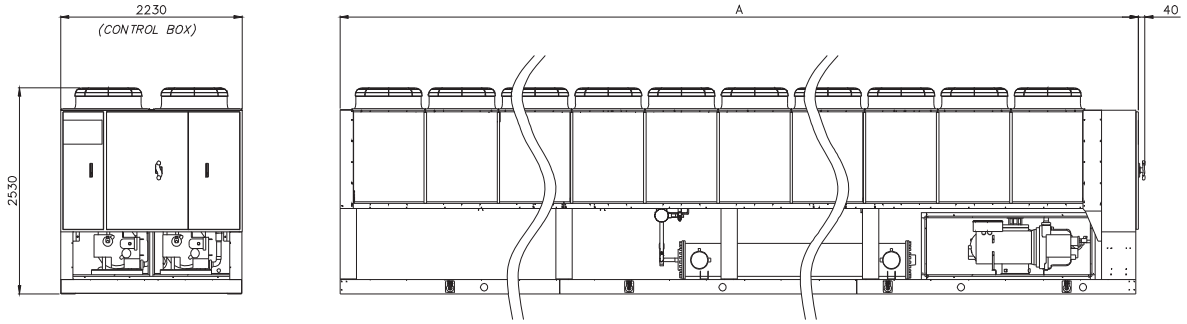
| ALS “E” SE Units | Length – A (mm) | ALS “E” XE Units | Length – A (mm) |
|---------------------------------|-----------------|---------------------------------|-----------------|
| ST-LN-XN | | ST-LN-XN | |
| ALS SE 163.2 ÷ 196.2 ST, LN, XN | 5310 | ALS XE 163.2 ST, LN, XN | 5310 |
| ALS SE 212.2 - 229.2 ST, LN, XN | 6210 | ALS XE 178.2 - 196.2 ST, LN, XN | 6210 |
| XXN | | XXN | |
| ALS SE 163.2 XXN | 5310 | ALS XE 212.2 - 229.2 ST, LN, XN | 7110 |
| ALS SE 178.2 - 196.2 XXN | 6210 | ALS XE 163.2 XXN | 6210 |
| ALS SE 212.2 - 229.2 XXN | 7110 | ALS XE 178.2 - 196.2 XXN | 7110 |

Dimensions ALS “E” SE, XE 240.3 ÷ 344.3 ST, LN, XN, XXN



| ALS “E” SE Units | Length – A (mm) | ALS “E” XE Units | Length – A (mm) |
|---|-----------------|---------------------------------|-----------------|
| ST-LN-XN | | ST-LN-XN | |
| ALS SE 240.3 – 279.3 ST, LN, XN | 7400 | ALS XE 240.3 – 260.3 ST, LN, XN | 8300 |
| ALS SE 260.3 – 296.3 – 312.3 ST, LN, XN | 8300 | ALS XE 279.3 – 296.3 ST, LN, XN | 9200 |
| ALS SE 327.3 – 344.3 ST, LN, XN | 9200 | ALS XE 312.3 – 327.3 ST, LN, XN | 10100 |
| XXN | | XXN | |
| ALS SE 240.3 – 260.3 XXN | 8300 | ALS XE 344.3 ST, LN, XN | 11000 |
| ALS SE 279.3 – 296.3 XXN | 9200 | ALS XE 240.3 XXN | 9200 |
| ALS SE 312.3 – 327.3 XXN | 10100 | ALS XE 260.3 – 279.3 XXN | 10100 |
| ALS SE 344.3 XXN | 11000 | ALS XE 296.3 XXN | 11000 |

Dimensions ALS "E" SE, XE 355.4 ÷ 460.4 ST, LN, XN, XXN



| ALS "E" SE Units | Length – A (mm) | ALS "E" XE Units | Length – A (mm) |
|---------------------------------|-----------------|-------------------------|-----------------|
| ST-LN-XN | | ST-LN-XN | |
| ALS SE 355.4 - 393.4 ST, LN, XN | 10100 | ALS XE 355.4 ST, LN, XN | 11000 |
| ALS SE 426.4 ST, LN, XN | 11000 | ALS XE 393.4 ST, LN, XN | 11900 |
| ALS SE 460.4 ST, LN, XN | 11900 | ALS XE 426.4 ST, LN, XN | 12800 |
| XXN | | ALS XE 460.4 ST, LN, XN | 13700 |
| ALS SE 355.4 XXN | 11000 | | |
| ALS SE 393.4 XXN | 11900 | | |
| ALS SE 426.4 XXN | 12800 | | |
| ALS SE 460.4 XXN | 13700 | | |

Technical specifications - ALS Frame 4 Air cooled screw chillers

To supply and install, where specified in the project n unit(s) air cooled water chiller with cooling capacity of kW, to cool l/sec. of water from °C to working with °C ambient temperature. The unit should work with electricity at V, 3ph, 50Hz. The electrical power absorbed should not exceed kW. The units COP will be at least at the working conditions of the project. Part load COP will be at least at the working conditions of the project. For the units with 2, 3 and 4 compressors the chillers will have (2), (3) or (4) independent refrigerant circuits, and the respective electronic microprocessor will allow the starting of the compressors. Each chiller will be factory assembled on a robust baseframe made of zinc coated steel, protected by an epoxy paint. The unit will be tested at full load in the factory at the nominal working conditions and water temperatures. Before shipment a full test will be held to avoid any losses, and the units will be filled with oil and refrigerant.

General – All units should be designed and manufactured in accordance with applicable selections of the following which are equivalent to American Air-conditioning industry applicable codes:

Rating of chillers: EN 12055.

Construction of pressure vessel: TUV Standards (on request).

Electrical codes: IEC 204-1 CEI 44-5 Elect. & Safety Codes

Safety Codes: CEI-EN 60204-1 Codes.

Manufacturing Quality Stds: ISO 9001 :2000.

Refrigerant - only HFC 134a will be accepted.

Noise level and vibrations – Sound pressure level at 1 meter distance in free field shall not exceeddBA

Vibration level should not exceed 2 mm/s.

Units will have the following components:

Compressors - The compressor should be single screw type with one main screw rotor that meshes with two diametrically opposed gaterotors. The two exactly opposed gaterotors create two exactly opposed compression cycles which results in balanced forces acting on the compressor. The gaterotors will be constructed of a carbon impregnated engineered composite material. The gaterotor supports will be constructed of cast iron.

Oil injection shall be used for these compressors in order to get high COP at high condensing pressure. The unit shall be provided with an oil separator and it will be the high efficiency, augmented gas impingement type to maximise oil extraction.

Evaporator - The units will be supplied with new optimised counter-flow evaporator single refrigerant pass. It will be direct expansion (2 evaporators for units with 4 compressors) with refrigerant inside the tubes and water outside (shell side) with carbon steel tube sheets, with straight copper tubes that are spirally wound internally for higher efficiencies, expanded on the tube plates. The external shell, will be linked with an electrical heater to prevent freezing to -28 C ambient temperature, commanded by a thermostat and will be covered with a closed cell insulation material. Each evaporator will have 2 or 3 refrigerant circuits one for each compressor. Each evaporator is manufactured in accordance to PED approval.

Condenser coil - The condenser coils are constructed with internally enhanced seamless copper tubes having a "W" configuration and arranged in a staggered row pattern and mechanically expanded into lanced and rippled aluminium fins with full fin collars for higher efficiencies. The space between the fins are given by a collar that will increase the surface area in connection with the tubes, protecting them from ambient corrosion. The coils will have an integral subcooler circuit which provides sufficient subcooling to effectively eliminate the possibility of liquid flashing and increase the unit's efficiency of 5-7% without an increase in power absorbed, and the surface area will be designed in order to have an air velocity not higher than 2.8 m/sec.

Condenser fans - The fans used in conjunction with the condenser coils, are helical type with aerofoil blades for higher efficiencies and lower noise. The air discharge is vertical and each fan will be coupled to the electrical motor, supplied as standard to IP54 and capable to work to ambient temperatures of -40 C to +55 C. Each fan will be controlled by the condensing pressure of the relavent cooling circuit. There is also an accident protection within the motors.

Electronic expansion valve - Each refrigerant circuit will be equipped with all the necessary components in order to ensure the workings and service (dehydration filter, liquid sight glass, shut-off valve, load connection, pressure switch etc.) and an electronic expansion valve that allows a simple control system that quickly interacts at load variations. This valve combines two functions: liquid solenoid and electronic expansion valve. It is managed directly by a microprocessor.

Control panel - Field power connection, control interlock terminals, and unit control system should be centrally located in an electric panel (IP 54). Power and starting controls should be separate from safety and operating controls in different compartments of the same panel. Starting will be star/delta type. Power and starting controls should include fuses and contactors for each compressor winding and fan motors. Operating and safety controls should include energy saving control; emergency stop switch; overload protection for compressor motor; high and low pressure cut-out switch (for each refrigerant circuit); anti-freeze thermostat; cut-out switch for each compressor.

All of the information regarding the unit will be reported on a display and with the internal built-in calender and clock that will switch the unit ON/OFF during day time all year long.

Regulation of cooling capacity - Each unit will have a microprocessor for the control and operation of the unit that should have a infinitely variable capacity control down to 6,25% (four compressors), to 8,3% (three compressors), to 12,5% (two compressors) of the cooling capacity.

High and low temperature function - The units will be provided with an automatic control for condensing pressure which ensures the working at low external temperatures down to +10 C, because of the ON/OFF of the condenser fans, to maintain condensing pressure. Fan speed control should be available as option.

Refrigerant piping - Refrigerant circuit should include a factory insulated suction line, manual liquid line shut-off valve with charging connection, refrigerant filter drier with replaceable core, sensor indicator, electronic expansion valve and relief valve.

We reserve the right to make changes in design and construction at any time without notice, thus the cover picture is not binding.

McQuay partecipa al programma di
Certificazione Eurovent.
I prodotti interessati figurano nella Guida
Eurovent dei Prodotti Certificati.



McQuay is participating in the Eurovent
Certification Programme
Product are as listed in the Eurovent
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