Air-cooled screw chillers

Refrigerant R1234ze
Model RTAF G 090 to 470
(330 to 1620 kW – 50 Hz)

SINTESIS™

PRIME

August 2020

RLC-PRC064A-GB

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Introduction

To meet a wide range of applications in the air-cooled market, Trane is proud to offer the model RTAF G chiller.

RTAF G models are leading the industry in terms of sustainability energy efficiency, application versatility, ease of installation, control precision, reliability and operational cost-effectiveness.

The units are designed to deliver proven performance, plus all the benefits of an advanced heat transfer design with multiple low-speed, direct-drive compressors.

EcoWise™

RTAF G chillers with **R1234ze** low GWP refrigerants are part of the **EcoWise™** portfolio of products that are designed to lower their environmental impact with next-generation, low global warming potential (GWP) refrigerants and high-efficiency operation.

The new Trane Sintesis Prime model RTAF G chiller is a very low environmental impact thanks to near zero GWP (<1) R1234ze refrigerant. An optimized design, the result of a search for higher reliability, higher energy efficiency, and lower sound levels for today's environment. The full range RTAF G comply with the latest Ecodesign requirements in Comfort cooling applications. In an effort to reduce energy consumed by HVAC equipment and to continually produce chilled water, Trane has developed the Model Sintesis Prime chiller with higher efficiencies and a more reliable design than any other air-cooled chiller available on the market today.

The Sintesis Prime model RTAF G chiller uses the proven design of the Trane helical-rotary compressor, which embraces all of the design features that have made the Trane helical-rotary compressor liquid chillers such a success since 1987.

Trane Sintesis Prime model RTAF G chillers offers high reliability coupled with greatly improved energy efficiency, and improved acoustical performance, due to its advanced design, low-speed, direct- drive compressor, and proven Sintesis performance.

The major advantages of the Sintesis Prime chiller are:

- 99.5% reliability rate
- Lower sound levels
- Higher energy efficiency at full load & part load.

The Sintesis Prime model RTAF G chiller is an industrial-grade design, built for both the industrial and commercial markets. It is ideal for schools, hotels, hospitals, retailers, office buildings, and industrial applications.

Sintesis Prime chillers are available in 5 sound levels and 5 efficiencies levels to answer accurately to every customer's needs.

Sound levels

– Standard Noise (SN)
– Low Noise (LN) (with or without Night Noise Setback (NNSB))
– Extra Low Noise (XLN-EC) (XLN-AC)

Efficiency levels

– Standard Efficiency (SE)
– High Efficiency (HE)
– Extra Efficiency (XE)
– High Seasonal Efficiency Short (HSS)
– High Seasonal Efficiency (HSE)

Features and Benefits

The Sintesis Prime Helical-Rotary Compressor

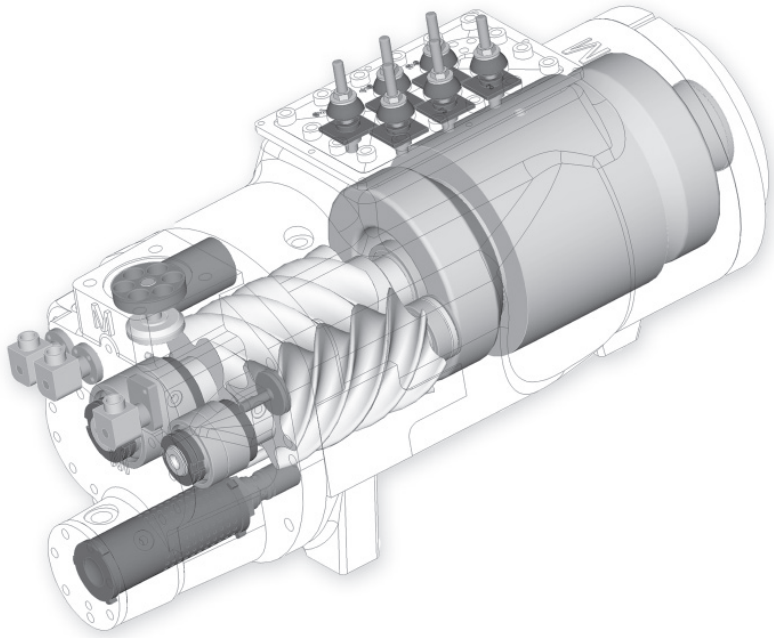
- Unequaled-reliability. The Sintesis Prime Trane helical-rotary compressor is designed, built, and tested to the same demanding and rugged standards as the Trane scroll compressors, the centrifugal compressors, and the previous generation helical-rotary compressors used in both air- and water-cooled chillers for more than 27 years.
- Years of research and testing. The Trane helical-rotary compressor has amassed thousands of hours of testing, much of it at severe operating conditions beyond normal commercial air- conditioning applications.
- Proven track record. The Trane Company is the world's largest manufacturer of large helical- rotary compressors used for refrigeration. Over 400,000 compressors worldwide have proven that the Trane helical- rotary compressor has a reliability rate of greater than 99.5% in the first year of operation — unequalled in the industry.
- Resistance to liquid slugging. The robust design of the Series R compressor can ingest amounts of liquid refrigerant that normally would severely damage compressor.
- Fewer moving parts. The helical- rotary compressor has only two rotating parts: the male rotor and the female rotor.
- Direct-drive, low-speed, semi- hermetic compressor for high efficiency and high reliability.
- Field-serviceable compressor for easy maintenance.
- Suction-gas-cooled motor. The motor operates at lower temperatures for longer motor life.
- Five minute start-to-start and two minute stop-to-start anti-recycle timer allows for closer water-loop temperature control.

Capacity Control and Load Matching

The combination patented unloading system on Trane helical- rotary compressors uses the variable unloading valve for the majority of the unloading function. This allows the compressor to modulate infinitely, to exactly match building load and to maintain chilled-water supply temperatures within ± 0.3°C [±0.5°F] of the set point. Helical-rotary chillers that rely on stepped capacity control must run at a capacity equal to or greater than the load, and typically can only maintain water temperature to around ± 1°C [±2°F]. Much of this excess capacity is lost because overcooling goes toward removing building latent heat, causing the building to be dried beyond normal comfort requirements.

On RTAF HSE G version, the combination of the variable unloading valve plus the adaptive frequency drive allow to exactly match building load and get excellent efficiencies at full load and part load.

Figure 1 – Cutaway of a compressor



Close Spacing Installation

The Sintesis Prime chiller has the tightest recommended side clearance in the industry, 1 meter, but that is not all. In situations where equipment must be installed with less clearance than recommended, which frequently occurs in retrofit applications, restricted airflow is common. Conventional chillers may not work at all. However, the Sintesis Prime chiller with the Adaptive Control™ microprocessor will make as much chilled water as possible given the actual installed conditions, stay on- line during any unforeseen abnormal conditions, and optimize its performance. Consult your sales engineer for more details.

Factory Testing Means Trouble-Free Start-up

All Sintesis Prime chillers are given a complete functional test at the factory. This computer-based test program completely checks the sensors, wiring, electrical components, microprocessor function, communication capability, expansion valve performance, and fans. In addition, each compressor is run-tested to verify capacity and efficiency. Where applicable, each unit is factory preset to the customer's design conditions. An example would be the leaving-liquid temperature set point. The result of this test program is that the chiller arrives at the job site fully tested and ready for operation

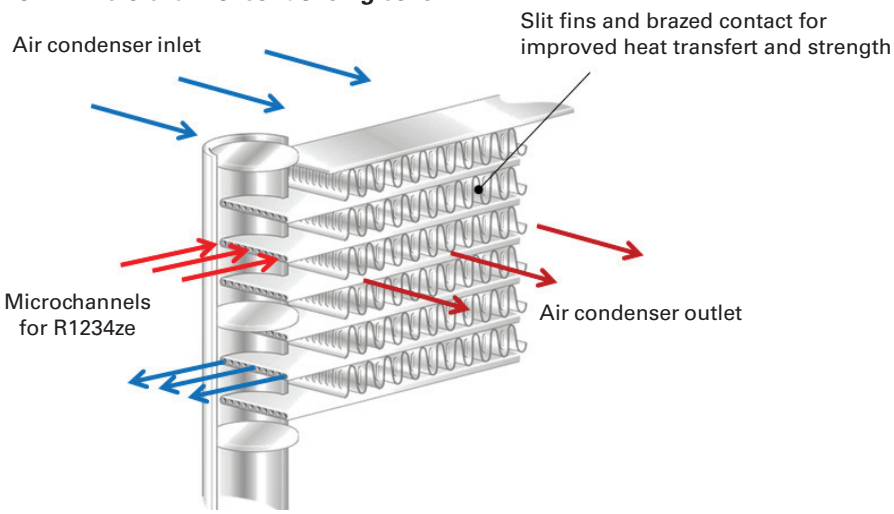
Factory-Installed and Tested Controls and Options Speed Installation

All Sintesis Prime chiller options, including low ambient control, ambient temperature sensor, low ambient lockout, communication interface and ice-making controls are factory installed and tested. Some manufacturers send accessories in pieces to be field installed. With Trane, the customer saves on installation expense and has assurance that ALL chiller controls and options have been tested and will function as expected.

Micro channel condensing coils

Sintesis Prime chillers are equipped with micro channel condensing coils allowing excellent heat transfer and a dramatic improvement of corrosion resistance versus conventional tubes in fins coils. Micro channel coils are 100% aluminum and galvanic corrosion which can occur on condensers made with copper tubes and aluminum fins is avoided. Micro channel coils are also well adapted to dirty environments thanks their small thickness and fins profile.

Figure 2 – Micro channel condensing coils

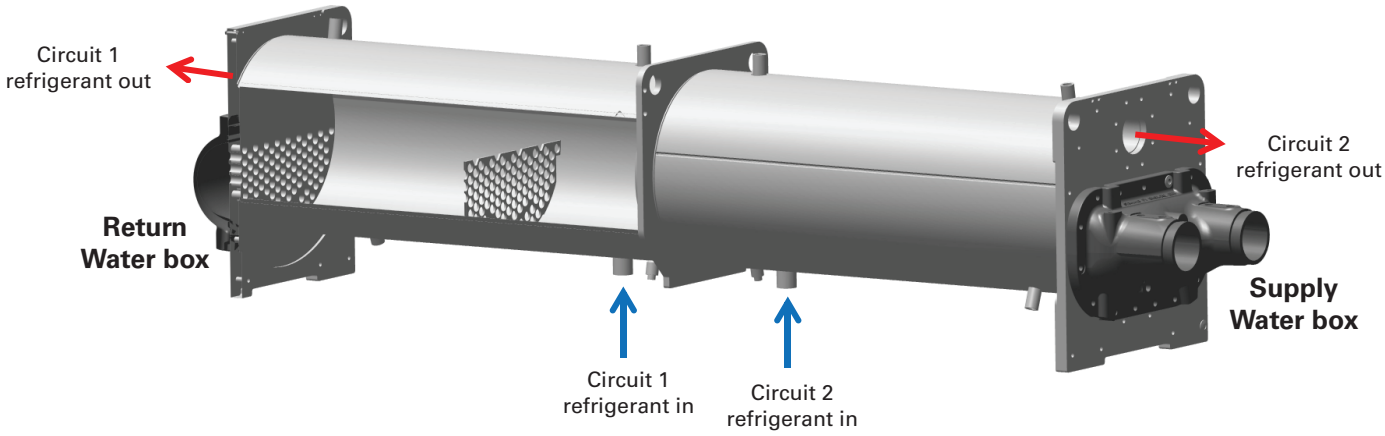


Features and Benefits

CHIL evaporator

Trane developed an evaporator specially designed for Sintesis Prime chillers. Compact - High performance - Integrated design - Low charge (CHIL) evaporator optimizes the flow of the refrigerant to get an excellent heat exchange with water in every operating condition and minimize the quantity of refrigerant used.

Figure 3 – CHIL Evaporator



Fans

Most of Sintesis Prime chillers use EC fans in order to reduce power consumption at full load and at part load. EC fans allow a significant reduction of sound level and a better operation of the chiller at low ambient conditions. On XLN units EC fans are equipped with a diffuser to get an air flow optimization and a quieter operation.

Figure 4 – EC fan with diffuser

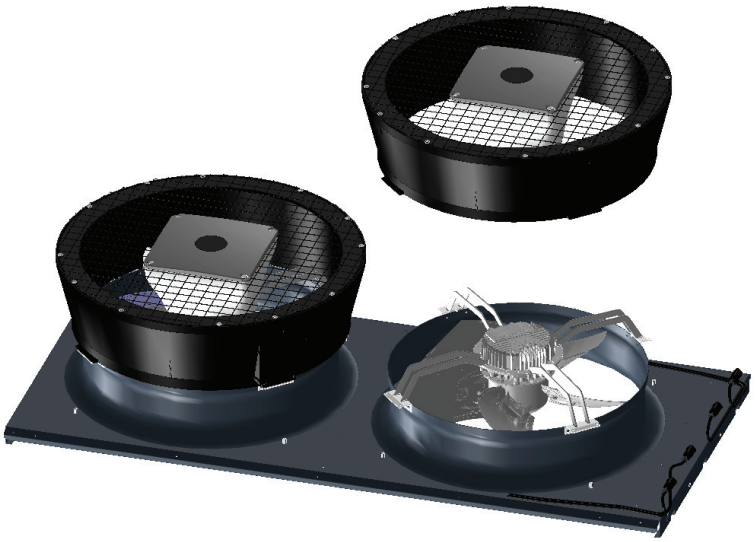
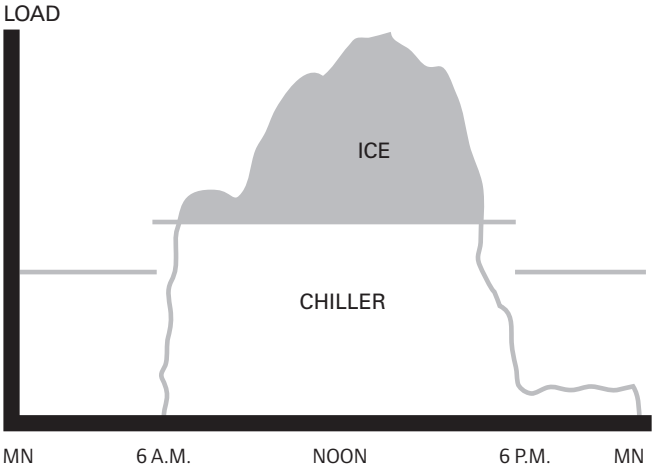


Figure 5 – Ice storage demand cost savings



Superior Control with UC 800™ Chiller Controls

The Adaptive Control™ microprocessor system enhances the Sintesis Prime chiller by providing the very latest chiller control technology. With the Adaptive Control microprocessor, unnecessary service calls and unhappy tenants are avoided. The unit does not nuisance-trip or unnecessarily shut down. Only when the Tracer chiller controls have exhausted all possible corrective actions and the unit is still violating an operating limit, will the chiller shut down. Controls on other equipment typically shut down the chiller, usually just when it is needed the most.

For Example:

A typical five-year-old chiller with dirty coils might trip out on high- pressure cutout on a 38°C [100°F] day in August. A hot day is just when comfort cooling is needed the most. In contrast, the Sintesis Prime chiller with an Adaptive Control microprocessor will stage fans on, modulate the electronic expansion valve, and modulate the slide valve as it approaches a high-pressure cutout, thereby keeping the chiller on line when you need it the most, on high ambient temperatures.

Features and Benefits

System Options:

Ice Storage

Trane air-cooled chillers are well- suited for ice production. The unique ability to operate at decreased ambient temperature while producing ice results in approximately the same amount of work for the compressor. An air-cooled machine typically switches to ice production at night. Two things happen under this assumption. First, the leaving brine temperature from the evaporator is lowered to around -5.5 to -5°C [22 to 24°F]. Second, the ambient temperature has typically dropped about 8.3 to 11°C [47 to 52°F] from the peak daytime ambient. This effectively places a lift on the compressors that is similar to daytime running conditions. The chiller can operate in lower ambient at night and successfully produce ice to supplement the next day's cooling demands.

The Model RTAF G produces ice by supplying ice storage tanks with a constant supply of glycol solution.

Air-cooled chillers selected for these lower leaving-fluid temperatures are also selected for efficient production of chilled fluid at nominal comfort- cooling conditions. The ability of Trane chillers to serve "double duty" in ice production and comfort cooling greatly reduces the capital cost of ice-storage systems.

When cooling is required, ice-chilled glycol is pumped from the ice storage tanks directly to the cooling coils. No expensive heat exchanger is required. The glycol loop is a sealed system, eliminating expensive annual chemical treatment costs. The air-cooled chiller is also available for comfort- cooling duty at nominal cooling conditions and efficiencies. The modular concept of glycol ice- storage systems, and the proven simplicity of Trane Tracer™ controls, allows the successful blend of reliability and energy-saving performance in any ice-storage application.

The ice-storage system is operated in six different modes, each optimized for the utility cost at a particular time of day.

1. Provide comfort cooling with chiller
2. Provide comfort cooling with ice
3. Provide comfort cooling with ice and chiller
4. Freeze ice storage
5. Freeze ice storage when comfort cooling is required
6. Off.

UC 800 optimization software controls operation of the required equipment and accessories to easily move from one mode of operation to another. For example: even with ice-storage systems, there are numerous hours when ice is neither produced nor consumed, but saved. In this mode, the chiller is the sole source of cooling. For example, to cool the building after all ice is produced but before high electrical demand charges take effect, UC 800 sets the air-cooled chiller leaving fluid set point to its most efficient setting and starts the chiller, chiller pump, and load pump.

When electrical demand is high, the ice pump is started and the chiller is either demand limited or shut down completely. UC 800 controls have the intelligence to optimally balance the contribution of the ice and the chiller in meeting the cooling load. The capacity of the chiller plant is extended by operating the chiller and ice in tandem. UC 800 rations the ice, augmenting chiller capacity while reducing cooling costs. When ice is produced, UC 800 will lower the air-cooled chiller leaving-fluid set point and start the chiller, ice and chiller pumps, and other accessories. Any incidental loads that persist while producing ice can be addressed by starting the load pump and drawing spent cooling fluid from the ice storage tanks.

For specific information on ice storage applications, contact your local sales office.

Options

Application options

Ice making

The ice making option provides special control logic to handle low temperature brine applications (less than 4.4°C [40°F] leaving evaporator temperature) for thermal storage applications.

Low temperature brine

Low temperature option provides special control logic and oil cooler is installed to handle low temperature brine applications including part load conditions below 4.4°C (40°F) leaving evaporator temperature.

Low ambient

The low ambient option adds unit controls to allow start and operation when the unit works with ambient temperatures between -10°C (14°F) and -20°C (-4°F). High side of ambient range remains at 46°C (115°F).

High ambient

The high ambient option adds unit controls, oil coolers and oversized electrical components to allow start and operation up to ambient temperatures of 55°C (131°F) operation. Low side of ambient range remains at -10°C (14°F).

SmartFlow Control

Constant speed pump – Variable frequency drive adjustment

The unit is equipped with a pump package driven by a speed inverter, without providing continuous modulation of the speed. The water flow is fixed during commissioning. The goal of this alternative is to provide the appropriate flow rate and hydraulic balance, without the need for a mechanical balancing valve, and by taking advantage of the energy consumption optimization of the pump.

Water flow is adjusted through parameter 204 of the speed inverter (TR200), when having the dual pump option, the active pump arbitration is based on pump equalization time and pump failure status.

Variable speed pump – Constant differential pressure (DP)

The unit is equipped with a pump package driven by a speed inverter. The modulation of the pump speed is made in order to ensure that the Differential Pressure (DP) remains constant within the system. The minimum pump speed is factory set at 60% of the nominal speed. The minimum pump frequency can be adjusted through inverter. The constant DP option is intended to be used with 2-way water regulation valves in the customer hydraulic system. At minimum system partial load, when most of the 2-way valves are closed, a minimum flow rate must be ensured through the chiller evaporator. DP is measured by a differential pressure sensor supplied by Trane, that the customer must install on the water loop, in a freeze protected area. A regulation valve should be installed on the by-pass line.

Variable speed pump – Constant differential temperature (DT)

The unit will be equipped with a pump package driven by a speed inverter. The modulation of the pump speed is managed to ensure that chiller DT stays constant. Entering and leaving temperatures at the evaporator will be measured directly by the chiller controller, through the factory-supplied sensor. A DT setpoint will be present on the unit controller. The option for constant DT is intended to be used with 3-way valves on water systems, or 2-way valves on water system but constant flow at the by-pass. The minimum pump frequency can be adjusted on the inverter.

Partial and Total Heat Recovery

Heat recovery appears more and more as a sensible response to offset energy costs continually onthe rise. The Trane Sintesis Prime chillers with Partial and Total Heat Recovery option combines the energy savings of heat recovery operation with the installation and maintenance cost savings of completely factory packaged air cooled liquid chillers. The RTAF G with Heat Recovery option operate as a standard chiller as long as heat is not required or it can simultaneously produce chilled and hot water which can be used for applications like: Heating or preheating of boiler systems or domestic cater, Air conditioning/ventilation air pre-heat, and Industrial processes.

The Heat Recovery Exchanger is a brazed plate exchanger, connected to the compressor discharge line, and sized to recover up to 25% of the nominal cooling capacity for PHR and 130% of a nominal cooling capacity for THR (an optional 3 way valve is available with THR).

The Heat Recovery Exchanger is not approved for Food and Beverage materials. The use of a primary loop is mandatory.

The amount of net heat recovery depends on:

– the percentage of cooling load available
– the ambient temperature

Options

Direct and Glycol Free Free-cooling

In order to take advantage of the low ambient

temperatures, Sintesis Prime chillers propose four alternatives, of free cooling:

– Total Direct Free-cooling
– Partial Direct Free-cooling
– Total Glycol free Free-cooling
– Partial Glycol free Free-cooling

The advantages of this type of application are:

- A small footprint compared to a system where a dry cooler and a chiller are used
- One single equipment control
- A wide range of capacities

The Sintesis Prime Series, RTAF G Free Cooling are designed for countries that have a significant yearly number of hours below 0 °C and for applications where cooling is needed year round.

Sound level options

Low noise

Low noise units are equipped with a jacket on the oil separators and a pre-formed 'sound box' encapsulating each compressor.

Low noise with NNSB

Night noise set back allow to reduce the sound level of the chiller by reducing the speed of EC fans controlled with an external on/off contact.

Extra low noise

Extra low noise units are equipped with a jacket on the oil separators, a pre-formed 'sound box' encapsulating each compressor and EC fans with diffusers or AC fans.

Electrical options

Under over voltage protection IP20 internal protection. Flow switch: the flow switch is sent as an accessory and has to be installed on site.

Hydraulic module option*

Hydraulic module includes the following components: water strainer, expansion vessel 80l, pressure relief valve set at 5 bars, twin pump low head allowing a pressure drop in the water circuit up to 120kPa or twin pump high head allowing a pressure drop in the water circuit up to 220kPa, balancing valve and anti-freeze protection.

Control options

BACnet™ communications interface

Allows the user to easily interface with BACnet via a single twisted pair wiring to a factory installed and tested communication board.

LonTalk™ (LCI-C) Communications Interface

Provides the LonMar chiller profile inputs/outputs for use with a generic building automation system via a single twisted pair wiring to a factory installed and tested communication board.

ModBus™ Communications Interface

Allows the user to easily interface with ModBus via a single twisted pair wiring to a factory installed and tested communication board.

External chilled water setpoint

UC800 accepts either a 2-10 VDC or a 4-20mA input signal, to adjust the chilled water setpoint from a remote location.

External current limit setpoint

UC800 accepts either a 2-10VDC or a 4-20mA input signal to adjust the current limit setpoint from a remote location.

Ice making contact

UC800 provides an output contact closure that can be used as a signal to the system that ice building is in operation. This relay will be closed when ice building is in progress and open when ice building has been terminated by either UC800 or the remote interlock. It is used to signal the system changes required to convert to and from ice making.

Run test report

Run test report gives the results of the performance test of the unit in the design conditions specified in the order write up with water without glycol.

The data recorded are: cooling capacity, power input, air temperature, water entering temperature, water leaving temperature and water flow.

* Components may differ depending on unit model and size. Contact your local sales office for details.

Other Options

Relief valves

Dual relief valve plus 3 way valve on high pressure side.

High performance insulation

Evaporator is insulated with 2 layers of Armaflex II or equivalent of 19 mm (3/4 inches) thickness and K factor of 0,26 W/m²°K.

Evaporator without insulation

Evaporator is not insulated and a specific insulation can be done on site.

Coated condensing coils

Condensing coils are protected with a cathodic epoxy electro deposition coating UV resistant.

Neoprene pads

Neoprene pads avoid a direct contact of the base of the unit with the ground.

Neoprene isolators

Isolators provide isolation between chiller and structure to help eliminate vibration transmission and have an efficiency of 95% minimum.

Grooved pipe plus weld coupling

Grooved pipes are connected on water inlet and outlet, the cooling allows the connection between the grooved pipe and the evaporator water connection.

Export shipping package

Metallic clog are fixed on the base frame of the unit. It prevents direct contact between the chiller and the container while loading and unloading from the container.

Disconnect with circuit breaker

The unit is equipped with a circuit breaker for each circuit and a centralized connecting block for the 3 phases.

Operating Map

To choose the unit configuration, refer to operating map figure below: Standard ambient, High ambient or Low ambient.

* Standard ambient units:

  -10°C ≤ Air temperature ≤ 46°C.

* Low ambient units:

  -20°C ≤ Air temperature ≤ 46°C

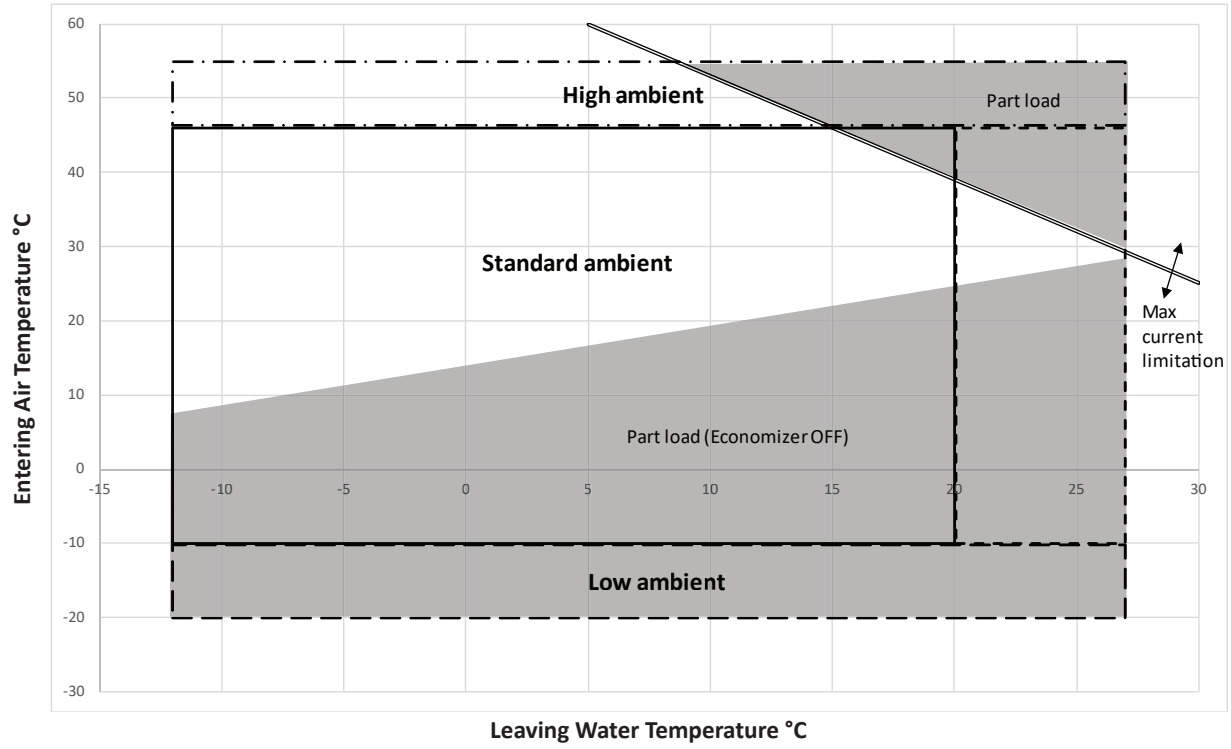
* High ambient units:

  -10°C ≤ Air temperature ≤ 55°C

Note: It is not possible to have a unit operate low and high ambient.

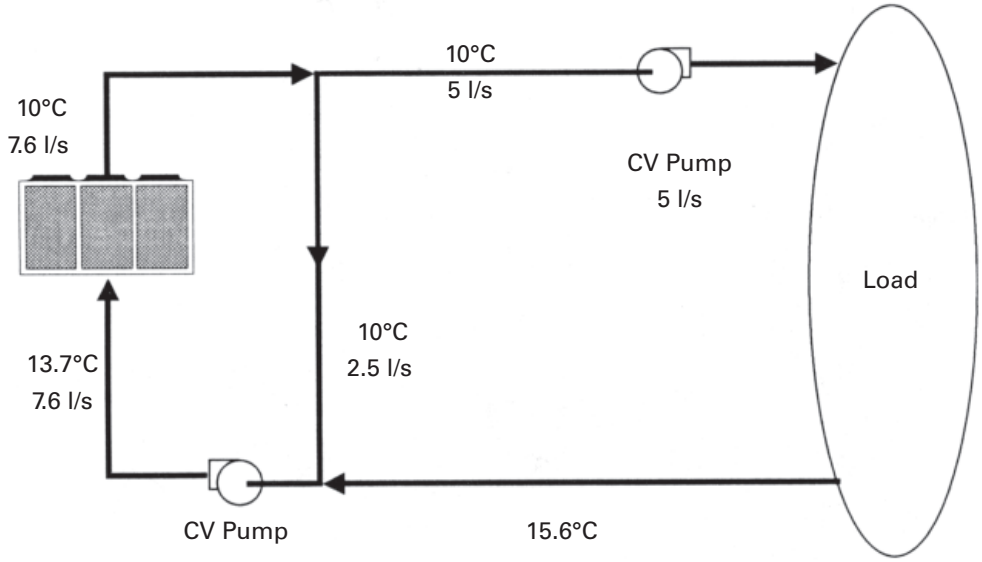
Options

Figure 6 – RTAF G Operating Map



		RTAF G
Condenser Ambient Temperature		
Standard (min/max)	(°C)	-10 / +46
With Low Ambient option (min/max)	(°C)	-20 / +46
With High Ambient option (min/max)	(°C)	-10 / +55
Evaporator Leaving Water Temperature		
Standard (min/max)	(°C)	-12 / +27
Power supply	(V/Ph/Hz)	400/3/50
Refrigerant		R1234ze

Figure 7 – Flow rate Out of Range



Important

Certain application constraints should be considered when sizing, selecting, and installing Trane Sintesis Prime chillers. Unit and system reliability is often dependent on properly and completely complying with these considerations. When the application varies from the guidelines presented, it should be reviewed with your local sales engineer.

Unit Sizing

Unit capacities are listed in the performance data section. Intentionally oversizing a unit to ensure adequate capacity is not recommended. Erratic system operation and excessive compressor cycling are often a direct result of an oversized chiller. In addition, an oversized unit is usually more expensive to purchase, install, and operate. If oversizing is desired, consider using two units.

Water Treatment

Dirt, scale, products of corrosion, and other foreign material will adversely affect heat transfer between the water and system components. Foreign matter in the chilled-water system can also increase pressure drop and, consequently, reduce water flow. Proper water treatment must be determined locally, depending on the type of system and local water characteristics. Neither salt nor brackish water is recommended for use in Trane Sintesis Prime chillers. Use of either will lead to a shortened chiller life. Trane encourages the employment of a reputable water-treatment specialist, familiar with local water conditions, to assist in this determination and in the establishment of a proper water-treatment program.

Effect of Altitude on Capacity

Sintesis Prime chiller capacities given in the performance data tables are for use at sea level. At elevations substantially above sea level, the decreased air density will reduce condenser capacity and, therefore, unit capacity and efficiency.

Ambient Limitations

Trane Sintesis Prime chillers are designed for year-round operation over a range of ambient temperatures. The Sintesis Prime chiller will operate in ambient temperatures of -10 to 46°C [14 to 115°F]. Selecting the high-ambient option will allow the chiller to operate in ambient temperatures of 55°C [131°F], and selecting the low- ambient option will increase the operational capability of the water chiller to ambient temperatures as low as -20°C [-4°F]. For operation outside of these ranges, contact the local sales office.

Water Flow Limits

The minimum water flow rates are given in Tables 1 to 6. Evaporator flow rates below the tabulated values will result in laminar flow and cause freeze-up problems, scaling, stratification, and poor control.

The maximum evaporator water flow rate is also given in the general data section. Flow rates exceeding those listed may result in excessive tube erosion.

Application Considerations

Flow Rates Out of Range

Many process cooling jobs require flow rates that cannot be met with the minimum and maximum published values within the Model Sintesis Prime evaporator. A simple piping change can alleviate this problem. For example: a plastic injection molding process requires 5.0 l/s [80 gpm] of 10°C [50°F] water and returns that water at 15.6°C [60°F]. The selected chiller can operate at these temperatures, but has a minimum flow rate of 7.6 l/s [120 gpm]. The following system can satisfy the process.

Flow Control

Trane requires the chilled water flow control in conjunction with the Sintesis Prime Chiller to be done by the chiller.

This will allow the chiller to protect itself in potentially harmful conditions.

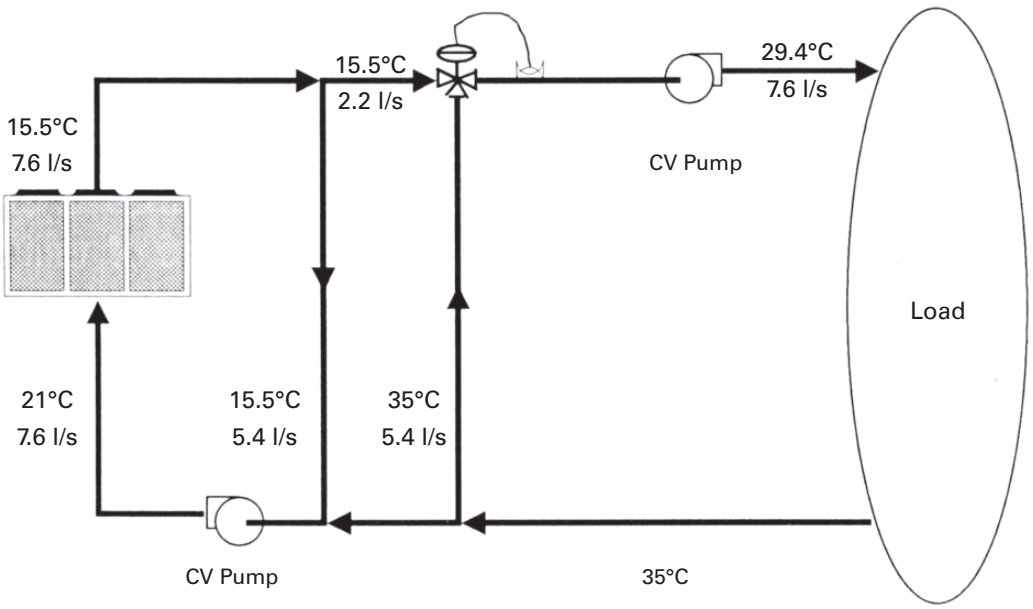
Leaving-Water Temperature Limits

Trane air-cooled Sintesis Prime Series chillers have three distinct leaving-water categories: standard, low temperature, and ice making. The standard leaving-solution temperature range is 4.4 to 27°C [40 to 80°F]. Low-temperature machines produce leaving-liquid temperatures less than 4.4°C [40°F]. Since liquid supply temperature set points less than 4.4°C [40°F] result in suction temperatures at or below the freezing point of water, a glycol solution is required for all low-temperature machines. Ice-making machines have a leaving-liquid temperature range of -12 to 27°C [10.5 to 80°F]. Ice-making controls include dual set point controls and safeties for ice making and comfort cooling capabilities. Consult your local sales engineer for applications or selections involving low temperature or ice making machines. The maximum water temperature that can be circulated through an evaporator when the unit is not operating is 55°C [131°F].

Leaving-Water Temperature

Out of Range

Figure 8 – "Leaving Water Temperature" Out of Range



Many process cooling jobs require temperature ranges that cannot be met with the minimum and maximum published values for the RTAF G evaporator. A simple piping change can alleviate this problem. For example: a laboratory load requires 7.6 l/s [120 gpm] of water entering the process at 29.4°C [85°F] and returning at 35°C [95°F]. The accuracy required is higher than the cooling tower can give. The selected chiller has adequate capacity, but has a maximum leaving-chilled- water temperature of 27°C [80°F]. In the example shown, both the chiller and process flow rates are equal. This is not necessary. For example, if the chiller had a higher flow rate, there would be more water bypassing and mixing with warm water.

Supply-Water Temperature Drop

The performance data for the Trane Sintesis Prime chiller is based on a chilled-water temperature drop of 6°C [43°F]. Chilled-water temperature drops from 3.3 to 10°C [38 to 50°F] may be used as long as minimum and maximum water temperature, and minimum and maximum flow rates, is not violated. Temperature drops outside this range are beyond the optimum range for control, and may adversely affect the microcomputer's ability to maintain an acceptable supply-water temperature range. Further, temperature drops of less than 3.3°C [38°F] may result in inadequate refrigerant superheat. Sufficient superheat is always a primary concern in any direct-expansion refrigerant system and is especially important in a package chiller where the evaporator is closely coupled to the compressor. When temperature drops are less than 3.3°C [38°F], an evaporator runaround loop may be required.

Ice Storage Provides

Reduced Electrical Demand an ice-storage system uses a standard chiller to make ice at night, when utilities charge less for electricity. The ice supplements, or even replaces, mechanical cooling during the day, when utility rates are at their highest. This reduced need for cooling results in big utility cost savings.

Another advantage of ice storage is standby cooling capacity. If the chiller is unable to operate, one or two days of ice may still be available to provide cooling. In that period of time, the chiller can be repaired before building occupants feel any loss of comfort.

The Trane Sintesis Prime Model RTAF G chiller is uniquely suited to low-temperature applications like ice storage because of the ambient relief experienced at night. This allows the Model Sintesis chiller to produce ice efficiently, with less stress on the machine.

Simple and smart control strategies are another advantage the Model Sintesis Prime chiller offers for ice-storage applications. Trane UC 800 building management systems can actually anticipate how much ice needs to be made at night, and operate the system accordingly. The controls are integrated right into the chiller. Two wires and preprogrammed software dramatically reduce field installation cost and complex programming.

Short Water Loops

The proper location of the temperature control sensor is in the supply (outlet) water connection or pipe. This location allows the building to act as a buffer and assures a slowly-changing return- water temperature. If there is not a sufficient volume of water in the system to provide an adequate buffer, temperature control can be lost, resulting in erratic system operation and excessive compressor cycling. A short water loop has the same effect as attempting to control using the building return water. Typically, a two-minute water loop is sufficient to prevent a short water loop. Therefore, as a guideline, ensure that the volume of water in the evaporator loop equals or exceeds two times the evaporator flow rate per minute. For a rapidly changing load profile, the amount of volume should be increased. To prevent the effect of a short water loop, the following item should be given careful consideration: a storage tank or larger header pipe to increase the volume of water in the system and, therefore, reduce the rate of change of the return water temperature.

Application Types

- Comfort cooling
- Industrial process cooling
- Ice or thermal storage
- Low-temperature process cooling.

General Data

Table 1a – RTAF HSE - High Seasonal Efficiency- Extra Low Noise -EC

		090	100	110	120	130	145	155	185	200	225
Net cooling capacity (1) (2)	(kW)	327	358	394	427	460	510	554	607	718	812
Net Power Input (1)(2)	(kW)	98	109	121	129	138	152	169	185	225	272
Net EER (1) (2)		3.32	3.29	3.25	3.3	3.34	3.36	3.28	3.28	3.19	2.98
Eurovent Energy class		A	A	A	A	A	A	A	A	A	B
SEER (3)		4.53	4.59	4.64	4.72	4.82	4.90	4.87	4.65	4.95	4.83
Space cooling efficiency ηs,c (3)	(%)	178	181	183	186	190	193	192	183	195	190
Sound Power Level (4)	(dBA)	91	91	92	91	91	91	91	92	96	98
Compressor											
Circuit 1	#	1	1	1	1	1	1	1	1	1	1
Circuit 2	#	1	1	1	1	1	1	1	1	1	1
Evaporator											
Type - Pass		Flooded shell and tube heat exchanger - 2									
Nominal Flow (1)	l/s	15.6	17.1	18.8	20.4	22.0	24.75	26.5	28.95	34.23	38.7
Pressure Drop (1)	kPa	35.9	32.6	39.4	33.5	33.1	34.5	39.2	37.7	34.3	43.7
Minimum Flow	l/s	8.0	9.4	9.4	10.6	11.6	12.6	12.6	14.2	14.2	14.2
Maximum Flow	l/s	29.6	34.7	34.7	39.5	43.1	46.8	46.8	52.6	52.6	52.6
Nominal water connection size (Grooved coupling)	(in) - (mm)	4" - 100	4" - 100	4" - 100	5" - 125	5" - 125	6" - 150	6" - 150	6" - 150	6" - 150	6" - 150
Condenser											
Type		Full aluminum Micro channel heat exchanger									
Quantity	#	5/5	5/5	5/5	5/5	5/5	6/6	6/6	7/7	7/7	7/7
Face area per coil	(m²)	2.4									
Condenser Fan											
Fan / motor Type		Propeller fan / Variable speed - EC motor									
Quantity	#	5/5	5/5	5/5	5/5	5/5	6/6	6/6	7/7	7/7	7/7
Nominal RPM	rpm	660	660	760	760	760	760	760	860	860	860
Airflow per fan	(m³/h)	15000	15000	17400	17400	17400	17400	17400	20000	20000	20000
Refrigerant R1234ze											
Charge Circuit 1	kg	44	43	43	44	45	58	58	63	66	66
Charge Circuit 2	kg	42	41	41	45	43	48	48	49	62	62
Dimensions & Weight											
Length	mm	5645	5645	5645	5645	5645	6770	6770	7895	7895	7895
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
Height	mm	2672	2672	2672	2672	2672	2672	2672	2672	2672	2672
Operating weight	kg	4280	4305	4305	4365	4425	5240	5275	5655	5795	5745

(1) Evaporator 12/7°C and 0.0 m²K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

Table 1b – RTAF HSE - High Seasonal Efficiency- Extra Low Noise -EC

		210	230	265	275	300	285	305	340	385	405	470
Net cooling capacity (1) (2)	(kW)	741	838	894	1000	1095	1026	1117	1199	1307	1404	1618
Net Power Input (1)(2)	(kW)	225	255	278	320	360	307	343	369	410	457	572
Net EER (1) (2)		3.29	3.29	3.22	3.13	3.04	3.34	3.26	3.25	3.19	3.07	2.83
Eurovent Energy class		A	A	A	A	B	A	A	A	A	B	C
SEER (3)		4.83	4.91	4.95	4.87	4.94	5.15	5.09	5.13	5	5	4.72
Space cooling efficiency ηs,c (3)	(%)	190	193	195	192	195	203	201	202	197	197	186
Sound Power Level (4)	(dBA)	94	94	94	97	98	95	95	95	97	98	101
Compressor												
Circuit 1	#	2	2	2	2	2	2	2	2	2	2	2
Circuit 2	#	1	1	1	1	1	2	2	2	2	2	2
Evaporator												
Type - Pass		Flooded shell and tube heat exchanger - 2										
Nominal Flow (1)	l/s	35.33	39.93	42.6	47.67	52.18	48.89	53.24	57.13	62.29	66.91	77.12
Pressure Drop (1)	kPa	42.3	43.2	49	48.5	57.9	41.2	38.4	44	42.8	41.8	44.1
Minimum Flow	l/s	15.8	17.7	17.7	20.1	20.1	22.3	25.0	25.0	27.8	30.3	31.5
Maximum Flow	l/s	58.5	65.8	65.8	74.5	74.5	82.6	92.8	92.8	103.0	112.5	116.9
Nominal water connection size (Grooved coupling)	(in) - (mm)	6" - 150	6" - 150	6" - 150	6" - 150	6" - 150	8" - 200	8" - 200	8" - 200	8" - 200	8" - 200	8" - 200
Condenser												
Type		Full aluminum Micro channel heat exchanger										
Quantity	#	12/4	12/6	12/6	12/6	12/6	12/10	12/10	12/12	12/12	12/12	12/12
Face area per coil	(m²)	2.4										
Condenser Fan												
Fan / motor Type		Propeller fan / Variable speed - EC motor										
Quantity	#	12/4	12/6	12/6	12/6	12/6	12/10	12/10	12/12	12/12	12/12	12/12
Nominal RPM	rpm	860	860	860	860	860	860	860	860	860	860	1020
Airflow per fan	(m³/h)	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	22500
Refrigerant R1234ze												
Charge Circuit 1	kg	98	104	104	108	108	100	102	102	108	107	112
Charge Circuit 2	kg	40	49	49	51	53	92	96	102	108	110	110
Dimensions & Weight												
Length	mm	9390	10135	10135	10135	11260	12385	12385	13510	13510	13510	13510
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
Height	mm	2672	2672	2672	2672	2672	2672	2672	2672	2672	2672	2672
Operating weight	kg	7245	7725	7635	7635	8060	9285	9510	9840	9655	9655	9655

(1) Evaporator 12/7°C and 0.0 m²K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign DirectiveTier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

General Data

Table 2a – RTAF HSE - High Seasonal Efficiency- Standard and Low Noise

		090	100	110	120	130	145	155	185	200	225
Net cooling capacity (1) (2)	(kW)	327	359	395	427	461	511	555	607	718	812
Net Power Input (1)(2)	(kW)	99	110	123	131	139	153	171	188	228	275
Net EER (1) (2)		3.29	3.26	3.22	3.27	3.31	3.33	3.25	3.23	3.15	2.95
Eurovent Energy class		A	A	A	A	A	A	A	A	A	B
SEER (3)		4.38	4.56	4.61	4.68	4.78	4.86	4.83	4.61	4.87	4.76
Space cooling efficiency ηs,c (3)	(%)	172.2	179.4	181.4	184.2	188.2	191.4	190.2	181.4	191.8	187.4
Sound Power Level Standard Noise (4)	(dBA)	96	96	97	97	96	96	96	97	101	103
Sound Power Level Low Noise (4)	(dBA)	93	94	94	94	94	94	94	95	98	100
Compressor											
Circuit 1	#	1	1	1	1	1	1	1	1	1	1
Circuit 2	#	1	1	1	1	1	1	1	1	1	1
Evaporator											
Type - Pass		Flooded shell and tube heat exchanger - 2									
Nominal Flow (1)	l/s	15.6	17.11	18.81	20.37	21.96	24.77	26.45	28.95	34.23	38.71
Pressure Drop (1)	kPa	36	32.8	39.5	33.6	33.2	34.5	39.2	37.7	34.3	42.5
Minimum Flow	l/s	8	9.4	9.4	10.6	11.6	12.6	12.6	14.2	14.2	14.2
Maximum Flow	l/s	29.6	34.7	34.7	39.5	43.1	46.8	46.8	52.6	52.6	52.6
Nominal water connection size (Grooved coupling)	(in) - (mm)	4" - 100	4" - 100	4" - 100	5" - 125	5" - 125	6" - 150	6" - 150	6" - 150	6" - 150	6" - 150
Condenser											
Type		Full aluminum Micro channel heat exchanger									
Quantity	#	5/5	5/5	5/5	5/5	5/5	6/6	6/6	7/7	7/7	7/7
Face area per coil	(m²)	2.4									
Condenser Fan											
Fan / motor Type		Propeller fan / Variable speed - EC motor									
Quantity	#	5/5	5/5	5/5	5/5	5/5	6/6	6/6	7/7	7/7	7/7
Nominal RPM	rpm	710	710	810	810	810	810	810	910	910	910
Airflow per fan	(m³/h)	15000	15000	17400	17400	17400	17400	17400	20000	20000	20000
Refrigerant R1234ze											
Charge Circuit 1	kg	44	43	43	44	45	58	58	63	66	66
Charge Circuit 2	kg	42	41	41	45	43	48	48	49	62	62
Dimensions & Weight											
Length	mm	5645	5645	5645	5645	5645	6770	6770	7895	7895	7895
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
Height	mm	2672	2672	2672	2672	2672	2672	2672	2672	2672	2672
Operating weight	kg	4180	4205	4205	4265	4325	5120	5155	5535	5675	5585
Additional weight for Low Noise version	kg	100	100	100	100	100	120	120	120	120	160

(1) Evaporator 12/7°C and 0.0 m²K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

Table 2b – RTAF HSE - High Seasonal Efficiency- Standard and Low Noise

		210	230	265	275	300	285	305	340	385	405	470
Net cooling capacity (1) (2)	(kW)	743	839	895	1002	1097	1028	1120	1200	1309	1407	1613
Net Power Input (1)(2)	(kW)	231	261	283	324	366	314	349	376	417	464	578
Net EER (1) (2)		3.22	3.22	3.16	3.09	3	3.27	3.21	3.19	3.14	3.03	2.79
Eurovent Energy class		A	A	A	B	B	A	A	A	A	B	C
SEER (3)		4.76	4.86	4.77	4.8	4.87	5.03	4.95	4.98	4.96	4.96	4.6
Space cooling efficiency ηs,c (3)	(%)	187.4	191.4	187.8	189	191.8	198.2	195	196.2	195.4	195.4	181
Sound Power Level Standard Noise (4)	(dBA)	99	99	99	102	103	100	100	100	103	103	106
Sound Power Level Low Noise (4)	(dBA)	97	97	97	99	101	98	98	98	100	101	104
Compressor												
Circuit 1	#	2	2	2	2	2	2	2	2	2	2	2
Circuit 2	#	1	1	1	1	1	2	2	2	2	2	2
Evaporator												
Type - Pass		Flooded shell and tube heat exchanger - 2										
Nominal Flow (1)	l/s	35.39	40	42.65	47.76	52.27	48.97	53.37	57.2	62.4	67.05	76.87
Pressure Drop (1)	kPa	43.7	43.4	49.1	48.7	41.3	58.1	38.5	44.1	43	42	43.8
Minimum Flow	l/s	15.8	17.7	17.7	20.1	20.1	22.3	25.0	25.0	27.8	30.3	31.5
Maximum Flow	l/s	58.5	65.8	65.8	74.5	74.5	82.6	92.8	92.8	103.0	112.5	116.9
Nominal water connection size (Grooved coupling)	(in) - (mm)	6" - 150	6" - 150	6" - 150	6" - 150	6" - 150	8" - 200	8" - 200	8" - 200	8" - 200	8" - 200	8" - 200
Condenser												
Type		Full aluminum Micro channel heat exchanger										
Quantity	#	12/4	12/6	12/6	12/6	12/6	12/10	12/10	12/12	12/12	12/12	12/12
Face area per coil	(m²)	2.4										
Condenser Fan												
Fan / motor Type		Propeller fan / Variable speed - EC motor										
Quantity	#	12/4	12/6	12/6	12/6	12/6	12/10	12/10	12/12	12/12	12/12	12/12
Nominal RPM	rpm	936	936	936	936	936	936	936	936	936	936	1020
Airflow per fan	(m³/h)	20600	20600	20600	20600	20600	20600	20600	20600	20600	20600	22400
Refrigerant R1234ze												
Charge Circuit 1	kg	98	104	104	108	108	100	102	102	108	107	112
Charge Circuit 2	kg	40	49	49	51	53	92	96	102	108	110	110
Dimensions & Weight												
Length	mm	9390	10135	10135	10135	11260	12385	12385	13510	13510	13510	13510
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
Height	mm	2672	2672	2672	2672	2672	2672	2672	2672	2672	2672	2672
Operating weight	kg	7085	7565	7455	7455	7840	9065	9290	9600	9415	9415	9415
Additional weight for Low Noise version	kg	160	160	180	180	220	220	220	240	240	240	240

(1) Evaporator 12/7°C and 0.0 m²K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

General Data

Table 3a – RTAF HSS - High Seasonal Short - Extra Low Noise -EC

		090	100	110	120	130	145	155	185	200	225
Net cooling capacity (1) (2)	(kW)	320	349	386	417	448	501	543	601	709	801
Net Power Input (1)(2)	(kW)	101	112	125	134	144	156	174	188	229	283
Net EER (1) (2)		3.18	3.11	3.1	3.12	3.11	3.22	3.11	3.2	3.1	2.83
Eurovent Energy class		A	A	A	A	A	A	A	A	A	C
SEER (3)		4.46	4.49	4.55	4.6	4.64	4.79	4.76	4.61	4.86	4.75
Space cooling efficiency ηs,c (3)	(%)	175.4	177	179	181	182.6	188.6	187.4	181.4	191.4	187
Sound Power Level Standard Noise (4)	(dBA)	91	91	91	92	92	91	92	92	96	98
Compressor											
Circuit 1	#	1	1	1	1	1	1	1	1	1	1
Circuit 2	#	1	1	1	1	1	1	1	1	1	1
Evaporator											
Type - Pass		Flooded shell and tube heat exchanger - 2									
Nominal Flow (1)	l/s	15.26	16.64	18.4	19.88	21.36	24.31	25.87	28.67	33.8	38.19
Pressure Drop (1)	kPa	34.49	31	37.81	32.1	31.49	33.3	37.6	37	33.5	42.5
Minimum Flow	l/s	8.0	9.4	9.4	10.6	11.6	12.6	12.6	14.2	14.2	14.2
Maximum Flow	l/s	29.6	34.7	34.7	39.5	43.1	46.8	46.8	52.6	52.6	52.6
Nominal water connection size (Grooved coupling)	(in) - (mm)	4" - 100	4" - 100	4" - 100	5" - 125	5" - 125	6" - 150	6" - 150	6" - 150	6" - 150	6" - 150
Condenser											
Type		Full aluminum Micro channel heat exchanger									
Quantity	#	4/4	4/4	4/4	4/4	4/4	5/5	5/5	6/6	6/6	6/6
Face area per coil	(m²)	2.4									
Condenser Fan											
Fan / motor Type		Propeller fan / Variable speed - EC motor									
Quantity	#	4/4	4/4	4/4	4/4	4/4	5/5	5/5	6/6	6/6	6/6
Nominal RPM	rpm	660	660	760	760	760	760	760	860	860	860
Airflow per fan	(m³/h)	15000	15000	17400	17400	17400	17400	17400	20000	20000	20000
Refrigerant R1234ze											
Charge Circuit 1	kg	41	40	40	41	42	55	55	60	63	63
Charge Circuit 2	kg	39	38	38	42	40	45	45	46	59	59
Dimensions & Weight											
Length	mm	4520	4520	4520	4520	4520	5645	5645	6770	6770	6770
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
Height	mm	2672	2672	2672	2672	2672	2672	2672	2672	2672	2672
Operating weight	kg	3870	3885	3885	3930	3980	4810	4850	5220	5345	5315

(1) Evaporator 12/7°C and 0.0 m²K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

Table 3b – RTAF HSS - High Seasonal Short - Extra Low Noise -EC

		210	230	265	275	300	285	305	340	385	405
Net cooling capacity (1) (2)	(kW)	735	818	884	989	1075	1009	1095	1180	1296	1391
Net Power Input (1)(2)	(kW)	228	265	283	327	378	315	355	378	417	467
Net EER (1) (2)		3.23	3.08	3.12	3.02	2.84	3.2	3.08	3.12	3.11	2.98
Eurovent Energy class		A	B	A	B	C	A	B	A	A	B
SEER (3)		4.8	4.73	4.88	4.79	4.87	5.09	5.02	5.07	4.92	4.94
Space cooling efficiency ηs,c (3)	(%)	189	186.2	192.2	188.6	191.8	200.6	197.8	199.8	193.8	194.6
Sound Power Level Standard Noise (4)	(dBA)	94	94	94	97	98	95	95	95	98	99
Compressor											
Circuit 1	#	2	2	2	2	2	2	2	2	2	2
Circuit 2	#	1	1	1	1	1	2	2	2	2	2
Evaporator											
Type - Pass		Flooded shell and tube heat exchanger - 2									
Nominal Flow (1)	l/s	35.05	38.97	42.15	47.12	51.23	48.1	52.16	56.24	61.76	66.31
Pressure Drop (1)	kPa	42.71	41.2	48	47.5	55.8	39.9	36.9	42.7	42.1	41.1
Minimum Flow	l/s	15.8	17.7	17.7	20.1	20.1	22.3	25.0	25.0	27.8	30.3
Maximum Flow	l/s	58.5	65.8	65.8	74.5	74.5	82.6	92.8	92.8	103.0	112.5
Nominal water connection size (Grooved coupling)	(in) - (mm)	6" - 150	6" - 150	6" - 150	6" - 150	6" - 150	8" - 200	8" - 200	8" - 200	8" - 200	8" - 200
Condenser											
Type		Full aluminum Micro channel heat exchanger									
Quantity	#	10/4	10/4	10/6	10/6	10/6	10/8	10/8	10/10	12/10	12/10
Face area per coil	(m²)	2.4									
Condenser Fan											
Fan / motor Type		Propeller fan / Variable speed - EC motor									
Quantity	#	10/4	10/4	10/6	10/6	10/6	10/8	10/8	10/10	12/10	12/10
Nominal RPM	rpm	860	860	860	860	860	860	860	860	860	860
Airflow per fan	(m³/h)	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000
Refrigerant R1234ze											
Charge Circuit 1	kg	90	93	93	96	96	90	94	94	108	107
Charge Circuit 2	kg	40	44	49	51	51	88	91	96	100	104
Dimensions & Weight											
Length	mm	8265	8265	9390	9390	9390	10135	10135	11260	12385	12385
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
Height	mm	2672	2672	2672	2672	2672	2672	2672	2672	2672	2672
Operating weight	kg	6895	7045	7310	7310	7440	8710	8870	9185	9520	9520

(1) Evaporator 12/7°C and 0.0 m²K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign DirectiveTier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

General Data

Table 4a – RTAF HSS - High Seasonal Short - Standard and Low Noise

		090	100	110	120	130	145	155	185	200	225
Net cooling capacity (1) (2)	(kW)	321	350	386	418	449	502	543	602	709	801
Net Power Input (1)(2)	(kW)	101	113	125	135	145	157	175	190	233	286
Net EER (1) (2)		3.17	3.1	3.08	3.1	3.1	3.2	3.1	3.16	3.04	2.8
Eurovent Energy class		A	A	B	A	A	A	A	A	B	C
SEER (3)		4.44	4.46	4.51	4.56	4.6	4.74	4.7	4.55	4.8	4.69
Space cooling efficiency ηs,c (3)	(%)	174.6	175.4	177.4	179.4	181	186.6	185	179	189	184.6
Sound Power Level Standard Noise (4)	(dBA)	97	97	97	97	97	96	96	97	101	103
Sound Power Level Low Noise (4)	(dBA)	94	94	95	94	94	94	94	95	98	101
Compressor											
Circuit 1	#	1	1	1	1	1	1	1	1	1	1
Circuit 2	#	1	1	1	1	1	1	1	1	1	1
Evaporator											
Type - Pass		Flooded shell and tube heat exchanger - 2									
Nominal Flow (1)	l/s	15.3	16.69	18.42	19.91	21.4	24.34	25.91	28.67	33.8	38.2
Pressure Drop (1)	kPa	34.7	31.2	37.9	32.1	31.6	33.4	37.7	37	33.5	42.6
Minimum Flow	l/s	8.0	9.4	9.4	10.6	11.6	12.6	12.6	14.2	14.2	14.2
Maximum Flow	l/s	29.6	34.7	34.7	39.5	43.1	46.8	46.8	52.6	52.6	52.6
Nominal water connection size (Grooved coupling)	(in) - (mm)	4" - 100	4" - 100	4" - 100	5" - 125	5" - 125	6" - 150	6" - 150	6" - 150	6" - 150	6" - 150
Condenser											
Type		Full aluminum Micro channel heat exchanger									
Quantity	#	4/4	4/4	4/4	4/4	4/4	5/5	5/5	6/6	6/6	6/6
Face area per coil	(m²)	2.4									
Condenser Fan											
Fan / motor Type		Propeller fan / Variable speed - EC motor									
Quantity	#	4/4	4/4	4/4	4/4	4/4	5/5	5/5	6/6	6/6	6/6
Nominal RPM	rpm	710	710	810	810	810	810	810	910	910	910
Airflow per fan	(m³/h)	15000	15000	17400	17400	17400	17400	17400	20000	20000	20000
Refrigerant R1234ze											
Charge Circuit 1	kg	41	40	40	41	42	55	55	60	63	63
Charge Circuit 2	kg	39	38	38	42	40	45	45	46	59	59
Dimensions & Weight											
Length	mm	4520	4520	4520	4520	4520	5645	5645	6770	6770	6770
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
Height	mm	2526	2526	2526	2526	2526	2526	2526	2526	2526	2526
Operating weight	kg	3830	3855	3855	3910	3970	4800	4835	5215	5355	5265
Additional weight for Low Noise version	kg	100	100	100	100	100	120	120	120	120	160

(1) Evaporator 12/7°C and 0.0 m²K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

Table 4b – RTAF HSS - High Seasonal Short - Standard and Low Noise

		210	230	265	275	300	285	305	340	385	405
Net cooling capacity (1) (2)	(kW)	737	820	886	991	1078	1012	1099	1183	1299	1395
Net Power Input (1)(2)	(kW)	233	270	288	331	382	321	360	384	423	473
Net EER (1) (2)		3.17	3.04	3.08	2.99	2.82	3.15	3.05	3.08	3.07	2.95
Eurovent Energy class		A	B	B	B	C	A	B	B	B	B
SEER (3)		4.73	4.69	4.72	4.98	4.79	4.98	4.9	4.94	4.89	4.9
Space cooling efficiency ηs,c (3)	(%)	186.2	184.6	185.8	196.2	188.6	196.2	193	194.6	192.6	193
Sound Power Level Standard Noise (4)	(dBA)	99	99	99	102	103	100	100	101	103	104
Sound Power Level Low Noise (4)	(dBA)	97	97	97	99	101	98	98	98	100	102
Compressor											
Circuit 1	#	2	2	2	2	2	2	2	2	2	2
Circuit 2	#	1	1	1	1	1	2	2	2	2	2
Evaporator											
Type - Pass		Flooded shell and tube heat exchanger - 2									
Nominal Flow (1)	l/s	35.13	39.1	42.22	47.24	51.38	48.24	52.35	56.36	61.9	66.48
Pressure Drop (1)	kPa	41.9	41.5	48.2	47.7	56.2	40.1	37.1	42.9	42.3	41.3
Minimum Flow	l/s	15.8	17.7	17.7	20.1	20.1	22.3	25.0	25.0	27.8	30.3
Maximum Flow	l/s	58.5	65.8	65.8	74.5	74.5	82.6	92.8	92.8	103.0	112.5
Nominal water connection size (Grooved coupling)	(in) - (mm)	6" - 150	6" - 150	6" - 150	6" - 150	6" - 150	8" - 200	8" - 200	8" - 200	8" - 200	8" - 200
Condenser											
Type		Full aluminum Micro channel heat exchanger									
Quantity	#	10/4	10/4	10/6	10/6	10/6	10/8	10/8	10/10	12/10	12/10
Face area per coil	(m²)	2.4									
Condenser Fan											
Fan / motor Type		Propeller fan / Variable speed - EC motor									
Quantity	#	10/4	10/4	10/6	10/6	10/6	10/8	10/8	10/10	12/10	12/10
Nominal RPM	rpm	936	936	936	936	936	936	936	936	936	936
Airflow per fan	(m³/h)	20600	20600	20600	20600	20600	20600	20600	20600	20600	20600
Refrigerant R1234ze											
Charge Circuit 1	kg	90	93	93	96	96	90	94	94	108	107
Charge Circuit 2	kg	40	44	49	51	51	88	91	96	100	104
Dimensions & Weight											
Length	mm	8265	8265	9390	9390	9390	10135	10135	11260	12385	12385
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	2200
Height	mm	2526	2526	2526	2526	2526	2526	2526	2526	2526	2526
Operating weight	kg	6735	6885	7130	7130	7220	8490	8650	8945	9280	9280
Additional weight for Low Noise version	kg	160	160	180	180	220	220	220	240	240	240

(1) Evaporator 12/7°C and 0.0 m²K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

General Data

Table 5a – RTAF XE Extra Efficiency- Extra Low Noise -EC

		090	100	110	120	130	145	155
Net cooling capacity (1) (2)	(kW)	329	360	395	427	459	509	552
Net Power Input (1)(2)	(kW)	98	108	119	128	136	148	163
Net EER (1) (2)		3.36	3.34	3.31	3.35	3.38	3.43	3.38
Eurovent Energy class		A	A	A	A	A	A	A
SEER (3)		4.18	4.22	4.26	4.34	4.45	4.62	4.51
Space cooling efficiency ηs,c (3)	(%)	164.2	165.8	167.4	170.6	175	181.8	177.4
Sound Power Level Standard Noise (4)	(dBA)	91	91	92	91	91	91	91
Compressor								
Circuit 1	#	1	1	1	1	1	1	1
Circuit 2	#	1	1	1	1	1	1	1
Evaporator								
Type - Pass		Flooded shell and tube heat exchanger - 2						
Nominal Flow (1)	l/s	15.68	17.15	18.85	20.36	21.9	24.68	26.32
Pressure Drop (1)	kPa	36.4	32.9	39.6	33.6	33	34.3	38.9
Minimum Flow	l/s	8.0	9.4	9.4	10.6	11.6	12.6	12.6
Maximum Flow	l/s	29.6	34.7	34.7	39.5	43.1	46.8	46.8
Nominal water connection size (Grooved coupling)	(in) - (mm)	4" - 100	4" - 100	4" - 100	5" - 125	5" - 125	6" - 150	6" - 150
Condenser								
Type		Full aluminum Micro channel heat exchanger						
Quantity	#	5/5	5/5	5/5	5/5	5/5	6/6	6/6
Face area per coil	(m^2)	2.4						
Condenser Fan								
Fan / motor Type		Propeller fan / Variable speed - EC motor						
Quantity	#	5/5	5/5	5/5	5/5	5/5	6/6	6/6
Nominal RPM	rpm	660	660	760	760	760	760	760
Airflow per fan	(m^3/h)	15000	15000	17400	17400	17400	17400	17400
Refrigerant R1234ze								
Charge Circuit 1	kg	44	43	43	44	45	58	58
Charge Circuit 2	kg	42	41	41	45	43	48	48
Dimensions & Weight								
Length	mm	5645	5645	5645	5645	5645	6770	6770
Width	mm	2200	2200	2200	2200	2200	2200	2200
Height	mm	2672	2672	2672	2672	2672	2672	2672
Operating weight	kg	4115	4140	4140	4200	4260	4930	4965

(1) Evaporator 12/7°C and 0.0 m^2K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

Table 5b – RTAF XE Extra Efficiency- Extra Low Noise -EC

		185	210	230	265	285	305	340
Net cooling capacity (1) (2)	(kW)	613	740	835	899	1025	1115	1204
Net Power Input (1)(2)	(kW)	181	223	249	273	305	337	364
Net EER (1) (2)		3.38	3.32	3.35	3.29	3.36	3.31	3.31
Eurovent Energy class		A	A	A	A	A	A	A
SEER (3)		4.4	4.73	4.8	4.96	4.89	4.89	5.16
Space cooling efficiency ηs,c (3)	(%)	173	186.2	189	195.4	192.6	192.6	203.4
Sound Power Level Standard Noise (4)	(dBA)	92	94	94	94	95	95	95
Compressor								
Circuit 1	#	1	2	2	2	2	2	2
Circuit 2	#	1	1	1	1	2	2	2
Evaporator								
Type - Pass		Flooded shell and tube heat exchanger - 2						
Nominal Flow (1)	l/s	29.2	35.29	39.82	42.83	48.85	53.16	57.38
Pressure Drop (1)	kPa	38.3	42.3	43	49.5	41.1	38.2	44.4
Minimum Flow	l/s	14.2	15.8	17.7	17.7	22.3	25.0	25.0
Maximum Flow	l/s	52.6	58.5	65.8	65.8	82.6	92.8	92.8
Nominal water connection size (Grooved coupling)	(in) - (mm)	6" - 150	6" - 150	6" - 150	6" - 150	8" - 200	8" - 200	8" - 200
Condenser								
Type		Full aluminum Micro channel heat exchanger						
Quantity	#	7/7	12/4	12/6	12/6	12/10	12/10	12/12
Face area per coil	(m²)	2.4						
Condenser Fan								
Fan / motor Type		Propeller fan / Variable speed - EC motor						
Quantity	#	7/7	12/4	12/6	12/6	12/10	12/10	12/12
Nominal RPM	rpm	860	860	860	860	860	860	860
Airflow per fan	(m³/h)	20000	20000	20000	20000	20000	20000	20000
Refrigerant R1234ze								
Charge Circuit 1	kg	63	98	104	104	100	102	102
Charge Circuit 2	kg	49	40	49	49	92	96	102
Dimensions & Weight								
Length	mm	7895	9390	10135	10135	12385	12385	13510
Width	mm	2200	2200	2200	2200	2200	2200	2200
Height	mm	2672	2672	2672	2672	2672	2672	2672
Operating weight	kg	5320	6905	7365	7335	8935	9160	9490

(1) Evaporator 12/7°C and 0.0 m²K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

General Data

Table 6a – RTAF XE Extra Efficiency- Standard and Low Noise

		090	100	110	120	130	145	155
Net cooling capacity (1) (2)	(kW)	329	360	396	427	460	509	553
Net Power Input (1)(2)	(kW)	99	109	121	129	137	150	165
Net EER (1) (2)		3.33	3.31	3.28	3.32	3.35	3.4	3.35
Eurovent Energy class		A	A	A	A	A	A	A
SEER (3)		4.14	4.19	4.22	4.3	4.39	4.58	4.46
Space cooling efficiency ηs,c (3)	(%)	162.6	164.6	165.8	169	172.6	180.2	175.4
Sound Power Level Standard Noise (4)	(dBA)	96	96	97	97	96	96	96
Sound Power Level Low Noise (4)	(dBA)	93	94	94	94	94	94	94
Compressor								
Circuit 1	#	1	1	1	1	1	1	1
Circuit 2	#	1	1	1	1	1	1	1
Evaporator								
Type - Pass		Flooded shell and tube heat exchanger - 2						
Nominal Flow (1)	l/s	15.7	17.19	18.86	20.38	21.92	24.7	26.35
Pressure Drop (1)	kPa	36.5	33.1	39.7	33.6	33.1	34.3	38.9
Minimum Flow	l/s	8.0	9.4	9.4	10.6	11.6	12.6	12.6
Maximum Flow	l/s	29.6	34.7	34.7	39.5	43.1	46.8	46.8
Nominal water connection size (Grooved coupling)	(in) - (mm)	4" - 100	4" - 100	4" - 100	5" - 125	5" - 125	6" - 150	6" - 150
Condenser								
Type		Full aluminum Micro channel heat exchanger						
Quantity	#	5/5	5/5	5/5	5/5	5/5	6/6	6/6
Face area per coil	(m²)	2.4						
Condenser Fan								
Fan / motor Type		Propeller fan / Variable speed - EC motor						
Quantity	#	5/5	5/5	5/5	5/5	5/5	6/6	6/6
Nominal RPM	rpm	710	710	810	810	810	810	810
Airflow per fan	(m³/h)	15000	15000	17400	17400	17400	17400	17400
Refrigerant R1234ze								
Charge Circuit 1	kg	44	43	43	44	45	58	58
Charge Circuit 2	kg	42	41	41	45	43	48	48
Dimensions & Weight								
Length	mm	5645	5645	5645	5645	5645	6770	6770
Width	mm	2200	2200	2200	2200	2200	2200	2200
Height	mm	2526	2526	2526	2526	2526	2526	2526
Operating weight	kg	4015	4040	4040	4100	4160	4810	4845
Additional weight for Low Noise version	kg	100	100	100	100	100	120	120

(1) Evaporator 12/7°C and 0.0 m²K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

Table 6b – RTAF XE Extra Efficiency- Standard and Low Noise

		185	210	230	265	285	305	340
Net cooling capacity (1) (2)	(kW)	613	742	837	900	1027	1118	1205
Net Power Input (1)(2)	(kW)	184	228	255	279	312	344	371
Net EER (1) (2)		3.33	3.25	3.28	3.23	3.29	3.25	3.25
Eurovent Energy class		A	A	A	A	A	A	A
SEER (3)		4.32	4.68	4.76	4.91	4.84	4.84	5.1
Space cooling efficiency ηs,c (3)	(%)	169.8	184.2	187.4	193.4	190.6	190.6	201
Sound Power Level Standard Noise (4)	(dBA)	97	99	99	99	100	100	100
Sound Power Level Low Noise (4)	(dBA)	95	97	97	97	98	98	98
Compressor								
Circuit 1	#	1	2	2	2	2	2	2
Circuit 2	#	1	1	1	1	2	2	2
Evaporator								
Type - Pass		Flooded shell and tube heat exchanger - 2						
Nominal Flow (1)	l/s	29.2	35.36	39.88	42.89	48.94	53.28	57.45
Pressure Drop (1)	kPa	38.3	42.4	43.1	49.7	41.3	38.4	44.5
Minimum Flow	l/s	14.2	15.8	17.7	17.7	22.3	25.0	25.0
Maximum Flow	l/s	52.6	58.5	65.8	65.8	82.6	92.8	92.8
Nominal water connection size (Grooved coupling)	(in) - (mm)	6" - 150	6" - 150	6" - 150	6" - 150	8" - 200	8" - 200	8" - 200
Condenser								
Type		Full aluminum Micro channel heat exchanger						
Quantity	#	7/7	12/4	12/6	12/6	12/10	12/10	12/12
Face area per coil	(m^2)	2.4						
Condenser Fan								
Fan / motor Type		Propeller fan / Variable speed - EC motor						
Quantity	#	7/7	12/4	12/6	12/6	12/10	12/10	12/12
Nominal RPM	rpm	910	936	936	936	936	936	936
Airflow per fan	(m^3/h)	20000	20600	20600	20600	20600	20600	20600
Refrigerant R1234ze								
Charge Circuit 1	kg	63	98	104	104	100	102	102
Charge Circuit 2	kg	49	40	49	49	92	96	102
Dimensions & Weight								
Length	mm	7895	9390	10135	10135	12385	12385	13510
Width	mm	2200	2200	2200	2200	2200	2200	2200
Height	mm	2526	2526	2526	2526	2526	2526	2526
Operating weight	kg	5200	6745	7205	7155	8715	8940	9250
Additional weight for Low Noise version	kg	120	160	160	180	220	220	240

(1) Evaporator 12/7°C and 0.0 m^2K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

General Data

Table 7a – RTAF HE High Efficiency- Extra Low noise - AC

		090*	100	110	120	130	145	155
Net cooling capacity (1) (2)	(kW)	331.9	364.6	396.7	428.9	461.8	511.0	554.9
Net Power Input (1)(2)	(kW)	103.2	112.5	122.4	130.4	138.7	151.6	167.2
Net EER (1) (2)		3.215	3.24	3.24	3.29	3.33	3.37	3.32
Eurovent Energy class		A	A	A	A	A	A	A
SEER (3)		3.76	3.85	4.01	4.14	4.26	4.29	4.32
Space cooling efficiency ηs,c (3)	(%)	147.6	151	157.4	162.6	167.4	168.6	169.8
Sound Power Level Standard Noise (4)	(dBA)	92	92	92	92	92	92	92
Compressor								
Circuit 1	#	1	1	1	1	1	1	1
Circuit 2	#	1	1	1	1	1	1	1
Evaporator								
Type - Pass		Flooded shell and tube heat exchanger - 2						
Nominal Flow (1)	l/s	15.82	17.38	18.91	20.45	22.01	24.78	26.45
Pressure Drop (1)	kPa	37.03	33.79	39.91	33.89	33.41	34.5	39.2
Minimum Flow	l/s	8.0	9.4	9.4	10.6	11.6	12.6	12.6
Maximum Flow	l/s	29.6	34.7	34.7	39.5	43.1	46.8	46.8
Nominal water connection size (Grooved coupling)	(in) - (mm)	4" - 100	4" - 100	4" - 100	5" - 125	5" - 125	6" - 150	6" - 150
Condenser								
Type		Full aluminum Micro channel heat exchanger						
Quantity	#	5/5	5/5	5/5	5/5	5/5	6/6	6/6
Face area per coil	(m^2)	2.4						
Condenser Fan								
Fan / motor Type		Propeller fan / Fixed speed - AC motor						
Quantity	#	5/5	5/5	5/5	5/5	5/5	6/6	6/6
Nominal RPM	rpm	900	900	900	900	900	900	900
Airflow per fan	(m^3/h)	18000	18000	18000	18000	18000	18000	18000
Refrigerant R1234ze								
Charge Circuit 1	kg	44	43	43	44	45	58	58
Charge Circuit 2	kg	42	41	41	45	43	48	48
Dimensions & Weight								
Length	mm	5645	5645	5645	5645	5645	6770	6770
Width	mm	2200	2200	2200	2200	2200	2200	2200
Height	mm	2526	2526	2526	2526	2526	2526	2526
Operating weight	kg	4115	4140	4140	4200	4260	4930	4965

(1) Evaporator 12/7°C and 0.0 m^2K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

Table 7b – RTAF HE High Efficiency- Extra Low noise - AC

		185	210	230*	265	285	305	340
Net cooling capacity (1) (2)	(kW)	611	737	831	895	1020	1108	1199
Net Power Input (1)(2)	(kW)	182	224	251	275	306	339	367
Net EER (1) (2)		3.36	3.29	3.32	3.26	3.33	3.27	3.27
Eurovent Energy class		A	A	A	A	A	A	A
SEER (3)		4.3	4.51	4.08	4.52	4.63	4.57	4.67
Space cooling efficiency ηs,c (3)	(%)	169	177.4	160.4	177.8	182.2	179.8	183.8
Sound Power Level Standard Noise (4)	(dBA)	92	94	94	94	95	95	95
Compressor								
Circuit 1	#	1	2	2	2	2	2	2
Circuit 2	#	1	1	1	1	2	2	2
Evaporator								
Type - Pass		Flooded shell and tube heat exchanger - 2						
Nominal Flow (1)	l/s	29.13	35.11	39.71	42.68	48.61	52.82	57.16
Pressure Drop (1)	kPa	38.1	41.8	43.88	49.2	40.7	37.8	44.1
Minimum Flow	l/s	14.2	15.8	17.7	17.7	22.3	25.0	25.0
Maximum Flow	l/s	52.6	58.5	65.8	65.8	82.6	92.8	92.8
Nominal water connection size (Grooved coupling)	(in) - (mm)	6" - 150	6" - 150	6" - 150	6" - 150	8" - 200	8" - 200	8" - 200
Condenser								
Type		Full aluminum Micro channel heat exchanger						
Quantity	#	7/7	12/4	12/4	12/6	12/10	12/10	12/12
Face area per coil	(m^2)	2.4						
Condenser Fan								
Fan / motor Type		Propeller fan / Fixed speed - AC motor						
Quantity	#	7/7	12/4	12/4	12/6	12/10	12/10	12/12
Nominal RPM	rpm	900	900	900	900	900	900	900
Airflow per fan	(m^3/h)	18000	18000	18000	18000	18000	18000	18000
Refrigerant R1234ze								
Charge Circuit 1	kg	63	98	104	104	100	102	102
Charge Circuit 2	kg	49	40	49	49	92	96	102
Dimensions & Weight								
Length	mm	7895	9390	9390	10135	12385	12385	13510
Width	mm	2200	2200	2200	2200	2200	2200	2200
Height	mm	2526	2526	2526	2526	2526	2526	2526
Operating weight	kg	5320	6905	7365	7335	8935	9160	9490

(1) Evaporator 12/7°C and 0.0 m^2K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

General Data

Table 8a – RTAF HE High Efficiency- Standard and Low Noise

		090*	100*	110*	120*	130	145	155
Net cooling capacity (1) (2)	(kW)	332	365	398	431	464	512.9	557.5
Net Power Input (1)(2)	(kW)	106	116	125	134	141.46	155.42	170.49
Net EER (1) (2)		3.13	3.16	3.17	3.23	3.28	3.3	3.27
Eurovent Energy class		A	A	A	A	A	A	A
SEER (3)		3.67	3.76	3.76	3.89	4.15	4.21	4.2
Space cooling efficiency ηs,c (3)	(%)	143.9	147.6	147.6	152.5	163	165.4	165
Sound Power Level Standard Noise (4)	(dBA)	97	97	97	97	97	97	97
Sound Power Level Low Noise (4)	(dBA)	95	95	95	95	94	95	95
Compressor								
Circuit 1	#	1	1	1	1	1	1	1
Circuit 2	#	1	1	1	1	1	1	1
Evaporator								
Type - Pass		Flooded shell and tube heat exchanger - 2						
Nominal Flow (1)	l/s	15.84	17.42	18.97	20.53	22.12	24.87	26.58
Pressure Drop (1)	kPa	37.1	33.9	40.1	34.1	33.7	34.8	39.6
Minimum Flow	l/s	8.0	9.4	9.4	10.6	11.6	12.6	12.6
Maximum Flow	l/s	29.6	34.7	34.7	39.5	43.1	46.8	46.8
Nominal water connection size (Grooved coupling)	(in) - (mm)	4" - 100	4" - 100	4" - 100	5" - 125	5" - 125	6" - 150	6" - 150
Condenser								
Type		Full aluminum Micro channel heat exchanger						
Quantity	#	5/5	5/5	5/5	5/5	5/5	6/6	6/6
Face area per coil	(m^2)	2.4						
Condenser Fan								
Fan / motor Type		Propeller fan / Fixed speed - AC motor						
Quantity	#	5/5	5/5	5/5	5/5	5/5	6/6	6/6
Nominal RPM	rpm	710	710	810	810	810	810	810
Airflow per fan	(m^3/h)	15000	15000	17400	17400	17400	17400	17400
Refrigerant R1234ze								
Charge Circuit 1	kg	44	43	43	44	45	58	58
Charge Circuit 2	kg	42	41	41	45	43	48	48
Dimensions & Weight								
Length	mm	5645	6770	6770	7895	9390	10135	10135
Width	mm	2200	2200	2200	2200	2200	2200	2200
Height	mm	2526	2526	2526	2526	2526	2526	2526
Operating weight	kg	4015	4040	4040	4100	4160	4810	4845
Additional weight for Low Noise version	kg	100	100	100	100	100	120	120

(1) Evaporator 12/7°C and 0.0 m^2K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

Table 8b – RTAF HE High Efficiency- Standard and Low Noise

		185	210	230*	265	285	305	340
Net cooling capacity (1) (2)	(kW)	612.44	740.2	835.1	898.44	1024.7	1114.9	1203.63
Net Power Input (1)(2)	(kW)	185.59	228.46	255.38	279.02	312.41	344.1	371.49
Net EER (1) (2)		3.3	3.24	3.27	3.22	3.28	3.24	3.24
Eurovent Energy class		A	A	A	A	A	A	A
SEER (3)		4.19	4.38	4.36	4.41	4.55	4.51	4.55
Space cooling efficiency ηs,c (3)	(%)	164.6	172.2	171.4	173.4	179	177.4	179
Sound Power Level Standard Noise (4)	(dBA)	97	99	98	99	100	100	100
Sound Power Level Low Noise (4)	(dBA)	95	96	97	97	98	98	98
Compressor								
Circuit 1	#	1	1	1	1	2	2	2
Circuit 2	#	1	2	2	2	2	2	2
Evaporator								
Type - Pass		Flooded shell and tube heat exchanger - 2						
Nominal Flow (1)	l/s	29.19	35.28	39.81	42.82	48.84	53.13	57.36
Pressure Drop (1)	kPa	38.3	42.2	42.9	49.5	41.1	38.2	44.4
Minimum Flow	l/s	14.2	15.8	17.7	17.7	22.3	25.0	25.0
Maximum Flow	l/s	52.6	58.5	65.8	65.8	82.6	92.8	92.8
Nominal water connection size (Grooved coupling)	(in) - (mm)	6" - 150	6" - 150	6" - 150	6" - 150	8" - 200	8" - 200	8" - 200
Condenser								
Type		Full aluminum Micro channel heat exchanger						
Quantity	#	7/7	12/4	12/4	12/6	12/10	12/10	12/12
Face area per coil	(m^2)	2.4						
Condenser Fan								
Fan / motor Type		Propeller fan / Fixed speed - AC motor						
Quantity	#	7/7	12/4	12/4	12/6	12/10	12/10	12/12
Nominal RPM	rpm	910	936	936	936	936	936	936
Airflow per fan	(m^3/h)	20000	20000	20000	20000	20000	20000	20000
Refrigerant R1234ze								
Charge Circuit 1	kg	63	98	104	104	100	102	102
Charge Circuit 2	kg	49	40	49	49	92	96	102
Dimensions & Weight								
Length	mm	5645	6770	6770	7895	9390	10135	10135
Width	mm	2200	2200	2200	2200	2200	2200	2200
Height	mm	2526	2526	2526	2526	2526	2526	2526
Operating weight	kg	5200	6745	7205	7155	8715	8940	9250
Additional weight for Low Noise version	kg	120	160	160	180	220	220	240

(1) Evaporator 12/7°C and 0.0 m^2K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

General Data

Table 9a – RTAF SE Standard Efficiency- Extra Low Noise -EC

		090	100	110	120	130	145	155
Net cooling capacity (1) (2)	(kW)	329.62	361.25	392.35	423.83	455.18	507.09	550.04
Net Power Input (1)(2)	(kW)	103.33	113.6	124.16	132.86	143.14	154.13	170.29
Net EER (1) (2)		3.19	3.18	3.16	3.19	3.18	3.29	3.23
Eurovent Energy class		A	A	A	A	A	A	A
SEER (3)		4.09	4.14	4.14	4.23	4.24	4.45	4.29
Space cooling efficiency ηs,c (3)	(%)	160.6	162.6	162.6	166.2	166.6	175	168.6
Sound Power Level Standard Noise (4)	(dBA)	92	92	92	92	92	92	92
Compressor								
Circuit 1	#	1	1	1	1	1	1	1
Circuit 2	#	1	1	1	1	1	1	1
Evaporator								
Type - Pass		Flooded shell and tube heat exchanger - 2						
Nominal Flow (1)	l/s	15.72	17.22	18.71	20.21	21.7	24.59	26.22
Pressure Drop (1)	kPa	36.6	33.2	39.1	33.1	32.4	34	38.6
Minimum Flow	l/s	8.0	9.4	9.4	10.6	11.6	12.6	12.6
Maximum Flow	l/s	29.6	34.7	34.7	39.5	43.1	46.8	46.8
Nominal water connection size (Grooved coupling)	(in) - (mm)	4" - 100	4" - 100	4" - 100	5" - 125	5" - 125	6" - 150	6" - 150
Condenser								
Type		Full aluminum Micro channel heat exchanger						
Quantity	#	4/4	4/4	4/4	4/4	4/4	5/5	5/5
Face area per coil	(m^2)	2.4						
Condenser Fan								
Fan / motor Type		Propeller fan / Variable speed - EC motor						
Quantity	#	4/4	4/4	4/4	4/4	4/4	5/5	5/5
Nominal RPM	rpm	860	860	860	860	860	860	860
Airflow per fan	(m^3/h)	20000	20000	20000	20000	20000	20000	20000
Refrigerant R1234ze								
Charge Circuit 1	kg	41	40	40	41	42	55	55
Charge Circuit 2	kg	39	38	38	42	40	45	45
Dimensions & Weight								
Length	mm	4520	4520	4520	4520	4520	5645	5645
Width	mm	2200	2200	2200	2200	2200	2200	2200
Height	mm	2672	2672	2672	2672	2672	2672	2672
Operating weight	kg	3785	3810	3810	3870	3925	4625	4660

(1) Evaporator 12/7°C and 0.0 m^2K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

Table 9b – RTAF SE Standard Efficiency- Extra Low Noise -EC

		185	210	230	265	285	305	340
Net cooling capacity (1) (2)	(kW)	606.73	734.58	817.22	889.38	1008.53	1094.21	1185.47
Net Power Input (1)(2)	(kW)	183.3	226.02	260.26	277.93	314.18	349.59	372.79
Net EER (1) (2)		3.31	3.25	3.14	3.2	3.21	3.13	3.18
Eurovent Energy class		A	A	A	A	A	A	A
SEER (3)		4.39	4.47	4.5	4.72	4.54	4.93	4.72
Space cooling efficiency ηs,c (3)	(%)	172.6	175.8	177	185.8	178.6	194.2	185.8
Sound Power Level Standard Noise (4)	(dBA)	92	94	94	94	95	95	95
Compressor								
Circuit 1	#	1	2	2	2	2	2	2
Circuit 2	#	1	1	1	1	2	2	2
Evaporator								
Type - Pass		Flooded shell and tube heat exchanger - 2						
Nominal Flow (1)	l/s	28.92	35.01	38.95	42.39	48.07	52.15	56.5
Pressure Drop (1)	kPa	37.6	41.6	41.2	48.5	39.8	36.8	43.1
Minimum Flow	l/s	14.2	15.8	17.7	17.7	22.3	25.0	25.0
Maximum Flow	l/s	52.6	58.5	65.8	65.8	82.6	92.8	92.8
Nominal water connection size (Grooved coupling)	(in) - (mm)	6" - 150	6" - 150	6" - 150	6" - 150	8" - 200	8" - 200	8" - 200
Condenser								
Type		Full aluminum Micro channel heat exchanger						
Quantity	#	6/6	10/4	10/4	10/6	10/8	10/8	12/12
Face area per coil	(m^2)	2.4						
Condenser Fan								
Fan / motor Type		Propeller fan / Variable speed - EC motor						
Quantity	#	6/6	10/4	10/4	10/6	10/8	10/8	12/12
Nominal RPM	rpm	860	860	860	860	860	860	860
Airflow per fan	(m^3/h)	20000	20000	20000	20000	20000	20000	20000
Refrigerant R1234ze								
Charge Circuit 1	kg	60	90	93	93	90	94	94
Charge Circuit 2	kg	46	40	44	49	88	91	96
Dimensions & Weight								
Length	mm	6770	8265	8265	9390	10135	10135	11260
Width	mm	2200	2200	2200	2200	2200	2200	2200
Height	mm	2672	2672	2672	2672	2672	2672	2672
Operating weight	kg	5020	6575	6725	7030	8400	8560	8875

(1) Evaporator 12/7°C and 0.0 m^2K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

General Data

Table 10a – RTAF SE Standard Efficiency- Extra Low noise - AC

		090	100	110	120*	130	145	155	185
Net cooling capacity (1) (2)	(kW)	328.43	359.43	389.89	421	451.22	503.76	545.72	604.33
Net Power Input (1)(2)	(kW)	103.61	114.1	124.57	133.7357052	143.7	154.53	171.07	184.25
Net EER (1) (2)		3.17	3.15	3.13	3.148	3.14	3.26	3.19	3.28
Eurovent Energy class		A	A	A	A	A	A	A	A
SEER (3)		3.83	3.9	3.86	3.9708	4.16	4.22	4.15	4.3
Space cooling efficiency ηs,c (3)	(%)	150.2	153	151.4	155.832	163.4	165.8	163	169
Sound Power Level Standard Noise (4)	(dBA)	92	92	92	92	92	92	92	92
Compressor									
Circuit 1	#	1	1	1	1	1	1	1	1
Circuit 2	#	1	1	1	1	1	1	1	1
Evaporator									
Type - Pass		Flooded shell and tube heat exchanger - 2							
Nominal Flow (1)	l/s	15.66	17.14	18.59	20.05	21.51	24.43	26.01	28.81
Pressure Drop (1)	kPa	36.6	33.2	39.1	32.6	32.4	34	38.6	37.6
Minimum Flow	l/s	8.0	9.4	9.4	10.6	11.6	12.6	12.6	14.2
Maximum Flow	l/s	29.6	34.7	34.7	39.5	43.1	46.8	46.8	52.6
Nominal water connection size (Grooved coupling)	(in) - (mm)	4" - 100	4" - 100	4" - 100	5" - 125	5" - 125	6" - 150	6" - 150	6" - 150
Condenser									
Type		Full aluminum Micro channel heat exchanger							
Quantity	#	4/4	4/4	4/4	4/4	4/4	5/5	5/5	6/6
Face area per coil	(m²)	2.4							
Condenser Fan									
Fan / motor Type		Propeller fan / Fixed speed - AC motor							
Quantity	#	4/4	4/4	4/4	4/4	4/4	5/5	5/5	6/6
Nominal RPM	rpm	900	900	900	900	900	900	900	900
Airflow per fan	(m³/h)	18000	18000	18000	18000	18000	18000	18000	18000
Refrigerant R1234ze									
Charge Circuit 1	kg	41	40	40	41	42	55	55	60
Charge Circuit 2	kg	39	38	38	42	40	45	45	46
Dimensions & Weight									
Length	mm	4520	4520	4520	4520	4520	5645	5645	6770
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200
Height	mm	2526	2526	2526	2526	2526	2526	2526	2526
Operating weight	kg	3785	3810	3810	3870	3925	4625	4660	5020

(1) Evaporator 12/7°C and 0.0 m²K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

Table 10b – RTAF SE Standard Efficiency- Extra Low noise - AC

		210	230	265	285	305	340
Net cooling capacity (1) (2)	(kW)	729.5	809.91	884.8	1000.27	1083.53	1178.41
Net Power Input (1)(2)	(kW)	226.55	261.26	280	315.54	351.8	376.49
Net EER (1) (2)		3.22	3.1	3.16	3.17	3.08	3.13
Eurovent Energy class		A	A	A	A	B	A
SEER (3)		4.54	4.22	4.49	4.46	4.53	4.62
Space cooling efficiency ηs,c (3)	(%)	178.6	165.8	176.6	175.4	178.2	181.8
Sound Power Level Standard Noise (4)	(dBA)	94	94	94	95	95	95
Compressor							
Circuit 1	#	2	2	2	2	2	2
Circuit 2	#	1	1	1	2	2	2
Evaporator							
Type - Pass		Flooded shell and tube heat exchanger - 2					
Nominal Flow (1)	l/s	34.77	38.6	42.17	47.67	51.64	56.16
Pressure Drop (1)	kPa	41.6	41.2	48.5	39.8	36.8	43.1
Minimum Flow	l/s	15.8	17.7	17.7	22.3	25.0	25.0
Maximum Flow	l/s	58.5	65.8	65.8	82.6	92.8	92.8
Nominal water connection size (Grooved coupling)	(in) - (mm)	6" - 150	6" - 150	6" - 150	8" - 200	8" - 200	8" - 200
Condenser							
Type		Full aluminum Micro channel heat exchanger					
Quantity	#	10/4	10/4	10/6	10/8	10/8	12/12
Face area per coil	(m^2)	2.4					
Condenser Fan							
Fan / motor Type		Propeller fan / Fixed speed - AC motor					
Quantity	#	10/4	10/4	10/6	10/8	10/8	12/12
Nominal RPM	rpm	900	900	900	900	900	900
Airflow per fan	(m^3/h)	18000	18000	18000	18000	18000	18000
Refrigerant R1234ze							
Charge Circuit 1	kg	90	93	93	90	94	94
Charge Circuit 2	kg	40	44	49	88	91	96
Dimensions & Weight							
Length	mm	8265	8265	9390	10135	10135	11260
Width	mm	2200	2200	2200	2200	2200	2200
Height	mm	2526	2526	2526	2526	2526	2526
Operating weight	kg	6575	6725	7030	8400	8560	8875

(1) Evaporator 12/7°C and 0.0 m^2K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

General Data

Table 11a – RTAF SE Standard Efficiency- Standard and Low Noise

		090*	100	110	120*	130*	145	155*
Net cooling capacity (1) (2)	(kW)	330	361	392	424	455	507	550
Net Power Input (1)(2)	(kW)	106	116	127	136	146	157	173
Net EER (1) (2)		3.11	3.11	3.10	3.12	3.13	3.23	3.17
Eurovent Energy class		A	A	A	A	A	A	A
SEER (3)		3.76	3.84	3.82	3.93	4.07	4.15	4.04
Space cooling efficiency ηs,c (3)	(%)	147.6	150.5	149.6	154.2	160.0	162.8	158.7
Sound Power Level Standard Noise (4)	(dBA)	97	97	97	97	97	97	97
Sound Power Level Low Noise (4)	(dBA)	95	95	95	95	95	95	95
Compressor								
Circuit 1	#	1	1	1	1	1	1	1
Circuit 2	#	1	1	1	1	1	1	1
Evaporator								
Type - Pass		Flooded shell and tube heat exchanger - 2						
Nominal Flow (1)	l/s	17.2	17.2	18.7	18.7	18.7	24.2	24.2
Pressure Drop (1)	kPa	33.2	33.2	39.0	39.0	39.0	32.9	32.9
Minimum Flow	l/s	8.0	9.4	9.4	10.6	11.6	12.6	12.6
Maximum Flow	l/s	29.6	34.7	34.7	39.5	43.1	46.8	46.8
Nominal water connection size (Grooved coupling)	(in) - (mm)	4" - 100	4" - 100	4" - 100	5" - 125	5" - 125	6" - 150	6" - 150
Condenser								
Type		Full aluminum Micro channel heat exchanger						
Quantity	#	4/4	4/4	4/4	4/4	4/4	5/5	5/5
Face area per coil	(m²)	2.4						
Condenser Fan								
Fan / motor Type		Propeller fan / Fixed speed - AC motor						
Quantity	#	4/4	4/4	4/4	4/4	4/4	5/5	5/5
Nominal RPM	rpm	932	932	932	932	932	932	932
Airflow per fan	(m³/h)	20000	20000	20000	20000	20000	20000	20000
Refrigerant R1234ze								
Charge Circuit 1	kg	41	40	40	41	42	55	55
Charge Circuit 2	kg	39	38	38	42	40	45	45
Dimensions & Weight								
Length	mm	4520	4520	4520	4520	4520	5645	5645
Width	mm	2200	2200	2200	2200	2200	2200	2200
Height	mm	2526	2526	2526	2526	2526	2526	2526
Operating weight	kg	3685	3710	3710	3770	3825	4505	4540
Additional weight for Low Noise version	kg	100	100	100	100	100	120	120

(1) Evaporator 12/7°C and 0.0 m²K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

Table 11b – RTAF SE Standard Efficiency- Standard and Low Noise

		185	210	230*	265	285	305	340
Net cooling capacity (1) (2)	(kW)	607	734	817	889	1008	1093	1185
Net Power Input (1)(2)	(kW)	188	230	265	283	320	355	381
Net EER (1) (2)		3.23	3.19	3.08	3.14	3.15	3.08	3.11
Eurovent Energy class		A	A	B	A	A	B	A
SEER (3)		4.21	4.44	4.20	4.44	4.40	4.44	4.41
Space cooling efficiency ηs,c (3)	(%)	165.3	174.4	164.9	174.4	173.2	174.4	173.6
Sound Power Level Standard Noise (4)	(dBA)	97	99	99	99	100	100	100
Sound Power Level Low Noise (4)	(dBA)	95	96	97	97	98	98	98
Compressor								
Circuit 1	#	1	2	2	2	2	2	2
Circuit 2	#	1	1	1	1	2	2	2
Evaporator								
Type - Pass		Flooded shell and tube heat exchanger - 2						
Nominal Flow (1)	l/s	29.1	35.1	39.0	42.9	48.1	52.2	57.3
Pressure Drop (1)	kPa	37.9	42.6	42.3	51.0	40.4	37.5	45.1
Minimum Flow	l/s	14.2	15.8	17.7	17.7	22.3	25.0	25.0
Maximum Flow	l/s	52.6	58.5	65.8	65.8	82.6	92.8	92.8
Nominal water connection size (Grooved coupling)	(in) - (mm)	6" - 150	6" - 150	6" - 150	6" - 150	8" - 200	8" - 200	8" - 200
Condenser								
Type		Full aluminum Micro channel heat exchanger						
Quantity	#	6/6	10/4	10/4	10/6	10/8	10/8	12/12
Face area per coil	(m^2)	2.4						
Condenser Fan								
Fan / motor Type								
Quantity	#	6/6	10/4	10/4	10/6	10/8	10/8	12/12
Nominal RPM	rpm	932	932	932	932	932	932	932
Airflow per fan	(m^3/h)	20000	20000	20000	20000	20000	20000	20000
Refrigerant R1234ze								
Charge Circuit 1	kg	60	90	93	93	90	94	94
Charge Circuit 2	kg	46	40	44	49	88	91	96
Dimensions & Weight								
Length	mm	6770	8265	8265	9390	10135	10135	11260
Width	mm	2200	2200	2200	2200	2200	2200	2200
Height	mm	2526	2526	2526	2526	2526	2526	2526
Operating weight	kg	4900	6415	6565	6850	8180	8340	8635
Additional weight for Low Noise version	kg	120	160	160	180	220	220	240

(1) Evaporator 12/7°C and 0.0 m^2K/kW, and condenser at 35°C

(2) Net performances calculated as per EN 14511 following Eurovent rules

(3) ηsc/ SEER as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Comfort Chillers with 2000 kW maximum capacity - COMMISSION REGULATION (EU) N° 2016/2281 of 30 November 2016

(4) At Eurovent conditions, with 1pW reference sound power, according to ISO9614

* Not available for comfort applications for countries adopting the Ecodesign Directive Tier 1. Not Eurovent certified

Operating weight include basic unit weight + the additional weight corresponding to the noise version

General Data

Figure 9 – Evaporator water pressure drop without Turbulators (SI Unit) sizes 090-185

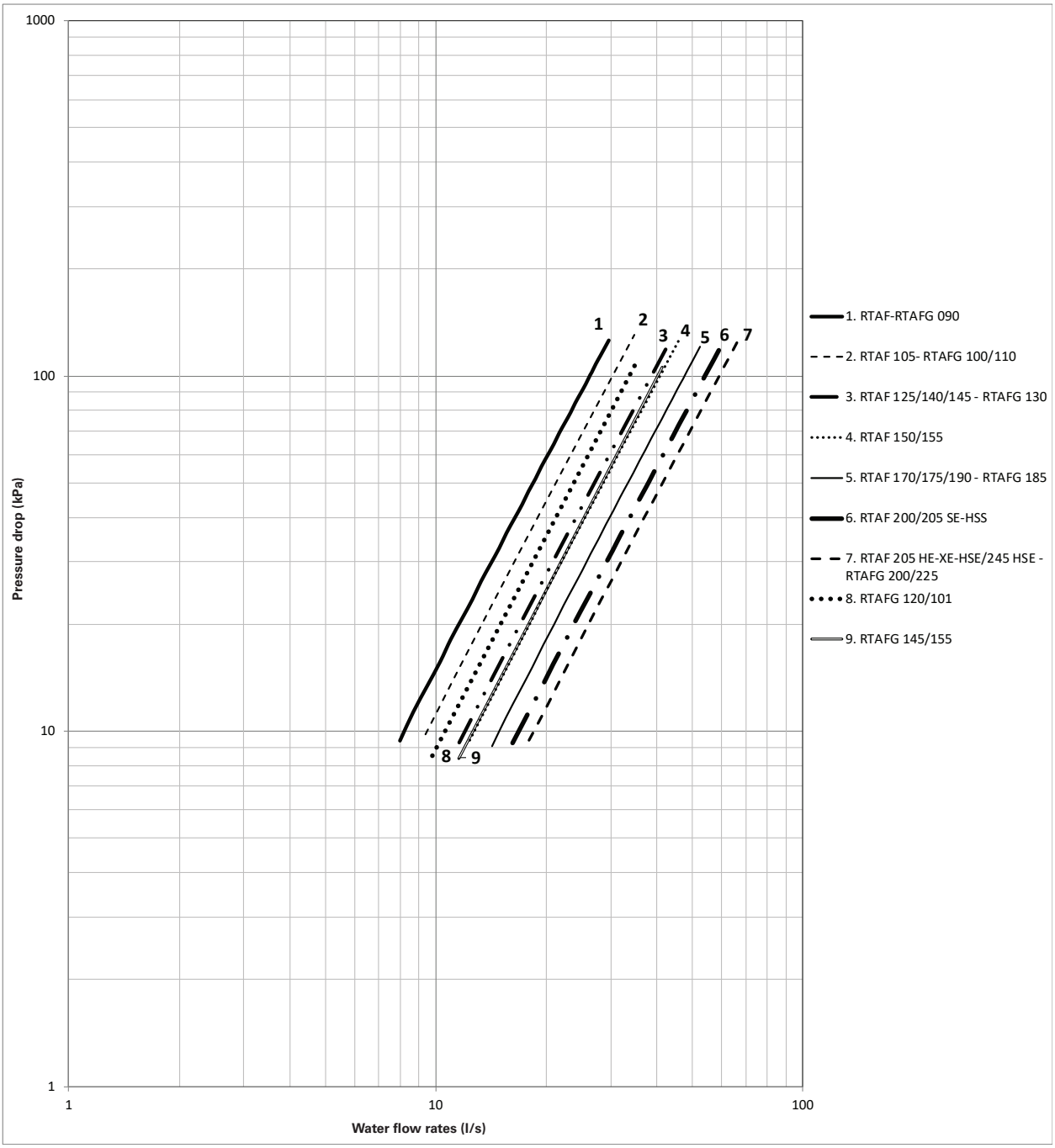
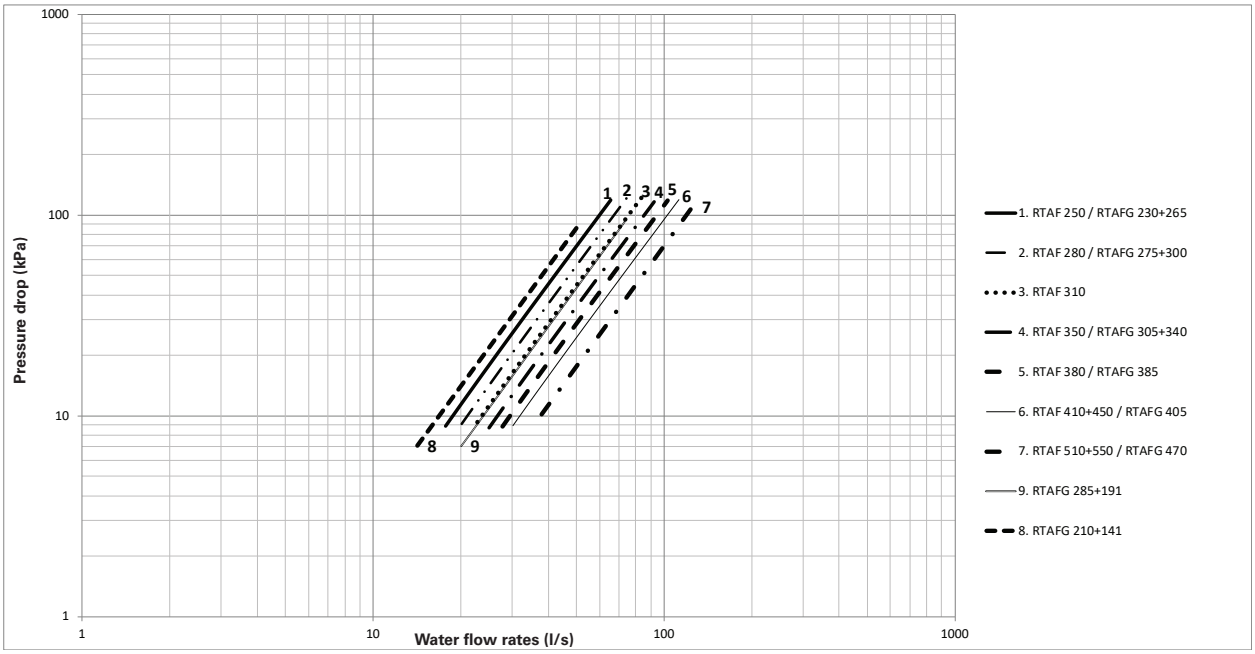


Figure 10 – Evaporator water pressure drop without Turbulators (SI Unit) sizes 210-470



General Data

Figure 11 – Evaporator water pressure drop with Turbulators (SI Unit) sizes 090-185 101

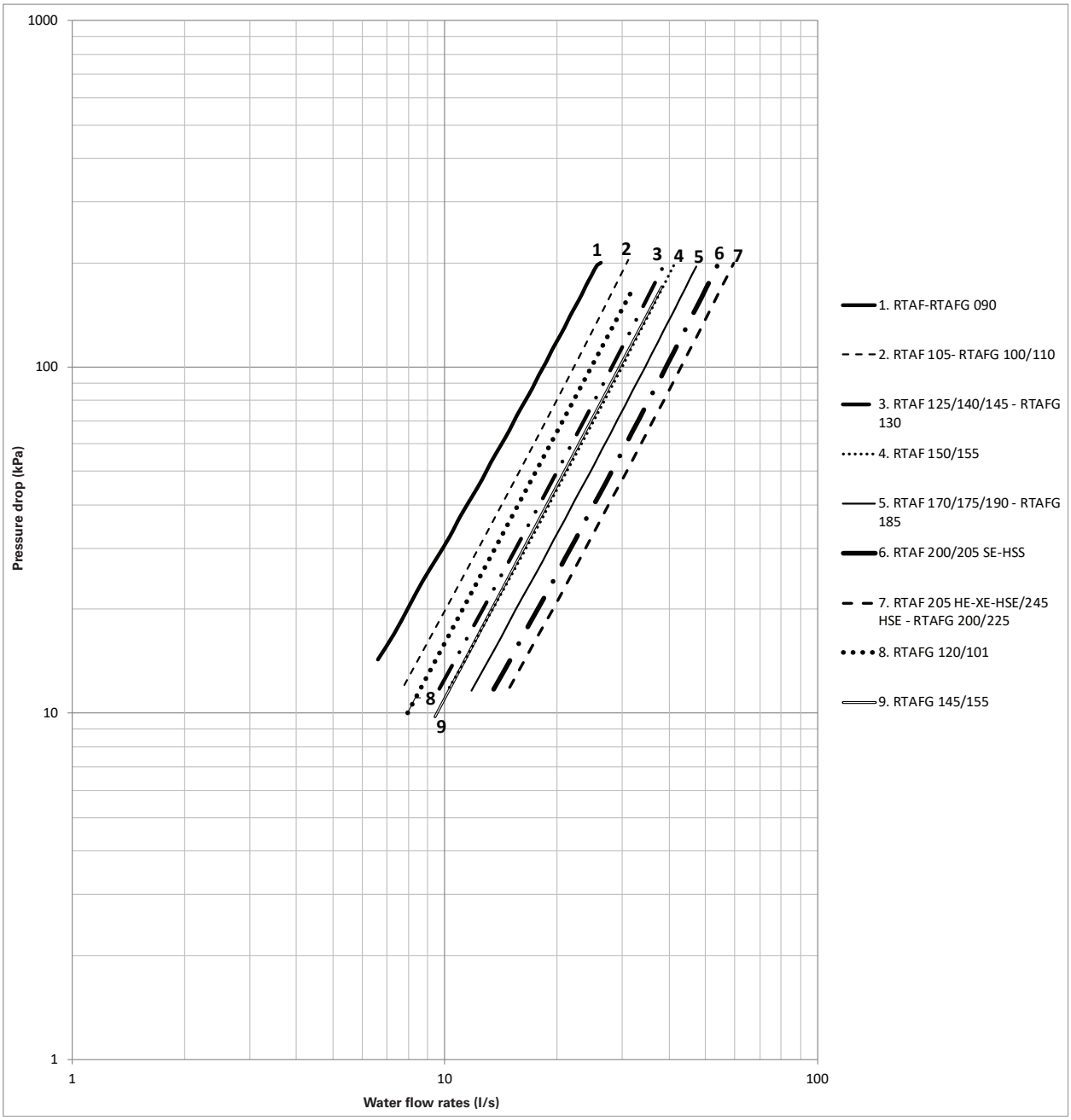
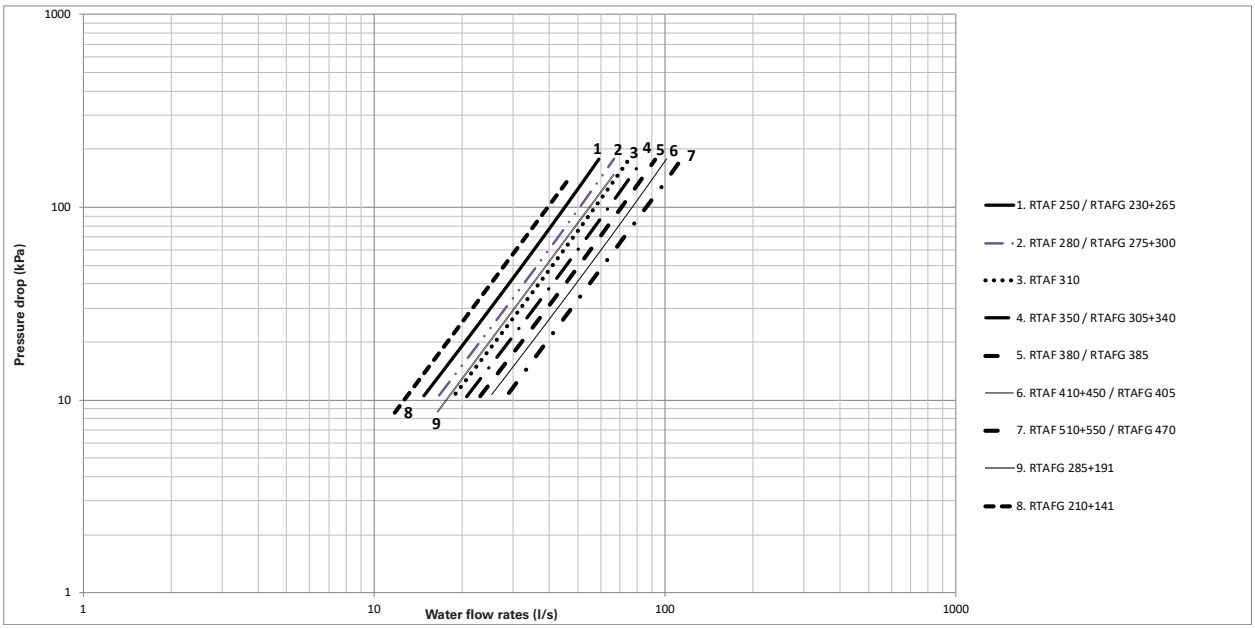


Figure 12 – Evaporator water pressure drop with Turbulators (SI Unit) sizes 210-470 141&191



General Data

Figure 13a – Standard head available pressure pump package (Evaporator without Turbulators) Sizes 090-185

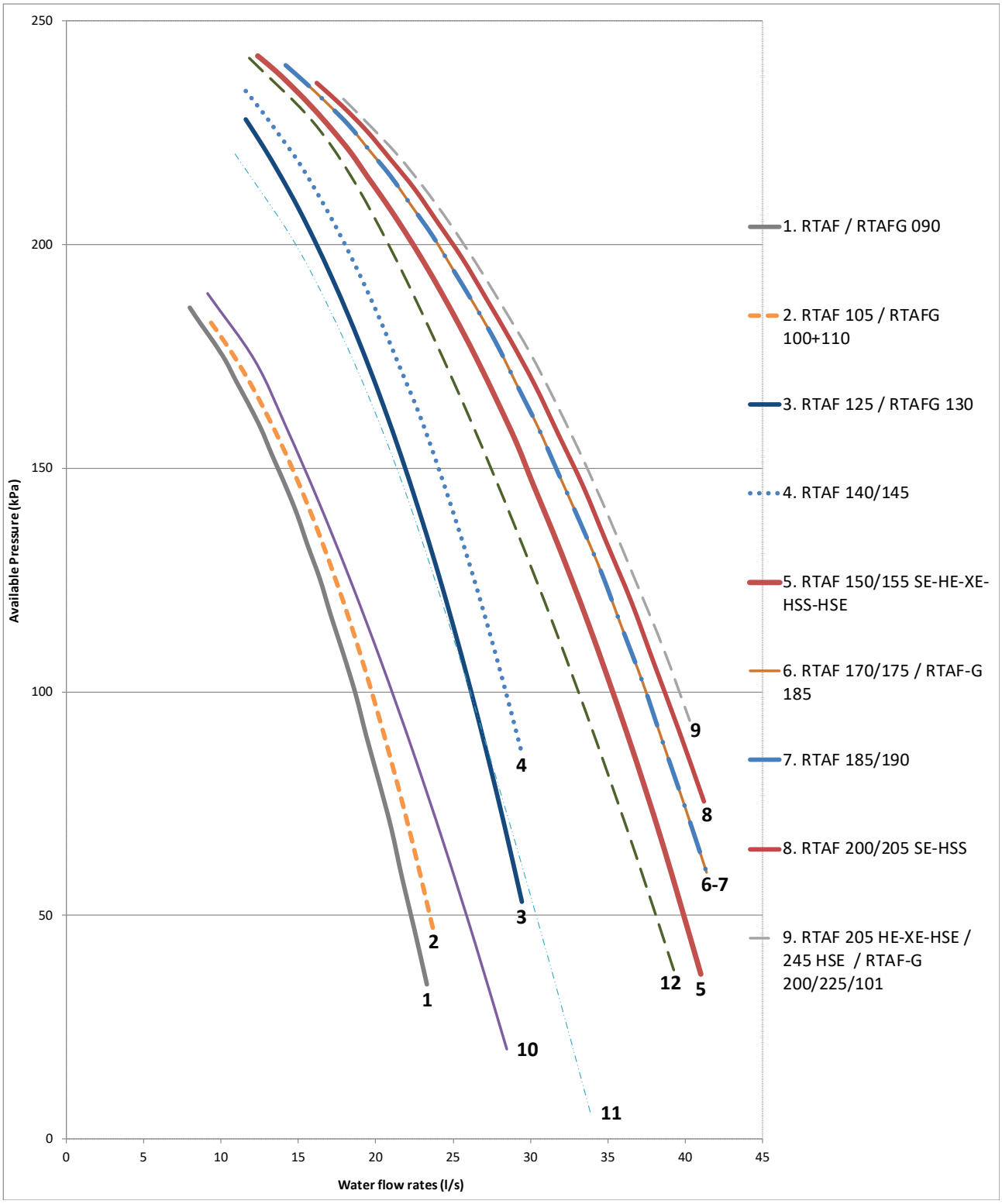
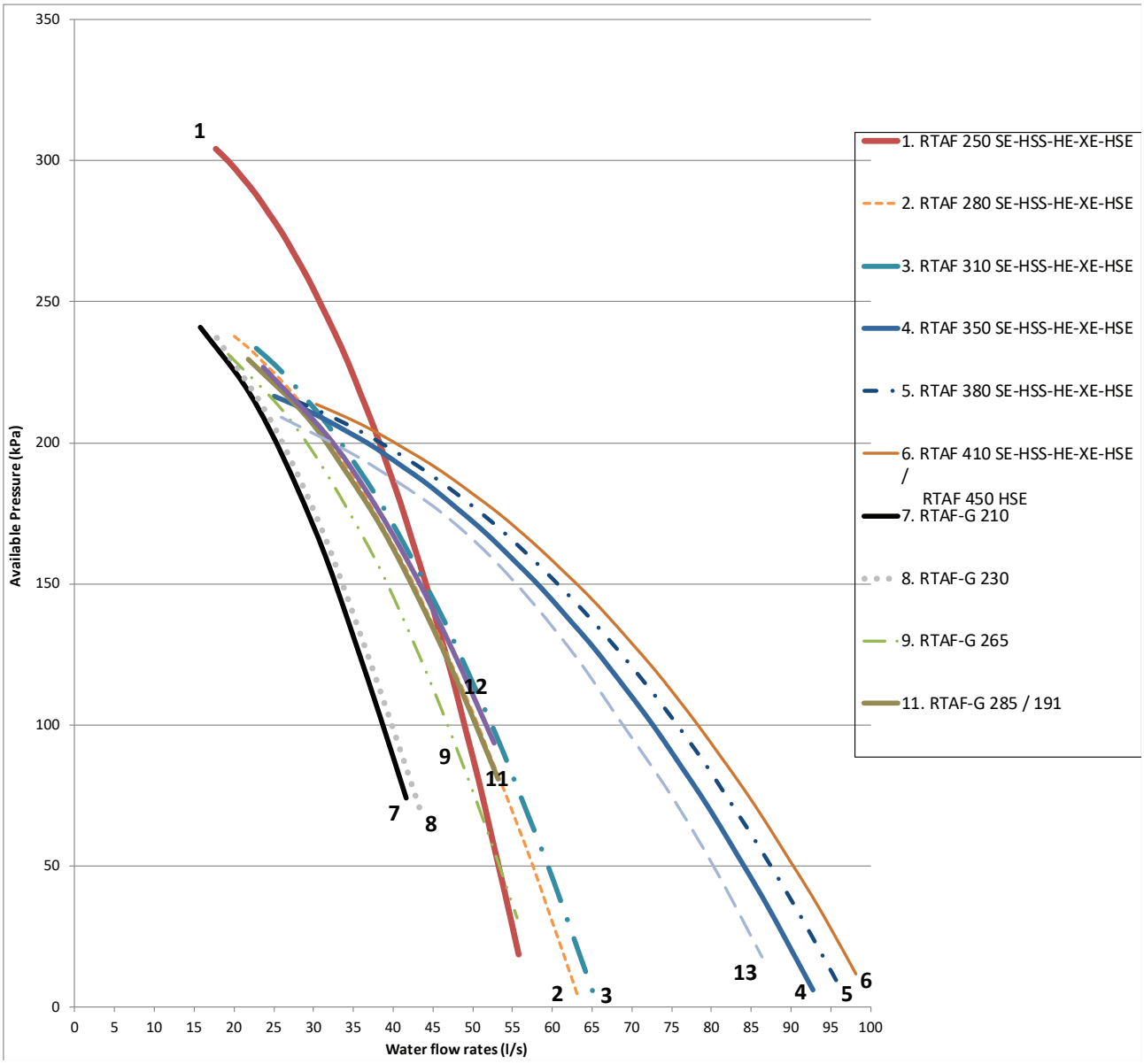


Figure 13b – Standard head available pressure pump package (Evaporator without Turbulators) sizes 210-405



General Data

Figure 14a – High head available pressure pump package (Evaporator without Turbulators) Sizes 090-185

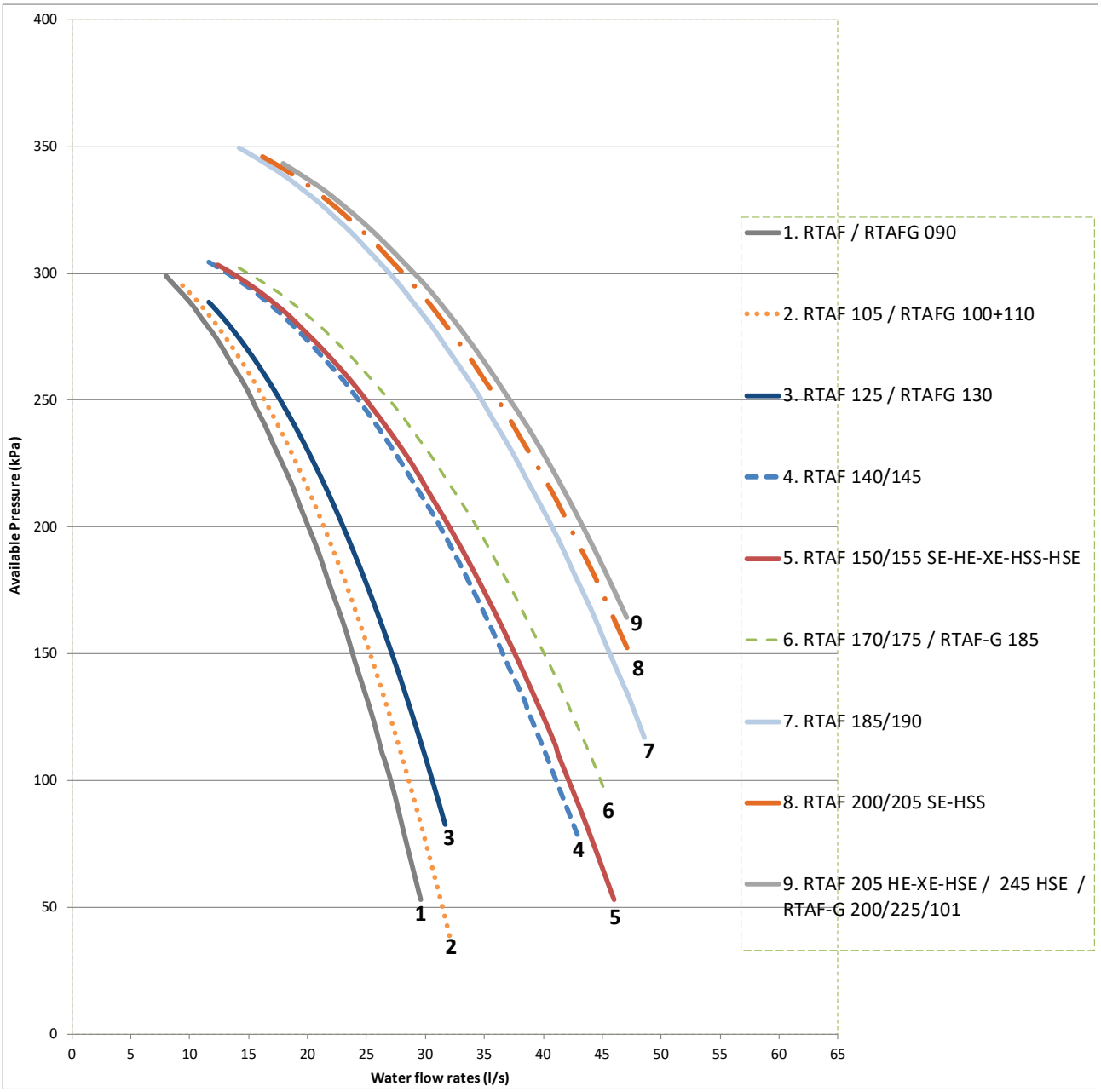
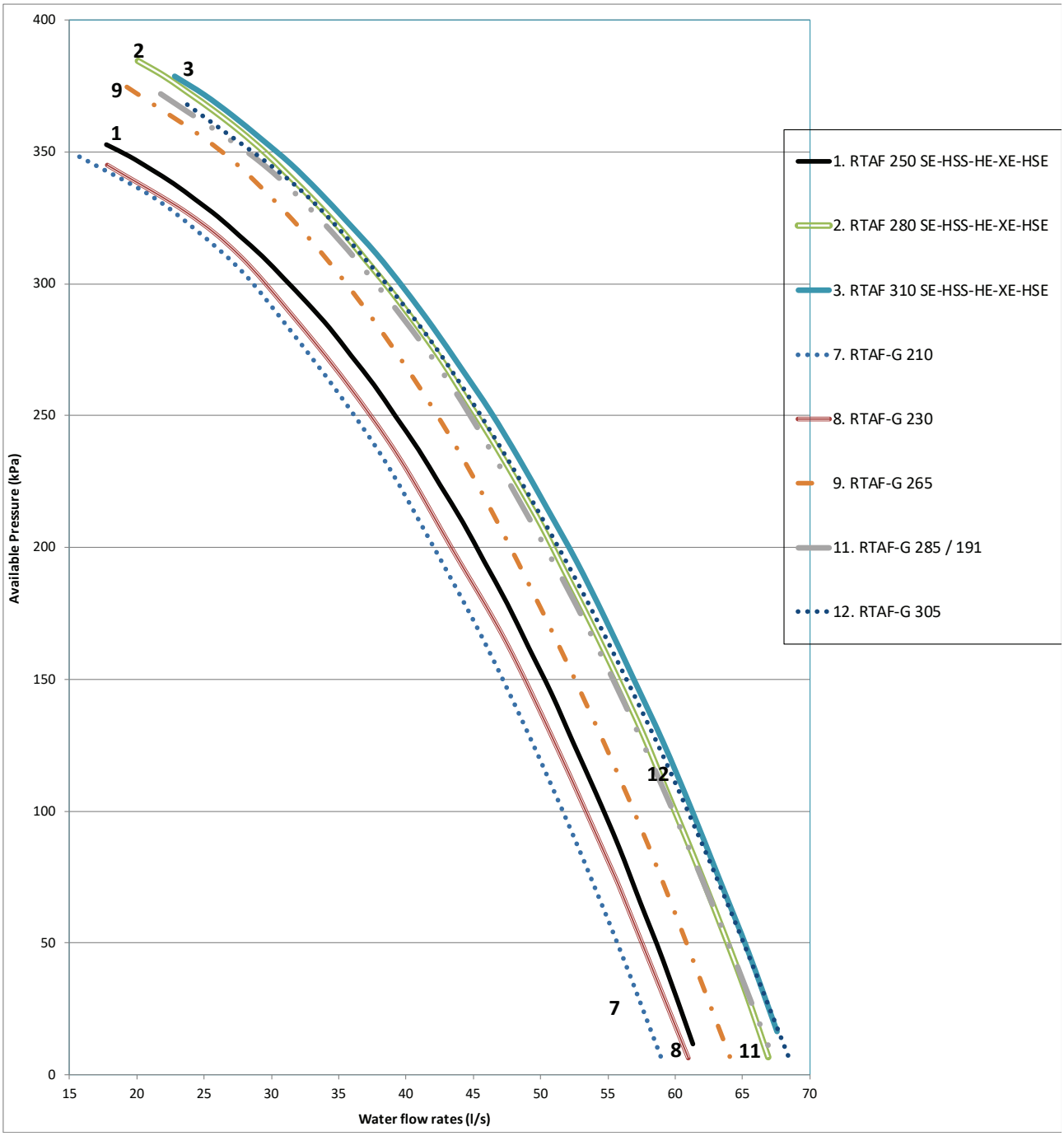


Figure 14b – High head available pressure pump package (Evaporator without Turbulators) Sizes 210-305



General Data

Figure 15a – Standard head available pressure pump package (Evaporator with Turbulators) Sizes 090-185 101

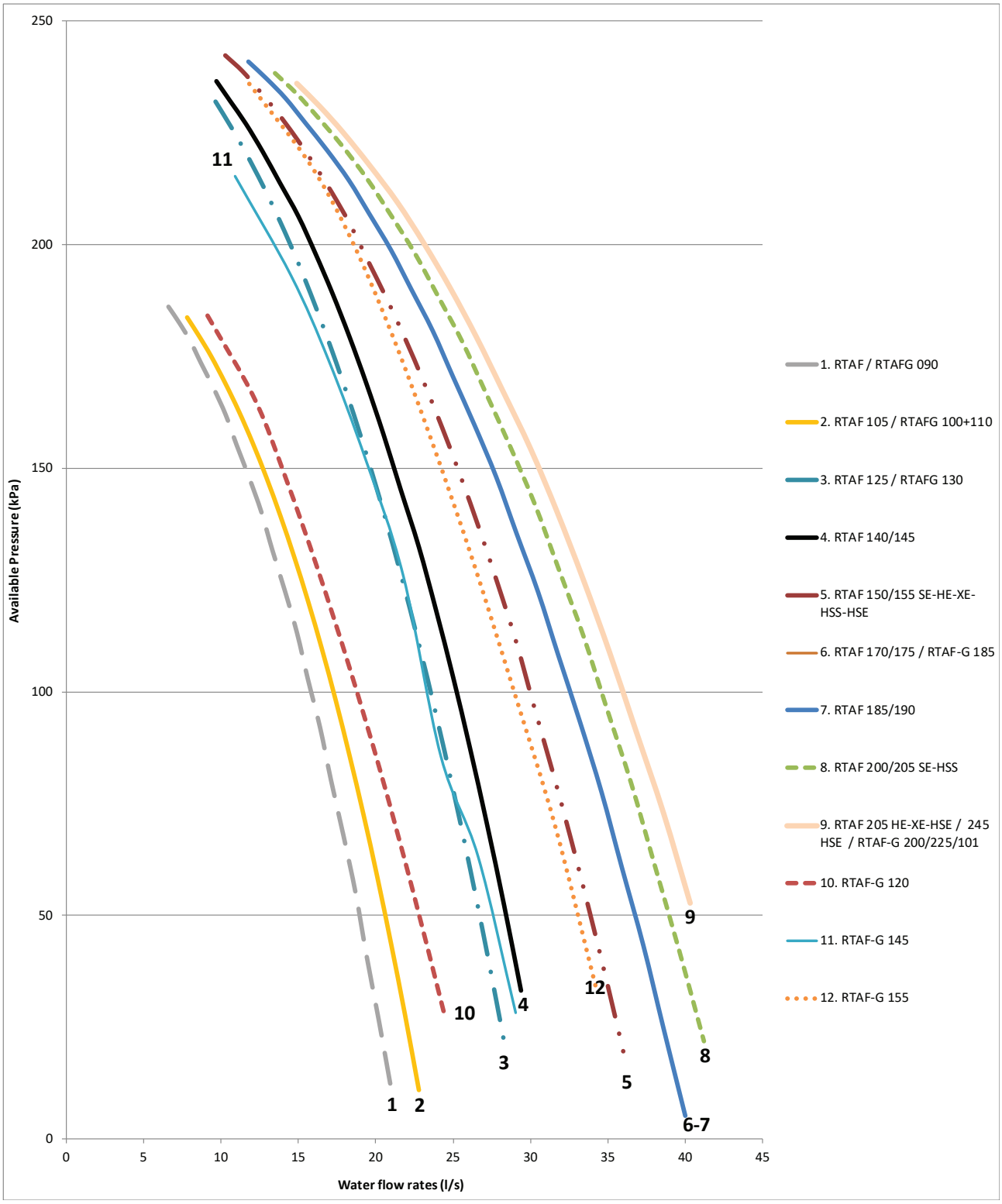
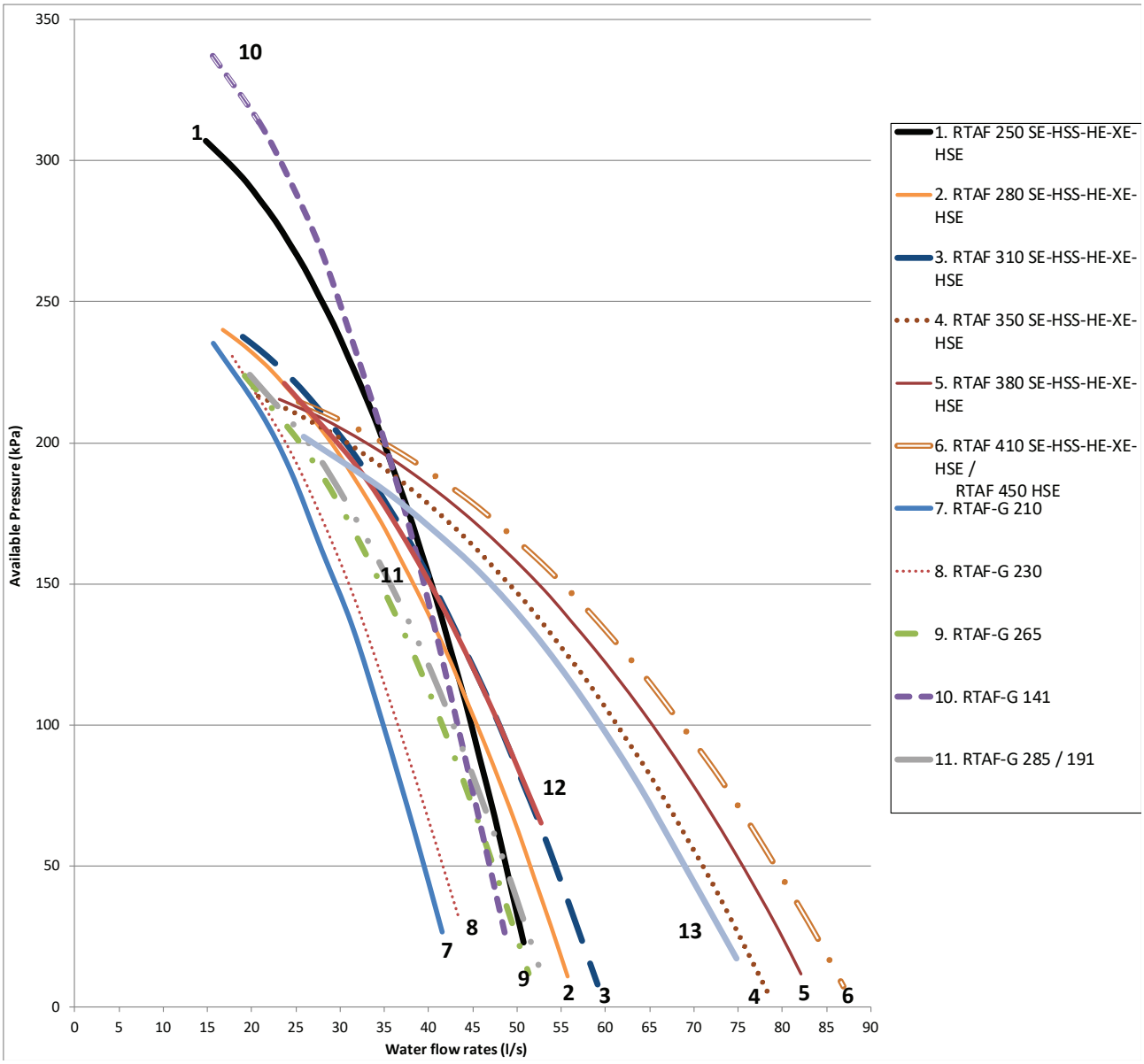


Figure 15b – Standard head available pressure pump package (Evaporator with Turbulators) Sizes 210-405 141 191



General Data

Figure 16a – High head available Pressure pump package (Evaporator with Turbulators) Sizes 090 - 185 101

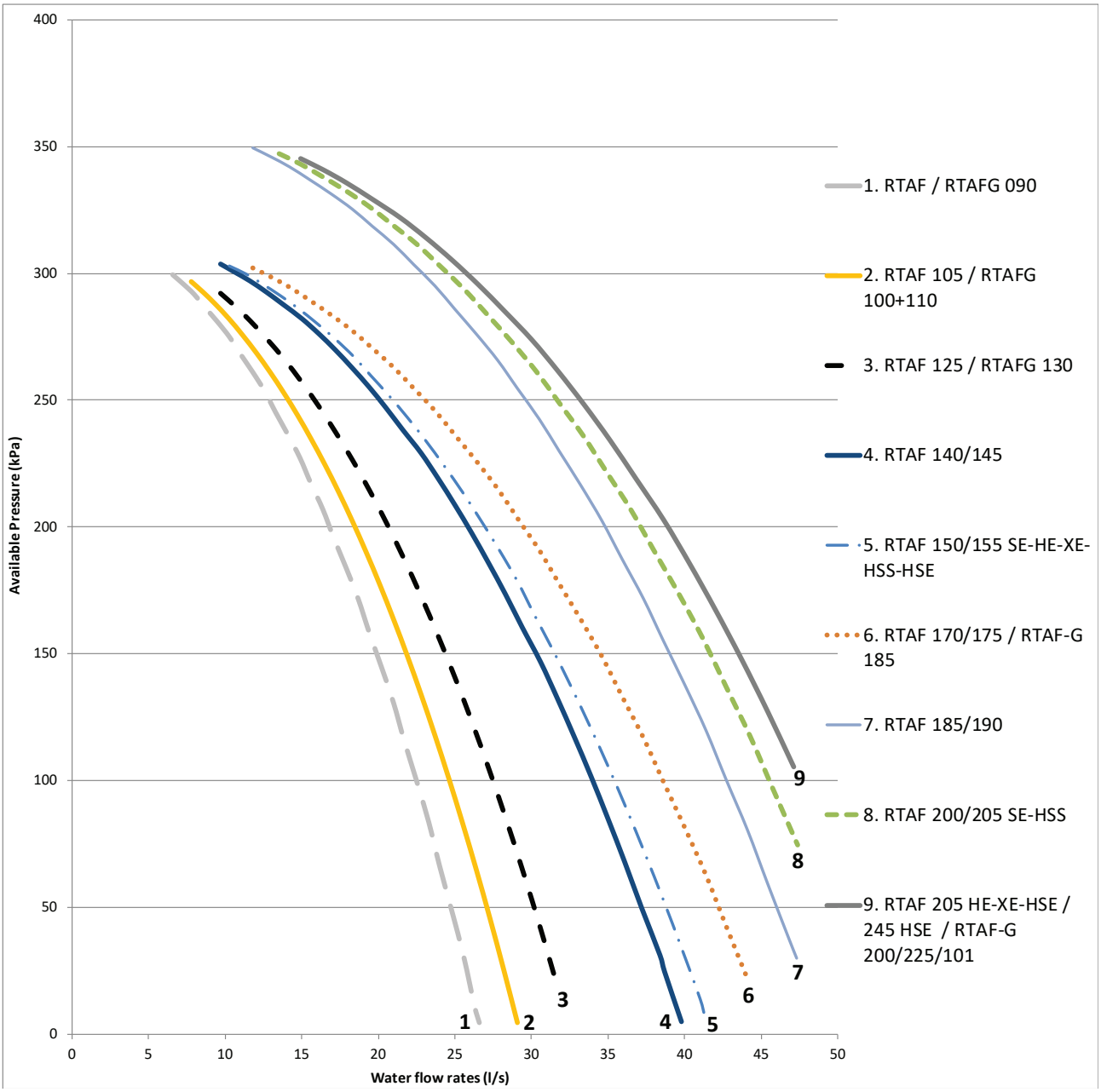
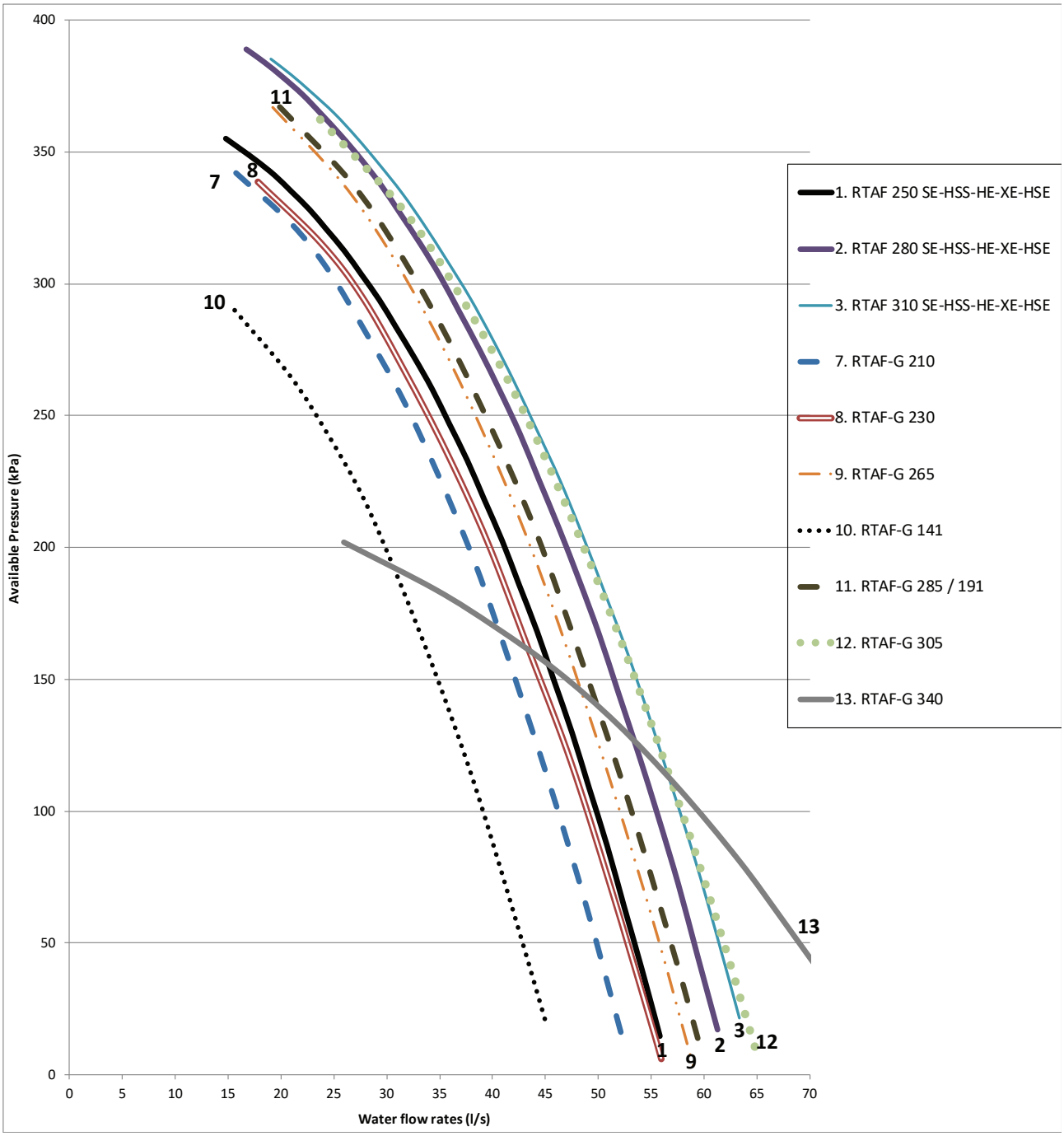


Figure 16b – High Head Pressure pump package (Evaporator with Turbulators) sizes 210 - 305 141&191



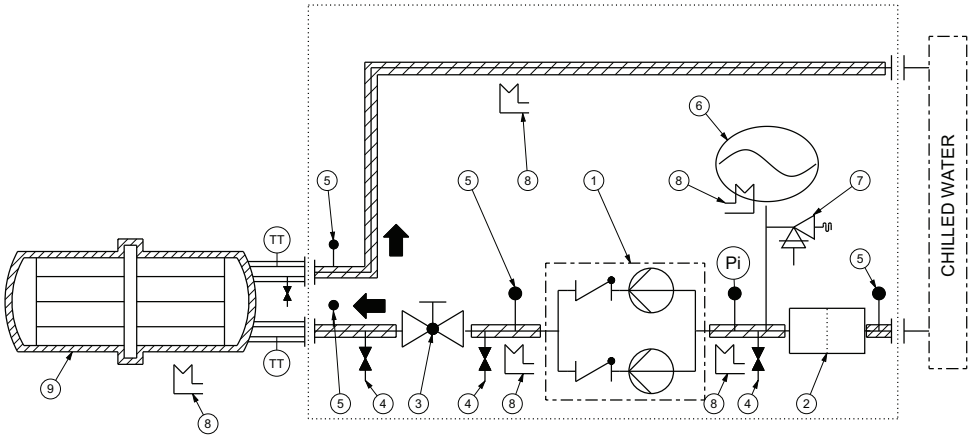
Hydraulic Module

The hydraulic module includes*:

- Twin water pump: Low pressure or High pressure
- Water strainer to protect the water circuit against fouling
- Expansion vessel and pressure relief valve to protect the water circuit against over pressure
- Thermal insulation for antifreeze protection
- Balancing valve to adjust the water flow
- Drain valve

* Components may differ depending on unit model and size. Contact your local sales office for details.

Figure 17 – Hydraulic module option



1 = Twin centrifugal pump
2 = Water strainer
3 = Balancing valve
4 = Drain valve
5 = Valve for pressure point
6 = Expansion tank
7 = Pressure relief valve
8 = Antifreeze protection
9 = Evaporator
Pi = Gauge
TT = Temperature sensor

Table 12a – Pump Package Data

Unit size		090	100	110	120	130	145	155	185	200	225
Antifreeze Heater with pump package	(kW)	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.8	2.8	2.8
Standard head pressure pump option (Twin pump)											
Available Head Pressure (1)	(kPa)	142	138	121	117	139	120	160	150	124	87
Max. Motor Power Input	(kW)	5.5	5.5	5.5	5.5	7.5	7.5	11	11	11	11
Max Amps	(A)	11	11	11	11	14.4	14.4	20.8	20.8	20.8	20.8
High head pressure pump option (Twin pump)											
Available Head Pressure (1)	(kPa)	256	253	238	235	225	258	248	240	248	216
Max. Motor Power Input	(kW)	11	11	11	11	11	15	15	15	18.5	18.5
Max Amps	(A)	20.8	20.8	20.8	20.8	20.8	28	28	28	34.5	34.5

Table 12b – Pump Package Data

Unit size		210	230	265	275	300	285	305	340	385	405
Antifreeze Heater with pump package	(kW)	3.3	3.3	3.4	3.4	3.6	3.6	3.6	3.6	3.6	3.6
Standard head pressure pump option (Twin pump)											
Available Head Pressure (1)	(kPa)	110	79	137	117	87	119	101	146	139	131
Max. Motor Power Input	(kW)	11	11	15	15	15	15	15	22	22	22
Max Amps	(A)	20.8	20.8	29	29	29	29	29	39.7	39.7	39.7
High head pressure pump option (Twin pump)											
Available Head Pressure (1)	(kPa)	235	209	254	224	184	223	196	-	-	-
Max. Motor Power Input	(kW)	18.5	18.5	22	22	22	22	22	-	-	-
Max Amps	(A)	35	35	40	40	40	40	40	-	-	-

(1) Evaporator 12/7°C and 0.0 m^2K/kW, and condenser at 35°C - Example for HSE XLN version

Sound Levels

Table 13 – Sound power levels in accordance with ISO 9614 - 1996.

RTAF G	HSE			HSS			XE			HE			SE			
dB(A) (1)	SN	LN	XLN EC	SN	LN	XLN EC	SN	LN	XLN EC	SN	LN	XLN AC	SN	LN	XLN AC	XLN EC
090	96	93	91	97	94	91	96	93	91	97	95	92	97	95	92	92
100	96	94	91	97	94	91	96	94	91	97	95	92	97	95	92	92
110	97	94	92	97	95	92	97	94	92	97	95	92	97	95	92	92
120	97	94	91	97	94	92	97	94	91	97	95	92	97	95	92	92
130	96	94	91	97	94	92	96	94	91	97	94	92	97	95	92	92
145	96	94	91	96	94	91	96	94	91	97	95	92	97	95	92	92
155	96	94	91	96	94	92	96	94	91	97	95	92	97	95	92	92
185	97	95	92	97	95	92	97	95	92	97	95	92	97	95	92	92
200	101	98	96	101	98	96	-	-	-	-	-	-	-	-	-	-
225	103	101	98	103	101	98	-	-	-	-	-	-	-	-	-	-
210	99	97	94	99	97	94	99	97	94	99	96	94	99	96	94	94
230	99	97	94	99	97	94	99	97	94	98	97	94	98	97	94	94
265	99	97	94	99	97	94	99	97	94	99	97	94	99	97	94	94
275	102	99	97	102	99	97	-	-	-	-	-	-	-	-	-	-
300	103	101	98	103	101	98	-	-	-	-	-	-	-	-	-	-
285	100	98	95	100	98	95	100	98	95	100	98	95	100	98	95	95
305	100	98	95	100	98	95	100	98	95	100	98	95	100	98	95	95
340	100	98	95	101	98	95	100	98	95	100	98	95	100	98	95	95
385	103	100	97	103	100	98	-	-	-	-	-	-	-	-	-	-
405	103	101	98	104	102	99	-	-	-	-	-	-	-	-	-	-
470	106	104	101	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 14 – Sound pressure levels at 10m

RTAF G	HSE			HSS			XE			HE			SE			
dB(A) (1)	SN	LN	XLN EC	SN	LN	XLN EC	SN	LN	XLN EC	SN	LN	XLN AC	SN	LN	XLN AC	XLN EC
090	63	60	58	64	61	58	63	60	58	64	62	59	64	62	59	59
100	63	61	58	64	61	58	63	61	58	64	62	59	64	62	59	59
110	64	61	59	64	62	59	64	61	59	64	62	59	64	62	59	59
120	64	61	58	64	61	59	64	61	58	64	62	59	64	62	59	59
130	63	61	58	64	61	59	63	61	58	64	61	59	64	62	59	59
145	63	61	58	63	61	58	63	61	58	64	62	59	64	62	59	59
155	63	61	58	63	61	59	63	61	58	64	62	59	64	62	59	59
185	64	62	59	64	62	59	64	62	59	64	62	59	64	62	59	59
200	68	65	63	68	65	63	-	-	-	-	-	-	-	-	-	-
225	70	68	65	70	68	65	-	-	-	-	-	-	-	-	-	-
210	66	64	61	66	64	61	66	64	61	66	63	61	66	63	61	61
230	66	64	61	66	64	61	66	64	61	65	64	61	65	64	61	61
265	66	64	61	66	64	61	66	64	61	66	64	61	66	64	61	61
275	69	66	64	69	66	64	-	-	-	-	-	-	-	-	-	-
300	70	68	65	70	68	65	-	-	-	-	-	-	-	-	-	-
285	67	65	62	67	65	62	67	65	62	67	65	62	67	65	62	62
305	67	65	62	67	65	62	67	65	62	67	65	62	67	65	62	62
340	67	65	62	68	65	62	67	65	62	67	65	62	67	65	62	62
385	70	67	64	70	67	65	-	-	-	-	-	-	-	-	-	-
405	70	68	65	71	69	66	-	-	-	-	-	-	-	-	-	-
470	73	71	68	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

At Eurovent conditions: 12/7°C entering/leaving water temperature and 35°C ambient temperature

(1) Value at full load with 1pW Reference Sound Power, according to ISO9614

(2) Average at 10 meters in a free field. This is a non-contractual data, calculated from the above certified sound power level according to the formula Lp=Lw-10logS. This is an averaged value considering the unit as a paralelopedic box with five exposed face areas.

Controls System

Tracer UC800 Controller

Today's Sintesis Prime chillers offer predictive controls that anticipate and compensate for load changes. Other control strategies made possible with the Tracer UC800 controls are:

Feedforward Adaptive Control

Feedforward is an open-loop, predictive control strategy designed to anticipate and compensate for load changes. It uses evaporator entering-water temperature as an indication of load change.

This allows the controller to respond faster and maintain stable leaving-water temperatures.

Soft Loading

The chiller controller uses soft loading except during manual operation. Large adjustments due to load or setpoint changes are made gradually, preventing the compressor from cycling unnecessarily. It does this by internally filtering the setpoints to avoid reaching the differential-to-stop or the demand limit. Soft loading applies to the leaving chilled-water temperature and demand limit setpoints.

Adaptive Controls

There are many objectives that the controller must meet, but it cannot satisfy more than one objective at a time. Typically, the controllers primary objective is to maintain the evaporator leaving water temperature.

Whenever the controller senses that it can no longer meet its primary objective without triggering a protective shutdown, it focuses on the most critical secondary objective. When the secondary objective is no longer critical, the controller reverts to its primary objective.

Rapid Restart

The controller allows the Sintesis Prime chiller to perform a Rapid Restart. A Rapid Restart is performed after a momentary power loss if it occurs during operation. Similarly, if the chiller shuts down on a non-latching diagnostic and the diagnostic later clears itself, a Rapid Restart will be initiated.

AdaptiSpeed Control

The speed control is now optimized mathematically and controlled simultaneously. The increased performance of the UC800 Controller allows the chiller to operate longer at higher efficiency, and with greater stability.

Variable-Primary Flow (VPF)

Chilled-water systems that vary the water flow through chiller evaporators have caught the attention of engineers, contractors, building owners, and operators. Varying the water flow reduces the energy consumed by pumps, while having limited effect on the chiller energy consumption. This strategy can be a significant source of energy savings, depending on the application.

TD7 Operator Interface

The standard TD7 display provided with the Trane UC800 controller features a 7" LCD touch-screen, allowing access to all operational inputs and outputs. This is an advanced interface that allows the user to access any important information concerning setpoints, active temperatures, modes, electrical data, pressure, and diagnostics.

Display Features Include:

- Factory-mounted above the control panel door
- UV Resistant touchscreen
- -40°C to 70°C Operating temperature
- IP56 rated
- CE marking
- Emissions: EN55011(Class B)
- Immunity: EN61000(Industrial)
- 7" diagonal
- 800x480 pixels
- TFT LCD @ 600 nits brightness
- 16 bit color graphic display
- Display features:
  Alarms
  Reports
  Chiller settings
  Display settings
  Graphing
  Support for 15 languages

Figure 18 – TD7 operator interface

Table 15 – RTAF SE Standard Efficiency- Standard and Low Noise

		400/3/50 - Rated without Pump Package													
Unit size		**090**	**100**	**110**	**120**	**130**	**145**	**155**	**185**	**210**	**230**	**265**	**285**	**305**	**340**
Maximum Power input	(kW)	162	176	190	201	212	242	269	273	349	403	406	481	535	539
Unit rated amps (1)	(A)	272	295	318	339	360	409	450	458	590	672	680	810	892	900
Unit start up amps starting Amps (2)	(A)	370	412	435	467	488	559	600	608	740	822	830	960	1042	1050
Displacement Power Factor (DPF)		0.87	0.87	0.87	0.86	0.85	0.86	0.87	0.87	0.86	0.87	0.87	0.86	0.87	0.87
Disconnect switch size	(A)	400	400	500	500	500	630	630	630	1250	1250	1250	1250	1250	1250
Max power cable cross section	mm²	1*240	1*240	1*240	1*240	1*240	2*300	2*300	2*300	4*185	4*185	4*185	4*185	4*185	4*185

Note :

All units : Maximum Short Circuit Rating 35 kA for 0,3 sec

1. Maximum Compressors FLA + All Fans FLA + Control Amps

2. Starting amps of the largest compressor plus RLA of second compressor plus RLA of all fans and control amps

Table 16 – RTAF SE Standard Efficiency- XLN AC

		400/3/50 - Rated without Pump Package													
Unit size		**090**	**100**	**110**	**120**	**130**	**145**	**155**	**185**	**210**	**230**	**265**	**285**	**305**	**340**
Maximum Power input	(kW)	159	173	187	198	209	238	265	268	343	397	400	474	528	531
Unit rated amps (1)	(A)	264	287	310	331	352	398	439	445	575	657	662	790	872	878
Unit start up amps starting Amps (2)	(A)	362	404	427	459	480	548	589	595	725	807	812	940	1022	1028
Displacement Power Factor (DPF)		0.87	0.87	0.87	0.87	0.86	0.87	0.88	0.87	0.86	0.88	0.87	0.87	0.88	0.88
Disconnect switch size	(A)	400	400	500	500	500	630	630	630	1250	1250	1250	1250	1250	1250
Max power cable cross section	mm²	1*240	1*240	1*240	1*240	1*240	2*300	2*300	2*300	4*185	4*185	4*185	4*185	4*185	4*185

Table 17 – RTAF SE Standard Efficiency- Low Ambient or XLN EC

		400/3/50 - Rated without Pump Package													
Unit size		**090**	**100**	**110**	**120**	**130**	**145**	**155**	**185**	**210**	**230**	**265**	**285**	**305**	**340**
Maximum Power input	(kW)	163	177	191	202	213	243	270	274	350	404	408	483	537	541
Unit rated amps (1)	(A)	264	287	310	331	352	399	440	446	576	658	664	792	874	880
Unit start up amps starting Amps (2)	(A)	362	404	427	459	480	549	590	596	726	808	814	942	1024	1030
Displacement Power Factor (DPF)		0.89	0.89	0.89	0.88	0.87	0.88	0.89	0.89	0.88	0.89	0.89	0.88	0.89	0.89
Disconnect switch size	(A)	400	400	500	500	500	630	630	630	1250	1250	1250	1250	1250	1250
Max power cable cross section	mm²	1*240	1*240	1*240	1*240	1*240	2*300	2*300	2*300	4*185	4*185	4*185	4*185	4*185	4*185

Table 18 – RTAF HE High Efficiency - Standard and Low Noise

		400/3/50 - Rated without Pump Package													
Unit size		**090**	**100**	**110**	**120**	**130**	**145**	**155**	**185**	**210**	**230**	**265**	**285**	**305**	**340**
Maximum Power input	(kW)	165	179	193	204	215	246	273	277	352	410	410	489	543	546
Unit rated amps (1)	(A)	280	303	326	347	368	417	458	466	598	688	688	826	908	916
Unit start up amps starting Amps (2)	(A)	378	420	443	475	496	567	608	616	748	838	838	976	1058	1066
Displacement Power Factor (DPF)		0.86	0.86	0.86	0.86	0.85	0.86	0.87	0.86	0.86	0.87	0.87	0.86	0.87	0.87
Disconnect switch size	(A)	400	400	500	500	500	630	630	630	1250	1250	1250	1250	1250	1250
Max power cable cross section	mm²	1*240	1*240	1*240	1*240	1*240	2*300	2*300	2*300	4*185	4*185	4*185	4*185	4*185	4*185

Table 19 – RTAF HE High Efficiency- XLN AC

		400/3/50 - Rated without Pump Package													
Unit size		**090**	**100**	**110**	**120**	**130**	**145**	**155**	**185**	**210**	**230**	**265**	**285**	**305**	**340**
Maximum Power input	(kW)	161	175	189	200	211	241	268	271	346	403	403	479	533	536
Unit rated amps (1)	(A)	269	292	315	336	357	404	445	451	580	668	668	802	884	890
Unit start up amps starting Amps (2)	(A)	367	409	432	464	485	554	595	601	730	818	818	952	1034	1040
Displacement Power Factor (DPF)		0.87	0.87	0.87	0.86	0.86	0.87	0.87	0.87	0.86	0.87	0.87	0.87	0.87	0.87
Disconnect switch size	(A)	400	400	500	500	500	630	630	630	1250	1250	1250	1250	1250	1250
Max power cable cross section	mm²	1*240	1*240	1*240	1*240	1*240	2*300	2*300	2*300	4*185	4*185	4*185	4*185	4*185	4*185

Electrical Data

Table 20 – RTAF XE Extra Efficiency - all Noise Versions

		400/3/50 - Rated without Pump Package													
Unit size		**090**	**100**	**110**	**120**	**130**	**145**	**155**	**185**	**210**	**230**	**265**	**285**	**305**	**340**
Maximum Power input	(kW)	166	180	194	205	216	247	274	278	354	412	412	491	545	549
Unit rated amps (1)	(A)	270	293	316	337	358	405	446	452	582	670	670	804	886	892
Unit start up amps starting Amps (2)	(A)	368	410	433	465	486	555	596	602	732	820	820	954	1036	1042
Displacement Power Factor (DPF)		0.89	0.89	0.89	0.88	0.87	0.88	0.89	0.89	0.88	0.89	0.89	0.88	0.89	0.89
Disconnect switch size	(A)	400	400	500	500	500	630	630	630	1250	1250	1250	1250	1250	1250
Max power cable cross section	mm²	1*240	1*240	1*240	1*240	1*240	2*300	2*300	2*300	4*185	4*185	4*185	4*185	4*185	4*185

Table 21a – RTAF HSS High Seasonal Short- all Noise Versions

		400/3/50 - Rated without Pump Package									
Unit size		**090**	**100**	**110**	**120**	**130**	**145**	**155**	**185**	**200**	**225**
Maximum Power input	(kW)	166	180	194	205	216	247	274	278	354	412
Unit rated amps (1)	(A)	270	293	316	337	358	405	446	452	582	670
Unit start up amps starting Amps (2)	(A)	368	410	433	465	486	555	596	602	732	820
Displacement Power Factor (DPF)		0.89	0.89	0.89	0.88	0.87	0.88	0.89	0.89	0.88	0.89
Disconnect switch size	(A)	400	400	500	500	500	630	630	630	1250	1250
Max power cable cross section	mm²	1*240	1*240	1*240	1*240	1*240	2*300	2*300	2*300	4*185	4*185

Table 21b – RTAF HSS High Seasonal Short- all Noise Versions

		400/3/50 - Rated without Pump Package									
Unit size		**210**	**230**	**265**	**275**	**300**	**285**	**305**	**340**	**385**	**405**
Maximum Power input	(kW)	379	421	425	478	526	511	554	558	615	663
Unit rated amps (1)	(A)	591	656	662	742	816	807	872	878	964	1038
Unit start up amps starting Amps (2)	(A)	741	806	812	892	966	957	1022	1028	1114	1188
Displacement Power Factor (DPF)		0.93	0.93	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92
Disconnect switch size	(A)	1250	1250	1250	1250	1250	1250	1250	1250	1250	1600
Max power cable cross section	mm²	4*185	4*185	4*185	4*185	4*185	4*185	4*185	4*185	4*185	6*185

Table 22a – RTAF HSE High Seasonal Efficiency- all Noise Versions

		400/3/50 - Rated without Pump Package									
Unit size		**090**	**100**	**110**	**120**	**130**	**145**	**155**	**185**	**200**	**225**
Maximum Power input	(kW)	169	184	198	222	245	270	292	296	338	385
Unit rated amps (1)	(A)	259	281	302	338	374	412	445	451	516	587
Unit start up amps starting Amps (2)	(A)	259	281	302	338	374	412	445	451	516	587
Displacement Power Factor (DPF)		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Disconnect switch size	(A)	400	400	500	500	500	630	630	630	800	800
Max power cable cross section	mm²	1*240	1*240	1*240	1*240	1*240	2*300	2*300	2*300	2*300	2*300

Table 22b – RTAF HSE High Seasonal Efficiency- all Noise Versions

		400/3/50 - Rated without Pump Package										
Unit size		**210**	**230**	**265**	**275**	**300**	**285**	**305**	**340**	**385**	**405**	**470**
Maximum Power input	(kW)	382	429	429	482	534	519	562	566	619	667	785
Unit rated amps (1)	(A)	597	668	668	748	828	819	884	890	970	1044	1195
Unit start up amps starting Amps (2)	(A)	747	818	818	898	978	969	1034	1040	1120	1194	1195
Displacement Power Factor (DPF)		0.93	0.93	0.93	0.93	0.93	0.92	0.92	0.92	0.92	0.92	0.95
Disconnect switch size	(A)	1250	1250	1250	1250	1250	1250	1250	1250	1250	1600	1600
Max power cable cross section	mm²	4*185	4*185	4*185	4*185	4*185	4*185	4*185	4*185	4*185	6*185	6*185

Table 23 – Fan Motor Data RTAF (Each)

Efficiency version		SE					HE			XE - HSS - HSE		
Noise Version		**SN**	**LN**	**L.A.***	**XLN-AC**	**XLN-EC**	**SN**	**LN**	**XLN-AC**	**SN**	**LN**	**XLN-EC**
Max Power input per Motor	(kW)	1.85	1.85	1.95	1.44	1.95	1.85	1.85	1.44	1.95	1.95	1.95
Max Amps per Motor	(A)	4	4	3	2.9	3	4	4	2.9	3	3	3

* L.A. : Low Ambient option

Table 24 – Compressor Data RTAF SE - HE - XE

Unit size		090	100	110	120	130	145	155	185	210	230	265	285	305	340
Max Compr Power input (Circuit 1 - Compressor A)	(kW)	73	87	87	98	98	125	125	125	98	125	125	98	125	125
Max Amps (Circuit 1 - Compressor A)	(A)	119	142	142	163	163	204	204	204	163	204	204	163	204	204
Start up Amps (Circuit 1 - Compressor A)	(A)	217	259	259	291	291	354	354	354	291	354	354	291	354	354
Max Compr Power input (Circuit 1 - Compressor B)	(kW)	-	-	-	-	-	-	-	-	125	125	125	125	125	125
Max Amps (Circuit 1 - Compressor B)	(A)	-	-	-	-	-	-	-	-	204	204	204	204	204	204
Start up Amps (Circuit 1 - Compressor B)	(A)	-	-	-	-	-	-	-	-	354	354	354	354	354	354
Max Compr Power input (Circuit 2 - Compressor A)	(kW)	73	73	87	87	98	98	125	125	98	125	125	98	125	125
Max Amps (Circuit 2 - Compressor A)	(A)	119	119	142	142	163	163	204	204	163	204	204	163	204	204
Start up Amps (Circuit 2 - Compressor A)	(A)	217	217	259	259	291	291	354	354	291	354	354	291	354	354
Max Compr Power input (Circuit 2 - Compressor B)	(kW)	-	-	-	-	-	-	-	-	-	-	-	125	125	125
Max Amps (Circuit 2 - Compressor B)	(A)	-	-	-	-	-	-	-	-	-	-	-	204	204	204
Start up Amps (Circuit 2 - Compressor B)	(A)	-	-	-	-	-	-	-	-	-	-	-	354	354	354

Table 25a – Compressor Data RTAF HSS - HSE

Unit size		090	100	110	120	130	145	155	185	200	225
Max Compr Power input (Circuit 1 - Compressor A)	(kW)	74	89	89	112	112	134	134	134	155	179
Max Amps (Circuit 1 - Compressor A)	(A)	113	135	135	171	171	203	203	203	236	271
Start up Amps (Circuit 1 - Compressor A)	(A)	113	135	135	171	171	203	203	203	236	271
Max Compr Power input (Circuit 1 - Compressor B)	(kW)	-	-	-	-	-	-	-	-	-	-
Max Amps (Circuit 1 - Compressor B)	(A)	-	-	-	-	-	-	-	-	-	-
Start up Amps (Circuit 1 - Compressor B)	(A)	-	-	-	-	-	-	-	-	-	-
Max Compr Power input (Circuit 2 - Compressor A)	(kW)	74	74	89	89	112	112	134	134	155	179
Max Amps (Circuit 2 - Compressor A)	(A)	113	113	135	135	171	171	203	203	236	271
Start up Amps (Circuit 2 - Compressor A)	(A)	113	113	135	135	171	171	203	203	236	271
Max Compr Power input (Circuit 2 - Compressor B)	(kW)	-	-	-	-	-	-	-	-	-	-
Max Amps (Circuit 2 - Compressor B)	(A)	-	-	-	-	-	-	-	-	-	-
Start up Amps (Circuit 2 - Compressor B)	(A)	-	-	-	-	-	-	-	-	-	-

Table 25b – Compressor Data RTAF HSS - HSE

Unit size		210	230	265	275	300	285	305	340	385	405	470 HSE
Max Compr Power input (Circuit 1 - Compressor A)	(kW)	112	134	134	160	184	112	134	134	160	184	184
Max Amps (Circuit 1 - Compressor A)	(A)	171	203	203	243	280	171	203	203	243	280	280
Start up Amps (Circuit 1 - Compressor A)	(A)	171	203	203	243	280	171	203	203	243	280	280
Max Compr Power input (Circuit 1 - Compressor B)	(kW)	125	125	125	125	125	125	125	125	125	125	184
Max Amps (Circuit 1 - Compressor B)	(A)	204	204	204	204	204	204	204	204	204	204	280
Start up Amps (Circuit 1 - Compressor B)	(A)	354	354	354	354	354	354	354	354	354	354	280
Max Compr Power input (Circuit 2 - Compressor A)	(kW)	112	134	134	160	184	112	134	134	160	184	184
Max Amps (Circuit 2 - Compressor A)	(A)	171	203	203	243	280	171	203	203	243	280	280
Start up Amps (Circuit 2 - Compressor A)	(A)	171	203	203	243	280	171	203	203	243	280	280
Max Compr Power input (Circuit 2 - Compressor B)	(kW)	-	-	-	-	-	125	125	125	125	125	184
Max Amps (Circuit 2 - Compressor B)	(A)	-	-	-	-	-	204	204	204	204	204	280
Start up Amps (Circuit 2 - Compressor B)	(A)	-	-	-	-	-	354	354	354	354	354	280

* : Available in HSE version only

Table 26 – Control and heaters Power Input (without pump Package)

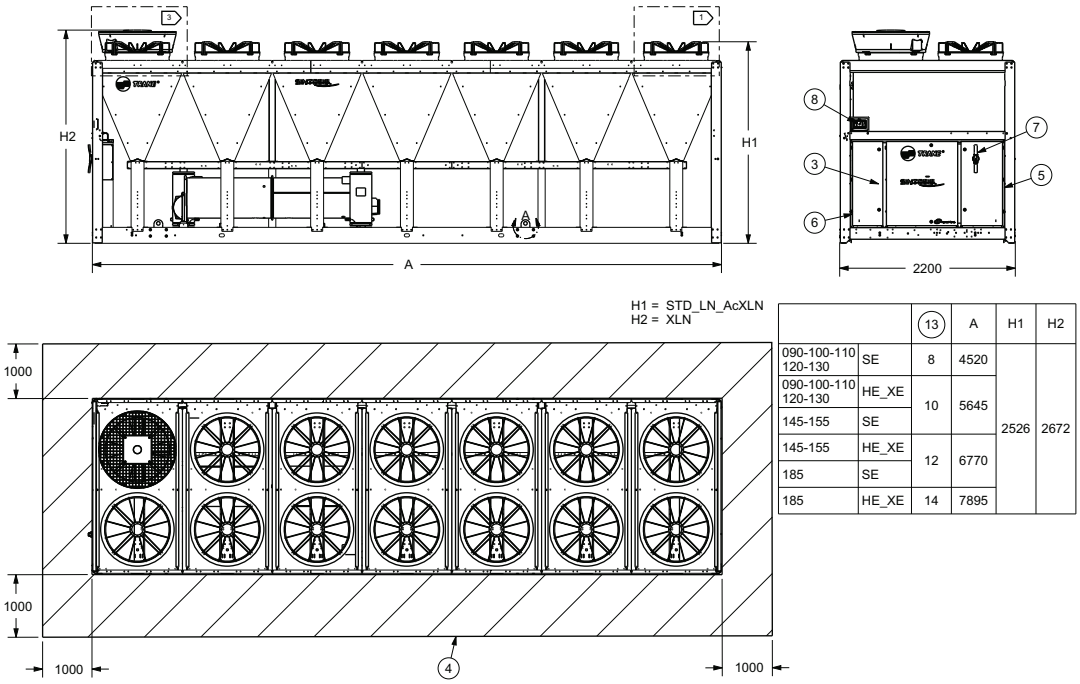
Unit size		090	100	110	120	130	145	155	185 200* 225*	210	230	265 275* 300*	285	305	340	385* 405* 470 HSE
Control	(kW)	1	1	1	1	1	1	1	1	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Evaporator Antifreeze Heater	(kW)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	2	2.2	2.2	2.2	2.4	2.4	2.4	2.4
Oil sump heater	(kW)	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.7	0.7	0.7	0.85	0.85	0.85	0.85

* : Available in HSS or HSE version only

Dimensional Data

The dimensional data below are given for reference only. Dimensions details, dimensions of hydraulic connections, electrical connections, isolator positioning, specific features for heat recovery and free cooling are included in submittals and diagrams provided in documentation package.

Figure 19 – RTAF 090 - 185 SE HE XE



		13	A	H1	H2
090-100-110 120-130	SE	8	4520	2526	2672
090-100-110 120-130	HE_XE	10	5645		
145-155	SE				
145-155	HE_XE	12	6770		
185	SE				
185	HE_XE	14	7895		

RTAF 090 - 185 SE HE XE

		Additional operating weight according option (kg)							
		090	**100**	**110**	**120***	**130**	**145**	**155**	**185**
Hydraulic module									
DPSP		350	350	377	395	395	524	548	548
DPSP + VPF		380	380	407	425	425	554	578	578
DPHP		377	377	412	422	517	550	548	548
DPHP + VPF		407	407	442	452	547	580	578	578
Heat Recovery									
Partial heat recovery (PHR)		110	110	110	110	110	110	185	185
Total heat recovery (THR) Naked		226	226	226	226	226	226	323	228
Total heat recovery (THR) full		395	395	395	395	395	395	562	577
Free cooling									
Total free cooling - Direct	SE	687	687	687	687	687	879	884	1011
Partial free cooling - Direct	SE	530	530	530	530	530	731	731	720
Total free cooling - Glycol-Free	SE	1183	1183	1183	1235	1235	1586	1586	1720
Partial free cooling - Glycol-Free	SE	903	903	903	903	965	1174	1174	1236
Total free cooling - Direct	HE XE	830	830	830	830	886	1011	1011	1200
Partial free cooling - Direct	HE XE	534	534	534	534	576	720	720	795
Total free cooling - Glycol-Free	HE XE	1321	1321	1321	1373	1373	1720	1720	1845
Partial free cooling - Glycol-Free	HE XE	976	976	976	976	1038	1236	1236	1246

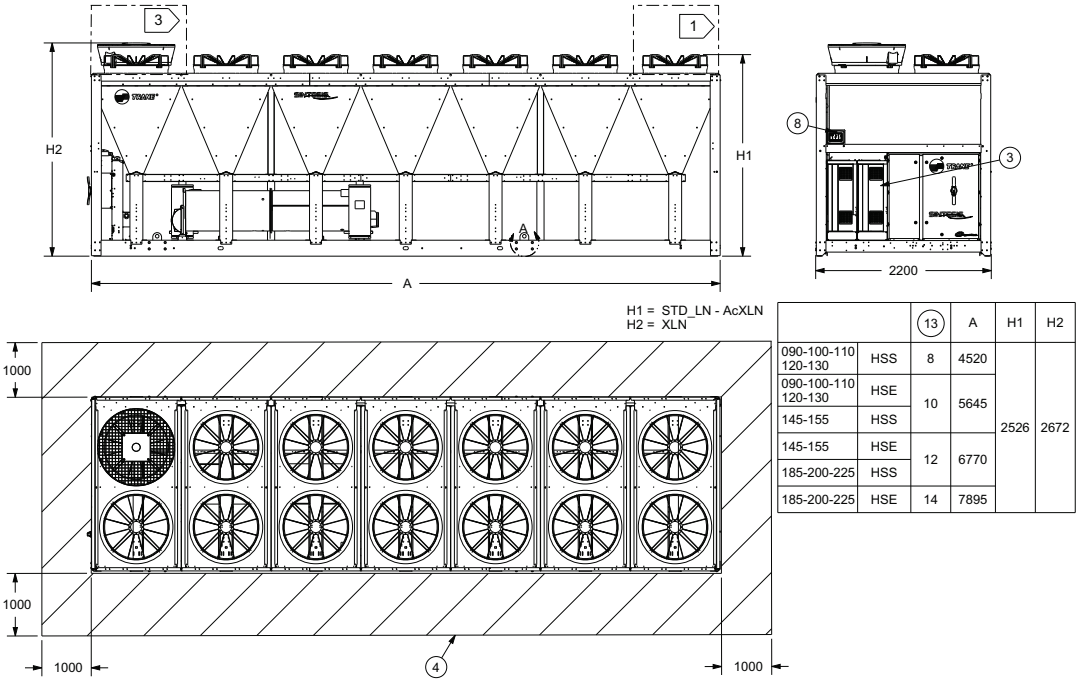
DPSP: Dual Pump Standard Pressure

DPHP: Dual Pump High Pressure

Important! Additional space is required to remove evaporator tubes.

For RTAF 090 to 185: 2.5 m in front of the unit (evaporator side).

Figure 20 – RTAF 090 - 185 HSE HSS



		13	A	H1	H2
090-100-110 120-130	HSS	8	4520	2526	2672
090-100-110 120-130	HSE	10	5645		
145-155	HSS				
145-155	HSE	12	6770		
185-200-225	HSS				
185-200-225	HSE	14	7895		

RTAF 090 - 185 HSE HSS

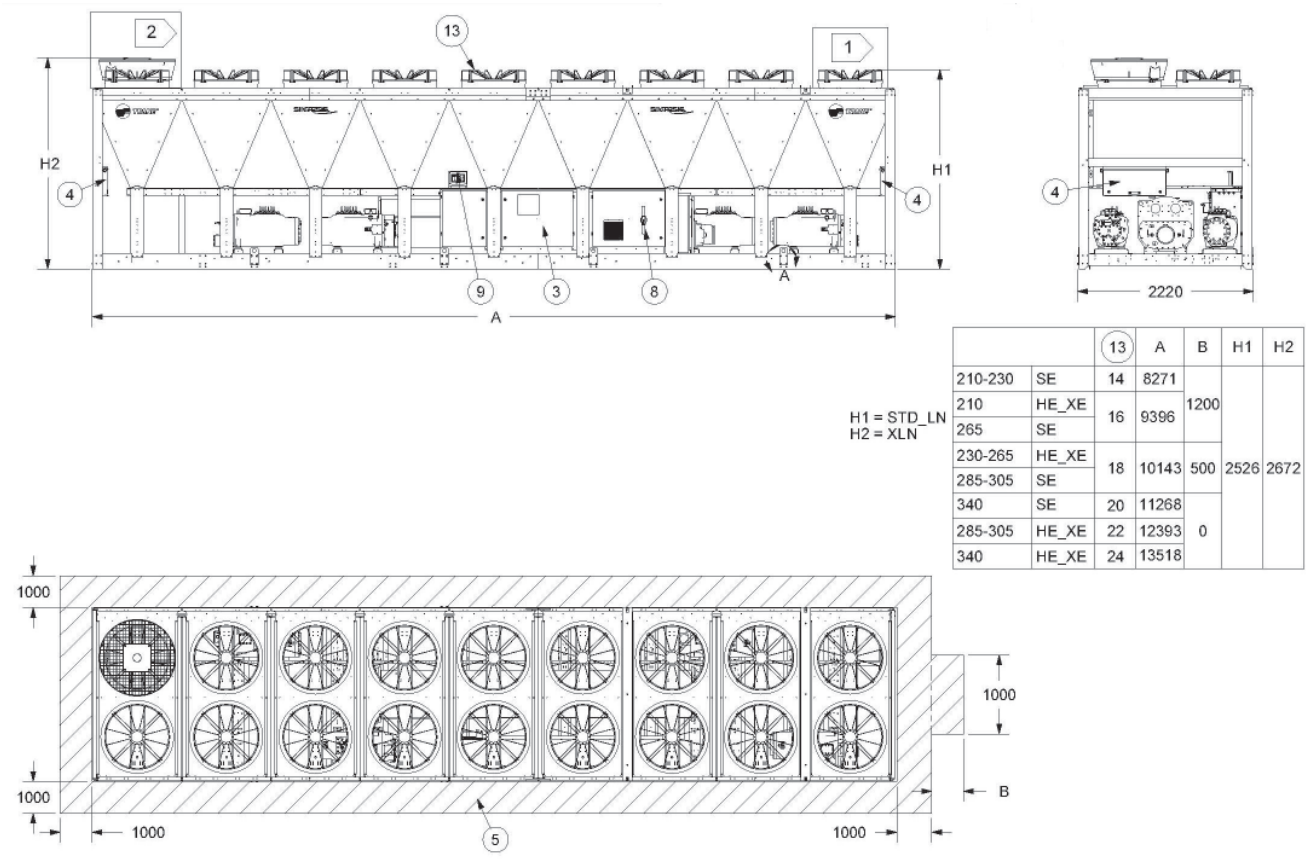
		Additional operating weight according option (kg)									
		090	100	110	120*	130	145	155	185	200	225
Hydraulic module											
DPSP		350	350	377	395	395	524	548	548	548	559
DPSP + VPF		380	380	407	425	425	554	578	578	578	589
DPHP		377	377	412	422	517	550	548	548	548	673
DPHP + VPF		407	407	442	452	547	580	578	578	578	703
Heat Recovery											
Partial heat recovery (PHR)		110	110	110	110	110	110	135	135	135	135
Total heat recovery (THR) Naked		226	226	226	226	226	226	323	338	338	338
Total heat recovery (THR) full		395	395	395	395	395	395	562	577	577	577
Free cooling											
Total free cooling - Direct	HSS	687	687	687	687	687	879	884	1207	1207	1207
Partial free cooling - Direct	HSS	530	530	530	530	530	731	731	720	795	795
Total free cooling - Glycol-Free	HSS	1183	1183	1183	1235	1235	1586	1586	1720	1720	1720
Partial free cooling - Glycol-Free	HSS	903	903	903	903	965	1174	1174	1236	1236	1236
Total free cooling - Direct	HSE	830	830	830	830	886	1011	1011	1200	1207	1207
Partial free cooling - Direct	HSE	534	534	534	534	576	720	720	795	795	795
Total free cooling - Glycol-Free	HSE	1321	1321	1321	1373	1373	1720	1720	1845	1845	1845
Partial free cooling - Glycol-Free	HSE	976	976	976	976	1038	1236	1236	1246	1246	1246

DPSP: Dual Pump Standard Pressure
DPHP: Dual Pump High Pressure

Important! Additional space is required to remove evaporator tubes.
For RTAF 090 to 185: 2.5 m in front of the unit (evaporator side).

Dimensional Data

Figure 21 – RTAF 210 - 340 SE HE XE



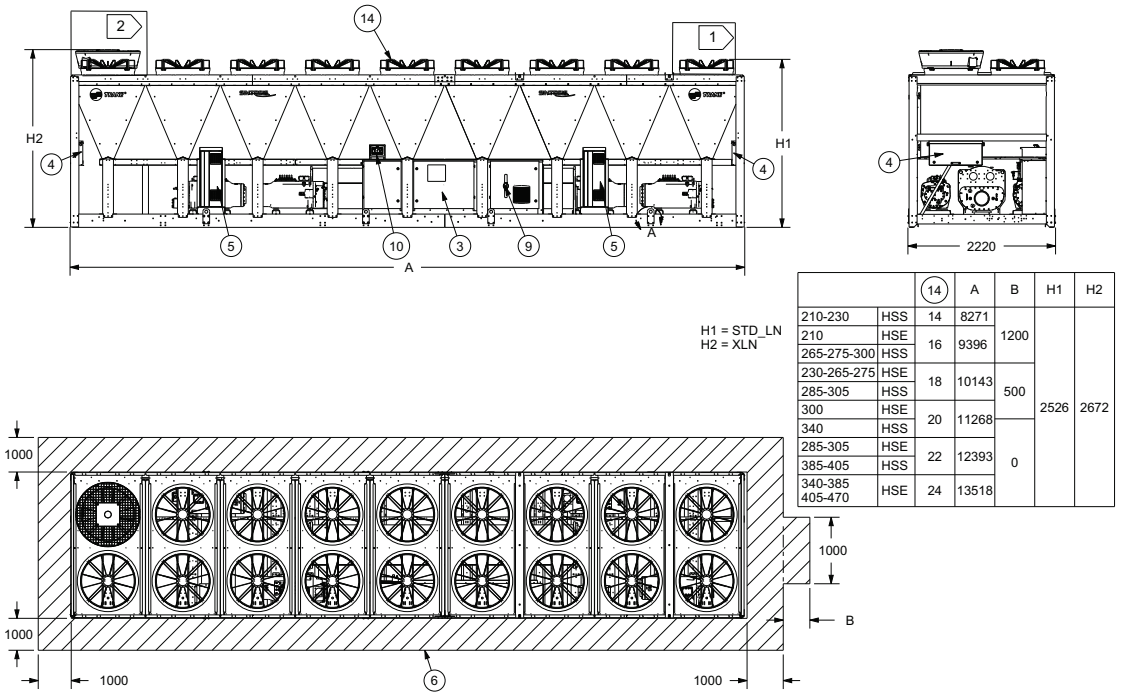
H1 = STD_LN
H2 = XLN

		13	A	B	H1	H2
210-230	SE	14	8271	1200	2526	2672
210	HE_XE	16	9396			
265	SE					
230-265	HE_XE	18	10143	500		
285-305	SE					
340	SE	20	11268	0		
285-305	HE_XE	22	12393			
340	HE_XE	24	13518			

		Additional operating weight according option (kg)					
		210	**230**	**265**	**285**	**305**	**340**
Hydraulic module							
DPSP		559	681	681	1229	1229	1229
DPSP + VPF		589	711	711	1279	1279	1279
DPHP		673	989	989	1229	1229	1229
DPHP + VPF		703	1019	1019	1279	1279	1279
Heat Recovery							
Partial heat recovery (PHR)		185	185	185	215	215	215
Total heat recovery (THR) Naked		800	800	800	930	930	930
Total heat recovery (THR) full		1040	1040	1040	1180	1180	1180
Free cooling							
Total free cooling - Direct	SE	1691	1691	1902	2191	2191	2191
Partial free cooling - Direct	SE	1199	1199	1199	1511	1511	1511
Total free cooling - Glycol-Free	SE	-	-	3144	3387	3387	3374
Partial free cooling - Glycol-Free	SE	-	-	1874	2033	2033	2233
Total free cooling - Direct	HE XE	1902	1902	1902	2520	2520	2520
Partial free cooling - Direct	HE XE	1223	1223	1223	1511	1511	1511
Total free cooling - Glycol-Free	HE XE	3334	3670	3670	3670	3942	3900
Partial free cooling - Glycol-Free	HE XE	1953	2064	2064	2064	2313	2384

Important! Additional space is required to remove evaporator tubes.
For RTAF sizes 210 to 340: 4.5 meter in front of the unit (evaporator outlet side at the right of the electrical panel).

Figure 22 – RTAF 210 - 470 HSS HSE



		14	A	B	H1	H2
210-230	HSS	14	8271	1200	2526	2672
210	HSE	16	9396			
265-275-300	HSS					
230-265-275	HSE	18	10143	500		
285-305	HSS					
300	HSE	20	11268			
340	HSS			0		
285-305	HSE	22	12393			
385-405	HSS					
340-385 405-470	HSE	24	13518			

H1 = STD_LN
H2 = XLN

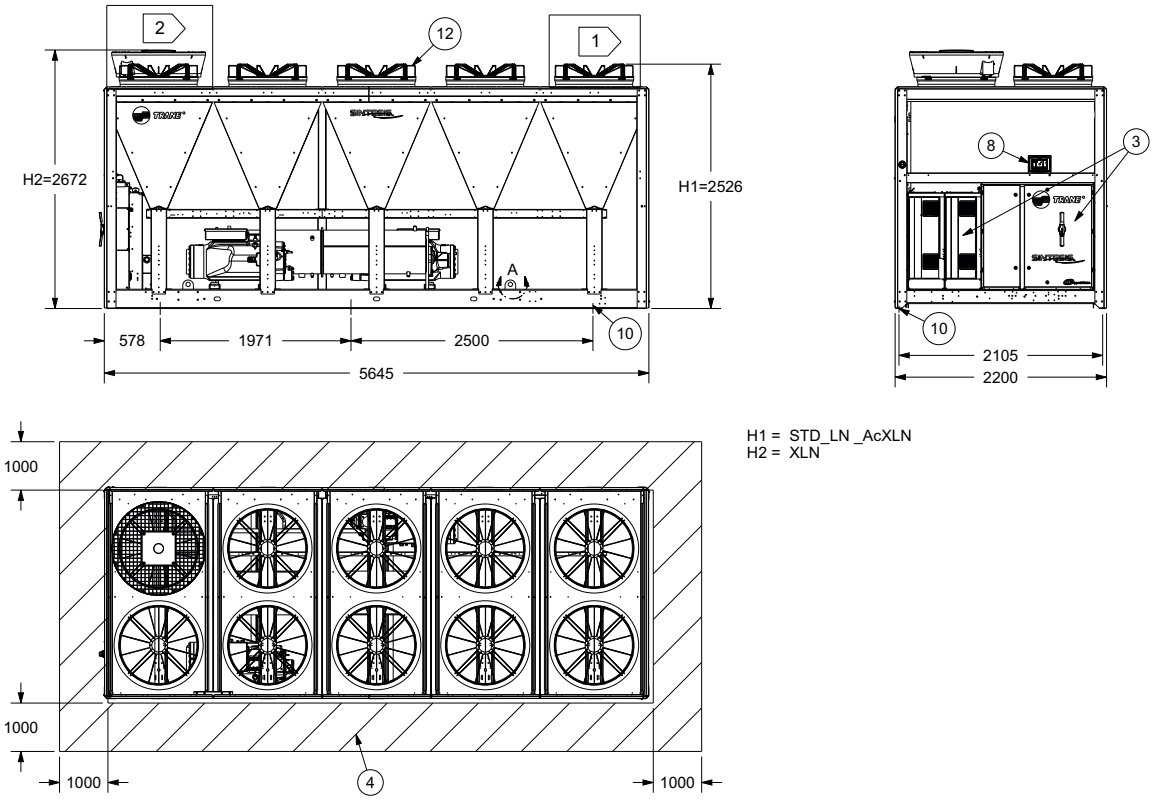
RTAF 210 - 470 HSS HSE

		Additional operating weight according option (kg)										
		210	230	265	275	300	285	305	340	385	405	470 HSE
Hydraulic module												
DPSP		559	681	681	989	1028	1229	1229	1229	1229	1229	1229
DPSP + VPF		589	711	711	1019	1078	1279	1279	1279	1279	1279	1279
DPHP		673	989	989	989	1229	1229	1229	1229	1229	1229	1229
DPHP + VPF		703	1019	1019	1019	1279	1279	1279	1279	1279	1279	1279
Heat Recovery												
Partial heat recovery (PHR)		185	185	185	185	185	215	215	215	215	215	215
Total heat recovery (THR) Naked		800	800	800	800	800	930	930	930	930	930	930
Total heat recovery (THR) full		1040	1040	1040	1040	1040	1180	1180	1180	1180	1180	1180
Free cooling												
Total free cooling - Direct	HSS	1691	1691	1902	2077	-	2191	2191	2191	2351	2522	
Partial free cooling - Direct	HSS	1199	1199	1199	1223	-	1511	1511	1511	1581	1665	
Total free cooling - Glycol-Free	HSS	-	-	3670	3144	-	3670	3387	3374	3732	3732	
Partial free cooling - Glycol-Free	HSS	-	-	2064	1874	-	2064	2033	2233	2226	2226	
Total free cooling - Direct	HSE	1902	1902	1902	2077	2382	2520	2520	2520	2712	2716	-
Partial free cooling - Direct	HSE	1223	1223	1223	1216	1216	1511	1511	1511	1581	1693	-
Total free cooling - Glycol-Free	HSE	3334	3670	3670	3670	3387	3670	3942	3900	4104	4104	-
Partial free cooling - Glycol-Free	HSE	1953	2064	2064	2064	2033	2064	2313	2384	2423	2423	-

Important! Additional space is required to remove evaporator tubes.
For RTAF sizes 210 to 470: 4.5 meter in front of the unit (evaporator outlet side at the right of the electrical panel).

Dimensional Data

Figure 23 – RTAF 101 G Process

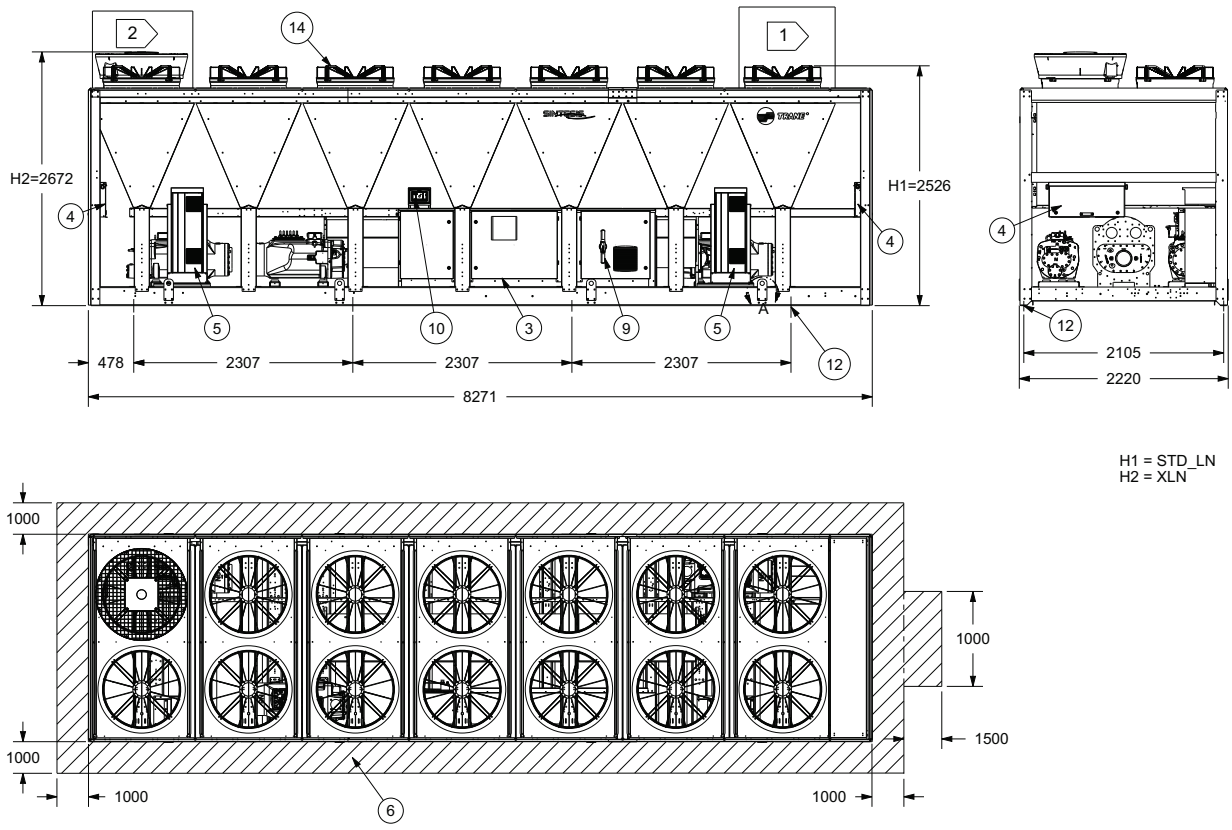


RTAF Process

Additional operating weight according option (kg)	101
Hydraulic module	
DPSP	541
DPSP + VPF	571
DPHP	541
DPHP + VPF	571
Heat Recovery	
Partial heat recovery (PHR)	135
Partial heat recovery Plus (PHR+)	270
Total heat recovery (THR) Naked	338
Total heat recovery (THR) full	577

Important! Additional space is required to remove evaporator tubes.
For RTAF sizes 101 : 2.5 meter in front of the unit (evaporator side).

Figure 24 – RTAF 141 G Process

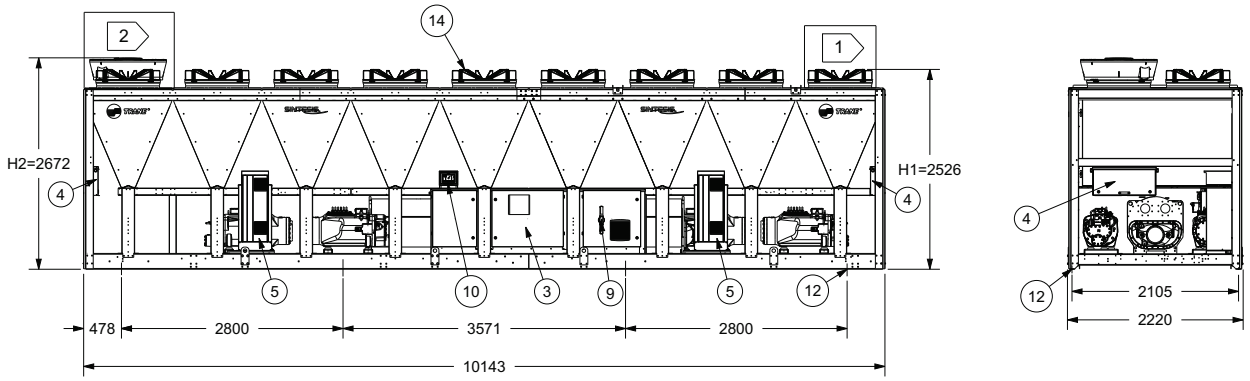


Additional operating weight according option (kg)	141
Hydraulic module	
DPSP	559
DPSP + VPF	-
DPHP	673
DPHP + VPF	-
Heat Recovery	
Partial heat recovery (PHR)	185
Partial heat recovery Plus (PHR+)	370
Total heat recovery (THR) Naked	800
Total heat recovery (THR) full	1040

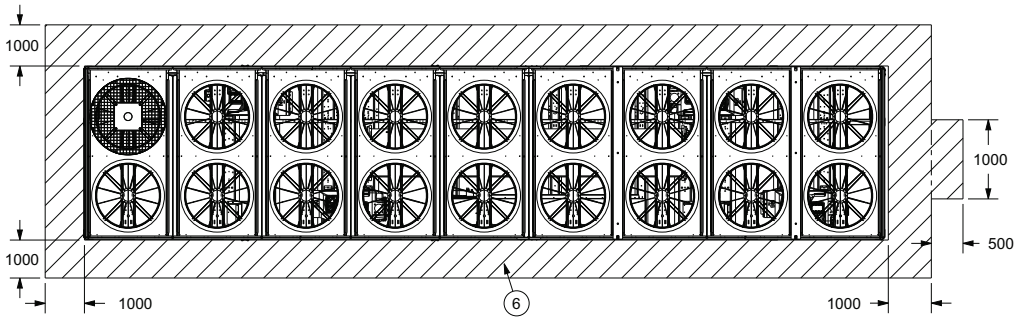
Important! Additional space is required to remove evaporator tubes.
For RTAF sizes 141 : 4.5 meter in front of the unit (evaporator outlet side at the right of the electrical panel).

Dimensional Data

Figure 25 – RTAF 191 G Process



H1 = STD_LN
H2 = XLN



Additional operating weight according option (kg)	191
Hydraulic module	
DPSP	1229
DPSP + VPF	1279
DPHP	1229
DPHP + VPF	1279
Heat Recovery	
Partial heat recovery (PHR)	215
Partial heat recovery Plus (PHR+)	430
Total heat recovery (THR) Naked	930
Total heat recovery (THR) full	1180

Important! Additional space is required to remove evaporator tubes.
For RTAF sizes 191 : 4.5 meter in front of the unit (evaporator outlet side at the right of the electrical panel).

RTAF Process

The Brine dedicated unit range suit to supply negative Leaving brine Temperature on Process applications. To deliver maximum efficiency, a single configuration supplies maximum efficiencies above the latest Medium Temperature Ecodesign Requirements. This unit comes with R1234ze refrigerant (GWP<1) allowing no special authorization, neither special safety maintenance on the jobsite. Range deliver the best compromise between efficiency, safety and cost.

Table 27 – RTAF HSE Process - High Seasonal Efficiency

Sound Version		**Standard Noise & Low Noise**			**Extra Low Noise - EC**		
Unit size		**101**	**141**	**191**	**101**	**141**	**191**
Net cooling capacity (1) (2)	(kW)	446	598	767	446	598	767
Net Power Input (1) (2)	(kW)	227	306	381	225	303	377
SEPR (3)		3.38	3.37	3.26	3.42	3.41	3.32
Sound Power Level (4)	dB(A)	102 / 99	103 / 101	103 / 101	97	98	98
Sound Pressure Level at 10m (5)	dB(A)	69 / 66	70 / 68	70 / 68	64	65	65
Compressor							
Circuit 1	#	1	1	2	1	1	2
Circuit 2	#	1	2	2	1	2	2
Evaporator							
Type - Pass		Flooded shell and tube heat exchanger - 2					
Nominal Flow (1)	l/s	29.8	40	51.3	29.8	40	51.3
Pressure Drop (1)	kPa	133	95.5	80.5	133	95.5	80.5
Minimum Flow	l/s	8.5	13.1	18.5	8.5	13.1	18.5
Maximum Flow	l/s	36.4	52.5	74.1	36.4	52.5	74.1
Nominal water connection size (Grooved coupling)	(in) - (mm)	5" - 125	6" - 150	8" - 200	5" - 125	6" - 150	8" - 200
Condenser							
Type		Full aluminum Micro channel heat exchanger					
Quantity	#	5/5	10/4	10/8	5/5	10/4	10/8
Face area per coil	(m^2)	2.4					
Condenser Fan							
Fan / motor Type		Propeller fan / Variable speed - EC motor					
Quantity	#	5/5	10/4	10/8	5/5	10/4	10/8
Nominal RPM	rpm	910	910	910	860	860	860
Airflow per fan	(m^3/h)	20000	20000	20000	20000	20000	20000
Refrigerant R1234ze							
Charge Circuit 1	kg	43	102	98	43	102	98
Charge Circuit 2	kg	43	35	95	43	35	95
Dimensions & Weight							
Length	mm	5645	8265	10135	5645	8265	10135
Width	mm	2200	2200	2200	2200	2200	2200
Height	mm	2526	2526	2526	2672	2672	2672
Operating weight	kg	4720	6675	8500	4840	6835	8720
Additional weight for Low Noise version	kg	120	160	220	-	-	-

(1) Evaporator -4/-8°C and 0.0 m^2K/kW 30% EG, and condenser at 35°C

(2) Net performances

(3) SEPR as defined in Directive 2009/125/EC of the European Parliament and of the Council with regard to Ecodesign requirements for Medium Temperature chillers - COMMISSION REGULATION (EU) N° 2015/1095 of 05 May 2015

(4) At Eurovent conditions, with 1pW Reference Sound Power, according to ISO9614

(5) Average at 10 meters in a free fi eld. This is a non-contractual data, calculated from the above certifi ed sound power level according to the formula Lp=Lw-10logS. This is an averaged value considering the unit as a paralelopedic box with fi ve exposed face areas.

RTAF Process

Table 28 – RTAF HSE High Seasonal Efficiency Process- Electrical data

		400/3/50 - Rated without Pump Package		
Unit size		**101**	**141**	**191**
Maximum Power input	(kW)	378	523	655
Unit rated amps (1)	(A)	575	810	1026
Unit start up amps starting Amps (2)	(A)	575	960	1176
Displacement Power Factor (DPF)		0.95	0.93	0.92
Disconnect switch size	(A)	800	1250	1250
Max power cable cross section	mm²	2*300	4*185	4*185
Max Compr Power input (Circuit 1 - Compressor A)	(kW)	179	184	184
Max Amps (Circuit 1 - Compressor A)	(A)	271	280	280
Start up Amps (Circuit 1 - Compressor A)	(A)	271	280	280
Max Compr Power input (Circuit 1 - Compressor B)	(kW)	-	125	125
Max Amps (Circuit 1 - Compressor B)	(A)	-	204	204
Start up Amps (Circuit 1 - Compressor B)	(A)	-	354	354
Max Compr Power input (Circuit 2 - Compressor A)	(kW)	179	184	184
Max Amps (Circuit 2 - Compressor A)	(A)	271	280	280
Start up Amps (Circuit 2 - Compressor A)	(A)	271	280	280
Max Compr Power input (Circuit 2 - Compressor B)	(kW)	-	-	125
Max Amps (Circuit 2 - Compressor B)	(A)	-	-	204
Start up Amps (Circuit 2 - Compressor B)	(A)	-	-	354
Max Power input per Condenser Fan Motor	(kW)	1.95	1.95	1.95
Max Amps per condenser Fan Motor	(A)	3	3	3
Control Power input	(kW)	1	1.8	1.8
Evaporator Antifreeze Heater	(kW)	1.6	2.2	2.44
Oil sump heater	(kW)	0.55	0.7	0.85
Optional Pump Package				
Antifreeze Heater	(kW)	0.8	1.1	1.16
Standard head pressure pump option (Twin pump)				
Available Head Pressure	(kPa)	34	116	51
Max. Motor Power Input	(kW)	11	15.0	15.0
Max Amps	(A)	21	29.0	29.0
High head pressure pump option (Twin pump)				
Available Head Pressure	(kPa)	153	135	151
Max. Motor Power Input	(kW)	18.5	18.5	22.0
Max Amps	(A)	35	34.5	39.7

All units : Maximum Short Circuit Rating 35 kA for 0,3 sec

1. Maximum Compressors FLA + All Fans FLA + Control Amps

2. Starting amps of the largest compressor plus RLA of second compressor plus RLA of all fans and control amps

Notes

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