YORK AIRSIDE PRODUCTS

Tailored air conditioning solutions

Introducing the YORK® YPRE range of custom air-to-air packaged roof top units

Johnson Controls

YORK® YPRE RTR/RTP SERIES
Air to air packaged rooftop units
Cooling only and heat pump versions

Refrigerant R407C

- Extreme flexibility
- Cooling range from 110 to 406 kW

Johnson Controls recognizes that large, single packaged units can have a significant impact on a building's energy bill. For that reason, YORK® YPRE units have been designed to address the economic concerns of facility owners and designers.

High-efficiency scroll compressors, multiple-step capacity control, and fully modulating gas heat deliver superior energy performance and better comfort. The microprocessor control ensures the proper quantity of ventilation air, eliminating the cost of conditioning excess air. An airside economizer enables compressor-free cooling when outdoor air is cool and dry, and Variable Speed drives significantly reduce the power consumption of the drive motors. An option for cross flow plate heat exchangers gives added heat recovery and can reduce energy costs even further.

Application Flexibility

Flexible design configurations simplify the design process,making YORK® YPRE units applicable for virtually any building application: commercial buildings, schools, hospitals, and more. Airflow configurations support variable air volume (VAV), changeover/bypass, and constant-volume applications.

Supply-duct connections are configurable in multiple orientations. In addition to cooling-only models, available heating configurations include staged gas, modulating gas, electric resistance and hot water.

YORK
BY JOHNSON CONTROLS

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ROOF-TOP series YORK® YPRE - RTR/RTP

Air to air packaged units with Scroll compressors and refrigerant R407C

The YORK® YPRE series of units have been conceived to be extremely flexible and to offer a wide range of custom- made options.

They are direct expansion packaged air to air units, suitable for outdoor installation, designed for air conditioning of large areas, pre-configured for direct connection to the air distribution ducts.

They represent, therefore, both from the performance and the economical perspective, the ideal solution for the summer cooling and the winter heating of supermarkets, commercial centres, exhibition halls, restaurants, hospital, facilities for food production / conservation and laboratories.

The roof-top units-are available in the following versions:

- **RTR.K** cooling only (refrigerant R407C)
- **RTP.K** reverse cycle heat pump (refrigerant R407C)

The units can be supplied, depending on the different air treatment required, in the following three configurations, as detailed in the following pages:

- **2S** Mixing of re- circulating and external air (2 dampers)
- **3S** Mixing of re-circulating and fresh air and discharge of the exhaust air through a suitable fan (3 dampers)
- **TR** All re-circulating air (no mixing between re-circulating and external air)

In order to allow the installation of these units in an increased range of applications and to conform with regulations concerning the energy saving, the following options can be installed on the units:

- Cross-flow heat recovery.
- Air heating by gas fired burner.
- Air heating by water coil, with supplementary gas boiler.

Main Components

The **structure** is comprised of a base-frame made in carbon steel profiles, protected against corrosion by an epoxy powder primer, kiln-polymerized, painted with polyester powder.

The structural frame is made from aluminium profiles and complete with aluminium panels; the internal division plates are made of galvanized steel.
The external panels of the sections in contact with the treated air are of 50mm thickness sandwich type with the internal surface in galvanized steel plate, insulated by a high-density foam polyurethane sheet. The parts of the base-frame and the internal steel plates in contact with the conditioned air -are thermally insulated with close-cell insulating material. The external panels can be easily dis mantled, so to allow access to internal components. The customer can gain to the main components of the cooling circuits, to the air filters and to the control panel through hinged doors and ¼ turn closures, to make the maintenance operations easier.

The **compressors** are of high efficiency scroll hermetic type, with in-built protection against high temperature, installed on rubber-type vibration dampers and provided with crankcase heater.

The **air treatment** coils are made of copper pipes suitable for refrigerant media, and high efficiency aluminium fins. There is a stainless steel grade 304 drip pan for the internal refrigerant coil.

The **external heat exchange coils** are also made of copper pipes and high efficiency aluminium fins.

Filtering section made of washable pleated filters in polyester with G4 metal frame (in conformity with EN779:2002 standard); the filter cells are easily removable, through a hinged opening door, for periodical cleaning and/or replacement.

Air outlet fan section with DIDW forward curved centrifugal fans, statically and dynamically balanced, installed on rubber-type vibration dampers. The fans are driven, through belt and pulley transmissions, by 4-pole tri-phase electrical motors on slides; the motor pulley is of variable diameter type. It is also provided with a device to switch off the unit in case of accidental stoppage of the fan.

Fans for condensing coils are of axial type with high aerodynamic efficiency blades directly joined to electrical motors suitable for fans speed regulation. The motor are provided with in-built thermal protection. An external mesh protection fitted for safety.

The units are supplied with **two cooling circuits** to increase their reliability and to adjust the cooling capacity to the exact requirements, keeping a high energy efficiency. Each circuit is made by a thermostatic expansion valve with external equalizer, liquid sight glass, safety valve, high and low pressure switches; in case of heat pump version, besides the above components, there are also a liquid receiver with shut-off valve, an additional thermostatic valve for winter operation, the 4-way valve for the cycle inversion and check valves on the liquid line.

Electrical control panel compliant to CE standard, complete with door interlock isolator, fuses for compressors, remote control switches, protection switches for the centrifugal fans motor, low voltage auxiliary circuit and terminal board.

All units are provided with electronic **microprocessor** to automatically manage all the functions of control, status alarm and diagnostics.

The units are supplied complete with R407C refrigerant charge and non-freezing oil. Before delivery, all units are factory tested.

The units are made in conformity with the European standards in force (regarding Low voltage Directive, Electromagnetic compatibility Directive, PED Directive and Machine Directive).

Possible Configurations

Mixing of return and external air, version 2S

This configuration allows the mixing of the ambient return air with the external air. There is an adjustable damper on the external air inlet for correct mixing; the damper is pre-arranged for motorization.

Usually this damper is ducted; alternatively, it is possible, on demand, to supply weatherproof protection. On the return air inlet there is a damper, also pre-arranged for motorization.

Mixing of return and external air with exhaust section, version 3S

The version 3S is similar to the previous one, with an additional section and a centrifugal fan.

The unit is provided with two dampers for the discharge of the exhaust air and for the inlet of the fresh air, plus a third internal damper for the re-circulating air.

The three dampers are controlled by motors, allowing, the operation with all re-circulating air, with a mixing of re-circulating air and external air or with all external air and total exhaust of the ambient return air.

The control of the dampers can be managed by an external signal 0-10V, or on demand, according to the thermo-hygrometric conditions (free-cooling operation) or to the quality of the internal air.

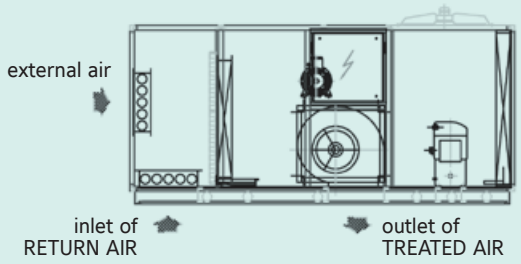
All re-circulating air with no mixing, version TR

This is the basic version on which the 2S and 3S versions are based. The unit is pre-arranged for the air inlet directly from the ambient space.

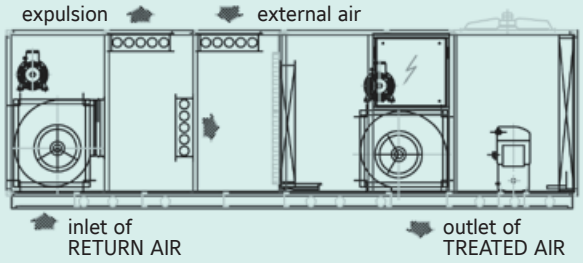
As an alternative to all air to air units, it is possible to provide water to air units, with external refrigerant/ water exchangers, for use in water loop plants (please contact your local Sales Dept.).

On demand, the fans of the external coils could be of ductable type so to allow the indoor installation (please contact your local Sales Dept.)

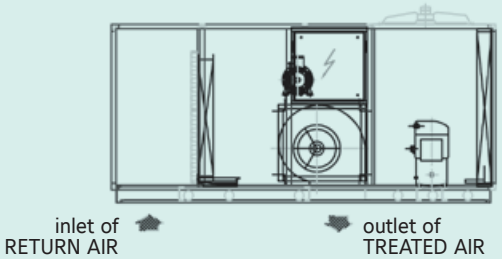
Mixing of ambient and external air, version 2S



Mixing of ambient and external air with exhaust section, version 3S



All re-circulating air with no mixing, version TR



Available Options

1M / 2M – CENTRIFUGAL FANS FOR HIGHER SYSTEM PRESSURES

In case of ducts with high pressure drops, it is necessary to increase the available pressure to the inlet and outlet centrifugal fans, increasing the power of the electrical motor and consequently adjusting the transmission.

AF – CLOGGED FILTER ALARM

A suitable differential pressure switch detects an excessive pressure drop on the air filters due to their dirty condition; the control system of the unit displays the problem, without switching off the unit.

AFL – SMOKE ALARM

In case of smoke, detected by an optical sensor, the unit is switched off and the motorized dampers will be suitably positioned.

BC – HEATING WITH WATER COIL

Coil with copper pipes, aluminium fins and copper manifolds, used for winter heating, The coil is fed by external hot water through a suitable 3-way mixing valve, controlled by the microprocessor.

BC1 – WATER POST-HEATING COIL

Coil with copper pipes, aluminium fins and copper manifolds, located after the evaporating coil; this coil is used to keep the air temperature within the requested value, when the evaporator is used to reduce the supply air relative humidity. The coil is fed by external hot water through a suitable 3-way mixing valve, controlled by the microprocessor.

BG – HOT GAS POST-HEATING COIL

Coil with copper pipes, aluminium fins and copper manifolds; this coil is used to re-adjust the air temperature to the requested value, when the evaporator is used to reduce the supply air relative humidity.

The coil is supplied by the hot gas coming out from the compressor, through a solenoid valve controlled by the microprocessor, therefore there is no need for external heating sources.

BT – REGULATION OF CONDENSING PRESSURE

device for the regulation of the condensing pressure, through the control of the fans speed rotation. In case of cooling operation, the phase regulation electronic equipment reduces the external fans speed rotation when the condensing pressure decreases, so as to allow suitable working conditions. Also suitable for use for low external air temperatures.

F – FREE-COOLING OPERATION

On the base of the comparison between the internal and the external temperature, the microprocessor controls the motorized dampers, to use, in the best way, the energy in the external air so to satisfy the heating loads. In this way, the working time of the compressors and of the external fans is remarkably reduced and, as a consequence, also the electrical consumption.

On demand, it is possible to use **enthalpic** control of free-cooling, so to use the external air for controlling the internal relative humidity, when possible. **Where the unit is also equipped with heat recovery, the standard version will be provided with 3 dampers. On demand, it is possible to supply a 5 damper version.**

FT – BAG FILTERS

Rigid bag filters with filtering efficiency F7 (in conformity with EN779:2002), complete with G4 pre-filters (in conformity with EN779:2002). The filters are placed at the inlet of the air treatment coil, so to assure a high filtering efficiency, without too high pressure drops. However, note that the length of the unit increases by 500 mm.

F5 – F5 PLEATED FILTERS

Glass fibre washable pleated filters with F5 metal frame (in conformity with EN779:2002). The filters are placed at the inlet of the air treatment coil, instead of the standard G4 filters.

H – HUMIDIFIER
Steam production equipment of immersed electrode type device, installed inside the unit and controlled by the microprocessor on a ON/OFF basis, to maintain the value of the treated air relative humidity within the pre-set limits. The steam produced by this equipment is distributed into the unit through a suitable sparge pipe.

IH – RS 485 SERIAL INTERFACE
Electronic card allowing the connection of the unit to a BMS supervision system, to allow complete control from a remote working station. On demand, it is possible to connect the unit to supervision systems with different communication protocols.

MS – MOTORIZED DAMPERS
Motor controlled by an external 0-10V.

MTB – HEATING SECTION WITH GAS FIRED HEATING COIL
Additional in-built section, where one or more heating modules of forced draft type are installed, each made of a gas fired burner and an air/smoke steel exchanger. This module will heat the air to be introduced in the space, the air passes through the heat exchanger. For the heat pump version this module can be used as an additional heating section or, as an alternative to the heat pump itself. This section is manufactured in conformity with the regulations in force.

MTC – HEATING SECTION WITH BOILER
Additional in-built section, where one or more boilers of watertight condensing type are installed, producing hot water necessary to supply, through a close circuit, a heating coil. The water circuit is complete with circulator, non return and check valves. This section is manufactured in conformity with the regulations in force.

PA – RUBBER-TYPE VIBRATION DAMPERS
Kit of rubber-type vibration dampers, to be placed between the base-frame and the supporting surface, suitably selected to isolate the vibrations produced during the unit operation.

PM – SPRING-TYPE VIBRATION DAMPERS
Kit of metal vibration dampers, to be placed between the base-frame and the supporting surface, more efficiently than the rubber-type dampers, so to isolate the vibrations produced during the unit operation.

PQ – REMOTE MICROPROCESSOR
Additional display for controlling the unit from a remote working station.

RC – CROSS-FLOW HEAT RECOVERY
Cross-flow static heat exchanger with aluminium plates, installed in a suitable section of the unit, so to partially allow the transfer to the fresh air of the heating load present in the exhaust air, increasing the energy efficiency of the unit. The exchanger has no moving components and therefore there is no energy consumption: the two air flows involved are hermetically divided and therefore there is no possibility of mixing.

The condensing water is collected in stainless steel drain pans and externally discharged. A bypass damper is positioned side by side to the heat recovery. **On demand, the heat recovery section can be supplied in the 5 dampers version.**

RE – ELECTRICAL POST-HEATING COIL
Electrical heaters with carbon steel finning, placed after the evaporating coil; the electrical heaters are used to readjust the air temperature to the requested value, when the evaporator is used to lower the relative humidity in the supply air. The coil is supplied via the electrical board of the units and it is controlled by the microprocessor on a several step basis.

VS - SOLENOID VALVE
Electrovalve for the liquid refrigerant at the compressor's stop.

Features of microprocessor

Microprocessor	standard	MP
Remote ON/OFF volt free contact	✓	✓
Codes menu	✓	NO
Multilanguage menu	NO	✓
Signal of common alarm	✓	✓
History of alarms	NO	✓
Automatic self-analysis of the electronic device	✓	✓
Display of compressors / circuits alarms	✓	✓
Display of unit general alarms	✓	✓
Display of ambient air temperature	✓	✓
Display of outlet air temperature	OPT	OPT
Display of external air temperature	OPT	OPT
Display of internal and external humidity	OPT	OPT
Display of CO2 sensor	OPT	OPT
Proportional regulation on the ambient air temperature	✓	✓
Start-up of compressors in series	✓	✓
Control of compressors start-up, hour and timing	✓	✓
Compressors functioning hour-counter	NO	✓
Balancing of the compressors working hours	✓	✓
Internal watch in real time	NO	OPT
Programmable timer function	NO	OPT
Continous regulation of the condensing fans	OPT	OPT
Pre-arrangement for remote keypad	✓	✓
Function without keypad on board	✓	✓
Availability of the protocol specifications	NO	✓
Interface with Metasys Johnson Controls	NO	OPT
Interface with ModBus protocol	OPT	OPT
Interface with Bacnet protocol	NO	OPT
Interface with LonWorks network	NO	OPT
Interface with Trend network	NO	OPT
Interface with Ethernet TCP/JP network	NO	OPT
Free cooling in temperature (only cooling)	OPT	OPT
Free cooling in temperature (only heating)	OPT	OPT
Enthalpic free cooling (only cooling)	OPT	OPT
Dehumidification in cooling	OPT	OPT
Post-heating with hot water	OPT	OPT
Post-heating with electric heaters	OPT	OPT
Hot gas post-heating	OPT	OPT
Control of hot water valve	OPT	OPT
Control of electric heaters	OPT	OPT
Control of humidifier in winter operation	OPT	OPT
Control of air differe ntial pressure switch	✓	✓
Set point compensation on the external air	OPT	OPT
Clogged filter alarms	OPT	OPT
Boiler	OPT	OPT
Motorized dampers	OPT	OPT
Cross flow heat recovery	OPT	OPT
Gas fired burner	OPT	OPT
Summer/ winter switch from external contact (only RTP)	✓	✓
Control of defrost cycles (only RTP)	✓	✓

Supervision systems

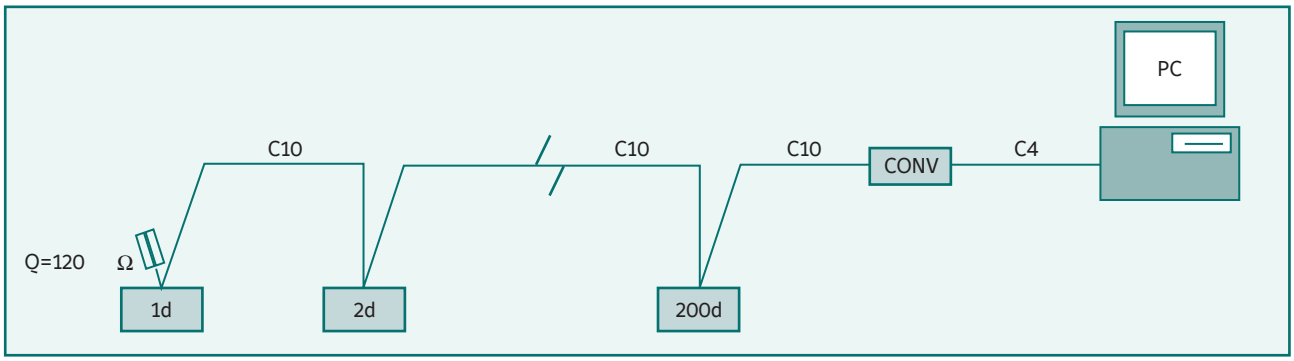
The units can be pre -arranged to be integrated in BMS supervision systems, according to the required communication protocol (to be indicated in the order), so to make possible their control from a remote workstation.

On demand, it is possible to provide a complete supervision system, complete as per the following description.

The management software and the system control is installed on a PC which, working as a web server, allows easy access to the information concerning the system and, consequently, allows them to be controlled in a simple and flexible way.

Through the supervision PC, it is possible:

- to display temperature, humidity, pressure measured on the single units;
- to display the working parameters of the single units;
- to display the status of the single units and of the main components (compressors, fans, pumps, etc);
- to change the set point and working conditions of the single units;
- to switch on/off the single units;
- to record the value of the main working parameters of the units, to store, to display and to print them;



PC - Computer with serial interface RS232 **CONV** – Serial converter

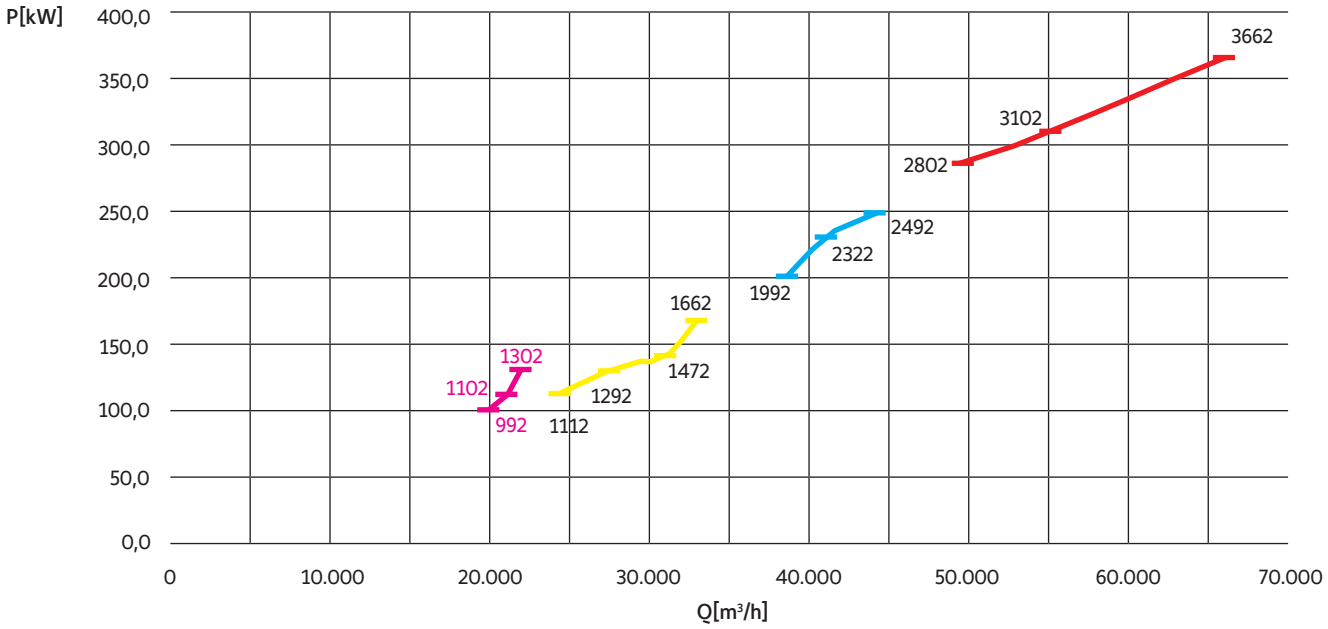
RS232/ RS485 **C4** – Computer connection cable – serial converter (max length 2,5 m) **C10** – Connection cable converter –microprocessors **Q**=120 Ohm ¼ W – Closing resistance of the serial line (n)d – Microprocessors equippe d with serial interface RS 485

The communication between the PC (to which you must connect the above converter) and the units takes place through a local RS485 network, up to a max distance of 1.000 m.

The management software allows to control, via PC the main parameters of the units in network (up to 200 pcs), also of different type (roof top, chillers, heat pumps, direct expansion and chilled water close control units, etc..).

- to memorize the alarms of the single units, so to consult and print type, hour and date of the alarm, time of its eventual reset;
- to manage the back-up of the system data;
- to program the actions to be taken in case of alarm, depending on the time band;
- to arrange, according to specified conditions, the sending of fax, SMS, e-mail, etc, through a traditional modem or GSM;
- to manage a similar system on remote PC for distant supervision of other units

Quick selection chart



Q [m³/h] Treated air flow P [kW] Total cooling capacity

Nominal performances

Cooling Only - Size	RTR	992	1102	1302	1292	1 472	1 662
Versions 2S - 3S							
Total cooling capacity (1)	kW	110	123	144	143	155	184
Sensible cooling capacity (1)	kW	66,8	72,3	83,7	84,2	91,5	113
Input power of compressors (1)	kW	30,7	36,8	39,9	41,4	46,8	51,2
Compressors absorbed current (1)	A	51	64	65	72,4	80,1	86,3
Versions 2S - 3S							
Total cooling capacity (2)	kW	119	133	156	155	168	199
Sensible cooling capacity (2)	kW	62,4	67,6	78,3	78,7	85,6	106
Input power of compressors (2)	kW	31,5	37,8	41	42,6	48,2	52,7
Compressors absorbed current (2)	A	53	66	67	75	82	89
Versions 2S-3S-TR							
Total cooling capacity (3)	kW	99,4	111	130	129	140	166
Sensible cooling capacity (3)	kW	72,6	78,6	91	91,5	99,5	123
Input power of compressors (3)	kW	29,2	35	38	39,4	44,6	48,8
Compressors absorbed current (3)	A	49	61	63	70	77	83
Compressors	nr. / type	2 / sll	2 / sll-t	2 / sll		2 / sll-t	
Cooling circuits	nr.	2	2	2	2	2	2
Capacity steps	nr.	2	4	2	4	4	4
Refrigerant		R407C					
Refrigerant charge per circuit (1-2-3)	kg	13	16	22	17	17	24

Heat Pump - Size	RTP	992	1102	1302	1292	1 472	1 662
Heating capacity (4)	kW	94,3	107	123	123	136	158
Input power of compressors (4)	kW	21,5	25,8	28	29	32,8	35,9
Compressors absorbed current (4)	A	39,2	48,9	50	55,4	61,3	66,1
Refrigerant charge per circuit (4)	kg	16	20	26	25	25	31
Fans for treated air	nr./type	1 / centrifugal					
Air flow	mc/h	19.800	20.900	22.000	27.500	30.800	33.000
Available pressure **STANDARD**	Pa	100					
Speed rotation	rpm	645	671	715	556	598	659
Motor power	kW	5,5	5,5	7,5	7,5	11	11
Aborbed current	A	12	12	15,4	15,4	22,4	22,4
Weight of electrical motor	kg	41,9	41,9	51	51	88,5	88,5
Available pressure **(opt. 1M)**	Pa	200					
Speed rotation	rpm	645	749	788	618	659	689
Motor power	kW	5,5	7,5	7,5	7,5	11	11
Aborbed current	A	12	15,4	15,4	15,4	15,4	22,4
Weight of electrical motor	kg	41,9	51	51	51	51	88,5
Available pressure **(opt. 2M)**	Pa	300					
Speed rotation	rpm	801	821	856	686	697	770
Motor power	kW	7,5	7,5	11	11	11	15
Aborbed current	A	15,4	15,4	22,4	22,4	22,4	29
Weight of electrical motor	kg	51	51	88,5	88,5	88,5	106,5
External fans	nr./type	2 / axial		4 / axial			
Air flow	mc/h	37.600	36.000	35.600	49.000	49.000	54.000
Speed rotation	rpm	870	870	870	915	915	915
Motor power	kW	2,2	2,2	2,2	4,2	4,2	4,2
Aborbed current	A	10	10	10	10	10	10
Tot.sound pressure level STD/1M/ 2M (5)	dB(A)	76	76	77	76	77	78
Electrical data							
Standard available pressure							
Max absorbed current	A	86	102	107	113	130	140
Total inrush current -Direct start	A	252	205	291	218	248	280
1M Available pressure							
Max absorbed current	A	86	105	107	113	123	140
Total inrush current -Direct start	A	252	208	291	218	241	280
2M Available pressure							
Max absorbed current	A	89	105	114	120	130	147
Total inrush current -Direct start	A	255	208	298	225	248	287
Power supply	type	400 V / 3ph / 50 Hz +T+N					
Dimensions							
Length - versions 2S and TR	mm	4.400			5.100		
Length - version 3S	mm	6.300			7.540		
Width	mm	2.100			2.300		
Height	mm	1.750			2.100		
Weight versions RTR	kg	1.404	1.586	1.633	1.993	2.108	2.159
Weight version RTP	kg	1.469	1.660	1.708	2.097	2.217	2.270

(1) Ambient air : 27°C / 50% U.R. - External air : 35°C/70% U.R.; 30% fresh air
(2) Ambient air : 27°C / 50% U.R. - External air : 35°C/70% U.R.; 50% fresh air
(3) Inlet air to the internal coil: 27°C / 50% U.R. - External air : 35°C
(4) Ambient air: 20°C - External air : +5°C / 70% U.R.
(5) Average value estimated at 1 m from unit (for versions 2S and TR) in open field according to UNI EN 3746, with ducted outlet fan

Nominal performances

Cooling Only - Size	RTR	1 992	2 322	2 492	2 802	3 102	3 662
Versions 2S - 3S							
Total cooling capacity (1)	kW	221	255	276	317	344	406
Sensible cooling capacity (1)	kW	132	148	160	184	197	233
Input power of compressors (1)	kW	64,1	74,7	84,8	90,3	97,9	123
Compressors absorbed current (1)	A	104	121	137	149	162	205
Versions 2S - 3S							
Total cooling capacity (2)	kW	239	275	299	343	372	439
Sensible cooling capacity (2)	kW	123	138	150	172	184	218
Input power of compressors (2)	kW	65,9	76,8	87,3	92,9	101	126
Compressors absorbed current (2)	A	107	125	141	153	167	211
Versions 2S - 3S - TR							
Total cooling capacity (3)	kW	199	229	249	286	310	366
Sensible cooling capacity (3)	kW	143	161	174	200	214	253
Input power of compressors (3)	kW	61	71,1	80,8	86	93,2	117
Compressors absorbed current (3)	A	100	116	132	143	156	197
Compressors	nr./type	2 / sll-t					
Cooling circuits	nr.	2					
Capacity steps	nr.	4					
Refrigerant	type	R407C					
Refrigerant charge per circuit (1-2-3)	kg.	23	27	30	32	32	40

Heat Pump - Size	RTP	1 992	2 322	2 492	2 802	3 102	3 662
Heating capacity (4)	kW	155	179	196	221	239	288
Input power of compressors (4)	kW	58	67,5	76,8	81,7	88,5	111
Compressors absorbed current (4)	A	95,7	111	127	137	150	189
Refrigerant charge per circuit (4)	kg	38	42	45	47	47	55
Fans for treated air	nr./type	1 / centrifugal					
Air flow	mc/h	38.500	41.000	44.000	49.500	55.000	66.000
Available pressure **STANDARD**	Pa	100					
Speed rotation	rpm	434	465	490	528	479	548
Motor power	kW	11	11	15	15	18,5	30
Aborbed current	A	22,4	22,4	29	29	40	57,3
Weight of electrical motor	kg	88,5	88,5	107	107	121	146
Available pressure **(opt. 1M)**	Pa	200	200	200	200	200	200
Speed rotation	rpm	490	549	538	576	522	581
Motor power	kW	11	15	15	18,5	18,5	30
Aborbed current	A	22,4	29	29	40	40	57,3
Weight of electrical motor	kg	88,5	107	107	121	121	146
Available pressure **(opt. 2M)**	Pa	300					
Speed rotation	rpm	546	574	590	622	562	619
Motor power	kW	15	15	15	18,5	22	37
Aborbed current	A	29	29	29	40	42	69,1
Weight of electrical motor	kg	107	107	107	121	140	207
External fans	nr./type	4 / axial			6 / axial		
Air flow	mc/h	84.000	82.000	80.000	126.000	126.000	120.000
Speed rotation	rpm	870	870	870	870	870	870
Motor power	kW	8	8	8	12	12	12
Aborbed current	A	16,8	16,8	16,8	25,2	25,2	25,2
Tot.sound pressure level STD/1M/2M (5)	dB(A)	78	79	80	82	82	84
Electrical data							
Standard available pressure							
Max absorbed current	A	167	197	210	240	273	333
Total inrush current -Direct start	A	333	381	394	460	493	580
1M Available pressure							
Max absorbed current	A	167	207	210	251	273	333
Total inrush current -Direct start	A	333	391	394	471	493	580
2M Available pressure							
Max absorbed current	A	174	214	210	251	275	344
Total inrush current -Direct start	A	340	398	394	471	495	592
Power supply	type	400 V / 3ph / 50 Hz +T+N					
Dimensions							
Length - versions 2S and TR	mm	6.000			7.150		
Length - version 3S	mm	9.110			10.260		
Width	mm	2.300					
Height	mm	2.500					
Weight versions RTR	kg	2.669	2.757	2.834	3.150	3.217	3.418
Weight version RTP	kg	2.831	2.923	3.004	3.329	3.400	3.610

(1) Ambient air : 27°C / 50% U.R. - External air : 35°C/70% U.R.; 30% fresh air
(2) Ambient air : 27°C / 50% U.R. - External air : 35°C/70% U.R.; 50% fresh air
(3) Inlet air to the internal coil: 27°C / 50% U.R. - External air : 35°C
(4) Ambient air: 20°C - External air : +5°C / 70% U.R.
(5) Average value estimated at 1 m from unit (for versions 2S and TR) in open field according to UNI EN 3746, with ducted outlet fan

Nominal performances – Version 3S – Exhaust Fans

RTR / RTP - Size		992	1102	1302	1292	1472	1662
Fans for treated air	nr./type	1 / centrifugal					
Air flow	mc/h	19.800	20.900	22.000	27.500	30.800	33.000
Available pressure **STANDARD**	Pa	100					
Speed rotation	rpm	470	486	503	443	479	504
Motor power	kW	3	3	4	5,5	7,5	7,5
Aborbed current	A	6,7	6,7	9,4	12	15,4	15,4
Weight of electrical motor	kg	22,4	22,4	30,4	41,9	51	51
Available pressure **(opt. 1M)**	Pa	200					
Speed rotation	rpm	555	569	581	544	564	378
Motor power	kW	4	4	5,5	7,5	11	7,5
Aborbed current	A	9,4	9,4	12	15,4	22,4	15,4
Weight of electrical motor	kg	30,4	30,4	41,9	51	88,5	51
Available pressure **(opt. 2M)**	Pa	300					
Speed rotation	rpm	638	650	657	580	606	622
Motor power	kW	5,5	5,5	5,5	7,5	11	11
Aborbed current	A	12	12	12	15	22	22
Weight of electrical motor	kg	41,9	41,9	41,9	51	88,5	88,5
Tot.sound pressure level. STD/1M/2M (1)	dB(A)	77	77	78	77	78	79
Electrical data							
Standard available pressure							
Max absorbed current	A	93	109	117	125	146	156
Total inrush current -Direct start	A	259	212	301	230	264	296
1M Available pressure							
Max absorbed current	A	95	115	119	125	139	163
Total inrush current -Direct start	A	261	218	303	230	257	303
2M Available pressure							
Max absorbed current	A	101	117	126	136	153	169
Total inrush current -Direct start	A	267	220	310	241	271	309
Power supply	type	400 V / 3ph / 50 Hz +T+N					
Dimensions							
Length	mm	6.300			7.540		
Width	mm	2.100			2.300		
Height	mm	1.750			2.100		
Weight version RTR	kg	1.734	1.916	1.973	2.483	2.608	2.659
Weight version RTP	kg	1.790	1.985	2.039	2.571	2.703	2.755

(1) Average value estimated at 1 m from the unit in open field according to UNI EN 3746, with ducted outlet and inlet fans

Nominal performances – Version 3S – Exhaust Fans

RTR / RTP - Size		1992	2322	2492	2802	3102	3662
Fans for treated air	nr./type	1 / centrifugal					
Air flow	mc/h	38.500	41000	44.000	49.500	55.000	66.000
Available pressure **STANDARD**	Pa	100					
Speed rotation	rpm	313	325	339	366	288	324
Motor power	kW	5,5	5,5	7,5	11	11	15
Aborbed current	A	12	12	15,4	22,4	22,4	29
Weight of electrical motor	kg	41,9	41,9	51	88,5	88,5	107
Available pressure **(opt. 1M)**	Pa	200					
Speed rotation	rpm	398	388	421	342	371	371
Motor power	kW	11	7,5	11	11	15	15
Aborbed current	A	22,4	15,4	22,4	22,4	29	29
Weight of electrical motor	kg	88,5	51	88,5	88,5	107	107
Available pressure **(opt. 2M)**	Pa	300					
Speed rotation	rpm	439	447	453	473	393	416
Motor power	kW	11	11	11	15	15	18,5
Aborbed current	A	22	22,4	22	29	29	40
Weight of electrical motor	kg	88,5	88,5	88,5	106,5	107	121
Tot.sound pressure level. STD/1M/2M (1)	dB(A)	79	79	80	82	83	85
Electrical data							
Standard available pressure							
Max absorbed current	A	179	197	225	263	296	362
Total inrush current -Direct start	A	345	381	409	483	516	609
1M Available pressure							
Max absorbed current	A	183	207	232	274	296	362
Total inrush current -Direct start	A	349	391	416	494	516	609
2M Available pressure							
Max absorbed current	A	196	214	232	280	304	384
Total inrush current -Direct start	A	362	398	416	500	524	632
Power supply	type	400 V / 3ph / 50 Hz +T+N					
Dimensions							
Length	mm	9.110			10.260		
Width	mm	2.300					
Height	mm	2.500					
Weight version RTR	kg	3.351	3439	3.527	3.943	4.065	4.286
Weight version RTP	kg	3.479	3619	3.663	4.091	4.219	4.451

(1) Average value estimated at 1 m from the unit in open field according to UNI EN 3746, with ducted outlet and inlet fans

Airside performance-available pressure correction factors Higher efficiency filters

RTR / RTI	Size	992	1102	1302	1292	1 472	1 662
G4 - thickness 100mm (1)	Pa	22	24	26	19	23	25
F5 - thickness 50 mm (1)	Pa	-98	-106	-114	-85	-100	-110
F5 - thickness 100 mm (1)	Pa	-17	-18	-19	-16	-17	-18
F7 bag type - thickness 300 mm (2)	Pa	-103	-111	-119	-90	-105	-116

RTR / RTI	Size	1 992	2 322	2 492	2 802	3 102	3 662
G4 - thickness 100mm (1)	Pa	20	22	24	29	33	43
F5 - thickness 50 mm (1)	Pa	-88	-96	-106	-126	-146	-190
F5 - thickness 100 mm (1)	Pa	-16	-17	-18	-20	-22	-25
F7 bag type - thickness 300 mm (2)	Pa	-93	-102	-112	-131	-152	-194

Variation of the available pressure in respect of the standard unit with G4 filters (50 mm)

NOTES
(1) The G4 (100 mm), F5 filters and F7 bag filters replace the standard G4 filters (50 mm)
(2) The F7 bag filters are in addition to the standard G4 (50 mm) filters

Heating / post-heating coils

RTR / RTI	Size	992	1102	1302	1292	1 472	1 662
Water heating coil **1R**	Pa	-19	-21	-23	-15	-19	-22
Water heating coil **2R**	Pa	-38	-42	-46	-31	-38	-43
Water heating coil **3R**	Pa	-56	-62	-69	-46	-57	-65
Water post-heating coil	Pa	-19	-21	-23	-15	-19	-22
Gas post-heating coil	Pa	-19	-21	-23	-15	-19	-22

RTR / RTI	Size	1 992	2 322	2 492	2 802	3 102	3 662
Water heating coil **1R**	Pa	-17	-19	-22	-27	-33	-47
Water heating coil **2R**	Pa	-34	-38	-44	-55	-67	-95
Water heating coil **3R**	Pa	-51	-57	-66	-82	-100	-142
Water post-heating coil	Pa	-17	-19	-22	-27	-33	-47
Gas post-heating coil	Pa	-17	-19	-22	-27	-33	-47

Variation of the available pressure in respect of the unit without coil.

Unit option performance data
Hot water heating coils

RTR / RTP	Size	992	1102	1302	1292	1 472	1 662
Air flow	mc/h	19.800	20.900	22.000	27.500	30.800	33.000
1 row coil							
Heating capacity (1)	kW	88,9	91,6	94,3	131	139	144
Water flow rate	mc / h	3,8	3,9	4,1	5,6	6	6,2
Pressure drop (2)	kPa	29	31	33	38	44	47
2 row coil							
Heating capacity (1)	kW	152	157	161	223	238	247
Water flow rate	mc / h	6,5	6,7	6,9	9,6	10,2	10,6
Pressure drop (2)	kPa	37	39	41	37	42	45
3 row coil							
Heating capacity (1)	kW	198	204	210	291	310	322
Water flow rate	mc / h	8,5	8,8	9	12,5	13,3	13,8
Pressure drop (2)	kPa	38	41	43	46	53	57

RTR / RTP	Size	1 992	2 322	2 492	2 802	3 102	3 662
Air flow	mc/h	38.500	41.000	44.000	49.500	55.000	66.000
1 row coil							
Heating capacity (1)	kW	178	184,3	192	204	217	239
Water flow rate	mc / h	7,7	7,92	8,2	8,8	9,3	10,3
Pressure drop (2)	kPa	44	48	51	59	53	52
2 row coil							
Heating capacity (1)	kW	304	315	328	350	370	409
Water flow rate	mc / h	13,1	13,6	14,1	15	15,9	17,6
Pressure drop (2)	kPa	53	57	61	43	48	58
3 row coil							
Heating capacity (1)	kW	397	411	427	456	483	534
Water flow rate	mc / h	17,1	17,7	18,4	19,6	20,8	23
Pressure drop (2)	kPa	37	39	43	48	54	66

Post-heating coils

RTR / RTP	Size	992	1102	1302	1292	1 472	1 662
Water							
Heating capacity (3)	kW	96,1	99	101,8	141	150	156
Water flow rate	mc / h	4,1	4,3	4,4	6,1	6,5	6,7
Pressure drop (2)	kPa	34	36	38	45	51	55
Hot gas							
Heating capacity (4)	kW	72	74,2	76,3	106	113	117

RTR / RTP	Size	1 992	2 322	2 492	2 802	3 102	3 662
Water							
Heating capacity (3)	kW	192	199	207	221	234	259
Water flow rate	mc / h	8,3	8,56	8,9	9,5	10,1	11,1
Pressure drop (2)	kPa	52	56	60	68	61	60
Hot gas							
Heating capacity (4)	kW	144	149	155	166	175	194

(1) Air inlet temperature to the coil 20°C - Hot water: 80/60°C
(2) Pressure drop of the coil included the 3-way mixing valve
(3) Air inlet temperature to the coil as coming from the evaporating coil at nominal conditions
(4) Air inlet temperature to the coil as coming from the evaporating coil at nominal conditions

Electrical heaters

Size		7,5	15	22,5	30
Max Capacity	kW	7,5	15,0	22,5	30,0
Power supply	V/f/hz	400V/3/50			
Max input current	A	10,9	21,7	32,6	43,3
Steps	n.	2			

Size		45	60	75	90
Max Capacity	kW	45,0	60,0	75,0	90,0
Power supply	V/f/hz	400V/3/50			
Max input current	A	65,0	86,6	108	130
Steps	n.	2			

Each size of electrical heater can be installed on all roof-top size

Humidifier

Size		3	8	15	45
Min-max steam production (1) (2)	kg/h	1,5 - 3	5 - 8	10 - 15	25 - 45
Power supply	V/f/hz	230V/1/50	400V/3/50		
Max input power	kW	2,35	6,0	11,35	33,80
Max input current	A	9,8	8,7	16,3	48,8

Each size of humidifier can be installed on all roof-top size
(1) The steam production can be set in the factory at a value between the maximum and the minimum indicated.
(2) For steam production quantity higher than the ones indicated, it is possible to install several humidifers connected in parallel. (Please get in touch with our Sales Dept.)

Cross-flow heat recovery

RTR / RTP	Size	992	1102	1302	1292	1472	1662
Capacity of heat recovery	kW	16,1	17,2	17,2	21,8	25,3	27,6
30% treated air flow	mc/h	5.940	6.270	6.600	8.250	9.240	9.900
Pressure drop of exhaust air	Pa	98	101	111	141	116	137
Pressure drop of fresh air	Pa	95	98	107	135	111	133
Weight of heat recovery	kg	72,4	72,4	72,4	111	176	176
Capacity of heat recovery	kW	29,9	32,2	31,0	39,1	46	44,8
50% treated air flow	mc/h	9.900	10.450	11.000	13.750	15.400	16.500
Pressure drop of exhaust air	Pa	132	138	103	131	132	112
Pressure drop of fresh air	Pa	127	133	100	127	128	108
Weight of heat recovery	kg	202	202	172	205	234	223

RTR / RTP	Size	1992	2322	2492	2802	3102	3662
Capacity of heat recovery	kW	32,2	34,5	36,8	41,4	46	54
30% treated air flow	mc/h	11.550	12.302	13.200	14.850	16.500	19.800
Pressure drop of exhaust air	Pa	95	102	122	144	184	157
Pressure drop of fresh air	Pa	92	98	118	138	177	151
Weight of heat recovery	kg	198	198	198	197	197	215
Capacity of heat recovery	kW	52,9	56,4	56,3	65,5	72,4	85
50% treated air flow	mc/h	19.250	20.504	22.000	24.750	27.500	33.000
Pressure drop of exhaust air	Pa	149	161	164	152	185	277
Pressure drop of fresh air	Pa	143	155	157	147	178	266
Weight of heat recovery	kg	216	216	200	259	259	259

Exhaust air temperature : 20°C, 50% U.R.
Fresh air temperature: 5°C, 70% U.R.

Heat recovery according to the air temperature

DTa (°C)	Size	992	1102	1302	1292	1472	1662
5	kW	5,3	5,7	5,7	7,2	8,3	9,1
10	kW	10,8	11,5	11,5	14,6	17,0	18,5
15	kW	16,1	17,2	17,2	21,8	25,3	27,6
20	kW	21,4	22,9	22,9	29,0	33,6	36,7
25	kW	26,9	28,7	28,7	36,4	42,3	46,1

DTa (°C)	Size	1992	2322	2492	2802	3102	3662
5	kW	10,6	11,4	12,1	13,7	15,2	17,8
10	kW	21,6	23,1	24,7	27,7	30,8	36,2
15	kW	32,2	34,5	36,8	41,4	46,0	54,0
20	kW	42,8	45,9	48,9	55,1	61,2	71,8
25	kW	53,8	57,6	61,5	69,1	76,8	90,2

DTa (°C) = Difference between the exhaust and fresh air temperature

Gas fired burners

RTR / RTP	Size	992	1102	1302	1292	1472	1662
Nominal heating capacity	kW	90	120	120	125	125	150
Pressure drop at the nominal flow	Pa	80	50	55	95	120	100
Length of the burner group	mm	1000	1000	1000	1000	1000	1000
Weight of the burner group	kg	315	395	395	386	386	416

RTR / RTP	Size	1992	2322	2492	2802	3102	3662
Nominal heating capacity	kW	175	175	225	250	300	350
Pressure drop at the nominal flow	Pa	105	105	75	50	50	40
Length of the burner group	mm	1000	1000	1000	1400	1400	1400
Weight of the burner group	kg	473	473	553	675	735	805

Electrical data: Configuration 2S/TR

Size	992	1102	1302	1292	1472	1662
MAX INPUT CURRENT (A)						
Compressor 1	32	40	41	44	49	54
Compressor 2	32	40	41	44	49	54
Single external fan	2,5	2,5	2,5	2,5	2,5	2,5
Outlet fan - std available pressure	12	12	15,4	15,4	22,4	22,4
Outlet fan - 1m available pressure	12	15,4	15,4	15,4	15,4	22,4
Outlet fan - 2 m available pressure	15,4	15,4	22,4	22,4	22,4	29
Total current standard avail. Pressure	86	102	107	113	130	140
Total current 1m avail. Pressure	86	105	107	113	123	140
Total current 2m avail. Pressure	89,4	105	114	120	130	147
INRUSH CURRENT (A)						
Compressor 1	198	143	225	149	123	127
Compressor 2	198	143	225	149	123	127
Single external fan	7,5	7,5	7,5	7,5	7,5	7,5
Outlet fan - std available pressure	69,6	69,6	105	105	21,2	26,1
Outlet fan - 1m available pressure	69,6	105	105	105	21,2	26,1
Outlet fan - 2 m available pressure	105	105	168	168	26,1	31
MAX INPUT CURRENT (A)						
Compressor 1	19	22,8	24,8	24,9	10,4	12,3
Compressor 2	19	22,8	24,8	24,9	10,4	12,3
Single external fan	0,56	0,56	0,56	1,05	1,05	1,05
Outlet fan - std available pressure	5,5	5,5	7,5	7,5	2,2	3
Outlet fan - 1m available pressure	5,5	7,5	7,5	7,5	2,2	3
Outlet fan - 2 m available pressure	7,5	7,5	11	11	3	4
Total power std avail. Pressure	45,7	53,3	59,4	61,5	25,2	29,6
Total power 1m avail. Pressure	45,7	55,3	59,4	61,5	25,2	29,6
Total power 2m avail. Pressure	47,7	55,3	62,9	65	26	30,6
INRUSH CURRENT OF THE UNIT (A)						
Std available pressure	252	205	291	218	153	161
1m available pressure	252	208	291	218	153	161
2m available pressure	255	208	298	225	155	163

Size	1992	2322	2492	2802	3102	3662
MAX INPUT CURRENT (A)						
Compressor 1	64	64	82	93	104	125
Compressor 2	64	82	82	93	104	125
Single external fan	4,2	4,2	4,2	4,2	4,2	4,2
Outlet fan - std available pressure	22,4	22,4	29	29	40	57,3
Outlet fan - 1m available pressure	22,4	29	29	40	40	57,3
Outlet fan - 2 m available pressure	29	29	29	40	42	69,1
Total current standard avail. Pressure	167	185	210	240	273	333
Total current 1m avail. Pressure	167	192	210	251	273	333
Total current 2m avail. Pressure	174	192	210	251	275	344
INRUSH CURRENT (A)						
Compressor 1	167	167	198	143	225	149
Compressor 2	167	167	198	143	225	149
Single external fan	7,5	7,5	7,5	7,5	7,5	7,5
Outlet fan - std available pressure	31	31	69,6	69,6	105	105
Outlet fan - 1m available pressure	69,6	31	69,6	105	105	105
Outlet fan - 2 m available pressure	69,6	69,6	105	105	168	168
MAX INPUT CURRENT (A)						
Compressor 1	16,2	15,9	19	22,8	24,8	24,9
Compressor 2	16,2	15,9	19	22,8	24,8	24,9
Single external fan	1,05	0,56	0,56	0,56	0,56	1,05
Outlet fan - std available pressure	4	4	5,5	5,5	7,5	7,5
Outlet fan - 1m available pressure	5,5	4	5,5	7,5	7,5	7,5
Outlet fan - 2 m available pressure	5,5	5,5	7,5	7,5	11	11
Total power std avail. Pressure	38,6	38	45,7	53,3	59,4	61,5
Total power 1m avail. Pressure	40,1	38	45,7	55,3	59,4	61,5
Total power 2m avail. Pressure	40,1	39,5	47,7	55,3	62,9	65
INRUSH CURRENT OF THE UNIT (A)						
Std available pressure	208	213	252	205	291	218
1m available pressure	211	213	252	208	291	218
2m available pressure	211	216	255	208	298	225

Power supply : 400 V /3F/50 Hz + T + N
The above values do not include any options

Electrical data: Configuration 3S

Size	992	1102	1302	1292	1472	1662
MAX INPUT CURRENT (A)						
Compressor 1	32	40	41	44	49	54
Compressor 2	32	40	41	44	49	54
Single external fan	2,5	2,5	2,5	2,5	2,5	2,5
Outlet fan - std available pressure	12	12	15,4	15,4	22,4	22,4
Outlet fan - 1m available pressure	12	15,4	15,4	15,4	15,4	22,4
Outlet fan - 2 m available pressure	15,4	15,4	22,4	22,4	22,4	29
Inlet fan - std available pressure	6,7	6,7	9,4	12	15,4	15,4
Inlet fan - 1m available pressure	9,4	9,4	12	12	15,4	22,4
Inlet fan - 2m available pressure	12	12	12	15,4	22,4	22,4
Total current standard avail. Pressure	92,7	109	117	125	146	156
Total current 1m avail. Pressure	95,4	115	119	125	139	163
Total current 2m avail. Pressure	101	117	126	136	153	169
INRUSH CURRENT (A)						
Compressor 1	198	143	225	149	167	194
Compressor 2	198	143	225	149	167	194
Single external fan	7,5	7,5	7,5	7,5	7,5	7,5
Outlet fan - std available pressure	69,6	69,6	105	105	168	168
Outlet fan - 1m available pressure	69,6	105	105	105	105	168
Outlet fan - 2 m available pressure	105	105	168	168	168	194
Inlet fan - std available pressure	26,1	26,1	31	69,6	104,7	104,7
Inlet fan - 1m available pressure	31	31	69,6	69,6	104,7	168
Inlet fan - 2m available pressure	69,6	69,6	69,6	105	168	168
MAX INPUT CURRENT (A)						
Compressor 1	19	22,8	24,8	24,9	28,4	31,7
Compressor 2	19	22,8	24,8	24,9	28,4	31,7
Single external fan	0,56	0,56	0,56	1,05	1,05	1,05
Outlet fan - std available pressure	5,5	5,5	7,5	7,5	11	11
Outlet fan - 1m available pressure	5,5	7,5	7,5	7,5	11	11
Outlet fan - 2 m available pressure	7,5	7,5	11	11	11	15
Inlet fan - std available pressure	3	3	4	5,5	7,5	7,5
Inlet fan - 1m available pressure	4	4	5,5	5,5	7,5	11
Inlet fan - 2m available pressure	5,5	5,5	5,5	7,5	11	11
Total power std avail. Pressure	48,7	56,3	63,4	67	79,5	86,2
Total power 1m avail. Pressure	49,7	59,3	64,9	67	79,5	89,7
Total power 2m avail. Pressure	53,2	60,8	68,4	72,5	83	93,7
INRUSH CURRENT OF THE UNIT (A)						
Std available pressure	259	212	301	230	264	296
1m available pressure	261	218	303	230	257	303
2m available pressure	267	220	310	241	271	309

Size	1992	2322	2492	2802	3102	3662
MAX INPUT CURRENT (A)						
Compressor 1	64	64	82	93	104	125
Compressor 2	64	82	82	93	104	125
Single external fan	4,2	4,2	4,2	4,2	4,2	4,2
Outlet fan - std available pressure	22,4	22,4	29	29	40	57,3
Outlet fan - 1m available pressure	22,4	29	29	40	40	57,3
Outlet fan - 2 m available pressure	29	29	29	40	42	69,1
Inlet fan - std available pressure	12	12	15,4	22,4	22,4	29
Inlet fan - 1m available pressure	15,4	15,4	22,4	22,4	22,4	29
Inlet fan - 2m available pressure	22,4	22,4	22,4	29	29	40
Total current standard avail. Pressure	179	197	225	263	296	362
Total current 1m avail. Pressure	183	207	232	274	296	362
Total current 2m avail. Pressure	196	214	232	280	304	384
INRUSH CURRENT (A)						
Compressor 1	230	230	266	313	324	373
Compressor 2	230	266	266	313	324	373
Single external fan	12,6	12,6	12,6	12,6	12,6	12,6
Outlet fan - std available pressure	168	168	194	194	224	361
Outlet fan - 1m available pressure	168	194	194	224	224	361
Outlet fan - 2 m available pressure	194	194	194	224	273	449
Inlet fan - std available pressure	69,6	69,6	104,7	168	168	194,3
Inlet fan - 1m available pressure	104,7	105	168	168	168	194,3
Inlet fan - 2m available pressure	168	168	168	194	194,3	224
MAX INPUT CURRENT (A)						
Compressor 1	39	39	50	55,9	62	74,3
Compressor 2	39	50	50	55,9	62	74,3
Single external fan	2	2	2	2	2	2
Outlet fan - std available pressure	11	11	15	15	18,5	30
Outlet fan - 1m available pressure	11	15	15	18,5	18,5	30
Outlet fan - 2 m available pressure	15	15	15	18,5	22	37
Inlet fan - std available pressure	5,5	5,5	7,5	11	11	15
Inlet fan - 1m available pressure	7,5	7,5	11	11	11	15
Inlet fan - 2m available pressure	11	11	11	15	15	18,5
Total power std avail. Pressure	103	114	131	150	165	206
Total power 1m avail. Pressure	105	120	134	153	165	206
Total power 2m avail. Pressure	112	123	134	157	173	216
INRUSH CURRENT OF THE UNIT (A)						
Std available pressure	345	381	409	483	516	609
1m available pressure	349	391	416	494	516	609
2m available pressure	362	398	416	500	524	632

Power supply: 400 V /3F/50 Hz + T + N / The above values do not include any options

Sound levels of the centrifugal fans

STANDARD Available pressure

Outlet fans

Size	N° Fan	Air flow rate m³/h	Sound power (1) dB(A)	Octave band (Hz)							
				63	125	250	500	1000	2000	4000	8000
				Sound power level (dB)							
992	1	19.800	83	91,4	88,6	82,6	80,5	76,5	75,5	71,2	66,4
1102	1	20.900	85	92,6	89,6	83,4	81,9	77,6	76,6	72,6	67,8
1302	1	22.000	86	94,6	91	84,4	83,6	78,8	77,7	74	69,3
1292	1	27.500	86	94	92	84,7	84,4	77,9	76,4	72	67
1472	1	30.800	88	95,5	94,4	85,9	87,7	80,4	78,8	74,7	70,1
1662	1	33.000	90	98	96,6	87,3	89,6	82,2	80,3	76,6	72,1
1992	1	38.500	84	96,9	87,4	87,3	80,8	76,9	74,5	68,8	63,9
2322	1	41.000	85	98,7	89,7	88,4	83,5	78,2	76,2	70,5	65,3
2492	1	44.000	88	100,7	92	89,5	85,9	79,7	78	72,4	67
2802	1	49.500	91	103,8	95,6	91,4	88,9	82,1	80,7	75,5	69,9
3102	1	55.000	92	103,9	96,1	94,3	89,8	83,9	81,8	76,2	70,9
3662	1	66.000	96	107,4	101,2	97,1	94,8	87,1	85,6	80,4	74,8

Inlet fans

Size	N° Fan	Air flow rate m³/h	Sound power (2) dB(A)	Octave band (Hz)							
				63	125	250	500	1000	2000	4000	8000
				Sound power level (dB)							
992	1	19.800	81,7	81,6	79	80,2	77,4	75,8	75,6	70,8	66,5
1102	1	20.900	82,9	82,5	80,4	81,1	78,6	76,9	77	72,2	68
1302	1	22.000	84,1	83,3	81,9	82	79,8	78	78,2	73,5	69,3
1292	1	27.500	84,2	87,2	84,9	84	81,3	77,9	76,8	72,3	67,3
1472	1	30.800	87	88,9	88,8	85,3	84,7	80,5	79,7	75,3	70,6
1662	1	33.000	88,7	90,1	91	86,1	86,8	82,1	81,4	77,2	72,6
1992	1	38.500	82,1	89,6	82,7	84,4	77,3	76,9	74	67,6	63
2322	1	41.000	83,6	91,2	83,8	85,2	78,9	78,5	75,8	69,5	64,9
2492	1	44.000	85,3	92,9	85,1	86,1	80,7	80,3	77,8	71,7	67
2802	1	49.500	88	95,7	87	88	83,5	83	80,8	75,5	70,3
3102	1	55.000	87,9	93,5	89	88,7	83,7	83	80	73,6	68,9
3662	1	66.000	92,1	99,2	92,3	91,8	87,6	87,3	84,8	78,6	74

The sound power values have been taken from the technical literature of the supplier
(1) Outlet
(2) Inlet

1M Available pressure

Outlet fans

Size	N° Fan	Air flow rate m³/h	Sound power (1) dB(A)	Octave band (Hz)							
				63	125	250	500	1000	2000	4000	8000
				Sound power level (dB)							
992	1	19.800	84,7	95,1	90,8	83,8	82,5	77,5	76	72,2	67,5
1102	1	20.900	85,7	96,1	91,6	84,5	83,5	78,4	76,9	73,2	68,6
1302	1	22.000	86,9	97,3	93	86	84,7	79,8	77,9	74,6	70
1292	1	27.500	86,5	98,7	93,2	84,9	85,4	78,4	76,4	72,3	67,4
1472	1	30.800	88,9	99,2	95,6	86,7	88	80,8	78,8	74,9	70,3
1662	1	33.000	90,5	100,8	97,7	88,5	89,5	82,5	80,3	76,8	72,3
1992	1	38.500	85,8	97,8	90,3	88	84	77,7	75,8	70,1	64,7
2322	1	41.000	88,1	99,5	94,2	89,3	86,8	79,5	77,8	72,6	67
2492	1	44.000	88,7	100,3	93,9	90	87,5	80	78,5	73,2	67,6
2802	1	49.500	91,1	102,6	96,9	91,8	90,2	82,1	80,8	75,9	70,2
3102	1	55.000	93,1	104,6	98,9	94,7	91,4	84,7	82,9	77,4	71,8
3662	1	66.000	96,8	107,8	103,1	97,4	95,7	87,8	86,3	81,4	75,7

Inlet fans

Size	N° Fan	Air flow rate m³/h	Sound power (2) dB(A)	Octave band (Hz)							
				63	125	250	500	1000	2000	4000	8000
				Sound power level (dB)							
992	1	19.800	81,7	80,7	81,7	80,3	78,1	75,6	75,2	70,6	65,8
1102	1	20.900	82,9	81	82,8	81,1	79,3	76,9	76,5	72	67,4
1302	1	22.000	84,1	81,3	83,7	81,9	80,3	78,1	77,8	73,4	68,9
1292	1	27.500	84,6	84,8	87,3	83,9	83,3	77,4	76,3	71,7	66,8
1472	1	30.800	87,2	86,7	89,6	84,9	86,2	80,1	79	74,8	70,1
1662	1	33.000	88,8	88,3	91,1	85,7	87,8	81,8	80,7	76,7	72,1
1992	1	38.500	82,5	90,5	84,6	85,2	78,2	76,5	74	67,9	63
2322	1	41.000	83,9	92,2	85	86,7	79,6	78	75,6	69,5	64,6
2492	1	44.000	85,5	94,1	85,3	88,8	81,1	79,6	77,3	71,3	66,4
2802	1	49.500	88,1	96,9	87	90,4	84,3	82,1	80,1	74,4	69,4
3102	1	55.000	88,3	96,1	89,7	91,2	83,6	82,6	79,8	73,6	69
3662	1	66.000	92,2	100,7	91,1	95	87,5	86,6	84,1	78,1	73,3

The sound power values have been taken from the technical literature of the supplier
(1) Outlet
(2) Inlet

2M Available pressure

Outlet fans

Size	N° Fan	Air flow rate m³/h	Sound power (1) dB(A)	Octave band (Hz)							
				63	125	250	500	1000	2000	4000	8000
				Sound power level (dB)							
992	1	19.800	86,5	97,2	92,8	85,9	84,5	79,1	76,9	73,8	69,2
1102	1	20.900	87,3	97,8	93,7	86,7	85,2	80	77,7	74,8	70,2
1302	1	22.000	88,4	98,6	94,9	88	86,2	81,2	78,6	76,1	71,4
1292	1	27.500	87,5	103,9	95,2	86,2	85,6	78,9	76,5	72,9	68,2
1472	1	30.800	89,6	103	97,4	88	88,1	81,3	79	75,5	71
1662	1	33.000	91,3	104,3	99,6	89,6	89,7	83	80,5	77,3	73
1992	1	38.500	87,3	98,5	93,8	88,5	85,7	78,8	76,9	71,7	66,1
2322	1	41.000	88,7	99,7	95,6	89,6	87,3	80	78,3	73,3	67,6
2492	1	44.000	90	100,9	96,8	90,6	88,8	81	79,5	74,6	68,9
2802	1	49.500	92,2	102,8	99,1	92,2	91,4	82,8	81,5	76,9	71,2
3102	1	55.000	94,1	105,1	101,2	95,2	92,5	85,4	83,6	78,5	72,9
3662	1	66.000	97,6	108,1	105	97,9	96,6	88,5	87	82,3	76,6

Inlet fans

Size	N° Fan	Air flow rate m³/h	Sound power (2) dB(A)	Octave band (Hz)							
				63	125	250	500	1000	2000	4000	8000
				Sound power level (dB)							
992	1	19.800	82,6	82,7	84,2	80,9	79,9	76,3	75,5	71,2	66,4
1102	1	20.900	83,5	83,1	84,7	81,5	80,9	77,2	76,5	72,3	67,6
1302	1	22.000	84,3	83,4	85,1	81,9	81,7	78	77,3	73,3	68,6
1292	1	27.500	85,1	87,3	88,5	83,2	84,3	77,9	76,3	72	67,1
1472	1	30.800	87,7	87,5	90,3	84,3	87,3	80,3	78,8	74,7	70,1
1662	1	33.000	89,2	87,3	91,4	84,8	89,1	81,7	80,3	76,3	71,9
1992	1	38.500	83,6	90,6	84,7	86,5	80,8	76,9	74,6	68,8	63,9
2322	1	41.000	84,9	92,3	86,4	87,2	82,3	78,1	76,1	70,4	65,2
2492	1	44.000	86,2	94,2	88,1	87,9	83,7	79,5	77,6	72	66,7
2802	1	49.500	88,7	97,1	90,5	89,5	86,6	81,9	80,3	74,9	69,4
3102	1	55.000	89	96,9	90,4	92,2	84,8	82,9	80,3	74,3	69,5
3662	1	66.000	92,7	101,3	93,2	95,1	88,9	86,6	84,5	78,7	73,5

The sound power values have been taken from the technical literature of the supplier
(1) Outlet
(2) Inlet

Unit performance data at varying air conditions

Cooling performances

Size	"Ta / hr (1)"	EXTERNAL AIR TEMPERATURE (°C)																	
		25			30			32			35			40			43		
		QF	QS	QE	QF	QS	QE	QF	QS	QE	QF	QS	QE	QF	QS	QE	QF	QS	QE
992	22 / 50%	101,3	101,3	19,6	94,9	94,9	24,2	92,1	92,1	26,2	87,9	87,9	29,2	82,1	82,1	33,3		-	
	24 / 50%	106,3	93,5	19,7	99,8	87,9	24,2	97,1	85,5	26,2	92,8	81,7	29,2	87,1	76,6	33,3		-	
	26 / 50%	111	85,5	19,7	104,5	80,5	24,2	101,8	78,4	26,2	97,5	75,1	29,2	91,8	70,7	33,3		-	
	27 / 50%	112,9	82,4	19,7	106,4	77,7	24,2	103,7	75,7	26,2	99,4	72,6	29,2	93,7	68,4	33,3		-	
	28 / 50%	114,4	78,9	19,7	107,9	74,4	24,3	105,2	72,6	26,2	101	69,6	29,2	95,1	65,6	33,3		-	
	30 / 50%	117,3	72,7	19,7	110,9	68,7	24,3	108,1	67,1	26,2	104	64,4	29,2	98,1	60,8	33,3		-	
1102	22 / 50%	122	122	25,3	106,4	106,4	29,9	100,9	100,9	31,9	93,7	93,7	35	83,1	83,1	38,1	76,3	76,3	40,5
	24 / 50%	129	113,5	25,3	113,6	100	29,9	108,1	95,1	31,9	101	88,9	35	90,3	79,5	38,1	83,5	73,4	40,5
	26 / 50%	136	104,8	25,3	120,5	92,8	29,9	115	88,5	31,9	108	83,2	35	97,2	74,9	38,1	90,4	69,6	40,5
	27 / 50%	139	101,4	25,3	123,3	90	29,9	117,7	85,9	31,9	111	80,9	35	100	73	38,1	93,1	68	40,5
	28 / 50%	141	97,2	25,3	125,3	86,5	29,9	119,8	82,6	31,9	113	77,9	35	102	70,4	38,1	95,2	65,7	40,5
	30 / 50%	145	90,1	25,3	129,6	80,4	29,9	124,1	76,9	31,9	117	72,7	35	106,3	65,9	38,1	99,5	61,7	40,5
1302	22 / 50%	140	140	29,4	128	128	34	123	123	35,9	117	117	38	105,6	105,6	42,1	98,9	98,9	44,5
	24 / 50%	147	129	29,4	134	118	34	129	114	35,9	123	108,5	38	112,1	98,6	42,1	105,4	92,8	44,5
	26 / 50%	152	117	29,4	139	107,1	34	134	103,1	35,9	128	98,6	38	116,8	90	42,1	110,2	84,8	44,5
	27 / 50%	154	112	29,4	141	103	34	136	99,2	35,9	130	94,9	38	118,9	86,8	42,1	112,2	81,9	44,5
	28 / 50%	156	107,4	29,4	143	98,7	34	138	95,1	35,9	132	91,1	38	120,8	83,4	42,1	114,1	78,8	44,5
	30 / 50%	159	98,7	29,4	147	90,9	34	141	87,6	35,9	135	84	38	124,3	77,1	42,1	117,6	72,9	44,5
1292	22 / 50%	136	136	29,8	123	123	34,4	118	118	36,4	109	109,1	39,4	98,5	98,5	43,2	91,7	91,7	45,7
	24 / 50%	146	125	29,8	133	114	34,4	127	109,4	36,4	119	102	39,4	108,1	93	43,2	101,3	87,1	45,7
	26 / 50%	153	118	29,8	140	107,6	34,4	134	103,4	36,4	126	96,8	39,4	115,2	88,7	43,2	108,4	83,4	45,7
	27 / 50%	156	114	29,8	143	104,5	34,4	138	100,5	36,4	129	94,3	39,4	118,6	86,6	43,2	111,8	81,6	45,7
	28 / 50%	159	109,8	29,8	146	100,9	34,4	141	97,2	36,4	132	91,3	39,4	121,7	84	43,2	114,9	79,3	45,7
	30 / 50%	165	102,2	29,8	152	94,2	34,4	146	90,8	36,4	138	85,5	39,4	127,3	78,9	43,2	120,5	74,7	45,7
1472	22 / 50%	147	147	32,6	134	134	38,3	128	128	40,7	119	119	44,6	108,1	108,1	49,1		-	
	24 / 50%	157	135	32,6	144	124	38,3	138	119	40,7	129	111,1	44,6	118,5	101,9	49,1		-	
	26 / 50%	165	127	32,6	151	117	38,3	146	112,2	40,8	137	105,3	44,6	126	97	49,1		-	
	27 / 50%	169	123	32,6	155	113,3	38,3	149	109,1	40,8	140	102,5	44,6	129,7	94,7	49,1		-	
	28 / 50%	172	119	32,6	159	109,4	38,3	153	105,5	40,8	144	99,3	44,6	133,1	91,9	49,1		-	
	30 / 50%	178	110,4	32,6	165	102,1	38,3	159	98,6	40,8	150	93	44,6	139,2	86,3	49,1		-	
1662	22 / 50%	188	188	39,3	172	172	43,9	165	165	45,8	155	155	48,8	141	141	52,7	133	133	55,2
	24 / 50%	194	167	39,3	178	153	43,9	171	147	45,8	161	138	48,8	147	126	52,7	138	119	55,2
	26 / 50%	198	152	39,3	181	140	43,9	175	135	45,8	164	126	48,8	150	116	52,7	142	109,2	55,2
	27 / 50%	199	146	39,3	183	134	43,9	177	129	45,8	166	121	48,8	152	111,1	52,7	144	104,8	55,2
	28 / 50%	201	139	39,3	185	128	43,9	178	123	45,8	168	116	48,8	154	106,2	52,7	145	100,3	55,2
	30 / 50%	204	127	39,3	188	117	43,9	181	112,5	45,8	171	106	48,8	157	97,4	52,7	149	92,1	55,2
1992	22 / 50%	206	206	48,5	192	192	54,5	187	187	57	177	177	61	166	166	66		-	
	24 / 50%	216	186	48,5	202	174	54,5	197	169	57	188	161	61	176	152	66		-	
	26 / 50%	225	173	48,5	211	163	54,5	205	158	57	196	151	61	185	142	66		-	
	27 / 50%	228	166	48,5	214	156	54,5	208	152	57	199	145	61	188	137	66		-	
	28 / 50%	231	159	48,5	217	150	54,5	212	146	57	202	140	61	191	132	66		-	
	30 / 50%	236	147	48,5	223	138	54,5	217	135	57	208	129	61	197	122	66		-	
2322	22 / 50%	210	210	58,4	198	198	64,4	193	193	67,0	185	185	71,1	176	176	75,8		-	
	24 / 50%	218	188	58,4	206	177	64,5	201	173	67,0	193	166	71,1	184	158	75,8		-	
	26 / 50%	225	173	58,4	213	164	64,5	208	160	67,0	200	154	71,1	190	147	75,8		-	
	27 / 50%	228	166	58,4	216	157	64,5	211	154	67,0	202	148	71,1	193	141	75,8		-	
	28 / 50%	230	158	58,4	218	150	64,5	213	147	67,0	204	141	71,1	195	135	75,8		-	
	30 / 50%	234	145	58,4	222	138	64,5	217	135	67,0	209	129	71,1	199	124	75,8		-	
2492	22 / 50%	263	263	70,5	250	250	75,4	244	244	77,5	235	235	80,8	226	226	84,4		-	
	24 / 50%	269	232	70,5	256	220	75,4	251	216	77,5	242	208	80,8	232	200	84,4		-	
	26 / 50%	275	212	70,5	262	201	75,4	256	197	77,5	247	190	80,8	237	183	84,4		-	
	27 / 50%	277	202	70,5	264	192	75,4	258	188	77,5	249	182	80,8	239	175	84,4		-	
	28 / 50%	279	192	70,5	265	183	75,4	260	179	77,5	251	173	80,8	241	166	84,4		-	
	30 / 50%	282	175	70,5	269	167	75,4	263	163	77,5	254	158	80,8	245	152	84,4		-	
2802	22 / 50%	295	295	74,8	282	282	80,1	276	276	82,3	268	268	86	257	257	90,5		-	
	24 / 50%	305	262	74,8	291	251	80,1	286	246	82,4	277	238	86	266	229	90,5		-	
	26 / 50%	312	240	74,8	298	230	80,1	293	226	82,4	284	219	86	273	210	90,5		-	
	27 / 50%	314	229	74,8	301	219	80,1	295	215	82,4	286	209	86	275	201	90,5		-	
	28 / 50%	316	218	74,8	303	209	80,1	297	205	82,4	288	199	86	277	191	90,5		-	
	30 / 50%	319	198	74,8	306	190	80,1	300	186	82,4	291	181	86	280	174	90,5		-	
3102	22 / 50%	312	312	81	299	299	86,8	293	293	89,2	284	284	93,2	273	273	98		-	
	24 / 50%	322	293	81	309	281	86,8	303	276	89,2	294	268	93,2	283	258	98		-	
	26 / 50%	334	257	81	320	247	86,8	315	242	89,2	306	235	93,2	295	227	98		-	
	27 / 50%	338	247	81	325	237	86,8	319	233	89,2	310	226	93,2	299	218	98		-	
	28 / 50%	342	236	81	329	227	86,8	323	223	89,2	314	217	93,2	303	209	98		-	
	30 / 50%	348	216	81	335	208	86,8	329	204	89,2	320	198	93,2	309	192	98		-	
3662	22 / 50%	365	365	104	352	352	110	347	347	113	338	338	117		-			-	
	24 / 50%	375	342	104	363	330	110	357	325	113	349	317	117		-			-	
	26 / 50%	388	299	104	375	289	110	370	285	113	361	278	117		-			-	
	27 / 50%	393	287	104	380	278	110	375	274	113	366	267	117		-			-	
	28 / 50%	397	274	104	384	265	110	379	261	113	370	255	117		-			-	
	30 / 50%	404	250	104	391	243	110	386	239	113	377	234	117		-			-	

(1) Inlet air to the internal coil - Temperature (°C) / Relative humidity (%) / Qf: Total cooling capacity (kW) / Qs: Sensible cooling capacity (kW)
Qe: Input power absorbed by compressors (kW)

Heating performances

Size	"Ta / hr (1)"	EXTERNAL AIR - Temperature (°C) / R.H. (%)														
		-5° / 90%			0° / 90%			+5° / 70%			+7° / 60%			+10°C / 50%		
		QT	QE	I	QT	QE	I	QT	QE	I	QT	QE	I	QT	QE	I
992	16	79,5	18,6	35,1	91,6	19,7	36,7	104	20,5	38,3	112	21,4	39,9	118	22,0	40,6
	18	78,5	19,2	35,9	90,6	20,1	37,5	103	21,2	39,1	111	22,5	41,4	117	23,3	43,0
	20	76,5	19,9	36,3	88,6	20,7	38,3	101	21,6	39,9	110	23,3	43,0	116	24,6	45,4
	22	76,5	21,0	38,7	87,6	22,0	40,3	99,6	23,3	42,2	109	24,8	45,4	116	25,9	47,8
	24	75,5	21,8	40,3	87,6	23,6	42,6	98,6	25,1	44,6	109	26,1	47,8	115	27,0	50,2
1102	16	90,2	22,3	43,8	104	23,6	45,8	118	24,6	47,7	127	25,6	49,7	134	26,4	50,7
	18	89,1	23,1	44,8	103	24,1	46,7	117	25,4	48,7	126	26,9	51,7	132	28,0	53,7
	20	86,8	23,8	45,3	101	24,9	47,7	114	25,9	49,7	125	28,0	53,7	131	29,5	56,7
	22	86,8	25,1	48,2	99,4	26,4	50,2	113	28,0	52,7	123	29,8	56,7	131	31,1	59,7
	24	85,7	26,2	50,2	99,4	28,2	53,2	112	30,0	55,7	123	31,3	59,7	130	32,4	62,7
1302	16	104	24,2	44,8	120	25,6	46,8	135	26,7	48,8	146	27,8	50,9	154	28,7	51,9
	18	102	25,0	45,8	118	26,2	47,8	134	27,6	49,9	145	29,2	52,9	152	30,4	54,9
	20	99,9	25,9	46,3	116	27,0	48,8	131	28,1	50,9	143	30,4	54,9	151	32,1	58,0
	22	99,9	27,3	49,3	114	28,7	51,4	130	30,4	53,9	142	32,3	58,0	151	33,7	61,0
	24	98,5	28,4	51,4	114	30,7	54,4	129	32,6	57,0	142	34,0	61,0	150	35,2	64,1
1292	16	107	25,1	49,0	123	26,5	51,2	139	27,7	53,5	150	28,9	55,7	158	29,7	56,8
	18	105	25,9	50,1	122	27,1	52,3	138	28,6	54,6	149	30,3	57,9	157	31,5	60,1
	20	103	26,8	50,7	119	28,0	53,5	135	29,2	55,7	147	31,5	60,1	155	33,2	63,5
	22	103	28,3	54,0	118	29,7	56,2	134	31,5	59,0	146	33,5	63,5	155	35,0	66,8
	24	101	29,4	56,2	118	31,8	59,6	133	33,8	62,4	146	35,3	66,8	154	36,4	70,2
1472	16	117	28,4	54,2	135	30,0	56,7	153	31,4	59,1	165	32,7	61,6	174	33,7	62,8
	18	116	29,4	55,4	134	30,7	57,9	152	32,3	60,4	163	34,3	64,1	172	35,6	66,5
	20	113	30,4	56,1	131	31,7	59,1	149	33,0	61,6	162	35,6	66,5	171	37,6	70,2
	22	113	32,0	59,8	129	33,7	62,2	147	35,6	65,3	160	38,0	70,2	171	39,6	73,9
	24	111	33,3	62,2	129	36,0	65,9	146	38,3	69,0	160	39,9	73,9	169	41,3	77,6
1662	16	136	31,1	58,4	157	32,9	61,1	178	34,3	63,7	192	35,8	66,4	202	36,8	67,7
	18	135	32,1	59,8	155	33,6	62,4	176	35,4	65,1	190	37,6	69,1	200	39,0	71,7
	20	131	33,2	60,4	152	34,7	63,7	173	36,1	66,4	188	39,0	71,7	198	41,2	75,7
	22	131	35,0	64,4	150	36,8	67,1	171	39,0	70,4	186	41,5	75,7	198	43,3	79,7
	24	129	36,5	67,1	150	39,4	71,0	169	41,9	74,4	186	43,7	79,7	197	45,1	83,7
1992	16	163	21,6	68,6	188	22,9	71,8	212	23,9	74,9	229	24,9	78,0	241	25,7	79,6
	18	161	22,4	70,2	186	23,4	73,3	210	24,7	76,4	227	26,2	81,1	239	27,2	84
	20	157	23,1	71,0	181	24,2	74,9	206	25,2	78,0	225	27,2	84	237	28,7	89
	22	157	24,4	75,7	179	25,7	78,8	204	27,2	83	223	28,9	89	237	30,2	94
	24	155	25,4	78,8	179	27,4	83	202	29,2	87	223	30,4	94	235	31,4	98
2322	16	188	44,6	79,9	217	47,2	84	246	49,3	87	265	51,4	91	279	52,9	93
	18	186	46,2	82	215	48,3	85	243	50,9	89	262	54,0	94	277	56,1	98
	20	181	47,8	83	210	49,8	87	238	51,9	91	260	56,1	98	274	59,2	104
	22	181	50,3	88	207	52,9	92	236	56,1	96	258	59,7	104	274	62,3	109
	24	179	52,4	93	207	56,6	97	234	60,2	102	258	62,8	109	272	64,9	114
2492	16	207	50,7	91	238	53,7	95	270	56,0	99	291	58,4	103	306	60,2	105
	18	204	52,5	93	236	54,9	97	267	57,8	101	288	61,3	107	304	63,7	112
	20	199	54,3	94	230	56,6	99	262	59,0	103	285	63,7	112	301	67,2	118
	22	199	57,2	100	228	60,2	104	259	63,7	109	283	67,8	118	301	70,8	124
	24	196	59,6	104	228	64,3	111	256	68,4	116	283	71,4	124	298	73,7	130
2802	16	233	54,0	98	268	57,1	103	304	59,6	107	327	62,2	112	345	64,0	114
	18	230	55,9	100	265	58,4	105	301	61,5	109	324	65,3	116	342	67,8	120
	20	224	57,8	102	260	60,3	107	295	62,8	112	322	67,8	120	339	71,6	127
	22	224	60,9	108	257	64,0	113	292	67,8	118	319	72,2	127	339	75,3	134
	24	221	63,4	113	257	68,4	119	289	72,8	125	319	76,0	134	336	78	141
3102	16	252	67,3	118	291	71,2	124	329	74,4	129	355	77,5	135	374	79,9	137
	18	249	69,7	121	288	72,8	126	326	76,7	132	351	81,4	140	371	84,6	145
	20	243	72,0	122	281	75,2	129	320	78,3	135	348	84,6	145	367	89	153
	22	243	75,9	130	278	79,9	136	316	84,6	143	345	90	153	367	94	161
	24	240	79,1	136	278	85,3	144	313	91	151	345	95	161	364	98	169
3662	16	303	84,7	149	349	90	156	395	94	163	426	97	170	449	100	173
	18	299	87,6	153	345	92	159	392	96	166	422	102	176	445	106	183
	20	292	91	154	338	95	163	384	98	170	418	106	183	441	112	193
	22	292	95	165	334	100	171	380	106	180	415	113	193	441	118	204
	24	288	99	171	334	107	181	376	114	190	415	119	204	438	123	214

(1) Temperature of air inlet to the internal coil (°C) / Qt: Heating capacity (kW) / Qe: Input power of compressors (kW) / I: Input current of compressors (A)

Hot water coil - heating performances

Air flow rate : standard

Size	Coil Rows	Difference between the coil inlet and outlet water temperature (°C)								
		20			15			10		
		Qt	Qw	Dp	Qt	Qw	Dp	Qt	Qw	Dp
992	1R	88,9	3,82	29	85,5	4,9	48	82,2	7,07	100
	2R	152	6,54	37	146	8,39	61	141	12,1	126
	3R	198	8,53	38	191	10,9	63	183	15,8	131
1102	1R	91,6	3,94	31	88,1	5,05	51	84,7	7,29	107
	2R	157	6,74	39	151	8,64	64	145	12,5	134
	3R	204	8,79	41	196	11,3	67	189	16,2	139
1302	1R	94,3	4,05	33	90,6	5,2	54	87,1	7,49	113
	2R	161	6,93	41	155	8,89	68	149	12,8	141
	3R	210	9,04	43	202	11,6	70	194	16,7	147
1292	1R	131	5,62	38	126	7,2	63	121	10,4	131
	2R	223	9,6	37	215	12,3	61	206	17,8	126
	3R	291	12,5	46	280	16,1	76	139	11,9	158
1472	1R	139	5,98	44	134	7,66	72	129	11,1	149
	2R	238	10,2	42	229	13,1	69	220	18,9	143
	3R	310	13,3	53	298	17,1	86	287	24,6	180
1662	1R	144	6,21	47	139	7,96	77	133	11,5	161
	2R	247	10,6	45	237	13,6	74	228	19,6	154
	3R	322	13,8	57	310	17,7	93	298	25,6	194
1992	1R	178	7,65	44	171	9,81	73	165	14,2	152
	2R	304	13,1	53	293	16,8	87	281	24,2	180
	3R	397	17,1	37	382	21,9	60	367	31,6	126
2322	1R	184	8	48	177	8	78	170	7	163
	2R	315	14	57	303	13	93	291	13	193
	3R	411	18	39	395	17	65	380	16	135
2492	1R	192	8,24	51	184	10,6	85	177	15,2	176
	2R	328	14,1	61	315	18,1	100	303	26	209
	3R	427	18,4	43	411	23,6	70	395	34	145
2802	1R	204	8,79	59	197	11,27	96	189	16,25	200
	2R	350	15	43	336	19,27	70	323	27,79	146
	3R	456	19,6	48	438	25,13	80	421	36,24	166
3102	1R	214	9,19	50	206	11,8	82	198	17	171
	2R	365	15,7	45	351	20,1	75	338	29,1	155
	3R	477	20,5	52	458	26,3	85	441	37,9	177
3662	1R	236	10,2	49	227	13	80	218	18,8	167
	2R	404	17,4	56	389	22,3	91	374	32,1	190
	3R	527	22,7	63	507	29	104	487	41,9	217

Air inlet temperature to the coil : 20°C Water outlet temperature from the coil : 60°C
Qt: Heating capacity (kW) / Qw: Water flow rate (mc/h) / Dp: Pressure drop of the coil including the 3-way mixing valve

Operation limits

Cooling

Parameter	Min	Max
Ti (°C)	+ 15	+25
Te (°C)	-20	See chart 1

Ti = w.b. temperature of the air entering the internal coil
Te = temperature of the external air

Heating

Parameter	Min	Max
Ti (°C)	+ 15	+25
Te (°C)	-10	+ 15

Ti = temperature of the air entering the internal coil
Te = w.b. temperature of the external air

Chart 1

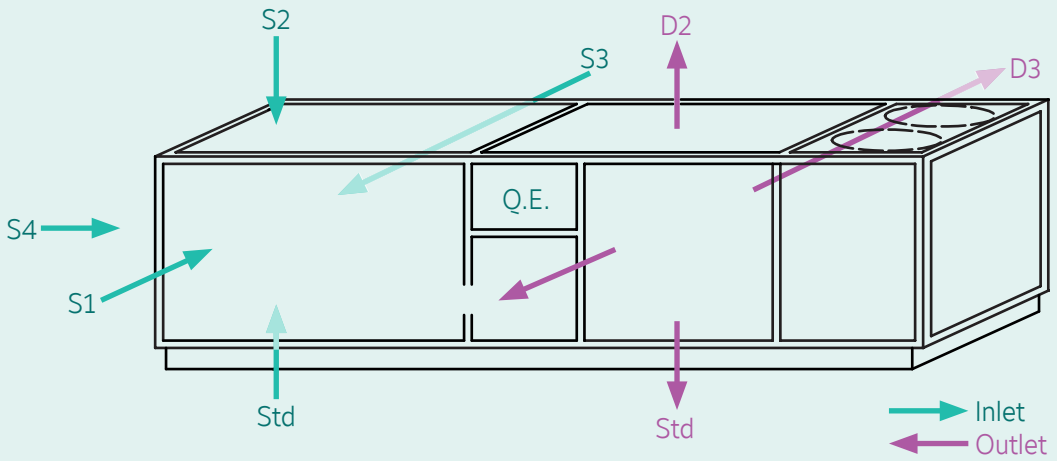
Size	RTR / RTP	992	1102	1302	1292	1472	1662
Te max	°C	41	43	43	43	43	41

Size	RTR / RTP	1922	2322	2492	2802	3102	3662
Te max	°C	43	42	42	42	42	39

Suggested min / max air flow rates

Size	RTR / RTP	992 / 1102 / 1302	1292 / 1472 / 1662	1992 / 2322 / 2492	2802 / 3102 / 3662
Max air flow rate	mc/h	23.000	34.000	45.000	68.000
Min air flow rate	mc/h	16.000	23.000	32.000	45.000

Air inlet and outlet available configurations



In case of order, if not clearly indicated, the units will be supplied with air inlet and outlet at the bottom (Std)

Legend

- D1 – Air outlet on the front of the unit
- D2 – Air outlet on the top of the unit
- D3 – Air outlet on the back of the unit
- S1 – Air inlet on the front of the unit
- S2 – Air inlet on the top of the unit
- S3 – Air inlet on the back of the unit
- S4 – Air inlet on the left side of the unit

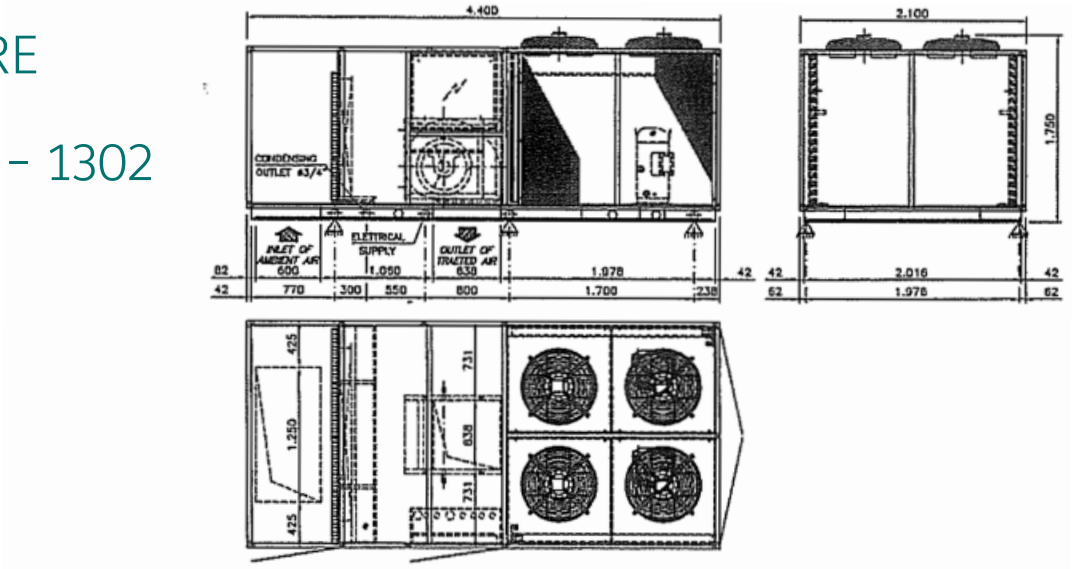
Note

- In case of D1 and D3, the length of the unit could be different from standard.

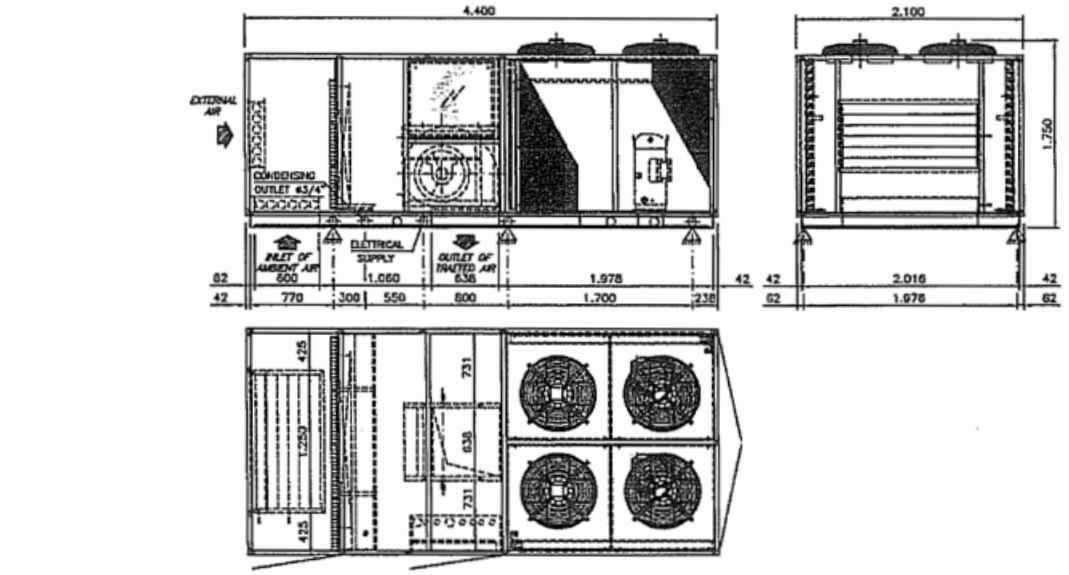
Dimensional drawings, lifting detail, service area drawing

YORK® YPRE RTR/RTP 992 – 1102 – 1302

Version “TR”



Version “2S”



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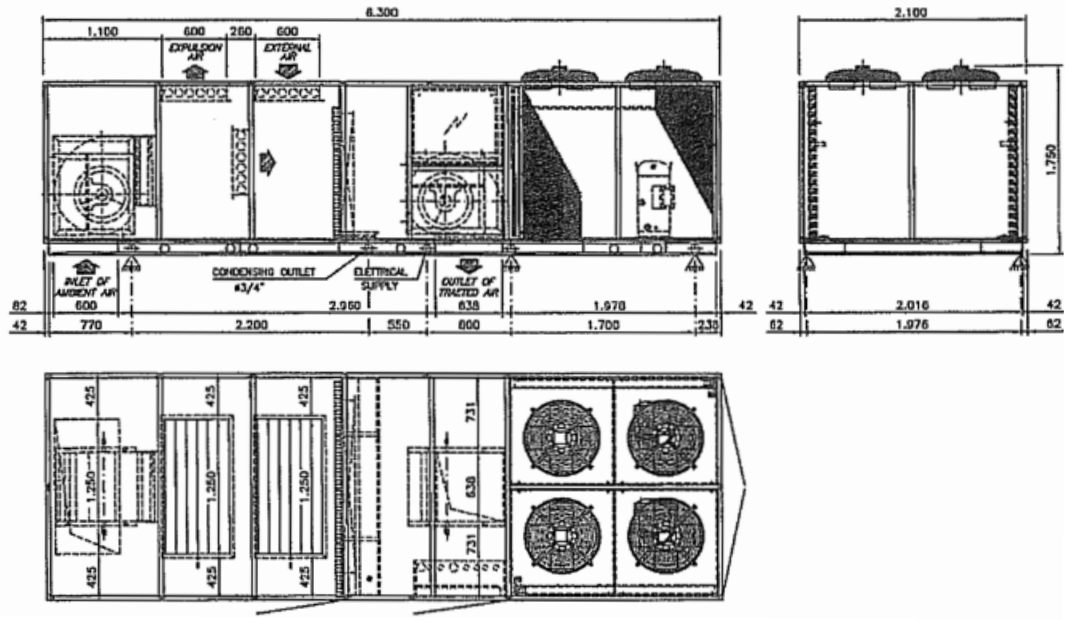
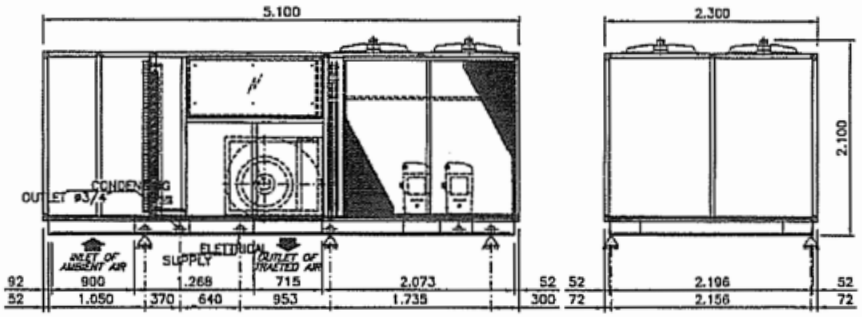
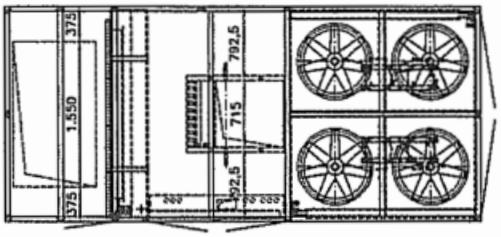


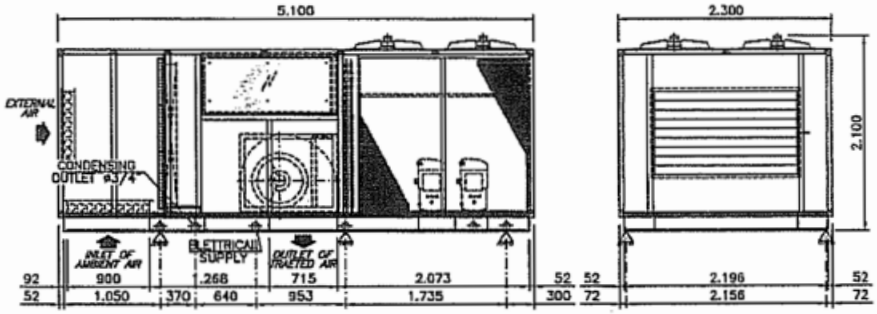
YORK® YPRE RTR/RTP 1292 – 1472 – 1662

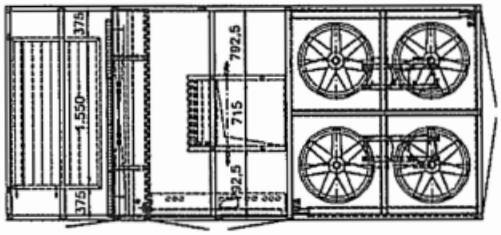
Version "TR"





Version "2S"





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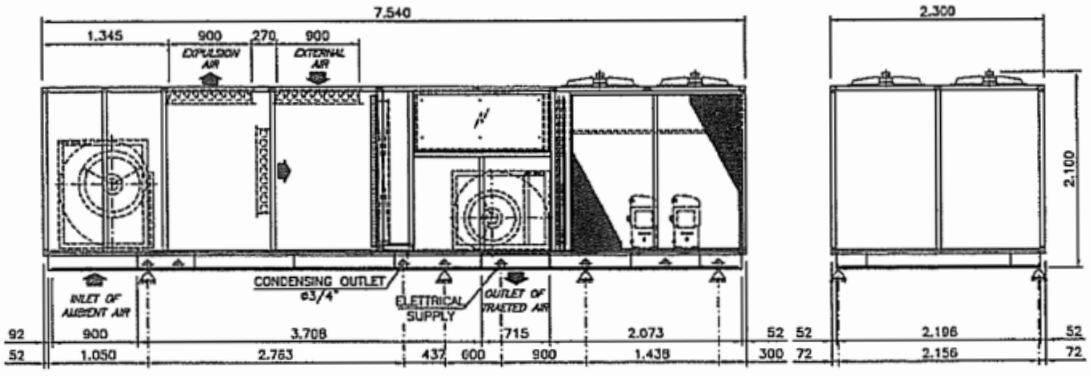
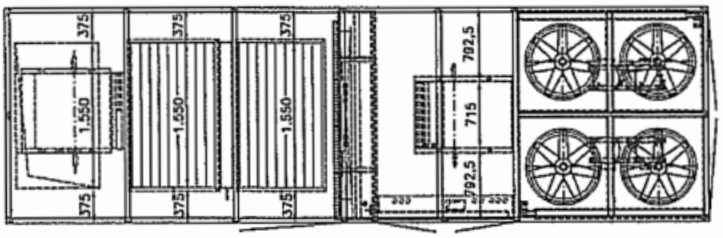
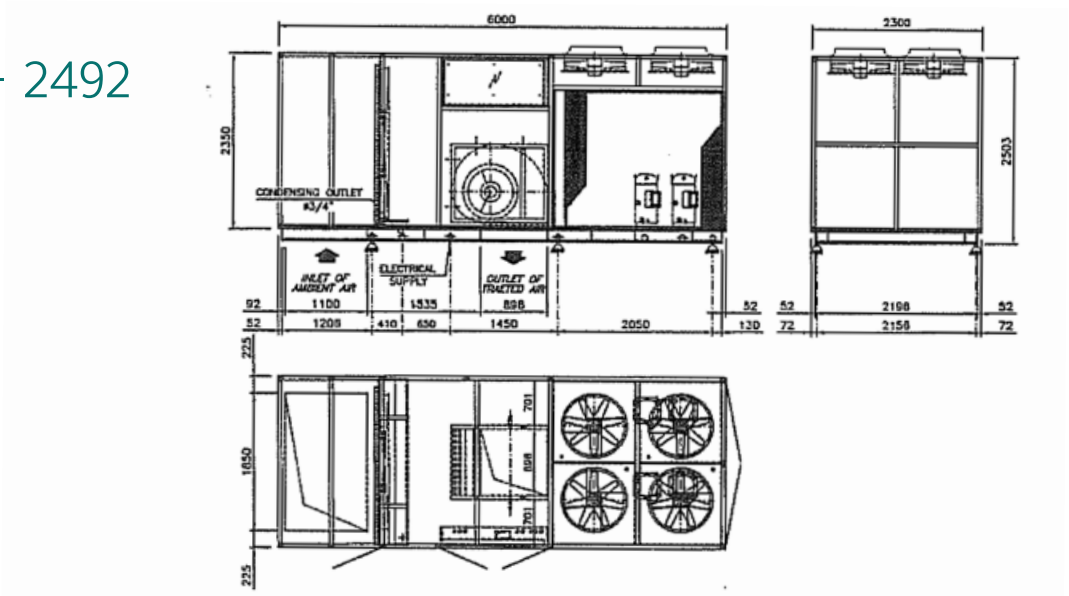


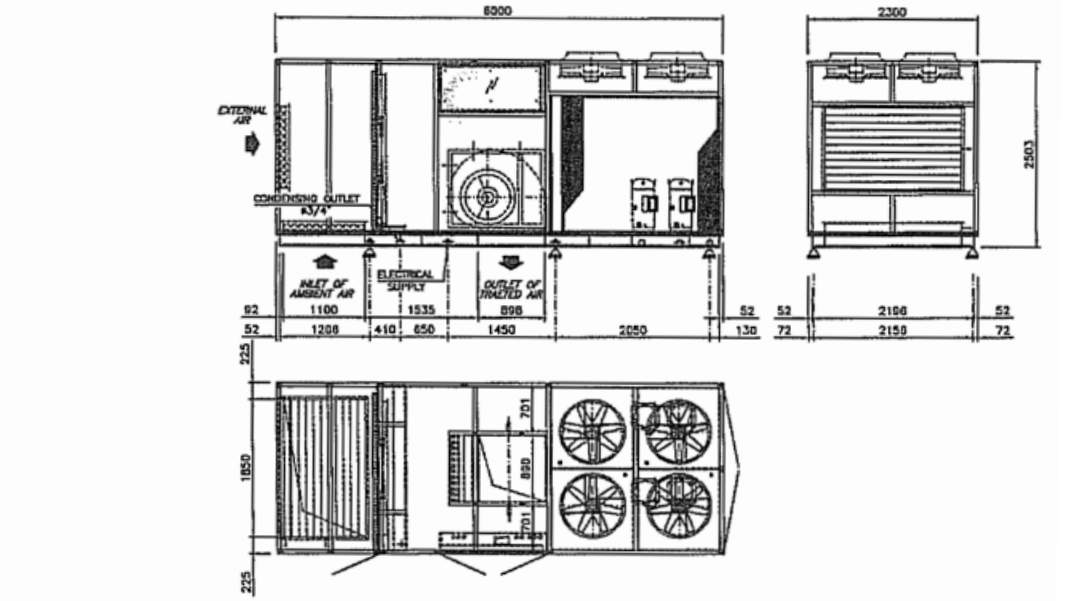


YORK® YPRE RTR/RTP 1992 – 2322 – 2492

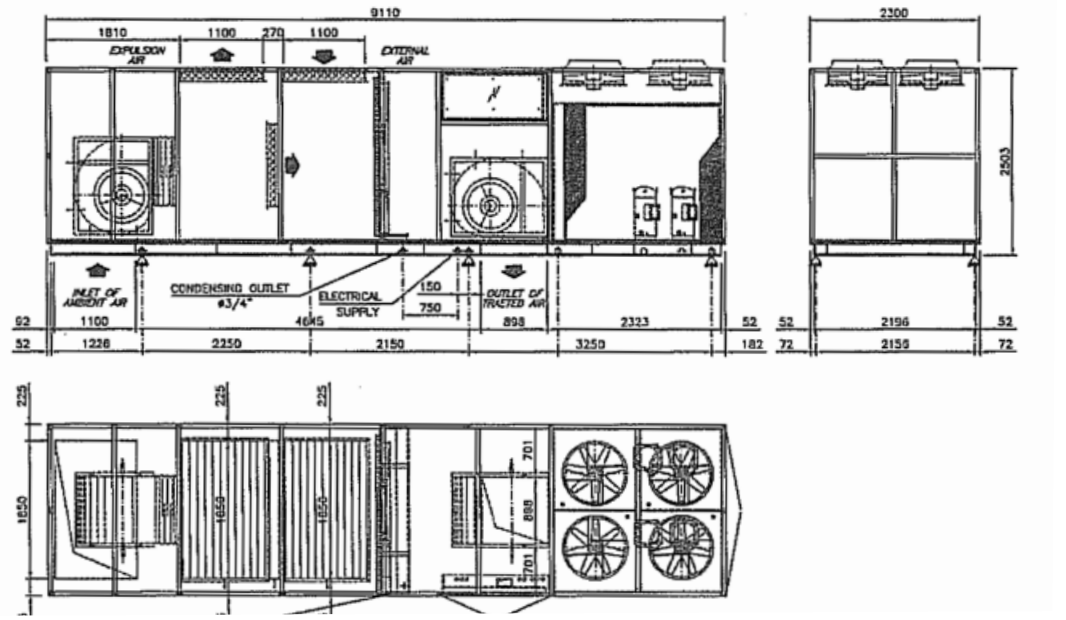
Version “TR”



Version “2S”

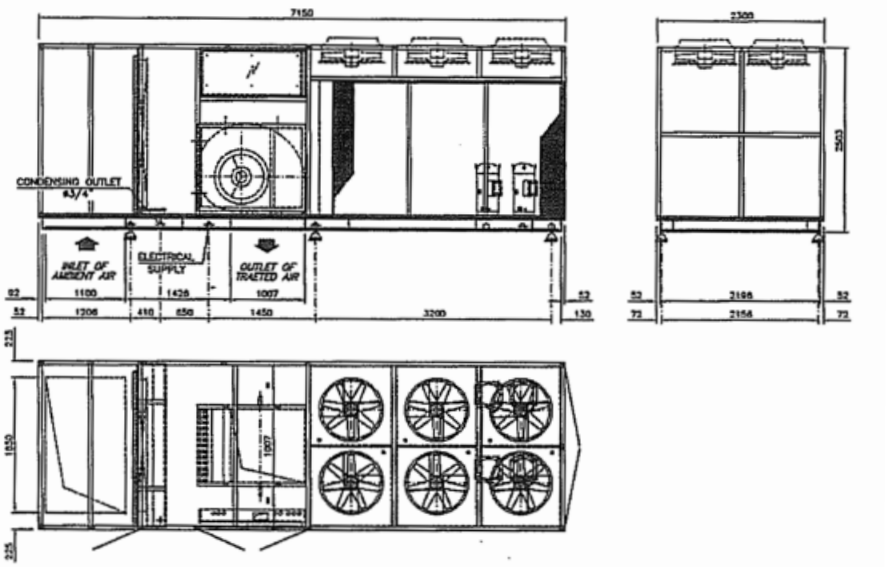


Version “3S”

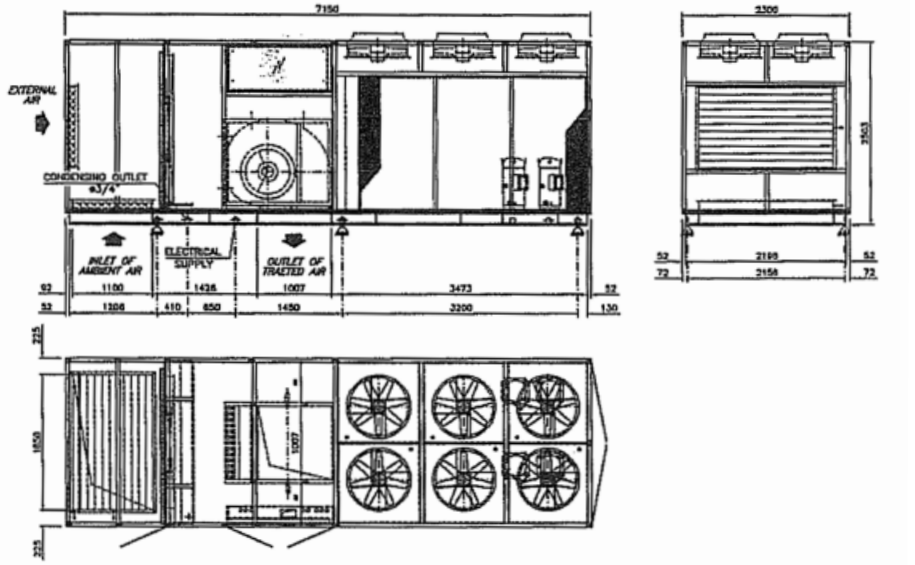


YORK® YPRE RTR/RTP 2802 – 3102 – 3662

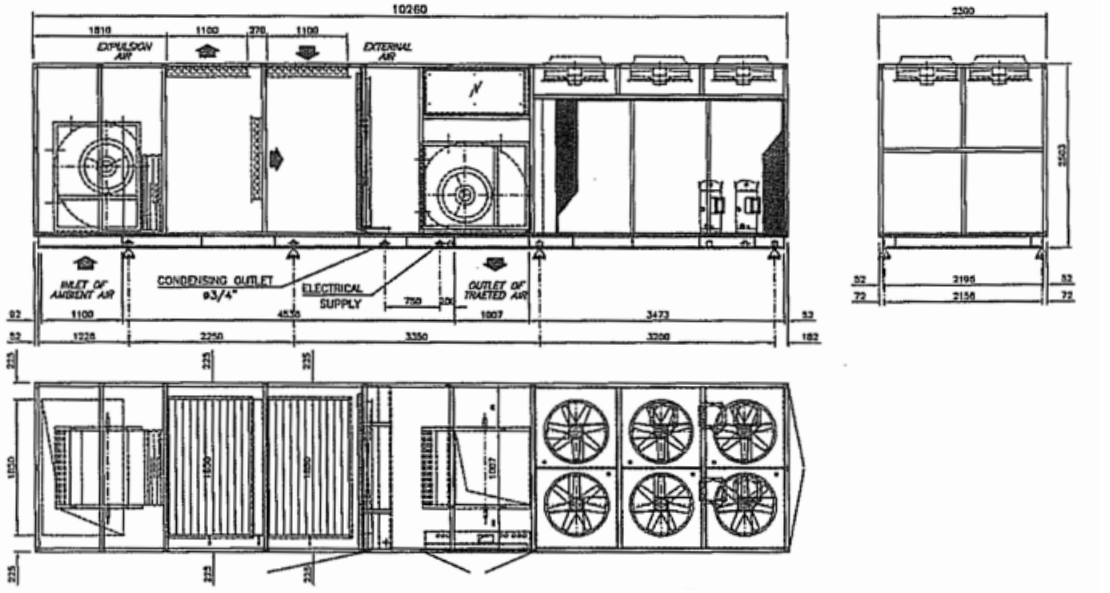
Version “TR”



Version “2S”

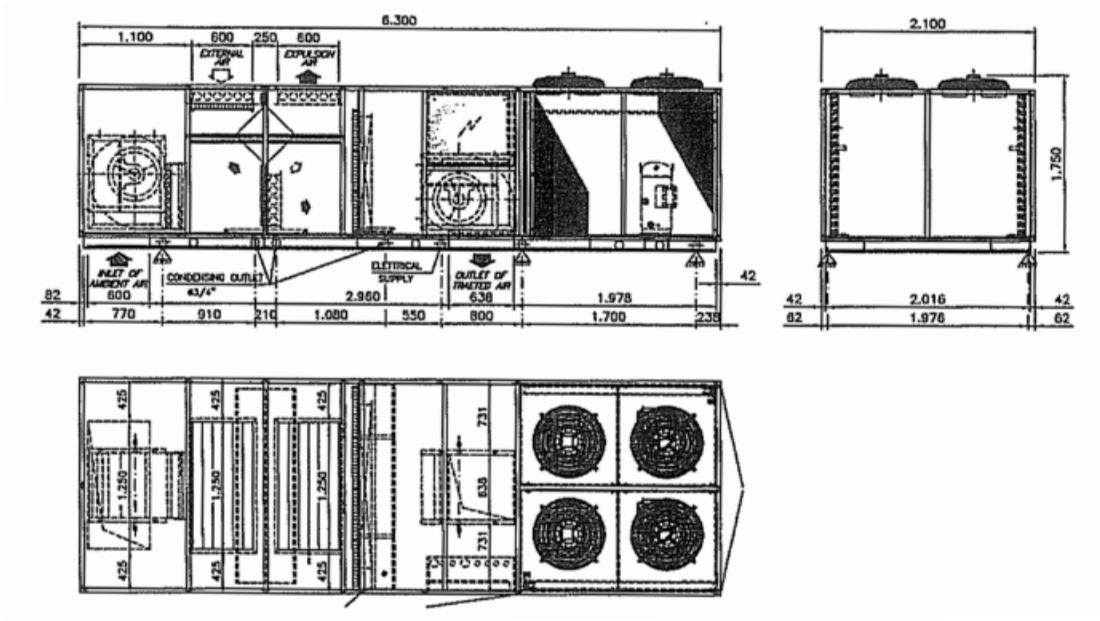


Version “3S”

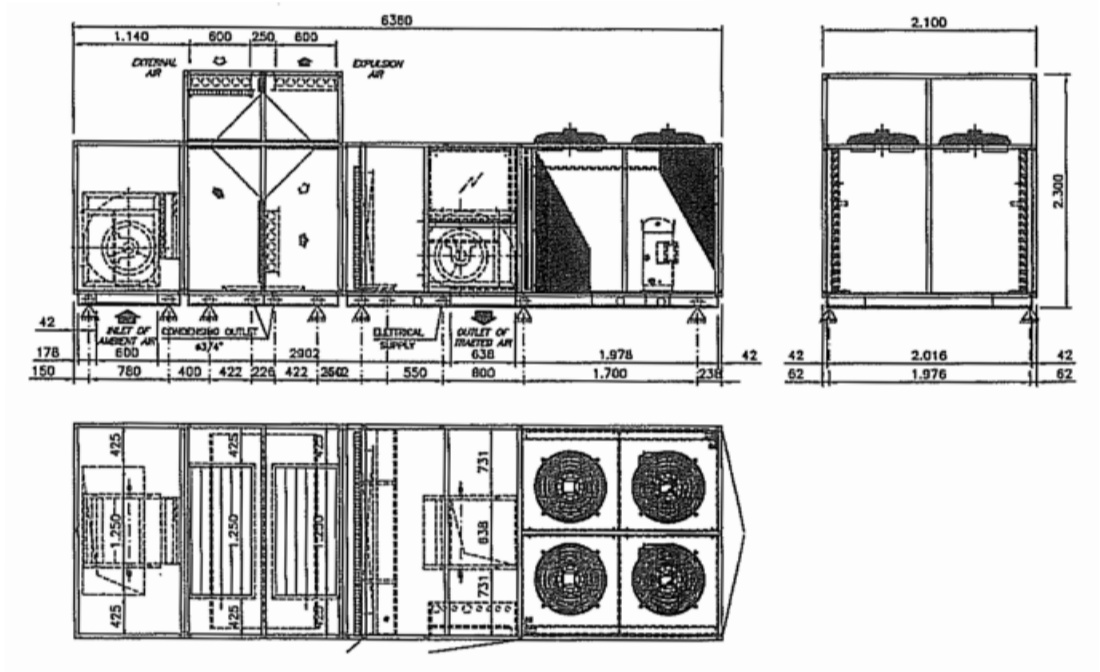


YORK® YPRE – RTR/RTP

992 – 1102 – 1302
REC. 30%

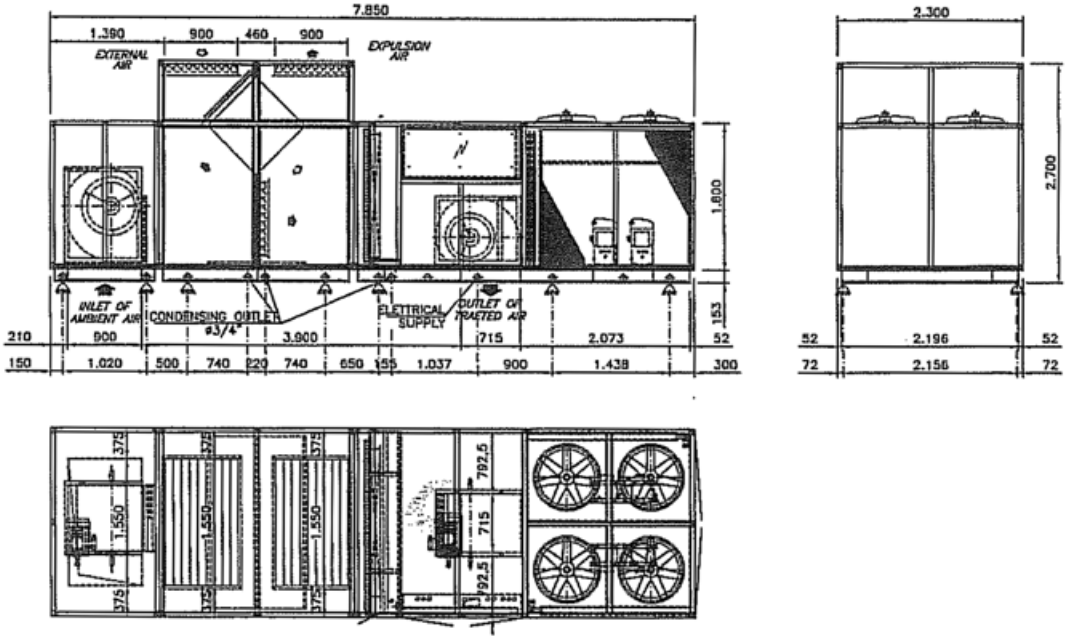


992 – 1102 – 1302
REC. 50%

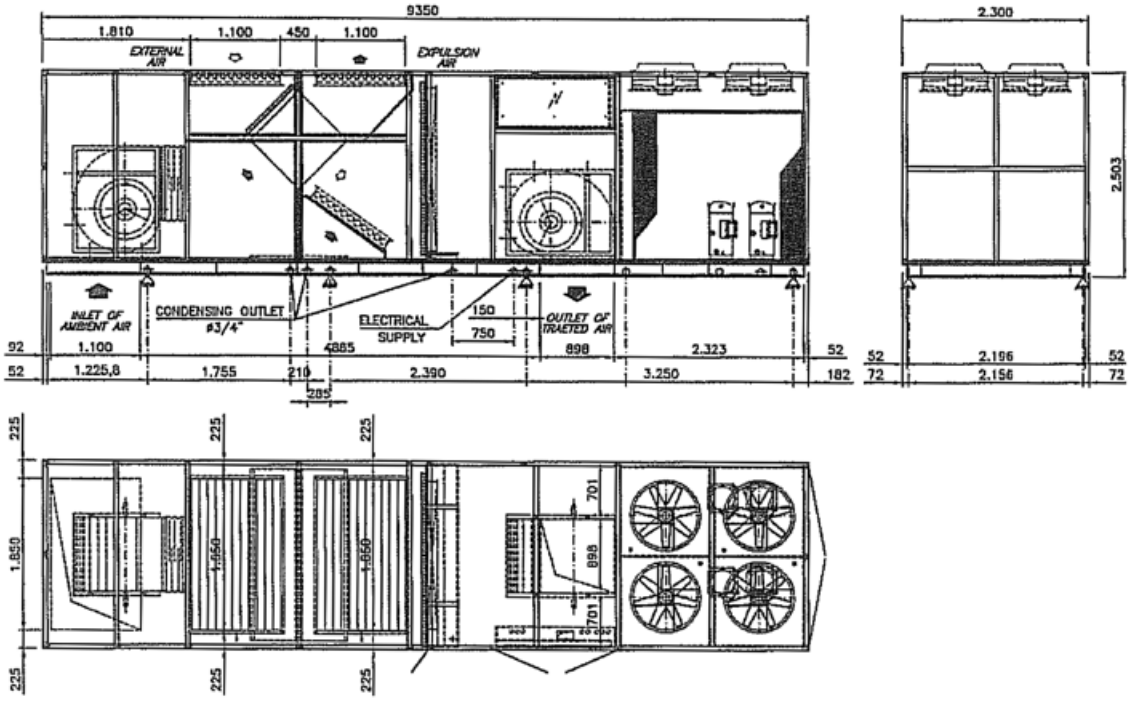


YORK® YPRE – RTR/RTP

1292 – 1472 – 1662
REC. 30% – 50%

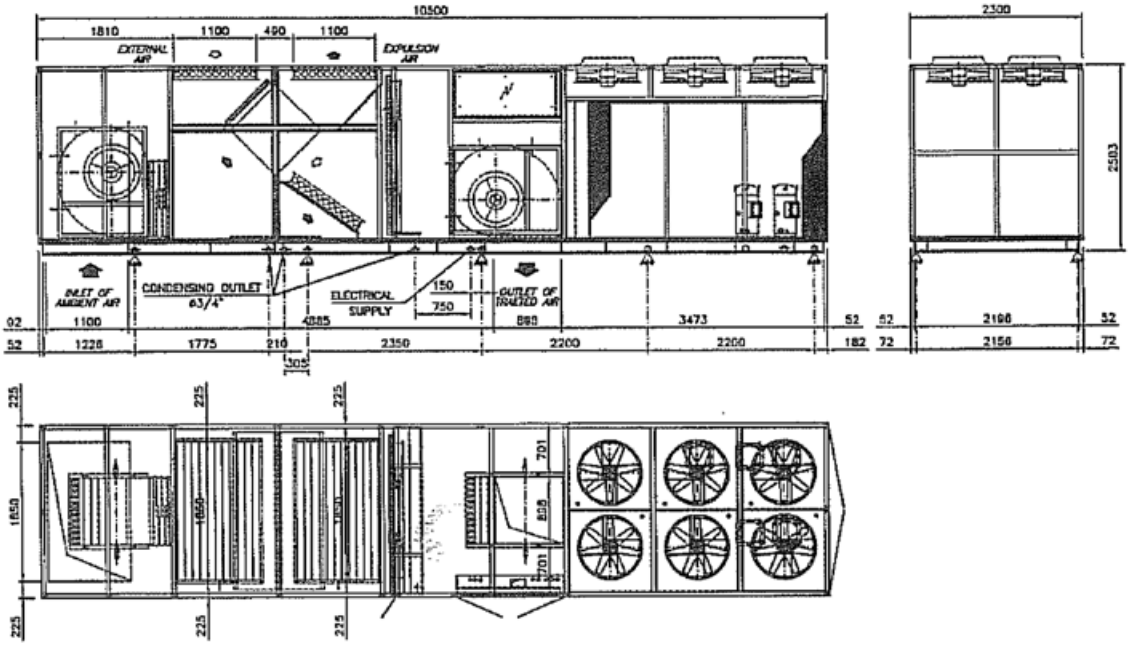


1292 – 1472 – 1662
REC. 30% – 50%

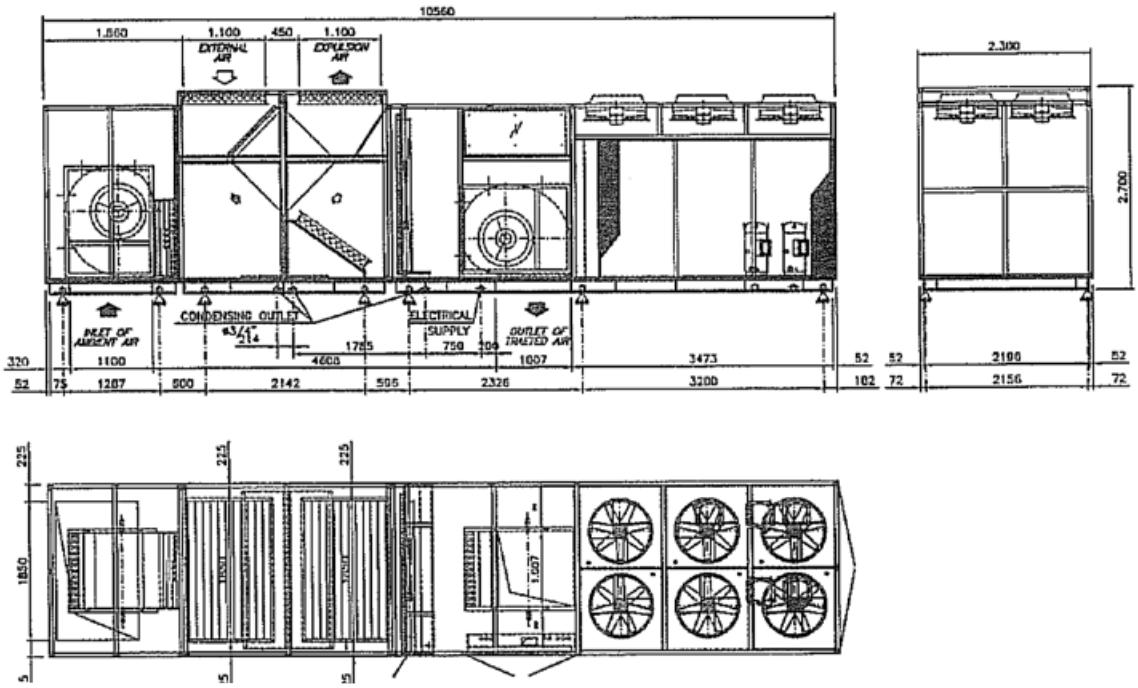


YORK® YPRE – RTR/RTP

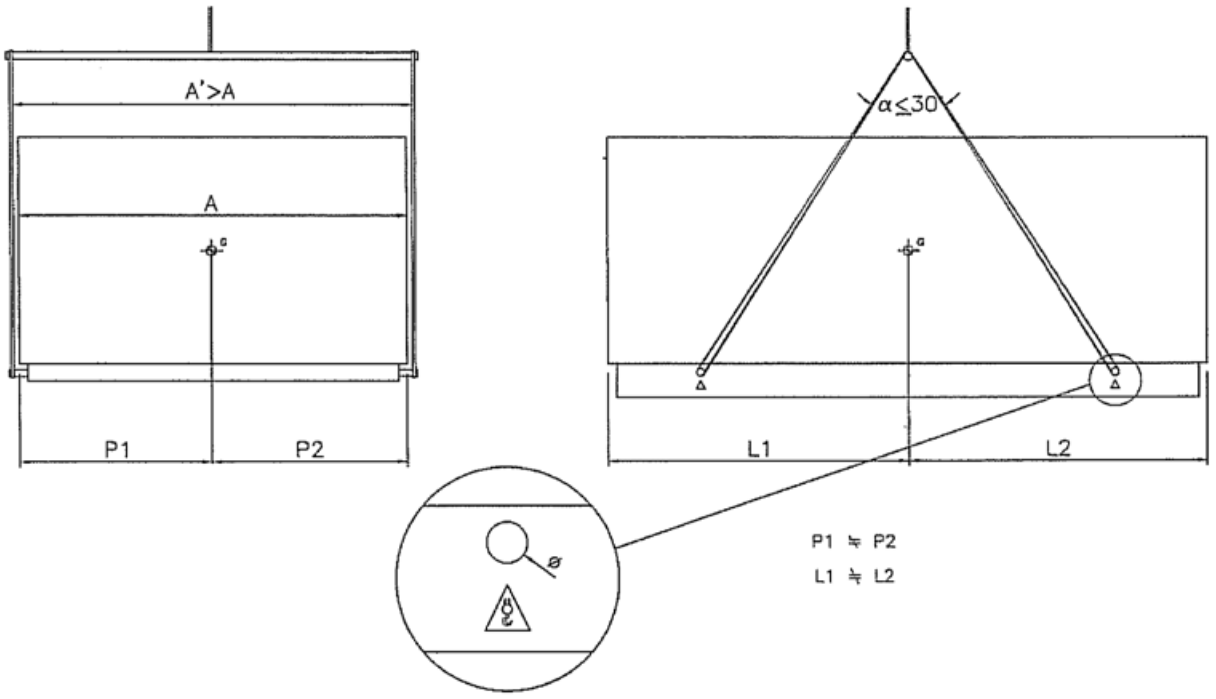
2802 – 3102 – 3662
REC. 30% – 50%



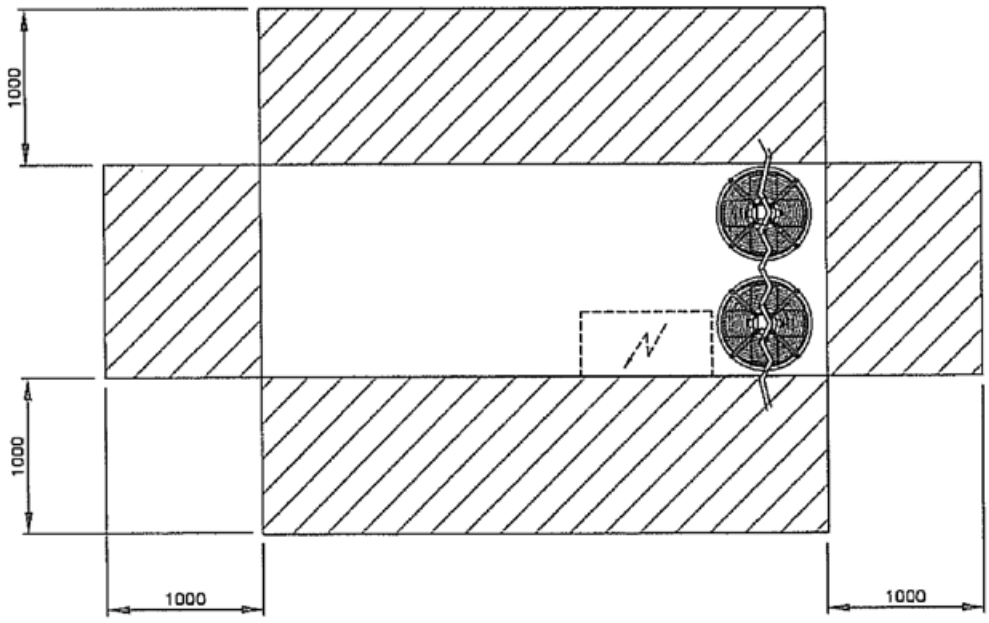
2802 – 3102 – 3662
REC. 30% – 50%



Lifting detail

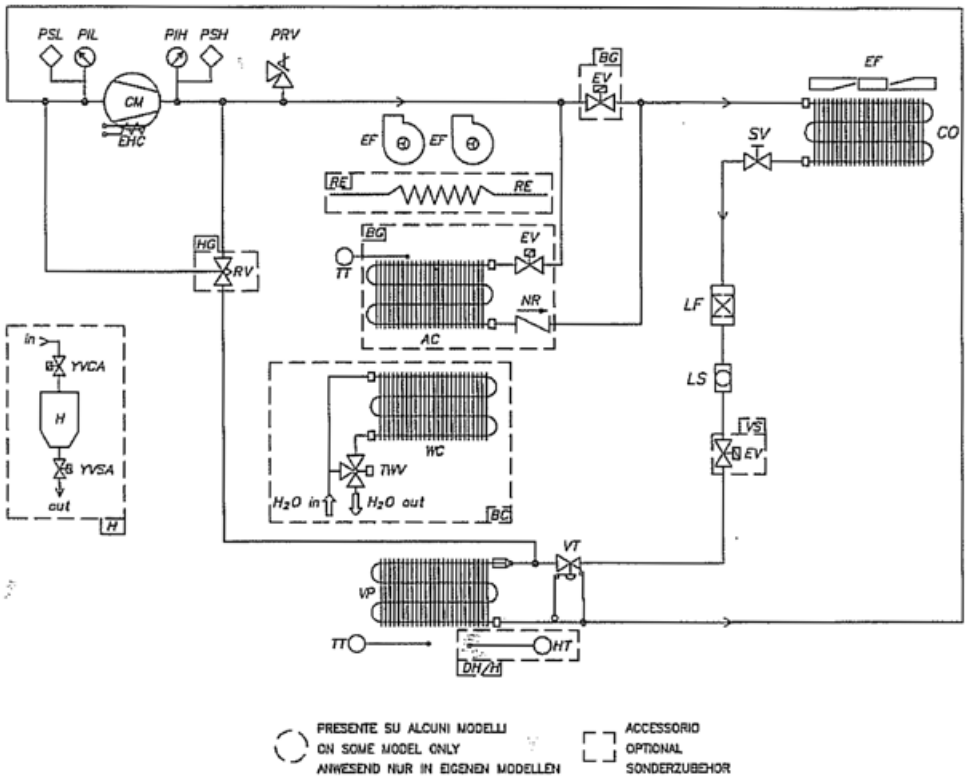


Access space and clearance requirements

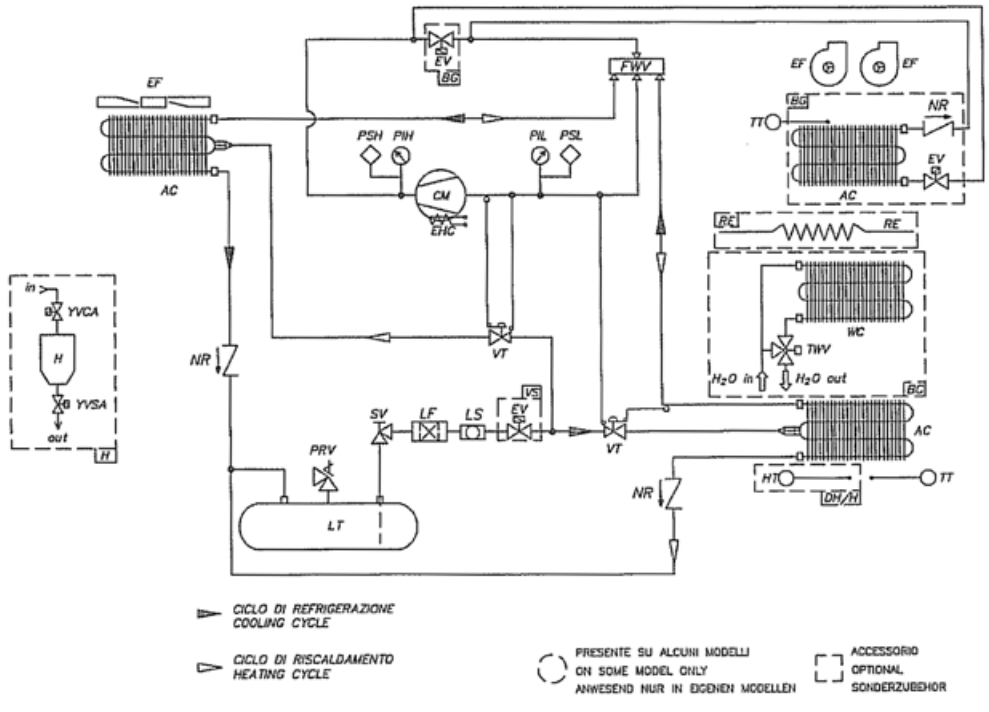


Cooling circuit schematic drawings

YORK® YPRE - RTR models



YORK® YPRE - RTP models



Legend of components

AC	AIR HEAT EXCHANGER
CM	COMPRESSOR
CO	CONDENSER
EF	FAN
EHC	CRANK-CASE HEATER
EV	SOLENOID VALVE
FWV	FOUR-WAY VALVE
HT	HUMIDITY PROBE
LF	DEHYDRATING FILTER
LS	SIGHT GLASS
LT	LIQUID RECEIVER
NR	CHECK VALVE
PIH	HIGH PRESSURE GAUGE
PIL	LOW PRESSURE GAUGE
PRV	PRESSURE RELIEFE DEVICE
PSH	HIGH PRESSURE SWITCH
PSL	LOW PRESSURE SWITCH
RE	ELETTRIC HEATERS
SV	SHUT-OFF VALVE
TT	TEMPERATURE PROBE
TWV	THREE WAY VALVE
VT	THERMOSTATIC EXPANSION DEVICE
WC	WATER COIL
BG	HOT GAS COIL
YVCA	HUMIDIFIER INLET VALVE
YVSA	HUMIDIFIER OUTLET VALVE

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