

SyScroll 85-135 Air **NEW**

Air Cooled Water Chillers Cooling Only, Heat Pump
Engineering Data Manual



84 to 132 kW

88 to 135 kW



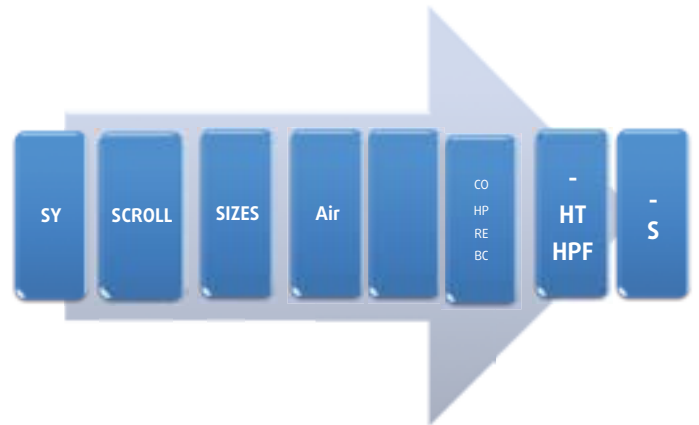
Key point

General

SyScroll Air have been designed and optimized to work with R410A refrigerant. As near azeotropic mixture it behaves like a homogeneous substance (reduced service problems in case of leakage or re-charge) with negligible temperature glide.

- Units with high seasonal performances (ESEER up to 4.4).
- With except for the fans, all the versions keep the same configuration of the base units (same structure, electrical board, compressors and coils).
Easy upgrade of the units in stock or on the field.
- Electronic expansion devices on all units: superheating value controlled by microprocessor, simple and accessible refrigeration system especially for heat pump versions with reduction of brazing points and than possible leakage.
- New Microchannel coils for Cooling only version.
- Compressors box (less sound proofing) always installed - additional compressors jackets only for S version (easy upgrade of the units in stock).
- High Temperature Version (HT) developed for high ambient temperature but also providing high seasonal efficiency (ESEER higher than and high operation limits with inverter fans (electronic brushless type motor).
- Special version (HPF) for high external static pressure (max. 120 Pa) with inverter fans (electronic brushless type motor).
- New microprocessor: 4 times greater RAM memory compared with previous version, flash memory card and compressors envelope curves put inside, 3 times faster than previous control.
- Hydro kits with or without buffer tank (205 l from 85 to 105 size, 320 l from 120 to 135 size).
One or two water pumps are available: standard pressure (100 kPa) or high pressure (200 kPa).
- For service operation, special valves dedicated to R410A are supplied on the refrigerant system. These valves, of 5/16" flare SAE type, are mounted on the liquid line, discharge, suction line and on the gauges manifold of the unit.

Specifications



CO = Cooling Only; HP = Heat Pump; RE = Remote Evaporator; BC = Brine for Process Cooling.

General

The new **SyScroll Air** units have been designed to operate with **HFC 410A** refrigerant. Both compressors and heat exchangers (plate heat exchanger and coils) have been optimized for this refrigerant.

They consist of a **single refrigerant circuit** equipped with a tandem complete with high efficiency and low vibration level Scroll compressors, a **single circuit** plate heat exchanger and a ventilating unit comprising V-shape coils and quiet fans; each of them is located in an externally mounted nozzle profile housing generating low sound level.

SyScroll Air CO units are available in **5 sizes**, with a nominal capacity range from **84 to 132 kW**.

SyScroll Air HP units are available in **5 sizes**, with a nominal capacity range from **79 to 125 kW** in cooling mode and from **85 to 133 kW** in heating mode.

SyScroll Air (Standard) version can be supplied with **2 acoustic options**:

- **Basic Low Noise (-)**: The units are equipped with **delta connected fans** implying a standard rpm. The chillers are not supplied with fan speed controller, but fitted with **compressors box** to reduce the noise emissions.
- **Super Low Noise (S)**: The units are equipped with **star connected fans**, fitted with a speed controller which allows the units to operate with a very low rpm. The chillers are supplied with **compressors box** and **soundproof jackets** on compressors reducing significantly the noise emissions.

To increase their field of applications, the SyScroll Air ranges are available in **2 additional versions**:

- **HT (High Temperature) version**: It has same equipment as Basic version, but the units are fitted with **special inverter fans and motors** to ensure low energy consumption and to operate on a wider envelope. The HT version can be supplied with BLN acoustic option only.

- **HPF (High Pressure Fans) version**: It has same equipment as Basic version, except that the units are equipped with **special inverter fans** (same as those used on HT version, but with a different regulation) driven by **EC motors** with **integrated electronic inverter**. HPF version provides external static pressure up to **120 Pa**. This version can be supplied with BLN acoustic option only.

In addition, **partial heat recovery option** is available:

- **Desuperheater**: All the versions can be supplied with plate type heat exchangers fitted, one on each refrigerant circuit, on the compressor discharge line to recover about **20 % of the total heat** rejected to the condensers.

Conformity with directives

The following applies to all the sizes and versions:

- Machine Directive: 2006/42/EC
- Electromagnetic Compatibility Directive: 2004/108/EC
- Pressure Equipment Directive: 2014/68/EU

Cabinet and structure

The unit cabinet and structure are made of heavy gauge galvanized steel coated with polyester powder based painting (RAL 7040). All parts of the structure are fastened totally with non-corrosive screws and bolts.

Compressors

Each unit is equipped with two compressors arranged in tandem.

Compressors are of hermetic scroll type and fitted with an electronic control system ensuring protection against high temperature and excessive load.

All compressors have direct-on-line starting and are mounted on rubber vibration isolators in order to minimize noise and vibration transmission.

Evaporator

Evaporators is of a brazed stainless steel plate type heat exchanger.

It is insulated with a 19 mm thick closed cell polyethylene foam material and is fitted with a film type electric heater on the external surface to prevent the unit from freezing at a low temperature (down to -18 °C) when the unit is off. Water connections are of a Male GAS Threaded type (2"1/2 diameter).

Condenser coils

The condenser coils are made of seamless copper tubes, arranged in staggered rows, mechanically expanded into corrugated aluminum fins.

For Cooling only version (CO version) condenser coils are of microchannel type, made of 100% aluminium (fins, tubes and headers) with the exception of pipe couplings which are in copper.

Condenser fans

For each size, all versions keep the same number of fans. Large diameter, direct drive axial type fans with asynchronous three-phase motors are used in all acoustic versions (S version) of SyScroll 85-135 Air.

Special inverter fans with electronic brushless type motors are used in SyScroll 85-135 Air HT and HPF.

On high pressure fans of HPF units, the external static pressure (≤ 120 Pa) can be adjusted on site to match the customer demand directly from the electronic control panel of the unit.

Fans are equipped with externally mounted nozzle profile housing which generates low sound levels.

Fan speed control

The speed of fans is controlled in order to operate at a low ambient temperature.

On units with standard axial fans, the accessory fan speed control, supplied as standard on S version, is of a pressure actuated stepless type with an electronic controller.

The pressure actuated stepless type fan speed controller can be supplied as optional on - version. It allows the units to operate in cooling mode at ambient temperature down to -14 °C.

On HT and HPF units with electronic axial fans, the pressure actuated stepless type fan speed control is supplied as standard, because these electronic fans are already equipped with an integrated fan speed control (fan speed range: 50 to 1200 rpm; ambient temperature limit: -18 °C (in cooling mode only).

Refrigerant circuits

All the units are composed a single refrigerant circuit.

Each refrigerant circuit is equipped with liquid line and discharge line shutoff valves, filter-drier with solid core, sight glass and [thermostatic expansion valve](#) ([electronic expansion valve](#) can be supplied as an option).

Heat pump units (HP) are provided with 4-way reversing valve, suction accumulator and liquid receiver on the liquid line.

The functional diagram of each circuit is shown in the section "Refrigerant flow diagram".

Electrical board

Metal case, externally arranged at one end of the unit. Case for the board with IP44 protection rating, complete with grille for natural air ventilation of the box.

Control and safety devices

Each unit is fitted with the following devices:

Safety:

- Power disconnect switch with an emergency stop function.
- HP switch, set to 40.5 bar, automatic and manual reset to be reinitialized from the control panel.
- Water flow switch on the evaporator, protect the unit against low water flow operation.
- Antifreeze temperature sensor (set to +4 °C) on the evaporator.
- Safety valve on discharge line, set to 45 bar.

Control:

- HP and LP transducers.
- Evaporator water inlet temperature sensor.
- Evaporator water outlet temperature sensor (with an antifreeze function).
- Suction temperature sensor (in case of EEV option).
- Ambient air temperature sensor.
- Coil temperature sensor.

Electronic control

Units are supplied with the new microprocessor-based electronic control and management system ensuring the following functions:

- Management of the operation of compressors:
 - Power on/off
 - Anticycle management
 - Tandem unloading for high pressure or high compressor pressure ratio (integrated inside the curves of compressor operating limits).
- Chilled and hot water temperature regulation (control option on inlet water temperature RWT (P+I type) or outlet water temperature LWT (neutral band type) of the evaporator.
- Control of superheating on suction line (in case of EEV option).
- Evaporator antifreeze protection.
- Heat pump defrost control for automatic operation.
- Management of high and low pressure alarms.
- Management of the electronic expansion valves by means of EXV controller allowing optimized functions: cooling, heating, start-up and defrost (in case of EEV option).

- Management of external interlocks.
- Management of the remote control:
 - Unit power on/off
 - Summary alarm signals
- Remote signalling, by dry contacts:
 - Voltage presence
 - Compressors in operation
 - General Alarm
- Management of the hydro kit: start-up of pump, anti-freeze heater of external tank.

The unit controller can also clearly show all control parameters of the machine on the liquid crystal display, such as:

- Display of superheating value (in case of EEV option).
- Display of the temperature at the evaporator inlet and outlet.
- Display of the ambient air temperature.
- Display of discharge pressure and suction pressure.
- Display of the set point.
- Display of the various alarm and operation status:
 - Low / High pressure
 - Evaporator antifreeze
 - Flow switch signal for lack of water
 - Control of the compressor operating hours
 - Compressors in operation
 - Pump in operation and operating hours
 - Thermal protection of compressors
 - Thermal protection of fans
 - Faulty sensors

Standard equipment

- Set point timer/clock card.
- Pressure actuated fan speed control.
- Back light display.
- Digital pressure and temperature reading kit.
- High ambient pressure control.
- Sequence phase control.
- Control circuit transformer 400 V/230 V.
- Data logger.
- Power supply without neutral.
- Hour meter.
- Main switch.
- Refrigerant R410A.
- PED approval.
- Evaporator antifreeze electric heater.
- Compressor jacket (standard on S version).
- Compressor box.
- Water flow switch.

Optional hydro kits

On board mounted inside and remote hydrokits are available as optional. The on board hydro kits can be supplied with or without buffer tank while remote hydro kits (supplied loose for field installation) are always provided with internal tank.

- On board hydro kit without buffer tank has the following components:

- Single or double pump with low static pressure (100 kPa) or high static pressure (200 kPa),
- Expansion tank (18 litres for all models),
- Water filter option (supplied loose),
- Shut-off valves,
- Safety valve,
- Automatic air vent valve,
- Thermal insulation for pipes and water pump(s),
- The on board hydro kit with buffer tank has the following components:
 - Single or double pump with low static pressure (100 kPa) or high static pressure (200 kPa),
 - Buffer tank (205 l from 85 to 105 size, 320 l from 120 to 135 size),
 - Expansion tank (18 litres for all models),
 - Water filter option (supplied loose),
 - Shut-off valves,
 - Safety valve,
 - Automatic air vent valve,
 - Thermal insulation for pipes and water pump(s),
 - Electrical box,
 - Antifreeze electric heater inside buffer tank (electric heater for pipes is not supplied).

Factory installed options

- ModBus protocol kit for BMS.
- Lonwork protocol kit for BMS.
- Bacnet protocol kit for BMS.
- Compressors soft starter.
- Pressure actuated stepless fan speed controller for low ambient operation (-14 °C).
- Double set point.
- Power factor correction capacitors.
- Compressors overload protection.
- GSM.
- HP & LP manometers.
- Ecoating for Microchannel and AL/CU. Blue fins treatment for AL/CU.
- Condenser coils with copper fins.
- Coil grilles.
- Chiller grilles.
- Desuperheater.
- On board hydro kits 1P/2P with/without tank.

Field-installed accessories

- Remote ON/OFF control.
- Remote keyboard panel.
- Master and slaves control, up to 4 units max.
- Spring anti-vibration.
- Water filter.
- Remote hydro kits with buffer tank, 1 or 2 low or high pressure pump(s), relevant accessories and with or without antifreeze heater:
 - 300 litres: sizes 85-105.
 - 500 litres: sizes 120-135.

Accessories & Options

SyScroll Air	Delivery	Abbreviation	Description & Befenit
Set point timer/Clock card	Std	CLK	To schedule 4 different interval time with different active water T setpoint.
Back light display	Std		User Display panel mounted. Suggested for outdoor installation.
Digital pressures and temperatures reading Kit	Std		Pressure Transducers & Sensors to show the Discharge and Suction pressure and temperature during running condition.
High pressure control on capacity	Std		Functions able to protect multistage circuit from High discharge pressure values. Circuit is partloaded whenever the Discharge pressure is too high to prevent HP tripping.
Sequence phases control	Std	PHC	It allows to check the correct sense R-S-T of electric supply phases for 400/3/50 units.
Control circuit transformer 400V/230V	Std	TRF	Voltage transformer to provide correctly the separated voltage to the auxiliary line.
Data logger	Std	DL	Record continuously the essential thermodynamic operating parameters, during the last hours. This facilitates debug and service activity on field.
Power supply without neutral	Std	3PH	Unit to be supplied with 400/3/50. No need of Neutral cable.
Hour meter	Std		Total running hours recorded for each compressors and for total unit. Also record of total scroll compressors starts.
Main switch	Std		Front operated switch-disconnector with direct mounted handle to cut the power Supply Line according CE standards.
Flow switch	Std	FS	Prevents the operation of the unit if the circulating chilled fluid is insufficient. It is recommended to install a flow switch to ensure the correct operation of the unit.
Antifreeze electric heater kit	Std	EEH	Electrical Heater protects the plate exchanger.
Compressor Jacket	Std SLN	CJ	Jacket for each compressors in order to reduce the sound of its.
Remote On/Off control	Accessory		It enables the operator to power on the unit when it is in standby mode, to display alarms and switch over cooling-heat pump. Maximum length: 50mt.
Remote keyboard panel	Accessory		Makes it possible to control the unit through the remote terminal, up to a maximum distance of 400mt of telephone cable.
Electronic expansion valves	Option	EEV	It is the device able to control the refrigerant flow on suction line through a stepper motor in order to keep the superheat as constant as possible.
Modbus protocol kit for BMS	Option	MBS	It permits the integration of the unit with BMS with Modbus protocol through RS485 port.
Lonwork protocol kit for BMS	Option	LON	It permits the integration of the unit with BMS with Lonwork Network.
Bacnet protocol kit for BMS	Option	BAC	It permits the integration of the unit with BMS with Bacnet protocol through RS485 port.
Interface Kit ethernet/webctrl pcos (Modbus & Bacnet already included)	Option		It permits the integration of the unit with BMS with Modbus or Bacnet protocol through Ethernet port (TCP/IP).
Softstarter for compressor	Option	SS	An electronic device that automatically starts up the compressors gradually. The starting current can be reduced by up to 40% of the direct on line value.
Low ambient kit (-14°C) (pressostatic stepless fan speed control)	Option	FSC	Electronic speed controllers are designed to control the speed of fan motors in Air Cooled Chiller and Heatpump. Fan Speed controlled by Condensing Pressure in cool mode or by Air Temp in heat mode. Using variable fan speed controllers offers following benefits in commercial refrigeration or air-conditioning applications High Efficiency, Low Noise level, Low air temperature in cool mode and High air temperature in heat mode.
Double set point	Option	DSP	Can manage two different applications (set point) selected by remote dry contact Circuit 1 and Circuit 2. On/Off or Part Load by remote Dry contact.
Power factor corrector capacitors	Option	PFC	The purpose of the power factor corrector capacitor is to minimize the input current distortion and make the current in phase with the voltage. Target is to keep Power Factor about 0.90 in any running condition.
Overload protection for compressors	Option	CP	The compressor is equipped with an amperometrical protection (overload protection) wired under the compressor contactor; this protection operates: a) if compressor's temperature is too high. b) if current's absorption is too high.

Accessories & Options (continued)

SyScroll Air	Delivery	Abbreviation	Description & Befenit
Sequencer for up to 4 chillers installation	Accessory	SEQ	It can easily pilot up to 4 units, chiller or heat pumps, belonging to the same family, fitted in parallel, 50 metres apart maximum.
Master and slave up to 4 chillers installation: CHILLERNET	Accessory		It is a network of chillers. They are hydraulically connected in parallel on the same installation. They are intended to work together as a single machine whose capacity equals the total amount of capacities. Up to 4 chillers of the same family can be connected together. One of these chillers is called MASTER, the others are SLAVE. The MASTER chiller will control all the other chillers.
GSM	Option	GSM	Makes it possible to check the working mode or the switching on/off of the unit via SMS. In case of any alarms, the unit sends an SMS to the user.
Automatic circuit breaker	Option	ACB	ACB is an automatically operated electrical switch designed to protect an electrical circuit from damage caused by overload or short circuit. Providing Magnetic and Thermal protection to Fan and Compressor motors.
Mechanical gauges kit (HP and LP manometers)	Option	KM	Pressure gauges that display the operating pressure in the high and low pressure sections of the refrigerant circuit.
E-coating MCHX	Option		It is a treatment fo MCHX coil for medium level of pollution and for marine atmosphere.
Copper Fins	Option	CU/CU	The package heat exchanger finned coils in Cu/Cu can be used in places with a concentrations in the air of saline and highly aggressive agents: Not suitable in presence of sulphur-based agents.
Coil Guards	Option	CG	Grilles to protect the coils.
Chiller grilles	Option	KG	Grilles to protect unit avoiding possible intrusion into the unit.
Desuperheater	Option	D	Additional exchanger in order to recover 20% of capacity for Domestic Hot Water application.
Water pressure switch	Accessory		Mechanical water pressure switch to be mounted on the field installation on installation water piping to prevent very low Water Pressure.
Water filter	Accessory		Filter to remove impurities from the water supply.

Accessories are loosed and to install in the field. Options are mounted in factory.

EN 14511

Starting 2012 Campaign Eurovent Certification Company took decision to start certify only performances declared in according severe European Standard EN14511.

BEFORE 2012: GROSS PERFORMANCES

Before this date all capacity performances are declared, measured and certified by Eurovent, as GROSS performances. COOLING or HEATING CAPACITY was rated without taking in account the negative contribution of the heat exchanger Pressure Drop or the positive contribution of the Head Available prevalence in example.

OWER INPUT was rated as pure sum of all power input contribution from all motors fitted on the unit. Without taking in account the correction due to power spent to win the exchanger Pressure Drop in example.

AFTER 2012: NET PERFORMANCES

After this date all data are certified according EN14511. Mainly consequences in example on Water chiller or heatpump are: COOLING or HEATING CAPACITY is now rated taking in account the negative contribution of the heat exchanger Pressure Drop or the positive contribution of the Head Available prevalence in example. In case of Water to Water unit, in example, both exchanger Pressure Drop values are taken in account in the formula.

POWER INPUT is now rated as all power input contribution from all motors fitted on the unit taking in account also the correction due to power spent to win the exchanger Pressure Drop in example.

As an important consequence of these new rules setted by Eurovent is that EER, COP and ESEER are also affected by these correction. All efficiency index are now calculated, measured and certified according new rules setted by Eurovent according EN14511.

Air to water unit (non ducted outdoor):

	Indoor pump is an integral part		Indoor pump is not an integral part	
	ECC 2011 (gross)	EN14511	ECC 2011 (gross)	EN14511
Ph	$Ph_m^{(1)}$	$Ph_m - \frac{q_{wi} \Delta p_{e,wi}}{\eta_{pi}}$	Ph_m	$Ph_m + \frac{q_{wi} (-\Delta p_{i,wi})}{\eta_{pi}}$
Pc	$Pc_m^{(1)}$	$Pc_m + \frac{q_{wi} \Delta p_{e,wi}}{\eta_{pi}}$	Pc_m	$Pc_m - \frac{q_{wi} (-\Delta p_{i,wi})}{\eta_{pi}}$
Pe	$Pe_m^{(1)}$	$Pe_m - \frac{q_{wi} \Delta p_{e,wi}}{\eta_{pi}}$	Pe_m	$Pe_m + \frac{q_{wi} (-\Delta p_{i,wi})}{\eta_{pi}}$

(1) Measured with the indoor pump not running.

Where:

Ph = NET heating capacity.

Pc = NET cooling capacity.

Pe = electrical power input.

Ph_m = is the gross heat capacity, expressed in Watts.

Pc_m = is the gross cool capacity, expressed in Watts.

q_{wi} = is the nominal liquid flow rate.

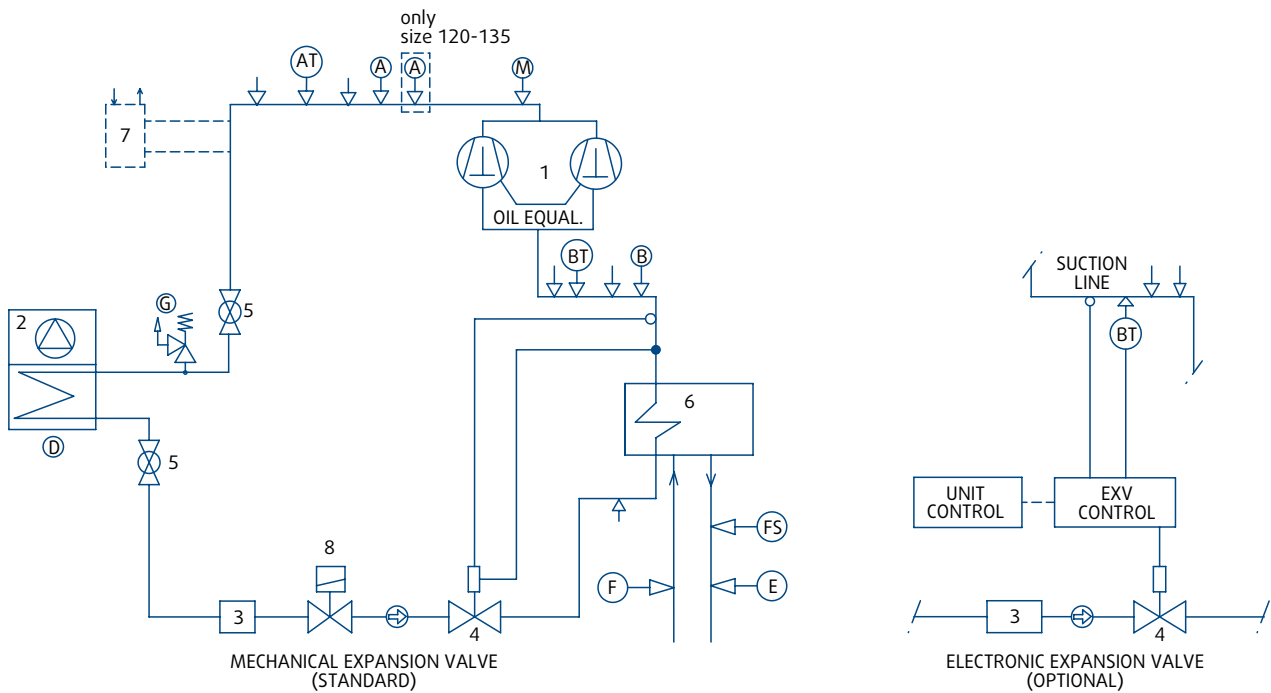
$\Delta p_{e,wi}$ = is the measured available external static pressure.

$\Delta p_{i,wi}$ = is the measured internal static pressure difference.

η_{pi} = is the efficiency of the pump.

Reference: Guidelines for the declaration of performances according to EN14511 (available a copy upon request for Systemair customer).

Refrigerant Flow Diagram - SyScroll 85-135 Air CO



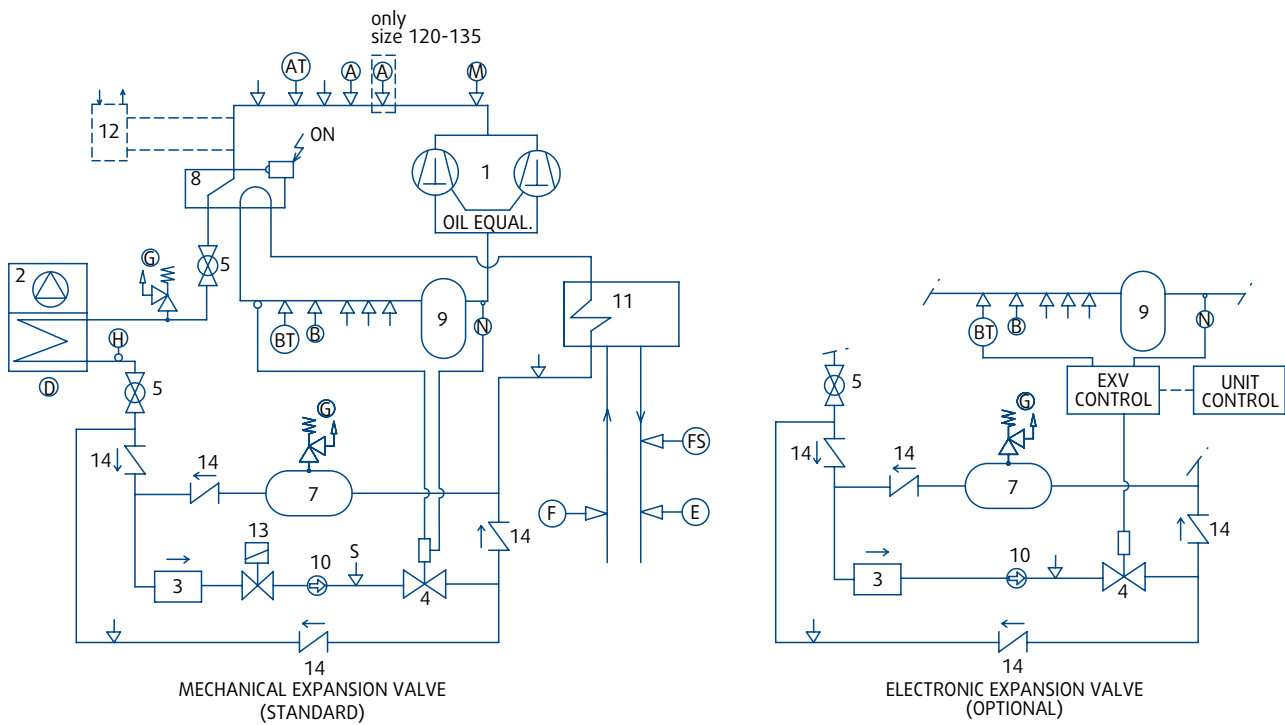
COMPONENTS

- 1 Compressor tandem scroll type
- 2 Air cooled condenser
- 3 Filter drier
- 4 Electronic/mechanical expansion valve
- 5 Globe valve
- 6 Plate heat exchanger
- 7 Desuperheater (optional)
- 8 Solenoid valve

SAFETY/CONTROL DEVICES

- A High pressure switch (40.5 bar)
- AT High pressure transducer
- B Low pressure switch (1.5 bar)
- BT Low pressure transducer
- FS Water flow switch
- D Air temperature sensor
- E Outlet water temperature sensor
- F Inlet water temperature sensor
- G PED pressure relief valve (45 bar)
- M Discharge temperature sensor
- ↓ Pipe connection with Shrader valve

Refrigerant Flow Diagram - SyScroll 85-135 Air HP



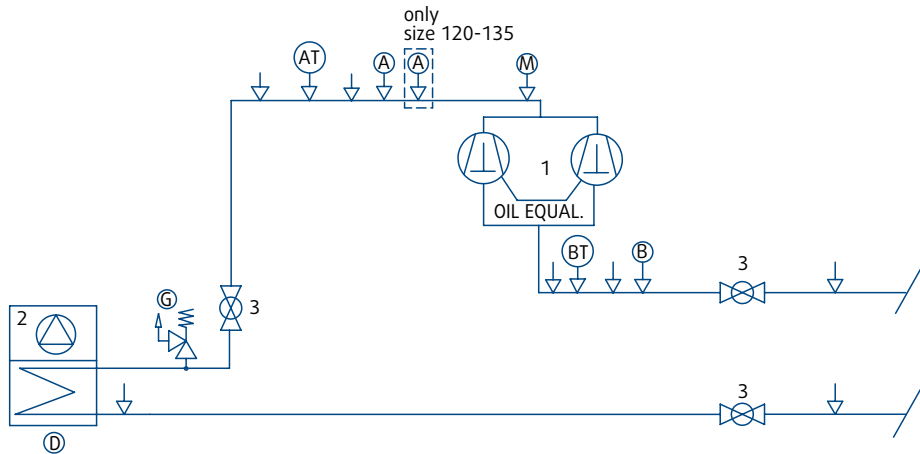
COMPONENTS

- 1 Compressor tandem scroll type
- 2 Air cooled heat exchanger
- 3 Filter drier
- 4 Electronic/mechanical expansion valve
- 5 Globe valve
- 7 Liquid receiver
- 8 Four-way valve
- 9 Suction accumulator
- 10 Sight glass
- 11 Plate heat exchanger
- 12 Desuperheater (optional)
- 13 Solenoid valve
- 14 Check valve

SAFETY/CONTROL DEVICES

- A High pressure switch (40.5 bar)
- AT High pressure transducer
- B Low pressure switch (1.5 bar)
- BT Low pressure transducer
- FS Water flow switch
- D Air temperature sensor
- E Outlet water temperature sensor
- F Inlet water temperature sensor
- G PED pressure relief valve (45 bar)
- M Discharge temperature sensor
- S 5/16" valve connection (service only)
- ↓ Pipe connection with Shrader valve

Refrigerant Flow Diagram - SyScroll 85-135 Air RE



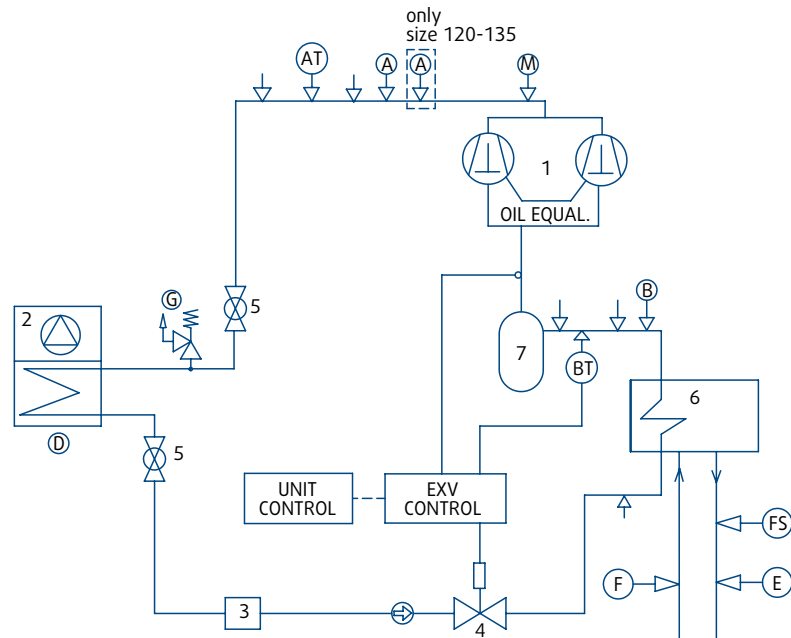
COMPONENTS

- 1 Compressor tandem scroll type
- 2 Air cooled condenser
- 3 Globe valve

SAFETY/CONTROL DEVICES

- A High pressure switch (40.5 bar)
- AT High pressure transducer
- B Low pressure switch (1.5 bar)
- BT Low pressure transducer
- D Air temperature sensor
- G PED pressure relief valve (45 bar)
- M Discharge temperature sensor
- ↓ Pipe connection with Shrader valve

Refrigerant Flow Diagram - SyScroll 85-135 Air BC



COMPONENTS

- 1 Compressor tandem scroll type
- 2 Air cooled heat exchanger
- 3 Filter drier
- 4 Electronic/mechanical expansion valve
- 5 Globe valve
- 6 Plate heat exchanger
- 7 Suction accumulator

SAFETY/CONTROL DEVICES

- A High pressure switch (40.5 bar)
- AT High pressure transducer
- B Low pressure switch (1.5 bar)
- BT Low pressure transducer
- FS Water flow switch
- D Air temperature sensor
- E Outlet water temperature sensor
- F Inlet water temperature sensor
- G PED pressure relief valve (45 bar)
- M Discharge temperature sensor
- ↓ Pipe connection with Schrader valve

Operating Limits - SyScroll Air CO - Cooling Mode

Operating limits

SyScroll Air CO				85		95		105		120		135	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Chilled liquid	Liquid outlet temperature	Water	°C	+6 to +18									
		Water with glycol*	°C	-10 to +6									
		Temperature spread	K	3 to 7									
	Maximum operating pressure	bar	6										
Ambient air	Air entering temperature cooling	-	°C	+10 to +45									
		S	°C	-14 to +42									
		HT-HPF	°C	-16 to +47									
	External static pressure	Standard fans	Pa	0									
		High pressure fans	Pa	<120									
Recommended system chilled water volume ²			l	510	570	630	720	810					
Minimum capacity step			%	50	43	50	44	50					
Power supply voltage ³			V	400 V / 3 Ø / 50 Hz (nominal)									

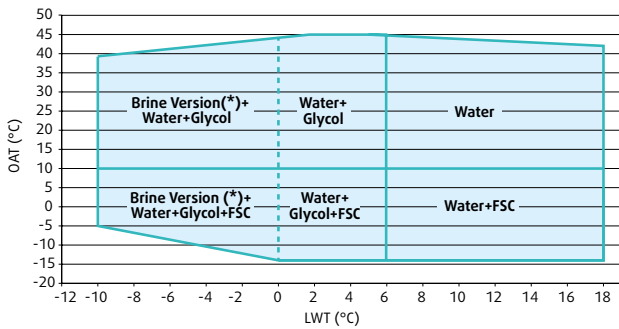
* For Liquid outlet temperature <0 °C provide Brine Version.

¹ Total unit flow rate and pressure drop are given for std unit. Caution: Minimum flow rates may only be used with brine solutions after reprogramming unit parameters.

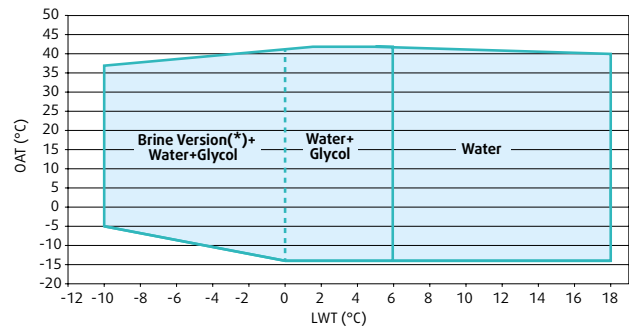
² Table shows minimum water / brine volume of system (about 5 lt/kW).

³ Voltage 400V +/- 10%.

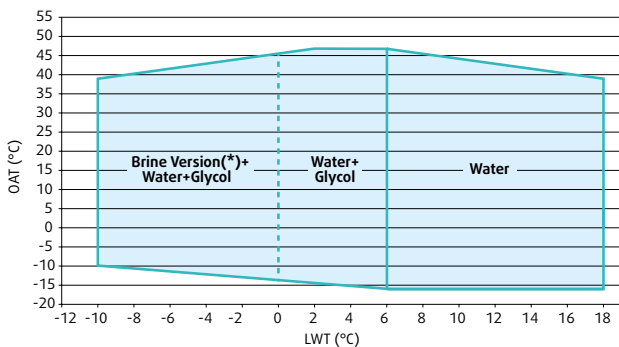
STD version



SLN version



HT version



Operating Limits - SyScroll Air HP - Cooling Mode

Operating limits

SyScroll Air HP				85		95		105		120		135	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Chilled liquid	Liquid outlet temperature	Water	°C	+6 to +18									
		Water with glycol*	°C	-10 to +6									
		Temperature spread	K	3 to 7									
	Maximum operating pressure	bar	6										
Ambient air	Air entering temperature cooling	-	°C	+5 to +42									
		S	°C	-14 to +40									
		HT-HPF	°C	-18 to +44									
	External static pressure	Standard fans	Pa	0									
		High pressure fans	Pa	<120									
Recommended system chilled water volume ²			l	510	570	630	720	810					
Minimum capacity step			%	50	43	50	44	50					
Power supply voltage ³			V	400 V / 3 Ø / 50 Hz (nominal)									

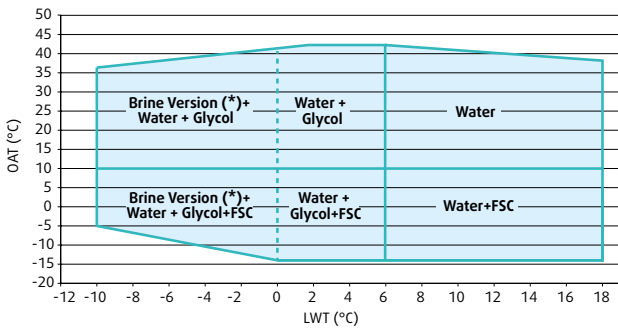
* For liquid outlet temperature <0 °C provide Brine Version.

¹ Total unit flow rate and pressure drop are given for std unit. Caution: Minimum flow rates may only be used with brine solutions after reprogramming unit parameters.

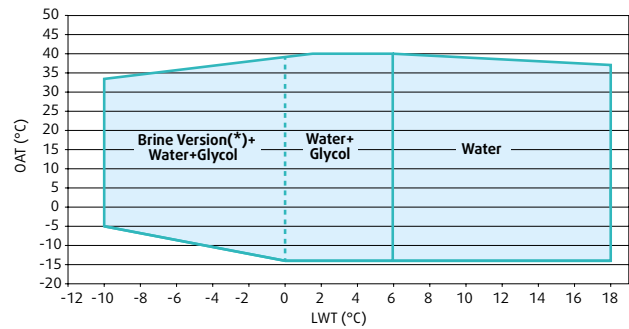
² Table shows minimum water / brine volume of system (about 5 lt/kW).

³ Voltage 400V +/- 10%.

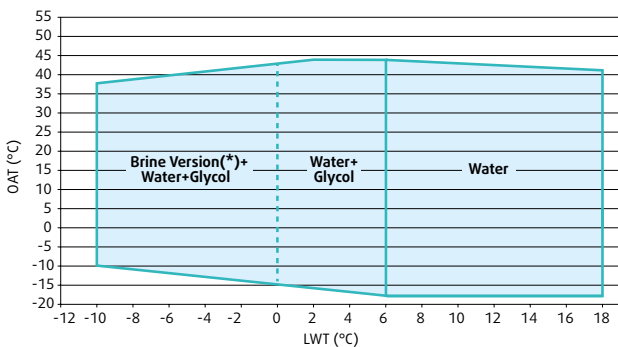
STD version



SLN version



HT version



Operating Limits - SyScroll Air HP - Heating Mode

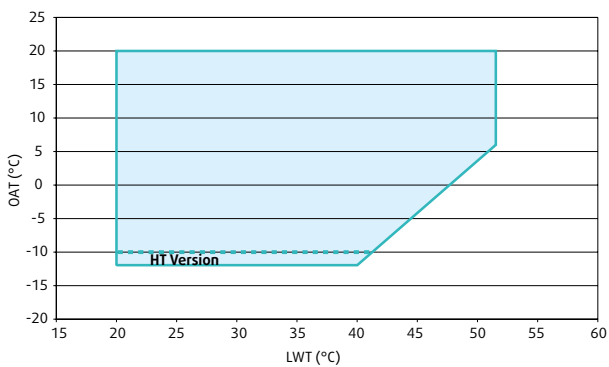
Operating limits

SyScroll Air HP				85		95		105		120		135	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Heat pump liquid	Liquid outlet temperature	Water	°C	+20 to +52									
		Temperature spread	K	3 to 7									
	Maximum operating pressure	bar	6										
Ambient air	Air entering Full Load Operation heating	-	°C	-10 to +20									
		S	°C	-10 to +20									
		HT	°C	-12 to +20									
	External static pressure	Standard fans	Pa	0									
High pressure fans		Pa	<120										
Recommended system chilled water volume ²			l	510	570	630	720	810					
Minimum capacity step			%	50	43	50	44	50					
Power supply voltage ³			V	400 V / 3 Ø / 50 Hz (nominal)									

¹ Total unit flow rate and pressure drop are given for std unit. Caution: Minimum flow rates may only be used with brine solutions after reprogramming unit parameters.

² Table shows minimum water / brine volume of system (about 3 lt/kW).

³ Voltage 400V +/- 10%.



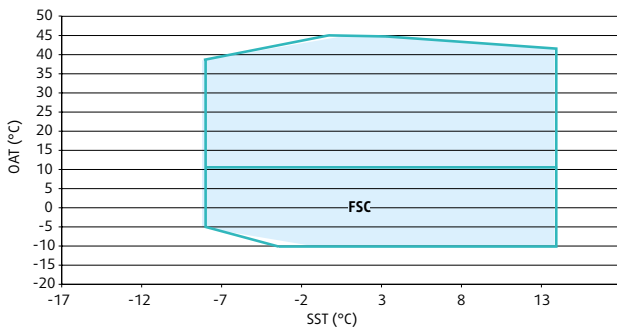
Operating Limits - SyScroll Air RE

Operating limits

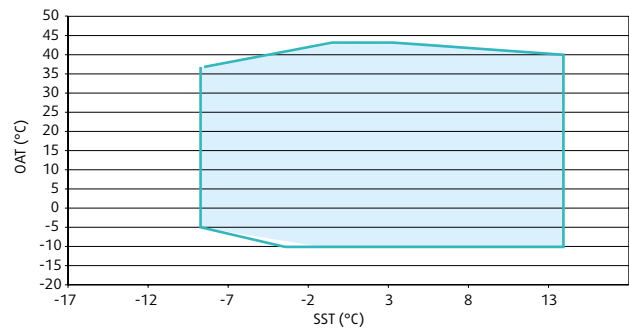
SyScroll Air RE				85		95		105		120		135	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Ambient air	Air entering temperature cooling	-	°C	+10 to +45									
		S	°C	-10 to +43									
		HT-HPF	°C	-12 to +47									
	External static pressure	Standard fans	Pa	0									
		High pressure fans	Pa	<120									
Minimum capacity step			%	50	43	50	44	50					
Power supply voltage ¹			V	400 V / 3 Ø / 50 Hz (nominal)									

¹ Voltage 400V +/- 10%.

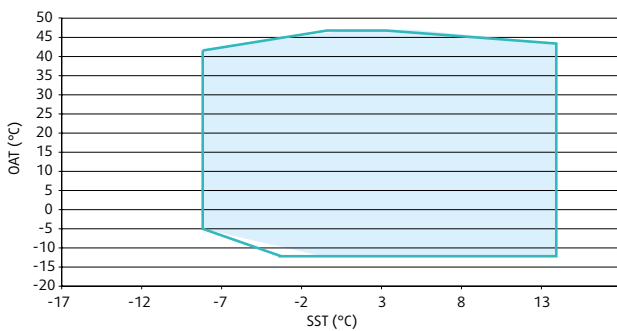
BLN version



S version



HT-HPF version



Correction Factors

Fouling factors

EVAPORATOR			CONDENSER		
Fouling factor (m ² ·°C/kW)	Cooling capacity factor	Power input factor	Fouling factor (m ² ·°C/kW)	Cooling capacity factor	Power input factor
0.044	1.000	1.000	0.044	1.000	1.000
0.088	0.987	0.995	0.088	0.987	1.023
0.176	0.964	0.985	0.176	0.955	1.068
0.352	0.915	0.962	0.352	0.910	1.135

Altitude factors

Altitude (m)	Cooling capacity factor	Power input factor
0	1.000	1.000
600	0.987	1.010
1200	0.973	1.020
1800	0.958	1.029
2400	0.943	1.038

System Water Volume

The minimum system water volume is calculated using the [minimum compressor running time](#) (1.5 minute for scroll compressor) and the [lower capacity step](#) (only one compressor running among the four compressors installed):

$$V = \frac{P \times t}{(n \times 25 \times \Delta T)}$$

Where

- V : Water volume (litre)
- P : Unit total cooling capacity (W)
- n : Number of compressor steps
- t : Compressor minimum running time (minute)
- ΔT : Evaporator temperature difference (°C)

With t = 1.5 minute, ΔT = 5 °C and n = 2, the minimum system water volume is about V = 6 litres/kW.

Physical Data - SyScroll Air CO _ - (STD-HT-HPF)

Standard, High Temperature and High Pressure Fan versions

Model		85	95	105	120	135
Nominal cooling capacity ¹	kW	84,2	93,2	104,6	118,6	132,1
Input power ¹	kW	27,2	31,5	37,7	42,0	47,6
EER ¹		3,09	2,96	2,77	2,82	2,78
Energy Efficiency Class		B	B	C	C	C
EER 75%		3,56	3,58	3,39	3,49	3,38
EER 50%		4,15	4,74	4,33	4,30	4,38
EER 25%		4,22	4,94	4,45	4,39	4,50
ESEER		3,94	4,35	4,00	4,01	4,03
EER*		3,18	3,04	2,76	2,84	2,80
ESEER*		4,03	4,43	3,96	4,03	4,00
EER**		2,80	2,73	2,58	2,72	2,68
ESEER**		3,66	4,11	3,81	3,90	3,90
Number of refrigerant circuits		1				
Total capacity steps	%	50-100	43-100	50-100	44-100	50-100
Compressor						
Number / Type		2 / Scroll				
N° of loading stages		0/100	0/100	0/100	0/100	0/100
Evaporator						
Number / Type		1 / Plate				
Water flow	m ³ /h	14,5	16,0	18,0	20,4	22,7
Pressure drop	kPa	26	32	28	22	19
Water volume	l	7	7	8	11	13
Antifreeze Heater	W	130				
Air cooled condenser						
Number of coils		2				
Total coil face area per coil	m ²	2,4			3,1	
Fans						
Number of fans		2				
Nominal speed	rpm	690	690	900	900	900
Total airflow	m ³ /h	34.000	34.000	44.000	44.000	44.000
Total input power	kW	2,4	2,4	3,4	3,4	3,4
Total input power*	kW	1,6	1,6	3,0	3,0	3,0
Total input power**	kW	3,0	3,0	5,2	5,2	5,2
External static pressure	Pa	0 or 120 Pa**				
Water Connections (Evaporator)						
Type		Male GAS Threaded				
Inlet Diameter / Outlet Diameter	inch	2"1/2 / 2"1/2				
Water Connections (Desuperheater)						
Type		Male GAS Threaded				
Inlet Diameter / Outlet Diameter	inch	1" / 1"				
Weight						
Shipping	kg	708	779	858	908	946
Operating	kg	715	786	867	919	959
Additional weight						
HT-HPF versions	kg	20	20	20	20	20
Desuperheater versions	kg	12	12	13	13	13
Dimensions						
Length	mm	3.000			3.500	
Width	mm	1.100				
Height	mm	2.250				
Acoustical data						
Sound power level ²	dB(A)	84	84	88	88	88
Sound pressure level at 10 m ³	dB(A)	52	52	56	56	56

¹ Data refers to 7°C leaving chilled water temperature and 35°C condenser air temperature, according EN14511 standard.

² Sound levels are at fully loaded conditions. Sound power level values refer to ISO standard 3744.

³ Sound pressure levels refer to ISO Standard 3744, parallelepiped shape.

* High Temperature Units (HT) with inverter fans.

** HPF Units with high static pressure fans.

Physical Data - SyScroll Air CO_S - (STD)

Standard version

Model		85	95	105	120	135
Nominal cooling capacity ¹	kW	81,1	89,3	101,4	113,5	126,0
Input power ¹	kW	28,0	32,8	38,6	43,0	49,6
EER ¹		2,90	2,72	2,63	2,64	2,54
Energy Efficiency Class		C	C	D	D	D
EER 75%		3,52	3,56	3,36	3,55	3,35
EER 50%		4,13	4,72	4,32	4,29	4,37
EER 25%		4,19	4,90	4,43	4,45	4,46
ESEER		3,91	4,32	3,98	4,03	4,00
Number of refrigerant circuits		1				
Total capacity steps	%	50-100	43-100	50-100	44-100	50-100
Compressor						
Number / Type		2 / Scroll				
N° of loading stages		0/100	0/100	0/100	0/100	0/100
Evaporator						
Number / Type		1 / Plate				
Water flow	m ³ /h	13,9	15,4	17,4	19,5	21,7
Pressure drop	kPa	23	28	25	20	17
Water volume	l	7	7	8	11	13
Antifreeze Heater	W	130				
Air cooled condenser						
Number of coils		2				
Total coil face area per coil	m ²	2,4			3,1	
Fans						
Number of fans		2				
Nominal speed	rpm	550	550	690	690	690
Total airflow	m ³ /h	25.000	25.000	34.000	36.000	36.000
Total input power	kW	1,8	1,8	2,4	2,4	2,4
Water Connections (Evaporator)						
Type		Male GAS Threaded				
Inlet Diameter / Outlet Diameter	inch	2"1/2 / 2"1/2				
Water Connections (Desuperheater)						
Type		Male GAS Threaded				
Inlet Diameter / Outlet Diameter	inch	1" / 1"				
Weight						
Shipping	kg	708	779	858	908	946
Operating	kg	715	786	867	919	959
Additional weight						
HT-HPF versions	kg	20	20	20	20	20
Desuperheater versions	kg	12	12	13	13	13
Dimensions						
Length	mm	3.000			3.500	
Width	mm	1.100				
Height	mm	2.250				
Acoustical data						
Sound power level ²	dB(A)	82	82	85	85	85
Sound pressure level at 10 m ³	dB(A)	50	50	53	53	53

¹ Data refers to 7°C leaving chilled water temperature and 35°C condenser air temperature, according EN14511 standard.

² Sound levels are at fully loaded conditions. Sound power level values refer to ISO standard 3744.

³ Sound pressure levels refer to ISO Standard 3744, parallelepiped shape.

Physical Data - SyScroll Air HP _ - (STD-HT-HPF)

Standard, High Temperature and High Pressure Fan versions

Model		85	95	105	120	135
Nominal cooling capacity ¹	kW	79,0	87,0	98,0	113,8	125,0
Input power ¹	kW	27,6	32,0	39,0	42,0	47,0
EER ¹		2,86	2,72	2,51	2,71	2,66
Energy Efficiency Class		C	C	D	C	D
EER 75%		3,21	3,48	3,18	3,46	3,36
EER 50%		4,43	4,60	4,06	4,27	4,35
EER 25%		3,81	4,79	4,17	4,36	4,48
ESEER		3,84	4,22	3,75	3,98	4,00
EER ¹ / EER ^{**}		2,93 / 2,59	2,77 / 2,48	2,51 / 2,29	2,74 / 2,45	2,68 / 2,40
ESEER ¹ / ESEER ^{**}		4,02 / 3,49	4,38 / 3,93	3,89 / 3,62	4,17 / 3,85	4,18 / 3,89
Nominal heating capacity ²	kW	85,0	96,0	107,0	120,0	132,6
Input power ²	kW	27,1	30,8	38,0	42,5	47,2
COP ²		3,14	3,12	2,82	2,82	2,81
Energy Efficiency Class		B	B	C	C	C
COP ² / COP ^{**}		3,23 / 2,86	3,21 / 2,88	2,85 / 2,70	2,58 / 2,69	2,83 / 2,67
SCOP / Energy efficiency class		3,56 / A+	3,51 / A+	3,36 / A+	3,31 / A+	3,33 / A+
η_s		140	138	131	129	130
Number of refrigerant circuits		1				
Total capacity steps	%	50-100	43-100	50-100	44-100	50-100
Compressor						
Number / Type		2 / Scroll				
N° of loading stages		0/100	0/100	0/100	0/100	0/100
Evaporator						
Number / Type		1 / Plate				
Water flow cooling ¹	m ³ /h	13,6	15,0	16,9	19,6	21,5
Water pressure drop cooling ¹	kPa	24	29	25	21	17
Water flow heat pump ²	m ³ /h	14,6	16,5	18,4	20,6	22,8
Water pressure drop heat pump ²	kPa	28	33	30	22	18
Water volume	l	7	7	8	11	13
Antifreeze Heater	W	130				
Air cooled condenser						
Number of coils		2				
Total coil face area per coil	m ²	2,4			3,1	
Fans						
Number of fans		2				
Nominal speed	rpm	690	690	900	900	900
Total airflow	m ³ /h	34.700	34.700	42.000	43.200	43.200
Total input power	kW	2,4	2,4	3,4	3,4	3,4
Total input power ¹ / Total input power ^{**}	kW	1,6 / 3,0	1,6 / 3,0	3,0 / 5,2	3,0 / 5,2	3,0 / 5,2
External static pressure	Pa	0 or 120 Pa ^{**}				
Water Connections (Evaporator)						
Type / Inlet Diameter / Outlet Diameter	inch	Male GAS Threaded / 2"1/2 / 2"1/2				
Water Connections (Desuperheater)						
Type / Inlet Diameter / Outlet Diameter	inch	Male GAS Threaded / 2"1/2 / 2"1/2				
Weight						
Shipping	kg	839	906	1.043	1.159	1.208
Operating	kg	860	932	1.064	1.170	1.214
Additional weight						
HT-HPF versions	kg	20	20	20	20	20
Desuperheater versions	kg	12	12	13	13	13
Dimensions						
Length	mm	3.000			3.500	
Width	mm	1.100				
Height	mm	2.250				
Acoustical data						
Sound power level ²	dB(A)	84	84	88	88	88
Sound pressure level at 10 m ³	dB(A)	52	52	56	56	56

¹ Data refers to 7°C leaving chilled water temperature and 35°C condenser air temperature, according EN14511 standard.

² Sound levels are at fully loaded conditions. Sound power level values refer to ISO standard 3744.

³ Sound pressure levels refer to ISO Standard 3744, parallelepiped shape.

* High Temperature Units (HT) with inverter fans.

** HPF Units with high static pressure fans.

Physical Data - SyScroll Air HP_S (STD)

Standard version

Model		85	95	105	120	135
Nominal cooling capacity ¹	kW	76,0	83,3	95,0	111,4	121,8
Input power ¹	kW	28,3	33,3	40,0	42,6	48,0
EER ¹		2,68	2,50	2,37	2,62	2,54
Energy Efficiency Class		D	E	E	D	D
EER 75%		3,37	3,39	3,13	3,26	3,26
EER 50%		3,94	4,47	3,98	4,01	4,22
EER 25%		4,01	4,66	4,11	4,09	4,34
ESEER		3,73	4,10	3,68	3,74	3,88
Nominal heating capacity ²	kW	82,6	93,1	105,1	117,8	129,4
Input power ²	kW	26,4	30,1	37,0	41,5	46,2
COP ²		3,13	3,09	2,84	2,84	2,80
Energy Efficiency Class		B	B	C	C	C
SCOP /Energy efficiency class		3,56 / A+	3,51 / A+	3,36 / A+	3,31 / A+	3,33 / A+
η_s		140	138	131	129	130
Number of refrigerant circuits		1				
Total capacity steps	%	50-100	43-100	50-100	44-100	50-100
Compressor						
Number / Type		2 / Scroll				
N° of loading stages		0/100	0/100	0/100	0/100	0/100
Evaporator						
Number / Type		1 / Plate				
Water flow cooling ¹	m ³ /h	13,1	14,3	16,3	19,2	20,9
Water pressure drop cooling ¹	kPa	22	26	24	20	17
Water flow heat pump ²	m ³ /h	14,2	16,0	18,1	20,3	22,3
Water pressure drop heat pump ²	kPa	26	32	29	21	17
Water volume	l	7	7	8	11	13
Antifreeze Heater	W	130				
Air cooled condenser						
Number of coils		2				
Total coil face area per coil	m ²	2,4			3,1	
Fans						
Number of fans		2				
Nominal speed	rpm	550	550	690	690	690
Total airflow	m ³ /h	26.200	26.200	34.700	35.800	35.800
Total input power	kW	1,8	1,8	2,4	2,4	2,4
Water Connections (Evaporator)						
Type		Male GAS Threaded				
Inlet Diameter / Outlet Diameter	inch	2"1/2 / 2"1/2				
Water Connections (Desuperheater)						
Type		Male GAS Threaded				
Inlet Diameter / Outlet Diameter	inch	1" / 1"				
Weight						
Shipping	kg	853	926	1.056	1.160	1.201
Operating	kg	860	932	1.064	1.170	1.214
Additional weight						
HT-HPF versions	kg	20	20	20	20	20
Desuperheater versions	kg	12	12	13	13	13
Dimensions						
Length	mm	3.000			3.500	
Width	mm	1.100				
Height	mm	2.250				
Acoustical data						
Sound power level ³	dB(A)	82	82	85	85	85
Sound pressure level at 10 m ⁴	dB(A)	50	50	53	53	53

¹ Data refers to 7°C leaving chilled water temperature and 35°C condenser air temperature, according EN14511 standard.

² Data refers to 45°C leaving warm water temperature and 7°C ambient coil air temperature with 87% R.H., according EN14511 standard.

³ Sound levels are at fully loaded conditions. Sound power level values refer to ISO standard 3744.

⁴ Sound pressure levels refer to ISO Standard 3744, parallelepiped shape.

Physical Data - SyScroll Air RE

Remote Evaporator

Model		85	95	105	120	135
SyScroll Air RE_ - (STD)						
Nominal cooling capacity ¹	kW	94,3	105,0	116,4	130,5	142,4
Input power ²	kW	24,8	29,2	34,6	39,8	45,1
Refrigerant In connections	inch	1 5/8"	1 5/8"	2 1/8"	2 1/8"	2 1/8"
Refrigerant Out connections	inch	7/8"	7/8"	1 1/8"	1 1/8"	1 1/8"
SyScroll Air RE_ - (S)						
Nominal cooling capacity ¹	kW	90,2	99,8	112,4	125,2	135,7
Input power ²	kW	26,3	31,3	36,7	42,5	48,4
Refrigerant In connections	inch	1 5/8"	1 5/8"	2 1/8"	2 1/8"	2 1/8"
Refrigerant Out connections	inch	7/8"	7/8"	1 1/8"	1 1/8"	1 1/8"
Weight						
Shipping	kg	625	697	765	817	840
Additional weight						
HT/HPF versions	kg	20	20	20	20	20
Dimensions						
Length	mm	3.000			3.500	
Width	mm	1.100				
Height	mm	2.250				

¹ Data refers to 7°C evaporating temperature and 35°C condenser air temperature.

² Input power (only compressors).

N.B. For additional technical data regarding compressors, fan motors and noise, please refer to correspondent CO unit.

Electrical Data

Compressors @ 400 V/3 Ph/50 Hz

Model	Power input nominal Cond. compressor	Nom. Cond. current compressor	Power input max. Cond. compressor	Max. running current compressor FLA	Starting current compressor LRA	Nominal power factor	Unit fuse size	Cable section
	kW	A	kW	A	A	kW	A	mm ²
85	12,3	23,3	17,0	34	174	0,76	100	50
	12,3	23,3	17,0	34	174	0,76		
95	12,3	23,3	17,0	34	174	0,76	100	50
	15,9	27,8	22,6	40	225	0,82		
105	17,4	28,2	26,0	44	210	0,89	125	70
	17,4	28,2	26,0	44	210	0,89		
120	17,4	28,2	26,0	44	210	0,89	125	70
	21,1	33,6	32,0	53	210	0,91		
135	21,1	33,6	32,0	53	210	0,91	160	70
	21,1	33,6	32,0	53	210	0,91		

Fans @ 400 V/3 Ph/50 Hz

Units _

Size	Number	Nominal power per fan (kW) Δ	Max. running current per fan (A) Δ	Total fan power (kW) Δ	Total max. fan current (A) Δ
85	2	1,2	2,2	2,3	4,4
95	2	1,2	2,2	2,3	4,4
105	2	2,1	4,1	4,2	8,2
120	2	2,1	4,1	4,2	8,2
135	2	2,1	4,1	4,2	8,2

Units S

Size	Number	Nominal power per fan (kW) Δ	Max. running current per fan (A) Δ	Total fan power (kW) Δ	Total max. fan current (A) Δ
85	2	1,2	2,2	2,3	4,4
95	2	1,2	2,2	2,3	4,4
105	2	1,2	2,2	2,3	4,4
120	2	1,2	2,2	2,3	4,4
135	2	1,2	2,2	2,3	4,4

Units HT/HPF

Size	Number	Nominal power per fan (kW) Δ	Max. running current per fan (A) Δ	Total fan power (kW) Δ	Total max. fan current (A) Δ
85	2	3,1	4,8	6,2	9,6
95	2	3,1	4,8	6,2	9,6
105	2	3,1	4,8	6,2	9,6
120	2	3,1	4,8	6,2	9,6
135	2	3,1	4,8	6,2	9,6

Units @ 400 V/3 Ph/50 Hz

- Version			85	95	105	120	135
Power input (A)	Nominal	kW	27	30	39	43	46
	Maximum	kW	36	42	56	62	68
Current input (kW)	Nominal	A	51	55	65	70	75
	Maximum	A	72	78	96	105	114
Max Start-up current		A	212	263	262	262	271

S Version			85	95	105	120	135
Power input (A)	Nominal	kW	27	30	37	41	45
	Maximum	kW	36	42	54	60	66
Current input (kW)	Nominal	A	51	55	61	66	72
	Maximum	A	72	78	92	101	110
Max Start-up current		A	212	263	258	258	267

HT/HPF Version			85	95	105	120	135
Power input (A)	Nominal	kW	31	34	41	45	48
	Maximum	kW	40	46	58	64	70
Current input (kW)	Nominal	A	56	61	66	71	77
	Maximum	A	78	84	98	107	116
Max Start-up current		A	218	269	264	264	273

Pump data

Model	Low Pressure		High Pressure	
	Nominal power	Max. running current	Nominal power	Max. running current
	kW	A	kW	A
85	1,99	3,41	3,26	5,86
95	1,99	3,41	3,26	5,86
105	1,99	3,41	3,26	5,86
120	2,45	4,53	3,00	6,14
135	2,45	4,53	3,00	6,14

Electrical Data

Units with std pressure pump @ 400 V/3 Ph/50 Hz

- Version			85	95	105	120	135
Power input (A)	Nominal	kW	29	32	41	45	49
	Maximum	kW	38	44	58	65	71
Current input (kW)	Nominal	A	54	59	68	75	80
	Maximum	A	76	82	100	110	119
Max Start-up current		A	216	267	266	267	276

S Version			85	95	105	120	135
Power input (A)	Nominal	kW	29	32	39	43	47
	Maximum	kW	38	44	56	63	69
Current input (kW)	Nominal	A	54	59	64	71	76
	Maximum	A	76	82	96	106	115
Max Start-up current		A	216	267	262	263	272

HT/HPF Version			85	95	105	120	135
Power input (A)	Nominal	kW	33	36	43	47	51
	Maximum	kW	42	48	60	67	73
Current input (kW)	Nominal	A	60	64	69	76	81
	Maximum	A	81	87	101	111	120
Max Start-up current		A	221	272	267	268	277

Units with high pressure pump @ 400 V/3 Ph/50 Hz

- Version			85	95	105	120	135
Power input (A)	Nominal	kW	30	34	42	46	49
	Maximum	kW	39	45	59	65	71
Current input (kW)	Nominal	A	57	61	70	76	82
	Maximum	A	78	84	102	111	120
Max Start-up current		A	218	269	268	268	277

S Version			85	95	105	120	135
Power input (A)	Nominal	kW	30	34	40	44	48
	Maximum	kW	39	45	58	63	69
Current input (kW)	Nominal	A	57	61	67	72	78
	Maximum	A	78	84	98	108	117
Max Start-up current		A	218	269	264	265	274

HT/HPF Version			85	95	105	120	135
Power input (A)	Nominal	kW	34	38	44	48	51
	Maximum	kW	43	49	61	67	73
Current input (kW)	Nominal	A	62	67	72	78	83
	Maximum	A	83	89	103	113	122
Max Start-up current		A	223	274	269	270	279

Fan Data - HPF Version

SyScroll 85-135 Air HPF

Model	Fan Static Pressure (Pa)	Fan RPM	Parameter in Service Level: Max Speed (Vdc)
85-105	40	870	8,1
	60	910	8,4
	80	950	8,7
	100	990	9,0
	120	1.030	9,3
120-135	40	1.000	9,1
	60	1.030	9,3
	80	1.070	9,6
	100	1.100	9,8
	120	1.130	10,0

Sound data - SyScroll Air

Model	Frequency (Hz)							Sound Power dB(A)	Sound Pressure dB(A) ⁺
	125	250	500	1000	2000	4000	8000		
- Version									
85	83	84	82	79	74	68	62	84	52
95	83	84	82	79	74	68	62	84	52
105	87	88	86	83	78	72	66	88	56
120	87	88	86	83	78	72	66	88	56
135	87	88	86	83	78	72	66	88	56
S Version									
85	81	82	80	77	72	66	60	82	50
95	81	82	80	77	72	66	60	82	50
105	84	85	83	80	75	69	63	85	53
120	84	85	83	80	75	69	63	85	53
135	84	85	83	80	75	69	63	85	53
HT-HPF Version^{**}									
85	94	95	93	90	85	79	73	95	63
95	94	95	93	90	85	79	73	95	63
105	94	95	93	90	85	79	73	95	63
120	94	95	93	90	85	79	73	95	63
135	94	95	93	90	85	79	73	95	63

* Sound pressure level at 10 m. Values refers to ISO Standard 3744 with parallelepiped shape.

** Sound data valid in max air flow rate condition.

Cooling Capacities - SyScroll Air CO _ - (STD-HT-HPF)

Model	LWT °C	Condensing Air Temperature °C							
		25		30		32		35	
		Cool	Input Power*	Cool	Input Power*	Cool	Input Power*	Cool	Input Power*
		kW	kW	kW	kW	kW	kW	kW	kW
85	5	88,5	19,9	84,2	21,9	82,4	22,8	79,6	24,1
	7	94,1	20,2	89,6	22,3	87,7	23,2	84,7	24,5
	9	100,0	20,6	95,1	22,7	93,1	23,6	89,9	24,9
	11	106,0	20,9	100,9	23,1	98,8	24,0	95,4	25,4
	13	112,4	21,2	106,9	23,5	104,6	24,4	101,1	25,8
	15	118,9	21,5	113,2	23,9	110,7	24,8	107,0	26,3
	18	129,2	22,0	122,9	24,5	120,2	25,5	116,1	27,0
95	5	98,6	22,9	93,5	25,2	91,4	26,1	88,1	27,7
	7	104,9	23,4	99,5	25,6	97,3	26,6	93,8	28,2
	9	111,4	23,8	105,7	26,1	103,4	27,1	99,7	28,7
	11	118,2	24,3	112,2	26,7	109,7	27,7	105,8	29,3
	13	125,3	24,8	118,9	27,2	116,2	28,2	112,2	29,9
	15	132,6	25,3	125,8	27,8	123,0	28,8	118,7	30,5
	18	144,0	26,1	136,6	28,7	133,6	29,7	128,9	31,4
105	5	110,9	26,6	105,3	29,9	102,9	31,3	99,2	33,6
	7	117,8	26,9	111,7	30,2	109,2	31,7	105,3	33,9
	9	124,9	27,2	118,3	30,6	115,7	32,0	111,5	34,3
	11	132,2	27,6	125,2	30,9	122,3	32,4	117,9	34,7
	13	139,7	27,9	132,2	31,2	129,1	32,7	124,4	35,1
	15	147,5	28,2	139,4	31,6	136,1	33,1	131,0	35,4
	18	159,3	28,7	150,4	32,1	146,7	33,6	141,3	36,0
120	5	124,6	30,8	117,9	34,5	115,1	36,2	110,8	38,8
	7	132,5	31,2	125,3	35,0	122,3	36,7	117,7	39,3
	9	140,6	31,6	132,9	35,5	129,7	37,1	124,8	39,8
	11	148,9	32,1	140,8	36,0	137,4	37,7	132,2	40,3
	13	157,6	32,6	148,9	36,5	145,3	38,2	139,8	40,9
	15	166,6	33,1	157,3	37,1	153,5	38,8	147,6	41,5
	18	180,4	34,0	170,3	37,9	166,1	39,7	159,7	42,4
135	5	140,9	34,4	132,9	38,6	129,6	40,4	124,5	43,3
	7	149,8	35,0	141,3	39,2	137,8	41,0	132,3	44,0
	9	159,0	35,6	150,0	39,8	146,3	41,7	140,5	44,7
	11	168,5	36,2	159,0	40,5	155,1	42,4	149,0	45,4
	13	178,5	37,0	168,4	41,3	164,2	43,2	157,7	46,2
	15	188,7	37,7	178,0	42,1	173,6	44,0	166,8	47,0
	18	204,7	38,9	193,1	43,3	188,3	45,3	180,9	48,3

* Only Compressors.

Model	LWT °C	Condensing Air Temperature °C							
		38		40		42		45	
		Cool	Input Power*	Cool	Input Power*	Cool	Input Power*	Cool	Input Power*
		kW	kW	kW	kW	kW	kW	kW	kW
85	5	76,7	25,5	74,6	26,5	72,5	27,5	69,2	29,2
	7	81,5	25,9	79,4	26,9	77,1	27,9	73,6	29,6
	9	86,6	26,3	84,3	27,3	82,0	28,4	78,3	30,0
	11	91,9	26,8	89,5	27,8	87,0	28,8	83,1	30,5
	13	97,4	27,3	94,8	28,3	92,2	29,3	88,1	31,0
	15	103,0	27,7	100,3	28,8	97,6	29,8	93,2	31,5
	18	111,9	28,5	108,9	29,5	105,9	30,6	101,3	32,2
95	5	84,8	29,4	82,5	30,6	80,2	31,9	76,5	33,9
	7	90,3	29,9	87,8	31,1	85,4	32,4	81,5	34,4
	9	96,0	30,4	93,4	31,7	90,8	32,9	86,7	35,0
	11	101,9	31,0	99,1	32,2	96,3	33,5	92,1	35,6
	13	108,0	31,6	105,1	32,8	102,2	34,1	97,6	36,2
	15	114,3	32,2	111,3	33,5	108,2	34,8	103,4	36,9
	18	124,1	33,2	120,8	34,5	117,5	35,8	112,3	37,9
105	5	95,3	36,0	92,5	37,7	89,6	39,5	85,0	42,4
	7	101,1	36,4	98,2	38,2	95,2	40,0	90,5	42,9
	9	107,1	36,8	104,1	38,6	101,0	40,4	96,0	43,4
	11	113,3	37,2	110,1	39,0	106,8	40,9	101,6	43,8
	13	119,5	37,6	116,2	39,4	112,7	41,3	107,4	44,3
	15	125,9	38,0	122,4	39,8	118,8	41,7	113,2	44,8
	18	135,7	38,6	131,9	40,4	128,0	42,3	122,0	45,4
120	5	106,2	41,6	103,0	43,7	99,7	45,8	94,4	49,1
	7	112,8	42,2	109,5	44,2	106,0	46,3	100,5	49,7
	9	119,7	42,7	116,1	44,7	112,5	46,9	106,8	50,3
	11	126,8	43,2	123,1	45,3	119,2	47,4	113,2	50,8
	13	134,1	43,8	130,2	45,9	126,1	48,0	119,9	51,5
	15	141,6	44,4	137,5	46,5	133,2	48,6	126,7	52,1
	18	153,2	45,4	148,8	47,4	144,2	49,6	137,1	53,1
135	5	119,2	46,5	115,4	48,8	111,6	51,1	105,6	54,9
	7	126,7	47,2	122,8	49,4	118,7	51,8	112,4	55,6
	9	134,5	47,8	130,4	50,1	126,1	52,5	119,4	56,3
	11	142,6	48,6	138,2	50,8	133,7	53,2	126,7	57,0
	13	151,0	49,4	146,4	51,6	141,6	54,0	134,3	57,8
	15	159,7	50,2	154,8	52,5	149,8	54,9	142,1	58,6
	18	173,2	51,5	168,0	53,8				

* Only Compressors. HT Version

Cooling Capacities - SyScroll Air CO S - (STD)

Model	LWT °C	Condensing Air Temperature °C							
		25		30		32		35	
		Cool	Input Power*	Cool	Input Power*	Cool	Input Power*	Cool	Input Power*
		kW	kW	kW	kW	kW	kW	kW	kW
85	5	86,0	21,1	81,6	23,2	79,7	24,0	76,8	25,4
	7	91,3	21,5	86,6	23,6	84,7	24,5	81,6	25,9
	9	96,8	22,0	91,9	24,1	89,7	25,0	86,5	26,4
	11	102,5	22,4	97,2	24,6	95,0	25,5	91,6	26,9
	13	108,4	22,9	102,8	25,1	100,5	26,1	96,8	27,5
	15	114,5	23,3	108,6	25,7	106,1	26,6	102,2	28,1
	18	124,0	24,1	117,5	26,5	114,8	27,4	110,6	28,9
95	5	95,2	24,4	90,0	26,8	87,9	27,8	84,6	29,5
	7	101,1	24,9	95,6	27,4	93,4	28,4	89,9	30,1
	9	107,2	25,5	101,4	28,0	99,0	29,0	95,3	30,8
	11	113,5	26,1	107,4	28,6	104,8	29,7	100,9	31,4
	13	120,0	26,8	113,5	29,3	110,9	30,4	106,7	32,1
	15	126,7	27,4	119,9	30,0	117,0	31,1	112,7	32,9
	18	137,1	28,5	129,7	31,2	126,6	32,3	121,8	34,1
105	5	108,3	28,1	102,6	31,5	100,1	33,0	96,3	35,4
	7	114,9	28,5	108,7	31,9	106,1	33,4	102,1	35,8
	9	121,6	28,9	115,0	32,4	112,2	33,9	107,9	36,3
	11	128,5	29,3	121,4	32,8	118,5	34,4	114,0	36,8
	13	135,5	29,7	128,0	33,3	124,9	34,8	120,1	37,3
	15	142,7	30,1	134,6	33,7	131,3	35,3	126,3	37,8
	18	153,7	30,8	144,8	34,4	141,2	36,0	135,7	38,5
120	5	121,7	32,4	114,9	36,3	112,0	38,0	107,6	40,8
	7	129,2	32,9	121,9	36,9	118,8	38,6	114,1	41,4
	9	136,9	33,5	129,1	37,5	125,9	39,2	120,9	42,0
	11	144,8	34,0	136,5	38,1	133,1	39,9	127,8	42,7
	13	153,0	34,7	144,2	38,8	140,5	40,5	134,9	43,4
	15	161,4	35,3	152,0	39,4	148,2	41,2	142,3	44,1
	18	174,3	36,3	164,1	40,5	159,9	42,3	153,5	45,2
135	5	134,9	36,7	126,9	41,2	123,6	43,1	118,4	46,2
	7	143,2	37,5	134,7	41,9	131,1	43,9	125,6	47,0
	9	151,7	38,2	142,7	42,8	138,9	44,7	133,0	47,9
	11	160,5	39,1	150,9	43,6	146,9	45,6	140,7	48,8
	13	169,6	39,9	159,5	44,5	155,2	46,5	148,7	49,7
	15	179,0	40,9	168,2	45,5	163,8	47,5	156,9	50,7
	18	193,4	42,4	181,8	47,1	177,0	49,1	169,5	52,4

* Only Compressors.

Model	LWT °C	Condensing Air Temperature °C					
		38		40		42	
		Cool	Input Power*	Cool	Input Power*	Cool	Input Power*
		kW	kW	kW	kW	kW	kW
85	5	73,8	26,9	71,7	27,9	69,5	29,0
	7	78,4	27,4	76,1	28,4		
	9	83,1	27,9	80,7	28,9		
	11	88,0	28,4	85,5	29,5		
	13	93,0	29,0	90,4	30,0		
	15	98,2	29,6	95,4	30,6		
	18	106,2	30,5	103,2	31,6		
95	5	81,2	31,3	78,8	32,6	76,4	34,0
	7	86,2	31,9	83,7	33,2		
	9	91,5	32,6	88,8	33,9		
	11	96,9	33,3	94,1	34,6		
	13	102,4	34,0	99,5	35,3		
	15	108,1	34,8	105,0	36,1		
	18	117,0	36,0	113,6	37,3		
105	5	92,2	37,9	89,3	39,7	86,3	41,6
	7	97,8	38,4	94,8	40,2		
	9	103,5	38,9	100,3	40,8		
	11	109,2	39,5	106,0	41,3		
	13	115,1	40,0	111,7	41,9		
	15	121,1	40,5	117,5	42,4		
	18	130,1	41,3	126,2	43,2		
120	5	102,8	43,7	99,5	45,8	96,1	48,0
	7	109,1	44,4	105,7	46,5		
	9	115,6	45,0	112,0	47,1		
	11	122,3	45,7	118,5	47,8		
	13	129,1	46,4	125,1	48,6		
	15	136,2	47,1	131,9	49,3		
	18	146,9	48,3	142,4	50,5		
135	5	112,9	49,6	109,1	52,0	105,2	54,5
	7	119,8	50,4	115,8	52,8		
	9	126,9	51,2	122,7	53,6		
	11	134,3	52,1	129,9	54,5		
	13	141,9	53,1	137,2	55,5		
	15	149,7	54,1	144,8	56,5		
	18						

* Only Compressors.

Cooling Capacities - SyScroll Air HP _ - (STD-HT-HPF)

Model	LWT °C	Condensing Air Temperature °C							
		25		30		32		35	
		Cool	Input Power*	Cool	Input Power*	Cool	Input Power*	Cool	Input Power*
		kW	kW	kW	kW	kW	kW	kW	kW
85	5	83,3	20,3	79,1	22,3	77,4	23,2	74,6	24,5
	7	88,5	20,7	84,1	22,7	82,2	23,6	79,2	24,9
	9	93,9	21,1	89,2	23,2	87,2	24,1	84,1	25,4
	11	99,5	21,5	94,5	23,6	92,4	24,5	89,1	25,9
	13	105,3	21,9	100,0	24,1	97,7	25,0	94,3	26,4
	15	111,3	22,3	105,7	24,6	103,3	25,5	99,6	26,9
	18	120,7	22,9	114,5	25,3	111,9	26,3	107,9	27,7
95	5	92,4	23,7	87,5	26,0	85,4	27,0	82,3	28,6
	7	98,2	24,2	93,0	26,5	90,8	27,6	87,5	29,2
	9	104,2	24,7	98,7	27,1	96,4	28,1	92,8	29,8
	11	110,4	25,3	104,6	27,7	102,1	28,7	98,4	30,4
	13	116,9	25,8	110,7	28,3	108,1	29,4	104,1	31,1
	15	123,5	26,4	116,9	29,0	114,2	30,0	110,1	31,8
	18	133,8	27,4	126,7	30,0	123,8	31,1	119,2	32,8
105	5	104,1	27,7	98,6	31,1	96,2	32,6	92,6	34,9
	7	110,4	28,1	104,5	31,5	102,0	33,0	98,1	35,4
	9	116,9	28,5	110,5	31,9	107,9	33,4	103,8	35,8
	11	123,5	28,9	116,7	32,4	113,9	33,9	109,6	36,3
	13	130,3	29,3	123,1	32,8	120,1	34,3	115,5	36,8
	15	137,3	29,7	129,5	33,2	126,4	34,8	121,5	37,3
	18	147,9	30,3	139,4	33,9	136,0	35,5	130,7	38,0
120	5	121,5	30,1	115,0	33,8	112,2	35,4	107,9	38,0
	7	129,1	30,6	122,1	34,3	119,2	35,9	114,6	38,5
	9	136,9	31,1	129,4	34,8	126,3	36,4	121,5	39,1
	11	145,0	31,6	137,0	35,3	133,7	37,0	128,6	39,6
	13	153,4	32,1	144,9	35,9	141,4	37,6	135,9	40,2
	15	162,0	32,6	152,9	36,5	149,2	38,2	143,5	40,8
	18	175,3	33,5	165,4	37,4	161,3	39,1	155,1	41,8
135	5	133,4	33,8	125,8	37,9	122,7	39,7	117,7	42,5
	7	141,7	34,4	133,6	38,5	130,3	40,3	125,0	43,2
	9	150,3	35,1	141,7	39,2	138,2	41,0	132,6	43,9
	11	159,2	35,8	150,1	40,0	146,3	41,8	140,4	44,7
	13	168,5	36,5	158,8	40,8	154,8	42,6	148,5	45,5
	15	178,0	37,3	167,7	41,6	163,5	43,5	156,9	46,4
	18	192,7	38,6	181,6	43,0	177,0	44,8	169,9	47,8

* Only Compressors.

Model	LWT °C	Condensing Air Temperature °C					
		38		40		42	
		Cool	Input Power*	Cool	Input Power*	Cool	Input Power*
		kW	kW	kW	kW	kW	kW
85	5	71,7	25,9	69,7	26,9	67,6	28,0
	7	76,2	26,4	74,1	27,4	71,9	28,4
	9	80,8	26,9	78,6	27,9	76,3	28,9
	11	85,6	27,4	83,3	28,4		
	13	90,6	27,9	88,1	28,9		
	15	95,8	28,4	93,1	29,4		
	18	103,8	29,2	100,9	30,3		
95	5	79,0	30,4	76,8	31,6	74,5	33,0
	7	84,0	31,0	81,6	32,2	79,2	33,5
	9	89,2	31,6	86,7	32,8	84,1	34,2
	11	94,5	32,2	91,9	33,5		
	13	100,1	32,9	97,3	34,2		
	15	105,8	33,6	102,8	34,9		
	18	114,6	34,7	111,4	36,0		
105	5	88,7	37,4	85,9	39,2	83,0	41,1
	7	94,0	37,9	91,2	39,7	88,2	41,6
	9	99,5	38,4	96,5	40,3	93,4	42,2
	11	105,1	38,9	101,9	40,8		
	13	110,8	39,4	107,5	41,3		
	15	116,5	39,9	113,1	41,8		
	18	125,3	40,7	121,6	42,6		
120	5	103,4	40,8	100,3	42,7	97,0	44,8
	7	109,9	41,3	106,6	43,3	103,1	45,4
	9	116,5	41,9	113,0	43,9	109,4	45,9
	11	123,3	42,4	119,7	44,5		
	13	130,3	43,1	126,5	45,1		
	15	137,6	43,7	133,5	45,7		
	18	148,7	44,7	144,3	46,7		
135	5	112,6	45,6	109,0	47,8	105,3	50,2
	7	119,6	46,3	115,8	48,5	111,8	50,9
	9	126,8	47,1	122,8	49,3	118,7	51,6
	11	134,3	47,8	130,1	50,1		
	13	142,1	48,7	137,6	50,9		
	15	150,1	49,6	145,4	51,8		
	18	162,5	51,0	157,5	53,2		

* Only Compressors. HT Version

Heating Capacities - SyScroll Air HP _ - (STD-HT-HPF)

Model	LWT °C	Ambient Air Temperature °C							
		-7		-5		-3		0	
		Heat	Input Power*	Heat	Input Power*	Heat	Input Power*	Heat	Input Power*
		kW	kW	kW	kW	kW	kW	kW	kW
85	30	61,5	17,2	64,8	17,3	68,3	17,5	73,8	17,7
	35	61,2	19,0	64,4	19,1	67,8	19,3	73,2	19,5
	40	61,0	21,1	64,1	21,2	67,2	21,3	72,5	21,5
	45			63,8	23,7	66,9	23,8	72,0	23,9
	50							71,5	26,6
95	30	69,1	19,8	72,8	20,0	76,7	20,1	82,8	20,3
	35	68,9	21,9	72,5	22,0	76,3	22,1	82,2	22,3
	40	68,9	24,4	72,3	24,4	76,0	24,5	81,8	24,7
	45					75,8	27,3	81,4	27,4
	50							81,3	30,6
105	30	77,4	24,2	81,2	24,2	85,2	24,2	91,4	24,2
	35	77,7	27,1	81,5	27,2	85,5	27,2	91,7	27,2
	40	77,6	30,4	81,5	30,4	85,6	30,5	91,8	30,5
	45			81,1	34,1	85,1	34,1	91,5	34,2
	50							90,8	38,3
120	30	86,0	27,1	90,2	27,1	94,8	27,1	101,9	27,1
	35	86,4	30,5	90,7	30,5	95,1	30,5	102,0	30,5
	40	86,8	34,3	91,0	34,3	95,4	34,4	102,2	34,4
	45			91,2	38,7	95,6	38,7	102,3	38,7
	50							102,1	43,6
135	30	94,8	30,2	99,2	30,2	104,6	30,2	111,9	30,3
	35	95,3	34,1	99,8	34,1	104,7	34,1	112,1	34,1
	40	96,2	38,6	100,6	38,6	105,3	38,6	112,5	38,5
	45					106,2	43,7	113,1	43,6
	50								

* Only Compressors.

Model	LWT °C	Ambient Air Temperature °C							
		5		7		10		15	
		Heat	Input Power*	Heat	Input Power*	Heat	Input Power*	Heat	Input Power*
		kW	kW	kW	kW	kW	kW	kW	kW
85	30	83,3	18,0	87,8	18,1	94,3	18,3	106,8	18,5
	35	82,5	19,8	86,9	20,0	93,4	20,2	105,6	20,5
	40	81,7	21,8	85,9	22,0	92,2	22,2	104,1	22,6
	45	80,8	24,1	84,8	24,3	91,0	24,5	102,5	24,9
	50	79,8	26,7	83,7	26,8	89,6	27,0	100,8	27,4
95	30	93,5	20,6	99,0	20,7	106,1	20,9	121,0	21,2
	35	92,7	22,6	98,0	22,8	104,9	23,0	118,8	23,3
	40	91,9	25,0	96,7	25,1	103,7	25,3	117,2	25,7
	45	91,3	27,7	95,8	27,8	102,6	28,0	115,6	28,4
	50	90,8	30,8	95,0	30,9	101,6	31,1	114,1	31,4
105	30	102,5	24,2	108,1	24,2	115,6	24,2	131,1	24,1
	35	102,6	27,2	108,0	27,2	115,1	27,2	129,4	27,1
	40	102,5	30,6	107,5	30,6	114,7	30,6	128,2	30,5
	45	102,2	34,3	107,0	34,3	114,1	34,3	127,2	34,3
	50	101,6	38,5	106,3	38,5	113,4	38,5	126,2	38,5
120	30	114,4	27,2	120,8	27,2	129,6	27,2	147,0	27,2
	35	114,2	30,6	120,5	30,6	128,5	30,6	145,4	30,6
	40	114,0	34,4	120,0	34,4	127,9	34,4	143,4	34,4
	45	113,8	38,7	119,2	38,7	127,2	38,7	142,3	38,7
	50	113,5	43,6	118,6	43,6	126,4	43,6	141,0	43,5
135	30	126,4	30,4	132,7	30,4	142,7	30,5	161,7	30,5
	35	125,5	34,2	132,2	34,2	141,8	34,3	160,2	34,3
	40	125,4	38,5	132,0	38,6	140,8	38,6	158,8	38,6
	45	125,5	43,5	131,8	43,5	140,1	43,5	156,9	43,5
	50	125,7	49,2	131,2	49,1	139,5	49,1	155,5	49,0

* Only Compressors.

Cooling Capacities - SyScroll Air HP S - (STD)

Model	LWT °C	Condensing Air Temperature °C					
		25		30		32	
		Cool	Input Power*	Cool	Input Power*	Cool	Input Power*
		kW	kW	kW	kW	kW	kW
85	5	80,9	21,5	76,6	23,5	74,8	24,4
	7	85,8	21,9	81,2	24,0	79,3	24,9
	9	90,9	22,4	86,0	24,6	83,9	25,5
	11	96,1	22,9	90,9	25,1	88,8	26,0
	13	101,5	23,5	96,0	25,7	93,7	26,6
	15	107,1	24,0	101,3	26,3	98,8	27,2
	18	115,7	24,8	109,4	27,2	106,7	28,1
95	5	89,2	25,2	84,2	27,6	82,1	28,7
	7	94,6	25,8	89,3	28,3	87,1	29,4
	9	100,2	26,4	94,6	29,0	92,2	30,1
	11	106,0	27,1	100,0	29,7	97,5	30,8
	13	111,9	27,8	105,6	30,4	103,0	31,6
	15	118,0	28,5	111,3	31,2	108,6	32,4
	18	127,4	29,7	120,2	32,5	117,2	33,6
105	5	101,9	29,3	96,2	32,8	93,7	34,4
	7	107,9	29,8	101,8	33,4	99,2	34,9
	9	114,0	30,3	107,5	33,9	104,7	35,5
	11	120,2	30,8	113,3	34,5	110,4	36,1
	13	126,6	31,3	119,2	35,0	116,1	36,7
	15	133,0	31,8	125,2	35,6	121,9	37,3
	18	142,8	32,6	134,2	36,5	130,7	38,1
120	5	119,8	31,3	113,1	35,2	110,2	36,8
	7	127,1	31,9	119,9	35,7	116,9	37,4
	9	134,6	32,5	126,9	36,3	123,7	38,0
	11	142,3	33,1	134,2	37,0	130,8	38,7
	13	150,3	33,7	141,6	37,7	138,0	39,4
	15	158,4	34,3	149,2	38,3	145,4	40,1
	18	171,0	35,4	161,0	39,4	156,8	41,2
135	5	131,0	35,3	123,2	39,5	120,0	41,4
	7	139,0	36,0	130,6	40,3	127,2	42,2
	9	147,2	36,8	138,3	41,1	134,6	43,0
	11	155,6	37,6	146,3	42,0	142,4	43,9
	13	164,4	38,5	154,4	43,0	150,3	44,9
	15	173,3	39,5	162,8	43,9	158,5	45,9
	18	187,1	41,0	175,8	45,5	171,1	47,5

* Only Compressors.

Model	LWT °C	Condensing Air Temperature °C					
		35		38		40	
		Cool	Input Power*	Cool	Input Power*	Cool	Input Power*
		kW	kW	kW	kW	kW	kW
85	5	71,9	25,8	68,9	27,3	66,9	28,3
	7	76,3	26,3	73,1	27,8		
	9	80,8	26,9	77,4	28,4		
	11	85,4	27,5	81,9	29,0		
	13	90,2	28,1	86,5	29,6		
	15	95,1	28,7	91,1	30,2		
	18	102,6	29,6	98,4	31,2		
95	5	78,9	30,4	75,6	32,3	73,3	33,7
	7	83,7	31,1	80,2	33,0		
	9	88,6	31,8	84,9	33,7		
	11	93,7	32,6	89,8	34,5		
	13	99,0	33,4	94,8	35,3		
	15	104,3	34,2	99,9	36,1		
	18	112,6	35,5	107,8	37,5		
105	5	89,9	36,8	85,7	39,4	82,8	41,3
	7	95,1	37,4	90,8	40,1		
	9	100,5	38,0	95,9	40,7		
	11	105,9	38,6	101,2	41,4		
	13	111,4	39,2	106,4	42,0		
	15	116,9	39,9	111,8	42,7		
	18	125,3	40,8	119,8	43,7		
120	5	105,8	39,5	101,1	42,3	97,9	44,4
	7	112,2	40,1	107,3	43,0		
	9	118,8	40,7	113,6	43,7		
	11	125,5	41,4	120,1	44,3		
	13	132,5	42,1	126,7	45,1		
	15	139,6	42,9	133,5	45,8		
	18	150,5	44,0	144,0	47,0		
135	5	114,9	44,4	109,5	47,6	105,8	49,9
	7	121,8	45,2	116,1	48,4		
	9	128,9	46,0	122,9	49,3		
	11	136,3	47,0	130,0	50,2		
	13	143,9	47,9	137,2	51,2		
	15	151,7	48,9	144,7	52,2		
	18	163,8	50,6	156,2	53,9		

* Only Compressors.

Heating Capacities - SyScroll Air HP S - (STD)

Model	LWT °C	Ambient Air Temperature °C							
		-7		-5		-3		0	
		Heat	Input Power*	Heat	Input Power*	Heat	Input Power*	Heat	Input Power*
		kW	kW	kW	kW	kW	kW	kW	kW
85	30	59,5	17,1	62,6	17,2	66,0	17,4	71,0	17,6
	35	59,2	18,9	62,3	19,0	65,6	19,2	70,6	19,3
	40	59,2	21,1	62,2	21,2	65,3	21,2	70,3	21,4
	45					65,2	23,7	69,9	23,8
	50							69,6	26,5
95	30	66,8	19,8	70,1	19,9	74,0	20,0	79,5	20,2
	35	66,7	21,9	69,9	22,0	73,7	22,1	79,1	22,3
	40	-	-	70,0	24,5	73,5	24,5	78,9	24,7
	45							78,8	27,5
	50								
105	30	75,8	24,2	79,3	24,2	83,4	24,2	89,2	24,2
	35	76,2	27,1	79,7	27,1	83,7	27,2	89,6	27,2
	40	76,0	30,4	79,8	30,4	83,7	30,5	89,7	30,5
	45					83,5	34,1	89,6	34,2
	50								
120	30	84,1	27,0	88,0	27,1	92,7	27,1	99,2	27,1
	35	84,7	30,5	88,5	30,5	93,1	30,5	99,5	30,5
	40	85,0	34,3	89,0	34,3	93,3	34,4	99,8	34,4
	45					93,6	38,7	100,1	38,7
	50								
135	30	92,4	30,1	96,6	30,2	101,8	30,2	109,2	30,3
	35	93,3	34,0	97,4	34,1	102,4	34,1	109,2	34,1
	40	94,4	38,6	98,4	38,6	103,2	38,5	109,9	38,5
	45					104,1	43,7	110,7	43,6
	50								

* Only Compressors.

Model	LWT °C	Ambient Air Temperature °C							
		5		7		10		15	
		Heat	Input Power*	Heat	Input Power*	Heat	Input Power*	Heat	Input Power*
		kW	kW	kW	kW	kW	kW	kW	kW
85	30	80,2	17,9	84,7	18,0	91,2	18,2	103,4	18,4
	35	79,6	19,7	84,1	19,9	90,1	20,1	102,4	20,4
	40	78,9	21,7	83,3	21,9	89,1	22,1	100,7	22,5
	45	78,3	24,0	82,4	24,2	88,1	24,3	99,2	24,7
	50	77,7	26,7	81,3	26,7	87,0	26,9	97,7	27,2
95	30	90,1	20,5	94,7	20,7	102,1	20,9	115,9	21,2
	35	89,5	22,6	94,0	22,7	101,1	22,9	114,6	23,3
	40	88,5	25,0	93,4	25,1	100,2	25,3	113,3	25,7
	45	88,1	27,7	92,8	27,8	99,1	28,0	112,1	28,4
	50	87,9	30,8	92,3	30,9	98,3	31,1	110,3	31,4
105	30	100,4	24,2	105,2	24,2	113,0	24,2	127,5	24,2
	35	100,1	27,2	105,3	27,2	112,7	27,2	126,7	27,2
	40	100,1	30,6	105,3	30,6	112,3	30,6	125,9	30,5
	45	100,0	34,3	105,1	34,3	111,7	34,3	124,8	34,3
	50	99,6	38,5	104,3	38,5	111,1	38,6	123,7	38,5
120	30	111,8	27,2	117,4	27,2	126,2	27,2	142,8	27,2
	35	111,5	30,6	117,2	30,6	125,7	30,6	141,7	30,6
	40	111,3	34,4	117,1	34,4	125,2	34,4	140,7	34,4
	45	111,3	38,7	116,9	38,7	124,3	38,7	139,5	38,7
	50	111,2	43,6	116,5	43,6	123,8	43,6	138,0	43,5
135	30	122,8	30,3	128,8	30,4	138,5	30,4	156,6	30,5
	35	122,7	34,2	128,5	34,2	138,0	34,2	155,6	34,3
	40	122,8	38,5	128,5	38,5	137,5	38,6	154,6	38,6
	45	122,6	43,5	128,6	43,5	137,2	43,5	153,6	43,5
	50	123,1	49,2	128,9	49,1	136,5	49,1	152,7	49,0

* Only Compressors.

Condensing unit - SyScroll Air RE _ - (STD-HT-HPF)

Model	ET °C	Condensing Air Temperature °C									
		25		30		35		40		45	
		Cool	Input Power*	Cool	Input Power*	Cool	Input Power*	Cool	Input Power*	Cool	Input Power*
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
85	1	88,1	19,5	83,5	21,5	78,6	23,5	73,2	25,9	67,5	28,4
	3	93,7	19,8	88,9	21,8	83,6	23,9	78,0	26,3	72,0	28,8
	5	99,6	20,1	94,4	22,2	88,8	24,4	82,9	26,7	76,5	29,3
	7	105,6	20,5	100,1	22,6	94,3	24,8	88,0	27,1	81,3	29,7
	9	111,9	20,8	106,1	23,0	99,9	25,2	93,2	27,6	86,2	30,2
	11	118,4	21,1	112,2	23,4	105,7	25,7	98,7	28,1		
	14	128,6	21,6	121,9	24,0	114,7	26,3	107,2	28,8		
95	1	98,6	23,0	93,1	25,2	87,4	27,7	81,3	30,5	75,0	33,8
	3	104,9	23,4	99,1	25,6	93,0	28,2	86,6	31,0	79,9	34,3
	5	111,5	23,9	105,4	26,1	98,9	28,7	92,2	31,6	85,1	34,8
	7	118,3	24,3	111,8	26,7	105,0	29,2	97,8	32,1	90,4	35,4
	9	125,3	24,8	118,5	27,2	111,3	29,8	103,7	32,7	95,9	36,0
	11	132,6	25,3	125,3	27,8	117,7	30,4	109,8	33,4		
	14	143,9	26,2	136,1	28,6	127,8	31,4	119,3	34,4		
105	1	110,4	26,6	104,3	29,8	97,9	33,5	90,8	37,6	82,9	42,2
	3	117,3	26,9	110,8	30,2	103,9	33,9	96,5	38,0	88,3	42,7
	5	124,4	27,2	117,4	30,5	110,1	34,2	102,3	38,5	93,8	43,2
	7	131,7	27,6	124,2	30,9	116,4	34,6	108,2	38,9	99,4	43,7
	9	139,1	27,9	131,1	31,2	122,9	35,0	114,3	39,3	105,0	44,1
	11	146,8	28,2	138,2	31,5	129,4	35,4	120,4	39,7		
	14	158,5	28,7	149,1	32,1	139,5	35,9	129,7	40,3		
120	1	123,7	30,4	116,6	34,1	109,1	38,3	101,0	43,1	92,1	48,5
	3	131,6	30,8	124,0	34,6	116,0	38,8	107,4	43,6	98,2	49,0
	5	139,7	31,3	131,6	35,0	123,1	39,3	114,1	44,1	104,4	49,5
	7	148,1	31,7	139,5	35,5	130,5	39,8	121,0	44,6	110,8	50,1
	9	156,8	32,2	147,6	36,0	138,1	40,3	128,1	45,2	117,4	50,7
	11	165,7	32,7	156,0	36,5	145,9	40,9	135,3	45,8		
	14	179,6	33,5	168,9	37,4	157,9	41,7	146,5	46,7		
135	1	135,6	34,3	127,4	38,4	118,8	43,1	109,6	48,5	99,6	54,6
	3	144,2	34,8	135,5	39,0	126,4	43,7	116,6	49,1	106,1	55,2
	5	153,2	35,4	143,9	39,6	134,2	44,4	123,9	49,8	112,9	55,9
	7	162,4	36,1	152,6	40,3	142,4	45,1	131,5	50,5	119,8	56,6
	9	172,0	36,8	161,6	41,1	150,8	45,9	139,3	51,3	127,1	57,4
	11	181,9	37,5	170,9	41,8	159,4	46,7	147,4	52,1		
	14	197,3	38,7	185,4	43,1	173,0	47,9	159,9	53,4		

* Only Compressors. HT Version

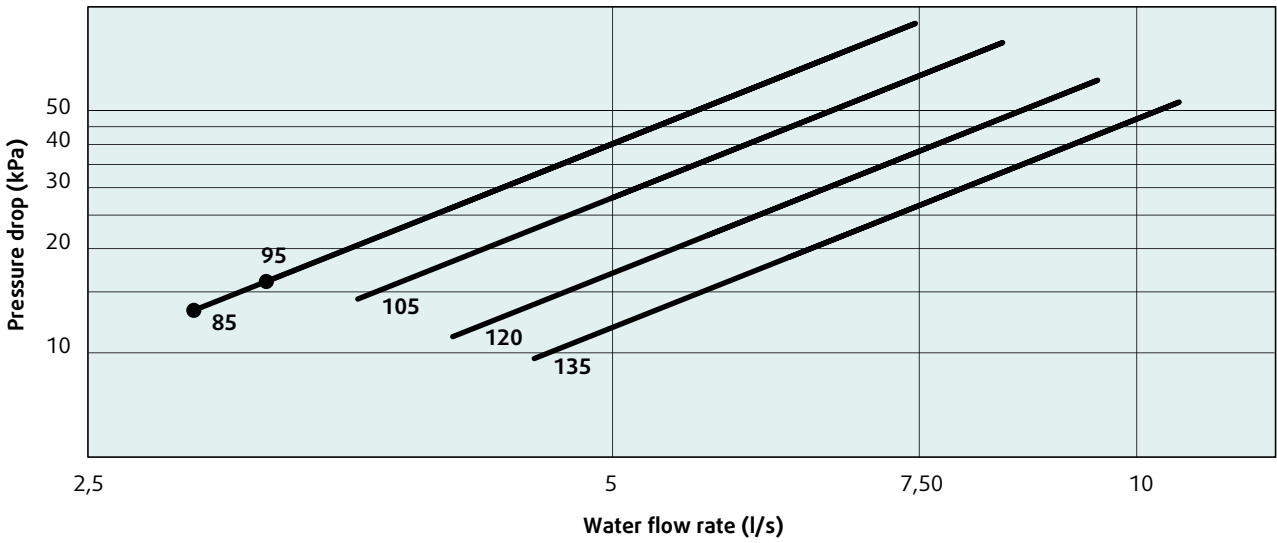
Condensing unit - SyScroll Air RE S - (STD)

Model	ET °C	Condensing Air Temperature °C							
		25		30		35		40	
		Cool	Input Power*	Cool	Input Power*	Cool	Input Power*	Cool	Input Power*
		kW	kW	kW	kW	kW	kW	kW	kW
85	1	85,4	20,7	80,7	22,6	75,6	24,8	70,2	27,2
	3	90,7	21,1	85,7	23,1	80,4	25,3	74,6	27,7
	5	96,2	21,5	90,9	23,6	85,2	25,8	79,1	28,2
	7	101,9	21,9	96,2	24,1	90,2	26,3	83,8	28,7
	9	107,7	22,4	101,7	24,6	95,4	26,8	88,6	29,3
	11	113,7	22,8	107,4	25,1	100,7	27,4	93,6	29,8
	14	123,1	23,5	116,2	25,9	108,9	28,2	101,3	30,7
95	1	95,0	24,4	89,4	26,7	83,6	29,4	77,5	32,5
	3	100,9	24,9	95,0	27,3	88,8	30,0	82,4	33,1
	5	107,0	25,5	100,7	27,9	94,2	30,7	87,4	33,7
	7	113,2	26,1	106,7	28,6	99,8	31,3	92,6	34,4
	9	119,7	26,8	112,7	29,3	105,5	32,0	97,9	35,2
	11	126,3	27,4	119,0	30,0	111,4	32,8	103,4	35,9
	14	136,6	28,5	128,7	31,1	120,4	33,9	111,8	37,1
105	1	107,7	28,0	101,5	31,4	94,9	35,3	87,5	39,5
	3	114,2	28,4	107,6	31,9	100,6	35,7	92,9	40,1
	5	120,9	28,8	113,8	32,3	106,4	36,2	98,4	40,6
	7	127,7	29,3	120,2	32,7	112,4	36,7	104,0	41,2
	9	134,7	29,7	126,7	33,2	118,4	37,2	109,6	41,7
	11	141,8	30,1	133,3	33,6	124,5	37,7	115,3	42,2
	14	152,6	30,7	143,3	34,3	133,8	38,4	124,0	43,0
120	1	120,1	32,3	112,9	36,2	105,2	40,6	96,9	45,6
	3	127,5	32,8	119,9	36,7	111,7	41,2	102,9	46,2
	5	135,2	33,4	127,0	37,3	118,4	41,8	109,1	46,9
	7	143,0	33,9	134,3	37,9	125,2	42,5	115,5	47,6
	9	151,1	34,5	141,9	38,6	132,2	43,1	122,0	48,3
	11	159,3	35,2	149,6	39,2	139,4	43,8	128,7	49,0
	14	172,1	36,2	161,4	40,3	150,5	44,9	139,0	50,1
135	1	131,1	36,5	122,8	40,9	114,0	45,9	104,5	51,6
	3	139,1	37,2	130,3	41,7	121,0	46,7	111,0	52,4
	5	147,4	38,0	138,1	42,5	128,2	47,5	117,7	53,2
	7	156,0	38,8	146,1	43,3	135,7	48,4	124,6	54,1
	9	164,9	39,7	154,4	44,2	143,4	49,3	131,7	55,0
	11	174,0	40,6	162,9	45,2	151,3	50,3	139,0	56,0
	14	188,0	42,1	176,1	46,7	163,5	51,9	150,3	57,6

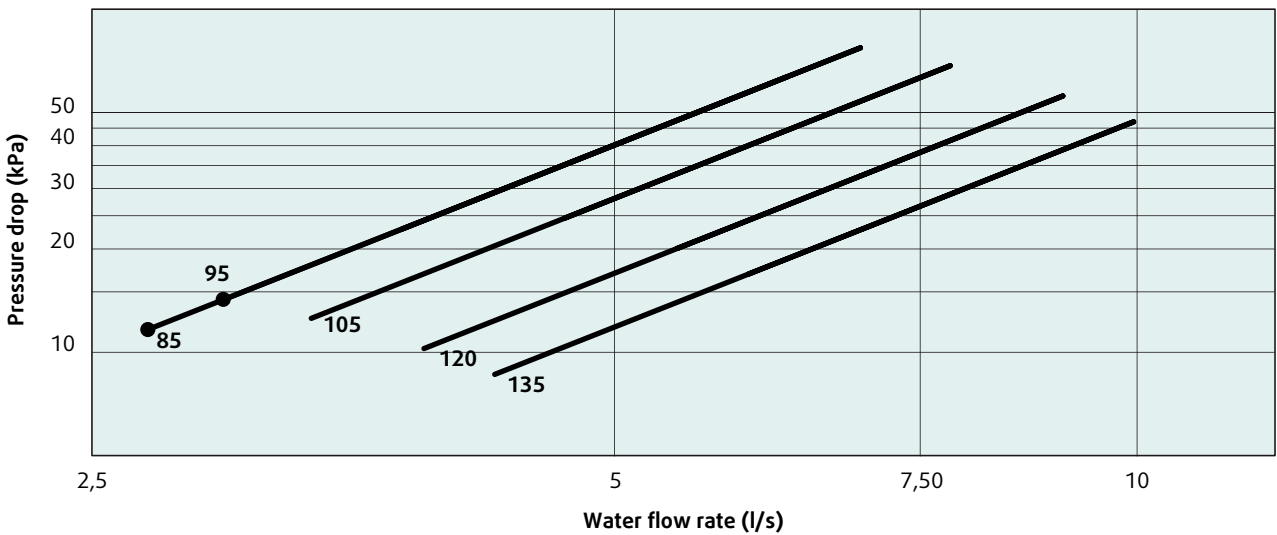
(*) Only Compressors.

Evaporator Water Pressure Drop Curves

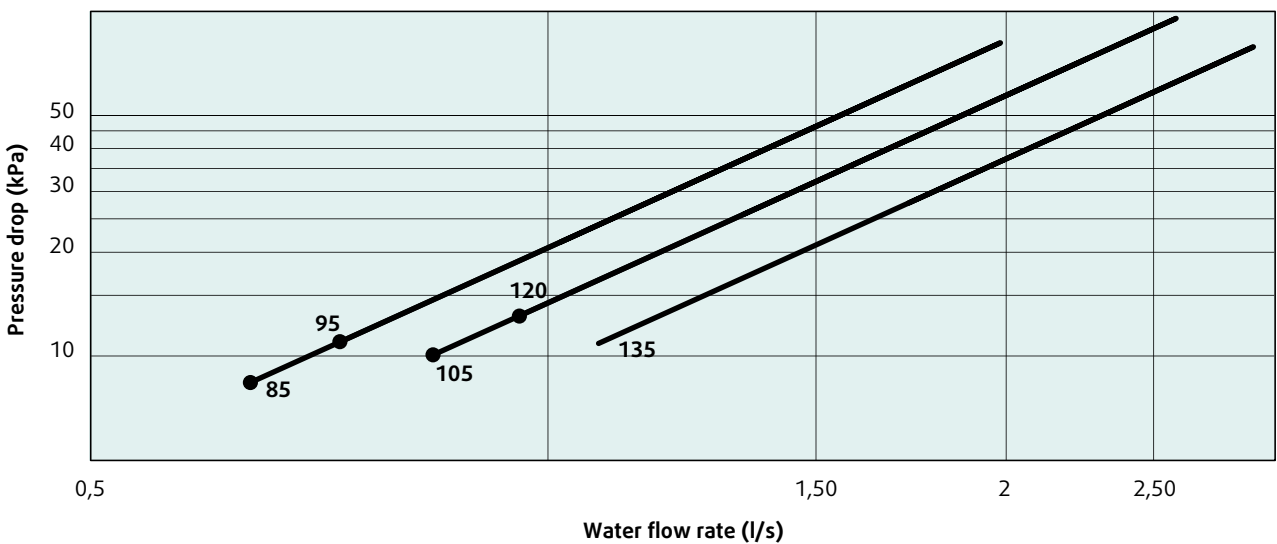
SyScroll Air C0



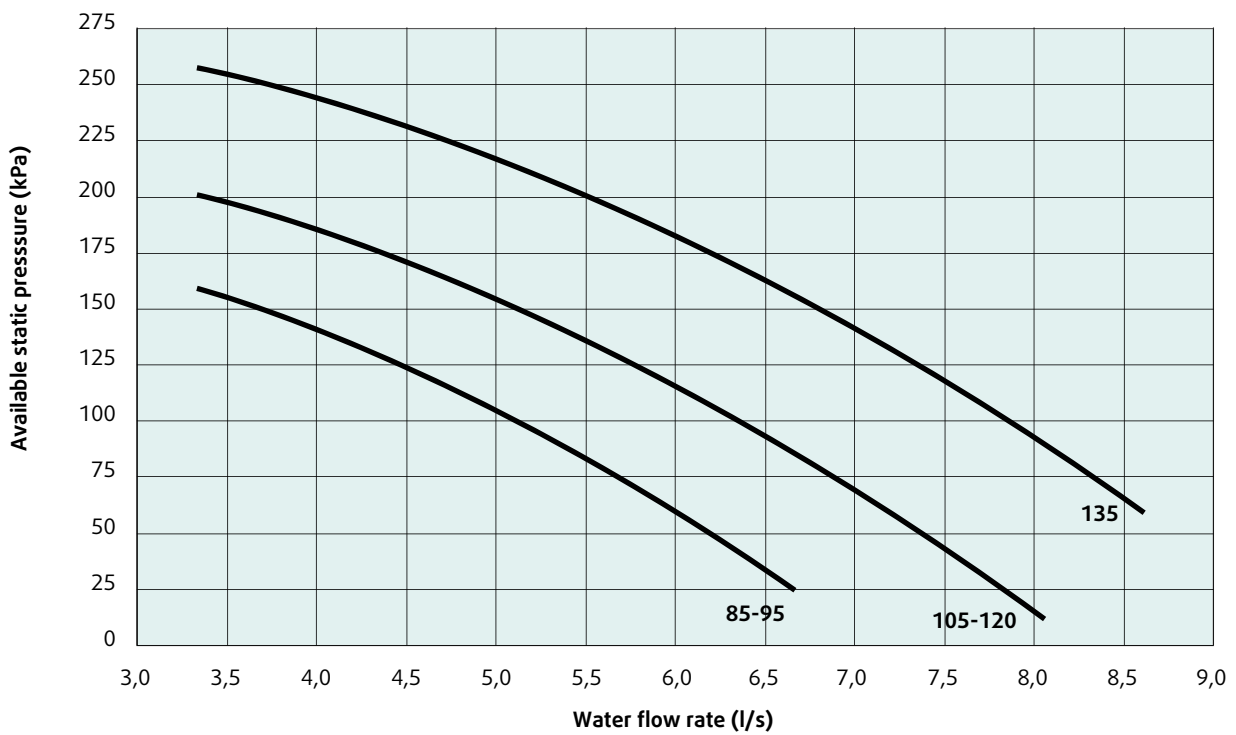
SyScroll HP



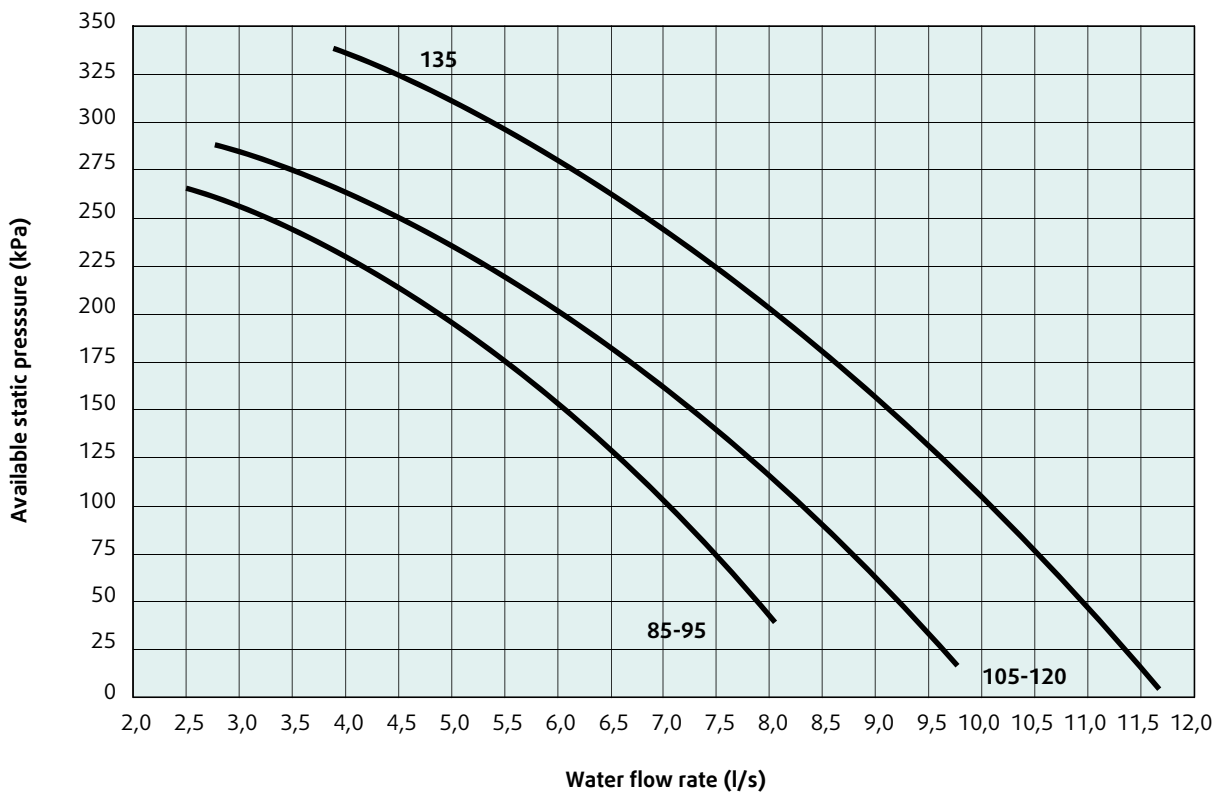
Desuperheater pressure drop



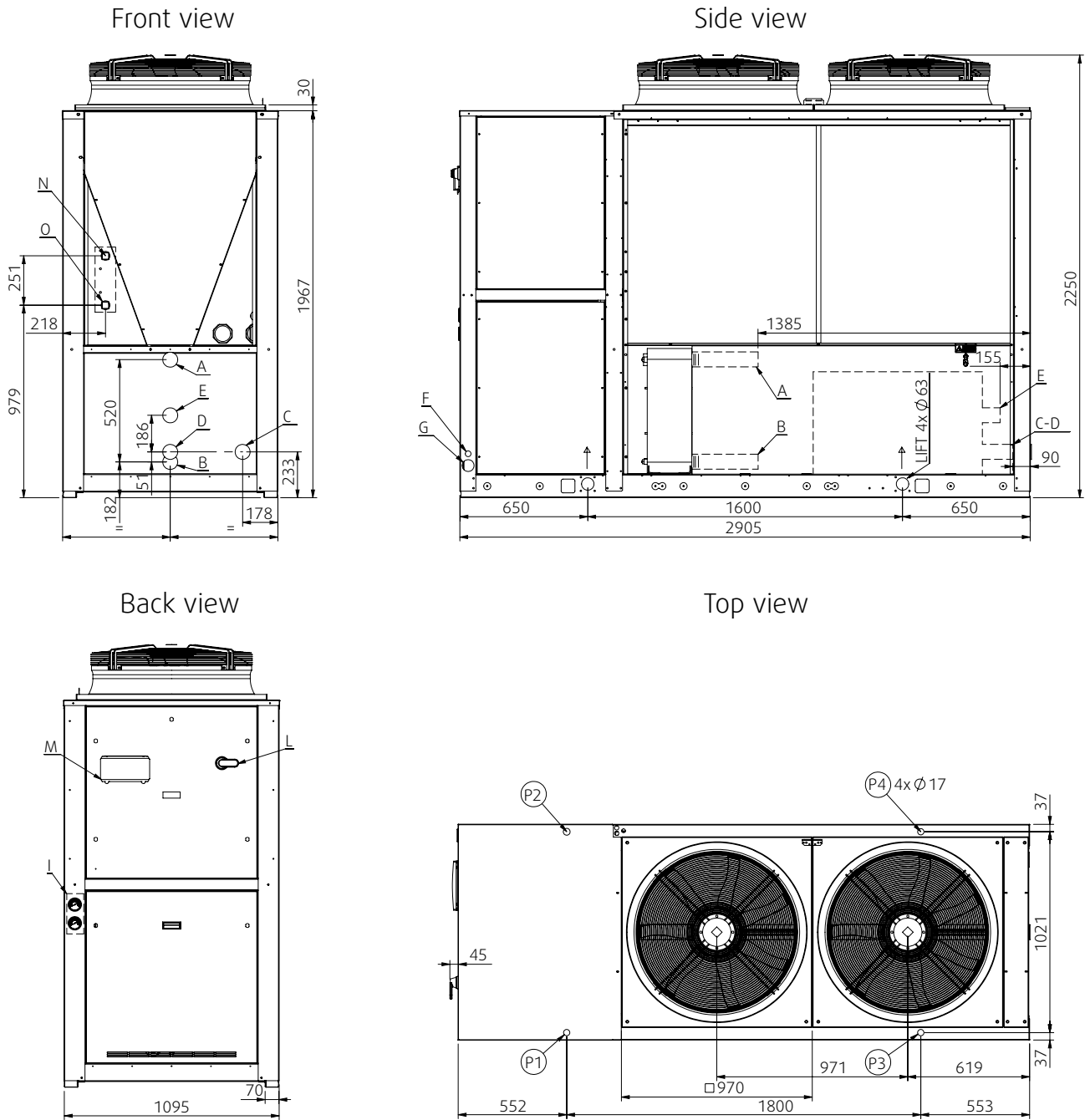
Water pump curves 1 or 2 pump available static pressure (1P/2P-SP)



Water pump curves 1 or 2 pump available static pressure (1P/2P-HP)



Dimensions SyScroll 85-105 Air



NOTES

- A B C D E Water connection 2" 1/2 Gas M
- F Electrical auxiliary lines
- G Electrical power supply
- I Gauge kit (Accessory)
- L Main switch
- M Control keypad / display

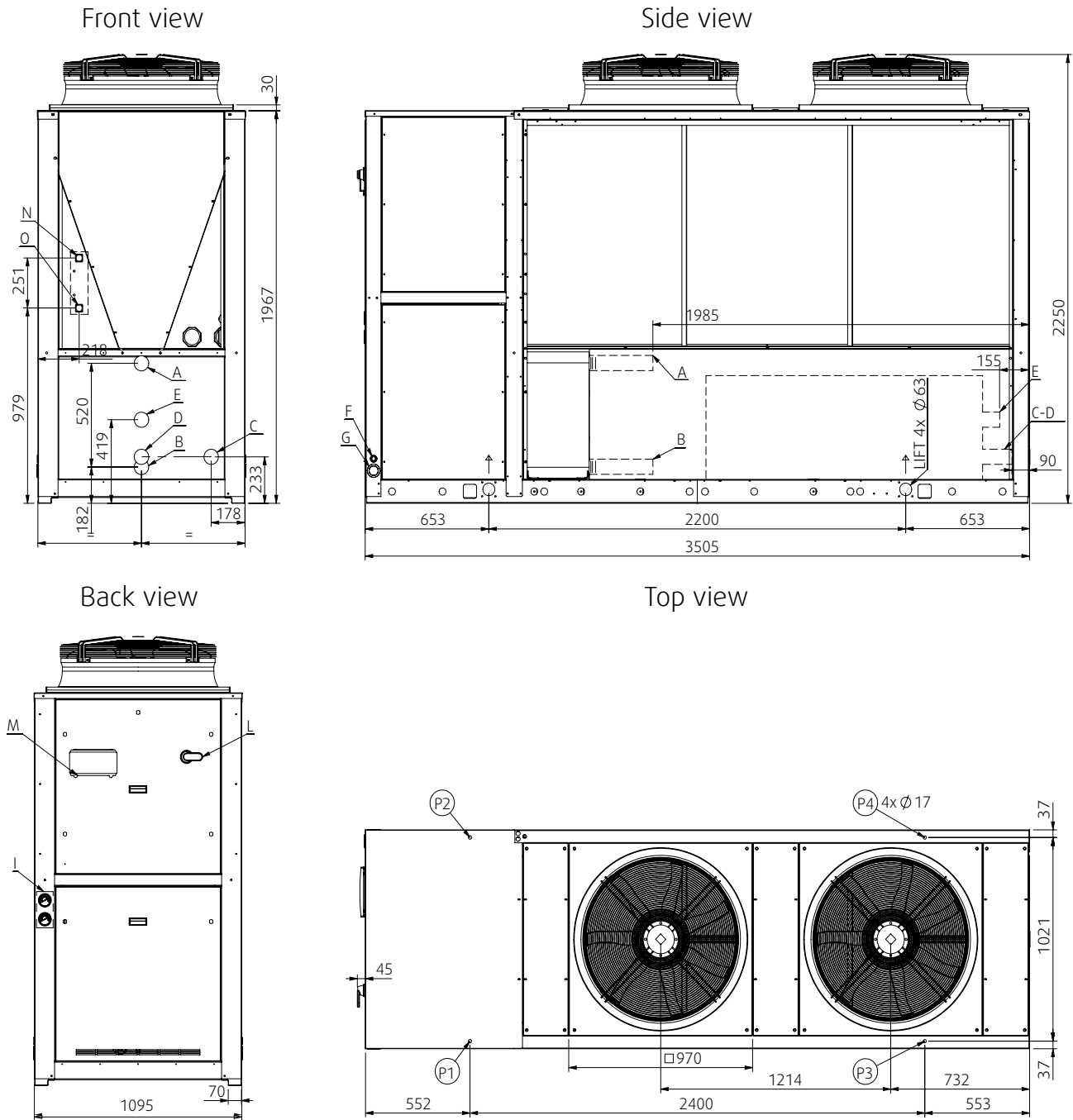
OPTIONAL

- N Desuperheater water inlet \varnothing 1" GAS M
- O Desuperheater water outlet \varnothing 1" GAS M

P1, P2, P3, P4 Anti-vibration mount position

Hydraulic option	Water in	Water out
STD	A	B
1P	C	B
2P	D	B
1PT	C	E
2PT	D	E

Dimensions SyScroll 120-135 Air



NOTES

- A B C D E Water connection 2" 1/2 Gas M
- F Electrical auxiliary lines
- G Electrical power supply
- I Gauge kit (Accessory)
- L Main switch
- M Control keypad / display

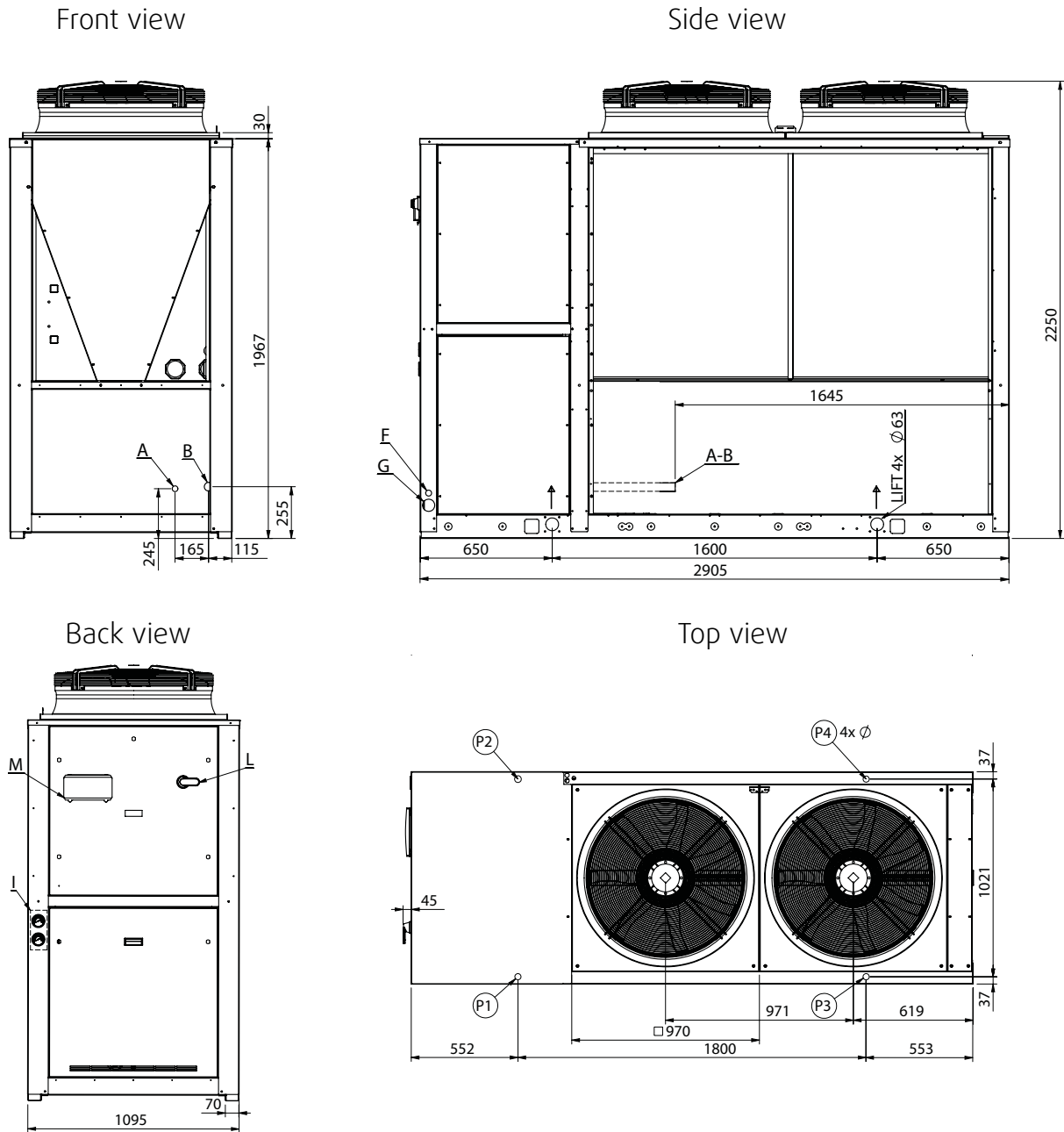
OPTIONAL

- N Desuperheater water inlet ø 1" GAS M
- O Desuperheater water outlet ø 1" GAS M

P1, P2, P3, P4 Anti-vibration mount position

Hydraulic option	Water in	Water out
STD	A	B
1P	C	B
2P	D	B
1PT	C	E
2PT	D	E

Dimensions SyScroll 85-105 Air RE



NOTES

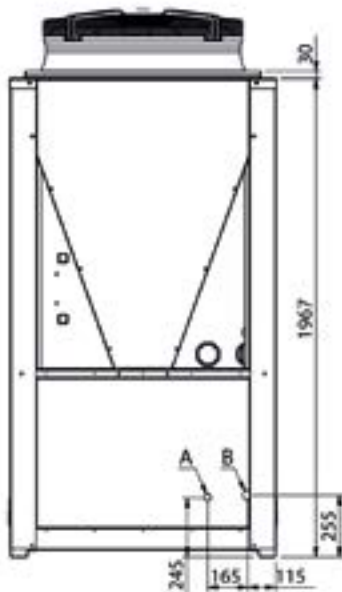
- A Liquid line
- B Suction line
- F Electrical auxiliary lines
- G Electrical power supply
- I Gauge kit (Accessory)
- L Main switch
- M Control keypad / display

Size	Liquid line	Suction line
85/95	7/8"	1 5/8"
105	1 1/8"	2 1/8"

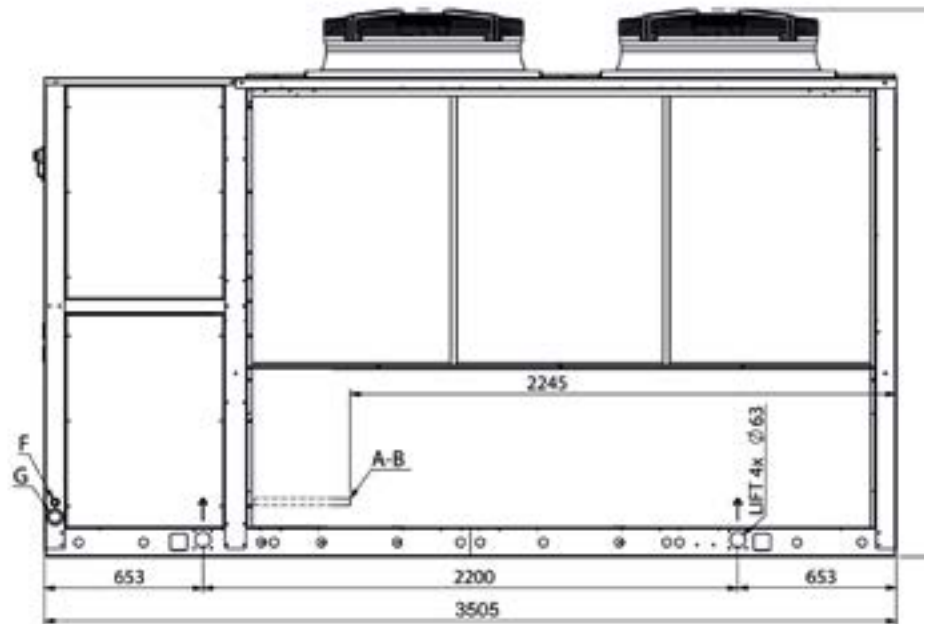
P1, P2, P3, P4 Anti-vibration mount position

Dimensions SyScroll 120-135 Air RE

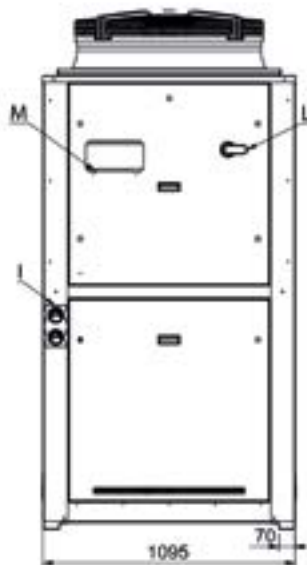
Front view



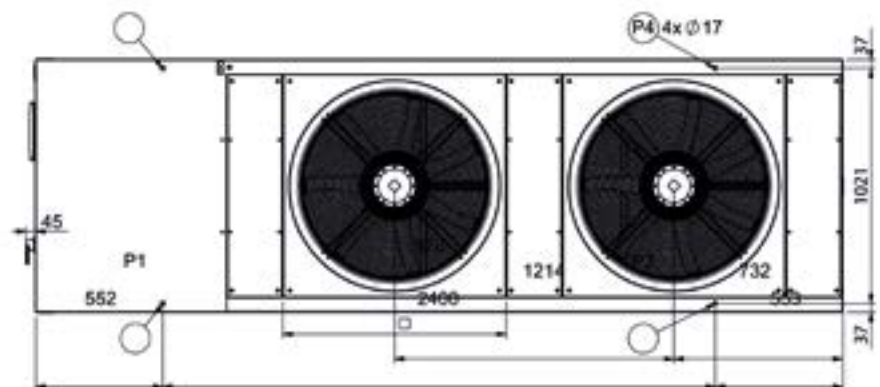
Side view



Back view



Top view

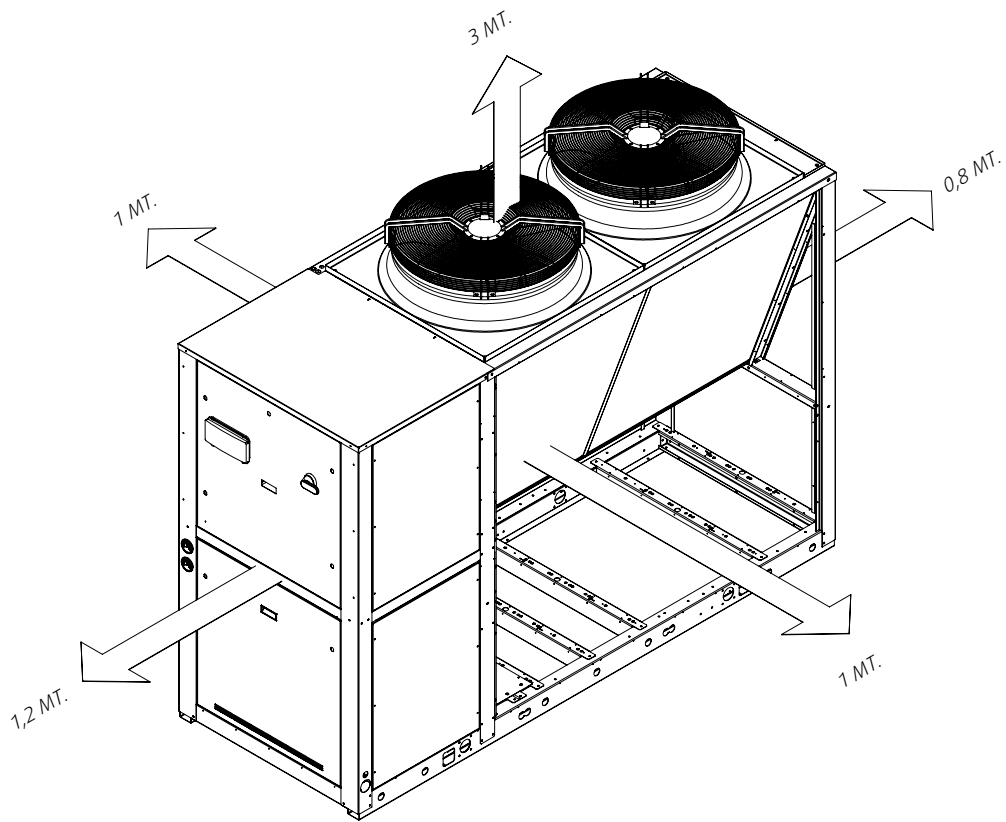


NOTES

- A Liquid line
- B Suction line
- F Electrical auxiliary lines
- G Electrical power supply
- I Gauge kit (Accessory)
- L Main switch
- M Control keypad / display

P1, P2, P3, P4 Anti-vibration mount position

Space requirements



Systemair - June 2018 - EDM Syscroll 85-135 Air-S-5GB/06.18 - E34013
As part of our ongoing product improvement programme, our products are subject to change without prior notice. Non contractual photos.

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