AQC 40 to 75

Air Cooled Condensing Units Engineering Data Manual















Outstanding Strength Points

- R410A Refrigerant.
- New simpler refrigerant circuit layout.
- Low sound level for BLN unit, very low sound level for ELN unit.
- Great accessibility to internal components for service operations.
- New display on external panel allows the complete control of the unit.
- More assembling quality.
- Construction easier.
- Operating limit of the unit stored in the flash memory of the control logic.
- Wide operating limits.
- High temperature operating limits.
- Less noisy compared to the unit with R407C.
- Less number of screws and piece of sheet metal.
- Component standardization (symmetric sheet metal, only 2 kinds of screws ...).
- New gauge kit can be fitted directly inside the units and not outside. This
 gauge kit is cheaper than R407C one and it is common for the whole
 range.
- Fan speed control for low ambient operation in cooling mode down to -18 °C.
- ModBus interface.

- Phase sequence monitor supplied as standard.
- User-friendly microprocessor control.
- For safety during service operations, special valves dedicated to R410A are available on the refrigerant system. These valves, of 5/16" flare SAE type, are mounted on the liquid line inside and on the lateral panel of the unit. This facilitates the access to the high and low side of the refrigerant circuit in order to do pressure measurement.
- Rubber pad supplied as standard.
- New anti-vibration kit, easier to be installed (same spring for every corner).
- Special Inverter Fan (SIF) version suitable for a widening of operating conditions, like ducted installation where high static pressure is needed or high ambient air temperature installation. Fan speed will be regulated by condensing pressure.
- Smaller footprint. The units are 100 mm thinner in order to simplify the transport operation.
- Extra low noise version now available.
- Smart hook in the electrical panel that keeps in position the closing panel while the operator is working on the electrical box.
- Refrigerant circuit completely enclosed in a separated box in order to reduce the noise, not only of the compressors but also of the whole circuit.

Specifications

General

The new AQC air cooled condensing units have been designed and optimized to operate with R410A refrigerant fluid.

The AQC range consists of 6 sizes (40, 45, 50, 60, 65 & 75) and covers a nominal cooling capacity range from 43.2 to 84.5 kW.

All units are equipped **two scroll compressors fitted in tandem** for adapting to partial system loads.

The general operation status of the machine is continuously under the control of a **microprocessor based controller**.

A fan speed controller can be supplied loose as field-installed accessory to authorize the unit to operate in cooling mode at low ambient temperature.

The AQC units can be supplied in 3 versions:

- Base Low Noise (BLN): This version is equipped with delta connected fan motors.
- Extra Low Noise (ELN): This version is equipped with star connected fan
 motors which allow the unit to operate with a very low rpm. Compressor
 sound proof jackets are also supplied as standard on this version.
- Special Inverter Fan (SIF): This version is equipped with inverter fan that allows the unit to be used as ducted or high ambient temperature unit thanks to the high static pressure and the high air flow provided by inverter fan.

Cabinet and structure

The cabinet and structure are made of heavy gauge galvanized steel. All galvanized steel components are individually painted by a special painting process before the assembly of the unit. This painting system performs a homogeneous protection to the corrosion.

The painting is a polyester powder based type, coloured in RAL 9001.

The units are suitable for outdoor installation, directly on the building roof or at the ground level.

Compressors

Each unit is equipped with **two scroll** compressors fitted on a rail and assembled together to form **tandem** compressors. The compressors are then mounted on rubber pads in order to eliminate noise and vibration transmissions.

The compressor motors have a direct start-up. Each motor is cooled by the refrigerant gas and is equipped with an overload protection.

A soft start system can be supplied as optional, whereas a **phase sequence monitor** is supplied as standard.

Condenser

The condenser is a finned coil constructed with seamless copper tubes mechanically expanded into aluminium fins.

The condenser coil is composed of **internally smooth tubes with louvered** fins to improve the heat transfer.

The air cooled condenser is supplied with a protective grille as standard.

Specifications (continued)

Condenser fans and motors

Each unit has one axial fan, of fixed speed type with diameter of 800 mm. According to the version, the fan is cabled in order to have **high speed** (700 to 900 rpm) for BLN version and **low speed** (530 to 680 rpm) to reduce the sound level for ELN version.

The fan motor has IP54 grade and is equipped with a thermal overload protection.

A pressure actuated fan speed controller can be supplied as field-installed accessory or factory-fitted option. It allows the unit to operate in cooling mode at ambient temperature down to -18 °C because it regulates the fan speed in order to maintain constant the condensing temperature.

On the SIF version, the fan is controlled by a $0-10\ V$ DC signal that regulates the speed from 0 to $1110\ rpm$. This special fan allows the unit to be used in two applications :

- High ambient temperature: The fan provides high air flow at maximum speed in order to keep a low condensing temperature while operating at high air temperature.
- Ducted installation: The fan provides high static pressure in order to allow the unit to be ducted.

The SIF fan can also be evolved in order to avoid the use of a fan speed controller.

All types of fans are fitted with a protective grille on top.

Refrigerant circuit

All units have one refrigerant circuit consisting of scroll tandem compressors, condenser coil, as well as safety and control devices, such as: high pressure switch, high/low pressure transducers and PED safety valve.

The refrigerant circuit is also fitted with suction and liquide line shut-off valves to allow the connection of the unit to the external evaporator.

A gauge kit can be supplied as a common accessory for all sizes to be installed inside the unit in order to read the high and low pressure values.

All refrigerant components are shown in the functional diagrams illustrated in the next pages, section "Refrigerant flow diagrams".

Control panel

The units are fitted with an external control panel that displays the operating parameters and alarms. This control panel is **accessible from outside** without removing any parts because it is placed on an external panel. A Plexiglas cover protects the control from external agent.

The AQC units are equipped with the "CHILLER CONTROL" system that has the main features as stated below :

- microprocessor control,
- user-friendly keyboard,
- access code to enter the Manufacturer's Level,
- access code to enter the Assistance Level,
- Alarm and LED,
- backlighted LCD,

- pump-down logic (start-stop),
- rotation of the compressor operation,
- oil return function,
- night mode (or Low Noise) control,
- counting of the pump/compressor's hours of operation,
- display of discharge and suction pressure values,
- display of temperature sensor,
- history of stored alarms (option),
- programming of different setpoints with 4 ranges of time/setpoint.

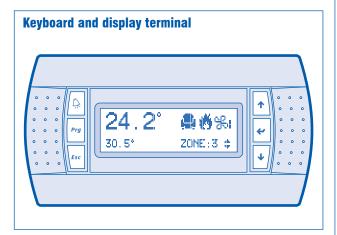
The following accessories can be also connected:

- serial communication RS485 card; to connect the "Chiller control" to a BMS network,
- remote display terminal,
- wire remote control.

The control system consists of a microprocessor card which is fully programmed by default for the control of a condensing unit, and a keyboard and display terminal.

The figure below shows the terminal with the front door open.

It is provided with a LCD 4 lines x 20 columns, keyboard and microprocessorcontrolled LED's, so as to allow the programming of the control parameters (setpoint, differential bands, alarm thresholds) and the main operations to be carried out by the user.



The terminal makes it possible to carry out the following operations:

- the initial configuration of the machine,
- the change of all the main operating parameters,
- the display of the detected alarms,
- the display of all measured quantities.

The terminal and the card are connected by a 6-way phone cable.

Specifications (continued)

Control and safety devices

Each unit is complete with the following safety and control devices :

Safety:

- → Fan motor overload protection,
- -> Compressor motor overload protection,
- → High pressure switch,
- → High and low pressure transducers,
- Crankcase oil electric heater,
- → 45 bar refrigerant safety valve,

Control:

- Discharge temperature sensor,
- → Air temperature sensor,
- Suction and discharge pressure transducers.

Conformity with standards

All AQC units are in compliance with the following standards:

- ✓ Machine Directive : 2006/42/EC
- ✓ Low Voltage Directive : 2006/95/EC
- ✓ Electromagnetic Compatibility Directive : 2004/108/EC
- ✓ Pressure Equipment Directive : 97/23/EC

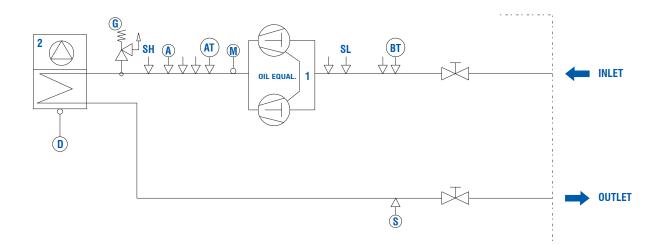
Factory-installed options

- → Blue fin coil,
- → Coil with "Fin Guard Silver" treatment,
- Coil with black epoxy treatment,
- → Soft starter,
- → Power supply without neutral kit,
- → Automatic circuit breaker,
- -> Compressor overload protection,
- → Fan speed control kit,

Field-installed accessories

- → Antivibration kit,
- → Fan speed control kit,
- → Gauge kit,
- → Remote On/Off control,
- → ModBus protocol kit for BMS,
- > Power factor correction capacitors,
- → Sequencer for up to 4 unit installation,
- -> Compressor soundproof jackets (this option is standard on ELN version).

Refrigerant Flow Diagram - AQC 40 to 75 - R410A



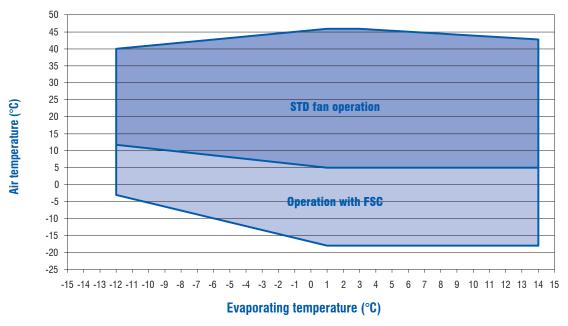
COMPONENTS

- 1 Compressor tandem scroll type
- 2 Air cooled condenser

SAF	ETY / CONTROL DEVICES		
A	High pressure switch (40.5 bar)	G	Safety valve (45 bar)
AT	High pressure transducer		Pipe connection with Schrader valve 1/4" SAE
BT	Low pressure transducer	_廿	ripe connection with Schrader valve 1/4 SAE
D	Air temperature sensor		Unit side
M	Discharge temperature sensor		Optional
S	5/16" SAE Schrader valve (charging point)	0	Probes
SH	5/16" SAE high pressure Schrader valve		
SL	5/16" SAE low pressure Schrader valve		

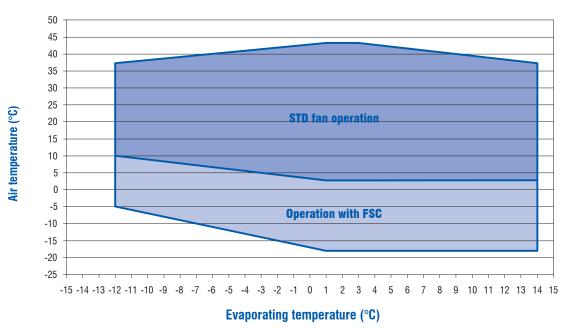
Operating Limits

Operating limits - AQC 40 to 75 - R410A - BLN Version



Note: Operating limits are referred to full load (2 compressors running).

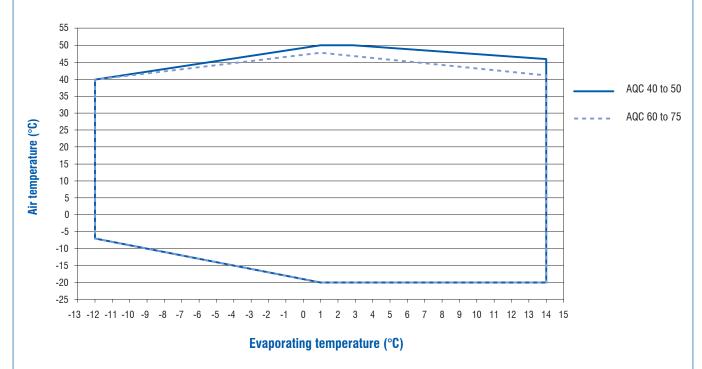
Operating limits - AQC 40 to 75 - R410A - ELN Version



Note: Operating limits are referred to full load (2 compressors running).

Operating Limits (continued)

Operating limits - AQC 40 to 75 - R410A - SIF Version



Note: Operating limits are referred to full load (2 compressors running).

Correction Factors

Fouling factors - Condenser

Fouling factor (m².°C/kW)	Cooling capacity factor	Power input factor
0.044	1.000	1.000
0.088	0.987	1.023
0.176	0.955	1.068
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	1.030
2400	0.943	1.040

Physical Data - AQC 40 to 75 - R410A - BLN Version

AQC BLN		40	45	50	60	65	75
Cooling Capacity - (OAT 35 [°C], ET 7 [°C])	kW	43.2	48.8	56.9	67.4	73.8	84.5
Input Power (Compressor) - (OAT 35 [°C], ET 7 [°C])	kW	13.0	15.3	17.8	18.7	21.6	26.3
Number of Refrigerant Circuits		1	1	1	1	1	1
Part Load Steps	%	0-50-100	0-50-100	0-50-100	0-44-56-100	0-50-100	0-50-100
Power Supply		400V/3/50Hz	400V/3/50Hz	400V/3/50Hz	400V/3/50Hz	400V/3/50Hz	400V/3/50Hz
Startup Type		Direct	Direct	Direct	Direct	Direct	Direct
Maximum Current (FLA)	А			Refer to ele	actrical data		
Startup Current (LRA)	А			neiei to eie	Cuicai uala		
REFRIGERANT							
Туре				R4	10A		
COMPRESSOR							
Number		2	2	2	2	2	2
Туре		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Crankcase Heater	W	90	90	90	90	90	90
COIL							
Number		1	1	1	1	1	1
Frontal Surface	lxa	2160 x 1200	2160 x 1200	2160 x 1200	2650 x 1200	2650 x 1200	2650 x 1200
Row		2	2	3	3	3	3
FANS							
Number		1	1	1	1	1	1
Air Flow Rate	m³/h	14000	14000	13200	21100	21100	21100
Speed	rpm	680	680	680	900	900	900
Input Power	kW	0.98	0.98	0.98	2.00	2.00	2.00
REFRIGERANT CONNECTIONS							
Туре				To be	brazed		
Inlet Diameter	inch	5/8"	5/8"	5/8"	7/8"	7/8"	7/8"
Outlet Diameter	inch	1"3/8	1"3/8	1"3/8	1"3/8	1"3/8	1"3/8
WEIGHT							
Shipping Weight	kg	391	399	422	456	466	469
Operating Weight	kg	391	399	422	456	466	469
DIMENSIONS							
Length	mm	1750	1750	1750	2200	2200	2200
Width	mm	1100	1100	1100	1100	1100	1100
Height	mm	1580	1580	1580	1580	1580	1580
ACOUSTIC DATA (NORMAL MODE)							
Sound Power Level	dB(A)	80.5	81.0	81.0	85.5	85.6	85.8
Sound Pressure Level (1)	dB(A)	48.9	49.4	49.4	53.8	53.9	54.1

⁽¹⁾ Sound pressure calculated at 10 m.

Physical Data - AQC 40 to 75 - R410A - ELN Version

AQC ELN		40	45	50	60	65	75
Cooling Capacity - (OAT 35 [°C], ET 7 [°C])	kW	41.6	46.7	54.0	64.9	70.7	80.6
Input Power (Compressor) - (OAT 35 [°C], ET 7 [°C])	kW	13.7	16.3	19.1	19.7	22.8	28.1
Number of Refrigerant Circuits		1	1	1	1	1	1
Part Load Steps	%	0-50-100	0-50-100	0-50-100	0-44-56-100	0-50-100	0-50-100
Power Supply		400V/3/50Hz	400V/3/50Hz	400V/3/50Hz	400V/3/50Hz	400V/3/50Hz	400V/3/50Hz
Startup Type		Direct	Direct	Direct	Direct	Direct	Direct
Maximum Current (FLA)	А			Defects at	.121.4.1.		
Startup Current (LRA)	А			Refer to ele	ectrical data		
REFRIGERANT							
Туре				R4	10A		
COMPRESSOR							
Number		2	2	2	2	2	2
Туре		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Crankcase Heater	W	90	90	90	90	90	90
COIL							
Number		1	1	1	1	1	1
Frontal Surface	lxa	2160 x 1200	2160 x 1200	2160 x 1200	2650 x 1200	2650 x 1200	2650 x 1200
Row		2	2	3	3	3	3
FANS							
Number		1	1	1	1	1	1
Air Flow Rate	m³/h	11000	11000	10300	16000	16000	16000
Speed	rpm	530	530	530	720	720	720
Input Power	kW	0.57	0.57	0.57	1.27	1.27	1.27
REFRIGERANT CONNECTIONS							
Туре				To be	brazed		
Inlet Diameter	inch	5/8"	5/8"	5/8"	7/8"	7/8"	7/8"
Outlet Diameter	inch	1"3/8	1"3/8	1"3/8	1"3/8	1"3/8	1"3/8
WEIGHT							
Shipping Weight	kg	391	399	422	456	466	469
Operating Weight	kg	391	399	422	456	466	469
DIMENSIONS							
Length	mm	1750	1750	1750	2200	2200	2200
Width	mm	1100	1100	1100	1100	1100	1100
Height	mm	1580	1580	1580	1580	1580	1580
ACOUSTIC DATA (NORMAL MODE)							
Sound Power Level	dB(A)	74.0	75.3	75.3	78.0	78.5	79.0
Sound Pressure Level (1)	dB(A)	42.4	43.7	43.7	46.3	46.8	47.3

⁽¹⁾ Sound pressure calculated at 10 m.

Physical Data - AQC 40 to 75 - R410A - SIF Version

AQC SIF		40	45	50	60	65	75
Cooling Capacity - (OAT 35 [°C], ET 7 [°C])	kW	45.8	52.1	61.3	68.4	75.2	85.9
Input Power (Compressor) - (OAT 35 [°C], ET 7 [°C])	kW	11.9	13.9	16.0	18.3	21.1	25.6
Number of Refrigerant Circuits	Number of Refrigerant Circuits		1	1	1	1	1
Part Load Steps	%	0-50-100	0-50-100	0-50-100	0-44-56-100	0-50-100	0-50-100
Power Supply		400V/3/50Hz	400V/3/50Hz	400V/3/50Hz	400V/3/50Hz	400V/3/50Hz	400V/3/50Hz
Startup Type		Direct	Direct	Direct	Direct	Direct	Direct
Maximum Current (FLA)	Α			Refer to ele	actrical data		
Startup Current (LRA)	А			neiei to eie	Cuicai uala		
REFRIGERANT							
Туре				R4	10A		
COMPRESSOR							
Number		2	2	2	2	2	2
Туре		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Crankcase Heater	W	90	90	90	90	90	90
COIL							
Number		1	1	1	1	1	1
Frontal Surface	lxa	2160 x 1200	2160 x 1200	2160 x 1200	2650 x 1200	2650 x 1200	2650 x 1200
Row		2	2	3	3	3	3
FANS							
Number		1	1	1	1	1	1
Air Flow Rate	m³/h	25284	25284	24300	25284	25284	25284
Speed	rpm	1110	1110	1110	1110	1110	1110
Input Power	kW	2.67	2.67	2.67	2.67	2.67	2.67
REFRIGERANT CONNECTIONS							
Туре				To be	brazed		
Inlet Diameter	inch	5/8"	5/8"	5/8"	7/8"	7/8"	7/8"
Outlet Diameter	inch	1"3/8	1"3/8	1"3/8	1"3/8	1"3/8	1"3/8
WEIGHT							
Shipping Weight	kg	391	399	422	456	466	469
Operating Weight	kg	391	399	422	456	466	469
DIMENSIONS							
Length	mm	1750	1750	1750	2200	2200	2200
Width	mm	1100	1100	1100	1100	1100	1100
Height	mm	1685	1685	1685	1685	1685	1685
ACOUSTIC DATA (NORMAL MODE)							
Sound Power Level			Refer to fan da	ta - SIF version			
Sound Pressure Level (1)	dB(A)			TIGIGI IU IAII UA	ια - ΟΙΙ VEISIUII		

⁽¹⁾ Sound pressure calculated at 10 m.

Fan Data - AQC 40 to 75 - R410A - SIF Version

Sizes	Fan static pressure (Pa)	Fan RPM	Sound power level - dB(A)
	145	900	90
40	195	1000	92
40	220	1050	94
	245	1100	95
	145	900	90
45	195	1000	92
40	220	1050	94
	245	1100	95
	145	900	90
50	195	1000	92
ขับ	220	1050	94
	245	1100	95
	45	1000	93
60	68	1050	94
	120	1100	95
	45	1000	93
65	68	1050	94
	120	1100	95
	45	1000	93
75	68	1050	94
	120	1100	95

Electrical Data - AQC 40 to 75 - R410A - BLN Version

Compressor data - 400 V/3 Ph/50 Hz

		Power input at nominal cond. per comp. [kW]	Nom.Cond. current per compressor [A]	Power input at max cond. per comp. [kW]	Current at max cond. per comp. FLA [A]	Start up current LRA [A]	Power factor @ nominal condition	Power factor @ maximum condition
40	COMP 1	6.3	11.3	9.1	16	95	0.8	0.8
40	COMP 2	6.3	11.3	9.1	16	95	0.8	0.8
45	COMP 1	7.1	12.7	10.2	21	111	0.8	0.7
40	COMP 2	7.1	12.7	10.2	21	111	0.8	0.7
50	COMP 1	8.3	15.3	12.0	22	118	0.8	0.8
30	COMP 2	8.3	15.3	12.0	22	118	0.8	0.8
60	COMP 1	10.5	19.1	14.8	31	140	0.8	0.7
UU	COMP 2	8.3	15.3	12.0	22	118	0.8	0.8
65	COMP 1	10.5	19.1	14.8	31	140	0.8	0.7
00	COMP 2	10.5	19.1	14.8	31	140	0.8	0.7
75	COMP 1	12.2	23.3	17.1	40	173	0.8	0.6
75	COMP 2	12.2	23.3	17.1	40	173	0.8	0.6

Units - 400 V/3 Ph/50 Hz

Sizes	BLN Unit Data								
31268	40	45	50	60	65	75			
Power input [kW] max.	19	21	25	29	32	36			
Current input [A] max.	34	44	46	57	66	84			
Start-up current (A)	113	134	142	166	175	217			

Fan electrical data - 400 V/3 Ph/50 Hz

Sizes	Number	Standard fan Nominal power (kW)	Standard fan Max. running current (A)	
40	1	0.98	2.4	8p - ∆
45	1	0.98	2.4	8p - ∆
50	1	0.98	2.4	8p - ∆
60	1	2.00	4.3	6p - ∆
65	1	2.00	4.3	6p - ∆
75	1	2.00	4.3	6p - ∆

Electrical Data - AQC 40 to 75 - R410A - ELN Version

Compressor data - 400 V/3 Ph/50 Hz

		Power input at nominal cond. per comp. [kW]	Nom.Cond. current per compressor [A]	Power input at max cond. per comp. [kW]	Current at max cond. per comp. FLA [A]	Start up current LRA [A]	Power factor @ nominal condition	Power factor @ maximum condition
40	COMP 1	6.3	11.3	9.1	16	95	0.8	0.8
40	COMP 2	6.3	11.3	9.1	16	95	0.8	0.8
45	COMP 1	7.1	12.7	10.2	21	111	0.8	0.7
40	COMP 2	7.1	12.7	10.2	21	111	0.8	0.7
50	COMP 1	8.3	15.3	12.0	22	118	0.8	0.8
30	COMP 2	8.3	15.3	12.0	22	118	0.8	0.8
60	COMP 1	10.5	19.1	14.8	31	140	0.8	0.7
OU	COMP 2	8.3	15.3	12.0	22	118	0.8	0.8
65	COMP 1	10.5	19.1	14.8	31	140	0.8	0.7
00	COMP 2	10.5	19.1	14.8	31	140	0.8	0.7
75	COMP 1	12.2	23.3	17.1	40	173	0.8	0.6
75	COMP 2	12.2	23.3	17.1	40	173	0.8	0.6

Units - 400 V/3 Ph/50 Hz

Sizes		ELN Unit Data									
31268	40	45	50	60	65	75					
Power input [kW] max.	19	21	24	28	31	35					
Current input [A] max.	33	43	45	56	65	83					
Start-up current (A)	112	133	141	165	174	216					

Fan electrical data - 400 V/3 Ph/50 Hz

Sizes	Number	Standard fan Nominal power (kW)	Standard fan Max. running current (A)	
40	1	0.57	1.2	8p - Y
45	1	0.57	1.2	8p - Y
50	1	0.57	1.2	8p - Y
60	1	1.27	2.5	6p - Y
65	1	1.27	2.5	6p - Y
75	1	1.27	2.5	6p - Y

Electrical Data - AQC 40 to 75 - R410A - SIF Version

Compressor data - 400 V/3 Ph/50 Hz

		Power input at nominal cond. per comp. [kW]	Nom.Cond. current per compressor [A]	Power input at max cond. per comp. [kW]	Current at max cond. per comp. FLA [A]	Start up current LRA [A]	Power factor @ nominal condition	Power factor @ maximum condition
40	COMP 1	6.3	11.3	9.1	16	95	0.8	0.8
40	COMP 2	6.3	11.3	9.1	16	95	0.8	8.0
45	COMP 1	7.1	12.7	10.2	21	111	0.8	0.7
40	COMP 2	7.1	12.7	10.2	21	111	0.8	0.7
50	COMP 1	8.3	15.3	12.0	22	118	0.8	0.8
30	COMP 2	8.3	15.3	12.0	22	118	0.8	0.8
60	COMP 1	10.5	19.1	14.8	31	140	0.8	0.7
00	COMP 2	8.3	15.3	12.0	22	118	0.8	0.8
65	COMP 1	10.5	19.1	14.8	31	140	0.8	0.7
ออ	COMP 2	10.5	19.1	14.8	31	140	0.8	0.7
75	COMP 1	12.2	23.3	17.1	40	173	0.8	0.6
75	COMP 2	12.2	23.3	17.1	40	173	0.8	0.6

Units - 400 V/3 Ph/50 Hz

Sizes		SIF Unit Data										
	40	45	50	60	65	75						
Power input [kW] max.	21	23	27	29	32	37						
Current input [A] max.	36	46	48	57	66	84						
Start-up current (A)	115	136	144	166	175	217						

Fan electrical data - 400 V/3 Ph/50 Hz

Sizes	Number	Standard fan Nominal power (kW)	Standard fan Max. running current (A)
40	1	2.67	4.1
45	1	2.67	4.1
50	1	2.67	4.1
60	1	2.67	4.1
65	1	2.67	4.1
75	1	2.67	4.1

Sound Data - AQC 40 to 75 - R410A

Sound power levels - Lw in dB(A) - BLN version

Sizes		Frequencies (Hz)										
31268	63	125	250	500	1000	2000	4000	8000	dB			
AQC 40	74.7	91.2	76.6	76.9	74.8	71.0	62.0	55.2	80.5			
AQC 45	74.9	91.5	76.7	77.5	76.0	71.1	62.1	55.4	81.0			
AQC 50	74.9	91.5	76.7	77.5	76.0	71.1	62.1	55.4	81.0			
AQC 60	77.2	94.6	80.7	82.0	81.1	76.2	66.5	59.2	85.5			
AQC 65	77.1	94.4	80.9	82.5	81.2	76.3	66.7	59.3	85.6			
AQC 75	77.5	95.0	81.0	82.7	81.1	76.4	66.9	59.5	85.8			

Sound power levels - Lw in dB(A) - ELN version

Sizes		Frequencies (Hz)									
31268	63	125	250	500	1000	2000	4000	8000	dB		
AQC 40	69.5	72.4	70.4	71.3	70.5	65.6	57.0	51.0	74.0		
AQC 45	73.1	76.4	74.7	73.4	70.9	65.5	58.6	48.3	75.3		
AQC 50	73.1	76.4	74.7	73.4	70.9	65.5	58.6	48.3	75.3		
AQC 60	72.3	88.5	75.1	74.0	72.8	68.5	59.1	52.1	78.0		
AQC 65	73.3	89.6	75.2	74.1	73.0	68.7	59.0	52.0	78.5		
AQC 75	73.5	89.9	75.5	75.0	73.7	69.2	60.5	53.4	79.0		

Sound power levels - Lw in dB(A) - SIF* version

Sizes		Frequencies (Hz)										
31268	63	125	250	500	1000	2000	4000	8000	dB			
AQC 40	82.8	99.1	90.3	93.5	91.4	85.3	75.0	68.5	95.2			
AQC 45	82.8	99.1	90.3	93.5	91.4	85.3	75.0	68.5	95.2			
AQC 50	82.8	99.1	90.3	93.5	91.4	85.3	75.0	68.5	95.2			
AQC 60	83.1	99.9	90.4	93.6	91.5	85.4	75.1	68.7	95.3			
AQC 65	83.1	99.9	90.4	93.6	91.5	85.4	75.1	68.7	95.3			
AQC 75	83.1	99.9	90.4	93.6	91.5	85.4	75.1	68.7	95.3			

^{*} Sound data referred to a fan speed of 1110 rpm. Compressor jacket (standard on ELN) can be ordered as accessory. Compressor jacket impact = -2 dB(A).

Sound Data - AQC 40 to 75 - R410A (continued)

Sound pressure levels - Lp in dB(A) - BLN version

Sizes		Frequencies (Hz)										
31268	63	125	250	500	1000	2000	4000	8000	dB			
AQC 40	43.1	59.6	45.0	45.3	43.2	39.4	30.4	23.6	48.9			
AQC 45	43.3	59.9	45.1	45.9	44.4	39.5	30.5	23.8	49.4			
AQC 50	43.3	59.9	45.1	45.9	44.4	39.5	30.5	23.8	49.4			
AQC 60	45.5	62.9	49.0	50.3	49.4	44.5	34.8	27.5	53.8			
AQC 65	45.4	62.7	49.2	50.8	49.5	44.6	35.0	27.6	53.9			
AQC 75	45.8	63.3	49.3	51.0	49.4	44.7	35.2	27.8	54.1			

Sound pressure levels - Lp in dB(A) - ELN version

Sizes		Frequencies (Hz)										
31268	63	125	250	500	1000	2000	4000	8000	dB			
AQC 40	37.9	40.8	38.8	39.7	38.9	34.0	25.4	19.4	42.4			
AQC 45	41.5	44.8	43.1	41.8	39.3	33.9	27.0	16.7	43.7			
AQC 50	41.5	44.8	43.1	41.8	39.3	33.9	27.0	16.7	43.7			
AQC 60	40.6	56.8	43.4	42.3	41.1	36.8	27.4	20.4	46.3			
AQC 65	41.6	57.9	43.5	42.4	41.3	37.0	27.3	20.3	46.8			
AQC 75	41.8	58.2	43.8	43.3	42.0	37.5	28.8	21.7	47.3			

Sound pressure levels - Lp in dB(A) - SIF* version

Sizes		Frequencies (Hz)										
31268	63	125	250	500	1000	2000	4000	8000	dB			
AQC 40	51.2	67.5	58.7	61.9	59.8	53.7	43.4	36.9	63.6			
AQC 45	51.2	67.5	58.7	61.9	59.8	53.7	43.4	36.9	63.6			
AQC 50	51.2	67.5	58.7	61.9	59.8	53.7	43.4	36.9	63.6			
AQC 60	51.4	68.2	58.7	61.9	59.8	53.7	43.4	37.0	63.6			
AQC 65	51.4	68.2	58.7	61.9	59.8	53.7	43.4	37.0	63.6			
AQC 75	51.4	68.2	58.7	61.9	59.8	53.7	43.4	37.0	63.6			

Sound pressure level calculated at a distance of 10 metre. Sound pressure levels refer to ISO standard 3744 with parallepiped shape.

* Sound data referred to a fan speed of 1110 rpm.

Compressor jacket (standard on ELN) can be ordered as accessory. Compressor jacket impact = -2 dB(A).

Performance Data - AQC 40 to 75 - R410A - BLN Version

							Amh	ient air te	mperature	(°C)					
AQC		2	?5	3	30	3	32		5		10	4	13	4	6
BLN	ET (°C)	Cool.	Input	Cool.	Input	Cool.	Input	Cool.	Input	Cool.	Input	Cool.	Input	Cool.	Input
sizes	(- /	cap. (kW)	power* (kW)	cap. (kW)	power* (kW)	cap. (kW)	power* (kW)	cap. (kW)	power* (kW)	cap. (kW)	power* (kW)	cap. (kW)	power* (kW)	cap. (kW)	power* (kW)
	1	40.9	10.1	38.6	11.1	37.8	11.6	36.3	12.2	33.9	13.4	32.4	14.2	30.8	15.0
	3	43.5	10.4	41.0	11.3	40.1	11.8	38.6	12.5	35.9	13.6	34.4	14.4	32.8	15.1
AQC	5	46.0	10.6	43.5	11.6	42.5	12.0	40.9	12.7	38.1	13.8	36.4	14.6		
40 BLN	7	48.7	10.9	46.0	11.9	44.9	12.3	43.2	13.0	40.3	14.1	38.6	14.8		
DEN	9	51.6	11.1	48.6	12.1	47.5	12.5	45.6	13.2	42.7	14.4	40.8	15.1		
	11	54.4	11.4	51.4	12.4	50.2	12.8	48.1	13.5	45.1	14.7				
	14	58.9	11.8	54.1	12.7	52.8	13.1	52.2	14.1	48.9	15.3	00.0	10.0	04.0	177
	3	46.3 49.2	12.0 12.3	43.7 46.4	13.1 13.4	42.7 45.4	13.7 14.0	41.1 43.6	14.5 14.8	38.4 40.6	15.8 16.1	36.6 38.9	16.8 17.0	34.9 37.1	17.7 17.9
	5	52.1	12.5	49.2	13.4	48.1	14.0	46.3	15.1	43.1	16.3	41.2	17.0	37.1	17.9
AQC 45	7	55.2	12.0	52.0	14.1	50.9	14.6	48.8	15.1 15.3	45.6	16.7	43.6	17.5		
BLN	9	58.4	13.1	55.0	14.4	53.8	14.8	51.6	15.6	48.3	17.0	46.1	17.9		
	11	61.6	13.5	58.2	14.7	56.8	15.2	54.5	16.0	51.0	17.4	10.1	17.0		
	14	66.6	14.0	61.3	15.0	59.7	15.6	59.1	16.6	55.4	18.1				
	1	53.9	13.9	50.9	15.2	49.8	15.9	47.9	16.8	44.7	18.4	42.7	19.4	40.7	20.5
	3	57.3	14.3	54.1	15.6	52.9	16.2	50.9	17.1	47.4	18.7	45.3	19.8	43.2	20.8
AQC	5	60.7	14.6	57.3	15.9	56.0	16.5	53.9	17.5	50.2	19.0	48.0	20.0		
5 0	7	64.3	14.9	60.7	16.3	59.3	16.9	56.9	17.8	53.2	19.4	50.9	20.4		
BLN	9	68.0	15.2	64.1	16.6	62.7	17.2	60.2	18.1	56.3	19.8	53.8	20.8		
	11	71.7	15.7	67.8	17.1	66.2	17.6	63.5	18.5	59.4	20.2				
	14	77.7	16.2	71.4	17.4	69.6	18.0	68.9	19.3	64.5	21.0				
	1	63.9	14.7	60.3	16.0	59.0	16.7	56.7	17.7	52.9	19.3	50.5	20.5	48.1	21.6
	3	67.9	15.0	64.1	16.4	62.6	17.1	60.2	18.0	56.1	19.7	53.7	20.8	51.2	21.9
AQC	5	71.9	15.4	67.9	16.7	66.4	17.4	63.9	18.4	59.5	20.0	56.9	21.1		
60 BLN	7	76.1 80.6	15.7 16.0	71.8 75.9	17.2 17.5	70.2 74.2	17.8 18.1	67.4 71.3	18.7 19.1	63.0 66.7	20.4	60.2 63.7	21.4 21.9		
	11	85.0	16.5	80.3	18.0	78.4	18.6	75.2	19.1	70.4	21.3	03.7	21.9		
	14	92.0	17.1	84.6	18.3	82.5	19.0	81.6	20.3	76.4	22.1				
	1	69.9	16.9	66.0	18.5	64.6	19.3	62.1	20.4	58.0	22.3	55.3	23.6	52.7	24.9
	3	74.3	17.3	70.1	18.9	68.6	19.7	65.9	20.8	61.4	22.7	58.8	24.0	56.1	25.1
AQC	5	78.8	17.7	74.3	19.3	72.7	20.0	69.9	21.2	65.1	23.0	62.3	24.3		
65	7	83.4	18.1	78.6	19.8	76.9	20.5	73.8	21.6	69.0	23.5	65.9	24.7		
BLN	9	88.2	18.5	83.1	20.2	81.3	20.9	78.0	22.0	73.0	24.0	69.7	25.1		
	11	93.0	19.0	87.9	20.7	85.8	21.4	82.3	22.5	77.1	24.5				
	14	100.7	19.7	92.6	21.1	90.3	21.9	89.4	23.4	83.7	25.4				
	1	80.0	20.6	75.6	22.5	73.9	23.5	71.0	24.8	66.3	27.2	63.3	28.7	60.3	30.3
	3	85.1	21.1	80.2	23.0	78.4	24.0	75.4	25.3	70.3	27.6	67.3	29.2	64.1	30.7
AQC 75	5	90.1	21.5	85.1	23.5	83.1	24.4	80.0	25.8	74.5	28.0	71.2	29.6		
75 BLN	7	95.4	22.0	90.0	24.1	87.9	25.0	84.5	26.3	78.9	28.6	75.4	30.1		
- DLN	9	100.9	22.5	95.0	24.6	93.0	25.4	89.3	26.8	83.5	29.2	79.8	30.7		
	11	106.4	23.1	100.5	25.2	98.1	26.1	94.2	27.4	88.2	29.8				
	14	115.2	24.0	106.0	25.7	103.3	26.7	102.2	28.5	95.7	31.0				

^{*} Compressors only. ET : Evaporating temperature.

Performance Data - AQC 40 to 75 - R410A - ELN Version

						Ar	nbient air tei	mnerature ((°C)				
AQC		2	?5	;	30		32		35	4	10	4	13
ELN sizes	ET (°C)	Cool. cap. (kW)	Input power* (kW)										
	1	39.4	10.7	37.3	11.7	36.4	12.2	35.0	12.9	32.7	14.1	31.2	14.9
	3	41.9	10.9	39.6	12.0	38.7	12.5	37.2	13.2	34.6	14.4	33.2	15.2
AQC	5	44.4	11.2	41.9	12.2	41.0	12.7	39.4	13.4	36.7	14.5		
40 ELN	7	47.0	11.4	44.4	12.5	43.4	13.0	41.6	13.7	38.9	14.9		
	9	49.8 52.5	11.7 12.0	46.9 49.6	12.8 13.1	45.8 48.4	13.2 13.5	44.0 46.4	13.9 14.2	41.2	15.2		
	14	56.8	12.0	52.2	13.1	50.9	13.5	50.4	14.2				
	1	44.3	12.8	41.8	14.0	40.9	14.6	39.3	15.4	36.7	16.8	35.0	17.8
	3	47.1	13.1	44.4	14.3	43.4	14.9	41.8	15.7	38.9	17.1	37.2	18.1
400	5	49.9	13.4	47.1	14.6	46.0	15.1	44.3	16.0	41.2	17.4	07.2	10.1
AQC 45	7	52.8	13.7	49.8	14.9	48.7	15.5	46.7	16.3	43.7	17.7		
ELN	9	55.9	14.0	52.6	15.2	51.5	15.8	49.4	16.6	46.2	18.1		
	11	58.9	14.3	55.7	15.6	54.3	16.1	52.1	17.0				
	14	63.8	14.9	58.6	15.9	57.2	16.5	56.6	17.7				
	1	51.1	15.0	48.3	16.4	47.2	17.1	45.4	18.1	42.4	19.7	40.5	20.9
	3	54.4	15.3	51.3	16.7	50.1	17.4	48.2	18.4	44.9	20.1	43.0	21.2
AQC	5	57.6	15.7	54.4	17.1	53.1	17.7	51.1	18.8	47.6	20.4		
50 ELN	7	61.0	16.0	57.5	17.5	56.2	18.1	54.0	19.1	50.4	20.8		
LLIV	9	64.5	16.4	60.7	17.9	59.4	18.5	57.0	19.5	53.4	21.2		
	11 14	68.0 73.6	16.8 17.4	64.3 67.7	18.3 18.7	62.7 66.0	18.9 19.4	60.2 65.3	19.9 20.7				
	1	61.5	15.4	58.1	16.7	56.8	17.6	54.5	18.6	50.9	20.4	48.6	21.6
	3	65.3	15.4	61.7	17.3	60.3	18.0	58.0	19.0	54.0	20.4	51.7	21.0
400	5	69.2	16.2	65.3	17.6	63.9	18.3	61.5	19.4	57.2	21.0	01.7	21.0
AQC 60	7	73.3	16.5	69.1	18.1	67.6	18.7	64.9	19.7	60.6	21.5		
ELN	9	77.5	16.9	73.0	18.5	71.4	19.1	68.6	20.1	64.1	21.9		
	11	81.8	17.4	77.3	18.9	75.4	19.6	72.4	20.6				
	14	88.5	18.0	81.4	19.3	79.4	20.0	78.5	21.4				
	1	67.0	17.8	63.3	19.5	61.9	20.3	59.5	21.5	55.5	23.5	53.0	24.9
	3	71.2	18.2	67.2	19.9	65.7	20.8	63.2	21.9	58.9	23.9	56.3	25.3
AQC	5	75.5	18.6	71.2	20.3	69.6	21.1	67.0	22.3	62.4	24.2		
65 ELN	7	79.9	19.1	75.4	20.9	73.7	21.6	70.7	22.8	66.1	24.8		
LLIV	9	84.5	19.5	79.6	21.3	77.9	22.0	74.8	23.2	69.9	25.3		
	11	89.1	20.0	84.2	21.8	82.2	22.5	78.9	23.7				
	14 1	96.5 76.3	20.8	88.7 72.1	22.2 24.1	86.5 70.5	23.1 25.1	85.6 67.7	24.6 26.5	63.3	29.0	60.4	30.7
	3	81.1	22.0	76.6	24.1	74.8	25.6	72.0	27.1	67.0	29.0	64.2	31.2
4.00	5	86.0	23.0	81.1	25.1	79.3	26.0	76.3	27.6	71.1	29.9	U-T.L	01.2
AQC 75	7	91.0	23.5	85.8	25.8	83.9	26.7	80.6	28.1	75.3	30.6		
ELN	9	96.3	24.1	90.7	26.3	88.7	27.2	85.2	28.6	79.7	31.2		
	11	101.5	24.7	95.9	26.9	93.6	27.8	89.9	29.3				
	14	109.9	25.6	101.1	27.4	98.6	28.5	97.5	30.4				

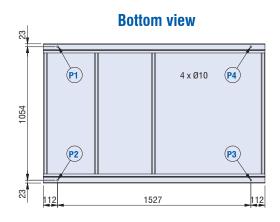
^{*} Compressors only. ET: Evaporating temperature.

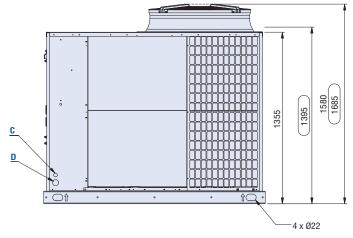
Performance Data - AQC 40 to 75 - R410A - SIF Version

AQC									Ambie	nt air te	mperatu	re (°C)							
	ET (°C)	25		30		32		35		40		43		46		48		50	
SIF sizes		Cool. cap. (kW)	Input power* (kW)																
AQC 40 SIF	1	43.4	9.3	41.0	10.2	40.1	10.7	38.5	11.3	36.0	12.3	34.3	13.0	32.7	13.8	31.7	14.3	30.6	14.7
	3	46.1	9.6	43.5	10.4	42.5	10.9	40.9	11.5	38.1	12.5	36.5	13.3	34.8	13.9	33.6	14.4	32.5	14.9
	5	48.9	9.8	46.1	10.7	45.1	11.0	43.4	11.7	40.4	12.7	38.6	13.4	36.8	14.1	35.6	14.6		
	7	51.7	10.0	48.8	10.9	47.7	11.3	45.8	11.9	42.8	13.0	40.9	13.6	39.0	14.3	37.7	14.8		
· · ·	9	54.7 57.7	10.2	51.5 54.5	11.2 11.4	50.4 53.2	11.5 11.8	48.4 51.1	12.2 12.4	45.3 47.8	13.3 13.5	43.3 45.7	13.9 14.2	41.2 43.7	14.6 14.9	39.9	15.1		
	14	62.5	10.5	57.5	11.7	56.0	12.1	55.4	12.4	51.9	14.1	49.7	14.2	47.6	15.6				
	1	49.3	10.9	46.6	11.9	45.5	12.4	43.8	13.1	40.9	14.3	39.0	15.2	37.2	16.0	36.0	16.6	34.8	17.1
	3	52.4	11.1	49.5	12.2	48.4	12.7	46.5	13.4	43.3	14.6	41.5	15.4	39.5	16.2	38.1	16.8	36.9	17.3
AQC	5	55.5	11.4	52.4	12.4	51.2	12.9	49.3	13.6	45.9	14.8	43.9	15.6	41.8	16.5	40.5	17.0		
45	7	58.8	11.6	55.5	12.7	54.2	13.2	52.1	13.9	48.6	15.1	46.5	15.9	44.3	16.7	42.9	17.2		
SIF	9	62.2	11.9	58.6	13.0	57.3	13.4	55.0	14.2	51.5	15.4	49.2	16.2	46.9	17.0	45.4	17.6		
	11	65.6	12.2	62.0	13.3	60.5	13.8	58.1	14.5	54.4	15.8	52.0	16.5	49.6	17.4				
	14	71.0	12.7	65.3	13.6	63.7	14.1	63.0	15.1	59.0	16.4	56.5	17.3	54.1	18.2				
	1	58.1	12.5	54.8	13.7	53.6	14.3	51.5	15.1	48.1	16.5	45.9	17.4	43.8	18.4	42.4	19.1	41.0	19.7
	3	61.7	12.8	58.2	14.0	56.9	14.6	54.8	15.4	51.0	16.8	48.8	17.7	46.6	18.6	44.9	19.3	43.5	19.9
AQC	5 7	65.4	13.1	61.7	14.3	60.3	14.8	58.1	15.7	54.1	17.0	51.7	18.0	49.3	18.9	47.7	19.5		
50 SIF	9	69.2 73.2	13.4 13.7	65.3 69.0	14.6 14.9	63.8 67.5	15.1 15.4	61.3 64.8	16.0 16.3	57.3 60.6	17.4 17.7	54.8 57.9	18.3 18.6	52.1 55.2	19.1 19.5	50.5 53.4	19.8 20.2		
	11	77.2	14.0	73.0	15.3	71.2	15.8	68.4	16.6	64.0	18.1	61.2	19.0	58.4	20.0	JJ.4	20.2		
	14	83.6	14.6	76.9	15.6	75.0	16.2	74.2	17.3	69.5	18.8	66.5	19.9	63.6	20.9				
	1	64.8	14.3	61.2	15.7	59.8	16.4	57.5	17.3	53.7	18.9	51.3	20.0	48.8	21.1	47.3	21.9		
	3	68.9	14.7	65.0	16.0	63.5	16.7	61.1	17.6	56.9	19.3	54.5	20.4	51.9	21.4				
AQC	5	73.0	15.0	68.9	16.4	67.3	17.0	64.8	18.0	60.3	19.5	57.7	20.6	55.0	21.7				
60	7	77.2	15.4	72.9	16.8	71.2	17.4	68.4	18.3	63.9	19.9	61.1	21.0	58.2	22.0				
SIF	9	81.7	15.7	76.9	17.1	75.3	17.7	72.3	18.7	67.6	20.4	64.6	21.4						
	11	86.2	16.1	81.4	17.6	79.5	18.2	76.3	19.1	71.4	20.8	68.3	21.8						
	14	93.3	16.7	85.8	17.9	83.7	18.6	82.8	19.9	77.5	21.6	FO 4	00.0	F0.7	04.0	50.0	05.0		
	3	71.3 75.8	16.5 16.9	67.3 71.5	18.1 18.4	65.8 69.9	18.8 19.2	63.2 67.2	19.9 20.3	59.1 62.6	21.8	56.4 59.9	23.0	53.7 57.1	24.3	52.0	25.2		
	5	80.2	17.3	75.8	18.8	74.0	19.5	71.3	20.3	66.3	22.1	63.4	23.7	60.5	25.0				
AQC 65	7	85.0	17.7	80.1	19.3	78.3	20.0	75.2	21.1	70.3	22.9	67.2	24.1	64.0	25.3				
SIF	9	89.9	18.1	84.6	19.7	82.8	20.4	79.5	21.5	74.4	23.4	71.0	24.6	0 1.0	20.0				
	11	94.8	18.5	89.6	20.2	87.4	20.9	83.9	22.0	78.5	23.9	75.1	25.1						
	14	102.6		94.4	20.6	92.0	21.4	91.1	22.8	85.3	24.9								
	1	81.4	20.0	76.9	21.9	75.2	22.9	72.2	24.2	67.5	26.4	64.4	27.9	61.4	29.5	59.4	30.6		
	3	86.5	20.5	81.6	22.4	79.8	23.3	76.8	24.6	71.5	26.9	68.4	28.4	65.3	29.8				
AQC	5	91.7	21.0	86.5	22.9	84.6	23.7	81.4	25.1	75.8	27.2	72.5	28.8	69.1	30.3				
75 SIF	7	97.0	21.4	91.5	23.4	89.5	24.3	85.9	25.6	80.3	27.8	76.8	29.2	73.1	30.7				
OIL	9	102.7		96.7	23.9	94.6	24.7	90.8	26.1	84.9	28.4	81.2	29.8						
	11	108.3		102.3	24.5	99.9	25.3	95.8	26.6	89.7	29.0	85.8	30.4						
	14	117.2	23.3	107.8	25.0	105.1	25.9	104.0	27.7	97.4	30.2								

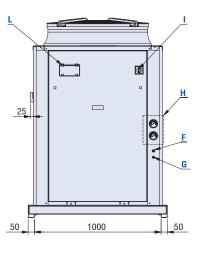
^{*} Compressors only. **ET**: Evaporating temperature.

Dimensions (mm) - AQC 40 to 50 - R410A

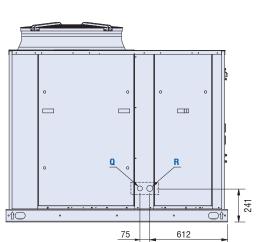




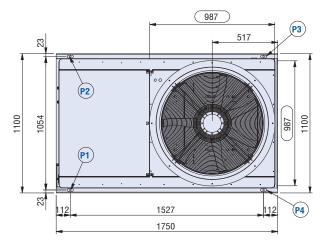
Front view



Side view



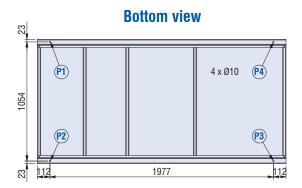
Top view



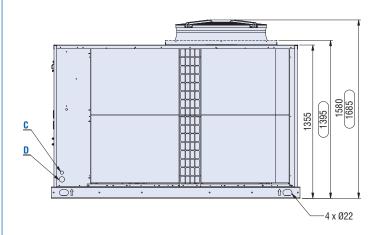
C	Electrical auxiliary lines
D	Electrical power supply
F	High pressure tap
G	Low pressure tap
Н	Gauge kit (accessory)
1	Main switch
L	Control keypad/display

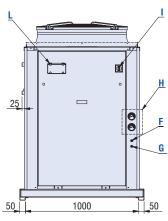
XXX	Only for SIF fan model
P1, P2, P3, P4	AVM position
Q	Liquid line Ø 5/8"
R	Suction line Ø 1 3/8"

Dimensions (mm) - AQC 60 to 75 - R410A



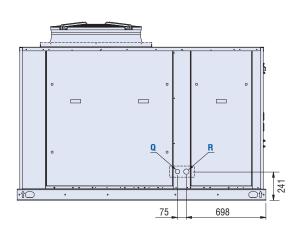
Front view

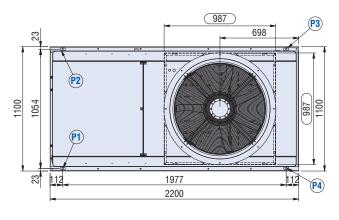




Side view

Top view

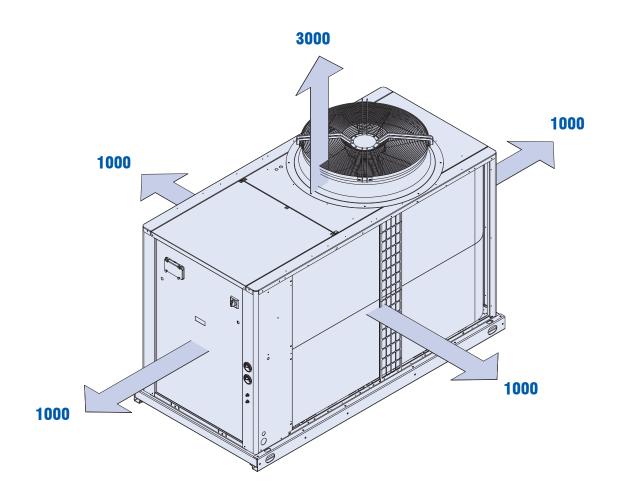




C	Electrical auxiliary lines
D	Electrical power supply
F	High pressure tap
G	Low pressure tap
н	Gauge kit (accessory)
Т	Main switch
L	Control keypad/display

XXX	Only for SIF fan model
P1, P2, P3, P4	AVM position
Q	Liquid line Ø 7/8"
R	Suction line Ø 1 3/8"

Unit Clearances (mm) - AQC 40 to 75 - R410A



Notes															
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