



## Chilled water production units

CIATCOOLER LJA



Attractive design,  
**Compact** and quiet  
Many **customisable** configurations possible  
For indoor installation  
New reliable technologies  
Version with **"Plug and Cool"** hydraulic module

Cooling capacity: 23 to 140 kW



Cooling only



Heat recovery



## USE

### LJA CIATCOOLERS

The **LJA CIATCOOLER** packaged chilled water production units with air-cooled condenser offer a solution to all the cooling applications encountered in collective housing or service buildings, in industrial processes and on industrial premises.

Several customisable configuration possibilities (fan power, supply air direction and hydraulic connections) provide workarounds to layout issues in mechanical rooms.

Flexible connecting sleeves at air intake and discharge, flexible connections and antivibration mounts provided as optional make the units even easier to integrate into installations.

The units can be connected to all types of aeraulic networks and sound traps (not supplied) thanks to wide pressure ranges available on air.

The units are fully encased to give excellent acoustic results.

### LJAH CIATCOOLERS

With their built-in hydraulic modules, the **LJAH CIATCOOLER** chilled water production units provide ideal solutions to meet the criteria of simplicity and quick installation.

The module integrates the complete hydraulic unit for traditional installations (buffer tanks, expansion vessels, circulating pumps, etc.).



### DESCRIPTION

Units in compliance with standards EN 60-204/EN 378-2 and with the following directives:

- Machines 98/37 CEE,
- CEM 89/336 CEE modified 92/31 CEE - 93/68 CEE,
- DESP 97/23 CEE -> category 2.

### CIATCOOLER LJA

The LJA - LJAH CIATCOOLERS make up a new generation of compact monobloc liquid coolers that benefit from the latest technological developments. Customisable product.

#### Structure

- Casing made up of painted aluminium profiles with lacquered galvanized double-wall metal sheet (RAL 7024) with thermal insulation.

#### SCROLL hermetic compressor

- Built-in motor cooled by suction gases.
- Internal motor protection by winding sensor.
- Fitted on antivibration mounts.

#### Brazed plates evaporator(s)

- End and internal plates made up of AISI 316 stainless steel, with high performance level optimised profile.
- Incorporated thermal insulation.

#### Air-cooled condenser

- Copper tube coil/aluminium fins crimped mechanically.
- Pulley and belt driven centrifugal fan(s).
- Waterproof motor, IP 55, class F.
- **Vertical or horizontal** front or horizontal rear discharge.

#### Control and safety devices

- High and low pressure safety devices.
- Chilled water and anti-freeze evaporator sensors.
- Mounted evaporator water flow controller.
- Thermostatic expansion valve.

#### Control panel

Fully wired, the electrical panel contains all of the electrical components and the electronic CPU board, providing full control and allowing the machine to be monitored, the water setpoints to be adjusted, or acts as the interface to an external control system.

It is composed of:

- Power and control circuits,
- Wire numbering,
- Master safety switch located on the front panel, with a handle.
- Control circuit transformer (350 to 600),
- Circuit breakers to protect the power and control circuits,
- Contactors and protection for compressor and fan motors,
- General earth connection,
- Electronic control module with CONNECT microprocessor,
- Remote of alarms or signals on voltage-free terminals.

#### Electronic control module

CIAT microprocessor electronic control module and CPU, with central control system and access to the internal components status.

Composition:

- On, Off, Reset or Remote Control,
- Operating mode selector - COOLING or HEATING,
- Outputs: RS485 output for the GTC link (ModBus-JBus),

- Additional dry-contacts board adapter,
- Adapter for remote control,
- Analogic and multilingual LCD display with LED indicators.

Functions:

- Regulation of the water temperature (on evaporator outlet or return) according to the outside temperature,
- Display of operating data by:
  - . Multilingual messages displayed in clear text
  - . Direct reading of temperatures and pressures.
- Complete management of the compressors with start-up sequence, metering and balancing of working hours,
- Self-adapting and anticipating functions with adjustment of the regulation depending upon the parameters drift,
- Staged capacity-reduction device operating in series on the multi-compressors, depending upon the cooling or heating requirements measured on water temperatures,
- Control of the internal working parameters,
- Management of a second setpoint,
- Direct display of water temperatures and pressures,
- Diagnosis of the operating and fault status: HP/LP, water flow, compressor motor(s), and antifreezing,
- Anti short-cycle protection,
- Remote control and remote monitoring.



### CIATCOOLER LJAH

The basic design of the LJAH CIATCOOLER series is identical to that of the CIATCOOLER LJA series.

These derivative units integrate the complete hydraulic assembly of a traditional installation:

- 1 black metal sheet buffer tank with thermal insulation.
- 1 single-cell centrifugal hydraulic pump with pressure gauges (single pump or double pump).
- 1 expansion vessel.
- 1 automatic air vent.
- 1 safety valve.
- 1 filling orifice with valve and check valve.
- 1 drain orifice with valve.
- Contactor(s) and protection(s) for hydraulic pump(s).
- 1 x 600 µm water filter.
- 1 adjusting valve.
- This hydraulic module can be supplied separately (see MHJ product).



# Chilled water production units

## OPTIONS

### Antivibration equipment

- Hydraulic flexible connections kits.
- Flexible air intake sleeves.
- Flexible air discharge sleeves.

### Condenser treatment

- Fins with a Polyurethane coating.
- BLYGOLD POLLUAL treatment.

### Desuperheaters

- The desuperheating option allows the recovery of calories by desuperheating the pressurised gas.

### Year-round operation

- Down to an outside temperature of -15 °C.

### Air filters on air intake

- The kit is supplied with a register providing access to the filters.

### Remote control kit

This box, which is delivered separately, can be used for remote control of the unit:

- Functions similar to those of the control module.
- The link between the remote control board and the electronic module is 2 wires only (1000 metres max.).

### Relay board kit for free potential contacts

- This board, which is supplied separately, can be used to display faults remotely as well as the capacity control operating status.

- The link between the relay board and the electronic module is made by 2 wires only (1000 metres max.).

### Frost protection ensured by electrical heating elements.

## TECHNICAL CHARACTERISTICS

CIATCOOLER LJA - LJAH			100	150	200	250	300	350	400	450	500	600
<b>Cooling capacity (1)</b>	<b>kW</b>		<b>23.7</b>	<b>35.7</b>	<b>45.1</b>	<b>58.8</b>	<b>69.8</b>	<b>79.6</b>	<b>93.0</b>	<b>105.7</b>	<b>113.3</b>	<b>140.8</b>
Absorbed power (2)	kW		8.5	13.1	18.2	23.1	27.5	32.0	36.1	40.4	46.6	54.4
<b>Compressor(s)</b>	Type / Rotation speed	r.p.m.	Sealed SCROLL / 2900									
	Number		1		2			3			4	
	R407C (GWP = 1520) refrigerant charge	kg	4.3	6.5	8.4	10.2	12	6 + 8	14 + 5	13 + 6.5	14 + 9	12 + 12
<b>Capacity control</b>		%	100-0		100-50-0	100-40-0	100-50-0	100-70-30-0	100-63-37-0	100-66-33-0	100-70-40-20-0	100-75-50-25-0
<b>Evaporator(s)</b>	Min water content of a LJA plant	l	112	181	110	112	174	121	174	167	106	164
	Type		Brazed plates									
	Number		1				2					
	Water content		1.9	2.85	3.39	5.65	5.65	7.5	7.95	9.2	9.7	11.4
	Hydraulic connections	Ø	G1"1/4		G2"			G2"1/2				
	Maximum pressure on water side	bar	LJA = 10 bars / LJAH = 4 bars									
	Minimum water flow	mini m³/h	3.4	4	5	7	7	9	11	12	12	15
		maxi m³/h	7.8	10	11.5	17	17	22	26	27	29	34
<b>Air condenser</b>	Discharge variant 1/2/3		1 = Vertical / 2 = Horizontal front / 3 = Horizontal rear									
	Fan type		Centrifugal - pulley and belt drive									
	Airflow	m³/h	8500	12000	14500	16000	18000	22000	24000	27000	31000	35000
<b>Hydraulic module*</b>	Buffer capacity	litres	350									
	Expansion vessel	litres	35									
	Pre-inflating pressure	bar	1.5									

(1) Cooling power for chilled water operation at 12°C/7°C and a condenser air inlet temperature of 35°C.

\* LJAH version only.

(2) Power input for compressors only (add selected pump and fan power).

= Power input, compressors only (add fan and pump power based on configuration)

Customisable product

## ELECTRICAL CHARACTERISTICS

CIATCOOLER LJA - LJAH		100	150	200	250	300	350	400	450	500	600	
<b>Rated max current</b>	A	20.44	29.74	40.54	49.84	59.14	69.83	79.13	88.43	99.23	117.83	
<b>Starting current</b>	A	120	175	145	200	210	240	249	258	269	292	
<b>Electrical power supply</b>	V	3 ph. 400V - 50Hz - + Neutral + Earth						3 ph. 400V + Earth				
<b>FAN MOTORS (1)</b>	<b>kW</b>	<b>2,2</b>	<b>3</b>	<b>4</b>	<b>5,5</b>	<b>7,5</b>	<b>9</b>	<b>11</b>	<b>15</b>			
<b>Max. rated current</b>	A	5,2	7,1	9,2	12	16	18,6	22	29,3			

(1) Motor selection in accordance with the overall static pressure.

PUMPS		Nr	40	41	42	43	117	118	119	217	218	219
<b>Power</b>	kW		0.75	1.1	1.5	1.85	2.2	4.0	7.5	2.2	4.0	7.5
<b>Max nominal current</b>	400 V		1.85	2.67	3.9	4.61	4.5	7.8	13.8	4.5	7.8	13.8

WARNING: Total current intensity of the machine: the sum of the maximum rated currents indicated in the above tables (max rated current + fan motor + pump if LJAH)

\* 230 V - 3 ph - 50 Hz: Voltage in force in France.



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## CIATCOOLER LJA

### AERAUIC CHARACTERISTICS

#### Fan motor selection

LJA - LJA H			100	150	200	250	300	350	400	450	500	600		
Pressure available for ducts in mm Water Column	Airflow	m <sup>3</sup> /h	8500	12000	14500	16000	18000	22000	24000	27000	31000	35000		
	0	Motor capacity	kW	2.2	4	4	5.5	7.5	5.5	5.5	9	5.5	9	
		Rotation speed	rpm	398	511	515	568	638	715	798	928	603	766	
		5	Motor capacity	kW	2.2	4	4	5.5	7.5	5.5	5.5	9	5.5	9
		Rotation speed	rpm	449	543	543	602	675	753	817	970	645	777	
		10	Motor capacity	kW	2.2	4	4	5.5	7.5	5.5	7.5	9	7.5	9
		Rotation speed	rpm	515	604	570	641	682	801	870	1015	638	829	
		15	Motor capacity	kW	2.2	4	4	5.5	7.5	5.5	7.5	9	7.5	11
		Rotation speed	rpm	575	673	604	675	722	844	928	1044	737	860	
		20	Motor capacity	kW	2.2	4	4	5.5	7.5	5.5	7.5	11	7.5	11
		Rotation speed	rpm	606	712	636	715	765	894	954	1087	774	902	
		25	Motor capacity	kW	2.2	4	4	5.5	7.5	7.5	7.5	11	7.5	15
		Rotation speed	rpm	679	751	712	750	808	928	1012	1127	812	960	
		30	Motor capacity	kW	2.2	4	4	5.5	7.5	7.5	7.5	11	9	15
		Rotation speed	rpm	715	792	751	801	848	971	1026	1165	870	986	
		35	Motor capacity	kW	2.2	4	4	5.5	7.5	7.5	9	15	9	-
		Rotation speed	rpm	753	839	755	844	967	1036	1088	1171	880	-	
		40	Motor capacity	kW	2.2	4	4	5.5	7.5	7.5	9	15	11	-
		Rotation speed	rpm	798	891	798	893	906	1062	1122	1225	932	-	
		Filter head loss*	mm WC	5					6			7		

\* Pressure drop if filter equipment is used.

This value must be added to the calculation of the overall available static pressure when selecting the motor.



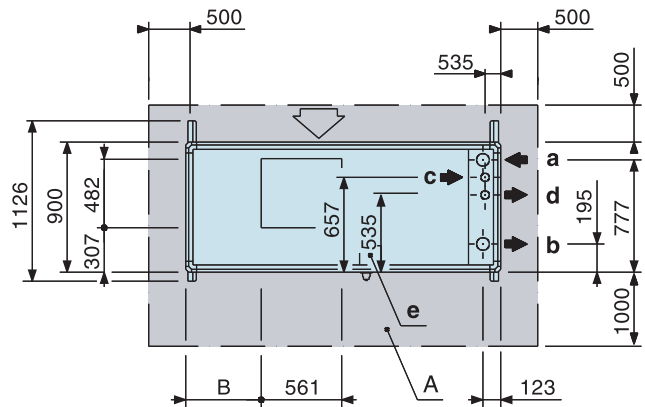
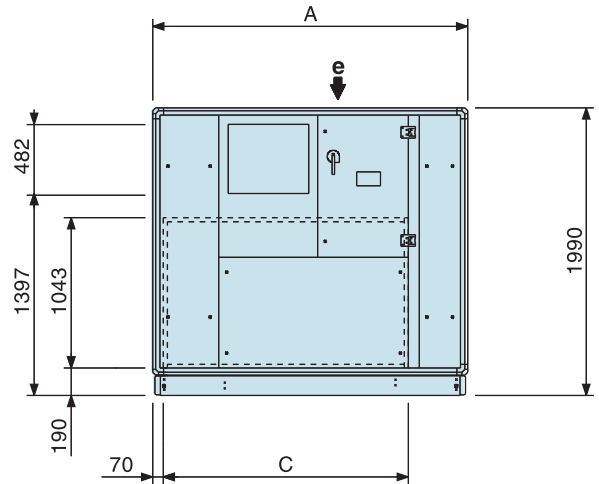
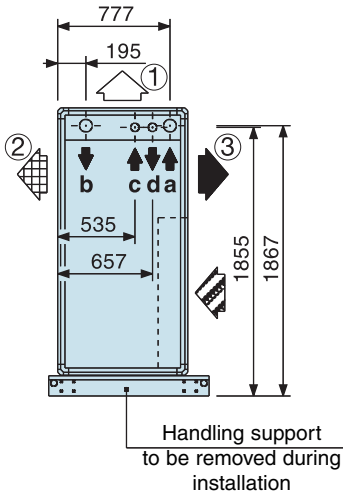
# Chilled water production units

## CIATCOOLER LJA

### DIMENSIONS

#### LJA CIATCOOLER

1 or 2 compressors, 1 refrigerating circuit



- Condenser coil intake
- Vertical discharge ①
- Front discharge ②
- Rear discharge ③

A: Maintenance area

- a: chilled water inlet
- b: chilled water outlet
- c: hot water inlet (desuperheater option)
- d: hot water outlet (desuperheater option)
- e: electricity supply hatch

LJA	A	B	C	Male connectors				Mass in kg	
				a	b	c	d	empty	in operation
100	1630	305,5	1153	G1" 1/4	G1" 1/4	G1" 1/4	G1" 1/4	581	591
150								610	620
200								771	785
250	2180	518	1703	G2"	G2"	G1" 1/4	G1" 1/4	832	846
300								859	873

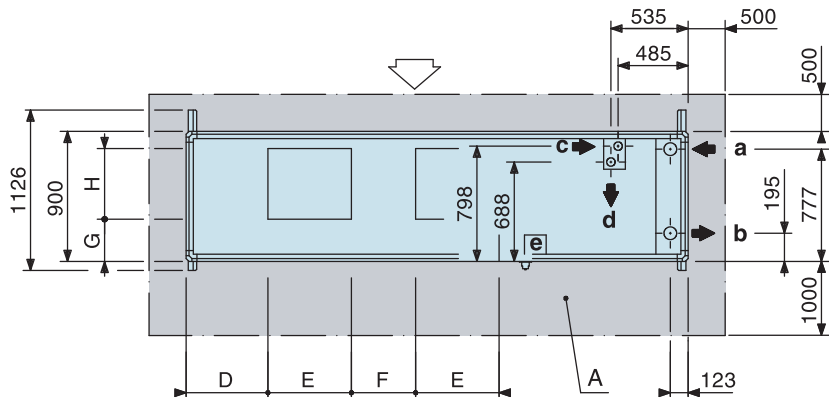
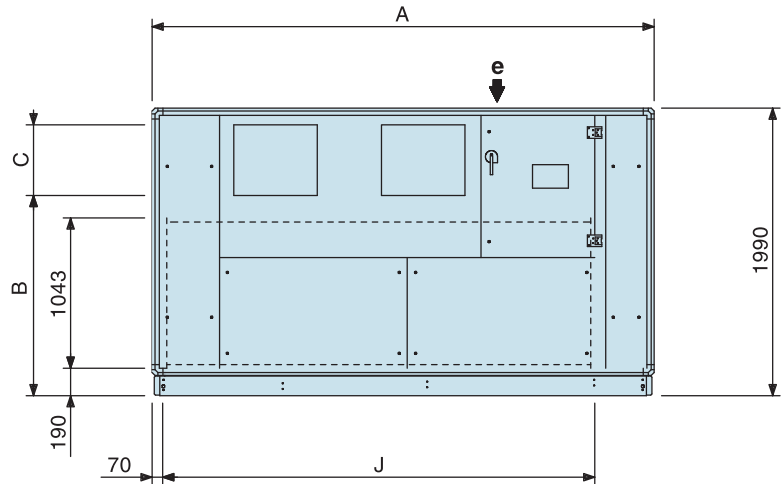
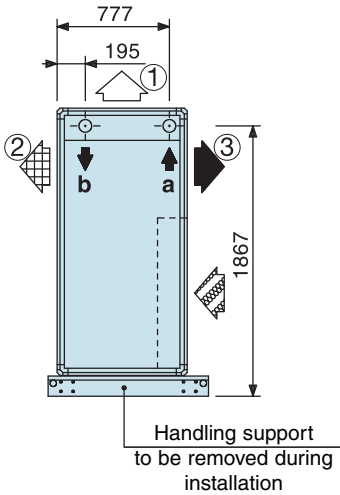


# Chilled water production units

## DIMENSIONS

### LJA CIATCOOLER

3 or 4 compressors, 2 refrigerating circuits



- Condenser coil intake
- Vertical discharge ①
- Front discharge ②
- Rear discharge ③

A: Maintenance area

- a: chilled water inlet
- b: chilled water outlet
- c: hot water inlet (desuperheater option)
- d: hot water outlet (desuperheater option)
- e: electricity supply hatch

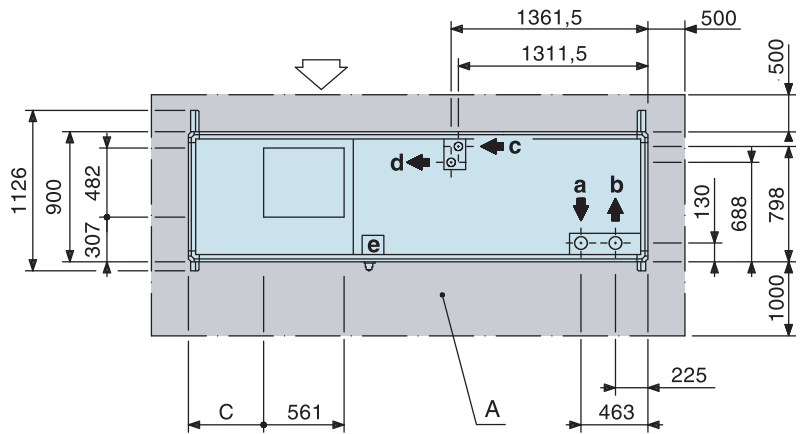
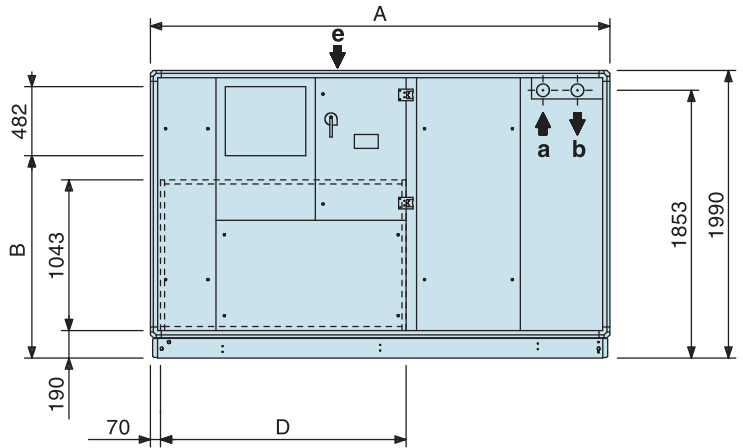
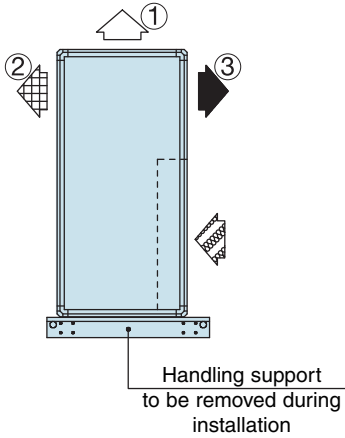
LJA	a	b	c	d	e	f	g	h	j	Male connectors				Mass in kg	
										a	b	c	d	empty	in operation
350	2830	1333	408	352,5	475	380	243	408	2353	G2" 1/2	G2" 1/2	G2"	G2"	1165	1179
400														1220	1234
450														1261	1275
500	3460	1390	482	570	561	454	300	482	2983	G2" 1/2	G2" 1/2	G2"	G2"	1462	1476
600														1517	1531



### DIMENSIONS

#### LJAH CIATCOOLER

1 or 2 compressors, 1 refrigeration circuit



- Condenser coil intake
- Vertical discharge ①
- Front discharge ②
- Rear discharge ③

A: Maintenance area

- a: chilled water inlet
- b: chilled water outlet
- c: hot water inlet (desuperheater option)
- d: hot water outlet (desuperheater option)
- e: electricity supply hatch

LJAH	A	B	C	D	Male connectors				Mass in kg	
					a	b	c	d	empty	in operation
100	2630	1397	300,5	1153	G1" 1/4	G1" 1/4	G1" 1/4	G1" 1/4	896	1254
150									925	1283
200	3180	1397	518,5	1703	G2"	G2"	G1" 1/4	G1" 1/4	1122	1482
250									1153	1513
300									1180	1540

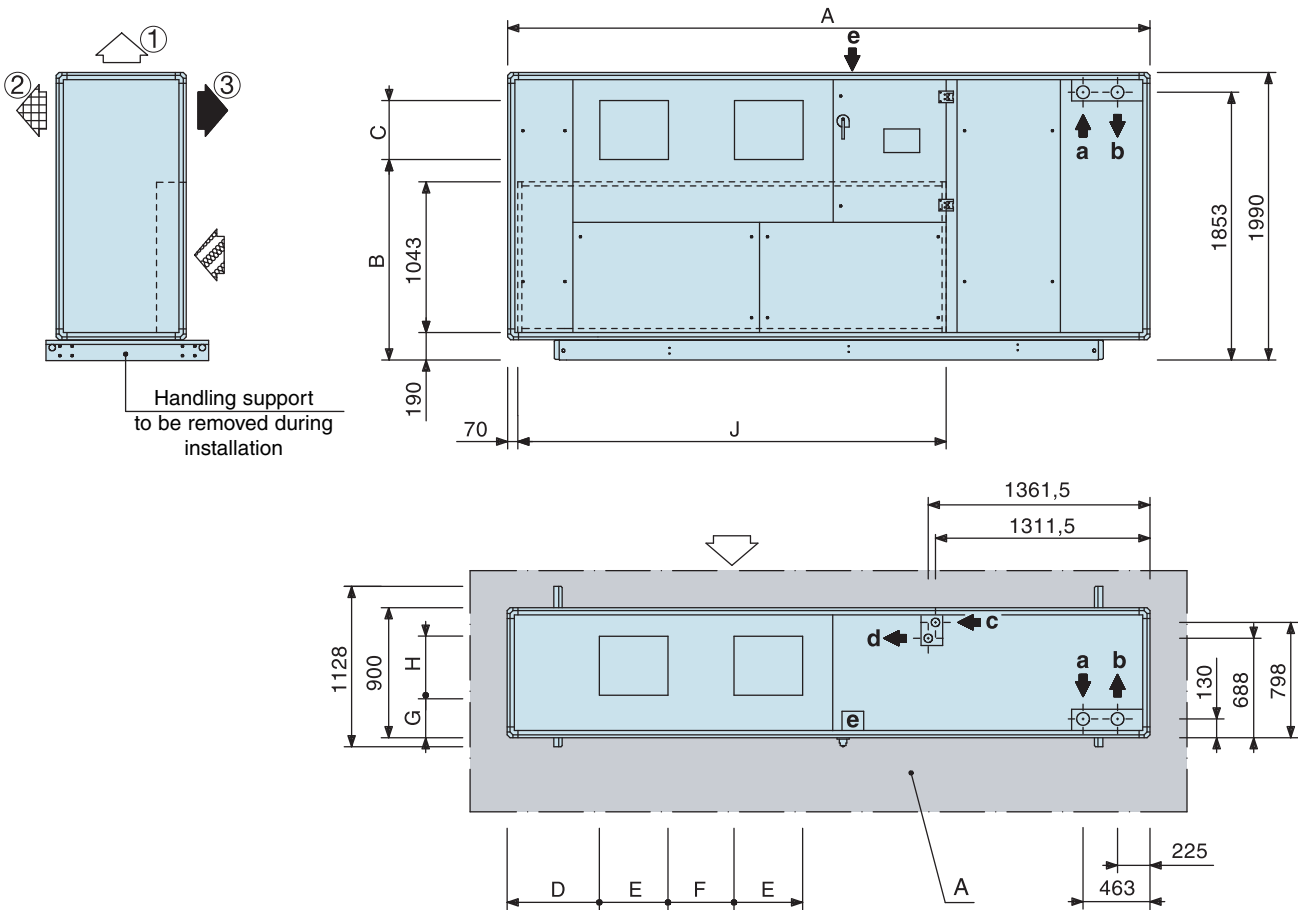


# Chilled water production units

## DIMENSIONS

### LJAH CIATCOOLER

3 or 4 compressors, 2 refrigerating circuits



- Condenser coil intake
- Vertical discharge ①
- Front discharge ②
- Rear discharge ③

A: Maintenance area

- a: chilled water inlet
- b: chilled water outlet
- c: hot water inlet (desuperheater option)
- d: hot water outlet (desuperheater option)
- e: electricity supply hatch

LJAH	A	B	C	D	E	F	G	H	J	Male connectors				Mass in kg	
										a	b	c	d	empty	in operation
350	3830	1333	408	352,5	475	380	243	408	2353	G2" 1/2	G2" 1/2	G2"	G2"	1490	1854
400														1560	1924
450														1617	1981
500	4460	1390	482	570	561	454	300	482	2983	G2" 1/2	G2" 1/2	G2"	G2"	1785	2159
600														1850	2214

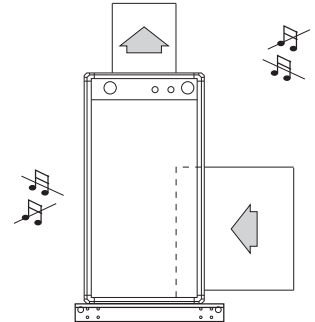


### NOISE LEVELS

Conditions in instructions - **Radiated noise - Suction and discharge ducts**

Models	SOUND POWER spectrum (dB)							Overall level Lw dB (A)
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	
100	73	75	73	66	60	57	55	69
150	80	78	74	62	63	63	62	71
200	78	79	73	64	64	62	58	71
250	82	80	71	65	65	65	63	72
300	84	83	73	67	68	67	66	75
350	84	82	74	65	66	65	64	73
400	85	83	75	66	68	67	66	75
450	88	85	77	69	70	69	69	77
500	87	86	77	71	69	69	67	77
600	91	90	81	75	73	72	71	81

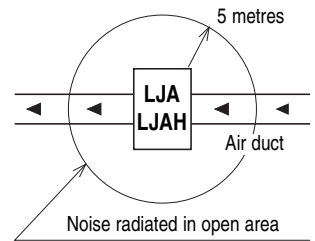
Sound power levels given for a nominal air flow with 10 mmWC of available pressure



Conditions in instructions - **Radiated noise - Suction and discharge ducts**

Models	SOUND PRESSURE spectrum (dB)							Overall level Lw dB (A)
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	
100	51	53	51	44	38	35	33	47
150	58	56	52	40	41	41	40	49
200	56	57	51	42	42	40	36	49
250	60	58	49	43	43	43	41	50
300	62	61	51	45	46	45	44	53
350	62	60	52	43	44	43	42	51
400	63	61	53	44	46	45	44	53
450	66	63	55	47	48	47	47	55
500	65	64	55	49	47	47	45	55
600	69	68	59	53	51	50	49	59

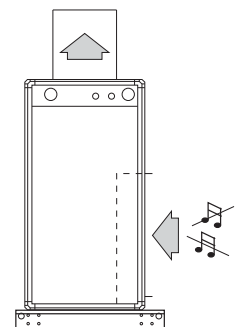
Sound power levels given for a nominal air flow with 10 mmWC of available pressure



Sound level on **SUCTION**: factor in when calculating the mufflers

Models	SOUND POWER spectrum (dB)							Overall level Lw dB (A)
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	
100	78	75	73	73	75	74	70	80
150	82	79	77	77	79	78	74	84
200	83	80	78	78	80	79	75	85
250	85	82	80	80	82	81	77	87
300	88	85	83	83	85	84	80	90
350	85	81	80	79	82	79	75	86
400	86	82	81	80	83	80	76	87
450	89	85	84	83	86	83	79	90
500	89	84	82	83	84	82	77	88
600	93	88	86	87	88	86	81	92

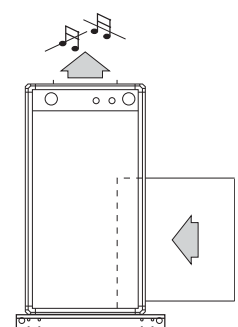
Sound power levels given for a nominal air flow with 10 mmWC of available pressure



Sound level on **DISCHARGE**: factor in when calculating the mufflers

Models	SOUND POWER spectrum (dB)							Overall level Lw dB (A)
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	
100	83	87	82	84	83	82	77	88
150	87	91	86	88	87	86	81	92
200	88	92	87	89	88	87	82	93
250	90	94	89	91	90	89	84	95
300	93	97	92	94	93	92	87	98
350	90	89	86	88	87	85	81	92
400	91	90	87	89	88	86	82	93
450	94	93	90	92	91	89	85	96
500	91	93	90	92	90	89	84	95
600	95	97	94	96	94	93	88	99

Sound power levels given for a nominal air flow with 10 mmWC of available pressure





# Chilled water production units

## ASSEMBLY RECOMMENDATIONS

### Installation

- LJA-LJAH CIATCOOLERS are monoblock units for indoor application, designed for installation in technical premises.
- It is necessary to have an access area of 1.5 m wide all round the units for servicing and maintenance operations.
- The air inlet to the coil and the fan discharge outlet must not be obstructed. In the case of connections via ductwork, study the system (slopes, pressure drops, velocities, etc.). A poorly designed system (excessive high speeds, poor rigidity, etc.) can result in high sound levels.
- The LJA / LJAH CIATCOOLERS outlets must be ducted. The ductwork must ensure the protection of persons close to the fan.
- Study the unit layout carefully, and select a location that is compatible with the requirements concerning the environment (sound levels, position of the technical premises in relation to the other rooms, etc.).

### Electrical connections

- All the necessary instructions for electrical connections are set out in the electrical diagram supplied with the unit (compulsory compliance at any time).
- These connections must be made in accordance with good engineering practice and in compliance with the standards in force.

- It is essential to fit the main electrical supply cables with an isolating switch or a motor circuit breaker (to be supplied and fitted by the installer).

### Hydraulic connections (LJA CIATCOOLER series )

- The hydraulic connections must be made in accordance with good engineering practice
- It is especially important to include the accessories essential for all hydraulic circuits:
  - Filter,
  - Expansion vessel,
  - Drain cocks at low points,
  - shut off valves,
  - Air vents at high points, etc.
- Make sure that the water content of the installation is sufficient,
- Include a buffering tank if necessary.

### Commissioning

- Comply with our assembly and maintenance manuals.

### Maintenance

- Comply with the operating and maintenance guide.
- Take out a maintenance contract.



# Chilled water production units

## CIATCOOLER LJA

### AUTOMATIC CONTROL SYSTEM CONNECT



#### USER-FRIENDLY INTERFACE CONSOLE

- Multilanguage LCD (2 lines of 20 characters each)
- Pressure and temperature readings
- Pump management
- Communication

Available voltage-free contact inputs and outputs:

- Inputs:
- Automatic operation control
  - Selection of setpoints 1/2
  - Heating/Cooling mode selection
  - Compressor load shedding
- Outputs:
- General fault display
  - Pump control.

#### RS-485 OUTPUT AS STANDARD

**MODBUS-JBUS open Protocol (standard)**  
**LONWORKS Protocol (option)**

#### RELAY BOARD (OPTION)

Available outputs:

- Water flow fault
- Frost protection fault
- Pump fault
- Fan fault
- Low and high pressure fault
- Compressor safety fault
- Discharge temperature fault
- Compressor operation fault

#### REMOTE-CONTROL UNIT (OPTION)

**Operation and design same as display console**

#### MULTICONNECT MULTI-UNIT MANAGEMENT (OPTION)

Main functions available:

- Management of up to 8 units on a single water loop
- Management in cooling mode (water chiller) or heating mode (heat pump)
- Management of chilled-water or hot-water pumps
- Centralised management of a backup unit
- Unit load shedding
- System time programming
- Energy storage mode management
- Fault management on each unit
- Unit running time balancing
- Integrated Modbus BMS link for obtaining information on unit operation and faults

This document is non-contractual. As part of its policy of continual product improvement, CIAT reserves the right to make any technical modification it feels appropriate without prior notification.

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CERTIFIED ISO 9001  
QUALITY SYSTEM



Compagnie Industrielle d'Applications Thermiques - S.A. with a registered capital of 26 728 480 € - R.C.S. Bourg-en-Bresse B 545 620 114