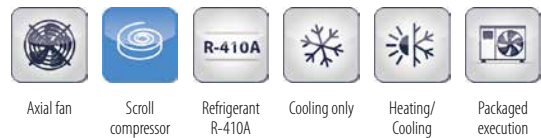


INSTALLATION, USE AND MAINTENANCE MANUAL

LCX

Chillers and heat pumps
55 kW - 360 kW



Axial fan

Scroll
compressorRefrigerant
R-410A

Cooling only

Heating/
CoolingPackaged
execution

PLUS

- » Super low noise execution available on request
- » Electronic expansion valve
- » Incorporable hydraulic kit
- » Up to 4 compressors
- » 1 or 2 cooling circuits
- » Remote connectivity with the most common protocols
- » Super low noise execution available on request

CE



Dear Customer,

Thank you for placing your trust in one of the products of Galletti S.p.a

This product is the result of our work and our commitment to design, research, and production and has been made from the finest materials, employing state-of-the-art components and production technology.

The CE marking of the product ensures its compliance with the safety requirements of the following directives: the Machinery Directive, the Electromagnetic Compatibility Directive, the Electrical Safety Directive, and the Pressure Equipment Directive. Fulfillment of the Ecodesign requirements is fully in keeping with the environmental awareness that has always guided our company.

The company certification of the Quality and Safety management system ensures that product quality is constantly checked and improved, and that the product is manufactured in full compliance with the highest standards.

By choosing our product, you have opted for Quality, Reliability, Safety, and Sustainability.

At your disposal, once again.

Galletti S.p.a

TRANSLATION BY ORIGINAL INSTRUCTIONS

The water chillers and heat pumps comply with directive 2014/68/EC (PED).

The technical and dimensional data reported in this manual may be modified in view of any product improvement.

For any information , please contact the company: info@galletti.it



The unit data are reported on the rating label in this page.

THE LABEL SHOWS THE FOLLOWING DATA:

- Series and size of the unit
- Date of manufacture
- Main technical data
- Manufacturer
- The label is applied on the unit, usually on the enclosing panels

IMPORTANT: NEVER REMOVE THE LABEL

- Unit serial number
- The serial number permits to identify the technical characteristics and the components installed
- Without this datum it will be impossible to identify the unit correctly

 	Galletti S.p.A. - Via L.Romagnoli 12/a 40010 Bentivoglio (BO) Italy Made in Italy CATEGORY 2
Serial number Code Date of production Cooling capacity (W) Heating capacity (W) Power supply Power input (kW) Weight (kg) Max power input (kW) Max running amperage (A) HP power input (kW) Refrigerant Max refrigerant pressure Max refrigerant temperature (°C)	

GENERAL CAUTIONARY NOTES

- Keep this manual intact in a safe place for the all life of the unit.
- Carefully read all the information contained in this manual, paying special attention to sections marked "Important" and "Warning"; failure to comply with the instructions provided could result in injury to persons or damage to the equipment.
- Should a fault occur, consult this manual and if necessary contact the nearest Galletti S.p.A. service centre.
- All installation and maintenance operations must be carried out by qualified personnel, unless otherwise indicated in this manual.
- The first start up must be carried out exclusively by qualified personnel and authorized by Galletti S.p.A. (see warranty sheet attached).
- Before performing any work on the unit, disconnect it from the power supply.
- Failure to comply with the rules provided in this manual will result in the immediate invalidation of the warranty.
- Galletti S.p.A. shall not accept any liability for injury or damage resulting from improper use of the equipment or failure to comply with the directions provided in this manual and on the unit it self.
- It's mandatory to install filters heat exchangers protection will immediately invalidate the warranty.

SAFETY SYMBOLS



Carefully read this manual.



Warning



Use personal protective equipment



Warning:

Electrical and electronic products may not be mixed with unsorted household waste. Do NOT try to dismantle the system yourself: the dismantling of the system, treatment of the refrigerant, of oil and of other parts must be done by an authorized installer and must comply with applicable legislation. Units must be treated at a specialized treatment facility for reuse, recycling and recovery. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. For more information, contact your installer or local authority.

USE SUITABLE PPE (GLOVES FOR REFRIGERANT, PROTECTIVE GOGGLES)

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1 LCX SERIES

1.1 FIELD OF APPLICATION

LCX air-condensed water chillers and heat pumps have been designed to cool and heat water for air conditioning and heating systems in residential or commercial buildings.

The LCX range units are intended for outdoor installation (IP24 protection degree), in a position not accessible to the public.

If protection grids are not provided (accessory) and if the machine can be reached by non-specialised personnel, access to the finned coil must be prohibited using appropriate barriers.

Do not install the unit in environments with gas or flammable dusts.

1.2 MAIN FEATURES

The series LCX consists of 16 models with cooling capacities from 55 to 360 kW, in cooling only version or heat pump with

1.3 MODELS AND VERSIONS

The LCX series consists of 16 models with different cooling capacities, in cooling only or reversible heat pump. All models operate with R410A refrigerant.

» Configuration options

1	Power supply
0	400 V - 3 N - 50 Hz
1	400 V - 3 - 50 Hz
2	400 V - 3 N - 50 Hz + magnetic breakers
3	400 V - 3 - 50 Hz + magnetic breakers
2	Onboard controller and expansion valve
B	Advanced + electronic expansion valve
3	User side water pump
0	Absent
1	LP pump + expansion vessel
2	HP pump + expansion vessel
3	Double pump LP parallel operation and expansion vessel (advanced controller required)
4	Double pump HP parallel operation and expansion vessel (advanced controller required)
5	LP run and standby double pump + expansion vessel
6	HP run and standby double pump + expansion vessel
4	Water buffer tank
0	Absent
S	Selected user side
5	Partial heat recovery
0	Absent
D	Desuperheater with water pump free contact
6	Air flow modulation
0	Absent
C	Condensation control by phase-cut fans
E	Condensation control performed by EC fans
7	Antifreezing kit
0	Absent
E	Evaporator
P	Evaporator and water pump
S	Evaporator, water pump and water buffer tank
8	Remote communication
0	Absent

two different acoustic systems.

The possibility of setting up different cooling circuits in units of the same power means being able to personalise efficiency levels under full or part load conditions.

— 1 circuit, 2 compressors. The solution of using two compressors in a single cooling circuit increases efficiency under part load conditions, reaching ESEER/SEER and SCOP values greater than 4.

— 2 circuits / 4 compressors, 4 compressors enable the unit to output power in 4 steps and adapt perfectly to the actual thermal load of the system, while reducing starting currents.

Complete hydronic kits can be incorporated within the units without modifying their size and you have the option of choosing the water circulation pump.

All units, irrespective of type of construction, are equipped with electronic expansion valves to maximise efficiency under part load conditions.

NOTE: The choice of some options can make the choice of some others forbidden or make some selection (fields) mandatory. Please contact Galletti S.p.A. for verification.

1	RS485 serial board (Carel / Modbus protocol)
2	LON FTT10 serial board (advanced controller required)
3	GSM modem board (advanced controller required)
4	BACNET IP / PCOWEB serial board + supervision software Gweb (advanced controller required)
5	BACNET IP / PCOWEB serial board + clock board + supervision software Gweb (advanced controller required)
9	Special coils / Protective treatments
0	Standard
B	Pre-painted fins with polyester paint
C	Cataphoresis treatment on fins and coil carpentry
R	Copper-copper
10	Packing
0	Standard
1	Wooden cage
2	Wooden crate
11	Anti vibration shock mounts
0	Absent
G	Rubber anti vibration shock mounts
M	Spring anti vibration shock mounts
12	Remote control
0	Absent
1	Remote simplified user panel
2	Remote simplified user panel for standard controller
3	Remote user panel for advanced controller
13	Unit installation accessories
0	Absent
V	Pair of couplings Victaulic

» Accessories

A	Power factor capacitors
B	Soft starter
C	Service kit (advanced controller required)
D	Clock board (advanced controller required)
E	ON/OFF status of the compressors
F	Remote control for step capacity limit (advanced controller required)
G	Configurable digital alarm board (advanced controller required)
H	Set point compensation outdoor temperature probe
I	Refrigerant pressure gauges
L	Filter regulating kit
M	Directives reference other than "2014/68/UE - PED"
N	Unit lifting pipes
P	Outdoor finned coil heat exchanger protection grille
Q	Outdoor finned coil heat exchanger protection filters

1.4 CONSTRUCTIVE FEATURES

Structure

Galvanised sheet steel structure treated with a polyester powder coating (RAL9002) suitable for outdoor applications, for an attractive look and effective resistance to corrosive agents. Fastening devices are made of non-oxidizable materials, or carbon steel that has undergone surface-passivating treatments. On request acoustic insulation can reduce the unit noise emissions

Fastening devices are made of non-oxidizable materials, or carbon steel that has undergone surface-passivating treatments.

Customised hydraulic kit

- High head pump made entirely of stainless steel, already configured for use with mixtures of water and ethylene glycol up to 30% and provided with internal thermal protection.
- Expansion tank.
- Safety valve.
- Filling cock (included).
- Automatic vent valve.
- Flow switch and outlet water temperature probe with anti-freeze thermostat function.
- Mechanical Y filter supplied as a standard feature on all models to protect the evaporator (included).

Cooling circuit

- Scroll type compressors in a tandem or trio configuration that can be sound insulated. The adopted components' efficiency, reliability, and noise emission levels represent the state of the art for scroll compressors.
- Brazed plate heat exchangers made of stainless steel and optimised for use with R410A.
- Finned block condenser with 8 mm copper piping and aluminium fins, characterised by ample heat exchange surfaces.
- Dehydrating filter.
- Flow indicator with humidity indicator.
- Thermostatic valve with external equalisation and integrated MOP function.
- Cycle reversing valve (only LCX H)

- Check valve (LCX H)
- Liquid receiver (LCX H)
- High and low pressure switch
- Water safety valve
- Schrader valves for checks and/or maintenance
- Refrigerant pressure gauges (optional)

Fan drive assembly

Electric fan with 6-pole external rotor motor directly keyed to the axial fan, with internal thermal protection on the windings, complete with safety grille and dedicated supporting structure. The fan is housed in a special compartment having a profile designed to optimise ventilation.

The use of finned block heat exchangers with 8 mm diameter pipes reduces pressure drops on the air side, thus significantly improving the noise levels of the units.

The condensation control system continuously and automatically regulates the fan speed, further limiting the noise emissions of the unit during nighttime operation and under partial load conditions.

Fans with EC motors are available on request.

Finned block heat exchanger

Made of 8 mm diameter copper pipes and aluminium fins, generously sized.

The special engineering of the heat exchangers allows defrost cycles to be carried out at maximum speed in the models with heat pump operation, which brings clear benefits in terms of the integrated efficiency of the whole cycle.

Electronic microprocessor control

The electronic control enables the complete control of the **LCX** unit. It can be easily accessed through a polycarbonate flap with IP65 protection rating.

By reading the outdoor air temperature, it can automatically change the setpoint to adapt it to the outdoor load conditions or keep the unit running even in the harshest winter conditions.

Electric control board

The electric control board is constructed and wired in accordance with EEC Directive 73/23, Directive 89/336 on electromagnetic compatibility and related standards. Made of steel sheet, it is also protected by the enclosing panels of the machine.

Options

- Incorporable hydraulic kit
- Condensation control
- Low noise execution
- Refrigerant pressure gauges
- Antifreeze heating elements on the water circuit
- Electronic thermostatic valve
- Heat recovery 25% (chiller)
- Special exchangers (hydrophilic treatment, copper-copper, cataphoresis, anti-corrosion)

2 INSPECTION, CONVEYANCE DIMENSIONAL AND SITING

2.1 INSPECTION

On receiving the unit, check that the packing is intact: the machine left the factory in perfect conditions and after thorough

inspection.

Should you detect any signs of damage, immediately report them to the carrier and note them on the delivery slip.

Galletti S.p.A. Must be notified of the entity of the damage within 8 days of the delivery date.

Check that the following items are present:

- starting up module,
- wiring diagram
- warranty certificate
- make sure that this manual is intact (48 pagine).

2.2 CONVEYANCE

During handling it is compulsory to check dimensions, weights, centre of gravity and anchorages. Check as well that lifting and positioning devices conform to the current safety regulations. The unit leaves the factory screwed onto a wooden pallet, which allows it to be easily conveyed with a forklift truck. After removing the unit from the pallet, handle it gently, without applying excessive pressure on the side panels, finned coil and fan grille. You should collect and separate the packing materials (wood, cardboard, nylon etc.) and make them available for recycling in order to minimise their environmental impact. Before lifting, remove the screws fastening the base of the unit to the wood platform.

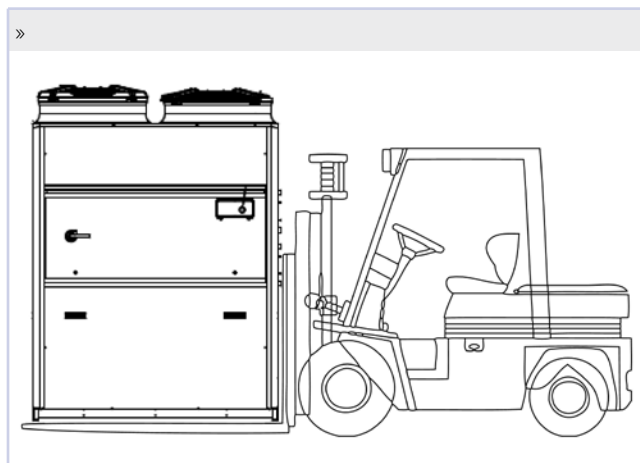
The unit must be lifted using Ø 1" steel pipes at least 5mm thick, to be inserted in the round holes on the base side members (see figure) and identified by means of stickers. Piping must protrude of at least 250-300 mm from each side, be slung with ropes of equal length and secured to the lifting hook (provide stops at the ends of the pipes to prevent the ropes from slipping off due to the weight).

Use ropes and belts sufficiently long to extend beyond the height of the machine and place spacer bars and boards on the top to prevent damaging the sides and the top of the unit.

In this phase, before the definitive position, vibration damping supports can be installed (optional).

⚠ WARNING In all lifting operations make sure that the unit is securely anchored in order to prevent accidental falls or overturning.

Use all available lifting points. See section 2.4 Installation clearance requirements and dimensional p. 8.



2.3 SITING AND DAMPERS

It is important to bear in mind the following aspects when choosing the best site for installing the unit:

- Size and origin of water pipes;
- Location of the power supply;
- Solidity of the supporting surface;

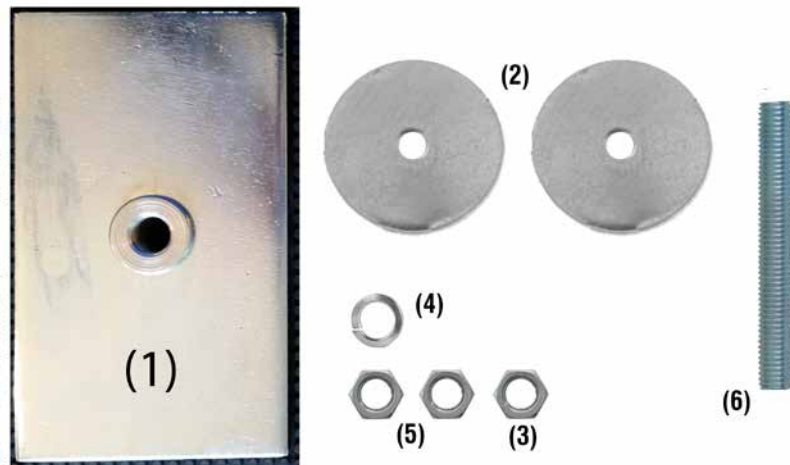
- Avoid obstacles to the outflow of air from the fan which could cause back suction (see section on 2.4 Installation clearance requirements and dimensional p. 8);
- Direction of prevalent winds: (position the unit so as to prevent prevalent winds from interfering with the fan air flow). Prevalent winds opposing the fan air flow will result in a maximum air temperature below the value indicated in the operating limits;
- Avoid the possible reverberation of sound waves; do not install the unit in narrow or cramped spaces;
- Ensure adequate accessibility for maintenance or repairs (see section on 2.4 Installation clearance requirements and dimensional p. 8).

This appliance is not intended to be used by children or persons with physical, sensorial or mental problems, inexperienced or unprepared, without supervision. Be careful that children do not approach the appliance.

When installing the vibration dampers follow the instructions below:

1. Screw the jack (6) into the vibration damper with jack support plate (1) all the way;
2. Screw the bolt (5) until the jack (6) is locked in place on the vibration damper (1);
3. Screw the bolt (3) and insert one of the two disks (2) into the jack (6);
4. Insert the jack (6) into the hole on the unit base;
5. Adjust the height by turning the bolt (3);
6. Insert the second disk (2) into the jack (6) until it makes contact with the base;
7. Tighten the vibration damper with the split washer (4) and the bolt (5) to the unit base.

LCX	DAMPERS
Frame 2	4
Frame 3	8
Frame 3+	8
Frame 4	8
Frame 5	8
Frame 6	8



See the vibration dampers mounting instructions LCX (code RG66013698).

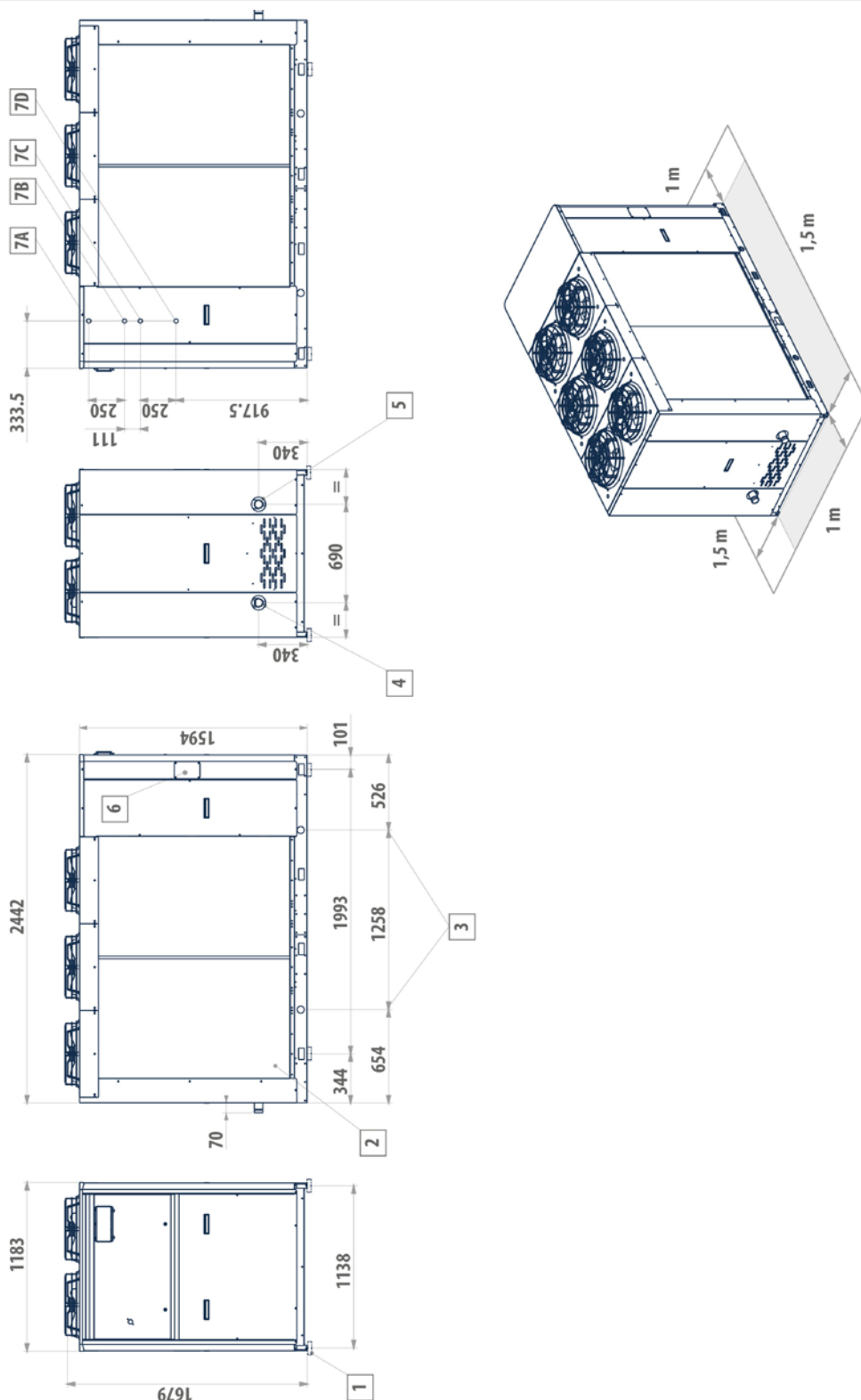
2.4 INSTALLATION CLEARANCE REQUIREMENTS AND DIMENSIONAL

To guarantee the proper functioning of the unit and access for maintenance purposes, it is necessary to comply with the minimum installation clearance requirements shown in figures 2.3 Dimensionale LCX FRAME 2 p. 9, 2.4 Dimensionale LCX FRAME 3 p. 10, 2.5 Dimensionale LCX FRAME 3+ p. 11, 2.6 Dimensionale LCX FRAME 4 p. 12, 2.7 Dimensionale LCX FRAME 5 p. 13 and 2.8 Dimensionale LCX FRAME 6 p. 14.

- Verify that there are no obstacles in front of the fans air outlet.
- Avoid any and all situations of backflow of hot air between air outlet and inlet of the unit.
- If even only one of the above conditions is not fulfilled, please contact the manufacturer to check for feasibility.
- In the design of the LCX series, special care has been taken to minimise noise and vibrations transmitted to the ground.
- Even greater insulation may be obtained, however, by using vibration damping base supports (available as optional accessories).
- If vibration damping base supports are adopted, it is strongly recommended also to use vibration damping couplings on the water pipes.
- Whenever the unit is to be sited on unstable ground (various types of soil, gardens, etc.) it is a good idea to provide a supporting base of adequate dimensions.

⚠ WARNING Heat pump units produce condensation while operating in the heating mode.

» LCX FRAME 2

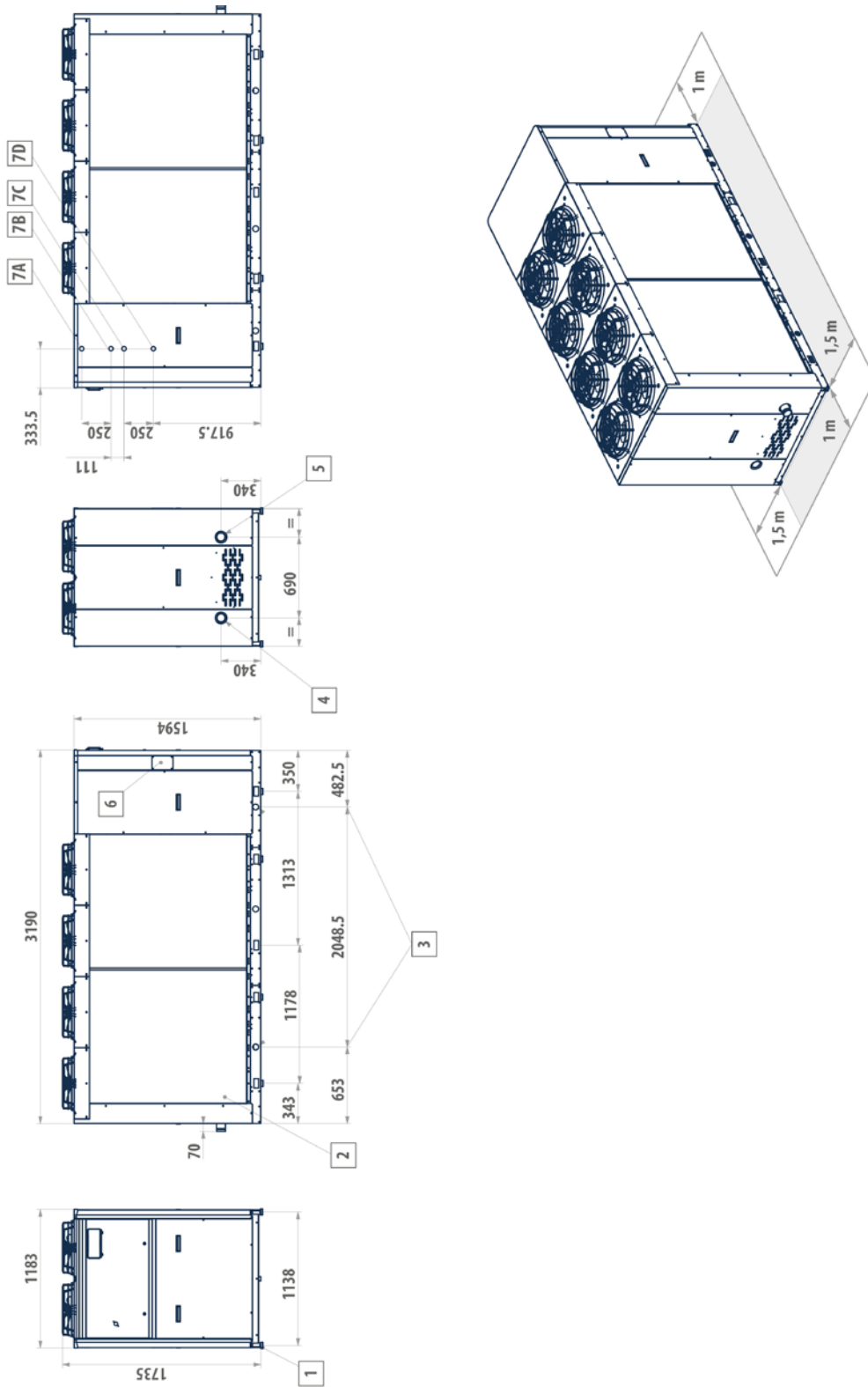


LEGEND

- 1** Vibration dampers
- 2** Protection grill (optional)
- 3** Lifting points
- 4** Water inlet (Victaulic 2")
- 5** Water outlet (Victaulic 2")
- 6** Power supply input
- 7A** Heat recovery water outlet (1"), left-hand circuit
- 7B** Heat recovery water inlet (1"), left-hand circuit
- 7C** Heat recovery water outlet (1"), right-hand circuit
- 7D** Heat recovery water inlet (1"), right-hand circuit

Model	Version
LCX 62-72-82	L - Q
LCX 92-102	S

» LCX FRAME 3

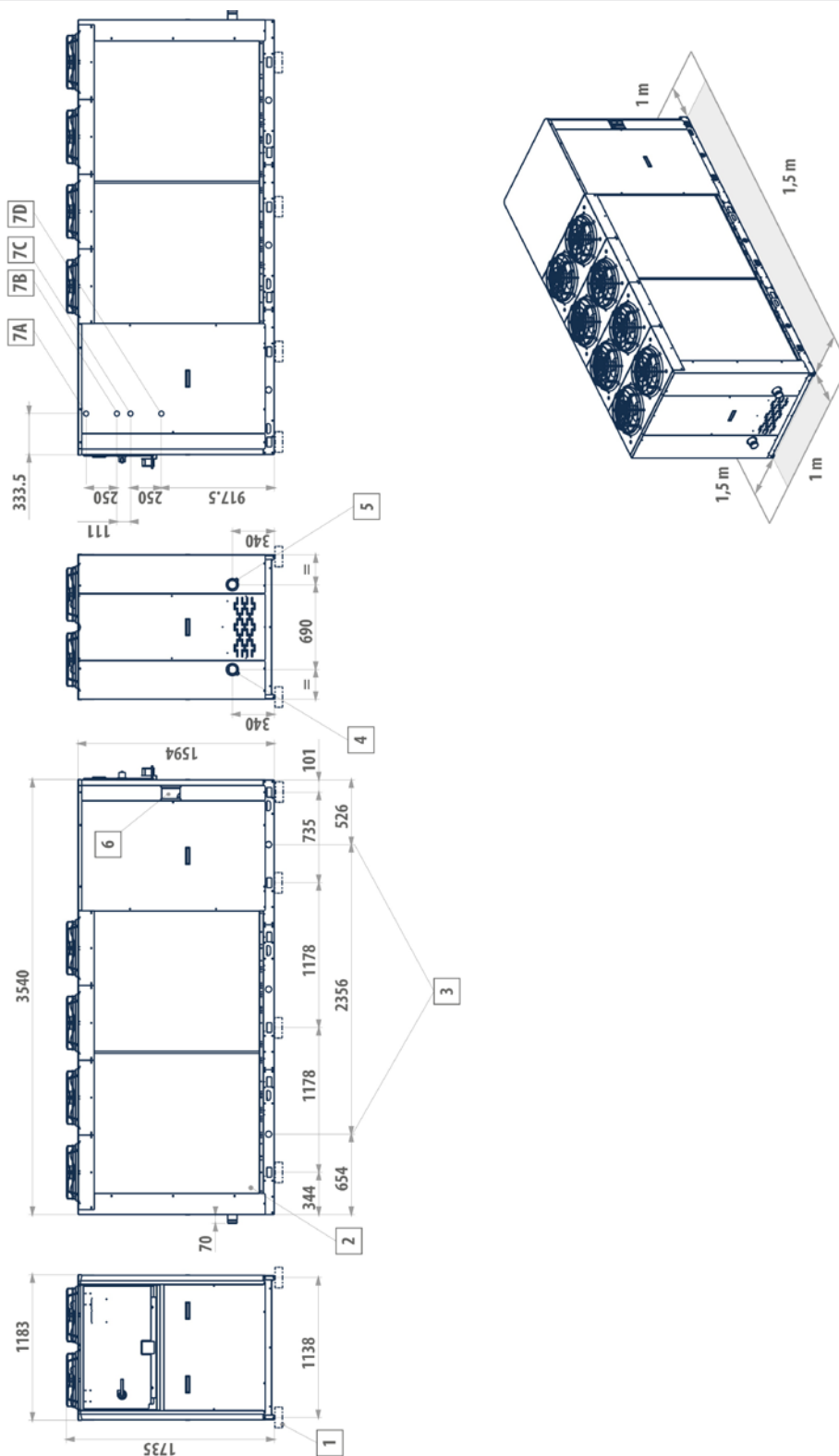


LEGEND

- 1** Vibration dampers
- 2** Protection grill (optional)
- 3** Lifting points
- 4** Water inlet (Victaulic 2 1/2")
- 5** Water outlet (Victaulic 2 1/2")
- 6** Power supply input
- 7A** Heat recovery water outlet (1") left-hand circuit
- 7B** Heat recovery water inlet (1") left-hand circuit
- 7C** Heat recovery water outlet (1") right-hand circuit
- 7D** Heat recovery water inlet (1") right-hand circuit

Model	Version
LCX 92-102	L - Q
LCX 122-142-162	S

» LCX FRAME 3+

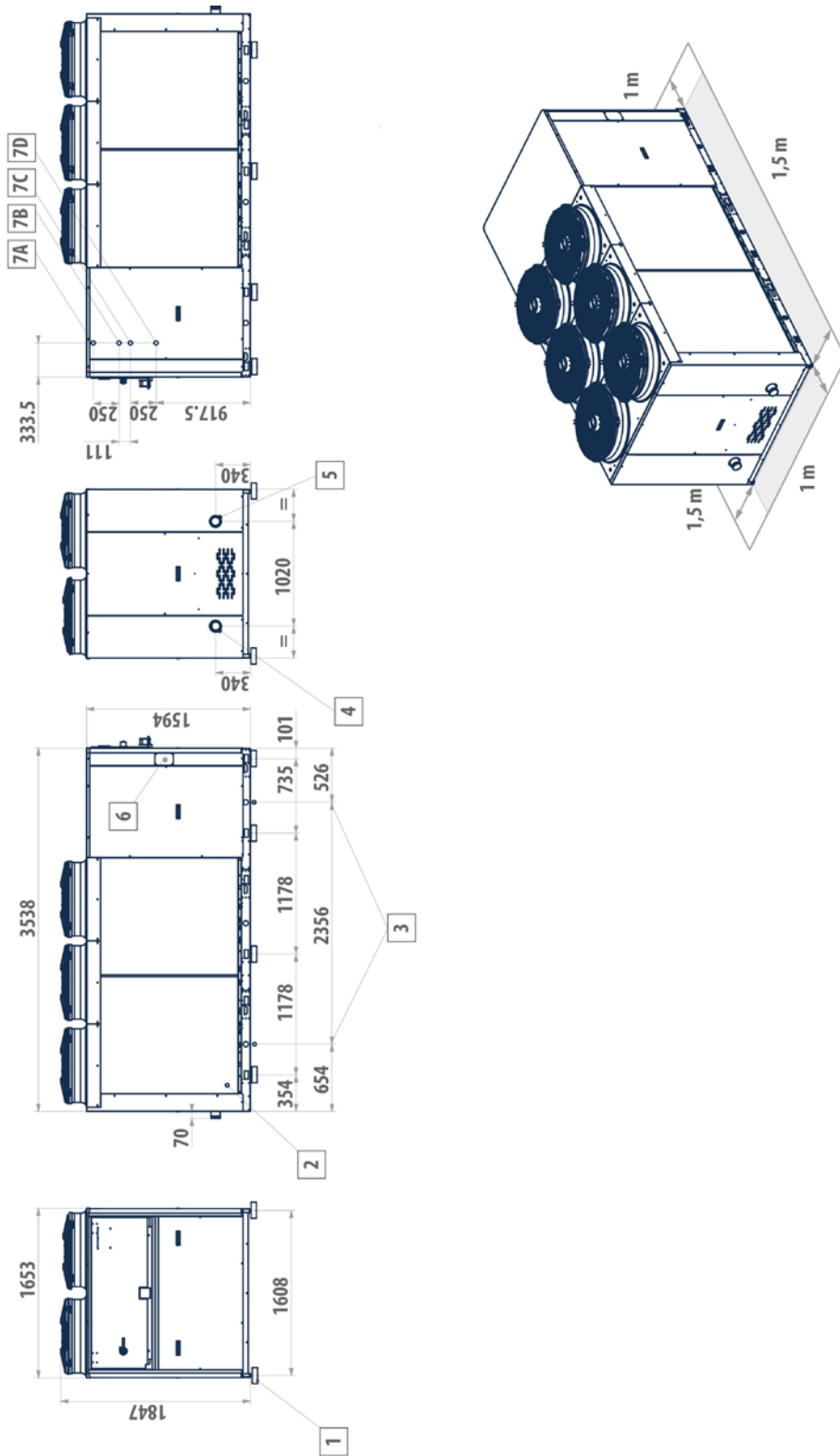


LEGEND

- 1** Vibration dampers
- 2** Protection grill (optional)
- 3** Lifting points
- 4** Water inlet (Victaulic 2 1/2")
- 5** Water outlet (Victaulic 2 1/2")
- 6** Power supply input
- 7A** Heat recovery water outlet (1"), left-hand circuit
- 7B** Heat recovery water inlet (1"), left-hand circuit
- 7C** Heat recovery water outlet (1"), right-hand circuit
- 7D** Heat recovery water inlet (1"), right-hand circuit

Model	Version
LCX 94-104	L - Q
LCX 124-144-164	S

» LCX FRAME 4

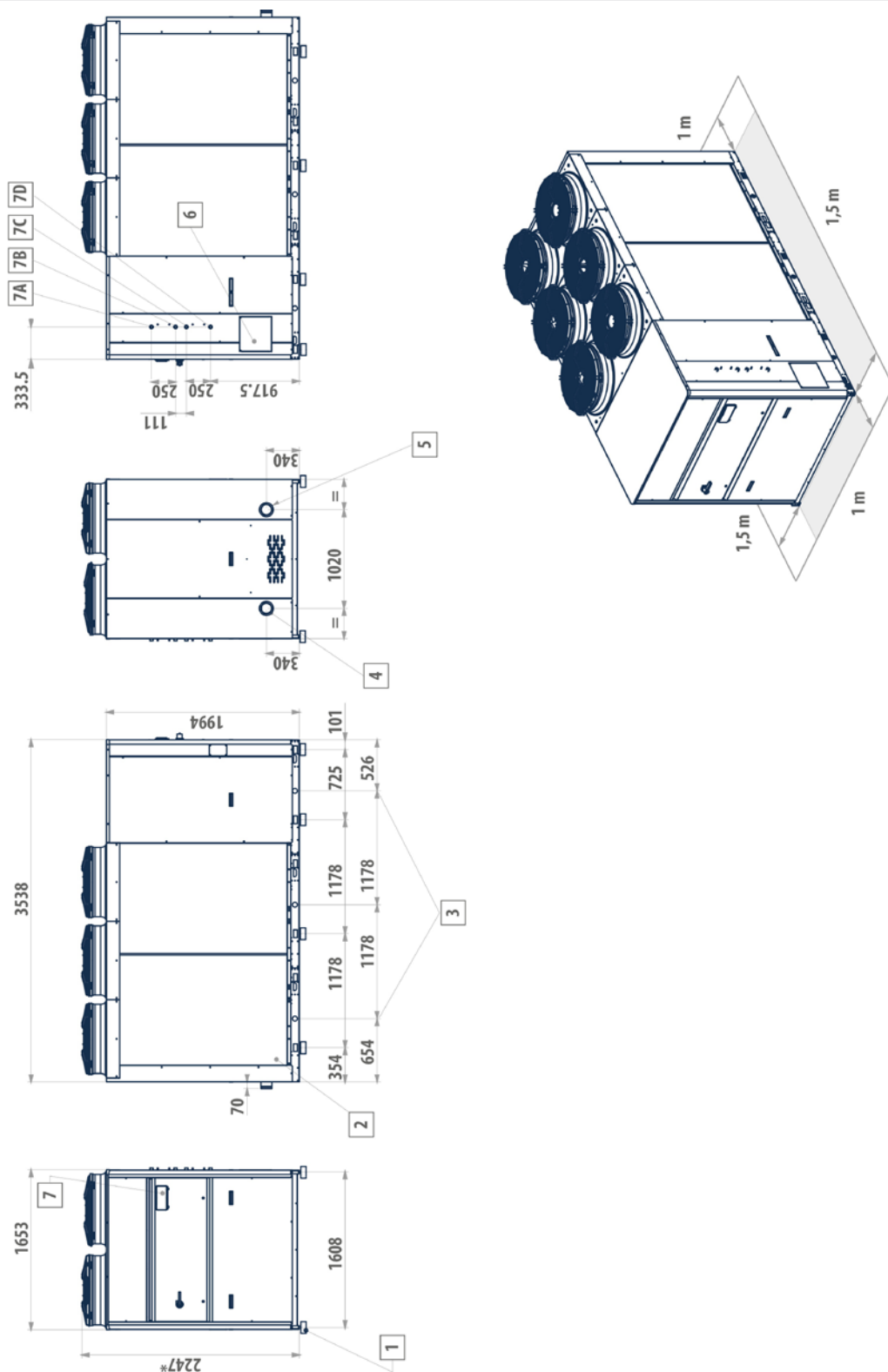


LEGEND

- 1** Vibration dampers
- 2** Protection grill (optional)
- 3** Lifting points (optional)
- 4** Water inlet (Victaulic 3")
- 5** Water outlet (Victaulic 3")
- 6** Power supply input
- 7A** Heat recovery water outlet (1") left-hand circuit
- 7B** Heat recovery water inlet (1") left-hand circuit
- 7C** Heat recovery water outlet (1") right-hand circuit
- 7D** Heat recovery water inlet (1") right-hand circuit
- *** With EC=1884 fans

Model	Version
LCX 122-124-142-144-162-164	L - Q
LCX 174-214	S
LCX 194	L - Q - S

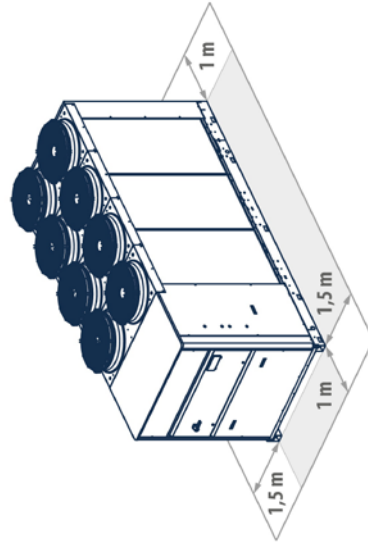
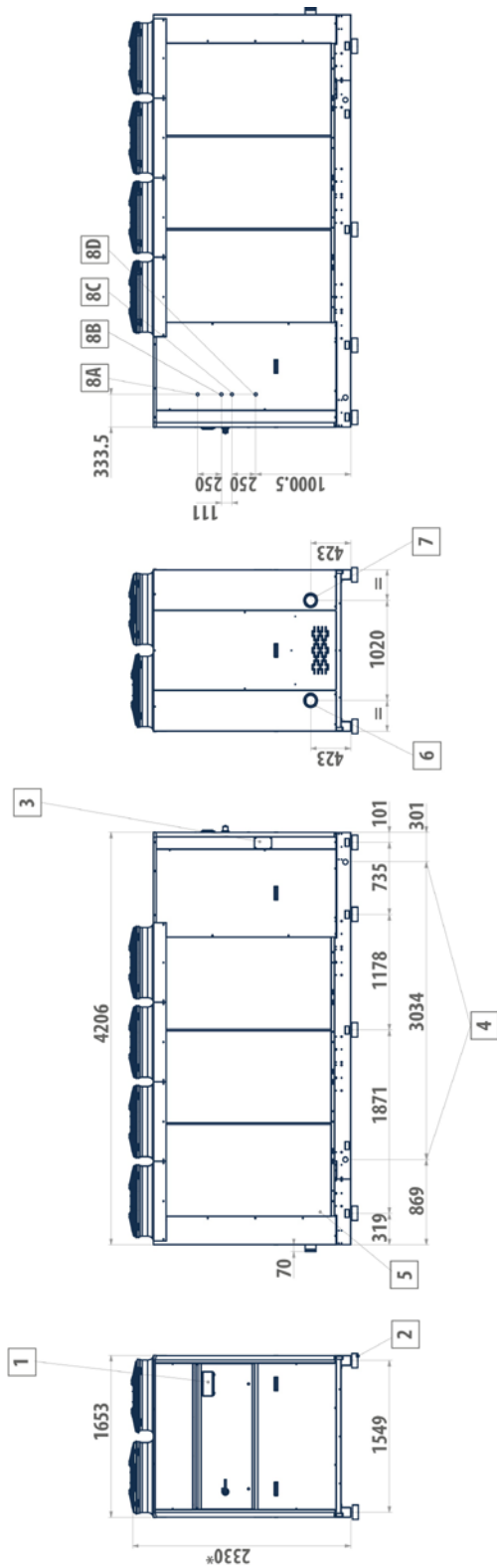
» LCX FRAME 5



LEGEND

- 1** Vibration dampers
- 2** Protection grill (optional)
- 3** Lifting points (optional)
- 4** Water inlet (Victaulic 4")
- 5** Water outlet (Victaulic 4")
- 6** Power supply input
- 7A** Heat recovery water outlet (1"), left-hand circuit
- 7B** Heat recovery water inlet (1"), left-hand circuit
- 7C** Heat recovery water outlet (1"), right-hand circuit
- 7D** Heat recovery water inlet (1"), right-hand circuit
- *** With EC=2284 fans

Model	Version
LCX 214	L - Q
LCX 244	S - L - Q



LEGEND

- 1** User interface
- 2** Vibration dampers
- 3** Power supply
- 4** Lifting points (optional)
- 5** Protection grill (optional)
- 6** Water inlet (Victaulic 4")
- 7** Water outlet (Victaulic 4")
- 8A** Heat recovery water outlet (1") left-hand circuit
- 8B** Heat recovery water inlet (1") left-hand circuit
- 8C** Heat recovery water outlet (1") right-hand circuit
- 8D** Heat recovery water inlet (1") right-hand circuit
- *** With EC=2367 fans

Model	Version
LCX 274	L - Q - S
LCX 294	L - Q - S
LCX 324	L - Q - S
LCX 364	S - L

3 TECHNICAL FEATURES

3.1 LCX C WATER CHILLERS RATED TECHNICAL DATA

» LCX CL air/water chillers rated technical data LOW NOISE version

LCX			062	072	082	092	094	102	104	122	124	142
Power supply		V-ph-Hz	400 - 3N - 50									
Cooling capacity	(1)(E)	kW	58,3	66,7	78,6	88,9	90,6	102	105	113	117	128
Total power input	(1)(E)	kW	20,3	22,9	26,5	31,0	31,4	35,1	35,9	40,1	41,0	46,6
Absorbed rated current	(1)	A	34,7	38,8	44,6	52,6	53,2	59,1	60,4	64,9	66,3	75,2
EER	(1)(E)		2,88	2,91	2,97	2,87	2,89	2,90	2,91	2,82	2,85	2,74
Eurovent efficiency class	(1)(E)		C	B	B	C	C	C	B	C	C	C
SEER	(2)		4,13	4,39	4,64	4,40	4,15	4,67	4,46	4,15	4,23	4,10
Maximum current absorption		A	51,0	55,0	66,0	77,0	81,0	86,0	87,0	95,0	96,0	106
Start up current		A	185	183	191	246	194	254	198	295	220	306
Startup current with soft starter		A	111	124	139	184	122	192	137	230	146	241
Compressors / circuits			2 / 1	2 / 1	2 / 1	2 / 1	4 / 2	2 / 1	4 / 2	2 / 1	4 / 2	2 / 1
no. of axial fans			6	6	6	8	8	8	8	6	6	6
Air flow rate	(1)	m ³ /h	21955	21955	21955	29393	29393	29393	29393	43434	43434	43434
Water flow	(1)	l/h	10031	11481	13526	15297	15594	17545	18027	19453	20090	21967
Water pressure drop	(1)(E)	kPa	28	29	31	32	32	32	34	34	34	36
Available pressure head - LP pumps	(1)	kPa	140	135	131	127	127	125	125	111	109	165
Available pressure head - HP pumps	(1)	kPa	200	199	198	188	188	185	186	194	193	191
Buffer tank volume		dm ³	220	220	220	340	340	340	340	600	600	600
Expansion vessel volume		dm ³	12	12	12	12	12	12	12	24	24	24
Unit connections diameter		"	2	2	2	2,50	2,50	2,50	2,50	3,00	3,00	3,00
Height		mm	1735	1735	1735	1735	1679	1735	1679	1847	1847	1847
Depth		mm	1183	1183	1183	1183	1183	1183	1183	1653	1653	1653
Length		mm	2442	2442	2442	3190	3540	3190	3540	3538	3538	3538
Sound power level	(3)(E)	dB(A)	80	80	80	81	80	81	80	83	80	84
Sound pressure level	(4)	dB(A)	52	52	52	53	52	53	52	55	52	56
Refrigerant charge - circuit 1	(5)	kg	14	14	14	17	8,5	17	10,5	19	10,8	22
Refrigerant charge - circuit 2	(6)	kg	-	-	-	-	8,5	-	10,5	-	10,8	-
Transport weight unit with pump and tank		kg	762	767	847	1086	1217	1096	1217	1440	1455	1490
Operating weight unit with pump and full tank		kg	982	987	1067	1426	1557	1436	1557	2040	2055	2090

(1) Outdoor air temperature 35°C, water temperature 12°C / 7°C (EN14511:2022)

(2) η efficiency values for heating and cooling are respectively calculated by the following formulas: $[\eta = SCOP / 2,5 - F(1) - F(2)]$ e $[\eta = SEER / 2,5 - F(1) - F(2)]$. For further information, please refer to the technical document "ErP 2009/125/EC DIRECTIVE" in the catalogue introducing pages, or to the EN14825:2022 regulation.

(3) Sound power level measured according to ISO 9614

(4) Sound pressure measured at a distance of 10 m in a free field with a directivity factor of 2

(5) If the two cooling circuits are unbalanced, it is the smaller circuit. Kg gas value is estimated. For the exact value refer to the plate data on the unit.

(6) If the two cooling circuits are unbalanced, it is the larger circuit. Kg gas value is estimated. For the exact value refer to the plate data on the unit.

(E) EUROVENT certified data

LCX			144	162	164	194	214	244	274	294	324	364
Power supply		V-ph-Hz	400 - 3N - 50									
Cooling capacity	(1)(E)	kW	133	160	152	178	198	220	256	279	316	338
Total power input	(1)(E)	kW	46,4	58,5	56,1	63,6	74,2	83,9	90,0	107	122	150
Absorbed rated current	(1)	A	74,9	94,0	90,2	102	119	135	143	171	195	239
EER	(1)(E)		2,87	2,74	2,72	2,79	2,66	2,62	2,84	2,59	2,59	2,26
Eurovent efficiency class	(1)(E)		C	C	C	C	D	D	C	D	D	F
SEER	(2)		4,16	4,20	4,15	4,21	4,25	4,16	4,28	4,34	4,10	4,12
Maximum current absorption		A	105	120	126	148	167	190	215	229	242	290
Start up current		A	222	371	241	307	318	382	398	464	472	487
Startup current with soft starter		A	163	288	189	245	256	317	333	381	389	430
Compressors / circuits			4 / 2	2 / 1	4 / 2	4 / 2	4 / 2	4 / 2	4 / 2	4 / 2	4 / 2	4 / 2
no. of axial fans			6	6	6	6	6	6	8	8	8	8
Air flow rate	(1)	m ³ /h	43434	40235	40235	55808	63261	63261	87186	81687	81687	81687
Water flow	(1)	l/h	22953	27613	26228	30531	33965	37745	43948	47875	54311	58055
Water pressure drop	(1)(E)	kPa	36	37	37	37	37	38	38	39	40	41
Available pressure head - LP pumps	(1)	kPa	162	152	153	154	163	192	185	171	166	147
Available pressure head - HP pumps	(1)	kPa	189	183	183	277	248	310	301	287	282	261
Buffer tank volume		dm ³	600	600	600	600	600	600	765	765	765	765
Expansion vessel volume		dm ³	24	24	24	24	24	24	24	24	24	24
Unit connections diameter		"	3,00	3,00	3,00	3,00	4,00	4,00	4,00	4,00	4,00	4,00
Height		mm	1847	1847	1847	1847	2247	2247	2330	2330	2330	2330
Depth		mm	1653	1653	1653	1653	1653	1653	1653	1653	1653	1653
Length		mm	3538	3538	3538	3538	3538	3538	4206	4206	4206	4206
Sound power level	(3)(E)	dB(A)	80	84	80	85	85	85	87	87	87	88
Sound pressure level	(4)	dB(A)	52	56	52	57	57	57	59	59	59	60
Refrigerant charge	(5)	kg	22,0	28,0	28,0	32,0	43,0	44,0	45,0	56,0	56,0	54,0
Transport weight unit with pump and tank		kg	1470	1510	1620	1676	1726	1869	2129	2161	2196	2196
Operating weight unit with pump and full tank		kg	2070	2110	2220	2276	2326	2469	2894	2926	2961	2961

(1) Outdoor air temperature 35°C, water temperature 12°C / 7°C (EN14511:2022)

(2) η efficiency values for heating and cooling are respectively calculated by the following formulas: $[\eta = SCOP / 2,5 - F(1) - F(2)]$ e $[\eta = SEER / 2,5 - F(1) - F(2)]$. For further information, please refer to the technical document "ErP 2009/125/EC DIRECTIVE" in the catalogue introducing pages, or to the EN14825:2022 regulation.

(3) Sound power level measured according to ISO 9614

(4) Sound pressure measured at a distance of 10 m in a free field with a directivity factor of 2

(5) Kg gas value is estimated. For the exact value refer to the plate data on the unit.

(E) EUROVENT certified data

» LCX CS air/water chillers rated technical data STANDARD version

LCX			92	102	122	124	142	144	162	164
Power supply		V-ph-Hz	400 - 3N - 50							
Cooling capacity	(1)(E)	kW	88,8	102	113	118	144	143	160	152
Total power input	(1)(E)	kW	32,1	35,9	40,4	42,8	50,9	50,8	58,9	56,4
Absorbed rated current	(1)	A	54,8	61,0	69,2	71,7	85,8	85,6	98,5	94,4
EER	(1)(E)		2,77	2,83	2,80	2,76	2,83	2,82	2,71	2,70
Eurovent efficiency class	(1)		C							
SEER	(2)(E)		4,14	4,45	4,15	4,11	4,14	4,20	4,32	4,19
Maximum current absorption		A	91,0	101	119	120	131	129	144	150
Start up current		A	261	269	319	247	330	245	396	266
Startup current with soft starter		A	199	207	254	172	265	186	313	214
Compressors / circuits			2 / 1	2 / 1	2 / 1	4 / 2	2 / 1	4 / 2	2 / 1	4 / 2
no. of axial fans			6	6	8	8	8	8	8	8
Air flow rate	(1)	m ³ /h	30913	30913	41340	41340	39890	39890	39890	39890
Water flow	(1)	l/h	15285	17530	19470	20283	24766	24674	27492	26160
Water pressure drop	(1)(E)	kPa	32	32	34	34	36	36	36	36
Available pressure head - LP pumps	(1)	kPa	128	125	113	114	174	168	158	159
Available pressure head - HP pumps	(1)	kPa	189	186	195	193	198	193	184	184
Buffer tank volume		dm ³	220	220	340	340	340	340	340	340
Expansion vessel volume		dm ³	12	12	12	12	12	12	12	12
Unit connections diameter		"	2,00	2,00	2,50	2,50	2,50	2,50	2,50	2,50
Height		mm	1735	1735	1735	1679	1735	1679	1735	1679
Depth		mm	1183	1183	1183	1183	1183	1183	1183	1183
Length		mm	2442	2442	3190	3540	3190	3540	3190	3540
Sound power level	(3)(E)	dB(A)	86	86	86	85	87	85	87	85
Sound pressure level	(4)	dB(A)	58	58	58	57	59	57	59	57
Refrigerant charge - circuit 1	(5)	kg	14	14	19	10,0	23	12,5	23	14,0
Refrigerant charge - circuit 2	(6)	kg	-	-	-	10,0	-	12,5	-	14,0
Transport weight unit with pump and tank		kg	918	918	1241	1301	1286	1321	1316	1471
Operating weight unit with pump and full tank		kg	1138	1138	1581	1641	1626	1661	1656	1811

(1) Outdoor air temperature 35°C, water temperature 12°C / 7°C (EN14511:2022)

(2) η efficiency values for heating and cooling are respectively calculated by the following formulas: $[\eta = SCOP / 2,5 - F(1) - F(2)]$ e $[\eta = SEER / 2,5 - F(1) - F(2)]$. For further information, please refer to the technical document "ErP 2009/125/EC DIRECTIVE" in the catalogue introducing pages, or to the EN14825:2022 regulation.

(3) Sound power level measured according to ISO 9614

(4) Sound pressure measured at a distance of 10 m in a free field with a directivity factor of 2

(5) If the two cooling circuits are unbalanced, it is the smaller circuit. Kg gas value is estimated. For the exact value refer to the plate data on the unit.

(6) If the two cooling circuits are unbalanced, it is the larger circuit. Kg gas value is estimated. For the exact value refer to the plate data on the unit.

(E) EUROVENT certified data

LCX			174	194	214	244	274	294	324	364
Power supply		V-ph-Hz	400 - 3N - 50							
Cooling capacity	(1)(E)	kW	162	183	202	245	264	294	318	355
Total power input	(1)(E)	kW	58,2	65,6	76,2	95,7	90,5	104	120	138
Absorbed rated current	(1)	A	97,1	109	126	157	150	172	195	226
EER	(1)(E)		2,78	2,79	2,65	2,56	2,91	2,82	2,66	2,57
Eurovent efficiency class	(1)		C	C	D	D	B	C	C	D
SEER	(2)(E)		4,13	4,28	4,31	4,19	4,33	4,37	4,12	4,15
Maximum current absorption		A	136	155	173	196	224	237	251	300
Start up current		A	252	310	330	380	403	468	476	497
Startup current with soft starter		A	200	248	268	315	338	385	393	440
Compressors / circuits			4 / 2							
no. of axial fans			6	6	6	6	8	8	8	8
Air flow rate	(1)	m ³ /h	67672	67672	67672	75478	103511	97902	97902	97902
Water flow	(1)	l/h	27855	31447	34689	42201	45368	50493	54657	60969
Water pressure drop	(1)(E)	kPa	37	37	38	38	39	40	39	41
Available pressure head - LP pumps	(1)	kPa	170	150	161	196	183	170	162	143
Available pressure head - HP pumps	(1)	kPa	203	273	251	314	299	285	281	256
Buffer tank volume		dm ³	600	600	600	600	765	765	765	765
Expansion vessel volume		dm ³	24	24	24	24	24	24	24	24
Unit connections diameter		"	3,00	3,00	3,00	4,00	4,00	4,00	4,00	4,00
Height		mm	1847	1847	1847	2247	2330	2330	2330	2330
Depth		mm	1653	1653	1653	1653	1653	1653	1653	1653
Length		mm	3538	3538	3538	3538	4206	4206	4206	4206
Sound power level	(3)(E)	dB(A)	88	88	89	89	89	89	89	90
Sound pressure level	(4)	dB(A)	60	60	61	61	61	61	61	62
Refrigerant charge - circuit 1	(5)	kg	15,0	16,5	16,5	23,0	25,5	28,0	30,0	30,0
Refrigerant charge - circuit 2	(6)	kg	15,0	16,5	16,5	23,0	25,5	28,0	30,0	30,0
Transport weight unit with pump and tank		kg	1608	1676	1686	1869	2129	2161	2196	2196
Operating weight unit with pump and full tank		kg	2208	2276	2286	2469	2894	2926	2961	2961

(1) Outdoor air temperature 35°C, water temperature 12°C / 7°C (EN14511:2022)

(2) η efficiency values for heating and cooling are respectively calculated by the following formulas: $[\eta = SCOP / 2,5 - F(1) - F(2)]$ e $[\eta = SEER / 2,5 - F(1) - F(2)]$. For further information, please refer to the technical document "ErP 2009/125/EC DIRECTIVE" in the catalogue introducing pages, or to the EN14825:2022 regulation.

(3) Sound power level measured according to ISO 9614

(4) Sound pressure measured at a distance of 10 m in a free field with a directivity factor of 2

(5) If the two cooling circuits are unbalanced, it is the smaller circuit. Kg gas value is estimated. For the exact value refer to the plate data on the unit.

(6) If the two cooling circuits are unbalanced, it is the larger circuit. Kg gas value is estimated. For the exact value refer to the plate data on the unit.

(E) EUROVENT certified data

3.2 LCX H HEAT PUMPS RATED TECHNICAL DATA

» LCX HL air/water chillers rated technical data LOW NOISE version

LCX			062	072	082	092	094	102	104	122	124	142
Power supply		V-ph-Hz	400 - 3N - 50									
Cooling capacity	(1)(E)	kW	57,3	65,6	77,6	87,4	89,0	101	103	112	115	126
Total power input	(1)(E)	kW	20,3	22,9	26,5	31,1	31,5	35,2	36,1	40,6	41,1	47,1
Absorbed rated current	(1)	A	34,7	38,8	44,6	52,6	53,2	59,1	60,4	65,7	66,5	75,3
EER	(1)(E)		2,82	2,86	2,93	2,81	2,83	2,85	2,86	2,75	2,81	2,68
SEER	(2)		4,09	4,35	4,60	4,37	4,13	4,62	4,42	3,80	3,61	3,79
Eurovent efficiency class	(1)(E)		C	C	B	C	C	C	C	C	C	C
Heating capacity	(3)(E)	kW	66,5	76,1	87,8	103	105	113	117	135	139	147
Total power input	(3)(E)	kW	19,0	21,3	24,8	28,7	29,7	32,2	33,8	38,0	39,4	45,1
Absorbed rated current	(3)	A	32,6	36,3	41,9	48,6	49,9	54,3	56,7	61,4	63,5	72,0
COP	(3)(E)		3,50	3,57	3,53	3,58	3,53	3,49	3,48	3,56	3,52	3,27
Eurovent efficiency class	(3)		A									
SCOP	(2)(E)		4,17	4,38	4,38	4,36	4,13	4,03	4,19	4,38	4,22	3,95
Energy efficiency			164	173	173	172	163	159	165	173	166	156
Heating energy efficiency class	(4)		A++									
Maximum current absorption		A	51,0	55,0	66,0	77,0	81,0	86,0	87,0	95,0	96,0	106
Start up current		A	185	183	191	246	194	254	198	295	220	306
Startup current with soft starter		A	111	124	139	184	122	192	137	230	146	241
Compressors / circuits			2 / 1	2 / 1	2 / 1	2 / 1	4 / 2	2 / 1	4 / 2	2 / 1	4 / 2	2 / 1
no. of axial fans			6	6	6	8	8	8	8	6	6	6
Air flow rate	(1)	m ³ /h	21955	21955	21955	29393	29393	29393	29393	43434	43434	43434
Water flow	(1)	l/h	9856	11285	13358	15029	15313	17286	17778	19202	19842	21739
Water pressure drop	(1)(E)	kPa	25	24	26	25	25	29	29	27	27	29
Available pressure head - LP pumps	(1)	kPa	143	139	136	134	133	127	130	118	116	172
Available pressure head - HP pumps	(1)	kPa	203	203	203	195	194	188	191	201	200	198
Air flow rate	(3)	m ³ /h	21955	21955	21955	29393	29393	29393	29393	43434	43434	43434
Water flow	(3)	l/h	11534	13190	15218	17819	18200	19506	20336	23409	24033	25547
Water pressure drop	(3)(E)	kPa	33	33	33	35	36	37	37	40	40	40
Available pressure head - LP pumps	(3)	kPa	137	133	128	126	124	117	120	112	110	165
Available pressure head - HP pumps	(3)	kPa	191	191	190	178	175	167	170	183	180	177
Buffer tank volume		dm ³	220	220	220	340	340	340	340	600	600	600
Expansion vessel volume		dm ³	12	12	12	12	12	12	12	24	24	24
Unit connections diameter		"	2,00	2,00	2,00	2,50	2,50	2,50	2,50	3,00	3,00	3,00
Height		mm	1720	1720	1720	1720	1720	1720	1720	1830	1830	1830
Depth		mm	1185	1185	1185	1185	1185	1185	1185	1654	1654	1654
Length		mm	2360	2360	2360	3190	3540	3190	3540	3540	3540	3540
Sound power level	(5)(E)	dB(A)	80	80	80	81	80	81	80	83	80	84
Sound pressure level	(6)	dB(A)	52	52	52	53	52	53	53	55	52	56
Refrigerant charge - circuit 1	(7)	kg	18	19	19	23	11,1	23	11,1	25	12,4	25
Refrigerant charge - circuit 2	(8)	kg	-	-	-	-	11,1	-	11,1	-	12,4	-
Transport weight unit with pump and tank		kg	762	767	847	1086	1217	1096	1217	1440	1455	1490
Operating weight unit with pump and full tank		kg	982	987	1067	1426	1557	1436	1557	2040	2055	2090

(1) Outdoor air temperature 35°C, water temperature 12°C / 7°C (EN14511:2022)

(2) η efficiency values for heating and cooling are respectively calculated by the following formulas: $[\eta = SCOP / 2,5 - F(1) - F(2)]$ e $[\eta = SEER / 2,5 - F(1) - F(2)]$. For further information, please refer to the technical document "ErP 2009/125/EC DIRECTIVE" in the catalogue introducing pages, or to the EN14825:2022 regulation.

(3) Outdoor air temperature dry bulb 7°C / wet bulb 6°C, water temperature 40°C / 45°C (EN14511:2022)

(4) Seasonal energy efficiency class for LOW TEMPERATURE room heating under AVERAGE climatic conditions [EUROPEAN REGULATION No 811/2013]

(5) Sound power level measured according to ISO 9614

(6) Sound pressure measured at a distance of 10 m in a free field with a directivity factor of 2

(7) If the two cooling circuits are unbalanced, it is the smaller circuit. Kg gas value is estimated. For the exact value refer to the plate data on the unit.

(8) If the two cooling circuits are unbalanced, it is the larger circuit. Kg gas value is estimated. For the exact value refer to the plate data on the unit.

(E) EUROVENT certified data

LCX			144	162	164	194	214	244	274	294	324
Power supply		V-ph-Hz	400 - 3N - 50								
Cooling capacity	(1)(E)	kW	133	158	150	176	195	216	253	275	312
Total power input	(1)(E)	kW	47,0	59,6	56,4	63,6	75,2	84,8	90,8	108	123
Absorbed rated current	(1)	A	75,2	95,2	90,4	102	120	135	144	172	196
EER	(1)(E)		2,82	2,65	2,67	2,77	2,59	2,55	2,78	2,55	2,54
SEER	(2)		3,88	4,12	3,88	3,66	3,89	3,68	3,86	3,82	3,89
Eurovent efficiency class	(1)(E)		C	D	D	C	D	D	C	D	D
Heating capacity	(3)(E)	kW	154	182	173	206	233	265	295	330	366
Total power input	(3)(E)	kW	43,7	53,0	53,8	59,9	67,3	76,9	86,2	97,5	109
Absorbed rated current	(3)	A	69,8	84,5	81,1	95,8	107	123	136	154	172
COP	(3)(E)		3,52	3,43	3,22	3,44	3,46	3,44	3,42	3,39	3,36
Eurovent efficiency class	(3)		A								
SCOP	(2)(E)		3,74	3,77	3,91	3,81	3,80	3,97	3,79	3,82	3,92
Energy efficiency			147	148	154	150	150	156	149	150	154
Heating energy efficiency class	(4)		A+	A+	A++	A++	A++	A++	A+	A++	A++
Maximum current absorption		A	105	120	126	148	167	190	215	229	242
Start up current		A	222	371	241	307	318	382	398	464	472
Startup current with soft starter		A	163	288	189	245	256	317	333	381	389
Compressors / circuits			4 / 2	2 / 1	4 / 2	4 / 2	4 / 2	4 / 2	4 / 2	4 / 2	4 / 2
no. of axial fans			6	6	6	6	6	6	8	8	8
Air flow rate	(1)	m ³ /h	43434	40235	40235	55808	63261	63261	87186	81687	81687
Water flow	(1)	l/h	22795	27214	25881	30277	33537	37139	43430	47237	53602
Water pressure drop	(1)(E)	kPa	29	34	32	33	34	33	36	34	37
Available pressure head - LP pumps	(1)	kPa	169	154	157	157	166	197	186	175	168
Available pressure head - HP pumps	(1)	kPa	195	185	187	280	251	315	302	291	284
Air flow rate	(3)	m ³ /h	43434	40235	40235	55808	63261	63261	87186	81687	81687
Water flow	(3)	l/h	26722	31536	30016	35733	40476	45910	51192	57334	63554
Water pressure drop	(3)(E)	kPa	40	46	43	46	49	50	50	50	51
Available pressure head - LP pumps	(3)	kPa	160	136	140	130	137	176	164	151	139
Available pressure head - HP pumps	(3)	kPa	173	153	156	241	199	282	268	253	239
Buffer tank volume		dm ³	600	600	600	600	600	600	765	765	765
Expansion vessel volume		dm ³	24	24	24	24	24	24	24	24	24
Unit connections diameter		"	3,00	3,00	3,00	3,00	4,00	4,00	4,00	4,00	4,00
Height		mm	1830	1830	1830	1830	2174	2174	2174	2174	2174
Depth		mm	1654	1654	1654	1654	1654	1654	1654	1654	1654
Length		mm	3540	3540	3540	3540	3540	3540	4296	4296	4296
Sound power level	(5)(E)	dB(A)	80	84	80	85	85	85	87	87	88
Sound pressure level	(6)	dB(A)	52	56	52	57	57	57	59	59	60
Refrigerant charge - circuit 1	(7)	kg	12,4	31	15,5	17,4	21,5	23,5	25,5	28,5	30,5
Refrigerant charge - circuit 2	(8)	kg	12,4	-	15,5	17,4	21,5	23,5	25,5	28,5	30,5
Transport weight unit with pump and tank		kg	1470	1510	1620	1676	1726	1869	2129	2161	2196
Operating weight unit with pump and full tank		kg	2070	2110	2220	2276	2326	2469	2894	2926	2961

- (1) Outdoor air temperature 35°C, water temperature 12°C / 7°C (EN14511:2022)
(2) η efficiency values for heating and cooling are respectively calculated by the following formulas: $[\eta = SCOP / 2,5 - F(1) - F(2)]$ e $[\eta = SEER / 2,5 - F(1) - F(2)]$. For further information, please refer to the technical document "ErP 2009/125/EC DIRECTIVE" in the catalogue introducing pages, or to the EN14825:2022 regulation.
(3) Outdoor air temperature dry bulb 7°C / wet bulb 6°C, water temperature 40°C / 45°C (EN14511:2022)
(4) Seasonal energy efficiency class for LOW TEMPERATURE room heating under AVERAGE climatic conditions [EUROPEAN REGULATION No 811/2013]
(5) Sound power level measured according to ISO 9614
(6) Sound pressure measured at a distance of 10 m in a free field with a directivity factor of 2
(7) If the two cooling circuits are unbalanced, it is the smaller circuit. Kg gas value is estimated. For the exact value refer to the plate data on the unit.
(8) If the two cooling circuits are unbalanced, it is the larger circuit. Kg gas value is estimated. For the exact value refer to the plate data on the unit.
(E) EUROVENT certified data

» LCX HS air/water chillers rated technical data STANDARD version

LCX			092	102	122	124	142	144	162	164
Power supply		V-ph-Hz	400 - 3N - 50							
Cooling capacity	(1)(E)	kW	87,7	100	112	117	142	141	157	150
Total power input	(1)(E)	kW	32,0	35,3	40,4	41,9	50,8	50,7	58,8	56,3
Absorbed rated current	(1)	A	54,8	61,5	69,2	71,7	85,8	85,6	98,5	94,4
EER	(1)(E)		2,74	2,84	2,76	2,80	2,79	2,79	2,68	2,66
Eurovent efficiency class	(1)(E)		C	C	C	C	C	C	D	D
SEER	(2)		4,11	4,38	4,02	3,97	4,10	4,16	4,27	4,15
Heating capacity	(3)(E)	kW	107	120	133	146	166	168	187	181
Total power input	(3)(E)	kW	30,0	34,2	38,1	41,7	47,7	47,3	53,2	50,7
Absorbed rated current	(3)	A	51,2	57,8	65,2	70,9	80,3	79,8	89,0	85,0
COP	(3)(E)		3,55	3,50	3,50	3,51	3,49	3,55	3,51	3,56
Eurovent efficiency class	(3)		A							
SCOP	(2)(E)		4,22	4,30	4,18	4,11	4,13	4,10	4,15	4,07
Energy efficiency			166	169	165	162	163	161	163	160
Heating energy efficiency class	(4)		A++							
Maximum current absorption		A	91,0	101	119	120	131	129	144	150
Start up current		A	261	269	319	247	330	245	396	266
Startup current with soft starter		A	199	207	254	172	265	186	313	214
Compressors / circuits			2 / 1	2 / 1	2 / 1	4 / 2	2 / 1	4 / 2	2 / 1	4 / 2
no. of axial fans			6	6	8	8	8	8	8	8
Air flow rate	(1)	m ³ /h	30913	30913	41340	41340	39890	39890	39890	39890
Water flow	(1)	l/h	15080	17276	19183	20189	24399	24308	27085	25773
Water pressure drop	(1)(E)	kPa	24	26	27	25	31	31	32	32
Available pressure head - LP pumps	(1)	kPa	136	131	121	123	177	173	161	162
Available pressure head - HP pumps	(1)	kPa	197	192	202	204	201	197	186	187
Air flow rate	(3)	m ³ /h	30913	30913	41340	41340	39890	39890	39890	39890
Water flow	(3)	l/h	18461	20768	23116	25387	28831	29176	32378	31359
Water pressure drop	(3)(E)	kPa	36	37	39	39	43	44	46	47
Available pressure head - LP pumps	(3)	kPa	130	123	113	114	162	156	139	141
Available pressure head - HP pumps	(3)	kPa	181	173	184	185	179	171	154	157
Buffer tank volume		dm ³	220	220	340	340	340	340	340	340
Expansion vessel volume		dm ³	12	12	12	12	12	12	12	12
Unit connections diameter		"	2,00	2,00	2,50	2,50	2,50	2,50	2,50	2,50
Height		mm	1735	1735	1735	1679	1735	1679	1735	1679
Depth		mm	1183	1183	1183	1183	1183	1183	1183	1183
Length		mm	2442	2442	3190	3540	3190	3540	3190	3540
Sound power level	(5)(E)	dB(A)	86	86	86	85	87	85	87	85
Sound pressure level	(6)	dB(A)	58	58	58	57	59	57	59	57
Refrigerant charge - circuit 1	(7)	kg	18	18	19	11,7	29	13,0	30	14,7
Refrigerant charge - circuit 2	(8)	kg	-	-	-	11,7	-	13,0	-	14,7
Transport weight unit with pump and tank		kg	918	918	1241	1301	1286	1321	1316	1471
Operating weight unit with pump and full tank		kg	1138	1138	1581	1641	1626	1661	1656	1811

- (1) Outdoor air temperature 35°C, water temperature 12°C / 7°C (EN14511:2022)
(2) η efficiency values for heating and cooling are respectively calculated by the following formulas: [$\eta = SCOP / 2,5 - F(1) - F(2)$] e [$\eta = SEER / 2,5 - F(1) - F(2)$]. For further information, please refer to the technical document "ErP 2009/125/EC DIRECTIVE" in the catalogue introducing pages, or to the EN14825:2022 regulation.
(3) Outdoor air temperature dry bulb 7°C / wet bulb 6°C, water temperature 40°C / 45°C (EN14511:2022)
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(8) If the two cooling circuits are unbalanced, it is the larger circuit. Kg gas value is estimated. For the exact value refer to the plate data on the unit.
(E) EUROVENT certified data

LCX			174	194	214	244	274	294	324	364
Power supply		V-ph-Hz	400 - 3N - 50							
Cooling capacity	(1)(E)	kW	160	180	199	242	260	289	324	349
Total power input	(1)(E)	kW	58,1	65,6	76,2	95,7	90,4	104	119	138
Absorbed rated current	(1)	A	97,1	109	126	157	150	172	195	226
EER	(1)(E)		2,74	2,74	2,61	2,53	2,88	2,77	2,72	2,53
Eurovent efficiency class	(1)(E)		C	C	D	D	C	C	C	D
SEER	(2)		3,45	3,64	3,67	3,55	3,69	3,73	3,86	4,04
Heating capacity	(3)(E)	kW	189	213	232	281	308	342	374	418
Total power input	(3)(E)	kW	56,9	64,6	71,0	85,6	88,7	99,5	110	128
Absorbed rated current	(3)	A	94,8	107	117	140	147	164	181	209
COP	(3)(E)		3,32	3,31	3,27	3,28	3,47	3,44	3,39	3,26
Eurovent efficiency class	(3)		A							
SCOP	(2)(E)		3,57	3,64	3,64	3,66	3,71	3,74	3,75	3,70
Energy efficiency			140	143	143	144	146	147	148	146
Heating energy efficiency class	(4)		A+							
Maximum current absorption		A	136	155	173	196	224	237	251	300
Start up current		A	252	310	330	380	403	468	476	497
Startup current with soft starter		A	200	248	268	315	338	385	393	440
Compressors / circuits			4 / 2							
no. of axial fans			6	6	6	6	8	8	8	8
Air flow rate	(1)	m ³ /h	67672	67672	67672	75478	103511	97902	97902	97902
Water flow	(1)	l/h	27443	30948	34175	41577	44698	49746	55669	60026
Water pressure drop	(1)(E)	kPa	34	34	35	35	35	35	37	35
Available pressure head - LP pumps	(1)	kPa	172	152	164	198	186	173	165	147
Available pressure head - HP pumps	(1)	kPa	206	275	253	316	302	289	280	261
Air flow rate	(3)	m ³ /h	67672	67672	67672	75478	103511	97902	97902	97902
Water flow	(3)	l/h	32758	37031	40301	48719	53462	59409	64891	72629
Water pressure drop	(3)(E)	kPa	48	48	48	48	50	50	51	51
Available pressure head - LP pumps	(3)	kPa	155	129	136	181	167	153	139	104
Available pressure head - HP pumps	(3)	kPa	180	239	208	287	270	254	238	207
Buffer tank volume		dm ³	600	600	600	600	765	765	765	765
Expansion vessel volume		dm ³	24	24	24	24	24	24	24	24
Unit connections diameter		"	3,00	3,00	3,00	4,00	4,00	4,00	4,00	4,00
Height		mm	1847	1847	1847	2247	2330	2330	2330	2330
Depth		mm	1653	1653	1653	1653	1653	1653	1653	1653
Length		mm	3538	3538	3538	3538	4206	4206	4206	4206
Sound power level	(5)(E)	dB(A)	88	88	89	89	89	89	89	90
Sound pressure level	(6)	dB(A)	60	60	61	61	61	61	61	62
Refrigerant charge - circuit 1	(7)	kg	15,2	17,0	17,0	23,5	27,5	28,5	30,5	30,5
Refrigerant charge - circuit 2	(8)	kg	15,2	17,0	17,0	23,5	27,5	28,5	30,5	30,5
Transport weight unit with pump and tank		kg	1608	1676	1686	1869	2129	2161	2196	2196
Operating weight unit with pump and full tank		kg	2208	2276	2286	2469	2894	2926	2961	2961

(1) Outdoor air temperature 35°C, water temperature 12°C / 7°C (EN14511:2022)

(2) η efficiency values for heating and cooling are respectively calculated by the following formulas: $[\eta = SCOP / 2,5 - F(1) - F(2)]$ e $[\eta = SEER / 2,5 - F(1) - F(2)]$. For further information, please refer to the technical document "ErP 2009/125/EC DIRECTIVE" in the catalogue introducing pages, or to the EN14825:2022 regulation.

(3) Outdoor air temperature dry bulb 7°C / wet bulb 6°C, water temperature 40°C / 45°C (EN14511:2022)

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(5) Sound power level measured according to ISO 9614

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(8) If the two cooling circuits are unbalanced, it is the larger circuit. Kg gas value is estimated. For the exact value refer to the plate data on the unit.

(E) EUROVENT certified data

3.3 MICROPROCESSOR CONTROL

For microprocessor control functions referred to the attached manual.

4 START-UP

The first start up must be carried out exclusively by qualified personnel and authorized by Galletti S.p.A. (see warranty sheet attached).

At first start-up of the installation make sure to comply with current national regulations.

In order to hold the condensate that the unit normally produces during operation in winter mode (and during defrosting), it is advisable to prepare a technical tank below the base of the unit, with sufficient capacity to collect and discharge the water produced. The adoption of a drip tray may be mandatory (check the local legislation in force) in case of the use of glycol or additives such as ethylene glycol that cannot be released into the environment in case of possible leakage of the circuit. The installer is responsible for the construction of such a drip tray.

4.1 PRELIMINARY CHECKS

When starting up the unit for the first time or after a seasonal period of quiescence, it is advisable to have the following checks performed by specialised personnel:

- Check that the electrical connections have been made properly and that all the terminals are securely tightened.
- Check that the external power supply is within $\pm 5\%$ tolerance from the power supply reported on the unit identification label. If the power supply is subject to frequent voltage fluctuations, contact Galletti S.p.A. for advice on choosing suitable protections.
- Check for refrigerant leaks, with the aid of a leak detector if necessary
- Check that the plumbing connections have been properly made according to the indications given on the plates to be found on the unit itself (water inlet, water outlet etc.).
- Make sure that the pump is not blocked.
- Make sure that the water circuit is duly bled to completely eliminate the presence of air: load the circuit gradually and open the air vent valves, which the installer should have set in place.

In order to avoid soiling that could result in the breakage of the plate heat exchangers and hydronic pumps, it is necessary to wash the hydraulic system properly, before allowing water to circulate inside the unit. More specifically:

1. The hydraulic system must be flushed out, with a flow of water (which is then to be disposed of) and without passing through the filter at the inlet of the unit, in order to eliminate large-diameter impurities, debris, and any dirt present

as residue from the work carried out (e.g. welding). Continue flushing until the water (to be disposed of) becomes clear.

2. The system can then be connected to the chiller, on which the inlet water filter must be installed. In this phase it is necessary to let the water circulate inside the unit (through the filter) without starting the compressors in any case. Perform this operation for a sufficient time to allow the water to circulate in the system a few times.
3. At the end of the previous phase, clean the inlet filter, refit the cartridge in place, and circulate the water by starting the unit. In case of a flow alarm, check whether there is air in the circuit.

The fluid in the hydraulic circuit must not contain:

- dirt or solids in suspension;
- acids or bases or corrosive liquids in general;
- sea water;
- liquids that are flammable and generally dangerous.

⚠ CAUTION: during the start-up phase, maximum attention must be paid to the filling pressure of the system and in particular to the pressure of the intake water to the pump (under operating flow rate conditions) in order to AVOID CAVITATION phenomena that could seriously compromise the reliability of the pump. The intake pressure value must be higher than the minimum value indicated in the manuals. The cavitation phenomenon can also be identified by the anomalous noise produced by the pump when it is running; this noise disappears if the pressure returns to its proper value.

⚠ WARNING before starting the unit, make sure all the covering panels are in place and secured with the fastening screws provided. To start the unit, move the main switch to on. Use the keypad of the electronic control as directed in section 5.6 Electrical data p. 30 to select the cooling or heating mode.

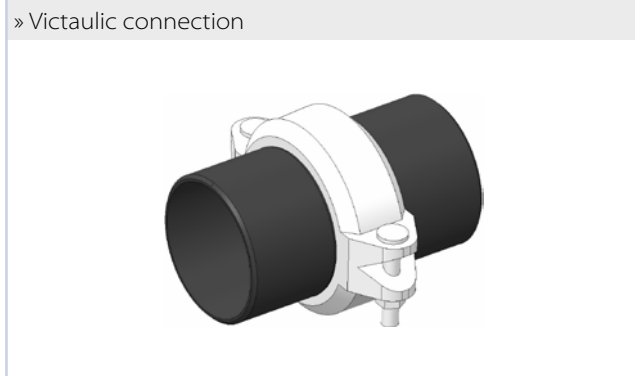
⚠ ATTENZIONE You should not disconnect the unit from the power supply during periods when it is inoperative but only when it is to be taken out of service for a prolonged period (e.g. at the end of the season). To turn off the unit temporarily follow the directions provided in the section 5.6 Electrical data p. 30.

⚠ WARNING do not cut off power using the main switch: the latter device serves to disconnect the unit from the power supply when there is no passage of current, i.e. when the unit is already turned OFF.

5 PLUMBING AND ELECTRICAL CONNECTIONS

5.1 PLUMBING CONNECTION

All the units belonging to the LCX series are equipped with water differential pressure switch or flow switch, safety valve, water pressure gauge and automatic filling device and emptying tap. Furthermore, depending on the version, units can be supplied complete with pump, expansion vessel and buffer tank.



Evaporator hydraulic connection

⚠ WARNING: It is of fundamental importance that the incoming water supply is hooked up to the connection marked "Water Inlet".

Otherwise the evaporator would be exposed to the risk of freezing since the antifreeze thermostat would not be able to perform its function; moreover the reverse cycle would not be respected in the cooling mode, resulting in additional risks of malfunctioning.

The dimensions and position of plumbing connections are

shown in the dimension tables at the end of the manual.

⚠ WARNING: The water circuit must be set up in such a way as to guarantee that the nominal flow rate of the water supplied to the evaporator remains constant (+/- 15%) in all operating conditions.

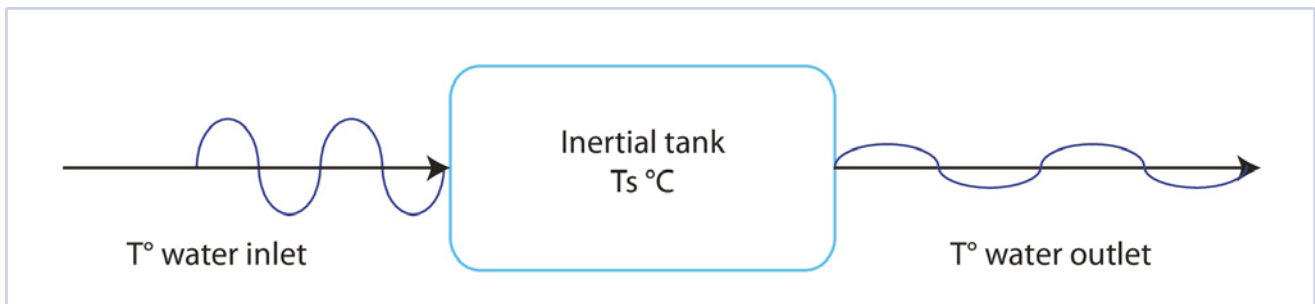
The compressors' action is intermittent, as the refrigeration requirements of the user may not match the supply from the unit LCX.

In systems with a low water content, where the water thermal inertia effect is less sensitive, it is advisable to check that the water content of the delivery section to the users matches the following ratio:

»

$$V = \frac{Cc \times \Delta\tau}{\rho \times Sh \times \Delta T \times Ns}$$

V	water content in the user section [m ³]
Sh	fluid specific heat [J/(kg/°C)]
ρ	fluid density [kg/m ³]
Δt	Minimum time between two starts on the same compressor [s]
ΔT	permitted water T differential [°C]
Cc	refrigerating power [W]
Ns	No. of partial loading steps



⚠ WARNING: A standard feature of LCX units is a device for controlling the flow rate (flow switch) in the water circuit in the immediate vicinity of the evaporator. If this device is tampered with, the guarantee is no longer valid. It's mandatory the metallic filter installation with with mesh less than 1mm, on the inlet water pipe.

⚠ WARNING: It is recommended to install a safety valve in the water circuit. In the event of serious equipment faults (e.g. fire) it will enable water to be drained from the system, thereby preventing possible bursts. Always connect the drain outlet to a pipe with a diameter at least as large as that of the valve opening and direct it toward an area where the discharge of water cannot harm people. This is a standard feature of units equipped with the optional buffer tank (optional) or pump/s kit.

⚠ WARNING: When making the plumbing connections, make sure there are no open flames in proximity to or inside the unit.

5.1.1 General guidelines for plumbing connections

When you are getting ready to set up the water circuit for the evaporator you should follow the directions below and in any case make sure you comply with national or local regulations (use the diagrams included in this manual as your reference).

1. Connect the pipes to the chiller using flexible couplings to prevent the transmission of vibrations and to compensate for thermal expansions. These units are all configured for installation of the water inlet-outlet pipes outside the unit (on the rear) and these pipes are supplied as standard accessories at no extra cost for the customer.
2. Install the following components on the piping:

- Pair of quick-connection couplings with pipe section to be welded (optional item that may be selected from the price list). They facilitate the connecting operations to the plumbing system, greatly speeding up installation
- temperature and pressure indicators for routine maintenance and monitoring of the unit. Pressure control on the water side allows to assess the correct functioning of the expansion tank and to detect water leakage in advance.
- sumps on inlet and outlet piping for temperature detection, for a direct view of operating temperatures. They can also be consulted on the microprocessor on board the unit.
- cut-off valves (gate valves) to isolate the unit from the hydraulic circuit.
- metal net filter compulsory (inlet piping) with mesh no larger than 1 mm, to protect the heat exchanger from slag or impurities inside the piping. If the machine is combined with process cycles, it is recommended to install a readily serviceable uncoupling exchanger to prevent possible operation blockages and/or breakage of the plate evaporator.
- air vent valve placed on the higher parts of the hydraulic circuit to bleed the air. The internal pipes of the unit are fitted with small air vent valves for bleeding the unit itself: this operation should be conducted when the unit is disconnected from the power supply - make sure that the circuit is completely full of water and check again to make sure there is no air before starting the pump for the first time.
- discharge cock and, where needed, drain tank in order to empty the system for maintenance or seasonal stops. Drainage valve is provided on the optional water buffer tank: this operation may only be carried out when the unit is disconnected from the power supply.

⚠ WARNING Failure to use anti-freezing solutions may cause serious damage of the free-cooling coils and to the hydraulic/cooling circuit in general.

Requirements for the heat transfer fluid and maintenance of the system

In order to avoid problems of reliability and/or operation of the hydronic system, it is necessary to take into consideration the characteristics of the heat transfer fluid (water or mixtures of water and glycol) and the hydraulic circuit.

The use of an unsuitable fluid can cause sludge deposits, algae growth, scale build-up, or corrosion and in some cases even erosion.

The Manufacturer does not accept any responsibility for damage caused by the use of untreated water, water containing particles or debris in suspension, water that has been incorrectly treated or admixed, or salt water.

By way of example, some (non-exhaustive) advice is given below (contact a specialist and consult specific standards such as UNI 8065)

- Ammonium ions (NH₄⁺) dissolved in water should be eliminated due to their high reactivity with copper.
- Chlorine ions (Cl⁻) pose a risk of holes developing due to corrosion.
- Sulfate ions (SO₄⁻) must be eliminated because they may present a risk of corrosion.
- Limit for fluoride ions: 0.1 mg/l.
- Silicon may pose a risk of corrosion. Limit: < 1 mg/l.
- Electrical conductivity: the higher the specific resistivity, the lower the tendency of corrosion. Therefore, the following limit must be observed: Electrical conductivity: < 3,500 μS/cm
- pH: neutral pH at 20 °C (7 < pH < 8)
- Fixed residue (at 180 °C): < 2 000 mg/kg
- Conditioners Present within the concentrations prescribed

by the supplier

The water must be analysed: it is advisable to contact a qualified water treatment specialist to determine the most suitable type of treatment according to the materials used in the hydraulic system.

The installed hydraulic circuit must include all the necessary devices for water treatment: mesh filter (immediately at the inlet to the unit), additive dosing systems if necessary, any intermediate heat exchangers, vent valves at all points of possible air accumulation, air intakes, isolation valves, etc., and anything else necessary according to best practice.

⚠ CAUTION: in case of regular shut-down, if it is necessary to empty the hydraulic circuit, the system must be flushed internally with nitrogen, making sure to leave it pressurized (at a pressure approximately equal to half the maximum pressure of the hydraulic circuit) in order to avoid the entry of oxygen and to protect the parts of the system from the risk of corrosion.

5.1.2 Recommended water circuit

⚠ WARNING when making the plumbing connections, make sure there are no open flames in proximity to or inside the unit.

When setting up the water circuit, it is advisable to equip it with:

- valves for regulating (VI) the unit on the water pipes, immediately upstream and downstream from the unit itself, to be used in the event maintenance work is required;
- standard mechanical filter (FM) (OBLIGATORY!) on the pipe feeding the unit, in proximity to the latter;
- standard mechanical filter (FM) (OBLIGATORY!) and check valve (VNR), on the supply line upstream from the filling tap (RC);
- an air vent valve at the highest point of the circuit;
- escape pipe for the safety valve (VS), which, in the event the safety valve opens, diverts the jet of water to an area where it cannot harm persons or things, (**Important!**);
- vibration-damping couplings (GA) on the pipes to prevent vibrations from being transmitted toward the system.

Important! It is advisable to ensure that the pipes connected upstream and downstream from the unit are not smaller in diameter than the plumbing connections of the unit itself.

Important! During wintertime the water circuit (or the water chiller only) must be emptied to prevent damage caused by freezing; alternatively, the circuit may be filled with a mixture of water and glycol; the percentage of glycol necessary will depend on the lowest forecast temperature (see table):

Percentage by weight of ethylene glycol (%)	Mixture freezing temperature (°C)
0	0
10	-3
20	-8
30	-15
40	-25

👉 NOTE: The percentage shown in the upper table are indicative. Always refer to your glycol supplier for the right freezing temperatures.

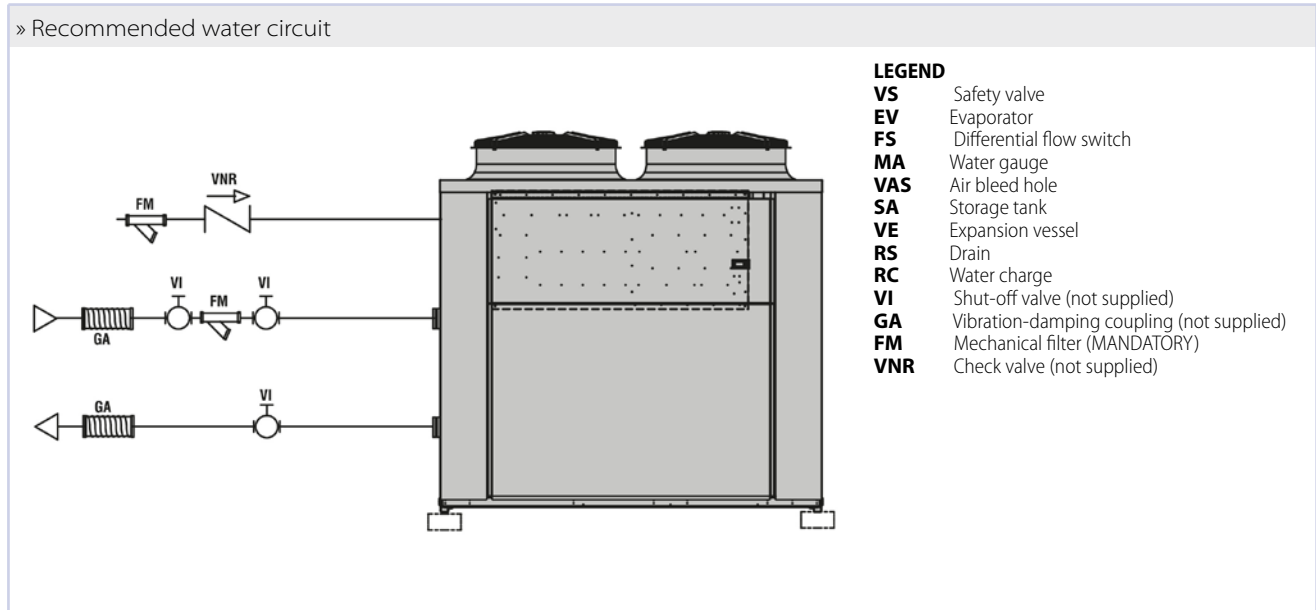
👉 NOTE: For choice of glycol percentage to use, in case of low temperature water produced, is recommended keeping a edge of 5K on outlet water temperature in order to consider any temperature fluctuations inside the heat exchanger. Example: water temperature produced: -10°C, minimum water

temperature during the fluctuations: -10-5=-15°C, recommended ethylene glycol percentage: >30%.

Important! If different antifreeze product is to be used, please

contact the manufacturer.

Failure to install filters and vibration dampers may cause problems of clogging, breakages and noise, for which the manufacturer may not be held liable.



5.1.3 Filling the system

- Before you start filling, make sure that the system draining tap is closed.
- Open all the air vent valves of the system and of the indoor units and chiller.
- Open the system regulating devices.
- To fill the circuit open slowly the water tap of the system (optional).
- When water starts coming out of the air vent valves of the indoor units, close them and continue filling until the pressure gauge reading is 1.5 bars.

installed, as prescribed by Directive 2014/68/UE (PED); in particular, with respect to equipment design, this Directive requires manufacturers to abide by the technical standard nearest to the type of object produced; in the case of chillers designed for air-conditioning or liquid cooling systems, standard UNI EN 378-2 is taken into consideration.

According to this standard, for refrigerant mass flow rates of up to 25 dm³ per circuit only one pressure limiting device is required; beyond this limit 2 must be applied. Practically speaking, these are safety pressure switches designed to protect the cooling circuit in a cascade fashion.

What is meant by cascade protection is illustrated in the figure:

5.2 TANK FILLING MODE

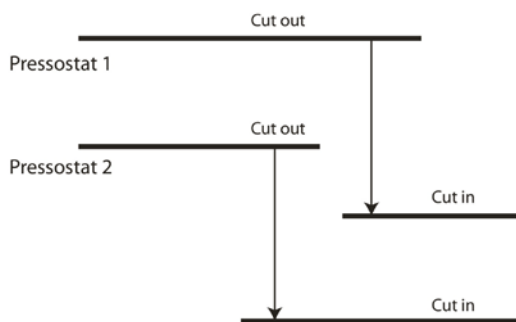
WARNING: The tank has not been designed to withstand a depression greater than -0.15 Bar. For this reason, attention should be paid to ensure that the pressure on the pump intake side, where the expansion tank is positioned, will always be greater than 0.5 bars while the pump is running; this helps to reduce the risk of cavitation.

It is extremely important that the installer follows and verifies the following procedure point by point in order to prevent the risk of the tank exploding or pump cavitation:

1. Drain the expansion tank until pressure is 0.5 bar
2. Fill the system and pressurise it until approximately + 1 Bar at pump intake (pump stopped).
3. Vent the system
4. Check the inlet pressure pump (about 1 Bar) and start the system.
5. Stop the pump after 15-30 minutes and repeat from point c) until there are no more noises caused by air in the system.

5.3 SAFETY MANAGEMENT HIGH PRESSURE SIDE

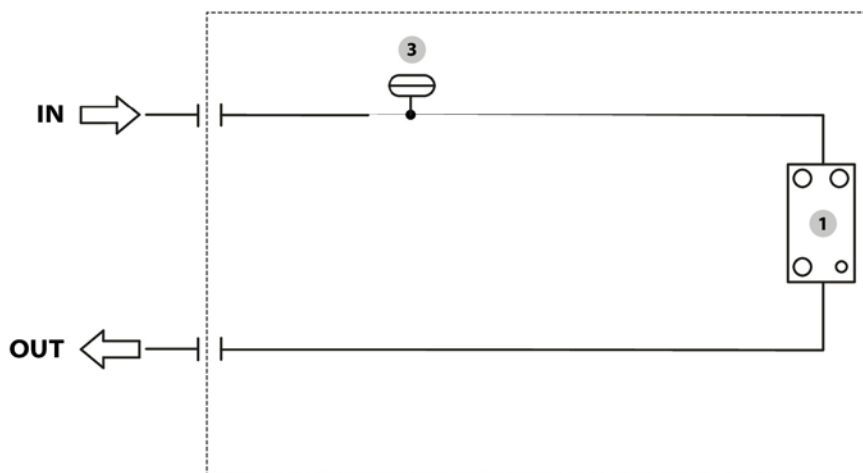
Cooling circuit safety devices are provided on each refrigerant circuit according to the volumetric capacity of the compressors



Pressure switch 1 is set at the "PS" (maximum admissible pressure) of the system
Pressure switch 2 will have the setting = PS x 0.9 in accordance with the reference technical standard

5.4 WATER CIRCUIT

» LCX (evaporator)

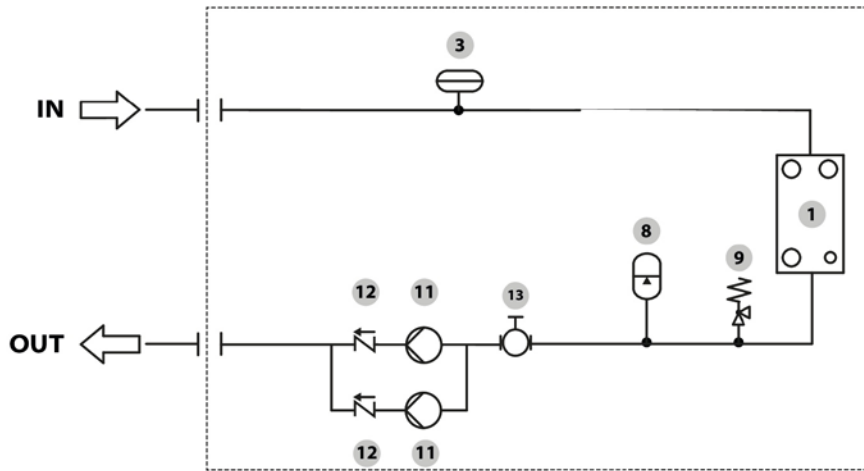


LEGEND

- 1 Evaporator
- 2 -
- 3 Flow switch
- 4 -
- 5 -
- 6 -
- 7 -
- 8 -
- 9 -
- 10 -
- 11 -
- 12 -
- 13 -

----- Internal and external borderline
 - - - - - OPTIONAL

» LCX (evaporator and 2 pumps)

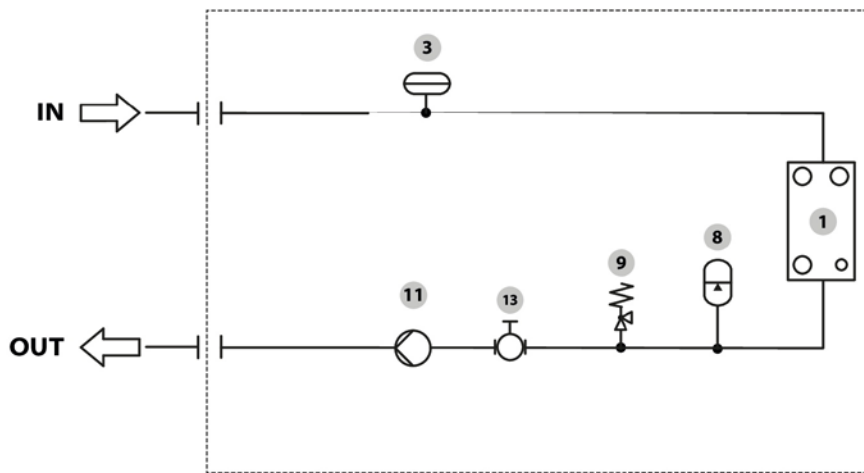


LEGEND

- 1** Evaporator
- 2** -
- 3** Flow switch
- 4** -
- 5** -
- 6** -
- 7** -
- 8** Expansion tank

- 9** Safety valve
- 10** -
- 11** Hydraulic pump
- 12** Clapet valve
- 13** Gate valve
- Internal and external borderline
- OPTIONAL

» LCX (evaporator and pump)

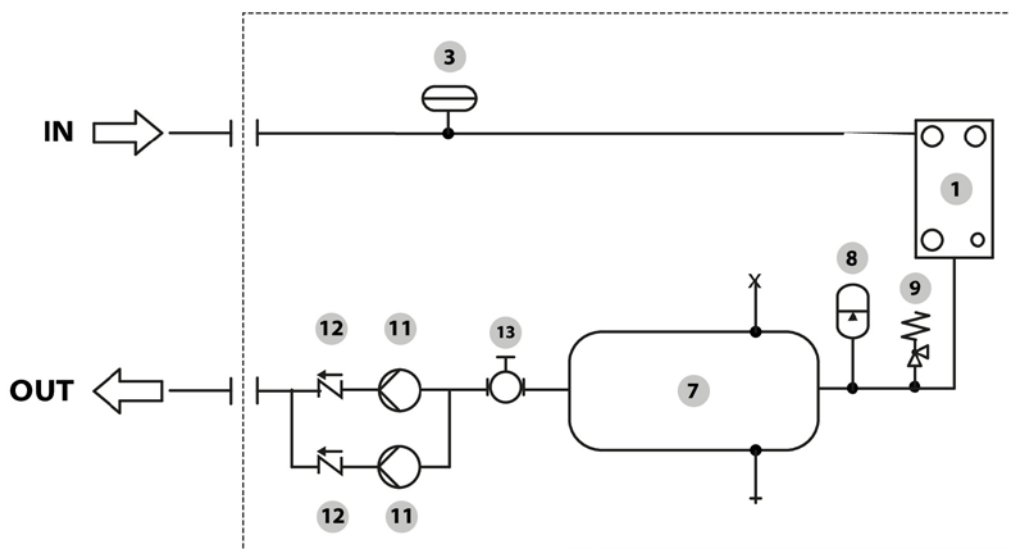


LEGEND

- 1** Evaporator
- 2** -
- 3** Flow switch
- 4** -
- 5** -
- 6** -
- 7** -
- 8** Expansion tank

- 9** Safety valve
- 10** -
- 11** Hydraulic pump
- 12** -
- 13** Gate valve
- Internal and external borderline
- OPTIONAL

» LCX (evaporator, tank and 2 pumps)

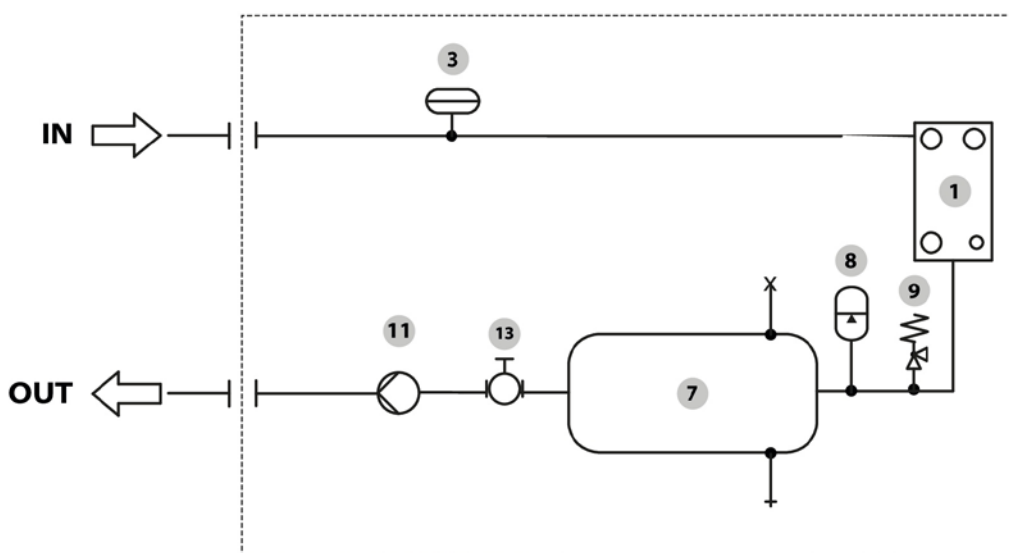


LEGEND

- 1 Evaporator
- 2 -
- 3 Flow switch
- 4 -
- 5 -
- 6 -
- 7 Buffer tank
- 8 Expansion tank

- 9 Safety valve
- 10 -
- 11 Hydraulic pump
- 12 Clapet valve
- 13 Gate valve
- Internal and external borderline
- OPTIONAL

» LCX (evaporator, pump and tank)



LEGEND

- 1 Evaporator
- 2 -
- 3 Flow switch
- 4 -
- 5 -
- 6 -
- 7 Buffer tank
- 8 Expansion tank

- 9 Safety valve
- 10 -
- 11 Hydraulic pump
- 12 -
- 13 Gate valve
- Internal and external borderline
- OPTIONAL

5.5 ELECTRICAL CONNECTIONS

All operations must be performed by qualified service personnel in accordance with current laws and regulations. For any electrical work on the unit, refer to the electric diagrams supplied with the unit. It is recommended to make sure that:

- The characteristics of the mains power supply are adequate for the electrical inputs specified in the table of electrical data.

⚠ WARNING Before carrying out any job on electrical parts, make sure the power supply is disconnected. Check that the mains electricity supply is compatible with the specifications (voltage, number of phases, frequency) shown on the unit rating plate. The supply voltage may not undergo fluctuations exceeding $\pm 5\%$ of the rated voltage. The electrical connections must be made in accordance with the wiring diagram provided with the unit and the regulations in force.

⚠ WARNING Never attempt to modify internal electrical connections: any undue modifications will immediately invalidate the warranty.

An all-pole circuit breaker must be used on the electric panel upstream, conform to IEC Standards (contacts must be open at least of 3 mm), with suitable interruption capacity and differential protection, according to the electrical data tables in 5.6 Electrical data paragraph, described below, and installed as close as possible to the device.

For the unit power supply line use H07RN-F-type flexible rubber cables with the cross-section shown in the electrical data. Use cable ducts and conduits suitable for outdoor installation to route the cables. Provide a switch and delayed fuses meeting the specifications given in the tables included in the electrical data. To access the electric control board it is necessary to remove the inspection panel (figure 5.11 Access to electrical control board) by unscrewing the relevant screws; insert the power cable into the unit through the hole with cable gland on the side panel, then insert it into the electric control board through the

appropriate cable gland.

Tighten the wires securely to the terminals and clamp the cable in place with the cable holder (figure p. 30).

To preserve the protection degree of the machine, use a cable gland compatible with the sheath or power cable diameter, in correspondence to the unit side panel hole.



An earth connection is mandatory: connect the earthing wire to the terminal provided on the electric control board (see the electric control board layout supplied with the unit), marked \perp .

If you wish to include:

- a remote on/off switch
- a remote switch for changing over between the cooling and heating mode (LCX H only),
- a remote alarm indicator

It is a good idea to do so at this stage of the installation procedure, by connecting the switches or PCDS remote control (accessory) to the electric control board terminals as directed in section 5.6 Electrical data p. 30 and using the unit wiring diagram as your reference.

5.6 ELECTRICAL DATA

» LCX CS electrical data

LCX		92	102	122	124	142	144	162	164
Power supply	V-ph-Hz	400 - 3N - 50							
Maximum power input	kW	45,5	52,0	59,6	60,5	65,7	67,3	76,6	75,1
Maximum current absorption	A	91,0	101	119	120	131	129	144	150
Start up current	A	261	269	319	247	330	245	396	266
Startup current with soft starter	A	199	207	254	172	265	186	313	214
Fan motor rated power	kW	1,75	1,75	2,34	2,34	2,34	2,34	2,34	2,34
Fan motor rated current	A	6,60	6,60	8,80	8,80	8,80	8,80	8,80	8,80
Pump motor rated power - LP pumps	kW	1,40	1,40	1,80	1,80	2,90	2,90	2,90	2,90
Pump motor rated current - LP pumps	A	2,50	2,50	3,40	3,40	4,80	4,80	4,80	4,80
Pump motor rated power - HP pumps	kW	2,90	2,90	3,30	3,30	3,30	3,30	3,30	3,30
Pump motor rated current - HP pumps	A	4,80	4,80	5,60	5,60	5,60	5,60	5,60	5,60

LCX		174	194	214	244	274	294	324	364
Power supply	V-ph-Hz	400 - 3N - 50							
Maximum power input	kW	75,4	88,4	101	114	128	139	150	179
Maximum current absorption	A	136	155	173	196	224	237	251	300
Start up current	A	252	310	330	380	403	468	476	497
Startup current with soft starter	A	200	248	268	315	338	385	393	440
Fan motor rated power	kW	6,30	6,30	6,30	6,30	8,40	8,40	8,40	8,40
Fan motor rated current	A	15,0	15,0	15,0	15,0	20,0	20,0	20,0	20,0
Pump motor rated power - LP pumps	kW	2,80	2,80	3,70	5,10	5,10	5,10	5,10	5,10
Pump motor rated current - LP pumps	A	4,80	4,80	6,80	9,20	9,20	9,20	9,20	9,20
Pump motor rated power - HP pumps	kW	3,70	3,70	5,10	9,10	9,10	9,10	9,10	9,10
Pump motor rated current - HP pumps	A	6,80	6,80	9,20	15,5	15,5	15,5	15,5	15,5

» LCX HS technical data

LCX		092	102	122	124	142	144	162	164
Power supply	V-ph-Hz	400 - 3N - 50							
Maximum power input	kW	45,5	52,0	59,6	60,5	65,7	67,3	76,6	75,1
Maximum current absorption	A	91,0	101	119	120	131	129	144	150
Start up current	A	261	269	319	247	330	245	396	266
Startup current with soft starter	A	199	207	254	172	265	186	313	214
Fan motor rated power	kW	1,75	1,75	2,34	2,34	2,34	2,34	2,34	2,34
Fan motor rated current	A	6,60	6,60	8,80	8,80	8,80	8,80	8,80	8,80
Pump motor rated power - LP pumps	kW	1,40	1,40	1,80	1,80	2,90	2,90	2,90	2,90
Pump motor rated current - LP pumps	A	2,50	2,50	3,40	3,40	4,80	4,80	4,80	4,80
Pump motor rated power - HP pumps	kW	2,90	2,90	3,30	3,30	3,30	3,30	3,30	3,30
Pump motor rated current - HP pumps	A	4,80	4,80	5,60	5,60	5,60	5,60	5,60	5,60

LCX		174	194	214	244	274	294	324	364
Maximum power input	kW	75,4	88,4	101	114	128	139	150	179
Maximum current absorption	A	136	155	173	196	224	237	251	300
Start up current	A	252	310	330	380	403	468	476	497
Startup current with soft starter	A	200	248	268	315	338	385	393	440
Fan motor rated power	kW	6,30	6,30	6,30	6,30	8,40	8,40	8,40	8,40
Fan motor rated current	A	15,0	15,0	15,0	15,0	20,0	20,0	20,0	20,0
Pump motor rated power - LP pumps	kW	2,80	2,80	3,70	5,10	5,10	5,10	5,10	5,10
Pump motor rated current - LP pumps	A	4,80	4,80	6,80	9,20	9,20	9,20	9,20	9,20
Pump motor rated power - HP pumps	kW	3,70	3,70	5,10	9,10	9,10	9,10	9,10	9,10
Pump motor rated current - HP pumps	A	6,80	6,80	9,20	15,5	15,5	15,5	15,5	15,5
Power supply	V-ph-Hz	400 - 3N - 50							

» LCX CL technical data

LCX		062	072	082	092	094	102	104	122	124	142
Power supply	V-ph-Hz	400 - 3N - 50									
Maximum power input	kW	28,5	31,9	35,8	42,7	44,1	49,2	49,1	56,2	57,1	62,3
Maximum current absorption	A	51,0	55,0	66,0	77,0	81,0	86,0	87,0	95,0	96,0	106
Start up current	A	185	183	191	246	194	254	198	295	220	306
Startup current with soft starter	A	111	124	139	184	122	192	137	230	146	241
Fan motor rated power	kW	0,81	0,81	0,81	1,08	1,08	1,08	1,08	4,02	4,02	4,02
Fan motor rated current	A	3,84	3,84	3,84	5,12	5,12	5,12	5,12	7,74	7,74	7,74
Pump motor rated power - LP pumps	kW	1,40	1,40	1,40	1,80	1,80	1,80	1,80	1,80	1,80	2,90
Pump motor rated current - LP pumps	A	2,50	2,50	2,50	3,40	3,40	3,40	3,40	3,40	3,40	4,80
Pump motor rated power - HP pumps	kW	2,90	2,90	2,90	2,90	2,90	2,90	2,90	3,30	3,30	3,30
Pump motor rated current - HP pumps	A	4,80	4,80	4,80	4,80	4,80	4,80	4,80	5,60	5,60	5,60

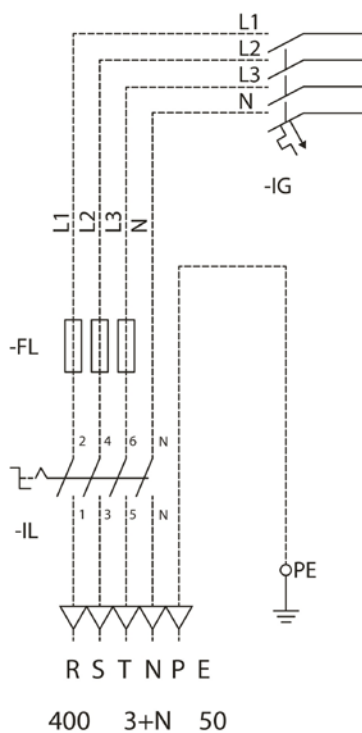
LCX		142	144	162	164	194	214	244	274	294	324	364
Power supply	V-ph-Hz	400 - 3N - 50										
Maximum power input	kW	62,3	63,9	73,2	71,7	86,5	99,5	112	125	136	147	173
Maximum current absorption	A	106	105	120	126	148	167	190	215	229	242	290
Start up current	A	306	222	371	241	307	318	382	398	464	472	487
Startup current with soft starter	A	241	163	288	189	245	256	317	333	381	389	430
Fan motor rated power	kW	4,02	4,02	4,02	4,02	4,02	4,02	4,02	6,10	6,10	6,10	6,10
Fan motor rated current	A	7,74	7,74	7,74	7,74	7,74	7,74	7,74	10,3	10,3	10,3	10,3
Pump motor rated power - LP pumps	kW	2,90	2,90	2,90	2,90	2,80	3,70	5,10	5,10	5,10	5,10	5,10
Pump motor rated current - LP pumps	A	4,80	4,80	4,80	4,80	4,80	6,80	9,20	9,20	9,20	9,20	9,20
Pump motor rated power - HP pumps	kW	3,30	3,30	3,30	3,30	5,10	5,10	9,10	9,10	9,10	9,10	9,10
Pump motor rated current - HP pumps	A	5,60	5,60	5,60	5,60	9,20	9,20	15,5	15,5	15,5	15,5	15,5

» LCX HL electrical data

LCX		062	072	082	092	094	102	104	122	124	142	
Power supply	V-ph-Hz	400 - 3N - 50										
Maximum power input	kW	28,5	31,9	35,8	42,7	44,1	49,2	49,1	56,2	57,1	62,3	
Maximum current absorption	A	51,0	55,0	66,0	77,0	81,0	86,0	87,0	95,0	96,0	106	
Start up current	A	185	183	191	246	194	254	198	295	220	306	
Startup current with soft starter	A	111	124	139	184	122	192	137	230	146	241	
Fan motor rated power	kW	0,81	0,81	0,81	1,08	1,08	1,08	1,08	4,02	4,02	4,02	
Fan motor rated current	A	3,84	3,84	3,84	5,12	5,12	5,12	5,12	7,74	7,74	7,74	
Pump motor rated power - LP pumps	kW	1,40	1,40	1,40	1,80	1,80	1,80	1,80	1,80	1,80	2,90	
Pump motor rated current - LP pumps	A	2,50	2,50	2,50	3,40	3,40	3,40	3,40	3,40	3,40	4,80	
Pump motor rated power - HP pumps	kW	2,90	2,90	2,90	2,90	2,90	2,90	2,90	3,30	3,30	3,30	
Pump motor rated current - HP pumps	A	4,80	4,80	4,80	4,80	4,80	4,80	4,80	5,60	5,60	5,60	

LCX		144	162	164	194	214	244	274	294	324	
Power supply	V-ph-Hz	400 - 3N - 50									
Maximum power input	kW	63,9	73,2	71,7	86,5	99,5	112	125	136	147	
Maximum current absorption	A	105	120	126	148	167	190	215	229	242	
Start up current	A	222	371	241	307	318	382	398	464	472	
Startup current with soft starter	A	163	288	189	245	256	317	333	381	389	
Fan motor rated power	kW	4,02	4,02	4,02	4,02	4,02	4,02	6,10	6,10	6,10	
Fan motor rated current	A	7,74	7,74	7,74	7,74	7,74	7,74	10,3	10,3	10,3	
Pump motor rated power - LP pumps	kW	2,90	2,90	2,90	2,80	3,70	5,10	5,10	5,10	5,10	
Pump motor rated current - LP pumps	A	4,80	4,80	4,80	4,80	6,80	9,20	9,20	9,20	9,20	
Pump motor rated power - HP pumps	kW	3,30	3,30	3,30	5,10	5,10	9,10	9,10	9,10	9,10	
Pump motor rated current - HP pumps	A	5,60	5,60	5,60	9,20	9,20	15,5	15,5	15,5	15,5	

» Main electrical connection of units



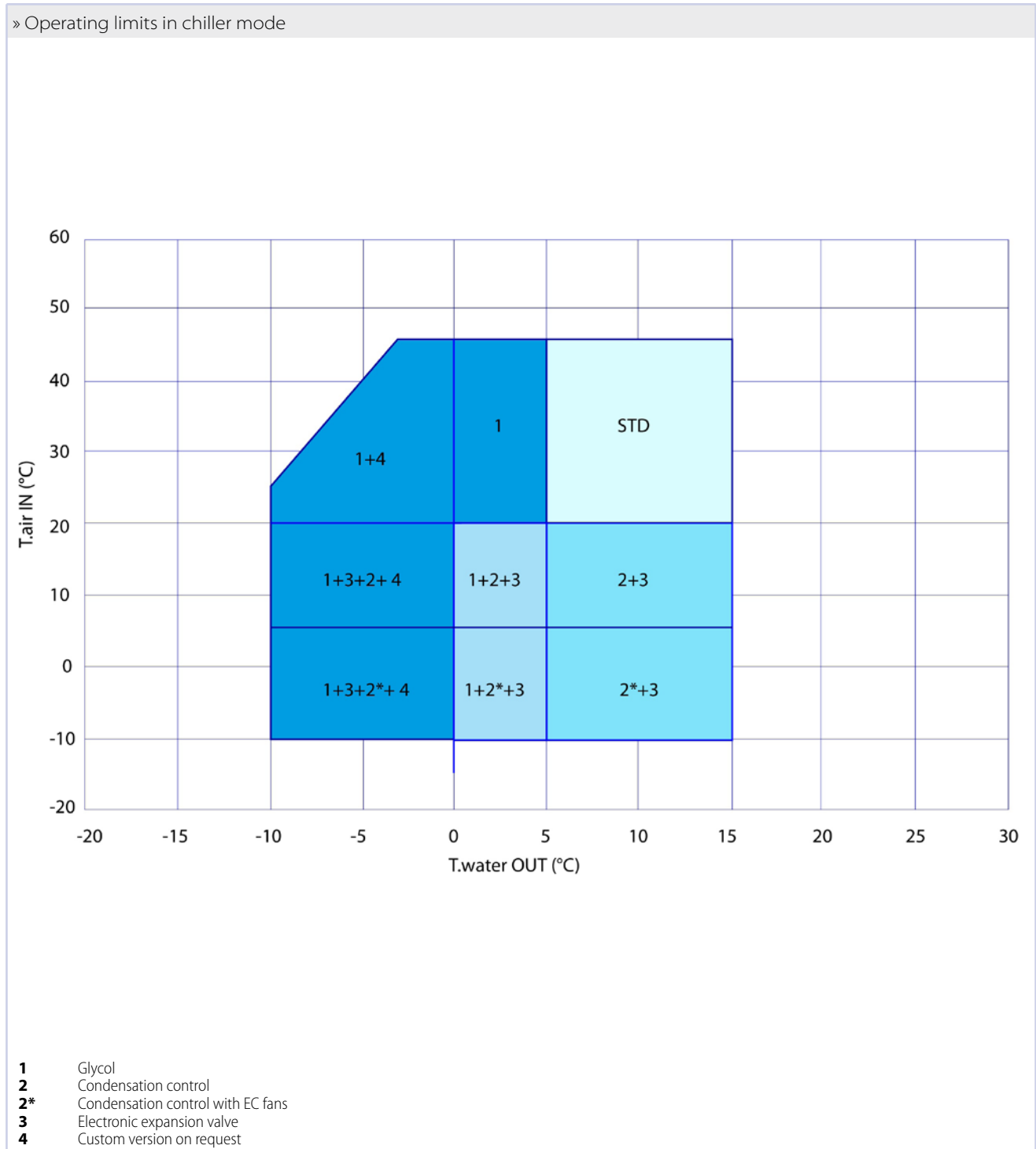
6 OPERATING LIMITS

The graphs below illustrate the operating limits of LCX units (in the case of continuous operation) in relation to the outlet water temperature and outdoor air temperature.

⚠ WARNING The units are designed to work with water and air temperatures falling within the range defined by the

operating limits. Attempting to operate the units beyond these limits could cause irreparable damage to the units themselves.

6.1 OPERATING LIMITS IN CHILLER MODE

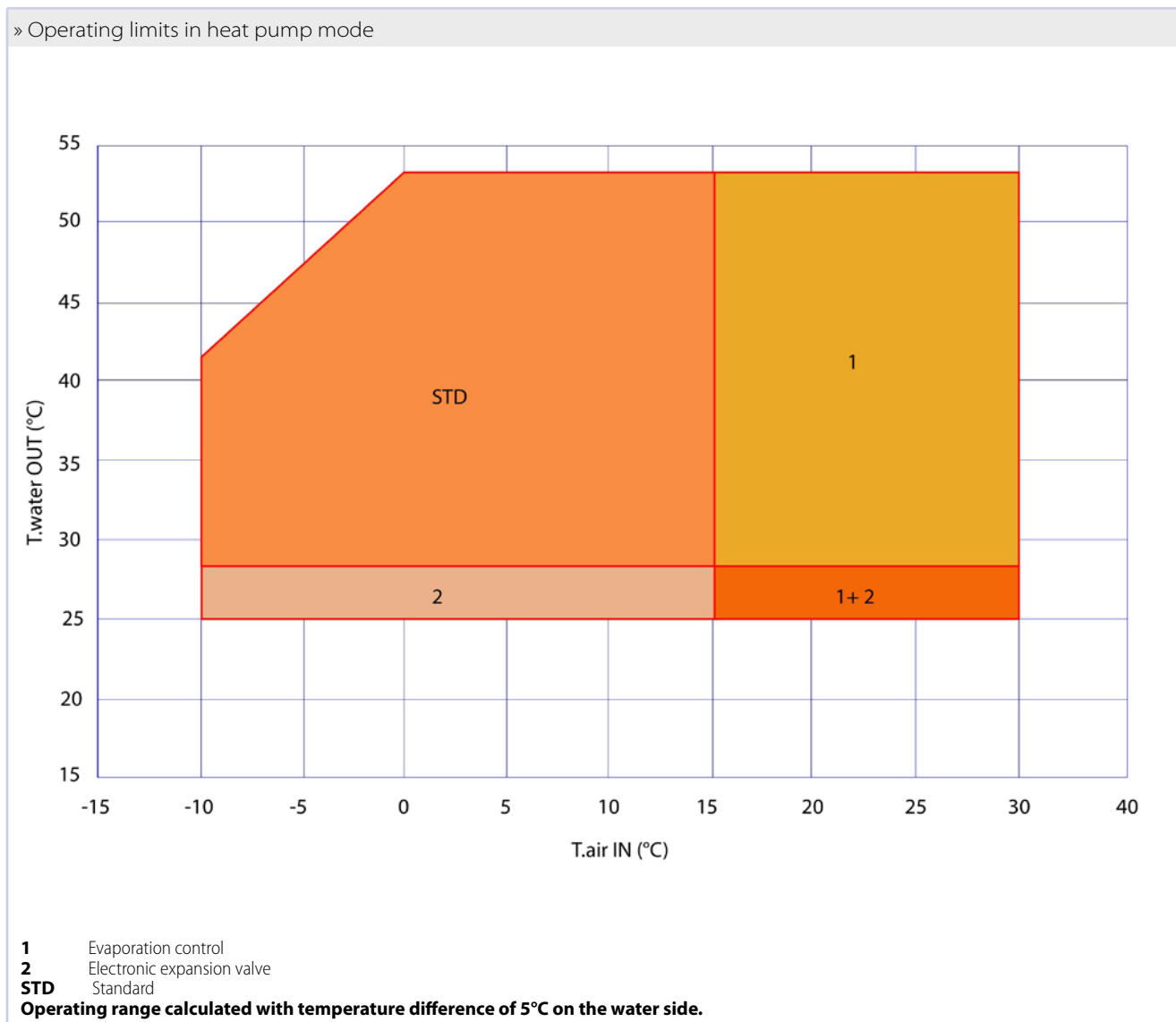


To operate with outdoor temperatures below 20 °C and above 5 °C it is essential to employ the (optional) condensation control with phase cutting device.

To operate with outdoor temperatures below 5 °C it is essential

to employ the (optional) condensation control with EC fans.

6.2 OPERATING LIMITS IN HEAT PUMP MODE



To operate with outdoor air temperatures below 0°C the temperature of the water produced will be reduced to 45°C. It is essential to use the (optional) device to monitor evaporation to detect the outlet water temp. from the condenser with an ambient temperature of the air greater than 20°C. For temp. of produced water between 25°C and 30°C is it compulsory to use an electrical expansion valve.

The unit will automatically block itself below -10°C, thanks to the external low-temperature probe in order to protect the chilling compressors from non application fields they were not designed for.

6.3 THERMAL CARRYING FLUID

The units belonging to the LCXseries can work with mixtures of water and up to 30% ethylene glycol.

7 CONTROL AND SAFETY DEVICES

All the control and safety devices are set and tested in the factory before the unit is dispatched.

7.1 CONTROL DEVICES

7.1.1 Service thermostat

The service thermostat activates and deactivates the compressor according to the demand for chilled water (cooling mode) or heated water (heat pump mode), as determined by a sensor installed on the water exchanger inlet. This device is governed by the microprocessor control (see also the chapter regarding the microprocessor).

7.1.2 Control device settings

LCX	CONTROL DEVICES	SET POINT	DIFFERENTIAL
CS-CL	Service thermostat (outlet water temp. cooling mode)	12 °C	4 °C
HS-HL	Service thermostat (inlet water temperature heating mode)	40 °C	4 °C

7.2 SAFETY DEVICES

7.2.1 High pressure switch

The high pressure switch stops the compressor when the delivery pressure exceeds the set value.

To verify its efficiency, while the compressors are running, close off the passage of air into the condensers and check, by referring to the compressor outlet pressure gauge (previously installed), whether the pressure switch is activated (i.e. the compressors stop) when the set value is reached.

7.2.2 Low pressure switch

The low pressure switch stops the compressor when the intake pressure falls below the set value up to 60 seconds.

7.2.3 Anti-recycle timer

The function of the timer is to prevent excessively frequent compressor starts and stops. This device is a function included in the microprocessor control; it prevents the compressor from starting up again after a stop until a set period of time has elapsed (approximately 5 minutes).

7.2.4 Antifreeze thermostat

The antifreeze thermostat situated at the evaporator outlet performs a dual function: it prevents ice from forming in the evaporator in the event of an excessive decrease in the water flow; it stops the unit in the event of a failure of the service thermostat. This device is governed by the microprocessor control (see also the chapter regarding the microprocessor).

7.2.5 Water differential pressure switch

The water differential pressure switch stops the unit in the event of an excessive reduction in the water flow, thus protecting it from the formation of ice (chiller operation) and excessively high condensation temperatures (heat pump operation).

7.2.6 Water safety valve

The water safety valve opens when the pressure within the water circuit reaches a level that may cause damage to the unit.

7.2.7 Safety device settings

Safety device	Start up	Differential	Resetting
Maximum safety pressure switch (bar)	45	-13,5	Manual
Maximum safety pressure switch (bar)	40,5	-12,2	Manual
Minimum pressure switch (bars)	1,5	1,0	Automatic
Antifreeze thermostat (°C)	4	3	Manual
Security valve low pressure (bar)	29	-	-
Modulating condensation control (bar)	18	10	-
Time lapse between two start-ups of the same compressor (s)	450	-	-
Delay flow switch alarm (s)	20	-	-
Delay low pressure alarm (s)	1	-	-
Pumps rotation (optional) (h)	6	-	-
Pressostat end defrosting	29	-	-
Maximum time for defrosting (s)	360	-	-
Minimum time between two defrosts (s)	1800	-	-

8 ROUTINE MAINTENANCE AND CHECKS

It is recommended to carry out periodic checks of the safety devices (pressure switches and safety valves) and verify the absence of refrigerant leaks.

After the first start-up, the periodic checks must be carried out in conformity with the schedule and the manners provided for by current national regulations.

To keep the unit in good working order and guarantee the expected levels of performance and safety, it is necessary to carry out some periodic routine checks: some may be performed directly by the user while others must be carried out solely by specialised personnel.

8.1 CHECKS TO BE PERFORMED BY THE USER

The checks and operations described in this section may be easily performed by the user, provided that the latter shows a minimum of attention.

- Remove any dirt that has built up around the coil or objects trapped in the mesh protecting the coil itself (leaves, paper etc., to be carried out monthly).

⚠ WARNING Be especially careful when working in proximity to finned coils since the aluminium fins are extremely sharp and can cause cuts.

- Check the level of water in the circuit using the water pressure gauge, which should indicate a pressure of about 1.5 bars (monthly).
- Check that the escape pipe of the water safety valve is tightly secured.
- Check the water circuit for leaks (monthly).
- If the unit is to remain out of service for a long time, drain the water (or other fluid present in the circuit) from the pipes and the unit itself. This is indispensable if during the period of quiescence the ambient temperature is expected to fall below the freezing point of the fluid used (seasonal operation). Drain the unit and parts of the circuit subject to the risk of freezing by opening the RS (optional) emptying tap.
- Before placing the unit back in service at the start of the season, refill the water circuit.
- Check that the noise emissions of the unit are regular (monthly).
- If necessary, release the pump rotor ("P" and "S" version)

8.2 CHECKS AND MAINTENANCE TO BE PERFORMED BY SPECIALISED PERSONNEL

REQUIREMENTS

All the operations described in this section MUST ALWAYS BE PERFORMED BY QUALIFIED PERSONNEL.

⚠ WARNING Before carrying out any work on the unit or accessing internal parts, make sure you have disconnected it from the mains power supply.

⚠ WARNING The upper part of the compressor casing and the outlet pipe reach high temperatures. Be especially careful when working in their vicinity.

⚠ WARNING Be especially careful when working in proximity to the finned coils: the aluminium fins are extremely sharp and can cause cuts.

⚠ ATTENTION In case of extraordinary weather events, the unit must be stopped; prior to putting it back into operation,

it must be inspected by qualified personnel who must first check the integrity of the cooling circuit (pipes and components) and electrical connections, and verify that the safety devices are working properly.

After completing maintenance jobs, always replace the panels enclosing the unit and secure them with the fastening screws provided.

The checks and operations described in this section must be carried out on a yearly basis by specialised personnel.

- Check the electric control board terminals to ensure that they are securely tightened: the movable and fixed contacts of the circuit breakers must be periodically cleaned and replaced whenever they show signs of deterioration.
- Check the compressor and pipes for oil leaks.
- Check the efficiency of the water differential pressure switch.
- Clean the metal filters mounted in the water pipes.
- Clean the finned coil by aiming a jet of compressed air in a direction opposite to the outflow of air, taking care not to bend the fins.

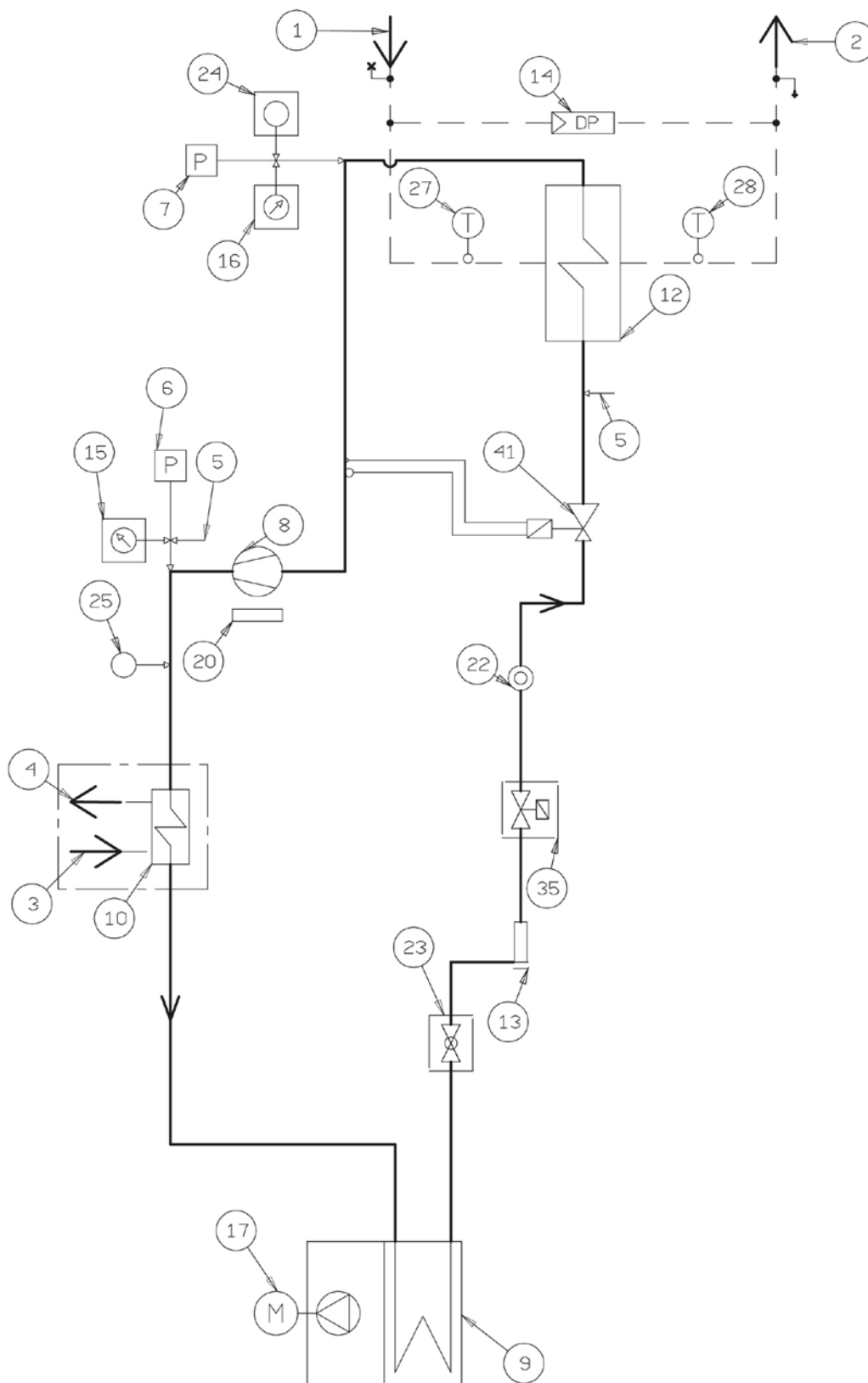
⚠ CAUTION: Installation and maintenance activities performed on heat pumps may only be carried out by personnel and companies holding the appropriate certificate in compliance with Regulation (EU) no. 2015/2067, which establishes, in accordance with Regulation (EU) no. 517/2014 of the European Parliament and of the Council, minimum requirements for companies and personnel with regard to stationary refrigeration equipment, air conditioning equipment, and heat pumps containing certain fluorinated greenhouse gases.

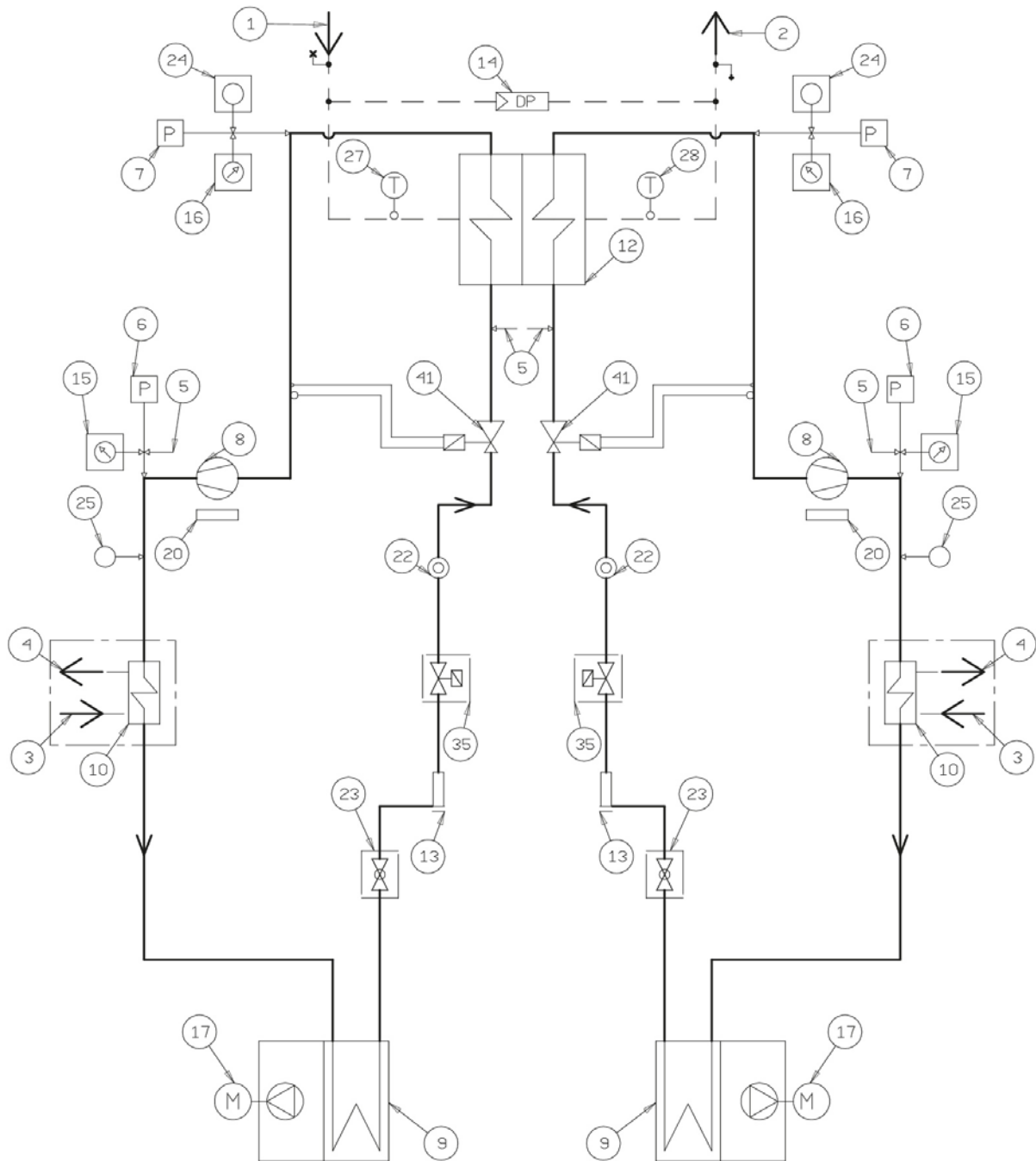
9 COOLING CIRCUITS

» Legend

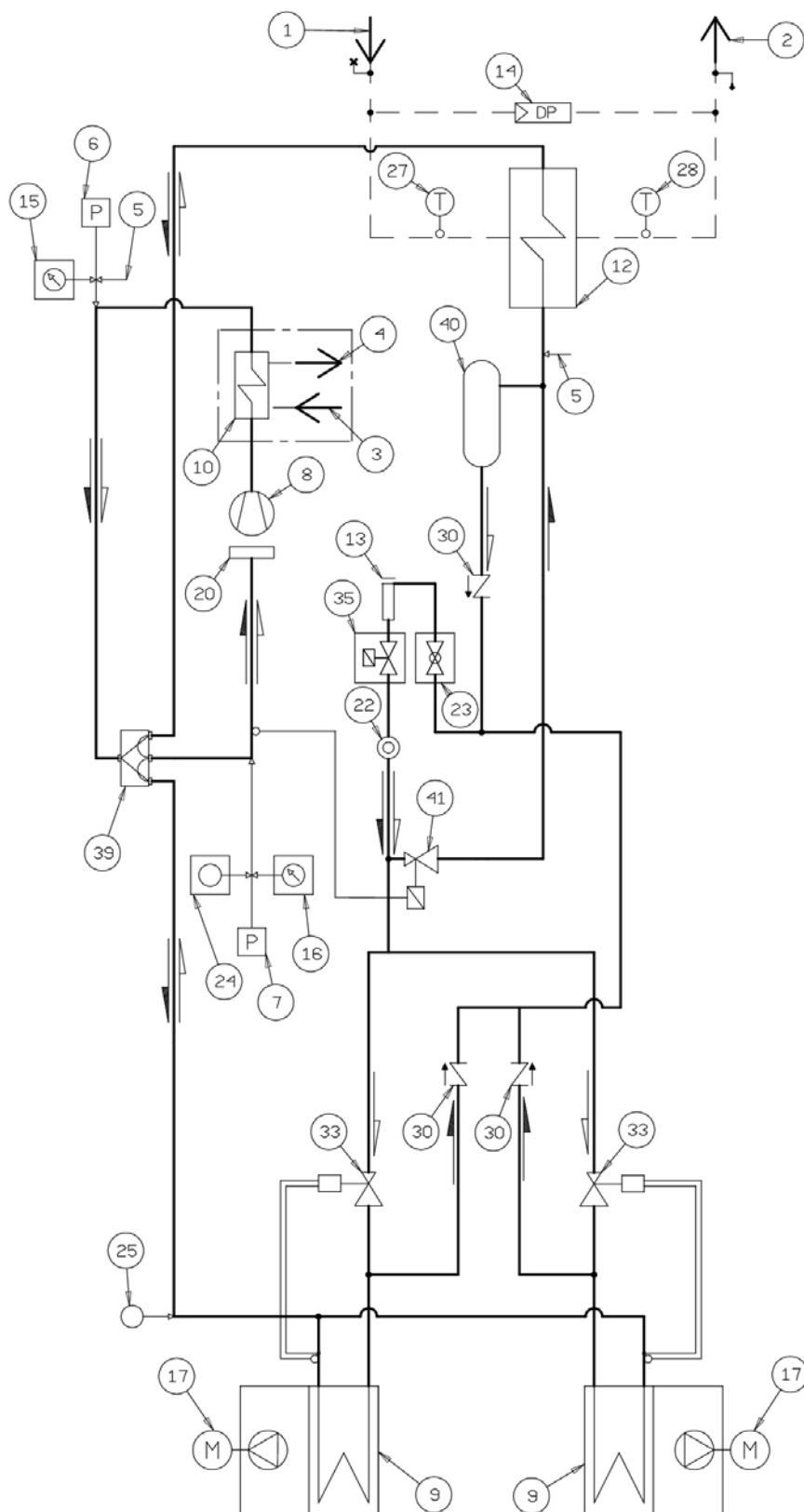
N°	COMPONENT
1	Chilled water inlet
2	Chilled water outlet
3	De-superheater water inlet
4	De-superheater water outlet
5	Charge connection
6	High pressure switch
7	Low pressure switch
8	Compressor
9	Condenser
10	De-superheater
11	Buffer tank
12	Evaporator
13	Dehydrating filter
14	Flow switch
15	High pressure gauge
16	Low pressure gauge
17	Fan motor
18	Chilled water circulation pump
19	Gate valve
20	Crankcase heater
21	Energy - saving coil
22	Sight glass
23	Shut-off valve
24	Evaporating pressure probe
25	Condensing pressure probe
26	Expansion tank
27	Water inlet temperature sensor
28	Water outlet temperature sensor
29	Outdoor air outlet temperature sensor
30	Check valve
31	Safety valve
32	Water safety valve
33	Thermostatic valve
34	Condensation control valve
35	Solenoid valve
36	Partialization solenoid valve
37	Condensing water inlet
38	Condensing water outlet
39	4 - way valve
40	Liquid receiver
41	Electronic expansion valve

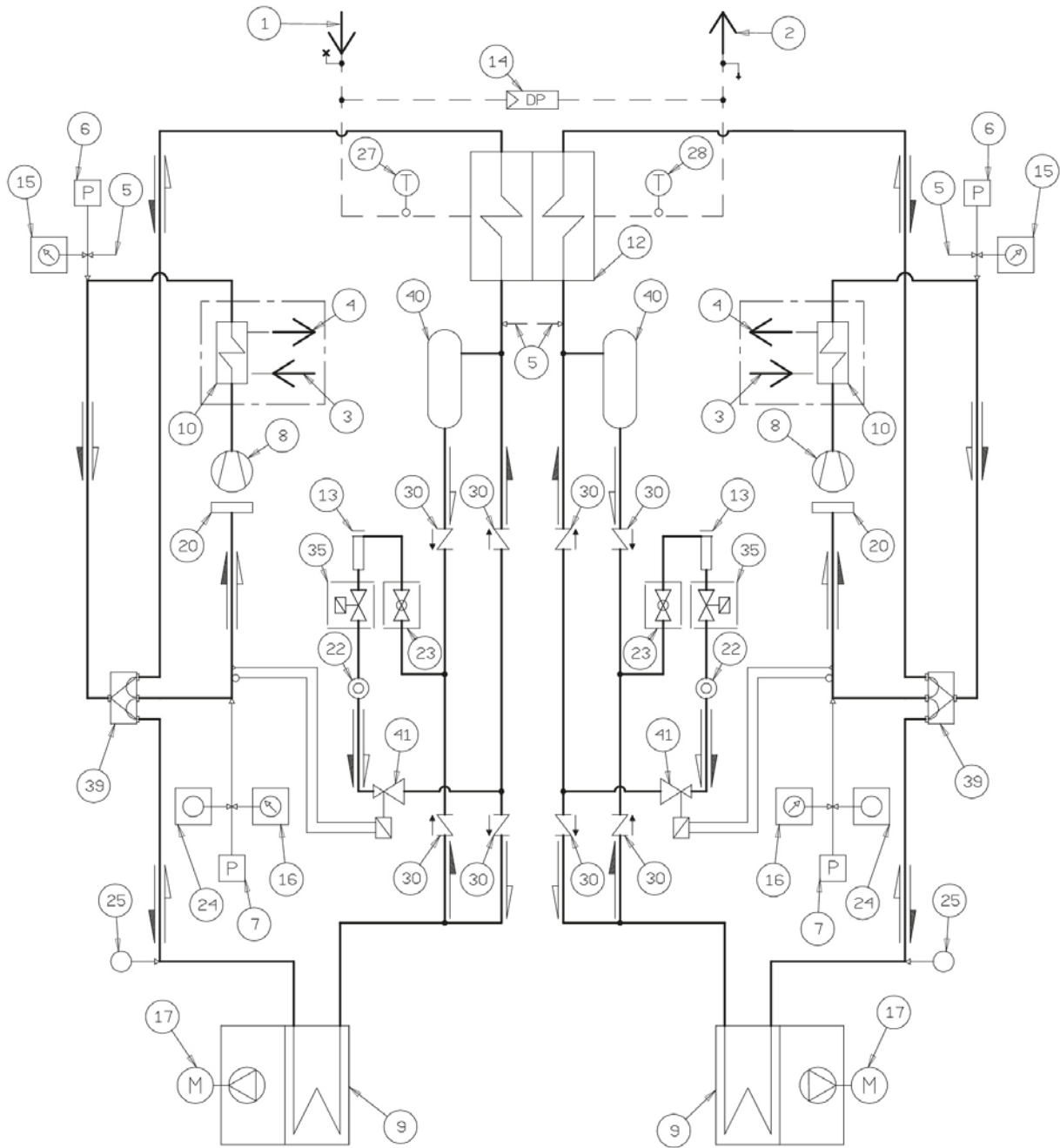
» LCX C 1 circuit cooling diagram





» LCX H 1 circuit cooling diagram











10 TROUBLESHOOTING

In this section you will find a list of the most common problems that may cause the chiller unit to stop or malfunction. Possible remedies are shown alongside a description of easily identifiable remedies.

⚠ WARNING Extreme care should be taken when performing work or repairs on the unit: overconfidence can result in injuries, even serious ones, to inexperienced individuals. Operations marked with the letter "U" can be performed directly by the user, who must carefully follow the instructions provided in this manual. Operations marked with the letter "S" may be performed exclusively by specialised personnel. Once the cause has been identified, you are advised to contact a Galletti S.p.A. service centre or a qualified technician for help.

SYMPTOM			Who can take corrective action U = User S = specialised personnel	Possible control panel indication	Probable cause	Possible remedy
A The unit does not start	X	X	S	EU EO	Faulty connection or contacts open. Wrong voltage	Check the voltage and close the contacts
	X	X	S		Not enabled by remote controls	Check the efficiency of the water circulation pump, pressure switch, bleed air from the circuit; check whether contacts 16 and 30 on the terminal board are closed
	X	X	U		Anti-recycle timer active	Wait 5 minutes until the timer enables operation
	X	X	S	E1	Service thermostat sensor defective	Check and replace if necessary
	X	X	U		Not enabled by service thermostat	System at the set temperature, no demand; Check the setting
	X	X	U	A1	Not enabled by antifreeze thermostat	Check the water temperature Check the antifreeze setting
	X	X	S	E2	Antifreeze sensor defective	Check whether it is functioning properly
	X	X	S		Tripping of main circuit breaker	Check for the presence of short circuits in the wiring or windings of the pump, fan and compressor motors or in the transformer
	X	X	S	L1 H1	Not enabled by high or low pressure switch	See items D-E
	X	X	S		Compressor defective	See item B
B The compressor does not start	X	X	S		Compressor burnout or seizure	Replace the compressor
	X	X	S		Compressor contactor deenergized	Check the voltage at either end of the compressor contactor coil and verify the continuity of the coil itself
	X	X	S		Power circuit open	Locate the cause that tripped the protection; check for the presence of short circuits in the wiring or windings of the pump, fan and compressor motors or in the transformer
	X	X	S		Power circuit open	The compressor has operated in critical conditions or there is insufficient refrigerant within the circuit; check the working conditions and make sure they fall within the operating limits. Refrigerant leak: refer to item G
C The compressor starts up and stops repeatedly	X	X	S	L1	Minimum pressure switch has tripped	See item E
	X	X	S		Compressor contactor defective	Check and replace if necessary
	X	X	U		Wrong set-point or differential setting	Change them according to the indications given in the tables
	X	X	S		Lack of refrigerant	See item G

SYMPTOM			Who can take corrective action U = User S = specialised personnel	Possible control panel indication	Probable cause	Possible remedy
D The compressor does not start because the maximum pressure switch has tripped	X	X	S	H1	Pressure switch failure	Check and replace
	X	X	S	H1	Excessive refrigerant charge	Discharge the excess gas
	X		U	H1	Finned coil obstructed, insufficient air flow	Remove dirt from the coil and any obstacles to air flow
	X	X	S	H1	Fan not working	See item F
		X	U	H1	Water circulation pump blocked	Release the pump
		X	S	H1	Water circulation pump defective	Check the pump and replace it if necessary.
	X	X	S	H1	Presence of incondensable gas in the cooling circuit	Recharge the circuit after having drained and evacuated it
E The compressor does not start because the minimum pressure switch has tripped	X	X	S	L1	Pressure switch failure	Check and replace
	X	X	S	L1	Unit completely empty	See item G
		X	U	L1	Finned coil obstructed, insufficient air flow	Remove dirt from the coil
	X		S	L1	Water circulation pump blocked	Release the pump
	X		S	L1	Water circulation pump blocked defective	Check the pump and replace it if necessary.
		X	S	L1	Presence of frost on the evaporating coil	See item O
		X	S	L1	Evaporator fan not working	See item F
	X	X	S	L1	Refrigerant filter clogged	Check and replace
	X	X	S	L1	Expansion valve is not working properly	Check and replace if necessary
F The fans do not start	X	X	S	H1 L1	Fan contactor deenergized (LCX only)	Check the voltage at either end of the compressor contactor coil and verify the continuity of the coil itself
	X	X	S	H1 L1	No power output by the fan speed control card (only LCX H or LCX with condensation control)	Check and replace if necessary
	X	X	S	H1 L1	The fan's internal thermal protection has tripped	Check the fan conditions and the air temperature while the unit is running
	X	X	S	H1 L1	Fan motor defective	Check and replace if necessary
	X	X	S	H1 L1	Loose electrical connections	Check and fasten securely
G Lack of gas	X	X	S	L1	Cooling circuit leak	Check the cooling circuit using a leak detector after pressurising the circuit to approximately 4 bars Repair, evacuate and refill
I Frost in liquid pipe downstream from a filter	X	X	S	H1 L1	Liquid filter clogged	Replace the filter
L The unit works continuously without ever stopping	X	X	S		Lack of refrigerant gas	See item G
	X	X	U		Wrong setting of operating thermostat	Check the setting
	X	X	S		Thermal overload	Reduce the thermal load
	X	X	S		Compressor does not provide the rated heating capacity	Check and replace or overhaul
	X	X	S		Liquid filter clogged	Replace
M The unit works regularly but with an insufficient capacity	X	X	S		Low level of refrigerant	See item G
	X	X	S		4-way cycle reversing valve defective	Check the valve power supply and coils and replace the valve if necessary

SYMPTOM			Who can take corrective action U = User S = specialised personnel	Possible control panel indication	Probable cause	Possible remedy
N Frost in the compressor intake pipe	X	X	S		Expansion valve is not working properly	Check and replace
	X		S		Water circulation pump blocked	Release the pump
	X	X	S		Water circulation pump defective	Check the pump and replace it if necessary.
	X	X	S		Low level of refrigerant	See item G
	X	X	S		Liquid filter clogged	Replace
O The defrosting cycle is never activated		X	S		4-way cycle reversing valve defective	Check the valve power supply and coil and replace the valve if necessary
		X	S		The defrost thermostat has broken down or has been set incorrectly	Check and replace if defective or change the setting
P Abnormal noises detected in the system	X	X	S		The compressor is noisy	Check and replace if necessary
	X	X	S		The panels vibrate	Fasten properly

11 RETIRING THE UNIT

When the unit has reached the end of its working life and needs to be removed and replaced, a series of operations should be carried out:

- the refrigerant gas it contains should be recovered by specialised personnel and sent to a waste collection facility;
- the lubricating oil in the compressor should also be recovered by specialised personnel and sent to a waste collection facility;
- If they cannot be reused, the framework and components should be scrapped and separated according to the type of material: this applies especially for the considerable quantities of copper, aluminium and steel present in the unit. This will make the job of waste collection, disposal and recycling facilities easier and minimise the environmental impact of the dismantling.

Installation and maintenance should be carried out by technical personnel qualified for this type of machine, in compliance with current safety regulations.

When receiving the unit please check its state verifying if any damage occurred during the transport.

For installation and use of possible accessories please refer to the pertinent technical sheets.

The manual are subject to changes, in any times, without prior notice aimed at improving the product.



Galletti S.p.A Organization has a Management System Certified according to the UNI EN ISO 9001:2015, UNI EN ISO 14001:2015 and UNI ISO 45001:2018 standards.

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