

EAGLE FREE: Packaged air cooled liquid chillers with free-cooling system for outdoor installation, equipped with scroll compressors and axial fans

Cooling Capacity: 69 ÷ 331 kW

Free-Cooling Capacity: 47 ÷ 194 kW



EAGLE FREE

rcgroupairconditioning



MAIN FEATURES

- Air cooled liquid chiller with free-cooling system.
- 17 models available, for a wide selection opportunity.
- Average step of 20kW.
- EER up to 2,92.
- ESEER up to 3,85.
- Scroll compressors.
- R410A Refrigerant charge.
- Single or double refrigerant circuit.
- Plate type heat exchangers.
- AC Axial fans.
- Single air circuit.
- Electronic expansion valve.
- Suitable for outdoor installation.

MAIN BENEFITS

- Units equipped with two scroll compressors for refrigerant circuit to reach a high efficiency.
- Units with single and double refrigerant circuits.
- Indirect free cooling system.
- Availability of EC axial fans for a high efficiency.
- Availability of kit for the reduction and the extreme reduction of the noise.
- Availability of pumping groups.
- Availability of partial heat recovery system.
- Easily of maintenance.
- Components dedicated to the safety of the unity.

INDIRECT FREE COOLING SYSTEM

Complete cooling of the chilled water of the existing cooling system with the outside air. The energy saving will be higher the longer the outside temperature remains below the required temperature for cooling.

ELECTRONIC EXPANSION VALVE

The electronic expansion valves are synonymous of an higher energy efficiency and stability of the system.

WORKING LIMITS IN COOLING MODE

Chilled water outlet temperature: 4÷15°C

Ambient temperature: -10÷45°C

WORKING LIMITS IN FREE-COOLING MODE

Minimum chilled water outlet temperature: -15°C

Minimum ambient temperature: -20°C



MAIN COMPONENTS

FRAMEWORK

- Base, self supporting frame and panelling in steel plate with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders.
- Compressors compartment.
- Colour: RAL 9002

COMPRESSORS

- Orbiting spiral (SCROLL) hermetic compressors with spiral profile optimized for R410A refrigerant.
- ON / OFF capacity control (0 / 100% each compressor).
- 2-pole 3-phase electric motor with direct on line starting.
- Phase sequence electronic relay.
- Crankcase heater.
- Electric motor thermal protection via internal winding temperature sensors.
- Rubber supports.

EVAPORATOR

- Copper brazed plate type with cover plates, plates and connections in AISI 316 stainless steel:
 - With single refrigerant circuit for S version machines.
 - With double refrigerant circuit for D version machines.
- Anticondensate insulation made of polyurethane.
- Temperature sensors on water inlet and outlet.
- Water flow safety switch.
- Antifreeze heater.

CONDENSING AND FREE-COOLING COIL

- Heat exchangers contained in single coil with high efficiency aluminium fins, specifically developed to provide high heat transfer and lower pressure drops. The combination of two factors, special tubes and fins, allow to optimally combine the following aspects:
 - Maximum capacity relative to the size of the exchanger.
 - Minimum charge of refrigerant.
 - Reduction of the air flow required for the heat exchange.
- Frame in galvanized steel.
- Motorized valves for free-cooling water circuit control.
- Temperature sensor on ambient air.

FANS SECTION

- Axial fans with sickle-shaped blades, fan guard and optimized for low noise levels.
- External rotor AC type electric motor.
- Stepless variable speed with phase-cut electronic controller for condensing pressure control.
- Stepless variable speed with phase-cut electronic controller for free-cooling control.
- IP54 enclosure class.

REFRIGERANT CIRCUIT

Components for each refrigerant circuit:

- Electronic expansion valve. The valve allows high performance and system efficiency thanks to a timely and accurate response to changes in temperature and pressure.
- Sight glass.
- Filter dryer on liquid line.
- Service valves on liquid line and gas discharge.
- Liquid receiver with safety valve.
- Safety valve on low pressure side.
- Pressure transducers with indication, control and protection functions, on low and high refrigerant pressure.
- High pressure safety switch with manual reset.
- Refrigerant circuit with copper tubing with anticondensate insulation of the suction line.
- Plastic capillary hoses for pressure sensors connection.
- R410A refrigerant charge.

ELECTRICAL PANEL

In accordance with EN60204-1 norms, suitable for outdoor installation, complete with:

- Main switch with door lock safety.
- Magnetothermic switch or fuses for each compressor.
- Magnetothermic switches for fans or water pumps (if scheduled).
- Contactors for each load.
- Transformer for auxiliary circuit and microprocessor supply.
- Panel with machine controls.
- Power supply 400/3/50.

CONTROL SYSTEM

- MP.COM microprocessor system with graphic display for control and monitor of operating and alarms status. The system includes:
 - Voltage free contact for remote general alarm.
 - Main components hour-meter.
 - Nonvolatile "Flash" memory for data storage.
 - Menu with protection password.
 - LAN connection.
 - Additional module with the following inlets / outlets:

INLETS

- o External alarm 1
- o External alarm 2
- o Line current indication.
- o Line voltage indication / Compensation
- o Ambient air temperature

OUTLETS

- o External alarm 1
- o External alarm 2
- o General alarm 2
- o General alarm 3

- Driver for the additional module.

OPTIONAL ACCESSORIES

EAGLE FREE SIZE	N6	N7	N8	N9	N10
739 - Pumping group (1 pump)	•	•	•	•	•
740 - Pumping group (2 pumps)	•	•	•	•	•
150 - LNO kit (noise reduction)	•	•	•	•	•
151 - ELN kit (extremely noise reduction)	•	•	•	•	•
170 - Spring antivibration holders (kit)	-	-	-	-	•
172 - Rubber support (kit)	•	•	•	•	•
118 - Kit brine A (for glycol solution production up to -6°C)	•	•	•	•	•
119 - Kit brine B (for glycol solution production up to -12°C)	•	•	•	•	•
79 - Electrical panel heating system	•	•	•	•	•
101 - EC fan	•	•	•	•	•
450 - Partial heat recovery	•	•	•	•	•
251 - Coils protection nets	•	•	•	•	•
Condensing coil in special execution	•	•	•	•	•
143 - Glycol free	•	•	•	•	•
731 - Safety water flow switch	•	•	•	•	•
605 - Compr. power factor capacitor - 0,9	•	•	•	•	•
1002 - Soft Starter	•	•	•	•	•
83 - Compressor operation indicator	•	•	•	•	•
Expansion valve energy reserve module	•	•	•	•	•
1003 - Analogic flowmeter	•	•	•	•	•
1005 - Power supply analyzer	•	•	•	•	•
1009 - Multimeter kit	•	•	•	•	•
919 - Clock card	•	•	•	•	•
923 - RC-Com MBUS/JBUS Serial board	•	•	•	•	•
926 - LON Serial board	•	•	•	•	•
931 - BACnet Ethernet - SNMP - TCP/IP Serial board	•	•	•	•	•
932 - BACnet MS/TP Serial board	•	•	•	•	•
942 - Serial card for GSM Modem	•	•	•	•	•
943 - Data Logger	•	•	•	•	•
962 - Kit modem GSM	•	•	•	•	•
957 - Plantwatch without modem	•	•	•	•	•
930 - Remote graphic terminal kit	•	•	•	•	•
889 - Master plant SEQUENCER	•	•	•	•	•
RC CLOUD PLATFORM	•	•	•	•	•

• available accessory; - not available accessory

TECHNICAL DATA EAGLE FREE

EAGLE FREE		T 60 P2	T 60 P2	T 70 P2	T 70 P2	T 90 P2	T 90 P2	T 120 P2	T 120 P2
SIZE		S N6	D N6	S N6	D N6	S N7	D N7	S N7	D N7
STANDARD	Cooling capacity (1)	kW	69,7	69,7	79,8	79,6	104,0	103,0	126,0
	Unit power input	kW	24,0	23,9	28,8	28,5	36,9	36,5	47,7
	Free-Cooling capacity (2)	kW	47,5	47,5	51,4	51,4	64,2	63,9	71,3
	Total water flow rate	m³/h	12,8	12,8	14,7	14,7	19,1	18,9	23,3
	Total pressure drop	kPa	187	165	225	204	148	132	194
	Compressors		scroll	scroll	scroll	scroll	scroll	scroll	scroll
	Quantity	n.	2	2	2	2	2	2	2
	Capacity steps	n.	2	2	2	2	2	2	2
	Axial fans	n.	6	6	6	6	2	2	2
	Total air flow	m³/h	30000	30000	33000	33000	44000	44000	48000
	Air circuits	n.	1	1	1	1	1	1	1
	Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A	R410A
	Total refrigerant charge (optional excluded)	kg	31,6	34,6	32,0	35,6	42,0	40,8	42,9
	Gas circuits	n.	1	2	1	2	1	2	1
	Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
	Max unit operating current (FLA)	A	67,6	67,6	73,9	73,9	92,2	92,2	110,0
	Unit starting current (LRA)	A	173,4	173,4	209,4	209,4	272,8	272,8	328,3
	EER (1)	kW/kW	2,90	2,92	2,77	2,79	2,82	2,82	2,64
	ESEER		3,78	3,49	3,68	3,31	3,58	3,31	3,53
	Sound power level [Lw] (3)	dB(A)	83,3	83,3	83,8	83,8	92,3	92,3	92,5
	Average sound pressure level [Lpm] (4)	dB(A)	66,3	66,3	66,4	66,4	74,2	74,2	74,4
	Net weight	kg	830	810	870	850	1170	1150	1280
	Hydraulic connections								
	Evaporator IN/OUT - ISO 7/1 - R	Ø	2"	2"	2"	2"	--	--	--
	Evaporator IN/OUT - OD (5)	Ø mm	--	--	--	--	76,1	76,1	76,1
OPTIONAL	Partial heat recovery (6)								
	Heating capacity	kW	24,0	--	27,5	--	35,7	--	43,4
	Pumping group								
LNO KIT 100%	Power input	kW	1,1	1,1	2,2	2,2	2,2	2,2	2,2
	Cooling capacity (1)	kW	69,7	69,7	79,8	79,6	104,0	103,0	126,0
	Unit power input	kW	24,0	23,9	28,8	28,5	36,9	36,5	47,7
	Free-Cooling capacity (2)	kW	47,5	47,5	51,4	51,4	64,2	63,9	71,3
	Total air flow	m³/h	30000	30000	33000	33000	44000	44000	48000
	EER (1)	kW/kW	2,90	2,92	2,77	2,79	2,82	2,82	2,64
	Sound power level [Lw] (3)	dB(A)	83,2	83,2	83,7	83,7	92,2	92,2	92,3
	Average sound pressure level [Lpm] (4)	dB(A)	66,2	66,2	66,2	66,2	74,1	74,1	74,2
LNO KIT 85%	Cooling capacity (1)	kW	68,3	68,3	78,1	78,0	102,0	101,0	123,0
	Unit power input	kW	24,3	24,1	29,3	29,0	37,2	37,0	48,4
	Free-Cooling capacity (2)	kW	47,2	47,2	51,1	51,1	63,7	63,4	70,8
	Total air flow	m³/h	25500	25500	28050	28050	37400	37400	40800
	EER (1)	kW/kW	2,81	2,83	2,67	2,69	2,74	2,73	2,54
	Sound power level [Lw] (3)	dB(A)	79,9	79,9	80,3	80,3	88,8	88,8	89,0
ELN KIT	Average sound pressure level [Lpm] (4)	dB(A)	62,8	62,8	62,9	62,9	70,7	70,7	70,9
	Cooling capacity (1)	kW	66,3	66,3	75,7	75,6	98,8	97,7	119,0
	Unit power input	kW	24,0	23,9	29,1	28,9	35,9	35,7	47,8
	Free-Cooling capacity (2)	kW	46,8	46,8	50,7	50,7	63,0	62,7	70,0
	Total air flow	m³/h	21000	21000	23100	23100	30800	30800	33600
	EER (1)	kW/kW	2,76	2,77	2,60	2,62	2,75	2,74	2,49
	Sound power level [Lw] (3)	dB(A)	74,1	74,1	74,7	74,7	82,9	82,9	83,3
	Average sound pressure level [Lpm] (4)	dB(A)	57,0	57,0	57,2	57,2	64,8	64,8	65,2

1. Referred to glycol solution temperature 15/10°C; 20% Ethylene glycol solution; air temperature to the condenser 35°C. Fouling factor of the exchangers 0,043 m²K/kW.
2. Referred to glycol solution inlet temperature 15°C; 20% Ethylene glycol solution; ambient temperature 3°C. Fouling factor of the exchangers 0,043 m²K/kW.
3. Sound power level [Lw] according to ISO EN 9614 - 2.
4. Average sound pressure level [Lp_m] 1m far according to ISO EN 3744.
5. Hydraulic connection with grooved end complete with flexible joint and adapter pipe for solder connection.
6. Referred to glycol solution temperature 15/10°C; 20% Ethylene glycol solution; air temperature to the condenser 35°C. Water temperature heat recovery 40/45°C - 0% glycol solution; Fouling factor of the exchangers 0,043 m²K/kW.

TECHNICAL DATA EAGLE FREE

EAGLE FREE		T 135 P2	T 150 P2	T 150 P2	T 190 P4	T 200 P2	T 200 P2	T 240 P4	T 270 P4	T 300 P4
SIZE		S N7	S N8	D N8	D N9	S N8	D N8	D N9	D N10	D N10
STANDARD	Cooling capacity (1)	kW	141,0	168,0	171,0	202,0	203,0	208,0	247,0	331,0
	Unit power input	kW	55,7	60,4	60,6	76,2	79,0	80,6	99,2	126,8
	Free-Cooling capacity (2)	kW	73,8	108,0	109,0	117,0	118,0	119,0	132,0	194,0
	Total water flow rate	m³/h	26,1	31,0	31,4	37,3	37,4	38,4	45,6	60,9
	Total pressure drop	kPa	230	193	184	146	193	193	202	288
	Compressors		scroll	scroll	scroll	scroll	scroll	scroll	scroll	scroll
	Quantity	n.	2	2	2	4	2	2	4	4
	Capacity steps	n.	2	2	2	4	2	2	4	4
	Axial fans	n.	2	3	3	3	3	4	4	6
	Total air flow	m³/h	50000	66000	66000	72000	72000	76000	88000	108000
	Air circuits	n.	1	1	1	1	1	1	1	1
	Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
	Total refrigerant charge (optional excluded)	kg	43,6	62,6	64,6	68,4	66,4	67,0	68,0	94,2
	Gas circuits	n.	1	1	2	2	1	2	2	2
	Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
	Max unit operating current (FLA)	A	127,8	149,6	149,6	180,3	184,5	188,6	220,1	263,8
	Unit starting current (LRA)	A	366,3	387,1	387,1	356,7	477,7	481,6	433,1	495,8
	EER (1)	kW/kW	2,53	2,78	2,82	2,65	2,57	2,58	2,49	2,61
	ESEER		3,47	3,60	3,33	3,85	3,49	3,09	3,64	3,74
	Sound power level [Lw] (3)	dB(A)	93,5	95,4	95,4	94,8	94,8	94,8	100,0	101,8
	Average sound pressure level [Lpm] (4)	dB(A)	75,4	76,0	76,0	75,4	75,4	75,4	80,2	81,5
	Net weight	kg	1350	1560	1580	1840	1710	1730	1850	2260
OPTIONAL	Hydraulic connections									
	Evaporator IN/OUT - ISO 7/1 - R	Ø	--	--	--	--	--	--	--	--
	Evaporator IN/OUT - OD (5)	Ø mm	76,1	88,9	88,9	88,9	88,9	88,9	88,9	88,9
OPTIONAL	Partial heat recovery (6)									
	Heating capacity	kW	48,6	57,8	58,7	69,6	69,8	71,7	85,0	101,0
OPTIONAL	Pumping group									
	Power input	kW	2,2	4,0	4,0	4,0	4,0	4,0	5,5	7,5
LNO KIT 100%	Cooling capacity (1)	kW	141,0	168,0	171,0	202,0	203,0	208,0	247,0	331,0
	Unit power input	kW	55,7	60,4	60,6	76,2	79,0	80,6	99,2	126,8
	Free-Cooling capacity (2)	kW	73,8	108,0	109,0	117,0	118,0	119,0	132,0	194,0
	Total air flow	m³/h	50000	66000	66000	72000	72000	76000	88000	108000
	EER (1)	kW/kW	2,53	2,78	2,82	2,65	2,57	2,58	2,49	2,61
	Sound power level [Lw] (3)	dB(A)	93,3	95,2	95,2	94,6	94,6	94,6	96,3	97,5
	Average sound pressure level [Lpm] (4)	dB(A)	75,2	75,8	75,8	75,3	75,3	75,3	76,5	77,2
LNO KIT 85%	Cooling capacity (1)	kW	138,0	164,0	167,0	197,0	198,0	203,0	240,0	323,0
	Unit power input	kW	56,8	61,4	61,6	77,9	80,5	81,5	101,3	129,2
	Free-Cooling capacity (2)	kW	73,3	108,0	108,0	117,0	118,0	118,0	131,0	193,0
	Total air flow	m³/h	42500	56100	56100	61200	61200	64600	74800	91800
	EER (1)	kW/kW	2,43	2,67	2,71	2,53	2,46	2,49	2,37	2,50
	Sound power level [Lw] (3)	dB(A)	90,0	91,9	91,9	91,3	91,3	91,3	93,3	94,6
	Average sound pressure level [Lpm] (4)	dB(A)	71,9	72,5	72,5	71,9	71,9	71,9	73,5	74,2
ELN KIT	Cooling capacity (1)	kW	132,0	159,0	161,0	190,0	190,0	195,0	231,0	311,0
	Unit power input	kW	56,7	59,8	60,1	78,2	80,2	79,6	100,4	125,4
	Free-Cooling capacity (2)	kW	72,4	107,0	107,0	115,0	116,0	117,0	130,0	192,0
	Total air flow	m³/h	35000	46200	46200	50400	50400	53200	61600	75600
	EER (1)	kW/kW	2,33	2,66	2,68	2,43	2,37	2,45	2,30	2,48
	Sound power level [Lw] (3)	dB(A)	84,3	86,0	86,0	85,6	85,6	85,6	88,2	89,7
	Average sound pressure level [Lpm] (4)	dB(A)	65,7	66,6	66,6	66,3	66,3	66,3	68,4	69,4

1. Referred to glycol solution temperature 15/10°C; 20% Ethylene glycol solution; air temperature to the condenser 35°C. Fouling factor of the exchangers 0,043 m²K/kW.
2. Referred to glycol solution inlet temperature 15°C; 20% Ethylene glycol solution; ambient temperature 3°C. Fouling factor of the exchangers 0,043 m²K/kW.
3. Sound power level [Lw] according to ISO EN 9614 - 2.
4. Average sound pressure level [Lp_m] 1m far according to ISO EN 3744.
5. Hydraulic connection with grooved end complete with flexible joint and adapter pipe for solder connection.
6. Referred to glycol solution temperature 15/10°C; 20% Ethylene glycol solution; air temperature to the condenser 35°C. Water temperature heat recovery 40/45°C - 0% glycol solution; Fouling factor of the exchangers 0,043 m²K/kW.

DIMENSIONS (mm)

SIZE N	a	b	c
N6	2580	1200	1630
N7	3020	1200	1950
N8	4400	1800	1990
N9	3600	2290	2250
N10	4600	2290	2250

