Application guide
ECOLEAN - EAC/EAR

• • • Providing indoor climate comfort

MSL76E-0104 12-2006

CONTENTS

Our company's products comply with European standards.

The manufacturing of EcoLean™ answers to ISO9001 control quality system.

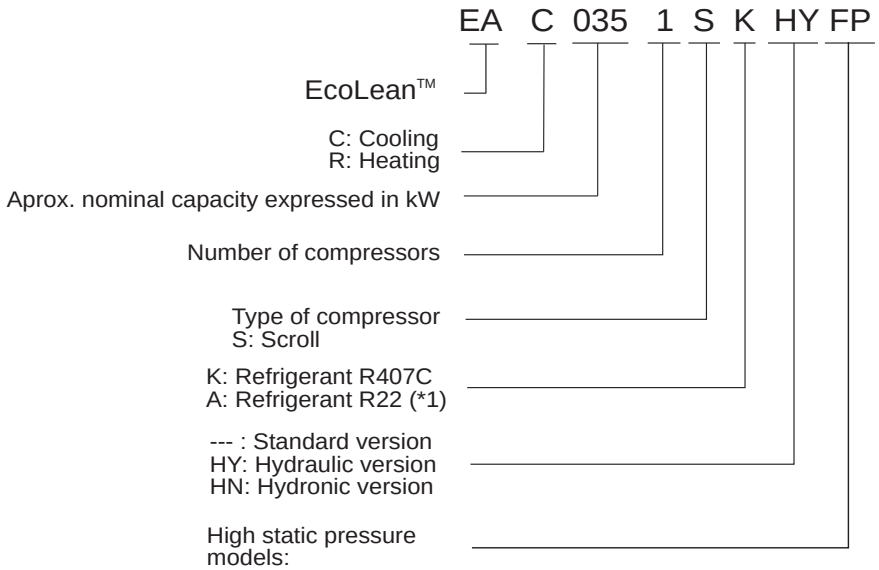
Lennox have been providing environmental solutions since 1895, our range of EcoLean™ reversible chillers continues to meet the standards that have made LENNOX a household name. Flexible design solutions to meet YOUR needs and uncompromising attention to detail. Engineered to last, simple to maintain and Quality that comes as standard.
Information on local contacts at www.lennoxeurope.com.

In order to ensure conformity of finished product with the customers' order and the perfect refrigeration and electrical operation of the unit, the EcoLean™ chillers are systematically tested in the test station before shipping.

With low dimensions and quiet operation, the EcoLean™ chillers make use of the finest in technology to satisfy the strictest reliability and safety requirements.

EcoLean™ units are equipped with hermetic scroll type compressors .

EXAMPLES OF UNITS RANGES DESIGNATIONS



(*1) R22 is only for units used outside the EEC.

STANDARD ACCESSORIES FITTED SUPPLIED ON THE VARIOUS VERSIONS

- STANDARD VERSION UNIT
- Piping and inlet/outlet connections.

- HYDRAULIC VERSION UNIT
- Piping and inlet/outlet connections.
- Water pump.
- Expansion vessel.
- Collapsible water filter.
- Safety valve.
- Manometer.
- Flow switch.

- HYDRONIC VERSION UNIT
- Piping and inlet/outlet connections.
- Water pump.
- Expansion vessel.
- Collapsible water filter.
- Safety valve.
- Manometer.
- Flow switch.
- Water tank.

FAN STATIC PRESSURES

- STANDARD VERSION UNIT (all models)
- Available static pressure sown to 50 Pa.

- FP VERSION UNIT (0091 to 0211 models)
- Available static pressure sown to 200 Pa.

- FP1 VERSION UNIT (0251 to 1303 models)
- Available static pressure sown to 120 Pa.

- FP2 VERSION UNIT (0251 to 1303 models)
- Available static pressure sown to 250 or 350 Pa.

CHASSIS

- Rigid, hot dipped galvanized chassis.
- Polyester paint - Color RAL 9002.
- Unit lifting and handling via the base frame.

COMPRESSOR

- Scroll type.
- Suction gas cooled integral motor.
- Crankcase heater.
- Direct on line start.
- Mounted on high efficiency cellular polyurethane vibration absorbers.

PLATE EXCHANGER

- Stainless steel plate brazed.
- Thermal insulation by top grade 10 mm plastic foam.

OUTDOOR EXCHANGER

- Expanded copper tubes and high efficiency fins.

FANS

- Standard version: axial fans 900 rpm, direct coupling
- FP version: centrifugal fans 1450 rpm, direct coupling
- FP1 version: axial fans 1450 rpm, direct coupling 0251 to 0812 models, axial fans 900rpm ,direct coupling 1003 to1303 models.
- FP2 version: axial fans "short case" 1450 rpm, direct coupling.

REFRIGERATION CIRCUITS ACCESSORIES

Welded and hermetically sealed and including the following components:
- Expansion valve
- Filter drier
- High-pressure switch with automatic reset
- Low-pressure switch with automatic reset (Heat pump units incorporate two of them, one for cooling only cycle and other for heat pump cycle).
- Four-way valve (heat pump units only).
- Liquid device (heat pump units only).

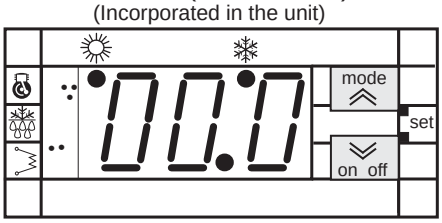
ELECTRICAL PANEL

- Unit wiring in compliance with standard EN 60204-1.
- IP 54 water protection.
- Protection fuses for compressor, fan and water pump.
- Compressor, fan and water pump working contactors
- Crankcase heater.
- Terminal block and wiring for power supply to the unit.

CONTROL

- Model: Climatic® 200/400.
- Control and check by microprocessor.
- Reading of water and refrigerant temperatures.
- Alarm signaling.
- Diagnostic per circuit.
- Adjustment of temperature set points and parameters adapted.
  for operating conditions
- Hour counter and daily balance of operating time for each compressor by "first in/first out" permutation (units with two compressors).
- Possibility of remote alarm signals.
  (Option for some models).
- Antifreeze protection.
- Fan speed control.

DISPLAY (STANDARD)
(Incorporated in the unit)



REFRIGERATING OPTIONS

- HP & LP refrigerant gauges.
- Operating with low water temperature (water outlet 0ºC / -5ºC / -10ºC).
- Heating low ambient kit (-15ºC) . The reverse unit can operate in heating mode down to an ambient temperature of -15ºC (Standard unit just can operate down to -10ºC).
- Low ambient kit. The cooling only unit can operate down to an ambient temperature of -15ºC (Standard unit just can operate down to 0ºC).

SAFETY OPTIONS

- Chilled water flow switch (standard version unit only).
- Water filter (standard version unit only).
- Evaporator anti freeze heater (necessary for ambient temperatures below +5ºC under cooler operation).
- Coil guard.
- Hot gas injection valve (advisable for ambient temperatures below +5 ºC under water cooler operation).

HYDRAULIC OPTIONS

- Water single pump (standard version unit only).
- Isolation valves.
- Twin pumps (models from 0251 to 1303 only).

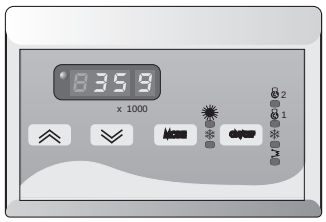
LOW NOISE OPTION

- Compressor noise insulation by sound-proofing jacket.

ELECTRICAL OPTIONS

- Door interlocked main switch.
- Three phase protection.
- Remote control panel for microprocessor controller.
- Water tank electrical heater (only for Hydronic version units).
- Soft starter (3N~400V units).

REMOTE CONTROL (OPTION)



OTHER OPTIONS

- Condenser coil with coated aluminium fins.
- Rubber antivibration mounts, for unit installation.
- Kit air intake plenum, for 0251 to 1303 model units only.
- Kit air discharge plenum, available for high static pressure units only (models from 0251 to 1303).

	Standard version unit	Hydraulic version unit	Hydronic (1) version unit
Main ON/OFF switch	X	X	X
Flow switch	X	**included**	**included**
Water filter	X	**included**	**included**
Evaporator anti freeze protection	X	X	X
Condenser protection guards	X	X	X
Thermostatic hot gas injection	X	X	X
Three phase protection (Three phase units)	X	X	X
HP and LP refrigerant gauges	X	X	X
Epoxy coated Al fin coils treated	X	X	X
Remote display	X	X	X
In/Out isolating valves	X	X	X
Anti-vibration mounts rubber	X	X	X
Compressor noise insulation jacket	X	X	X
"Soft starter" only 3N~400V units	X	X	X
Inlet plenum	X	X	X
Square discharge duct (2)	X	X	X
Low water temperature	X	X	X
Water pump	X	**included**	**included**
Twin pumps (6)	**not available**	X	X
Tank anti-freeze heater	**not available**	**not available**	X
Water tank electrical heater (3)	**not available**	**not available**	X
Heating low ambient kit (-15ºC). EAR units	X	X	X
Low ambient kit (-15ºC). EAC units (4)	X	X	X
BMS (Interface Mod-bus KP06+Bus Adapter)	X	X	X
Alarm relay (5)	X	X	X
Dynamic set point (7)	X	X	X

X Option element
(1) Water tank included
(2) Only versions FP1/FP2
(3) Only for heat pumps units.
(4) Not available for units EAC 0251 FP2 to 0812 FP2
(5) Standard for models: EAR 0472 to 1303 /EAC 1003 to 1303.
(6) For models 0251 to 1303. With twin pumps, water filter has to be mounted outside the unit. (1003 to 1303 models)
(7) Not available for units EAC 0472 to 0812.

AVAILABLE OPTIONS

NOTE: All the options will be supplied and mounted in the unit, except the water filter, water isolation valves, rubber antivibration mounts, remote controller and air intake plenum supplied to mount in the moment of installation.

MAIN ON/OFF SWITCH
Located at the electrical box of the unit.

FLOW SWITCH (included on Hydraulic and Hydronic versions).
The flow switch stops the unit if water flow is lower than the minimum.

WATER FILTER (included on Hydraulic and Hydronic versions).
The water filter must be fitted in the water inlet of the unit, it protects the unit against particles (greater than 1 mm) getting inside the water circuit, and prevents the water interchanger gets dirty.
NOTE: IT IS NECESSARY TO FIT A WATER FILTER IN THE WATER INLET OF THE UNIT

EVAPORATOR ANTI FREEZE PROTECTION
The evaporator anti freeze heater prevents the water exchange from low temperatures.

CONDENSER PROTECTION GUARDS
The condenser coil protection grill prevents light damage to the coil when shipping and when installed. It cannot protect against very heavy impacts.

THERMOSTATIC HOT GAS INJECTION
Supplies hot gas which is injected into the evaporator gas to increase the suction pressure if the chilled water temperature falls to low. It can be used to allow the unit to operate at reduced capacity, if the water temperature falls below the set point (5ºC). It is controlled via the microprocessor controller ON at (5ºC) and OFF (6ºC) for example. This option is NOT available for units selected with low water temperature option.

THREE PHASE PROTECTION
Located at the electrical box of the unit, it assures that unit will not begin operation if connection phases of compressor are not correct. Should this occur, then just switch two phase connections.

HP AND LP RERRIGERANT GAUGES
Visualize the high and low pressures of the refrigerant circuit.

EPOXY COATED ALUMINIUM FIN COILS TREATED
Special protection of the aluminium condenser coil fins, to give improved protection from aggressive external environmental conditions.

REMOTE DISPLAY
It controls and shows the unit's operating, it may be installed until 50 m from the unit.

IN/OUT ISOLATING VALVES
To fit at inlet and water outlet of the unit. Isolating the unit from water circuit, so service and maintenance of the unit will be easier.
For units EAC 1003-1303 SKHN this option includes another valve in order to isolate the buffer tank.

ANTI-VIBRATION MOUNTS RUBBER
To install under the unit, to avoid transmission of vibrations, to the floor where unit is installed, while unit is operating.

COMPRESSOR NOISE INSULATION JACKET
Each compressor is fitted with a compressor acoustic jacket this provides attenuation of the compressor noise that radiates from the unit when in operation.

WATER PUMP (included on Hydraulic and Hydronic versions)

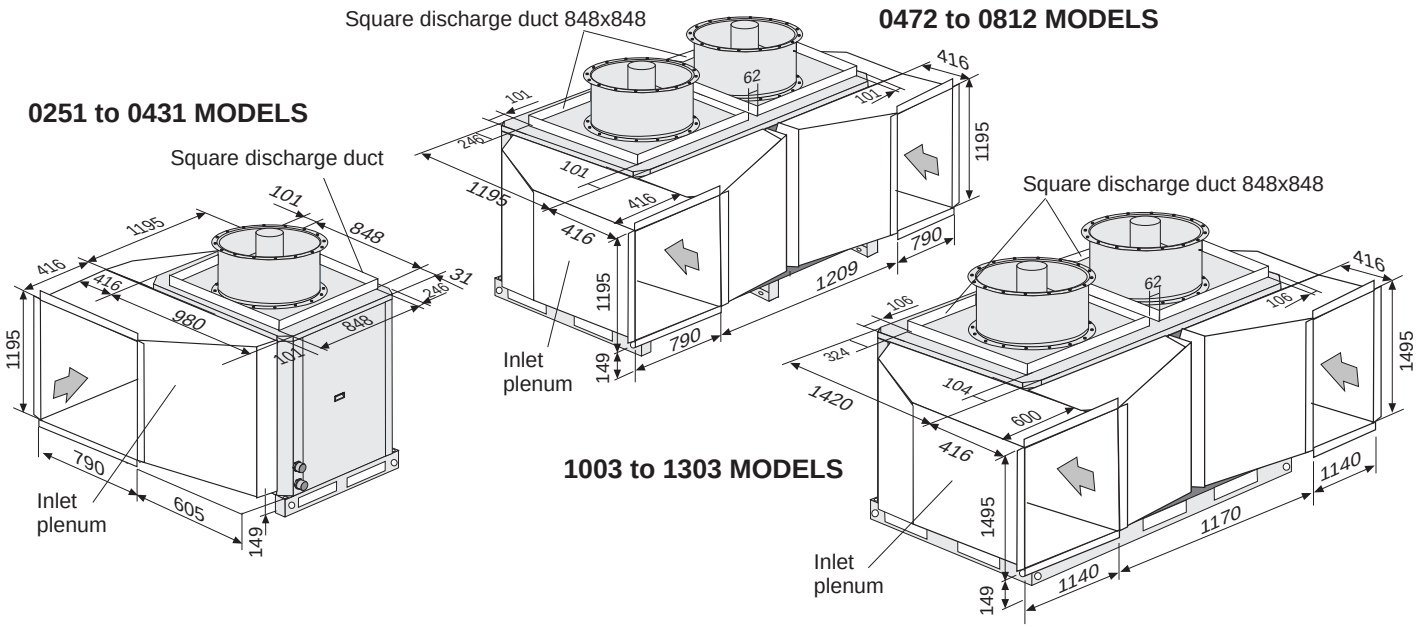
TWIN PUMPS KIT (models from 0251 to 1303 only)
It is formed by two-water pump mounted on parallel and with same characteristics as the single one. Only one pump is working the other remains on stand by.
When the water pump, which is operating cuts out, and the pump turns off, automatically starting the water pump on stand by.
It is possible to select which one of the pumps we want to be working through an external switch supplied with the kit.
With the twin pumps, the available static pressure will decrease 5% from the available static pressure with one water pump only.

SOFT STARTER (for 3N~400V units only)
It is an electronic element, which reduces the peak compressor starting current up to 40%.

INLET PLENUM (models from 0251 to 1303 only)
It is a accessory for adapting the condenser air intake to accept a duct.

SQUARE DISCHARGE DUCT (FP1 and FP2 unit versions and models from 0251 to 1303 only).
It is formed by 1 or 2 square frames, for adapting discharge air from the unit to a square duct.

AVAILABLE OPTIONS



LOW WATER TEMPERATURE

Necessary for water outlet temperatures below +5ºC

There are three different kits, which depend for selecting on the water outlet temperature desired, as the following table shows:

Denomination	Application duty on the water outlet temperature
KIT LOW WATER TEMPERATURE 0ºC	For water temperatures below 5ºC to 0ºC
KIT LOW WATER TEMPERATURE -5ºC	For water temperatures below 0ºC to -5ºC
KIT LOW WATER TEMPERATURE -10ºC	For water temperatures below -5ºC to -10ºC

TANK ANTI-FREEZE HEATER AND WATER TANK ELECTRICAL HEATER (available only for Hydronic version)

An immersion heater can be supplied complete with safety thermostat and pressure switch fitted in the buffer tank, or an anti-freeze and supplementary heater (heat pump units only).

Tank Anti-freeze heater: It starts when water temperature in the buffer tank is lower than + 5ºC (Not for units with low water temperature kit).

Water tank electrical heater: Heat pump units only. The heater works as anti-freeze heater as explained before and as supplementary heater, when inlet warm water reaches a temperature below a value selected (example: 30 ºC) through an independent thermostat included.

THE POWER INPUT IS:

Models		0091/0211	0251/0431	0472/0812	1003/1303
Voltage	v	1N~230V	3~230V - 3~400V		3~400V
Tank anti-freeze heater	kW	2,25	2,25	2,25	6
Water tank electrical heater*	kW	6	9	12	24

(*) Heat pump units only

LOW AMBIENT KIT (-15ºC)
(Not available for EAC 0251 FP2 to EAC 0812 FP2)

- With this option, the cooling only units (EAC) can operate with ambient temperature below 0ºC (standard unit limit) down to (-15ºC).
- For models EAC 1003 to 1303 there are 2 versions:
  * **Low ambient kit (-15ºC) Air conditioner (Comfort applications).**
    When the ambient temperature is 0ºC, one circuit is disabled, only the other circuit can operate below 0ºC down to (-15ºC).
  * **Low ambient kit (-15ºC) Process (Industrial applications).**
    Both circuits can operate below 0ºC down to (-15ºC).

HEATING LOW AMBIENT KIT (-15ºC)

With this option heat pump units (EAR) on heating mode can operate with ambient temperature below (-10ºC) (standard unit limit) down to (-15ºC).

BMS (Interface Mod-bus KP06+Bus Adapter)

It is possible to connect several units with a communication system (MOD BUS Protocol).

ALARM RELAY

It is a free voltage contact which indicates a general alarm in the unit.

DYNAMIC SET POINT
(Not available for units EAC 0472 to 0812)

It changes cooling and heating set point according ambient temperature (an extra sensor must be installed).

AXIAL FAN UNITS

COOLING MODE

MODELS	ºC Water outlet temperature	Air inlet temperature											
		28°C		30°C		32°C		35°C		40°C		45 °C	
		Qo	P	Qo	P	Qo	P	Qo	P	Qo	P	Qo	P
EAC 0091 EAR 0091	6	8,92	2,92	9,09	2,95	8,85	3,01	8,58	3,08	7,91	3,41	7,40	3,74
	7	9,11	2,98	9,31	3,00	9,06	3,05	8,84	3,09	8,14	3,43	7,61	3,77
	9	9,83	3,06	9,96	3,09	9,69	3,14	9,42	3,20	8,79	3,53	8,32	3,88
	11	10,56	3,13	10,60	3,18	10,32	3,24	10,04	3,30	9,45	3,65	9,03	4,00
EAC 0111 EAR 0111	6	11,25	3,59	11,47	3,62	11,16	3,70	10,82	3,79	9,98	4,19	9,33	4,59
	7	11,49	3,66	11,75	3,68	11,42	3,75	11,2	3,78	10,26	4,21	9,60	4,63
	9	12,40	3,76	12,56	3,79	12,22	3,86	11,88	3,93	11,09	4,34	10,49	4,77
	11	13,31	3,85	13,38	3,91	13,02	3,98	12,67	4,06	11,91	4,48	11,39	4,91
EAC 0151 EAR 0151	6	13,48	4,66	13,74	4,70	13,37	4,79	12,96	4,91	11,96	5,43	11,18	5,95
	7	13,77	4,75	14,08	4,77	13,69	4,86	13,4	4,93	12,30	5,46	11,50	6,00
	9	14,86	4,87	15,05	4,92	14,65	5,01	14,24	5,10	13,29	5,63	12,57	6,18
	11	15,95	4,99	16,03	5,06	15,60	5,16	15,18	5,26	14,28	5,81	13,64	6,37
EAC 0191 EAR 0191	6	17,54	6,04	17,87	6,09	17,39	6,21	16,86	6,36	15,56	7,04	14,54	7,71
	7	17,91	6,15	18,31	6,18	17,81	6,29	17,4	6,35	15,99	7,07	14,96	7,78
	9	19,33	6,31	19,58	6,37	19,05	6,49	18,52	6,61	17,28	7,30	16,35	8,01
	11	20,75	6,47	20,85	6,56	20,30	6,69	19,75	6,81	18,57	7,53	17,74	8,25
EAC 0211 EAR 0211	6	19,36	6,70	19,73	6,75	19,20	6,89	18,62	7,06	17,18	7,81	16,05	8,56
	7	19,77	6,82	20,22	6,86	19,66	6,98	19,2	7,06	17,66	7,85	16,52	8,63
	9	21,34	7,00	21,62	7,07	21,03	7,20	20,45	7,33	19,08	8,10	18,05	8,89
	11	22,91	7,18	23,01	7,28	22,41	7,42	21,80	7,56	20,50	8,35	19,59	9,15
EAC 0251 EAR 0251	6	23,31	8,79	23,69	8,87	23,01	9,05	22,31	9,22	20,63	10,17	19,36	11,12
	7	23,81	8,90	24,34	8,94	23,67	9,10	23,00	9,27	21,26	10,22	19,89	11,23
	9	25,70	9,14	26,03	9,23	25,33	9,40	24,63	9,57	22,98	10,57	21,74	11,60
	11	27,59	9,37	27,71	9,50	26,98	9,69	26,25	9,87	24,69	10,90	23,59	11,95
EAC 0291 EAR 0291	6	27,36	9,89	27,81	9,98	27,02	10,18	26,19	10,37	24,22	11,44	22,72	12,51
	7	27,95	10,01	28,58	10,06	27,79	10,23	27,00	10,43	24,96	11,50	23,35	12,64
	9	30,17	10,28	30,56	10,38	29,73	10,57	28,91	10,76	26,97	11,89	25,52	13,06
	11	32,39	10,55	32,53	10,69	31,68	10,90	30,82	11,10	28,98	12,26	27,69	13,44
EAC 0351 EAR 0351	6	32,42	11,49	32,96	11,60	32,02	11,83	31,03	12,05	28,70	13,29	26,93	14,53
	7	33,12	11,63	33,87	11,69	32,93	11,89	32,00	12,12	29,58	13,36	27,67	14,69
	9	35,75	11,95	36,21	12,07	35,24	12,29	34,26	12,51	31,97	13,82	30,25	15,17
	11	38,38	12,25	38,56	12,43	37,54	12,66	36,52	12,90	34,35	14,25	32,82	15,62
EAC 0431 EAR 0431	6	39,01	14,03	39,65	14,16	38,52	14,44	37,34	14,72	34,53	16,23	32,40	17,75
	7	39,85	14,20	40,75	14,27	39,62	14,52	38,50	14,80	35,59	16,32	33,29	17,94
	9	43,01	14,59	43,57	14,73	42,39	15,00	41,22	15,27	38,46	16,88	36,39	18,53
	11	46,18	14,96	46,39	15,17	45,16	15,46	43,94	15,75	41,32	17,40	39,49	19,08

Qo : Net cooling capacity in kW

Nominal conditions

P : Total power input in kW (compressor and fan motor)

Fouling factor: 0,44 m²C/kW

Water ΔT = 5 ºC

Units are tested and rated in accordance with Eurovent standards

AXIAL FAN UNITS

COOLING MODE

MODELS	ºC Water outlet temperature	Air inlet temperature											
		28°C		30°C		32°C		35°C		40°C		45 °C	
		Qo	P	Qo	P	Qo	P	Qo	P	Qo	P	Qo	P
EAC 0472 EAR 0472	6	44,58	16,12	45,31	16,27	44,03	16,59	42,67	16,91	39,47	18,65	37,03	20,38
	7	45,54	16,31	46,57	16,40	45,29	16,68	44,00	17,00	40,68	18,74	38,05	20,60
	9	49,16	16,76	49,79	16,92	48,45	17,23	47,11	17,54	43,95	19,38	41,59	21,28
	11	52,78	17,19	53,02	17,43	51,62	17,76	50,22	18,09	47,23	19,99	45,13	21,91
EAC 0552 EAR 0552	6	52,08	18,68	52,94	18,85	51,43	19,22	49,85	19,59	46,11	21,61	43,26	23,62
	7	53,20	18,90	54,40	19,00	52,90	19,33	51,40	19,70	47,52	21,72	44,45	23,87
	9	57,43	19,42	58,17	19,61	56,60	19,97	55,03	20,33	51,35	22,46	48,58	24,66
	11	61,66	19,92	61,94	20,20	60,30	20,58	58,66	20,97	55,17	23,16	52,72	25,39
EAC 0672 EAR 0672	6	63,33	22,82	64,37	23,02	62,53	23,48	60,61	23,93	56,06	26,39	52,60	28,85
	7	64,69	23,09	66,15	23,21	64,32	23,61	62,50	24,06	57,78	26,52	54,04	29,16
	9	69,83	23,72	70,73	23,95	68,82	24,39	66,91	24,83	62,43	27,43	59,07	30,12
	11	74,97	24,33	75,31	24,67	73,32	25,14	71,33	25,61	67,08	28,29	64,10	31,01
EAC 0812 EAR 0812	6	76,50	28,35	77,76	28,61	75,54	29,18	73,22	29,74	67,72	32,79	63,54	35,85
	7	78,15	28,69	79,91	28,84	77,71	29,34	75,50	29,90	69,80	32,96	65,29	36,24
	9	84,36	29,48	85,44	29,77	83,14	30,31	80,84	30,86	75,42	34,09	71,36	37,43
	11	90,57	30,23	90,98	30,65	88,57	31,24	86,17	31,83	81,04	35,16	77,44	38,54
EAC 1003 EAR 1003	6	89,37	33,36	90,84	33,66	88,25	34,33	87,29	34,30	80,73	37,83	75,74	41,36
	7	91,29	33,76	93,35	33,93	90,78	34,52	90,00	34,49	83,21	38,02	77,83	41,80
	9	98,55	34,69	99,82	35,02	97,12	35,67	96,36	35,60	89,90	39,33	85,07	43,17
	11	105,80	35,57	106,28	36,07	103,47	36,76	102,72	36,71	96,60	40,56	92,31	44,45
EAC 1103 EAR 1103	6	102,34	36,87	104,02	37,21	101,06	37,94	97,95	38,29	90,60	42,23	85,00	46,17
	7	104,54	37,31	106,90	37,50	103,95	38,16	101,00	38,50	93,37	42,44	87,34	46,66
	9	112,85	38,34	114,30	38,71	111,22	39,42	108,14	39,73	100,89	43,90	95,47	48,19
	11	121,15	39,32	121,70	39,86	118,49	40,63	115,28	40,98	108,41	45,27	103,60	49,62
EAC 1203 EAR 1203	6	114,86	42,36	116,74	42,74	113,42	43,58	111,05	43,55	102,71	48,03	96,36	52,51
	7	117,33	42,86	119,98	43,08	116,67	43,83	114,50	43,79	105,86	48,28	99,01	53,07
	9	126,65	44,04	128,28	44,47	124,82	45,28	122,59	45,19	114,38	49,93	108,23	54,82
	11	135,97	45,16	136,59	45,79	132,98	46,67	130,68	46,61	122,90	51,49	117,44	56,44
EAC 1303 EAR 1303	6	126,11	46,89	128,18	47,32	124,53	48,25	123,17	48,22	113,92	53,17	106,88	58,13
	7	128,82	47,45	131,73	47,69	128,10	48,52	127,00	48,48	117,41	53,45	109,82	58,75
	9	139,06	48,76	140,85	49,23	137,05	50,13	135,97	50,03	126,86	55,28	120,04	60,69
	11	149,29	50,00	149,97	50,70	146,01	51,66	144,95	51,60	136,32	57,01	130,27	62,49

Qo : Net cooling capacity in kW

P : Total power input in kW (compressor and fan motor)

Fouling factor : 0,44 m²C/kW

Water ΔT = 5 ºC

Nominal conditions

Units are tested and rated in accordance with Eurovent standards

AXIAL FAN UNITS

HEATING MODE

MODELS	ºC Ambient air temperature	Hot water outlet temperature									
		30°C		35°C		40°C		45°C		50°C	
		Qc	P	Qc	P	Qc	P	Qc	P	Qc	P
EAR 0091	11	10,53	2,43	10,24	2,65	10,14	2,91	9,98	3,18	9,68	3,44
	7	9,55	2,38	9,29	2,60	9,15	2,84	8.96	3,37	8,66	3,35
	5	9,07	2,36	8,82	2,57	8,66	2,81	8,51	3,07	8,15	3,31
	0	8,03	2,31	7,81	2,51	7,59	2,73	7,39	2,99	6,97	3,21
	-5	7,24	2,27	7,03	2,47	6,77	2,69	6,53	2,94	---	---
	-10	6,10	2,24	5,89	2,42	5,57	2,65	---	---	---	---
EAR 0111	11	12,99	3,21	12,63	3,51	12,50	3,84	12,31	4,20	11,93	4,55
	7	11,78	3,15	11,46	3,44	11,28	3,75	11,0	4,45	10,69	4,42
	5	11,19	3,12	10,88	3,40	10,68	3,71	10,49	4,05	10,05	4,36
	0	9,90	3,05	9,63	3,31	9,36	3,61	9,12	3,94	8,60	4,24
	-5	8,92	3,00	8,67	3,25	8,34	3,55	8,05	3,87	---	---
	-10	7,52	2,95	7,26	3,19	6,87	3,49	---	---	---	---
EAR 0151	11	15,39	3,80	14,97	4,15	14,81	4,55	14,58	4,98	14,14	5,39
	7	13,95	3,73	13,57	4,07	13,36	4,45	13,1	5.28	12,66	5,24
	5	13,25	3,70	12,89	4,03	12,65	4,39	12,43	4,80	11,91	5,17
	0	11,73	3,61	11,41	3,93	11,09	4,28	10,80	4,67	10,19	5,02
	-5	10,57	3,56	10,27	3,86	9,88	4,20	9,54	4,59	---	---
	-10	8,91	3,50	8,61	3,79	8,14	4,14	---	---	---	---
EAR 0191	11	20,48	4,95	19,92	5,41	19,71	5,92	19,40	6,47	18,81	6,99
	7	18,57	4,85	18,06	5,29	17,78	5,77	17,4	6,82	16,85	6,79
	5	17,64	4,80	17,16	5,23	16,84	5,70	16,54	6,22	15,84	6,69
	0	15,62	4,68	15,18	5,09	14,76	5,54	14,37	6,04	13,56	6,49
	-5	14,07	4,61	13,66	4,99	13,15	5,44	12,69	5,94	---	---
	-10	11,85	4,52	11,45	4,89	10,84	5,35	---	---	---	---
EAR 0211	11	23,17	5,57	22,54	6,09	22,30	6,66	21,96	7,28	21,29	7,88
	7	21,01	5,46	20,44	5,96	20,12	6,50	19,7	7,70	19,06	7,66
	5	19,96	5,41	19,41	5,89	19,05	6,42	18,71	7,01	17,93	7,55
	0	17,67	5,28	17,18	5,74	16,70	6,24	16,26	6,81	15,34	7,32
	-5	15,92	5,19	15,46	5,63	14,88	6,13	14,36	6,70	---	---
	-10	13,41	5,10	12,96	5,52	12,26	6,03	---	---	---	---
EAR 0251	11	28,09	7,02	27,32	7,66	27,03	8,38	26,61	9,15	25,80	9,88
	7	25,46	6,87	24,77	7,48	24,39	8,16	24,00	8,90	23,11	9,59
	5	24,19	6,79	23,53	7,39	23,09	8,05	22,68	8,78	21,73	9,45
	0	21,41	6,62	20,82	7,18	20,25	7,81	19,71	8,52	18,59	9,16
	-5	19,30	6,50	18,74	7,04	18,04	7,66	17,41	8,37	---	---
	-10	16,26	6,38	15,71	6,89	14,86	7,53	---	---	---	---
EAR 0291	11	32,18	7,90	31,30	8,62	30,97	9,42	30,49	10,29	29,56	11,12
	7	29,18	7,73	28,38	8,42	27,94	9,18	27,50	10,00	26,48	10,79
	5	27,72	7,64	26,96	8,31	26,46	9,06	25,99	9,88	24,90	10,63
	0	24,54	7,45	23,86	8,09	23,20	8,79	22,59	9,59	21,30	10,31
	-5	22,11	7,32	21,47	7,93	20,67	8,63	19,95	9,42	---	---
	-10	18,63	7,18	18,00	7,76	17,03	8,48	---	---	---	---

Qc : Net heating capacity in kW
P : Total power input in kW (compressor and fan motor)
Fouling factor : 0,44 m²C/kW
Water ΔT = 5 ºC

Nominal conditions

Note: with the option heating low ambient kit (-15ºC), it is possible the unit operation up to a hot water outlet temperature of 50ºC, and an ambient temperature of -15ºC. To calculate the capacity at -15ºC, it is necessary to extrapolate figures on the table and then apply a reduction of a 15%.

Units are tested and rated in accordance with Eurovent standards

AXIAL FAN UNITS

HEATING MODE

MODELS	ºC Ambient air temperature	Hot water outlet temperature									
		30°C		35°C		40°C		45°C		50°C	
		Qc	P	Qc	P	Qc	P	Qc	P	Qc	P
EAR 0351	11	39,79	9,92	38,70	10,83	38,29	11,85	37,70	12,94	36,55	13,99
	7	36,07	9,72	35,09	10,59	34,55	11,56	34,00	12,60	32,73	13,59
	5	34,27	9,61	33,34	10,47	32,72	11,41	32,14	12,44	30,78	13,39
	0	30,34	9,38	29,50	10,18	28,68	11,08	27,93	12,09	26,34	12,99
	-5	27,34	9,22	26,54	9,99	25,56	10,87	24,66	11,88	---	---
	-10	23,03	9,05	22,25	9,79	21,05	10,70	---	---	---	---
EAR 0431	11	45,64	11,30	44,39	12,33	43,92	13,49	43,24	14,73	41,93	15,92
	7	41,38	11,06	40,25	12,05	39,63	13,15	39,00	14,32	37,55	15,46
	5	39,31	10,94	38,24	11,91	37,53	12,98	36,86	14,15	35,31	15,23
	0	34,80	10,67	33,84	11,58	32,90	12,60	32,03	13,74	30,21	14,77
	-5	31,35	10,48	30,45	11,36	29,32	12,36	28,29	13,50	---	---
	-10	26,42	10,29	25,52	11,13	24,15	12,16	---	---	---	---
EAR 0472	11	55,59	13,72	54,06	14,93	53,49	16,31	52,67	17,79	51,06	19,20
	7	50,40	13,38	49,02	14,55	48,27	15,86	47,50	17,30	45,73	18,60
	5	47,87	13,21	46,57	14,36	45,71	15,63	44,89	17,03	43,01	18,31
	0	42,38	12,85	41,22	13,94	40,07	15,15	39,02	16,51	36,80	17,73
	-5	38,19	12,60	37,08	13,65	35,71	14,84	34,45	16,20	---	---
	-10	32,17	12,35	31,08	13,35	29,41	14,58	---	---	---	---
EAR 0552	11	63,78	15,82	62,03	17,21	61,38	18,79	60,43	20,49	58,59	22,10
	7	57,82	15,42	56,25	16,76	55,38	18,26	54,50	19,87	52,47	21,41
	5	54,93	15,22	53,44	16,53	52,44	17,99	51,51	19,60	49,34	21,07
	0	48,63	14,79	47,29	16,04	45,97	17,43	44,76	18,99	42,22	20,39
	-5	43,82	14,50	42,55	15,70	40,97	17,07	39,53	18,63	---	---
	-10	36,91	14,20	35,66	15,35	33,75	16,76	---	---	---	---
EAR 0672	11	75,48	18,77	73,41	20,37	72,64	22,22	71,52	24,19	69,34	26,05
	7	68,43	18,23	66,57	19,78	65,54	21,52	64,50	23,43	62,10	25,17
	5	65,01	17,96	63,24	19,48	62,06	21,18	60,96	23,05	58,40	24,74
	0	57,55	17,40	55,97	18,85	54,41	20,46	52,98	22,28	49,97	23,90
	-5	51,86	17,03	50,35	18,42	48,48	20,02	46,78	21,83	---	---
	-10	43,69	16,65	42,21	17,98	39,94	19,62	---	---	---	---
EAR 0812	11	92,45	23,58	89,92	25,55	88,97	27,83	87,60	30,27	84,93	32,56
	7	83,82	22,84	81,54	24,75	80,27	26,91	79,00	29,30	76,06	31,41
	5	79,62	22,48	77,46	24,36	76,02	26,46	74,67	28,77	71,53	30,86
	0	70,49	21,74	68,55	23,53	66,64	25,52	64,89	27,77	61,20	29,77
	-5	63,51	21,25	61,67	22,97	59,38	24,94	57,30	27,18	---	---
	-10	53,51	20,73	51,70	22,38	48,92	24,41	---	---	---	---

Qc : Net heating capacity in kW
P : Total power input in kW (compressor and fan motor)
Fouling factor : 0,44 m²C/kW
Water ΔT = 5 ºC

Nominal conditions

Note: with the option heating low ambient kit (-15ºC), it is possible the unit operation up to a hot water outlet temperature of 50ºC, and an ambient temperature of -15ºC. To calculate the capacity at -15ºC, it is necessary to extrapolate figures on the table and then apply a reduction of a 15%.

Units are tested and rated in accordance with Eurovent standards

AXIAL FAN UNITS

HEATING MODE

MODELS	ºC Ambient air temperature	Hot water outlet temperature									
		30°C		35°C		40°C		45°C		50°C	
		Qc	P	Qc	P	Qc	P	Qc	P	Qc	P
EAR 1003	11	103,83	25,24	100,00	29,24	99,92	32,27	98,38	35,20	95,38	37,98
	7	96,55	25,91	93,92	28,18	92,47	30,71	91,00	33,50	87,61	36,02
	5	91,72	25,58	89,23	27,80	87,56	30,27	86,01	32,98	82,39	35,46
	0	81,20	24,88	78,96	26,99	76,76	29,33	74,74	31,97	70,50	34,33
	-5	73,16	24,40	71,04	26,43	68,40	28,74	66,00	31,37	---	---
	-10	61,64	23,91	59,55	25,84	56,35	28,23	---	---	---	---
EAR 1103	11	116,95	28,74	113,75	31,26	112,55	34,14	110,81	37,23	107,43	40,16
	7	108,75	29,48	105,79	32,05	104,15	34,92	102,50	38,00	98,68	40,94
	5	103,31	29,10	100,50	31,61	98,63	34,41	96,88	37,48	92,80	40,29
	0	91,46	28,28	88,94	30,67	86,46	33,32	84,19	36,31	79,41	38,99
	-5	82,41	27,73	80,02	30,02	77,05	32,65	74,34	35,63	---	---
	-10	69,43	27,16	67,07	29,35	63,47	32,05	---	---	---	---
EAR 1203	11	132,81	33,54	129,17	36,39	127,81	39,69	125,84	43,21	122,00	46,53
	7	124,14	33,92	120,76	36,80	118,89	40,05	117,00	43,60	112,64	46,83
	5	117,92	33,43	114,72	36,25	112,58	39,41	110,58	42,88	105,93	46,05
	0	104,40	32,38	101,52	35,08	98,70	38,08	96,10	41,46	90,64	44,47
	-5	94,06	31,69	91,34	34,29	87,95	37,25	84,86	40,62	---	---
	-10	79,25	30,97	76,56	33,45	72,45	36,51	---	---	---	---
EAR 1303	11	147,57	37,47	143,53	40,59	142,01	44,22	139,82	48,09	135,56	51,73
	7	137,93	38,20	134,17	41,39	132,10	45,00	130,00	49,00	125,16	52,53
	5	131,03	37,60	127,46	40,74	125,09	44,25	122,87	48,11	117,70	51,61
	0	116,00	36,36	112,80	39,35	109,66	42,68	106,78	46,44	100,71	49,78
	-5	104,52	35,53	101,49	38,41	97,72	41,71	94,29	45,46	---	---
	-10	88,05	34,67	85,07	37,43	80,50	40,82	---	---	---	---

Qc : Net heating capacity in kW
P : Total power input in kW (compressor and fan motor)
Fouling factor : 0,44 m²C/kW
Water ΔT = 5 ºC

Nominal conditions

Note: with the option heating low ambient kit (-15ºC), it is possible the unit operation up to a hot water outlet temperature of 50ºC, and an ambient temperature of -15ºC. To calculate the capacity at -15ºC, it is necessary to extrapolate figures on the table and then apply a reduction of a 15%.

Units are tested and rated in accordance with Eurovent standards

COOLING MODE

To find out the performances for units installed with air ducts, apply the following coefficients for capacity and consumption, over the performance tables of axial fan units without ducts (see pages 7 and 8):

STANDARD AXIAL FAN UNITS

AVAILABLE STATIC PRESSURE UP TO 50 Pa (0091 to 1303 models)	0091 to 0211S		0251 to 1303S	
Available static pressure Pa	**30**	**50**	**30**	**50**
Maximum ambient temperature ºC	43	40	42	38
Correction Coefficient Cooling Capacity	0,95	0,91	0,95	0,89
Correction Coefficient Consumption	1,06	1,12	1,06	1,16

HIGH STATIC PRESSURE UNITS

FP CENTRIFUGAL FAN VERSION

AVAILABLE STATIC PRESSURE UP TO 200 Pa (0091 to 0211-FP models only)	0091 to 0211S-FP MODEL UNITS			
Available static pressure Pa	**50**	**100**	**150**	**200**
Maximum ambient temperature ºC	46	45	41	38
Minimum ambient temperature ºC	0ºC (2)			
Correction Coefficient Cooling Capacity	1	0,98	0,93	0,91
Correction Coefficient Consumption (1)	1	1,01	1,09	1,14

(1) After applying correction coefficient consumption is needed to add the following power input to get total power consumption:

MODELS	Available static pressure Pa			
	50	100	150	200
0091FP	0,75 KW	0,65 KW	0,60 KW	0,55 KW
0111 to 0211 FP	1,55 KW	1,40 KW	1,25 KW	1,10 KW

FP1 AXIAL FAN VERSION

AVAILABLE STATIC PRESSURE UP TO 120 Pa (0251 to 1303-FP1 models only)	0251 to 1003S-FP1 MODEL UNITS				1103 to 1303S-FP1 MODEL UNITS			
Available static pressure Pa	**50**	**75**	**100**	**125**	**50**	**75**	**100**	**125**
Maximum ambient temperature ºC	46	43	39	35	44	41	37	35
Minimum ambient temperature ºC	0ºC (2)				0ºC (2)			
Correction Coefficient Cooling Capacity	1	0,947	0,923	0,878	0,964	0,935	0,9	0,856
Correction Coefficient Consumption (1)	1	1,078	1,122	1,22	1,072	1,094	1,171	1,269

(1) After applying correction coefficient consumption is needed to add the following power input to get total power consumption:

MODELS	Extra power consumption
0251 to 0431S-FP1	0,85 KW
0472 to 0812S-FP1	1,7 KW
1003S-FP1	3,8 KW
1103 to 1203S-FP1	3,4 KW
1303S-FP1	2,9 KW

FP2 SHORT CASED AXIAL FAN VERSION

AVAILABLE STATIC PRESSURE UP TO 250 OR 350 Pa (0251 to 1303-FP2 models only)	0251 to 0812S-FP2 MODEL UNITS					1003 to 1303S-FP2 MODEL UNITS				
Available static pressure Pa	**150**	**200**	**250**	**300**	**350**	**150**	**200**	**250**	**300**	**350**
Maximum ambient temperature ºC	47	44	41	38	35	47	44	41	N/A	N/A
Minimum ambient temperature ºC	0ºC					0ºC (2)				
Correction Coefficient Cooling Capacity	1,01	0,97	0,94	0,90	0,87	1,01	0,97	0,94	N/A	N/A
Correction Coefficient Consumption (1)	0,98	1,037	1,099	1,17	1,22	0,98	1,037	1,099	N/A	N/A

(1) After applying correction coefficient consumption is needed to add the following power input to get total power consumption:

(2) With the option cooling low ambient kit (-15ºC), it is possible the unit operation down to -15ºC.

MODELS	Extra power consumption
0251 to 0431S-FP2	1,5 KW
0472 to 0812S-FP2	3 KW
1003S-FP2	7,3 KW
1103 to 1203S-FP2	6,4 KW
1303S-FP2	5,4 KW

Units are tested and rated in accordance with Eurovent standards

HEATING MODE

To find out the performances for units installed with air ducts, apply the following coefficients for capacity and consumption, over the performance tables of axial fan units without ducts (see pages 9 to 11):

STANDARD AXIAL FAN UNITS

AVAILABLE STATIC PRESSURE UP TO 50 Pa (0091 to 1303 models)	0091 to 0211S		0251 to 1303S	
Available static pressure Pa	**30**	**50**	**30**	**50**
Minimum ambient temperature ºC (2)	-8	-6	-8	-6
Correction Coefficient Heating Capacity	0,94	0,89	0,94	0,89
Correction Coefficient Consumption	1,01	1,03	1,02	1,03

HIGH STATIC PRESSURE UNITS

FP CENTRIFUGAL FAN VERSION

AVAILABLE STATIC PRESSURE UP TO 200 Pa (0091 to 0211-FP models only)	0091 to 0211S-FP MODEL UNITS			
Available static pressure Pa	**50**	**100**	**150**	**200**
Minimum ambient temperature ºC (2)	-10	-10	-8	-6
Correction Coefficient Heating Capacity	1	1	0,94	0,89
Correction Coefficient Consumption (1)	1	1	1,01	1,03

(1) After applying correction coefficient consumption is needed to add the following power input to get total power consumption:

	Available static pressure Pa			
MODELS	50	100	150	200
0091FP	0,75 KW	0,65 KW	0,60 KW	0,55 KW
0111 to 0211 FP	1,55 KW	1,40 KW	1,25 KW	1,10 KW

FP1 AXIAL FAN VERSION

AVAILABLE STATIC PRESSURE UP TO 120 Pa (0251 to 1303-FP1 models only)	0251 to 1303S-FP1 MODEL UNITS			
Available static pressure Pa	**50**	**75**	**100**	**125**
Minimum ambient temperature ºC (2)	-10	-8	-6	-5
Correction Coefficient Heating Capacity	1	0,94	0,89	0,87
Correction Coefficient Consumption (1)	1	1,02	1,03	1,04

(1) After applying correction coefficient consumption is needed to add the following power input to get total power consumption:

MODELS	Extra power consumption
0251 to 0431S-FP1	0,85 KW
0472 to 0812S-FP1	1,7 KW
1003S-FP1	3,8 KW
1103 to 1203S-FP1	3,4 KW
1303S-FP1	2,9 KW

FP2 SHORT CASED AXIAL FAN VERSION

AVAILABLE STATIC PRESSURE UP TO 250 OR 350 Pa (0251 to 1303-FP2 models only)	0251 to 0812S-FP2 MODEL UNITS					1003 to 1303S-FP2 MODEL UNITS				
Available static pressure Pa	**150**	**200**	**250**	**300**	**350**	**150**	**200**	**250**	**300**	**350**
Minimum ambient temperature ºC (2)	-10	-10	-8	-6	-5	-10	-10	-8	N/A	N/A
Correction Coefficient Heating Capacity	1,01	1	0,94	0,89	0,87	1,01	1	0,94	N/A	N/A
Correction Coefficient Consumption (1)	0,99	1	1,02	1,03	1,04	0,99	1	1,02	N/A	N/A

(1) After applying correction coefficient consumption is needed to add the following power input to get total power consumption:

(2) With the option heating low ambient kit (-15ºC), it is possible the unit operation down to -15ºC.

MODELS	Extra power consumption
0251 to 0431S-FP2	1,5 KW
0472 to 0812S-FP2	3 KW
1003S-FP2	7,3 KW
1103 to 1203S-FP2	6,4 KW
1303S-FP2	5,4 KW

Units are tested and rated in accordance with Eurovent standards

Qo: Cooling capacity in kW
P: Power input in kW (compressor and fan motor)

From 0091 to 0211 MODELS

MODELS	Water outlet temperature ºC	Air inlet temperature											
		28°C		30°C		32°C		35°C		40°C		45°C	
		Qo	P	Qo	P	Qo	P	Qo	P	Qo	P	Qo	P
0091S	7	9,11	2,98	9,31	3,00	9,06	3,05	8,80	3,10	8,14	3,43	7,61	3,77
0111S	7	11,49	3,66	11,75	3,68	11,42	3,75	11,10	3,81	10,26	4,21	9,60	4,63
0151S	7	13,77	4,75	14,08	4,77	13,69	4,86	13,30	4,94	12,30	5,46	11,50	6,00
0191S	7	17,91	6,15	18,31	6,18	17,81	6,29	17,30	6,40	15,99	7,07	14,96	7,78
0211S	7	19,77	6,82	20,22	6,86	19,66	6,98	19,10	7,10	17,66	7,85	16,52	8,63

To find out the performances for units with low water temperature kit (option), apply the following coefficients for capacity and consumption, over the data table shows above for 7ºC of water outlet temperature, from capacity table data.

MODELS	Water outlet temperature ºC	CORRECTION FACTORS Air inlet temperature											
		28°C		30°C		32°C		35°C		40°C		45°C	
		Qo	P	Qo	P	Qo	P	Qo	P	Qo	P	Qo	P
	-10	*0,51*	*0,78*	*0,49*	*0,81*	*0,49*	*0,83*	*0,47*	*0,88*	*0,53*	*0,83*	*N/A*	*N/A*
	-9	*0,55*	*0,78*	*0,52*	*0,81*	*0,52*	*0,84*	*0,51*	*0,88*	*0,55*	*0,84*	*N/A*	*N/A*
	-8	*0,59*	*0,79*	*0,56*	*0,82*	*0,56*	*0,84*	*0,55*	*0,89*	*0,57*	*0,86*	*N/A*	*N/A*
	-7	*0,63*	*0,79*	*0,60*	*0,82*	*0,60*	*0,84*	*0,59*	*0,90*	*0,60*	*0,88*	*0,59*	*0,79*
0091S	*-6*	*0,67*	*0,79*	*0,64*	*0,82*	*0,64*	*0,85*	*0,63*	*0,90*	*0,63*	*0,89*	*0,61*	*0,80*
	-5	*0,69*	*0,80*	*0,67*	*0,83*	*0,67*	*0,86*	*0,66*	*0,91*	*0,66*	*0,91*	*0,64*	*0,82*
0111S	*-4*	*0,72*	*0,81*	*0,70*	*0,84*	*0,70*	*0,86*	*0,69*	*0,92*	*0,68*	*0,92*	*0,67*	*0,85*
	-3	*0,75*	*0,82*	*0,72*	*0,85*	*0,73*	*0,87*	*0,72*	*0,93*	*0,71*	*0,93*	*0,69*	*0,87*
0151S	*-2*	*0,78*	*0,83*	*0,75*	*0,86*	*0,76*	*0,88*	*0,74*	*0,94*	*0,73*	*0,94*	*0,72*	*0,89*
	-1	*0,81*	*0,84*	*0,78*	*0,87*	*0,79*	*0,89*	*0,77*	*0,94*	*0,76*	*0,95*	*0,75*	*0,91*
0191S	*0*	*0,83*	*0,85*	*0,81*	*0,87*	*0,81*	*0,90*	*0,80*	*0,95*	*0,78*	*0,96*	*0,78*	*0,94*
	1	*0,86*	*0,87*	*0,84*	*0,90*	*0,84*	*0,92*	*0,83*	*0,96*	*0,82*	*0,97*	*0,81*	*0,95*
0211S	*2*	*0,89*	*0,90*	*0,87*	*0,92*	*0,88*	*0,93*	*0,87*	*0,97*	*0,85*	*0,98*	*0,85*	*0,96*
	3	*0,92*	*0,92*	*0,90*	*0,94*	*0,91*	*0,95*	*0,90*	*0,98*	*0,89*	*0,98*	*0,89*	*0,97*
	4	*0,94*	*0,94*	*0,93*	*0,95*	*0,93*	*0,96*	*0,92*	*0,98*	*0,92*	*0,99*	*0,92*	*0,98*
	5	*0,96*	*0,96*	*0,95*	*0,97*	*0,95*	*0,97*	*0,95*	*0,99*	*0,95*	*0,99*	*0,94*	*0,98*
	6	0,98	0,98	0,98	0,98	0,98	0,99	0,97	0,99	0,97	1,00	0,97	0,99
	7	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

From 0251 to 1303 MODELS

MODELS	Water outlet temperature ºC	Air inlet temperature											
		28°C		30°C		32°C		35°C		40°C		45°C	
		Qo	P	Qo	P	Qo	P	Qo	P	Qo	P	Qo	P
0251S	7	23,81	8,90	24,34	8,94	23,67	9,10	23,00	9,27	21,26	10,22	19,89	11,23
0291S	7	27,95	10,01	28,58	10,06	27,79	10,23	27,00	10,43	24,96	11,50	23,35	12,64
0351S	7	33,12	11,63	33,87	11,69	32,93	11,89	32,00	12,12	29,58	13,36	27,67	14,69
0431S	7	39,85	14,20	40,75	14,27	39,62	14,52	38,50	14,80	35,59	16,32	33,29	17,94
0472S	7	45,54	16,31	46,57	16,40	45,29	16,68	44,00	17,00	40,68	18,74	38,05	20,60
0552S	7	53,20	18,90	54,40	19,00	52,90	19,33	51,40	19,70	47,52	21,72	44,45	23,87
0672S	7	64,69	23,09	66,15	23,21	64,32	23,61	62,50	24,06	57,78	26,52	54,04	29,16
0812S	7	78,15	28,69	79,91	28,84	77,71	29,34	75,50	29,90	69,80	32,96	65,29	36,24
1003S	7	91,29	33,76	93,35	33,93	90,78	34,52	90,00	34,49	83,21	38,02	77,83	41,80
1103S	7	104,54	37,31	106,90	37,50	103,95	38,16	101,00	38,50	93,37	42,44	87,34	46,66
1203S	7	117,33	42,86	119,98	43,08	116,67	43,83	114,50	43,79	105,86	48,28	99,01	53,07
1303S	7	128,82	47,45	131,73	47,69	128,10	48,52	127,00	48,48	117,41	53,45	109,82	58,75

To find out the performances for units with low water temperature kit (option), apply the following coefficients for capacity and consumption, over the data table shows above for 7ºC of water outlet temperature, from capacity table data.

MODELS	Water outlet temperature ºC	CORRECTION FACTORS Air inlet temperature											
		28°C		30°C		32°C		35°C		40°C		45 °C	
		Qo	P	Qo	P	Qo	P	Qo	P	Qo	P	Qo	P
	-10	*0,57*	*0,84*	*0,54*	*0,86*	*0,54*	*0,87*	*0,53*	*0,89*	*0,53*	*0,90*	*N/A*	*N/A*
0251S	*-9*	*0,59*	*0,84*	*0,56*	*0,86*	*0,56*	*0,87*	*0,55*	*0,90*	*0,55*	*0,91*	*N/A*	*N/A*
0291S	*-8*	*0,62*	*0,85*	*0,58*	*0,87*	*0,58*	*0,88*	*0,57*	*0,90*	*0,57*	*0,91*	*N/A*	*N/A*
0351S	*-7*	*0,64*	*0,85*	*0,61*	*0,88*	*0,60*	*0,89*	*0,59*	*0,91*	*0,60*	*0,92*	*0,62*	*0,85*
0431S	*-6*	*0,67*	*0,86*	*0,63*	*0,88*	*0,62*	*0,90*	*0,61*	*0,92*	*0,62*	*0,93*	*0,64*	*0,86*
0472S	*-5*	*0,70*	*0,87*	*0,65*	*0,89*	*0,65*	*0,91*	*0,64*	*0,92*	*0,64*	*0,93*	*0,66*	*0,87*
0552S	*-4*	*0,72*	*0,87*	*0,68*	*0,90*	*0,67*	*0,92*	*0,66*	*0,93*	*0,67*	*0,94*	*0,69*	*0,88*
0672S	*-3*	*0,75*	*0,88*	*0,71*	*0,91*	*0,70*	*0,93*	*0,69*	*0,94*	*0,69*	*0,94*	*0,71*	*0,89*
0812S	*-2*	*0,78*	*0,89*	*0,73*	*0,92*	*0,73*	*0,94*	*0,71*	*0,94*	*0,72*	*0,95*	*0,74*	*0,90*
1003S	*-1*	*0,80*	*0,90*	*0,76*	*0,93*	*0,75*	*0,95*	*0,73*	*0,95*	*0,74*	*0,95*	*0,76*	*0,91*
1103S	*0*	*0,83*	*0,91*	*0,78*	*0,94*	*0,78*	*0,96*	*0,76*	*0,96*	*0,76*	*0,96*	*0,79*	*0,92*
1203S	*1*	*0,86*	*0,92*	*0,82*	*0,95*	*0,81*	*0,96*	*0,80*	*0,96*	*0,80*	*0,97*	*0,82*	*0,93*
1303S	*2*	*0,89*	*0,94*	*0,86*	*0,96*	*0,85*	*0,97*	*0,84*	*0,97*	*0,84*	*0,97*	*0,86*	*0,94*
	3	*0,92*	*0,95*	*0,89*	*0,97*	*0,89*	*0,98*	*0,88*	*0,98*	*0,88*	*0,98*	*0,89*	*0,96*
	4	*0,94*	*0,96*	*0,92*	*0,98*	*0,92*	*0,98*	*0,91*	*0,98*	*0,91*	*0,98*	*0,92*	*0,97*
	5	*0,96*	*0,98*	*0,95*	*0,98*	*0,94*	*0,99*	*0,94*	*0,99*	*0,94*	*0,99*	*0,95*	*0,98*
	6	0,98	0,99	0,97	0,99	0,97	0,99	0,97	0,99	0,97	0,99	0,97	0,99
	7	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

⚠ If the water outlet temperature is likely to drop below 5ºC, it is very important to use glycol anti-freeze

The amount of anti-freeze required will vary depending on the water outlet temperature.
When glycol is added to the system the capacity decreases, water pressure drop increases and flow rate drops. For correction factors see page 31.

COMPRESSORS AND REFRIGERANT CIRCUITS

MODELS			0091S	0111S	0151S	0191S	0211S	0251S	0291S	0351S	0431S
Compressor type			Scroll								
Number of compressors / Number of circuits			1 / 1								
Capacity steps for compressor		%	0-100								
Refrigerant charge per circuit (R-407C)	Kg	Cooling only	3,0	3,0	3,4	4,0	5,5	6,0	6,5	8,2	9,5
		Heat pump	3,1	3,1	3,9	5,0	6,5	6,2	7,0	9,0	10,5
Oil charge per compressor		l	1,1	1,1	1,55	1,64	4,1	4,1	4,1	4,1	4,1
Crankcase heater per compressor		W	40	40	70	70	70	70	70	70	70

MODELS			0472S	0552S	0672S	0812S	1003S	1103S	1203S	1303S
Compressor type			Scroll							
Number of compressors / Number of circuits			2/2 (EAR UNITS) (2/1) (EAC UNITS)				(3/2) (EAC-EAR UNITS)			
Capacity steps for each compressor		%	0-50-100				0-30-57-100	0-33-63-100	0-30-55-100	0-27-50-100
Refrigerant charge per circuit (R-407C)	Kg	Cooling only	12,0	14,0	17,6	20,6	13,1+10,5	16,5+10,5	16,5+13,1	16,5+16,5
		Heat pump	2x6,2	2x7,0	2x9,0	2x10,5	14,0+11,2	17,0+11,2	16,5+14,0	17,0+17,0
Oil charge per compressor		l	4,1	4,1	4,1	4,1	2x4,1+4,1	2x4,1+4,1	2x4,1+4,7	2x4,1+5,9
Crankcase heater per compressor		W	70+70	70+70	70+70	70+70	2x70+70	2x70+70	2x70+120	2x70+150

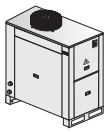
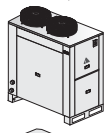
PLATE HEAT EXCHANGERS

MODELS			0091S	0111S	0151S	0191S	0211S	0251S	0291S	0351S	0431S
Number			1								
Water volume	l	EAC	1,43		1,43		1,9		2,38	3,15	4,2
		EAR	1,43		1,43		1,9		2,38	3,15	4,2
Water piping (female - threaded)		inch	1" G					1 1/2" G			
Test pressure - Bar		Water	15	15	15	15	15	15	15	15	15
		Refrigerant	32	32	32	32	32	32	32	32	32
Max. operating pressure	Bar	Water	4	4	4	4	4	4	4	4	4
		Refrigerant	29	29	29	29	29	29	29	29	29

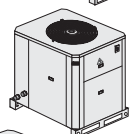
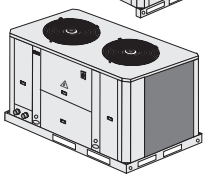
MODELS			0472S	0552S	0672S	0812S	1003S	1103S	1203S	1303S
Number			1							
Water volume	l	EAC	4,2	5,25	6,3	8,4	7,84	9,44	9,44	9,44
		EAR	3,36	4,0	4,64	6,24	7,84	9,44	9,44	9,44
Water piping (female - threaded)		inch	2" G				2 1/2" G			
Test pressure - Bar		Water	15	15	15	15	15	15	15	15
		Refrigerant	32	32	32	32	32	32	32	32
Max. operating pressure	Bar	Water	4	4	4	4	4	4	4	4
		Refrigerant	29	29	29	29	29	29	29	29

STANDARD AXIAL FAN UNITS

MODELS		0091S	0111S	0151S	0191S	0211S	0251S	0291S	0351S	0431S	0472S	0552S	0672S	0812S
Fan type		Axial - Direct coupling 900 rpm 1N~230V												
Fan number		1	2				1				2			
Air flow rate	m^3/h	3500	6500	6700	6500	6300	9500	11500	11000	10500	19000	23000	22000	21000
Power Input	kW	0,15	0,30	0,32	0,30	0,28	0,75	0,90	0,85	0,83	1,50	1,80	1,70	1,66

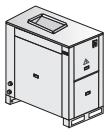
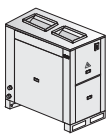
MODELS			1003S	1103S	1203S	1303S
Fan type			Axial - Direct coupling 3~400V			
Fan number			1+1			
Air flow rate	m^3/h	High	32250	36250	36000	40000
		Low	27250	29250	29000	31000
Power Input	kW	High	1,05 + 1,05	2 + 1,05	2 + 1,05	2 + 2
		Low	0,77 + 0,77	1,25 + 0,77	1,25 + 0,77	1,25 + 1,25
Fan speed	rpm	High	700 + 700	900 + 700	900 + 700	900 + 900
		Low	550 + 550	700 + 550	700 + 550	700 + 700

HIGH STATIC PRESSURE UNITS

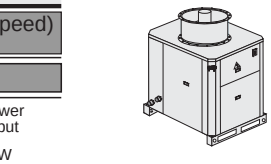
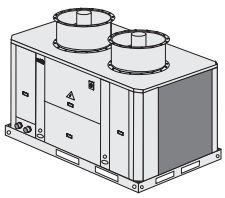
AVAILABLE STATIC PRESSURE UP TO 200 Pa - FP VERSION

MODELS	0091S-FP		0111S-FP		0151S-FP		0191S-FP		0211S-FP	
Fan type	Centrifugal - Direct coupling 1450 rpm 1N~230V									
Fan number	1		2							
Available static pressure Pa	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW
50	3500	0,9	6500	1,9	6700	1,95	6500	1,9	6300	1,85
100	2700	0,8	5700	1,75	5900	1,8	5700	1,75	5500	1,7
150	2500	0,75	5200	1,6	5400	1,65	5200	1,6	5000	1,55
200	2200	0,7	4700	1,45	4900	1,5	4700	1,45	4500	1,4

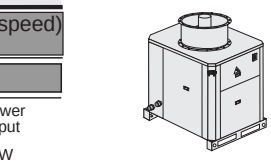
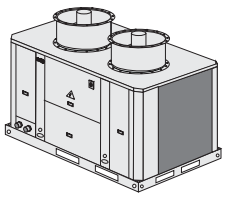
AVAILABLE STATIC PRESSURE UP TO 120 Pa - FP1 VERSION

MODELS	0251S-FP1		0291S-FP1		0351S-FP1		0431S-FP1		0472S-FP1		0552S-FP1		0672S-FP1		0812S-FP1		1003S TO 1303S-FP1	
Fan type	Axial - Direct coupling 1450 rpm 1N~230V																900 rpm (Low speed) 3~400V	
Fan number	1								2									
Available static pressure Pa	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW
50	11500	1,7	11500	1,7	11000	1,65	10500	1,65	23000	3,4	23000	3,4	22000	3,3	21000	3,3	36000	5
75	9600	1,65	9600	1,65	9200	1,6	8800	1,6	19200	3,3	19200	3,3	18400	3,2	17600	3,2	34000	5,1
100	8500	1,6	8500	1,6	8100	1,55	7700	1,55	17000	3,2	17000	3,2	16200	3,1	15400	3,1	32000	5,2
125	7200	1,55	7200	1,55	6900	1,5	6600	1,5	14400	3,1	14400	3,1	13800	3	13200	3	28000	5,3

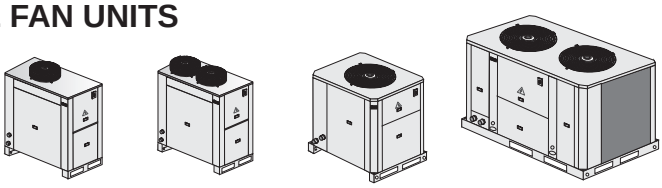



AVAILABLE STATIC PRESSURE UP TO 250 OR 350 Pa - FP2 VERSION

MODELS	0251S-FP2		0291S-FP2		0351S-FP2		0431S-FP2		0472S-FP2		0552S-FP2		0672S-FP2		0812S-FP2		1003S TO 1303S-FP2	
Fan type	Axial "short case" - Direct coupling 1450 rpm 3~230V/3~400V																1450 rpm (High speed) 3~400V	
Fan number	1								2									
Available static pressure Pa	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW	Air flow rate m^3/h	Power input kW
150	12400	2,45	12400	2,45	11900	2,4	11500	2,35	24800	4,9	24800	4,9	23800	4,8	23000	4,7	44000	9,2
200	10800	2,3	10800	2,3	10400	2,3	10000	2,25	21600	4,6	21600	4,6	20800	4,6	20000	4,5	40000	9,3
250	9200	2,3	9200	2,3	8800	2,3	8500	2,3	18400	4,6	18400	4,6	17600	4,6	17000	4,6	36000	9,4
300	7800	2,4	7800	2,4	7500	2,4	7250	2,45	15600	4,8	15600	4,8	15000	4,8	14500	4,9	N/A	N/A
350	6800	2,45	6800	2,45	6500	2,45	6250	2,5	13600	4,9	13600	4,9	13000	4,9	12500	5	N/A	N/A

STANDARD AXIAL FAN UNITS

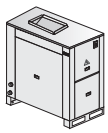


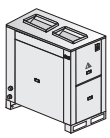
MODELS		0091S	0111S	0151S	0191S	0211S	0251S	0291S	0351S	0431S	0472S	0552S	0672S	0812S	1003S	1103S	1203S	1303S
Maximum power (kW)		4,2	5,0	6,1	7,9	8,9	11,9	13,8	16,4	20,6	23,6	27,3	32,6	39,8	47,7	54,1	59,3	66
Maximum current (A)	1N~230V	23,9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	3~230V	12,9	18,9	23,1	29,3	27,8	34,2	39,4	47,8	55,1	68,4	78,7	95,7	110,2	---	---	---	---
	3N~400V	7,8	11,6	14,0	17,6	16,7	21,0	24,2	29,1	33,3	42,0	48,4	58,2	66,6	76	87,4	97,6	107,2
LRC (A)	1N~230V	95,8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	3~230V	91,8	99,6	134,6	179,6	167,6	213,0	227,5	282,5	333,5	243,7	262,7	324,1	382,0	---	---	---	---
	3N~400V	44,3	51,6	63,6	97,4	95,6	119,0	130,5	161,5	192,5	138,0	152,3	187,0	222,0	235,2	246,6	282,6	331,2
Starting current (A) (*)	1N~230V	81,5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	3~230V	78,2	84,9	114,7	152,9	142,7	181,5	193,9	240,7	284,0	212,2	229,1	282,2	332,5	---	---	---	---
	3N~400V	37,8	44,1	54,3	83,0	81,5	101,6	111,5	137,8	164,1	120,6	133,2	163,3	193,7	200,6	210,6	241,2	282,7

Not included water pump consumptions of the Hydronic or Hydraulic version (see page 29)
Maximum power calculated for compressor operation at +12,5/65°C
(*) Starting current 2 cycles later from compressor starts (4 mseg)

HIGH STATIC PRESSURE UNITS

FP VERSIONS

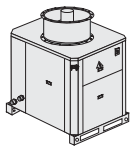


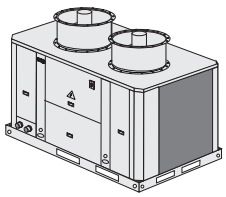


MODELS		0091S	0111S	0151S	0191S	0211S
Maximum power (kW)		5,0	6,6	7,7	9,5	10,5
Maximum current (A)	1N~230V	27,1	---	---	---	---
	3~230V	16,1	25,3	29,5	35,7	34,2
	3N~400V	11,0	18,0	20,4	24,0	23,1
LRC (A)	1N~230V	99,0	---	---	---	---
	3~230V	95,0	106,0	141,0	186,0	174,0
	3N~400V	47,5	58,0	70,0	103,8	102,0
Starting current (A) (*)	1N~230V	84,8	---	---	---	---
	3~230V	81,4	91,3	121,1	159,3	149,1
	3N~400V	41,0	50,5	60,7	89,4	87,9

Not included water pump consumptions of the Hydronic or Hydraulic version (see page 29)
Maximum power calculated for compressor operation at +12,5/65°C
(*) Starting current 2 cycles later from compressor starts (4 mseg)

FP1 VERSIONS

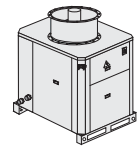


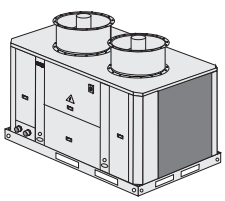


MODELS		0251S	0291S	0351S	0431S	0472S	0552S	0672S	0812S	1003S	1103S	1203S	1303S
Maximum power (kW)		12,9	14,6	17,2	21,4	25,5	28,9	34,2	41,4	50 ,6	56,0	61,2	67,0
Maximum current (A)	3~230V	39,2	43,9	52,3	59,6	78,4	87,7	104,7	119,2	---	---	---	---
	3N~400V	26,0	28,7	33,6	37,8	52,0	57,4	67,2	75,6	80,8	90,6	100,8	108,8
LRC (A)	3~230V	218,0	232,0	287,0	338,0	253,7	271,7	333,1	391,0	---	---	---	---
	3N~400V	124,0	135,0	166,0	197,0	148,0	161,3	196,0	231,0	240,0	249,8	285,8	332,8
Starting current (A) (*)	3~230V	186,5	198,4	245,2	288,5	222,2	238,1	291,2	341,5	---	---	---	---
	3N~400V	106,6	116,0	142,3	168,7	130,6	142,3	172,3	202,7	205,4	213,8	244,4	284,3

Not included water pump consumptions of the Hydronic or Hydraulic version (see page 29)
Maximum power calculated for compressor operation at +12,5/65°C
(*) Starting current 2 cycles later from compressor starts (4 mseg)

FP2 VERSIONS





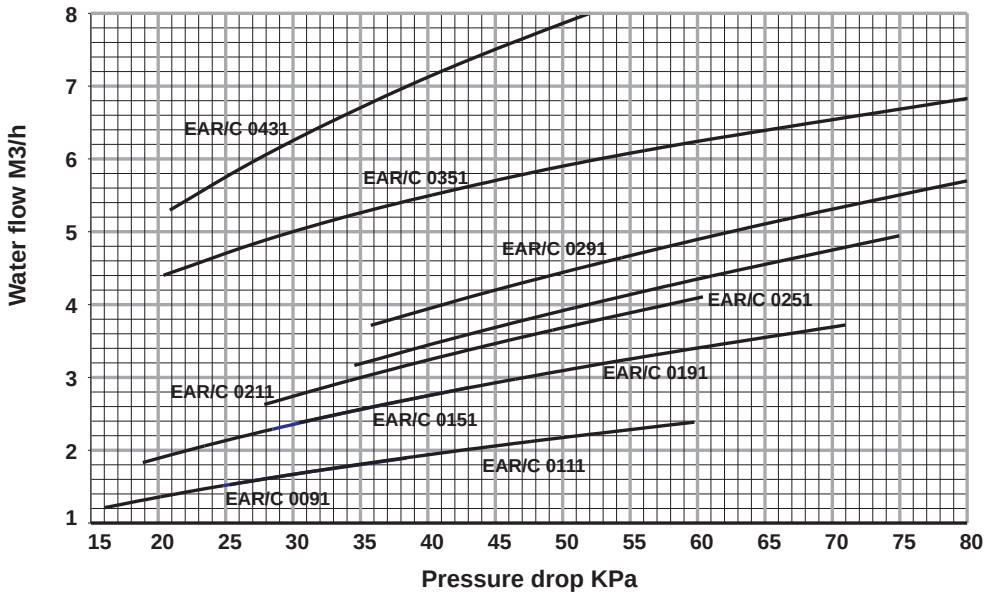
MODELS		0251S	0291S	0351S	0431S	0472S	0552S	0672S	0812S	1003S	1103S	1203S	1303S
Maximum power (kW)		13,6	15,4	18,0	22,1	27,0	30,4	35,7	42,8	54,8	60,2	65,4	71,2
Maximum current (A)	3~230V	39,2	43,9	52,3	59,6	78,4	87,7	104,7	119,2	---	---	---	---
	3N~400V	22,5	25,2	30,1	34,3	45,0	50,4	60,2	68,6	87,4	97,2	107,4	115,4
LRC (A)	3~230V	218,0	232,0	287,0	338,0	253,7	271,7	333,1	391,0	---	---	---	---
	3N~400V	120,5	131,5	162,5	193,5	141,0	154,3	189,0	224,0	246,6	256,4	292,4	339,4
Starting current (A) (*)	3~230V	186,5	198,4	245,2	288,5	222,2	238,1	291,2	341,5	---	---	---	---
	3N~400V	103,1	112,5	138,8	165,2	123,6	135,3	165,3	195,7	212,0	220,4	251,0	290,9

Not included water pump consumptions of the Hydronic or Hydraulic version (see page 29)
Maximum power calculated for compressor operation at +12,5/65°C
(*) Starting current 2 cycles later from compressor starts (4 mseg)

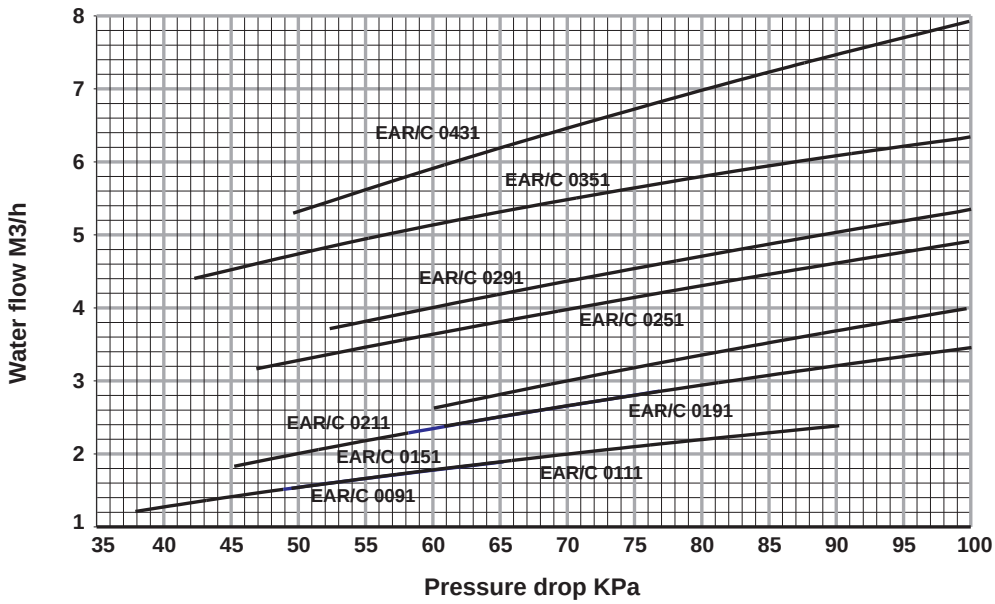
INSTALLATION ADVISE
The units MUST be fitted with a water filter at the inlet to the unit (trapping any particles with a diameter greater than 1 mm.)

MODELS EAC / EAR 0091 TO 0431

PRESSURE DROP WITHOUT FILTER



PRESSURE DROP + WATER FILTER (*)



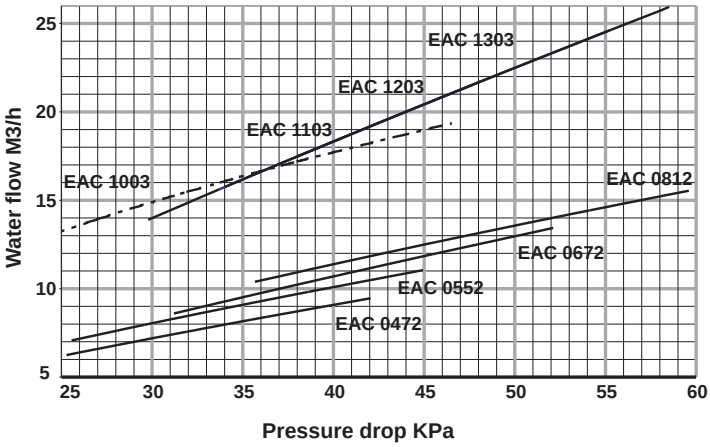
(*) Option in standard version, included in Hydronic and Hydraulic version.

INSTALLATION ADVISE
The units MUST be fitted with a water filter at the inlet to the unit (trapping any particles with a diameter greater than 1 mm.)

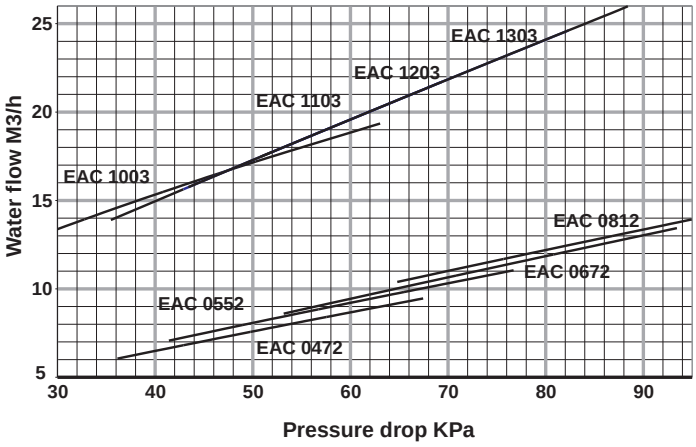
MODELS 0472 TO 1303

COOLING ONLY (EAC)

PRESSURE DROP WITHOUT FILTER

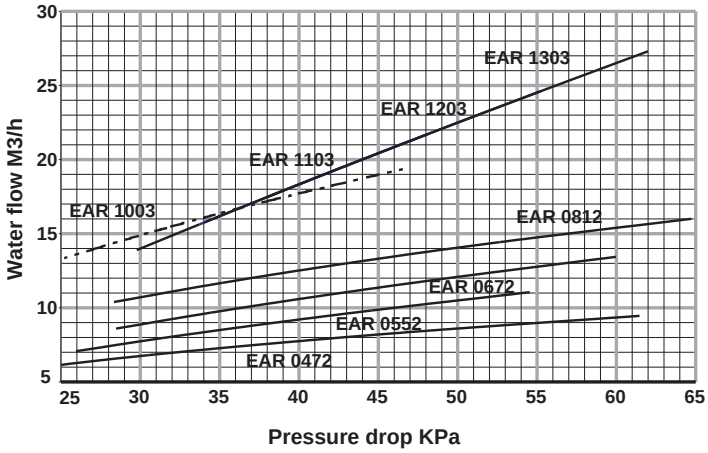


PRESSURE DROP + WATER FILTER (*)

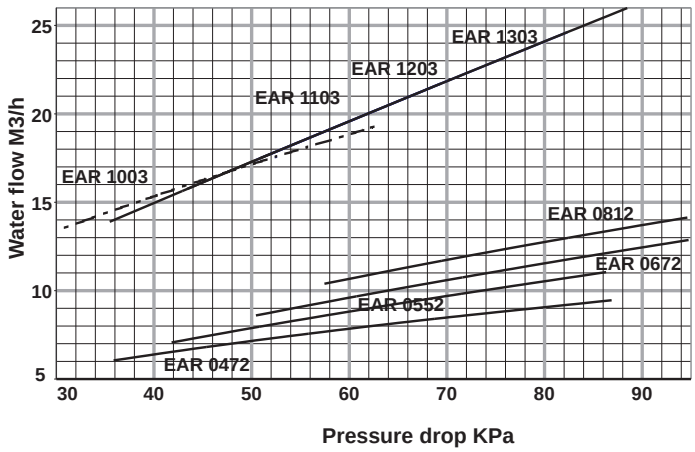


HEAT PUMPS (EAR)

PRESSURE DROP WITHOUT FILTER

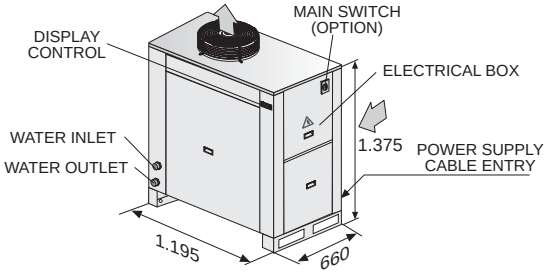


PRESSURE DROP + WATER FILTER (*)

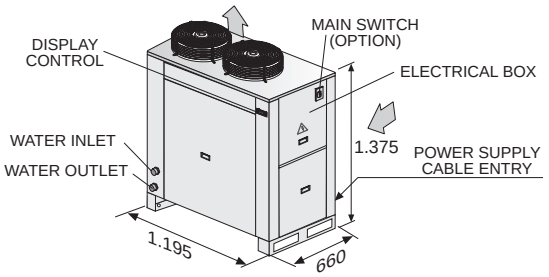


(*) Option in standard version, included in Hydronic and Hydraulic version.

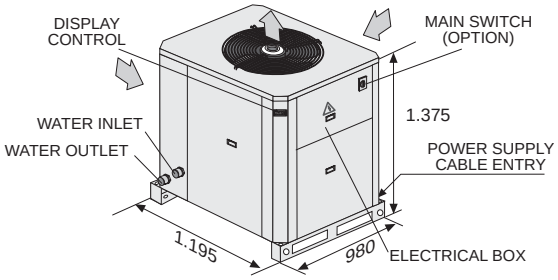
1 EAC/EAR 0091S



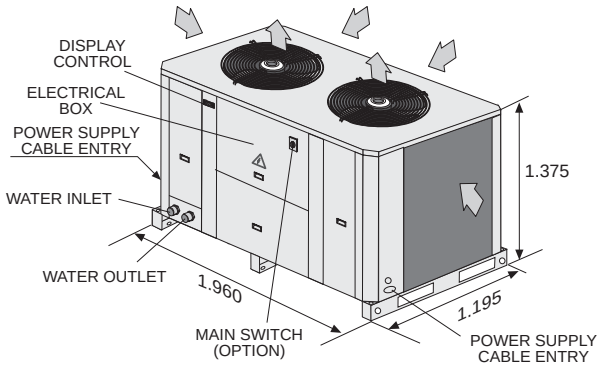
2 EAC/EAR 0111S-0151S-0191S-0211S



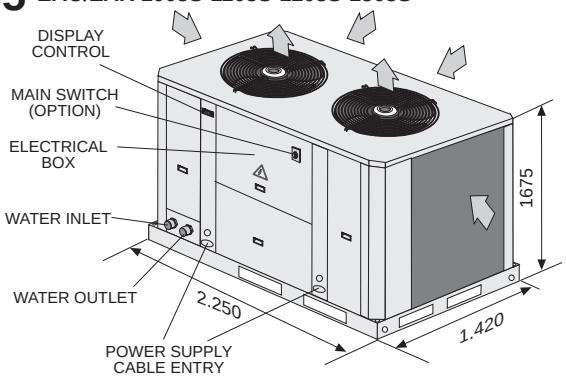
3 EAC/EAR 0251S-0291S-0351S-0431S



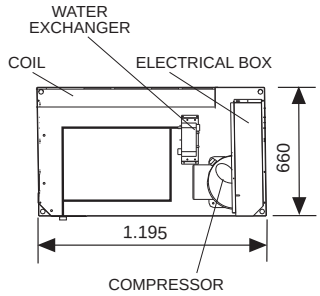
4 EAC/EAR 0472S-0552S-0672S-0812S



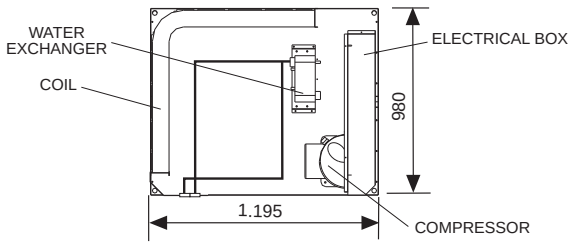
5 EAC/EAR 1003S-1103S-1203S-1303S



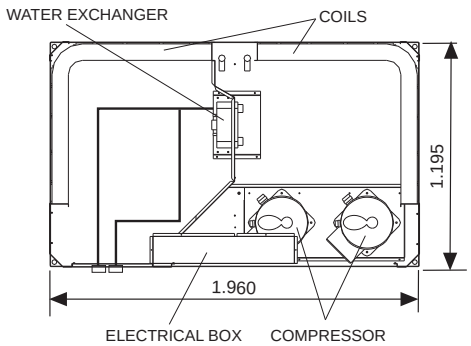
1 / 2 COMPONENT POSITION STANDARD VERSION UNIT



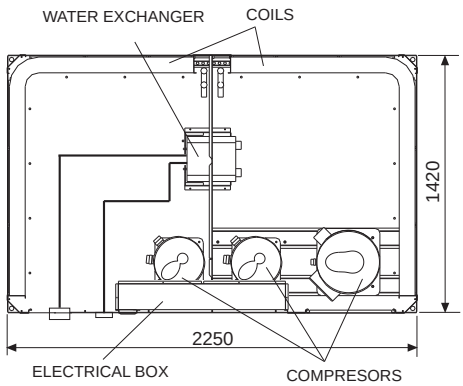
3 COMPONENT POSITION STANDARD VERSION UNIT



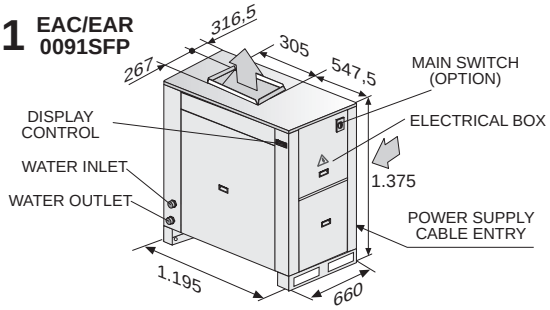
4 COMPONENT POSITION STANDARD VERSION UNIT



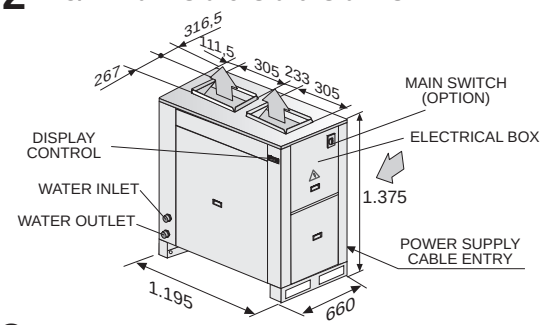
5 COMPONENT POSITION STANDARD VERSION UNIT



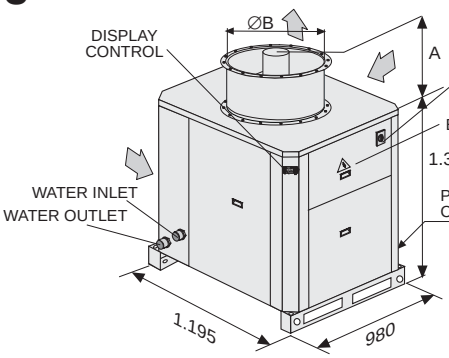
1 EAC/EAR 0091SFP



2 EAC/EAR 0111S-0151S-0191S-0211S FP

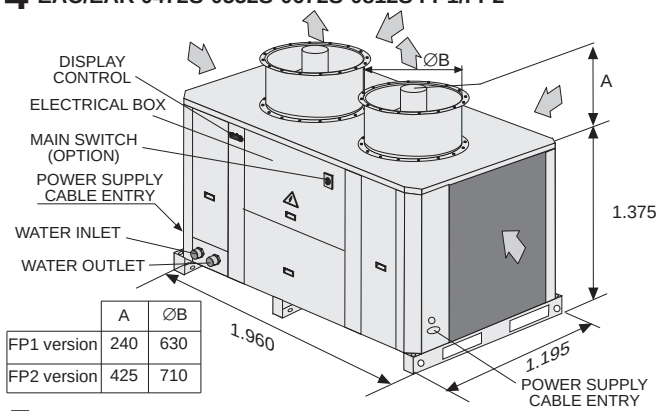


3 EAC/EAR 0251S-0291S-0351S-0431S FP1/FP2



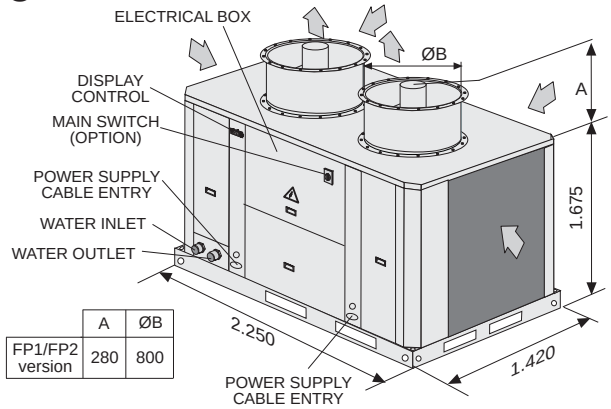
	A	ØB
FP1 version	240	630
FP2 version	425	710

4 EAC/EAR 0472S-0552S-0672S-0812S FP1/FP2



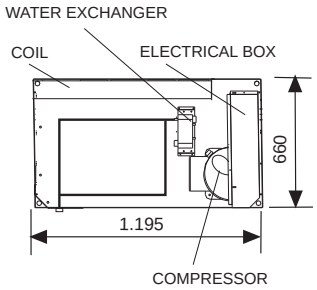
	A	ØB
FP1 version	240	630
FP2 version	425	710

5 EAC/EAR 1003S-1103S-1203S-1303S FP1/FP2

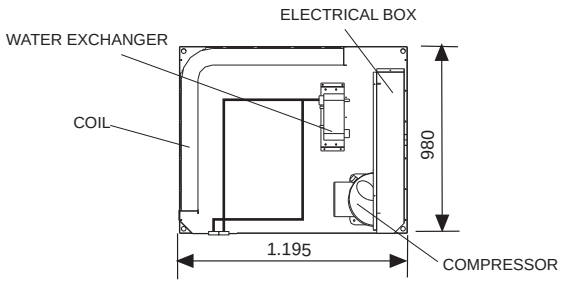


	A	ØB
FP1/FP2 version	280	800

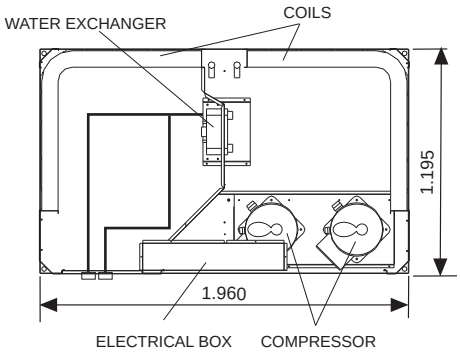
1 / 2 COMPONENT POSITION STANDARD VERSION UNIT



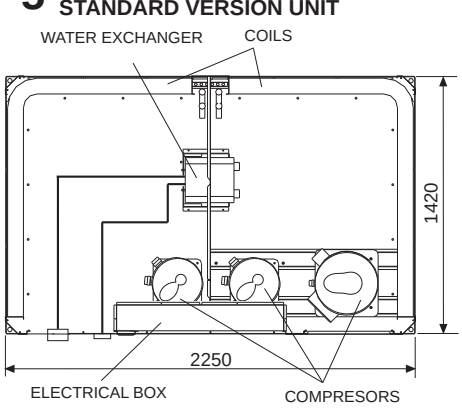
3 COMPONENT POSITION STANDARD VERSION UNIT

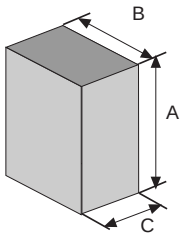


4 COMPONENT POSITION STANDARD VERSION UNIT



5 COMPONENT POSITION STANDARD VERSION UNIT





STANDARD AXIAL FAN UNITS

MODELS	EAC / EAR	0091S	0111S	0151S	0191S	0211S	0251S	0291S	0351S	0431S	0472S	0552S	0672S	0812S	1003S	1103S	1203S	1303S
A - Height	mm	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1375	1675	1675	1675	1675
B - Width	mm	1195	1195	1195	1195	1195	1195	1195	1195	1195	1960	1960	1960	1960	2250	2250	2250	2250
C - Depth	mm	660	660	660	660	660	980	980	980	980	1195	1195	1195	1195	1420	1420	1420	1420
Operating weight (*) kg	EAC	147	155	168	181	245	272	281	309	345	540	551	596	670	803	948	1059	1104
	EAR	150	158	172	185	250	277	285	317	353	549	561	612	685	825	971	1084	1129

(*) Not included Hydronic or Hydraulic version (see page 29).

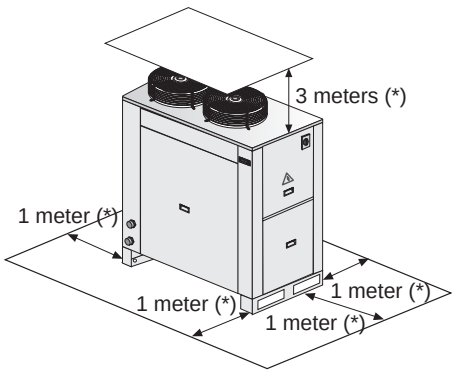
HIGH STATIC PRESSURE UNITS

MODELS	EAC / EAR	0091S	0111S	0151S	0191S	0211S	0251S	0291S	0351S	0431S	0472S	0552S	0672S	0812S	1003S	1103S	1203S	1303S
A - Height mm	FP/FP1	1375	1375	1375	1375	1375	1615	1615	1615	1615	1615	1615	1615	1615	1955	1955	1955	1955
	FP2	-	-	-	-	-	1800	1800	1800	1800	1800	1800	1800	1800	1955	1955	1955	1955
B - Width	mm	1195	1195	1195	1195	1195	1195	1195	1195	1195	1960	1960	1960	1960	2250	2250	2250	2250
C - Depth	mm	660	660	660	660	660	980	980	980	980	1195	1195	1195	1195	1420	1420	1420	1420
Operating weight (*) kg	EAC FP/FP1	156	173	186	199	263	297	296	324	360	590	581	626	700	843	988	1099	1144
	EAC FP2	-	-	-	-	-	317	316	344	380	630	621	666	740	843	988	1099	1144
	EAR FP/FP1	159	176	190	204	268	302	301	332	368	599	592	642	716	865	1011	1124	1169
	EAR FP2	-	-	-	-	-	322	321	352	388	639	632	682	756	865	1011	1124	1169

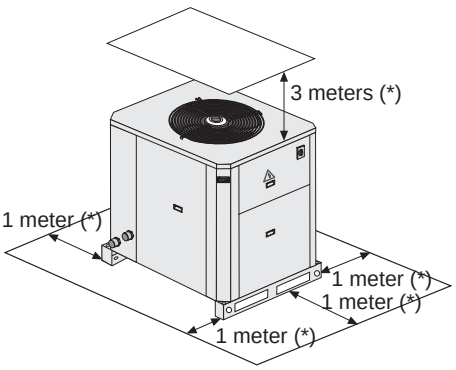
(*) Not included Hydronic or Hydraulic version (see page 29).

SERVICE AREAS

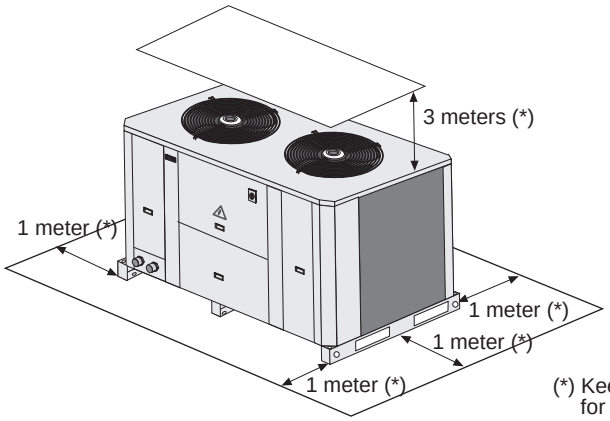
EAC/EAR 0091S-0111S-0151S-0191S-0211S



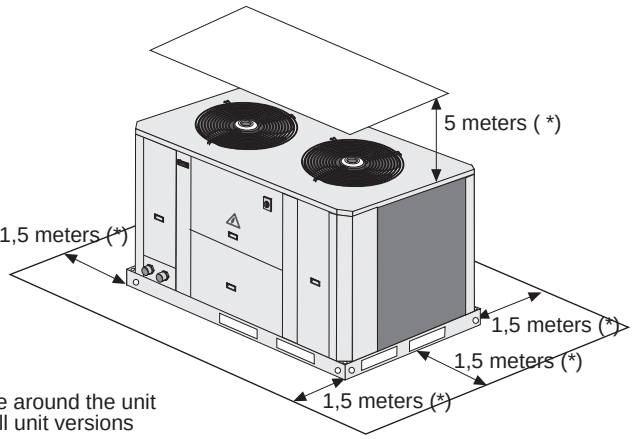
EAC/EAR 0251S-0291S-0351S-0431S



EAC/EAR 0472S-0552S-0672S-0812S



EAC/EAR 1003S-1103S-1203S-1303S



(*) Keep this space free around the unit for installation, for all unit versions

STANDARD AXIAL FAN UNITS

EAC EAR			Spectrum per octave band (dBA) 125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global sound power Lw dB(A)	Sound pressure at 10m. (dBA)
0091S	(1)		64,6	67,6	67,8	67,6	67,2	63,5	59,0	73	45
	(2)		64,6	67,6	67,7	66,8	65,9	61,9	56,7	72	44
0111S	(1)		67,6	70,6	70,8	70,4	68,5	64,2	57,5	75	47
	(2)		67,6	70,6	70,8	69,7	67,9	63,3	56,2	75	47
0151S	(1)		67,6	70,7	71,4	71,1	68,7	66,4	60,5	76	48
	(2)		67,6	70,6	71,1	70,2	68,0	64,8	58,5	75	47
0191S	(1)		67,6	70,6	71,4	71,8	69,2	67,2	59,9	76	48
	(2)		67,6	70,6	71,1	70,6	68,3	65,4	58,0	75	47
0211S	(1)		67,6	71,1	74,9	73,2	72,5	69,6	57,0	79	51
	(2)		67,6	70,9	73,2	71,3	70,3	66,9	55,7	77	49
0251S	(1)		73,8	70,0	74,8	72,7	73,5	70,4	57,5	79	51
	(2)		73,8	69,8	72,7	70,2	70,3	67,3	56,3	76	48
0291S	(1)		80,3	72,4	76,7	75,9	75,4	70,2	62,3	81	53
	(2)		80,3	72,3	75,2	74,9	73,9	68,0	61,3	80	52
0351S	(1)		80,3	72,6	76,1	75,8	77,6	74,2	67,3	83	55
	(2)		80,3	72,4	74,8	74,9	75,4	71,2	64,8	81	53
0431S	(1)		80,3	73,5	77,1	76,3	77,2	71,4	65,0	82	54
	(2)		80,3	72,9	75,4	75,1	75,1	68,9	63,1	80	52
0472S	(1)		76,8	73,0	77,8	75,7	76,5	73,4	60,5	82	54
	(2)		76,8	72,8	75,7	73,2	73,3	70,3	59,3	79	51
0552S	(1)		83,3	75,4	79,7	78,9	78,4	73,2	65,3	84	56
	(2)		83,3	75,3	78,2	77,9	76,9	71,0	64,3	83	55
0672S	(1)		83,3	75,6	79,1	78,8	80,6	77,2	70,3	86	58
	(2)		83,3	75,4	77,8	77,9	78,4	74,2	67,8	84	56
0812S	(1)		83,3	76,5	80,1	79,3	80,2	74,4	68,0	85	57
	(2)		83,3	75,9	78,4	78,1	78,1	71,9	66,1	83	55
1003S	Low speed	(1)	70,6	71,4	79,6	78,0	78,7	74,1	65,5	84	56
		(2)	70,6	70,0	76,7	75,8	75,2	70,7	62,4	81	53
	High speed	(1)	76,3	75,0	80,6	80,5	79,2	74,4	66,0	85	57
		(2)	76,3	74,4	78,5	79,4	76,3	71,3	63,4	83	55
1103S	Low speed	(1)	73,4	73,0	78,5	78,4	79,7	76,1	68,9	85	57
		(2)	73,3	72,0	76,2	76,9	76,4	72,7	65,8	82	54
	High speed	(1)	81,9	78,9	80,8	82,8	81,4	76,8	70,0	87	59
		(2)	81,9	78,7	79,6	82,3	79,4	74,2	67,7	86	58
1203S	Low speed	(1)	73,4	71,9	76,6	79,3	79,6	75,8	68,5	85	57
		(2)	73,3	71,6	75,1	78,8	77,9	73,4	66,2	83	55
	High speed	(1)	81,9	78,6	79,8	83,1	81,3	76,6	69,6	87	59
		(2)	81,9	78,6	79,1	82,9	80,2	74,7	68,0	86	58
1303S	Low speed	(1)	75,0	73,5	78,0	80,4	80,6	76,3	68,4	86	58
		(2)	75,0	73,3	76,9	80,0	79,4	74,3	66,1	84	56
	High speed	(1)	84,2	80,8	81,4	84,8	82,9	77,5	70,3	89	61
		(2)	84,2	80,7	80,9	84,6	82,2	76,0	69,0	88	60

(1) The above data shows noise levels **without** isolation for compressor
(2) The above data shows noise levels **with** isolation for compressor (option)

Global sound power level measured in compliance with ISO standard 3744 and under Eurovent certification program

Sound pressure in dB(A) calculated at 10 m, in a free field on a reflecting surface, is given as a guide only and with a directibility of +/- 3 dBA.

Only the sound power spectrum and the global sound power value are used in determining pressure characteristics on site. The data table above, are calculated:

A) For units: EAC/EAR 0091S to 0812S

Operating on cooling or heating mode (with ambient temperatures higher than +35ºC), and at maximum fan speed. For ambient temperatures lower than +35 ºC and unit working on cooling mode, the fan, speed regulating, and produce an attenuation of noise level as follow:

Sound pressure level attenuation calculated at 10 m (dBA) shows in the table below, (minimum speed when ambient temperatures lower than +20 ºC).

MODELS EAC / EAR	0091S	0111S/0211S	0251S/0431S	0472S/0812S
Noise level attenuation, because of fan speed regulation	-1 dBA	-2 dBA	-3 dBA	-3 dBA

B) For units: EAC/EAR 1003S to 1303S.

- For ambient temperatures lower than +35ºC and unit working on cooling mode the fan is running in low speed, and with ambient temperatures higher than +35ºC the fan is running in high speed.
- For ambient temperatures higher than +6ºC and unit working on heating mode the fan is running in low speed and with ambient temperatures lower than +6ºC the fan is running in high speed.

HIGH STATIC PRESSURE UNITS (WITHOUT AIR DUCT)

	EAC EAR		Spectrum per octave band (dBA)							Global sound power Lw dB(A)
			125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
FP VERSION	0091S	(1)	58,0	67,0	69,6	72,9	74,0	71,0	63,5	79
		(2)	58,0	67,0	69,5	72,7	73,7	70,8	62,9	79
	0111S	(1)	61,0	69,5	72,6	75,8	76,7	73,7	65,4	82
		(2)	61,0	69,5	72,5	75,7	76,6	73,6	65,2	81
	0151S	(1)	61,1	69,6	73,0	76,1	76,7	74,0	66,1	82
		(2)	61,1	69,5	72,8	75,8	76,6	73,7	65,6	82
	0191S	(1)	61,0	69,5	73,0	76,3	76,8	74,1	65,9	82
		(2)	61,0	69,5	72,8	75,9	76,6	73,8	65,5	82
	0211S	(1)	61,1	70,2	75,7	76,8	77,6	74,7	65,3	83
		(2)	61,0	69,8	74,3	76,1	77,0	74,1	65,2	82
FP1 VERSION	0251S	(1)	60,2	69,5	79,2	82,4	80,8	76,2	67,2	86
		(2)	60,1	69,2	78,6	82,2	80,4	75,6	67,1	86
	0291S	(1)	60,1	69,5	79,5	82,4	80,7	75,9	67,5	86
		(2)	60,1	69,2	78,8	82,2	80,3	75,4	67,3	86
	0351S	(1)	60,4	69,8	79,2	82,4	81,5	77,4	69,7	87
		(2)	60,2	69,4	78,6	82,2	80,7	76,2	68,5	86
	0431S	(1)	60,6	71,4	79,7	82,5	81,3	76,3	68,5	87
		(2)	60,3	70,3	78,9	82,2	80,6	75,6	67,8	86
	0472S	(1)	63,2	72,5	82,2	85,4	83,8	79,2	70,2	89
		(2)	63,1	72,2	81,6	85,2	83,4	78,6	70,0	89
	0552S	(1)	63,1	72,5	82,5	85,4	83,7	78,9	70,5	89
		(2)	63,1	72,2	81,8	85,2	83,3	78,4	70,0	89
	0672S	(1)	63,4	72,8	82,2	85,4	84,5	80,4	72,7	90
		(2)	63,2	72,4	81,6	85,2	83,7	79,2	70,0	89
	0812S	(1)	63,6	74,4	82,7	85,5	84,3	79,3	71,5	90
		(2)	63,3	73,3	81,9	85,2	83,6	78,6	70,0	89
	1003S	(1)	84,2	80,9	82,6	84,6	82,0	76,1	68,9	88
		(2)	84,2	80,7	81,3	84,2	80,7	74,2	67,7	87
	1103S	(1)	84,2	80,9	81,9	84,4	82,4	77,4	70,7	88
		(2)	84,2	80,7	80,9	84,1	80,9	75,1	68,9	87
	1203S	(1)	84,2	80,7	81,1	84,7	82,3	77,2	70,4	88
		(2)	84,2	80,7	80,6	84,5	81,5	75,6	69,1	88
	1303S	(1)	84,2	80,8	81,4	84,8	82,9	77,5	70,3	89
		(2)	84,2	80,7	80,9	84,6	82,2	76,0	69,0	88
FP2 VERSION	0251S	(1)	72,0	79,1	84,3	86,2	83,4	78,7	70,1	90
		(2)	72,0	79,0	84,2	86,1	83,2	78,3	70,1	90
	0291S	(1)	72,0	79,0	84,4	86,2	83,4	78,5	70,3	90
		(2)	72,0	79,0	84,2	86,1	83,2	78,2	70,1	90
	0351S	(1)	72,0	79,1	84,3	86,1	83,8	79,3	71,5	90
		(2)	72,0	79,0	84,2	86,1	83,4	78,6	70,8	90
	0431S	(1)	72,0	79,3	84,5	86,2	83,7	78,7	70,8	90
		(2)	72,0	79,1	84,2	86,1	83,3	78,3	70,4	90
	0472S	(1)	75,0	82,1	87,3	89,2	86,4	81,7	73,1	93
		(2)	75,0	82,0	87,2	89,1	86,2	81,3	73,0	93
	0552S	(1)	75,0	82,0	87,4	89,2	86,4	81,5	73,3	93
		(2)	75,0	82,0	87,2	89,1	86,2	81,2	73,0	93
	0672S	(1)	75,0	82,1	87,3	89,1	86,8	82,3	74,5	93
		(2)	75,0	82,0	87,2	89,1	86,4	81,6	73,0	93
	0812S	(1)	75,0	82,3	87,5	89,2	86,7	81,7	73,8	93
		(2)	75,0	82,1	87,2	89,1	86,3	81,3	73,0	93
	1003S	(1)	96,4	93,6	91,8	93,1	89,5	86,4	81,9	97
		(2)	96,4	93,6	91,6	93,0	89,3	86,3	81,8	97
	1103S	(1)	96,4	93,6	91,7	93,1	89,6	86,6	82,0	97
		(2)	96,4	93,6	91,6	93,0	89,3	86,3	81,9	97
	1203S	(1)	96,4	93,6	91,6	93,1	89,6	86,5	82,0	97
		(2)	96,4	93,6	91,6	93,1	89,4	86,4	81,9	97
	1303S	(1)	96,4	93,6	91,6	93,1	89,7	86,6	82,0	97
		(2)	96,4	93,6	91,6	93,1	89,5	86,4	81,9	97

(1) The above data shows noise levels **without** isolation for compressor, and unit mounted without air duct
(2) The above data shows noise levels **with** isolation for compressor (option), and unit mounted without air duct

- Global sound power level measured in compliance with ISO standard 3744 and under Eurovent certification program.
- The data table above, are calculated for units operating on cooling or heating mode.
- The above data shows sound power level data (Lw) calculated **without air ducts** on the installation.
  The final sound pressure level for the installation, will be decreased, once the ducts will be installed, and depends on material and dimensions of them.

STANDARD AXIAL FAN UNITS WITHOUT AIR DUCTS

COOLING MODE

MODELS EAC / EAR	0091 TO 0431S	0472 TO 0812S	1003 TO 1303S
Outlet chilled water temperature	Minimum : +5°C Maximum : +12°C	Minimum : +5°C Maximum : +12°C	Minimum : +5ºC Maximum : +12ºC
Inlet chilled water temperature	Minimum : +10 °C Maximum : +17°C	Minimum : +9 °C Maximum : +17°C	Minimum : +8ºC Maximum : +17ºC
Air inlet temperature	Minimum : 0°C (1) Maximum : +46°C	Minimum : 0°C (1) Maximum : +46°C	Minimum : 0°C (1) Maximum : +46°C

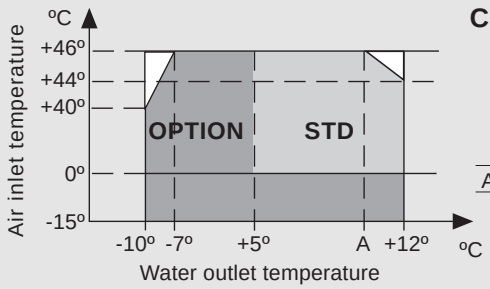
NOTE: With outdoor temperatures below +5°C, add glycol
(1) With the option cooling low ambient kit (-15ºC), it is possible the unit operation down to -15ºC in EAC units.

HEATING MODE

MODELS EAR	0091 TO 0812S	1003 TO 1303S
Hot water outlet temperature (operation)	Minimum : +20°C Maximum : +50°C	Minimum : +20ºC Maximum : +50ºC
Hot water inlet temperature (start)	Minimum : +10 °C Maximum : +43°C	Minimum : +10ºC Maximum : +43ºC
Difference hot water inlet/outlet	Minimum :+3°C Maximum : +8°C	Minimum : +3ºC Maximum : +8ºC
Air inlet temperature	Minimum : -10°C (2) Maximum : +23°C	Minimum : -10ºC (2) Maximum : +23ºC

OUTSIDE THESE VALUES, PLEASE CONSULT US
(2) With the option heating low ambient kit (-15ºC), it is possible the unit operation down to -15ºC

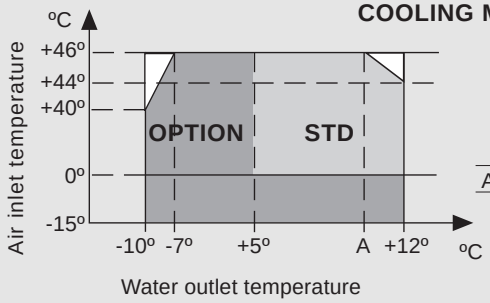
COOLING ONLY UNITS (EAC)



	0091S to 0812S	1003S to 1303S
A	+9ºC	+7ºC

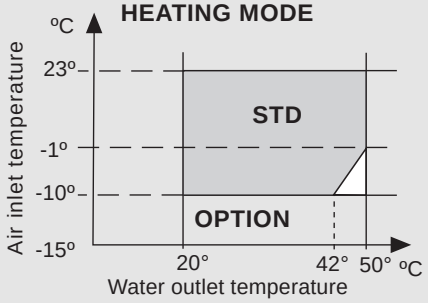
HEAT PUMP UNITS (EAR)

COOLING MODE



	0091S to 0812S	1003S to 1303S
A	+9ºC	+7ºC

HEATING MODE



NOTE: With outdoor temperatures below +5°C, add glycol.

STANDARD AXIAL FAN UNITS WITH AIR DUCTS

COOLING MODE

AVAILABLE PRESSURE UP TO 50 Pa	0091 to 0211S		0251 to 1303S	
Available static pressure Pa	**30**	**50**	**30**	**50**
Maximum ambient temperature ºC	43	40	42	38

HEATING MODE

AVAILABLE PRESSURE UP TO 50 Pa	0091 to 0211S		0251 to 1303S	
Available static pressure Pa	**30**	**50**	**30**	**50**
Minimum ambient temperature ºC (1)	-8	-6	-8	-6

(1) With the option heating low ambient kit (-15ºC), it is possible the unit operation down to -15ºC

HIGH STATIC PRESSURE UNITS

COOLING MODE

AVAILABLE PRESSURE UP TO 200 Pa FP VERSION	0091 to 0211S-FP MODEL UNITS			
Available static pressure Pa	**50**	**100**	**150**	**200**
Maximum ambient temperature ºC	46	45	41	38
Minimum ambient temperature ºC	0ºC (1)			

AVAILABLE PRESSURE UP TO 120 Pa FP1 VERSION	0251 to 1003S-FP1 MODEL UNITS				1103 to 1303S-FP1 MODEL UNITS			
Available static pressure Pa	**50**	**75**	**100**	**125**	**50**	**75**	**100**	**125**
Maximum ambient temperature ºC	46	43	39	35	44	41	37	35
Minimum ambient temperature ºC	0ºC (1)				0ºC (1)			

AVAILABLE PRESSURE UP TO 250 OR 350 Pa FP2 VERSION	0251 to 0812S-FP2 MODEL UNITS					1003 to 1303S-FP2 MODEL UNITS				
Available static pressure Pa	**150**	**200**	**250**	**300**	**350**	**150**	**200**	**250**	**300**	**350**
Maximum ambient temperature ºC	47	44	41	38	35	47	44	41	N/A	N/A
Minimum ambient temperature ºC	0ºC					0ºC (1)				

(1) With the option cooling low ambient kit (-15ºC), it is possible the unit operation down to -15ºC.

HEATING MODE

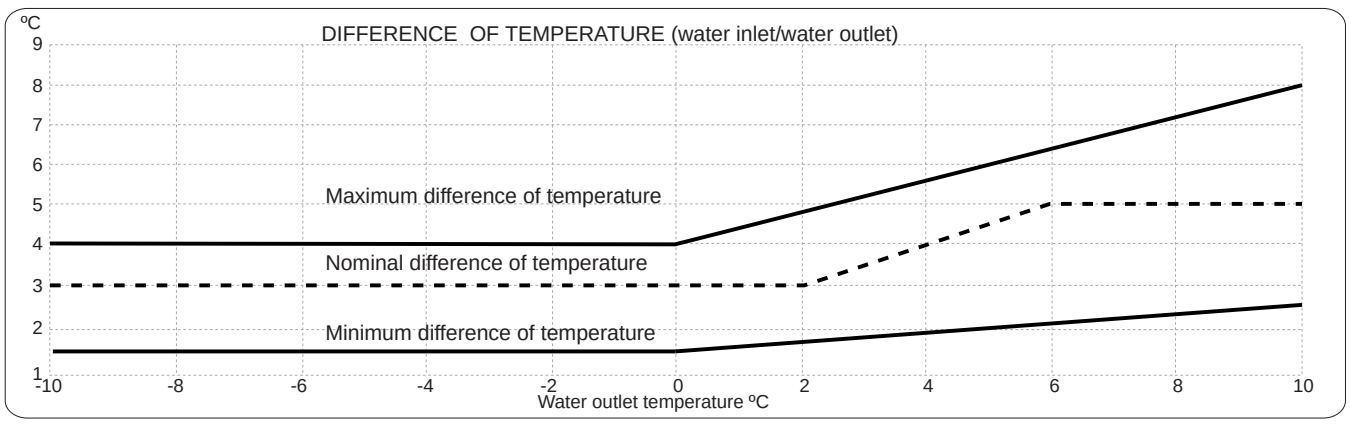
AVAILABLE PRESSURE UP TO 200 Pa FP VERSION	0091 to 0211S-FP MODEL UNITS			
Available static pressure Pa	**50**	**100**	**150**	**200**
Minimum ambient temperature ºC (2)	-10	-10	-8	-6

AVAILABLE PRESSURE UP TO 120 Pa FP1 VERSION	0251 to 1303S-FP1 MODEL UNITS			
Available static pressure Pa	**50**	**75**	**100**	**125**
Minimum ambient temperature ºC (2)	-10	-8	-6	-5

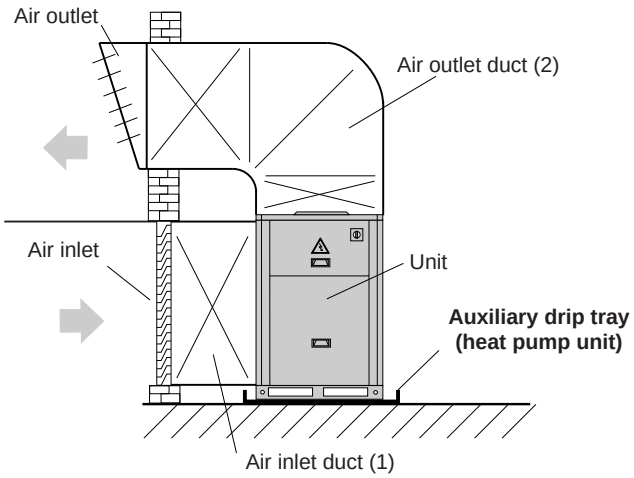
AVAILABLE PRESSURE UP TO 250 OR 350 Pa FP2 VERSION	0251 to 0812S-FP2 MODEL UNITS					1003 to 1303S-FP2 MODEL UNITS				
Available static pressure Pa	**150**	**200**	**250**	**300**	**350**	**150**	**200**	**250**	**300**	**350**
Minimum ambient temperature ºC (2)	-10	-10	-8	-6	-5	-10	-10	-8	N/A	N/A

(2) With the option heating low ambient kit (-15ºC), it is possible the unit operation down to -15ºC.

UNITS WITH LOW WATER TEMPERATURE KIT (OPTION)



LOCATION INSIDE



For location inside, keep in mind following advice:

-In heat pump units during defrost cycle, the units produce a great amount of water melting the ice off coils.
If you wish to drain the water, an auxiliary drip tray, should to be installed below the unit to collect and carry out water where desired.

-Air duct installation:
If air duct has been installed, the operating limits get reduced (see operation limits section in this manual).
(1) The air intake plenum (option) available for models from 0251 to 1303 makes easier the installation of the air intake duct (see page 6).
(2) The discharge plenum (option) lets the installation of a square discharge duct for the high static pressure units FP1 and FP2 (see page 6).

CONTENTS

DESCRIPTION

- All hydraulic accessories are integrated in the standard unit casing

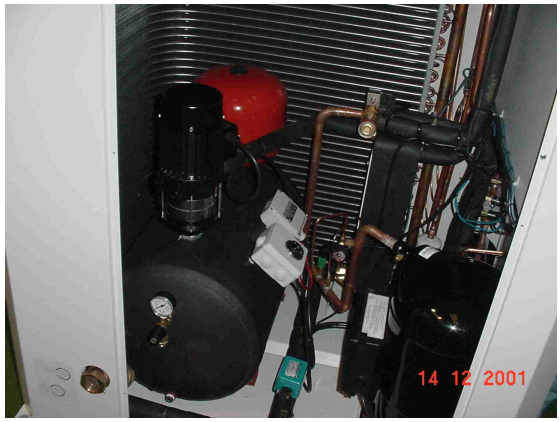
COMPONENTS:

HYDRONIC VERSION:

- Water tank
- Water pump
- Expansion vessel
- Collapsible water filter
- Safety valve
- Manometer
- Flow switch

HYDRAULIC VERSION:

- Water pump
- Expansion vessel
- Collapsible water filter
- Safety valve
- Manometer
- Flow switch



TECHNICAL DATA

MODELS			0091S	0111S	0151S	0191S	0211S	0251S	0291S	0351S	0431S
Expansion vessel											
Capacity		l	5	5	5	5	5	12	12	12	12
Max. pressure		bar	4								
Pressure available (nominal water flow)		KPa	196	161	152	140	126	131	106	140	96
Water flow rate nominal		l/s.	0,42	0,53	0,64	0,83	0,91	1,10	1,29	1,53	1,84
Net weight	Hydronic version	Kg	44	44	44	44	45	47	47	48	48
(add to the unit weight)	Hydraulic version	Kg	14	14	14	14	15	16	16	17	17
Hydraulic connections		inches	1"G	1"G	1"G	1"G	1"G	1 1/2"G	1 1/2"G	1 1/2"G	1 1/2"G
Water tank (1)		l	50	50	50	50	50	75	75	75	75

MODELS			0472S	0552S	0672S	0812S	1003S	1103S	1203S	1303S
Expansion vessel										
Capacity		l	18	18	18	18	35	35	35	35
Max. pressure		bar	4							
Pressure available (nominal water flow)		KPa	122	111	164	107	189	172	151	131
Water flow rate nominal		l/s.	2,10	2,46	2,99	3,61	4,30	4,83	5,47	6,07
Net weight	Hydronic version	Kg	55	55	57	57	81	81	81	81
(add to the unit weight)	Hydraulic version	Kg	23	23	24	24	26	26	26	26
Hydraulic connections		inches	2"G	2"G	2"G	2"G	2 1/2"G	2 1/2"G	2 1/2"G	2 1/2"G
Water tank (1)		l	100	100	100	100	240	240	240	240

(1) Only for units with Hydronic version

SINGLE PUMP

MODELS		0091S	0111S	0151S	0191S	0211S	0251S	0291S	0351S	0431S
Pump Type		Horizontal multistage centrifugal pump								
Voltage	V.	1N~230V			3~230V-3~400V					
Power	kW	0,49	0,49	0,49	0,72	0,72	0,72	0,72	1,10	1,10
Maxi current	A	2,3	2,3	2,3	2,4-1,4	2,4-1,4	2,4-1,4	2,4-1,4	3,0-1,7	3,0-1,7

MODELS		0472S	0552S	0672S	0812S	1003S	1103S	1203S	1303S
Pump Type		Horizontal multistage centrifugal pump							
Voltage	V.	3~230V-3~400V				3~400V			
Power	kW	1,17	1,17	1,55	1,55	2,2	2,3	2,5	2,7
Maxi current	A	3,0-1,7	3,0-1,7	4,8-2,8	4,8-2,8	3,7	3,9	4,2	4,5

The EcoLean™ system comprises a water cooler or air/water pump combined with a series of hydraulic accessories obtaining the Hydraulic or Hydronic version.

COMPONENTS:

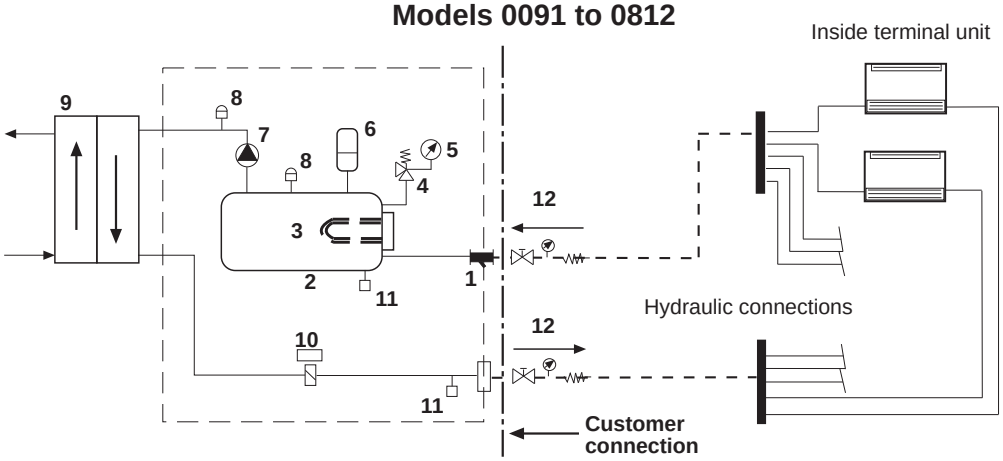
HYDRONIC VERSION:
1,2,3,4,5,6,7,8,9,10, 11

HYDRAULIC VERSION:
1,4,5,6,7,8,9,10,11

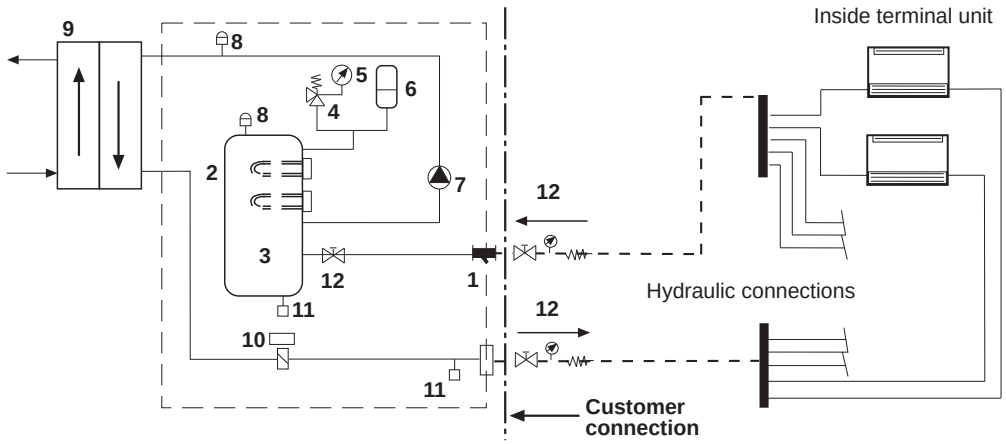
1.- Detachable water filter
2.- Water tank
3.- Water tank heater (in option)
4.- Safety valve
5.- Manometer
6.- Expansion vessel
7.- Water pump
8.- Air purge valve
9.- Plate exchanger
10.- Flow switch
11.- Drain valve
12.- Water isolation valves (in option)

HYDRONIC VERSION

Models 0091 to 0812

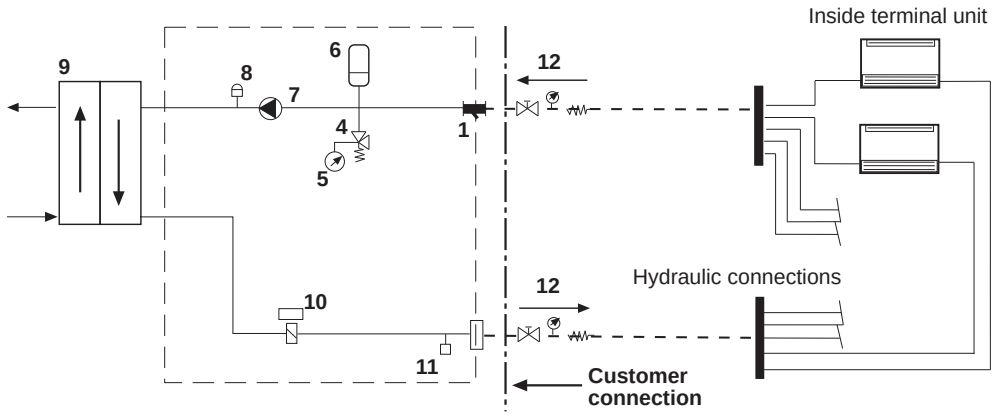


Models 1003 to 1303



HYDRAULIC VERSION

Models 0091 to 1303



AVAILABLE STATIC PRESSURE OF THE UNIT

WATER FLOW AND AVAILABLE STATIC PRESSURE (Factory supplied; standard water pump and filter).

	MODEL	EAC / EAR 0091S					EAC / EAR 0111S					EAC / EAR 0151S				
Water flow	l/s	0,34	0,38	0,42	0,47	0,53	0,42	0,48	0,53	0,59	0,66	0,51	0,57	0,64	0,71	0,79
	m^3/h	1,21	1,36	1,51	1,68	1,89	1,53	1,72	1,91	2,12	2,39	1,83	2,06	2,29	2,54	2,86
Available static pressure	kPa	216	207	196	183	163	196	178	161	144	126	186	170	152	132	104

	MODEL	EAC / EAR 0191S					EAC / EAR 0211S					EAC / EAR 0251S				
Water flow	l/s	0,66	0,74	0,83	0,92	1,03	0,73	0,82	0,91	1,01	1,14	0,88	0,99	1,10	1,22	1,37
	m^3/h	2,38	2,68	2,98	3,31	3,72	2,63	2,96	3,29	3,65	4,11	3,16	3,56	3,96	4,40	4,95
Available static pressure	kPa	170	154	140	124	107	167	144	126	111	100	175	152	131	110	87

	MODEL	EAC / EAR 0291S					EAC / EAR 0351S					EAC / EAR 0431S			
Water flow	l/s	1,03	1,16	1,29	1,43	1,61	1,22	1,38	1,53	1,70	1,91	1,47	1,66	1,84	2,04
	m^3/h	3,72	4,18	4,64	5,16	5,81	4,40	4,95	5,50	6,12	6,88	5,30	5,96	6,62	7,36
Available static pressure	kPa	153	129	106	83	55	210	176	140	98	43	161	132	96	47

	MODEL	EAR 0472S					EAR 0552S					EAR 0672S				
Water flow	l/s	1,68	1,89	2,10	2,34	2,63	1,96	2,21	2,46	2,73	3,07	2,39	2,69	2,99	3,32	3,73
	m^3/h	6,05	6,81	7,57	8,41	9,46	7,07	7,96	8,84	9,82	11,05	8,60	9,68	10,75	11,94	13,44
Available static pressure	kPa	156	139	122	104	82	140	126	111	93	69	226	195	164	131	90

	MODEL	EAR 0812S				EAC 0472S					EAC 0552S				
Water flow	l/s	2,89	3,25	3,61	4,01	1,68	1,89	2,10	2,34	2,63	1,96	2,21	2,46	2,73	3,07
	m^3/h	10,39	11,69	12,99	14,43	6,05	6,81	7,57	8,41	9,46	7,07	7,96	8,84	9,82	11,05
Available static pressure	kPa	188	153	111	56	156	141	128	115	101	140	128	115	99	78

	MODEL	EAC 0672S					EAC 0812S				EAC / EAR 1003S				
Water flow	l/s	2,39	2,69	2,99	3,32	3,73	2,89	3,25	3,61	4,01	3,44	3,87	4,30	4,78	5,38
	m^3/h	8,60	9,68	10,75	11,94	13,44	10,39	11,69	12,99	14,43	12,38	13,93	15,48	17,20	19,35
Available static pressure	kPa	223	194	165	134	97	180	147	107	54	215	206	196	183	164

	MODEL	EAC / EAR 1103S					EAC / EAR 1203S					EAC / EAR 1303S				
Water flow	l/s	3,86	4,34	4,83	5,36	6,03	4,38	4,92	5,47	6,08	6,84	4,85	5,46	6,07	6,74	7,58
	m^3/h	13,90	15,63	17,37	19,30	21,72	15,76	17,72	19,69	21,88	24,62	17,48	19,66	21,84	24,27	27,31
Available static pressure	kPa	206	195	181	164	139	194	178	160	138	105	180	161	138	109	75

NOTE: The flow data indicated in table are between a minimum and a maximum water flow.
With the twin pumps kit, the available static pressure will decrease 5% from the data shown above.

Unit conversion:
Pressure 1KPa = 1/9,8 m.c.a. = 0,01 bar
1 bar = 10 m.c.a. = 100 kPa

GLYCOL SOLUTION UNIT

If the outside temperature where the system is to be installed or the water outlet temperature is likely to drop below 5ºC, it is very important to use glycol anti-freeze.

The amount of anti-freeze required will vary depending on the minimum ambient temperature or the water outlet temperature. When the percentage of glycol increases the standard pump flow decreases, the pressure drop increases and the cooling and thermal capacities drop. As a result the minimum flow must be multiplied by the coefficient shown in the table:

MINIMUM AMBIENT TEMPERATURE OR WATER OUTLET TEMPERATURE	ETHYLENE GLYCOL %	PRESSURE DROP	WATER FLOW	CAPACITIES COOL	CAPACITIES HEAT
FROM +5ºC TO 0ºC	10 %	1,05	1,02	0,99	0,994
FROM 0ºC TO -5ºC	20 %	1,10	1,05	0,98	0,993
FROM -5ºC TO -10ºC	30 %	1,15	1,08	0,97	0,99
FROM -10ºC TO -15ºC	35 %	1,18	1,10	0,96	0,987

Example: 10 % glycol in EAC0091SKHN
Minimum flow: 1,19 m^3/h x 1.02
Pressure drop x 1.07
System capacity x 0.99

MINIMUM WATER FLOW

The installation must never operate with less than the minimum water flow (see table above), this will cause:

i. - Freezing the water heat exchanger.

ii. - Contamination of the heat exchanger.

MAXIMUM WATER FLOW

See maximum water flow, (see table above). Always assure the minimum ΔT to the exchanger of 3ºC.

MAXIMUM WATER VOLUME IN THE INSTALLATION

The units with Hydronic or Hydraulic module include a expansion vessel.

The table below details the maximum water volume in the system.

Models	0091/0211	0251/0431	0472/0812	1003/1303
Solution	Water volume in liters			
Water	225	550	850	1650
Water + 10% gyt	175	400	650	1260
Water + 20% gyt	150	350	575	1115
Water + 30% gyt	125	300	450	875
Water + 35% gyt	110	225	325	650

If the water volume in the system is greater than that detailed in the table it will be necessary to add additional expansion vessel(s).

The system design must allow for water expansion and contraction.

WATER TANK HEATER (AN OPTION)

The option for Antifreeze protection on the buffer tank includes on cooling only units a immersion heater with safety thermostat.

On heat pump units only when fitted with a buffer tank it is possible to have anti freeze plus supplemental water heater this includes immersion heater with safety thermostat and a adjustable heater thermostat.

Tank anti-freeze heater: It starts when water temperature in the buffer tank is lower than + 5 ºC (Not for units with low water temperature kit).

Water tank electrical heater: heat pump units only. The heater works as anti-freeze heater as explained before and as supplementary heater, when inlet warm water reaches a temperature below a value selected (example: 30 ºC) through an independent thermostat included.

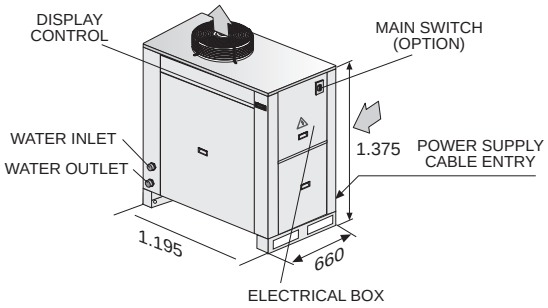
Power consumption is:

Models		0091/0211	0251/0431	0472/0812	1003/1303
Voltage	v	1N~230V	3~230V - 3~400V		3~400V
Tank anti-freeze heater	kW	2,25	2,25	2,25	6
Water tank electrical heater*	kW	6	9	12	24

(*) Heat pump units only

(HYDRAULIC VERSION)

1 EAC/EAR 0091S



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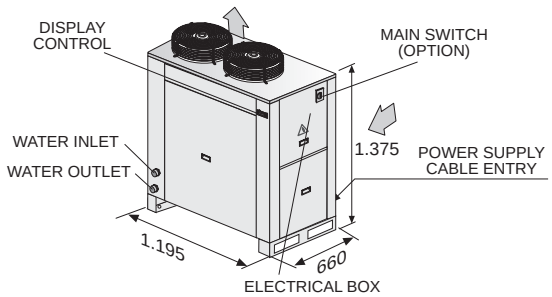

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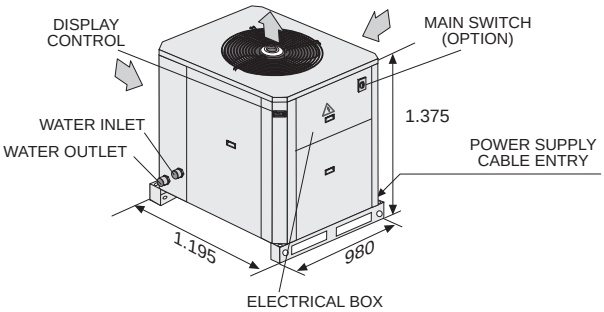
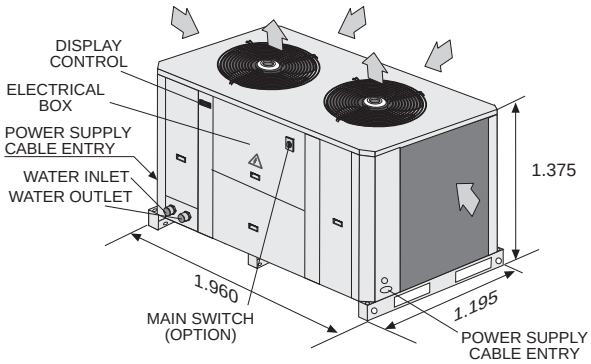
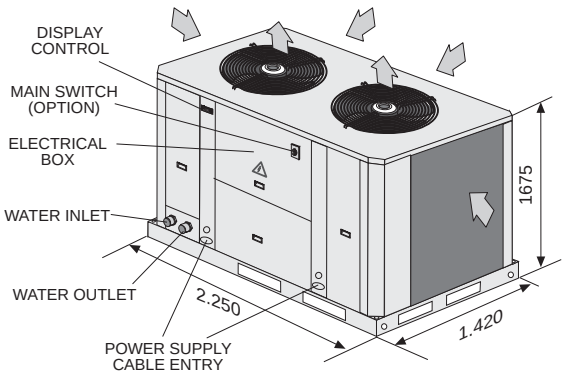


4 EAC/EAR 0472S-0552S-0672S-0812S



5 EAC/EAR 1003S-1103S-1203S-1303S



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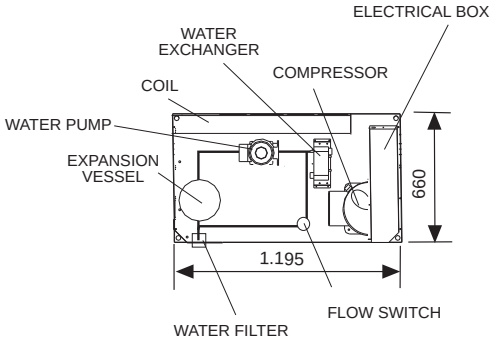

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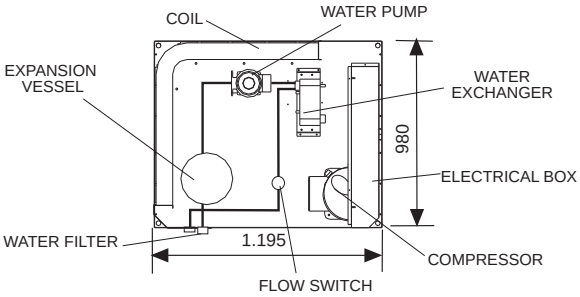

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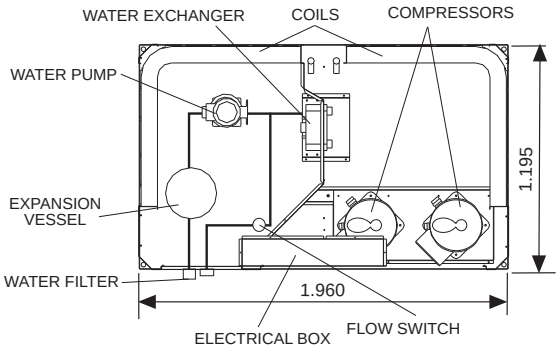

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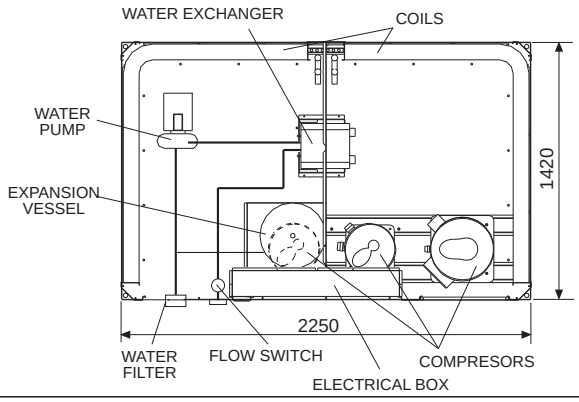
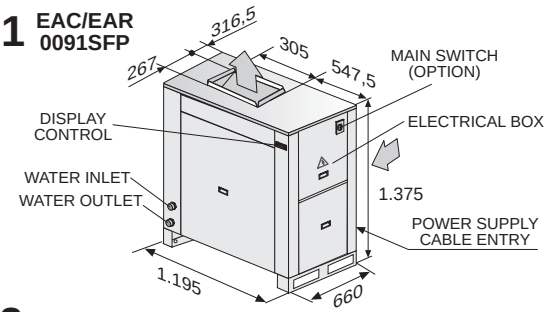
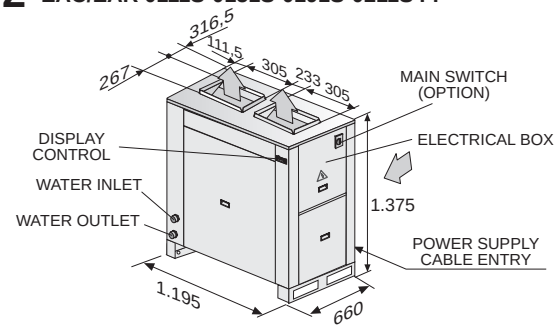


(HYDRAULIC VERSION)

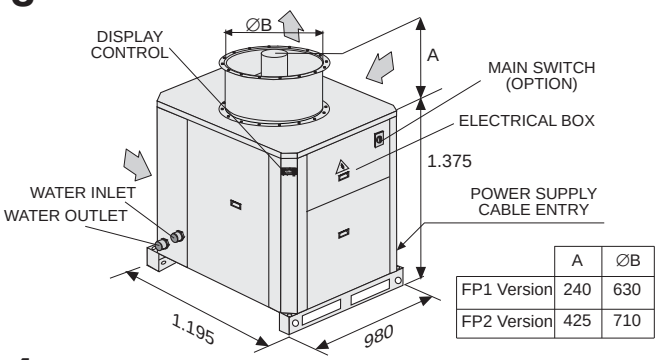
1 EAC/EAR 0091SFP



2 EAC/EAR 0111S-0151S-0191S-0211S FP



3 EAC/EAR 0251S-0291S-0351S-0431S FP1/FP2



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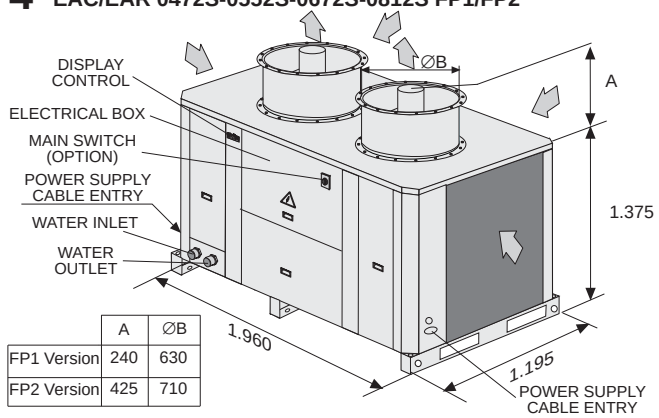
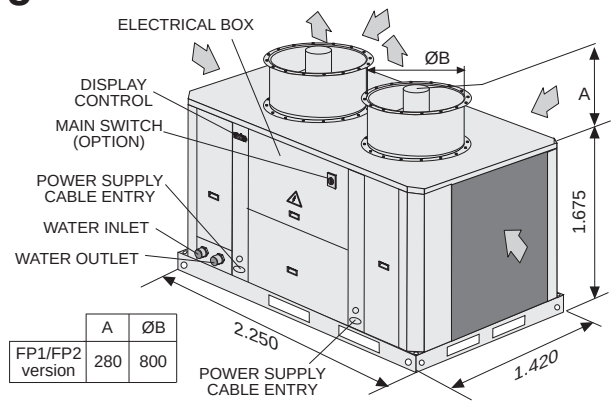
FP1 Version	240	630
FP2 Version	425	710

4 EAC/EAR 0472S-0552S-0672S-0812S FP1/FP2



	A	ØB
FP1 Version	240	630
FP2 Version	425	710

5 EAC/EAR 1003S-1103S-1203S-1303S FP1/FP2



	A	ØB
FP1/FP2 version	280	800

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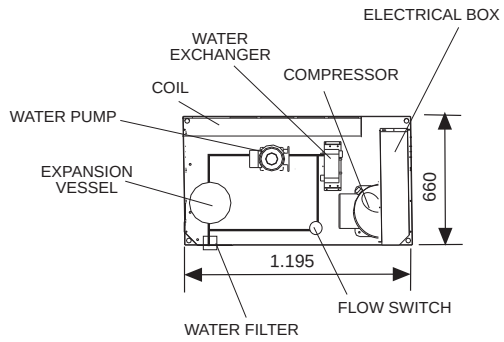

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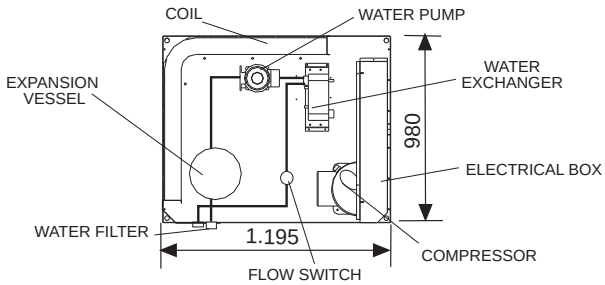

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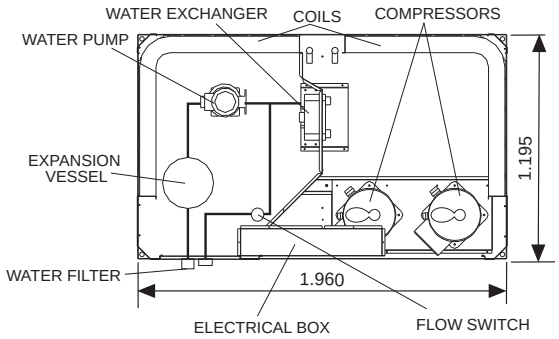

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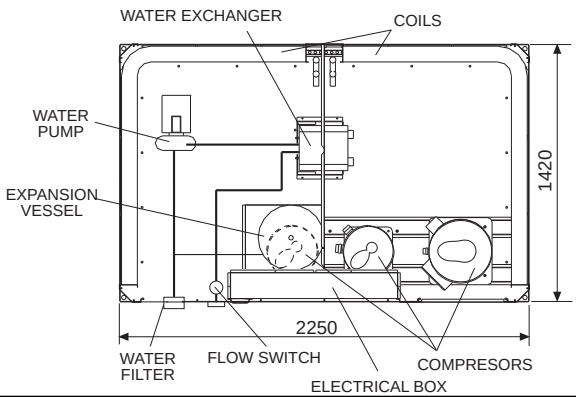
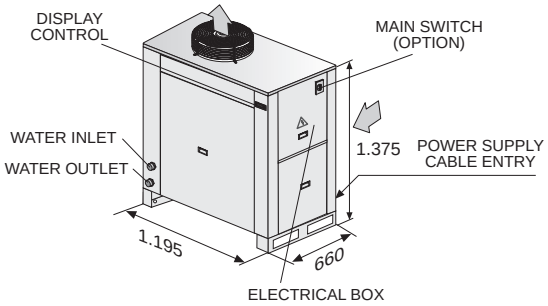


(HYDRONIC VERSION)

1 EAC/EAR 0091S



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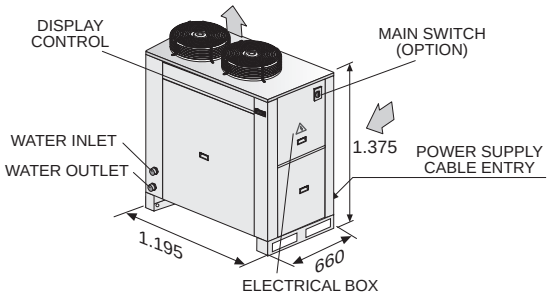

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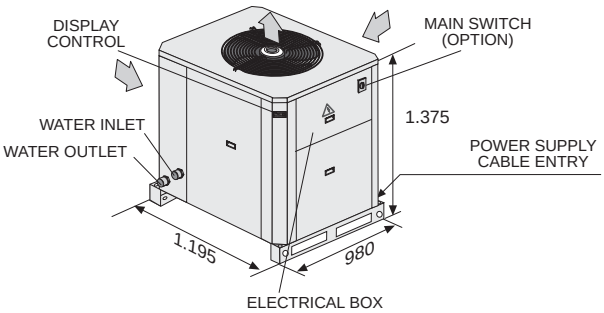
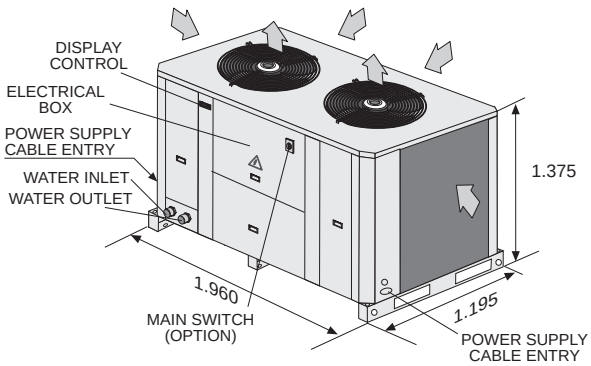
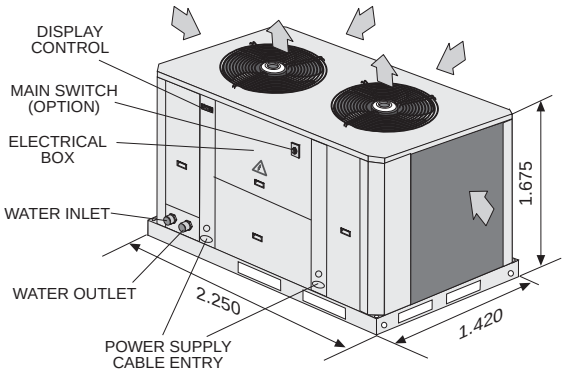


4 EAC/EAR 0472S-0552S-0672S-0812S



5 EAC/EAR 1003S-1103S-1203S-1303S



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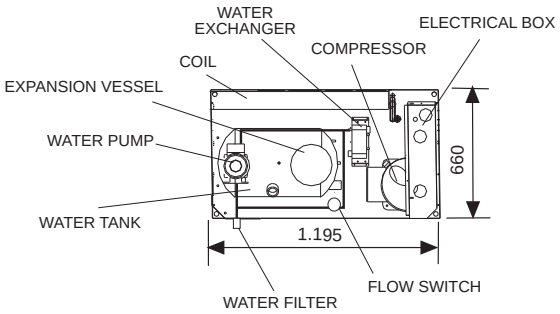

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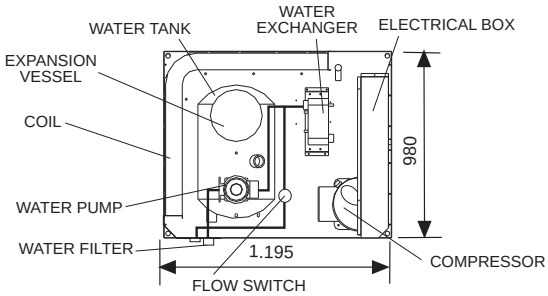
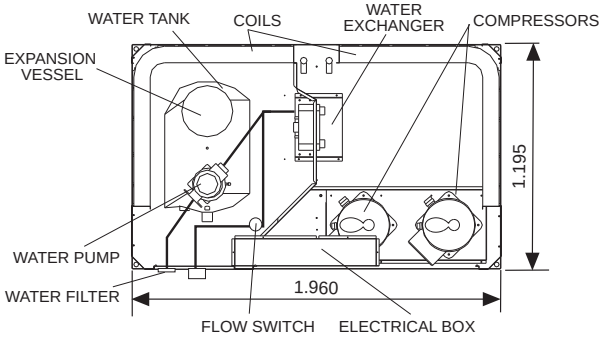
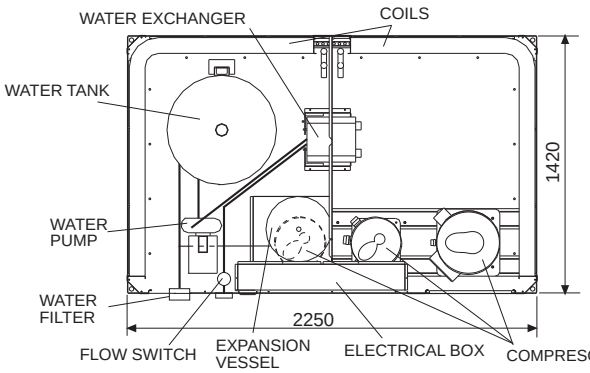


4 COMPONENT POSITION HYDRONIC VERSION UNIT

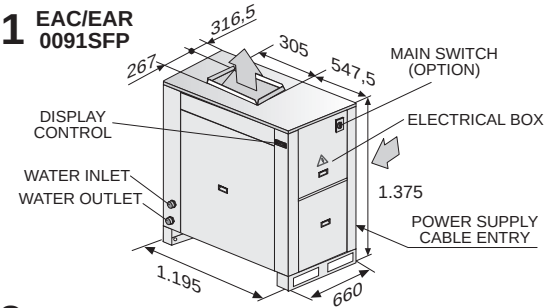


5 COMPONENT POSITION HYDRONIC VERSION UNIT

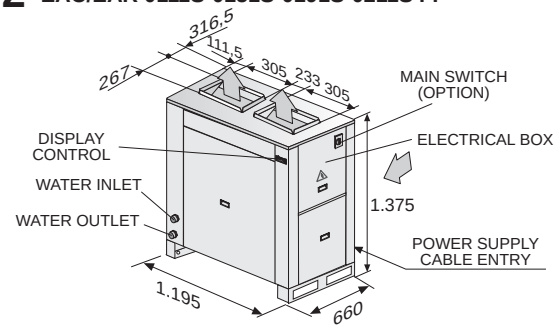


(HYDRONIC VERSION)

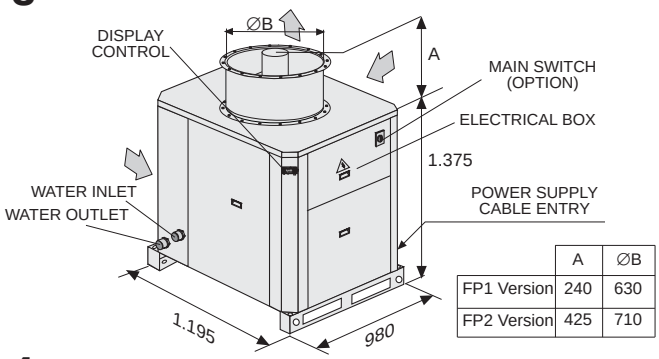
1 EAC/EAR 0091SFP



2 EAC/EAR 0111S-0151S-0191S-0211S FP

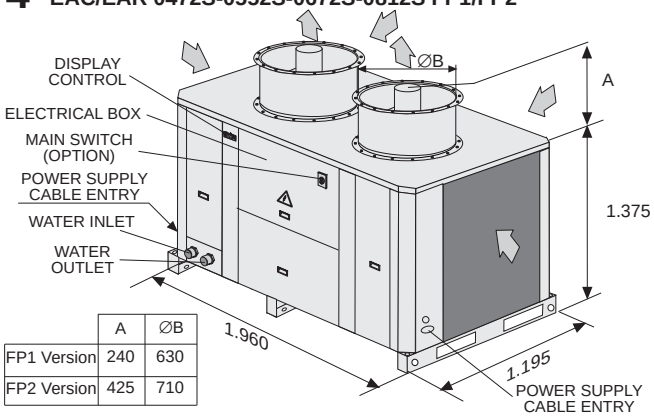


3 EAC/EAR 0251S-0291S-0351S-0431S FP1/FP2



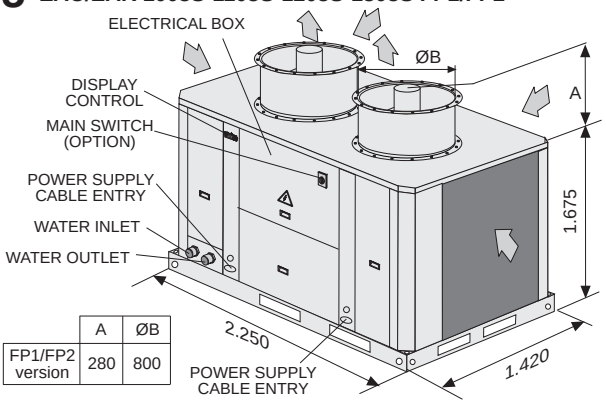
	A	ØB
FP1 Version	240	630
FP2 Version	425	710

4 EAC/EAR 0472S-0552S-0672S-0812S FP1/FP2



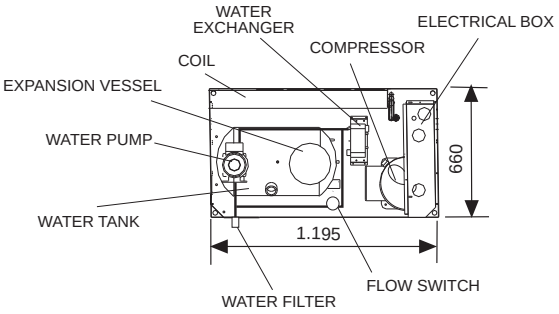
	A	ØB
FP1 Version	240	630
FP2 Version	425	710

5 EAC/EAR 1003S-1103S-1203S-1303S FP1/FP2



	A	ØB
FP1/FP2 version	280	800

1 / 2 COMPONENT POSITION HYDRONIC VERSION UNIT



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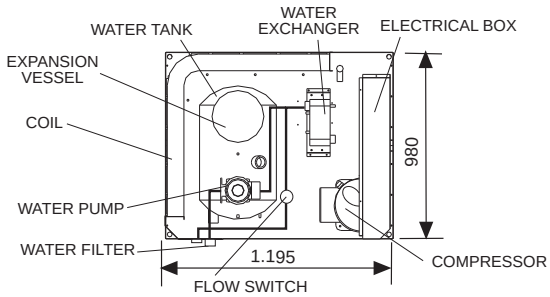
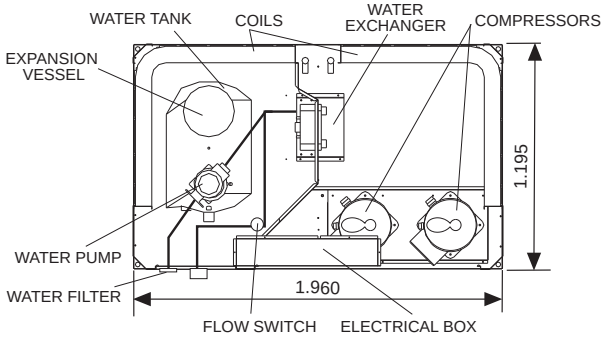
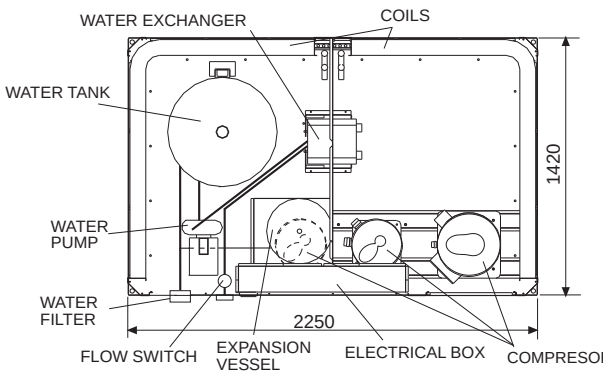


4 COMPONENT POSITION HYDRONIC VERSION UNIT



5 COMPONENT POSITION HYDRONIC VERSION UNIT



EcoLean™ Technical specification

To supply and install, where specified in the project n° …. unit(s) air-cooled water chiller with cooling capacity of …. kW, to cool …. m^3/sec. of water from …. °C to …. working with …. °C ambient temperature. The unit should work with electricity at …. V. 3ph. 50Hz. The electrical power absorbed should not overcome …. kW. The units COP will be at least …. at the working conditions of the project. Part load COP will be at least …. at the working conditions of the project. For the units with 1,2 or 3 compressors, the chillers will have (1) or (2) independent refrigerant circuits, with the respective electronic microprocessor will allow the starting of the compressors and the control of the chiller. Each chiller will be factory assembled on a robust base frame made of coated steel. The panels will be coated steel panels protected by an epoxy coated paint. The unit will be tested at full load in the factory at the nominal working conditions and water temperatures. Before shipment a full refrigerant leak test will be held to avoid any losses, and the units will be filled with oil and …… refrigerant.

General

Units are leak and pressure-tested at 27 bars (400 psi) high side and 16.5 bars (200 psi) low side, and then evacuated and charged. Packaged units ship with a full operating charge of oil and refrigerant. Unit panels, structural elements, and control boxes are constructed of 1.5 to 3 mm (11 to 16 gauge) galvanized sheet metal. The chiller is constructed on a solid rugged base frame constructed of steel beams welded together to form a ridged base. The base is structurally able to carry the unit weight and is torsion ally ridged with no vibrating sections. The base is hot dipped galvanised for corrosion protection. The chiller is lifted, moved and mounted via the base frame that contains mounting and lifting points as standard. Unit panels, control boxes and the structural-steel base are finished with baked-on powder paint. The unit is painted to RAL 9002 as standard. The units must be constructed to meet European norms and standards specifically EN 60204-1, NR 2037/2000, ISO9001, & Eurovent certification performance standards.

Compressors

All units will have direct driven hermetic Scroll compressors. The scroll compressor axial seal will be achieved by floating tip seals the radial seal is achieved via a micro cushion of oil. The scroll components will be able to disengage in the event of liquid carry over. The compressor motors will be suction gas cooled and have thermal overload device. The operating limits of the compressor motors will allow for +/- 10% of the nameplate voltage. The compressors are mounted on vibration isolation pads to reduce noise transmission.

Evaporator

The evaporator is brazed plate type designed, tested, and stamped in accordance with the appropriate pressure-vessel code approval. The evaporator is designed for a waterside working pressure of 10 bars (146psi) and refrigerant side 30 bars (450psi). Water connections are grooved stubs for simple site connection. The evaporator includes an automatic air vent, a drain, and fittings for temperature control sensors, and is insulated with 13 mm (1/2 inch) (K-0.26). Option evaporator heaters are provided to protect the evaporator from freezing at ambient temperatures down to –20°C (-6°F). The evaporator is designed to operate with a flow detection device. Options are for a paddle type switch. The evaporator will have independent refrigerant circuits. The evaporator should be protected from debris and a water filter is available as an option for standard version, included as standard for Hydraulic and Hydronic versions.

Condenser coil

The condenser coils are constructed with internally enhanced seamless copper tubes having a "L" configuration and making this unit compact and highly efficiency.

Condenser fans

The condenser fans are direct drive vertical discharge helical type with multiple aerofoil blades for higher efficiencies and lower noise The fan blade will be of the sickle end type mounted in a bell mouth orifice, except for FP versions which are centrifugal ones. The air discharge is vertical and each fan will be coupled to the electrical motor, supplied as standard to IP54/IP55 class “F” insulation with 6 poles except for FP unit versions which is 4 poles and capable to work to ambient temperatures of –40°C to +70°C max humidity 80%. The fans are direct driven via a single phase motor except for unit models EAC/EAR 1003 to 1303S and FP2 unit version driven via a three phase motor with permanently lubricated ball bearings. The single phase motors are designed for external operation with the possibility with regulation speed via unit control.
The three phase motors are designed with two speeds.

Control panel
Field power connection, controls interlock terminals, and unit control system shall be centrally located in a weatherproof cabinet accessible through a lockable door. All 3-phase connections shall be fully shrouded to prevent accidental contact. Power and starting controls shall include lockable individual fuses and contactors for each compressor winding and fan motors. Operating and safety controls shall be via a microprocessor controller plus thermal protection for compressor and fan motors; high and low pressure cut-out switch (for each refrigerant circuit). Standard single point power connections include main three-phase power plus neutral to the compressors, condenser fans and control power transformer. All internal cables must be mounted on cable tray and tied. The chillers will have full earth bonding between isolated metal parts.

Control & capacity regulation
Standard Controller
The standard control module is a weatherproof digital display. The display shows up to 4 numeric or letter sequences. In addition to the digital display there are functional leds to denote unit operation. Control interface will be via push button and menu screens for simple use. All alarms and faults are shown via the display

Functions:
Remote stop start (remote connection by others)
Flow switch (remote connection by others)
Heat or cool operation selection
Compressor overload Alarm
High pressure Alarm
Low pressure Alarm
Operating hours compressors
Operating hours Pump
Compressor sequencing to match operating hours
Condenser fan control
Chilled water pump
Freeze protection
Chilled water set point control
Alarm counter to go from auto reset to manual reset
Self-diagnostic
Password protection of settings
Remote display option
Hours run

Refrigerant piping
Each refrigerant circuit shall include a factory insulated suction line, a refrigerant filter drier, sensor indicator, liquid line, and thermostatic valve. All refrigerant pipework are clamped to prevent vibration. The refrigerant lines should contain independent Schrader valve test points for maintenance.

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Installation and service must be performed by a qualified installer and servicing agency.

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