CSA

Air cooled water chillers with centrifugal fans

The CSA water chiller range has been designed for small and medium residential and commercial applications.
They are suitable for generating chilled water at 7°C, commonly used in applications with fan coils and/or air handling units.
CSA water chillers have high operating efficiencies, are quiet in operation and are suitable for indoor mounting.
Differing versions and a wide range of accessories, enable the optimal solution to be selected.

VERSIONS

STD	Cooling only versions.

ACCESSORIES

A1NT	Hydraulic kit with: pump, expansion valve, safety valve, flow switch.
A1ZZ	Hydraulic kit with: pump, expansion valve, safety valve, flow switch and insulated tank.
DCCF	Low ambient condensing pressure control.
DCCI	Low ambient inverter condensing pressure control.
FAMM	Coil protection mesh with metallic filter.
FOSP	Condenser fan motors for high external static pressures.
INSE	Serial interface card RS485.
KAVG	Rubber Anti-vibration mountings.
KAVM	Spring Anti-vibration mountings.
LS00	Low noise version.
MAML	Refrigerant circuit pressure gauges.
PCRL	Remote control panel.
RAES	Antifreeze kit (for unit with hydraulic kit).
RAEV	Evaporator antifreeze heater (Basic version only).
RP00	Partial heat recovery.

CSA Models		06	08	10	14	16
Cooling capacity (EN14511) (1)	kW	5,7	7,5	8,5	14,0	15,5
Total input power (EN14511) (1)	kW	2,3	2.9	3,1	5,6	6,6
E.E.R (EN 14511) (1)	W/W	2,5	2,6	2,7	2,5	2,3
Cooling capacity (EN14511) (2)	kW	7,6	9,9	11,1	18,5	20,1
Total input power (EN14511) (2)	kW	2,4	3,1	3,3	5,8	7,2
E.E.R (EN14511) (2)	W/W	3,2	3,2	3,4	3,2	2,8
Power supply	V/Ph/Hz	230/1/50	230/1/50	230/1/50	400/3+N/50	400/3+N/50
Peak current	A	63,8	70,8	101,8	68,3	79,3
Max input current	A	16,6	20,9	25,8	15,6	19,3
Total airflow	m^3/h	2.000	3.000	3.000	5.400	5.400
Fans	n°/kW	1x0,52	1x0,52	1x0,52	1x1,10	1x1,10
Compressors / Circuits	n°/n°	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1
Sound power level (3)	dB (A)	71	71	71	73	73
Sound pressure level (4)	dB (A)	43	43	43	45	45
Water Pump input power	kW	0,1	0,2	0,2	0,5	0,5
Pump available static pressure (1)	kPa	23,7	56,6	46,0	112,8	113,5
Water tank volume	l	40	40	40	40	60

CSA Models		21	26	31	36	41
Cooling capacity (EN14511) (1)	kW	20,5	26,6	30,0	33,0	39,0
Total input power (EN14511) (1)	kW	7,5	9,5	11,7	13,0	15,0
E.E.R (EN 14511) (1)	W/W	2,7	2,8	2,6	2,5	2,6
Cooling capacity (EN14511) (2)	kW	26,7	34,6	38,8	42,4	50,5
Total input power (EN14511) (2)	kW	8,2	10,3	12,6	14,0	16,4
E.E.R (EN14511) (2)	W/W	3,3	3,4	3,1	3,0	3,1
Power supply	V/Ph/Hz	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50	400/3+N/50
Peak current	A	97,8	120,8	122,9	144,9	178,9
Max input current	A	18,8	24,8	29,9	35,9	38,9
Total airflow	m^3/h	8.500	8.500	10.800	10.800	10.800
Fans	n°/kW	1x1,10	1x1,10	1x2,20	1x2,20	1x2,20
Compressors / Circuits	n°/n°	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1
Sound power level (3)	dB (A)	77	77	82	82	82
Sound pressure level (4)	dB (A)	49	49	54	54	54
Water Pump input power	kW	0,6	0,6	0,9	0,9	1,3
Pump available static pressure (1)	kPa	136,8	79,2	96,4	41,2	170,1
Water tank volume	l	60	60	180	180	180

Performance refer to the following conditions:

(1)Cooling: ambient temperature 35°C; water temperature 12/7°C.

(2)Cooling: ambient temperature 35°C; water temperature 23/18°C.

(3)Sound power level in accordance with ISO 9614 (LS-Version).

(4)Sound pressure level at 10m from the unit in free field conditions direction factor Q = 2. in accordance with ISO 9614 (LS-Version).

(5)Cooling: ambient temperature 35°C; evaporating temperature 5°C.

FRAME

All CSA units are made from hot-galvanised sheet steel, painted with polyurethane powder enamel and stoved at 180°C to provide maximum protection against corrosion. The frame is self-supporting with removable panels. All screws and rivets used are made from stainless steel. The standard colour of the units is RAL 9018.

REFRIGERANT CIRCUIT

The refrigerant utilised is R410A. The refrigerant circuit is assembled using internationally recognised brand name components with all brazing and welding being performed in accordance with ISO 97/23. The refrigerant circuit includes: sight glass, filter drier, reversing valve (for reversible version only), one way valve (for reversible version only), liquid receiver (for reversible version only), Schraeder valves for maintenance and control and pressure safety device (for compliance with PED regulations).

COMPRESSOR

For models 06 & 08, rotary type compressors are used. For all other models the compressors are of the scroll type. All compressors are fitted with a crankcase heater and each compressor has a klixon embedded in the motor winding for thermal overload protection. They are mounted in a separate compartment within the casing in order to isolate them from the condenser air stream. The crankcase heater is always energised when the compressor is in standby. Access to the compressor compartment is by removal of a front panel and, because they are isolated from the main airstream, maintenance of the compressors is possible whilst the unit is operating.

CONDENSERS

The condenser is made from 3/8" copper pipes and 0,1mm thick aluminium fins with the tubes being mechanically expanded into the aluminium fins in order to maximise heat transfer. Furthermore, the condenser design guarantees a low air side pressure drop thus enabling the use of low rotation speed (and hence low noise emission) fans. The condensers can be protected by a metallic filter that is available as an accessory.

FANS

The fans are centrifugal type, double inlet with forward curved blades manufactured from galvanized steel. They are statically and dynamically balanced and are supplied complete with a safety fan guard complying with the requirements of EN 60335. They are fixed to the unit frame via rubber anti-vibration mountings. 4 pole electric motors are used (rotation speed approx 1500 rpm). For models 06,08 & 10 they are directly driven and for all other models the fan drive is via pulleys and belts. The motors are fitted with integrated thermal overload protection and have a moisture protection rating of IP 54.

EVAPORATORS

The evaporator is a braze welded, plate type heat exchanger, manufactured from AISI 316 stainless steel. Utilisation of this type of exchanger results in a massive reduction of the refrigerant charge of the unit compared to a traditional shell-in-tube evaporator. A further advantage is a reduction in the overall dimensions of the unit. The evaporators are factory insulated with flexible close cell material and can be fitted with an antifreeze heater (accessory). Each evaporator is fitted with a temperature sensor on the discharge water side for antifreeze protection.

MICROPROCESSOR

The autoadaptive control system ACTIVE is an advanced strategy that continuously monitors the temperature of the inlet and outlet water thereby determining the variation of the building thermal load. By then adjusting the outlet water temperature set point the compressor start/stop cycle can be accurately controlled thus optimizing the unit efficiency and maximizing the operational life of the units component's. Use of ACTIVE auto-adaptive Control enables the minimum water content to be reduced from the traditional 12-15 l/kw to 5 l/kw. A further benefit of the reduced water requirement is that CSA units can be used in installations without a buffer tank thereby reducing the space requirements, thermal losses and costs.

ELECTRIC ENCLOSURE

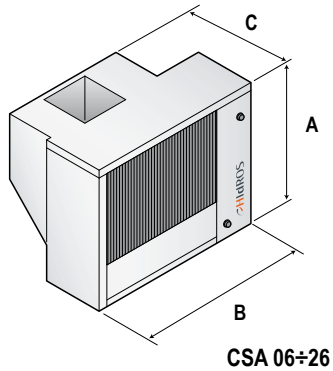
The enclosure is manufactured in order to comply with the requirements of the electromagnetic compatibility standards CEE 73/23 and 89/336. Access to the enclosure is achieved by removing the front panel of the unit. The following components are supplied as standard on all units: main switch, thermal overloads (protection of pumps and fans), compressor fuses, control circuit automatic breakers, compressor contactors, fan contactors and pump contactors. The terminal board has volt free contacts for remote ON-OFF, summer/winter change over (reversible versions only) and general alarm. For all three phase units, a sequence relay that disables the power supply in the event that the phase sequence is incorrect (scroll compressors can be damaged if they rotate in the wrong direction), is fitted as standard.

CONTROL AND PROTECTION DEVICES

All units are supplied with the following control and protection devices: Return water temperature sensor installed on the return water line from the building, antifreeze protection sensor installed on the outlet water temperature, high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection and flow switch.

CSA Versions	Code	06	08	10	14	16	21	26	31	36	41
Main switch	–	–	–	–	●	●	●	●	●	●	●
Flow switch	–	●	●	●	●	●	●	●	●	●	●
Microprocessor control	–	●	●	●	●	●	●	●	●	●	●
General alarm digital output	–	●	●	●	●	●	●	●	●	●	●
Remote on/off digital input	–	●	●	●	●	●	●	●	●	●	●
Electronic soft starter	DSSE	O	O	O	O	O	O	O	O	O	O
LS low noise version	LS00	O	O	O	O	O	O	O	O	O	O
Partial heat recovery	RP00	–	–	–	O	O	O	O	O	O	O
Low ambient condensing pressure control	DCCF	O	O	O	–	–	–	–	–	–	–
Inverter low ambient condensing pressure control	DCCI	–	–	–	O	O	O	O	O	O	O
Rubber anti-vibration mountings	KAVG	O	O	O	O	O	O	O	O	O	O
Spring anti-vibration mountings	KAVM	O	O	O	O	O	O	O	O	O	O
Evaporator antifreeze heater (basic version only)	RAEV	O	O	O	O	O	O	O	O	O	O
Antifreeze kit (only for A versions)	RAES	O	O	O	O	O	O	O	O	O	O
Refrigerant circuit pressure gauges.	MAML	O	O	O	O	O	O	O	O	O	O
Condensate discharge drip tray	BRCA	O	O	O	O	O	O	O	O	O	O
Hydraulic kit pump + tank (A1ZZ)	A1ZZ	O	O	O	O	O	O	O	O	O	O
Hydraulic kit pump no tank (A1NT)	A1NT	O	O	O	O	O	O	O	O	O	O
Condensing coil protection mesh with metallic filter	FAMM	O	O	O	O	O	O	O	O	O	O
High Ext. Static condenser fan motors Max 250 Pa	FOSP	O	O	O	O	O	O	O	O	O	O
Remote control panel	PCRL	O	O	O	O	O	O	O	O	O	O
Serial interface card RS485	INSE	O	O	O	O	O	O	O	O	O	O

● Standard, O Optional, – Not available.



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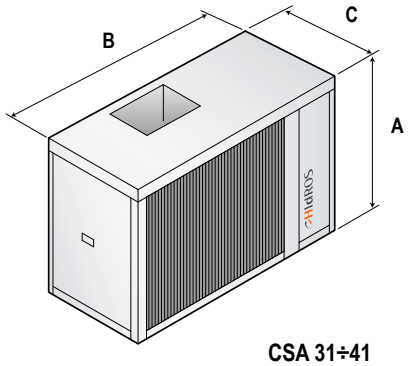

CSA 31÷41

Mod.	A (mm)	B (mm)	C (mm)	Kg
06/06A	989	1103	625	102/155
08/08A	989	1103	625	110/170
10/10A	989	1103	625	128/187
14/14A	1324	1203	694	135/217
16/16A	1324	1203	694	142/222
21/21A	1423	1453	780	188/267
26/26A	1423	1453	780	209/286

Mod.	A (mm)	B (mm)	C (mm)	Kg
31/31A	1270	1870	850	329/436
36/36A	1270	1870	850	343/491
41/41A	1270	1870	850	356/516