

CX

Packaged Air Conditioner
Water Cooled Vertical Type

Model 25



8.0 kW



General Characteristics

Introduction

The compact water-cooled vertical air conditioner **CX** has benefited from our experience gained in the manufacturing of large series as well as from our technical experience developed on our range of package units.

This compact, simple and well finished unit combines many features, such as : ease of installation, high efficiency, quiet operation and reliability resulting in a wide range of applications. It can meet varying requirements of all types of buildings : individual homes, shops, conference rooms, workshops, hospitals, laboratories, instrument rooms, computers rooms, etc...

The many functions offered by this air conditioner cover : circulation, renewal, filtering, cooling, dehumidification, heating of air and control.

Chassis

- Sturdily built in folded sheet steel;
- Processed plate enameled with oven baked paint;
- The four sides are entirely removable;
- The sides that are made of several panels are individually removable.

Insulation

Efficient sound and heat insulation throughout unit.

Control panel, electrical devices

All found on the front panel, for ease of access.

Compressor

Of the hermetically sealed type with all the renowned qualities of strength and silence, mounted on an antivibration support. Complete internal electrical protection against current surges and abnormal temperature rises in the windings.

Evaporator

These coils are made of copper tubes with crimped aluminium fins. The specifications, structures and couplings have been carefully studied to provide a high output.

Water cooled condenser

Counter-flow type exchanger with steel outer tube and copper finned inner tube (water circulates in inner tube).

A water pressure valve is mounted as standard to control the cooling water flow.

Treated air fan motor

Two speed motor, direct drive, mounted on anti-vibration system.

Treated air fan

Multiblade centrifugal fan, quiet operating, statically and dynamically balanced.

Air filter

A thick media of specially treated synthetic fibres. Located at the treated air end and designed for easy access, cleaning and possible replacement.

Control & safety protection circuit

The control circuit is designed to operate at 230 Volts. When only is available threephase 400 V without neutral, a safety transformer is needed (refer to electrical diagram and to matching key sheets).

Control & safety protection of the refrigerant circuit

Low pressure and high pressure cut-outs. High and low pressure gauge fittings.

Compressor electrical protection

Depending on the type of compressor, it is protected by a combination of :

- internal protection devices that cut the electric current in the event of a sudden overload,
- thermostat type internal protection devices, embedded in the compressor windings, which cut the supply in the event of overheating or abnormal overload.

Thermal safety protection

All electrical components such as the compressor, the fan motor and the electrical heating coils, are individually protected with an integral thermal safety protection.

Control devices, protection, safety

All controls are placed on a control panel with easily accessible knobs to select ventilation, cooling and optional heating.

A mid-point thermostat located on the room air intake, controls the temperature according to selected operation : Cooling or Heating

This air conditioner is factory fitted with a cascade of locked safety protections : electrical or thermal or refrigeration (refer to electrical diagram and key sheets).

All the safety cut-outs are manually reset. This basic principle compels the user to search for the cause of this problem and avoids an danger of automatic restarting of defective equipment.

Multiple safety protections such as these, combined with rigorous factory quality control, ensure a high degree of reliability in these products.

Air discharge and intake

- Direct front discharge through a plenum : Accessory with attractive fixed fascia mounted grilles.
- Air outlet with ducting (not supplied) : To be produced by the installer (top air discharge).
- Direct air intake through a front panel with grille and filter (standard)
- Air intake by ducting (not supplied) : Providing either complete air intake at the rear, or partial new air intake at the rear : to be produced by the installer.
- Treated air fan speed adjustment : A choice of 2 fan speeds is available : One is for direct discharge without pressure drops, the other for units connected to a duct system with pressure drops (see "Curves").

Electrical and hydraulic connections

▪ Electrical :

Refer to electrical wiring and connection diagrams specifying the necessary required connections; which will be made according to the accessories and the control devices.

▪ Hydraulic :

Entering and leaving water inlet and outlet is under pressure.

Flexible water pipes are mounted as standard, allowing simple connection to water mains and silent operation.

Refer to installation drawing for dimensional data applicable to water inlet and water outlet connection diameters.

The supply water should be clean and pure to prevent scaling and fouling of the condenser.

The outlet water temperature limits of leaving water should not be exceeded as this would result in premature scaling of the condenser.

When using recycled water, please consult us.

Condensate must be gravity drained. Condensate water and cooling water must each have a separate drain line.

General Characteristics (continued)

Accessories

■ Heating :

This air conditioner can be equipped with electrical heating and safety thermostat.

The electric heaters are delivered factory fitted with safety thermostats (see electrical diagram).

The heaters can be factory fitted or delivered in kit for field installation, when this accessory is field fitted, the installer should strictly comply with the installation and electrical connections instructions.

■ Discharge plenum.

■ Remote control :

In that case the integral control panel is replaced by a remote control system, performing the same functions except for the thermostat (See electrical diagram).

■ Cooling/heating control :

An automatic cooling/heating bulb thermostats with neutral zone is mounted on the air conditioner at return air intake.

When a remote control is mounted, cooling/heating control can be obtained through a remote ambient thermostat (Accessories).

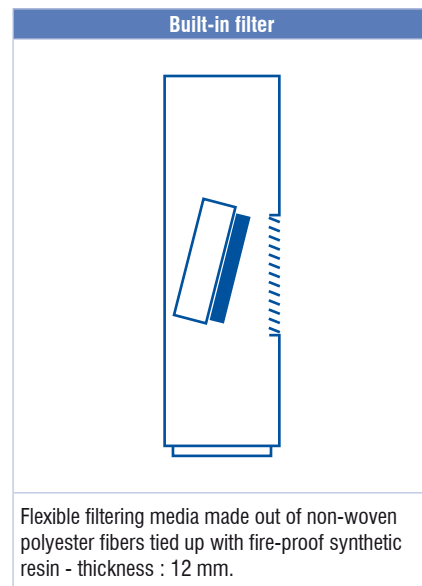
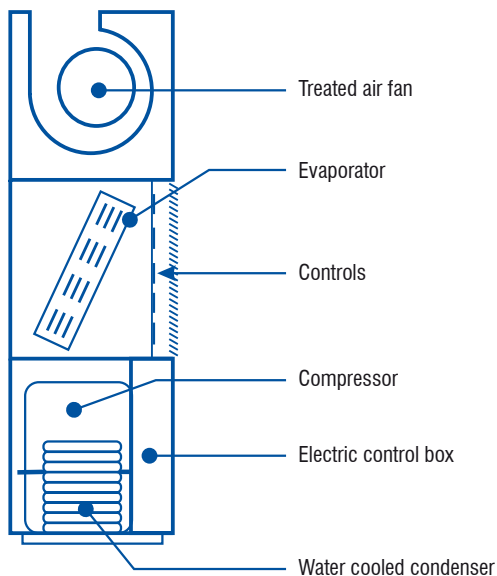
■ Crankcase heater :

When the compressor is located in a relatively low ambient temperature, from around 19 °C, the installation of a compressor crankcase heater is recommended. This accessory can be fitted at the factory or supplied as a kit.

This precaution is essential for cold starting to avoid liquid shocks. Heating the compressor housing before starting limits the build up of refrigerant fluid in the compressor when stopped and provides for improved refrigerant/oil degassing.

For the compressor crankcase heater to operate before the compressor starts, it must be connected to an independent electrical supply.

Description



Technical Data

MODEL		CX 25
Nominal cooling capacity (Water : 18 °C - Air : 19 °C wet bulb)	W	8000
Nominal cooling capacity (Eau : 18 °C - Air : 19 °C wet bulb)	BTU/HR	27300
Water flow rate	l/h	340
REFRIGERANT		
R-407C	g	1180
EVAPORATOR FAN		
Air flow	m ³ /h	1500
Motor power input	W	245
ELECTRICAL SPECIFICATIONS		
Power supply		~230V/50Hz
Voltage range	V	207/253
Average cooling consumption	W	2545
Wire size	mm ²	4
PIPING		
Water inlet/outlet		Female 15/21
Condensate drain	∅	15/21
WATER		
Water flow rate	l/h	370
SHIPPING DATA		
Net/gross weight	kg	125/134
OPTIONS		
Power supply		3N~400V-50Hz
ACCESSORIES		
Electrical heater	W	5400
Discharge plenum		•
Remote control		•

Electrical Data

MODEL		CX 25	
Power supply		~230V - 50 Hz	3N~400V - 50 Hz
COOLING + FAN			
Nominal current	A	12.28	5.28
Maximum current	A	14.85	6.38
Fuse rating aM *	A	16	8
Fuse rating ASE/VDE	A	16	10
Cable size *	mm ²	3 G 1.5	5 G 1.5
ELECTRICAL HEATING + FAN			
Nominal current	A	26	9.6
Maximum current	A	31	11.61
Fuse rating aM *	A	32	12
Fuse rating ASE/VDE	A	35	16
Cable size *	mm ²	3 G 4	5 G 1.5

* These values are given for information only. They should be checked and adjusted according to prevailing standards. They depend on the mode of installation and the type of wires selected.

Cooling Capacities - Wasted Water - Nominal Air Flow 1500 m³/h

		Inlet air temperature (°C)		Water temperature (°C)			
Wet bulb	Dry bulb				10	15	20
15		Total cooling capacity (kW)	7.2	Water consumption (l/h)	263	308	406
		Power input (kW) *	2.1	ΔP (kPa)	4	5	9
	21	Sensible capacity	5.0				
	23		5.7				
	25		6.4				
	27		7.2				
	29		7.2				
31	7.2						
17		Total cooling capacity (kW)	7.6	Water consumption (l/h)	276	324	427
		Power input (kW) *	2.1	ΔP (kPa)	5	6	10
	21	Sensible capacity	4.7				
	23		5.5				
	25		6.3				
	27		7.0				
	29		7.6				
31	7.6						
19		Total cooling capacity (kW)	8.0	Water consumption (l/h)	290	340	448
		Power input (kW) *	2.2	ΔP (kPa)	5	6	11
	21	Sensible capacity	3.6				
	23		4.4				
	25		5.2				
	27		6.0				
	29		6.8				
31	7.6						
21		Total cooling capacity (kW)	8.6	Water consumption (l/h)	308	361	476
		Power input (kW) *	2.3	ΔP (kPa)	5	7	13
	23	Sensible capacity	3.2				
	25		4.0				
	27		4.9				
	29		5.7				
	31		6.6				
33	7.5						
23		Total cooling capacity (kW)	9.1	Water consumption (l/h)	326	382	504
		Power input (kW) *	2.4	ΔP (kPa)	6	8	14
	25	Sensible capacity	2.7				
	27		3.6				
	29		4.5				
	31		5.4				
33	6.3						

* For compressor only (without fan motor).
Power absorbed by the indoor fan = 200 W.

Qn air volume correction	0.8 x Qn	0.9 x Qn	Qn	1.1 x Qn	1.2 x Qn
Total cooling capacity	0.940	0.970	1.000	1.020	1.040
Sensible cooling capacity	0.890	0.950	1.000	1.050	1.100
Power input	0.970	0.990	1.000	1.010	1.010

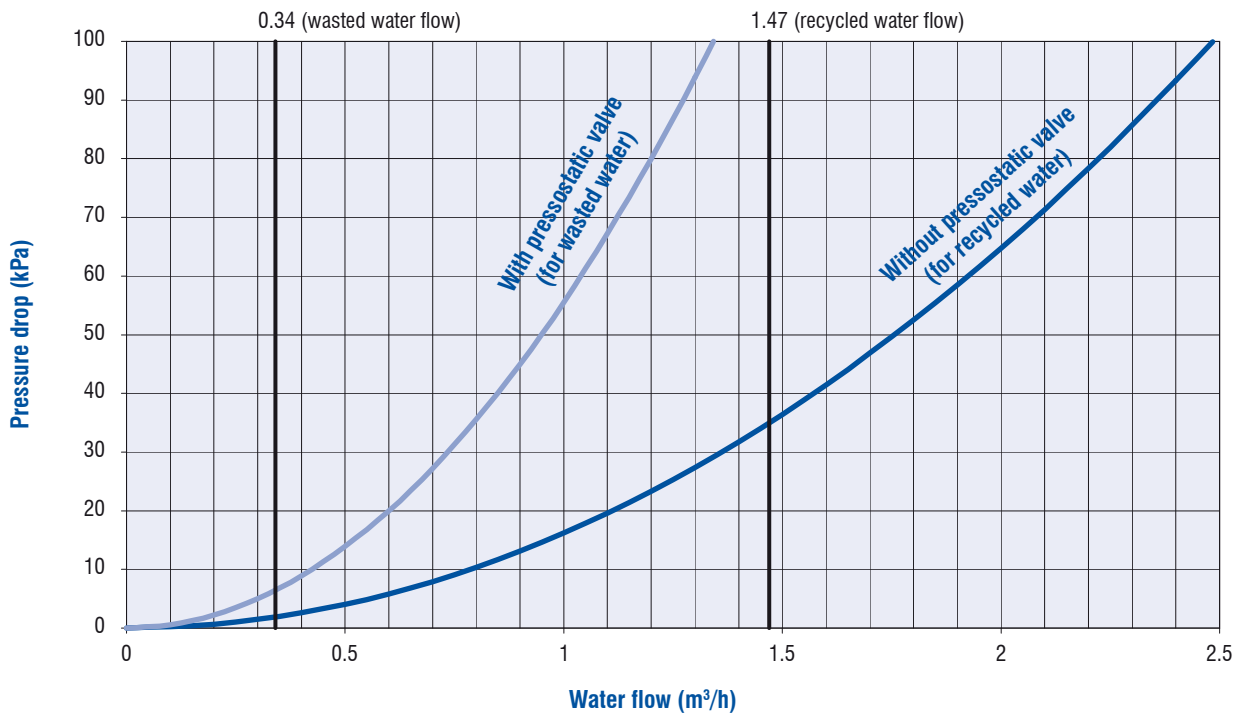
Working range	Air temperature at evaporator inlet	
	Min. temperature	Max. temperature
Wet bulb (°C)	15	23
Dry bulb (°C)	21	32
Water temperature (°C)	10	34

Cooling Capacities - Recycled Water - Nominal Air Flow 1500 m³/h

Inlet air temperature (°C)		Water flow : 1470 l/h	ΔP = 35 kPa
Wet bulb	Dry bulb	Entering water temperature : 29 °C	
15		Total cooling capacity (kW)	7.2
		Power input (kW) *	2.1
	21	Sensible capacity	5.0
	23		5.7
	25		6.4
	27		7.2
	29		7.2
31	7.2		
17		Total cooling capacity (kW)	7.6
		Power input (kW) *	2.1
	21	Sensible capacity	4.7
	23		5.5
	25		6.3
	27		7.0
	29		7.6
31	7.6		
19		Total cooling capacity (kW)	8.0
		Power input (kW) *	2.2
	21	Sensible capacity	3.6
	23		4.4
	25		5.2
	27		6.0
	29		6.8
31	7.6		
21		Total cooling capacity (kW)	8.6
		Power input (kW) *	2.3
	23	Sensible capacity	3.2
	25		4.0
	27		4.9
	29		5.7
	31		6.6
33	7.5		
23		Total cooling capacity (kW)	9.1
		Power input (kW) *	2.4
	25	Sensible capacity	2.7
	27		3.6
	29		4.5
	31		5.4
33	6.3		

* For compressor only (without fan motor).
Power absorbed by the indoor fan = 200 W.

Water Pressure Drop



CX 25 model		Type of water	
		Wasted water	Recycled water
Nominal water flow - Treated air 27°C 47% HR	l/h	340	1470
Pressure drop	kPa	6	35
Water inlet temperature	°C	15	29
Water outlet temperature	°C	-	35
Water min. pressure	kPa	50	-
Water max. pressure	kPa	1000	1000

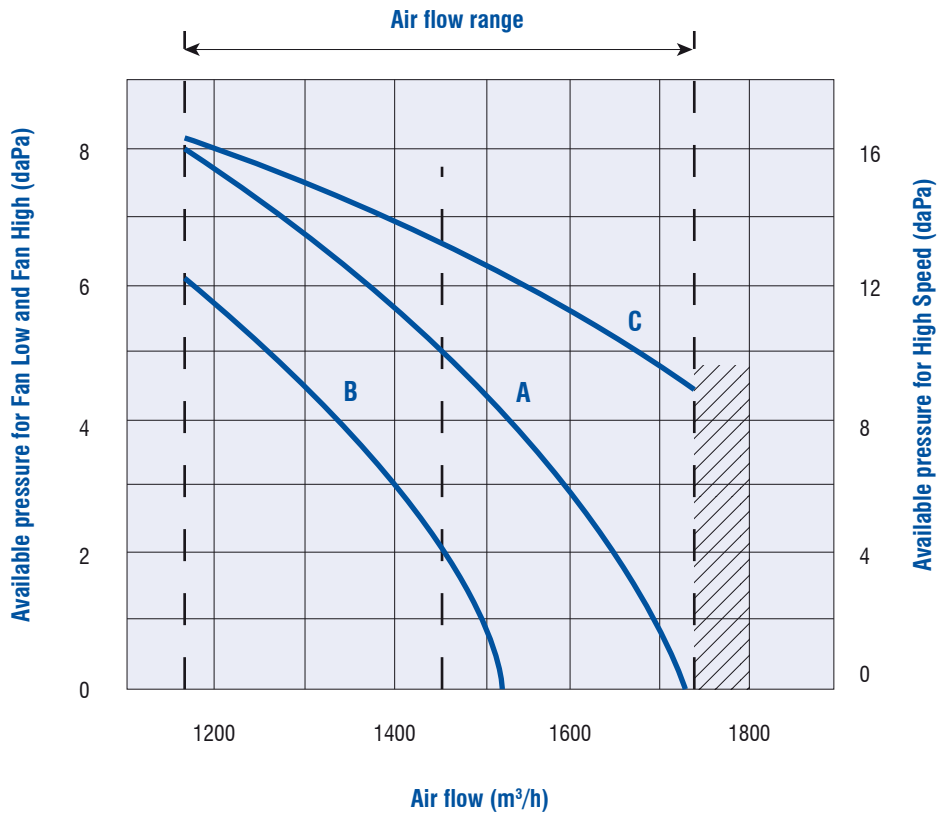
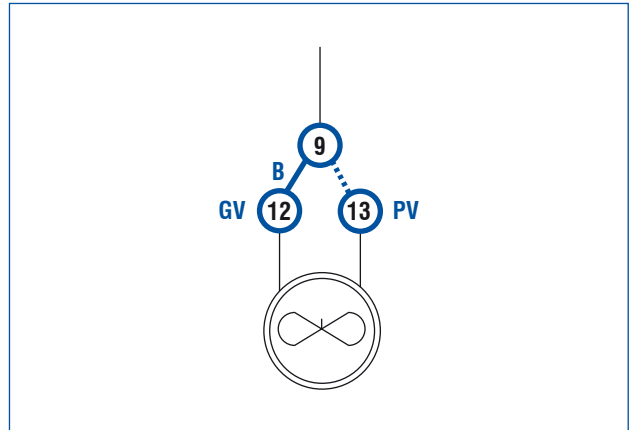
Treated Air Ventilation

Adjustment of air flow

A choice of 2 fan speeds is available to adapt to high pressure drops of the duct system (unit is factory adjusted on fan high - see performance curve A).

Appropriate air flow and pressure drops can be obtained, with in curve limits, through diaphragms.

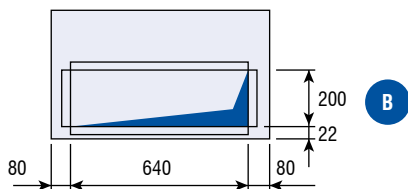
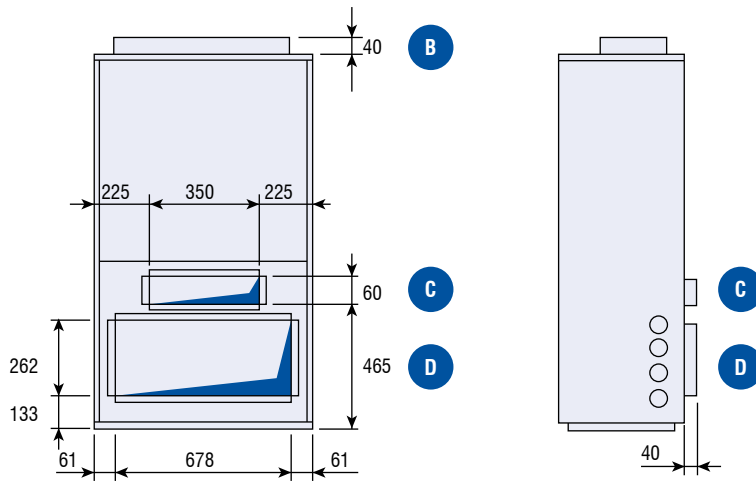
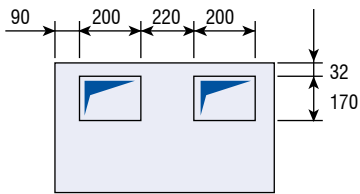
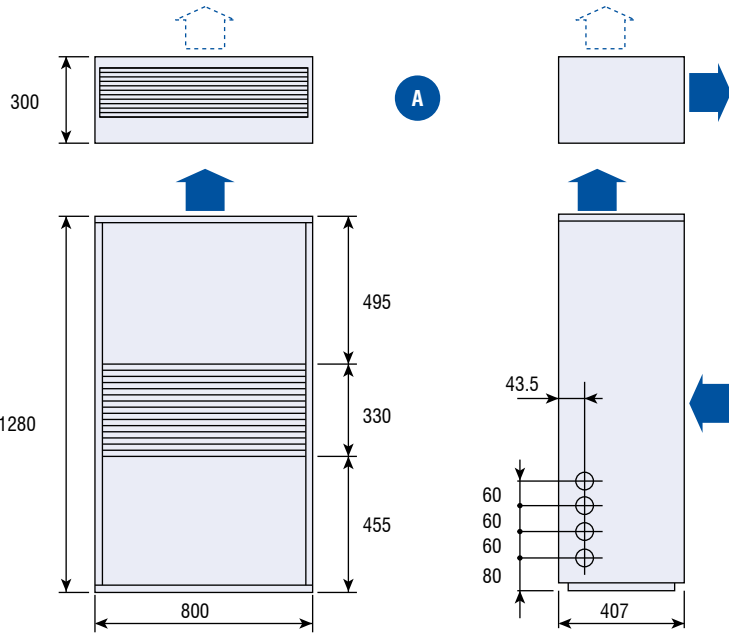
For applications with a plenum or a short duct system (curve B), the original high fan speed can be changed into fan low by disconnecting shunt B from terminal 12 and connecting it to terminal 13.



- A** : Fan high
- B** : Fan low
- C** : High speed

Accessories average pressure drop	daPa
Built-in electrical heating	0.2
Plenum	1
Filtering box	1

Dimensions



A	Discharge plenum
B	Duct connection flange, discharge *
C	Duct connection flange, partial rear return *
D	Duct connection flange, total rear return *

Weight (kg)		Packaging (mm)		
Net	Gross	Width	Depth	Height
125	134	830	440	140

* B, C, D : Accessories not supplied, to be produced by the installer.



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