

AIR HANDLING UNIT



AHU for all applications

Designed to meet the
EN 13053 and EN 1886
standards

The effective solution for
service sector, industry and
healthcare applications

39CZ

Air flow: 1000 to 610000 m³/h

The 39CZ range is designed for the service sector, industry and healthcare markets, to meet different requirements in terms of air mixing, filtration, heating, refrigeration, dehumidification, humidification, ventilation, recovery and sound attenuation. It is available as a horizontally-mounted version for installation indoors or outdoors with a roof and protection accessories. The range is available in a single or dual-flow version.

Thanks to the broad spectrum of solutions on offer, and the product's excellent modularity, the specifications for this product will always comply with the EN 13053 and EN 1886 standards, whatever its configuration.



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USE

External wall with RAL 7035 paint

Compliance with the provisions of the EN 13053 standard

Classification in accordance with European standard EN 1886

Casing resistance: class D1

Casing airtightness: class L1

Filter bypass leak: class F9

Thermal transmittance: class T2

Thermal bridge factor: class TB2

RANGE

The 39CZ range consists of 14 sizes to handle air flow rates from 1000 to 66,000 m³/h.

The diagram below shows how to preselect the necessary size based on:

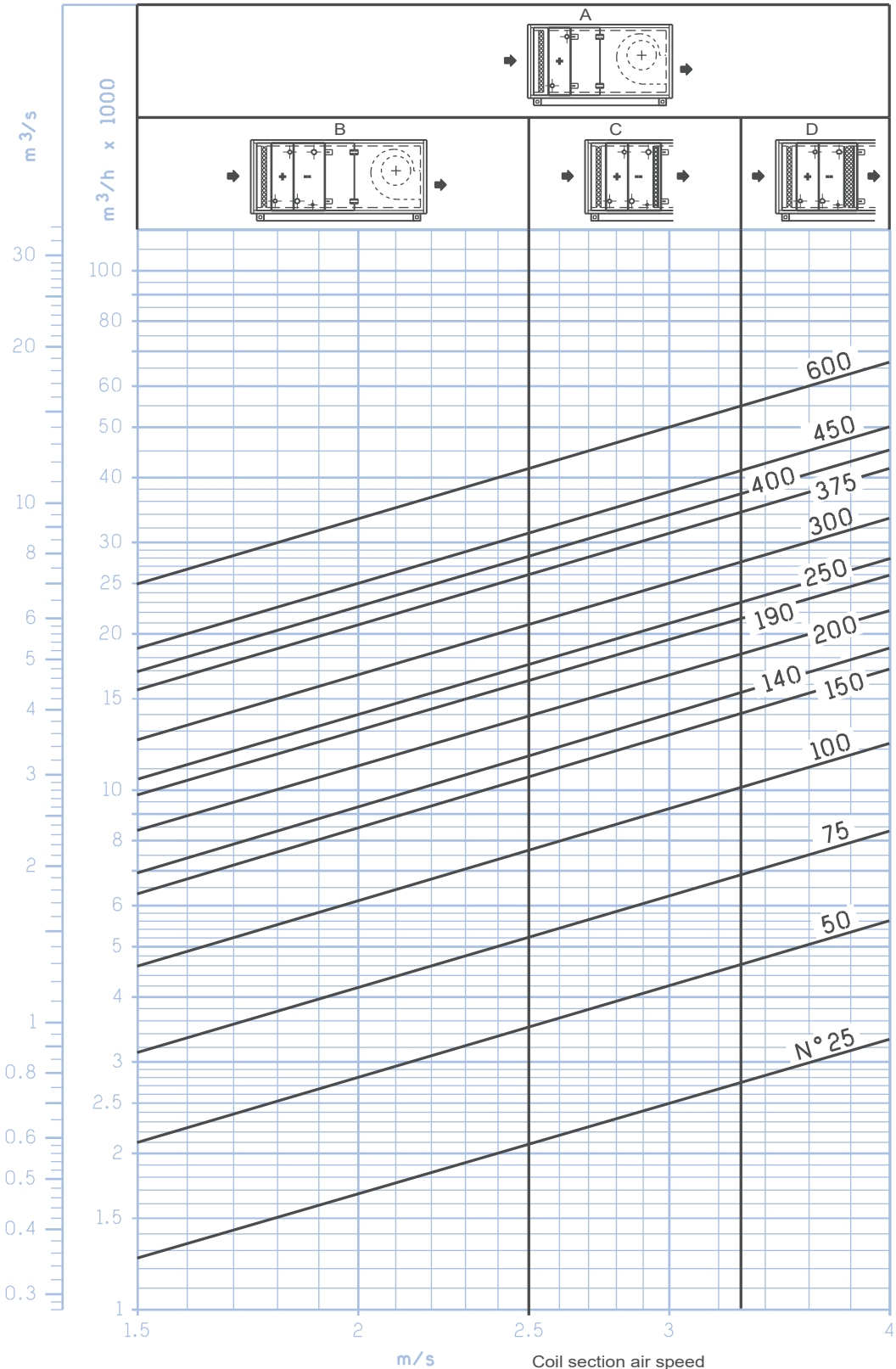
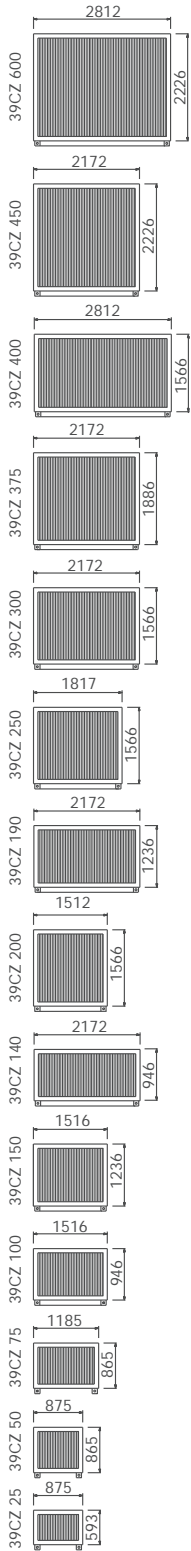
- The flow speed in the active front section of the exchanger coils.
- The air flow rate to be handled.



RANGE

The diagrams show the standard compositions with the usage limit corresponding to the components.

- Air heater (A).
- air conditioning unit without droplet separator (B).
- With drain screen separator (C).
- With blade-type separator (D)



DESCRIPTION

Casing

- Double-skin panel with 50 mm mineral insulation with long fibres reinforced by welded fibreglass material,
- Peripheral frame fitted or mounting brackets in stainless steel,
- Depending on the size, double-skin panels, galvanised, coated, smooth walls with no protruding screws as per EN 13053.

Construction structure depending on AHU sizes.

- Sizes 25 to 75: self-supporting panels with aluminium vertical uprights.
- Sizes 100 to 150: panels screwed onto an aluminium structure sunk into the casing.
- Sizes 200 to 600: panels screwed onto an aluminium double honeycomb structure offering high resistance to flexing.

- Air handling units consist of multi-block components or mono-block components if the composition and size allow.
- All of our blocks can be disassembled on the installation site.

At least one removable panel per function in accordance with EN 13053, access panel as standard on functions requiring maintenance.

Lift-off panels on offset hinges, equipped with slow closing latches in composite material, polyamide handles, large section square porthole in accordance with EN 13053.

OPTIONS AVAILABLE PER RANGE	39CZ ST	39CZ CL & HE
Adjustable support feet + 35/+ 60 mm	X	X
Support feet risers up to 400 mm	X	X
Stainless steel ground insulation casing (h: 100)	X	X
Epoxy or polyurethane paint on int. and ext. panels	X	X
Int. and ext. panels in pre-painted RAL 9010 sheet metal		standard
Int. and ext. panels in 304 L stainless steel or Z3CN 18.10	X	X
Flat stainless steel base	X	X
Inclined stainless steel base (per block)	X	X
Reinforced insulation	X	X
Roof for OUTDOOR model	X	X
Screened canopies for OUTDOOR model	X	X

Damper

- Isolation damper
- Safety damper (CH38)
- Control damper

All the dampers consist of airfoil blades, counter rotating with lateral seals and driven by toothed wheels or control rods. Steel frame and aluminium blades on 39CZ ST CL & HE Class 3 in accordance with EN1751. These dampers are installed on the inside or outside of the casing, depending on the solution chosen. Louvre control: manual, motorised or to be motorised.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Servomotor	kit	kit
Mechanism electric heaters <-25°C	X	X
Toothed wheels	standard	standard
Control rods	X	X
Class 4 sealing in accordance with EN 1751		X
Polyurethane frame paint	X	standard
Polyurethane or epoxy paint on louvres and frames	X	X
Frame and dampers in stainless steel sheet		X

DESCRIPTION

Boxes

Air intake boxes (AHU intake)

Single air intake, mixing, economiser mixing.

Air discharge box (AHU discharge)

Directional, distribution.

Assembly of combined louvres outside or inside the casing for the task defined by the section chosen. Manual control, motorised or to be motorised.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL&HE
Servomotor	kit	kit
Mechanism electric heaters for fresh air at a temperature < -25°C	X	X
Toothed wheels	standard	standard
Control rods	X	X
Class 4 sealing in accordance with EN 1751		X
Galvanised safety base with drain	X	X
Stainless steel sheet safety base with drain	X	X
Polyurethane or epoxy paint on louvres and frames	X	X
Lighting not connected (if access provided)	kit	kit
Lighting wired to switch (if access provided)	X	X
Double glass porthole	X	X
Lift-off panel (louvre control on opposite side)	X	X
Hinged door (louvre control on opposite side)	X	X

Filters

- G2 & G4 efficiency, M5 to F9, H10 to H14 or activated carbon with international dimensions mounted on compressible tracks, on universal frame or large-media frames with pressure tapings on each filtration stage, EN 1886 Filter bypass leakage classification (F9 classification).
- Fitting system equipment for filter cells for all 3 ranges.

- Filter cells with international dimensions 24" x 24" and 12" x 24".
- Efficiency classification in accordance with EN 779 from G2 to F9.
- Efficiency classification in accordance with EN 1822 from H10 to H14.

■ 4 Standardised assembly systems

Assembly 0: traditional tracks for full section G4 cells.

Assembly 1: compressible tracks (horizontal extension), G2 and G4 efficiency, 65 to 90 % gravimetric (GRAVI) efficiency with side door.

Assembly 2: compressible tracks (horizontal and vertical extension), M5 to F9 efficiency, 40 to 98 % opacimetric (OPA) efficiency with side door.

Assembly 3: 3U universal frames or 3B large-media frames, M5 to H10 efficiency for universal frames, 40 % OPA to 85 % MPPS efficiency, H10 to H14 efficiency for large-media frames, 85 to 99.995 % MPPS efficiency.

Activated carbon: a model with activated carbon cells for urban pollution can also be installed in assembly 2 or 3 (universal frame); another for specific pollution must be installed in a large-media frame.

ASSEMBLY	0	1	2	3U	3B
F1 efficiency G2		X			
F2 efficiency G4	X	X		X	
F3 efficiency G4			X	X	
HEP efficiency M6/F7			X	X	
HPS efficiency M5/F8			X	X	
FHPS efficiency G4 + F6/F8			X	X	
HPR efficiency M5/F9			X	X	
HPR efficiency H10				X	
H10 to H14					X
HPR CARB urban pollution				X	
CARBOC specific pollution					X

DESCRIPTION

■ Name of filters selected

Application	CARRIER	Construction material		Classification	Efficiency		Construction
		Frame	Medium				
Prefilter	F1		Galv. or stainless steel	G2	Gravimetric	65%	Flat filter
	F2		Synthetic	G4		90%	pleated filter
	F3			G4		90%	short bag
High efficiency filter	HEP1	Galv.	fibreglass	M6	Opacimetric	65%	pleated filter
	HEP2			F7		85%	
	HEP3			F8		95%	
	M5		M5	< 65%		Short or long bag	
	HPS1		Fibreglass or synthetic	M6			65%
	HPS2			F7			85%
	HPS3	F8		95%			
	FHPS1	Synthetic	G4+M6	90% Grav + 65% Opa			
	FHPS2		G4+F7	90% Grav + 85% Opa			
	FHPS3		G4+F8	90% Grav + 90% Opa			
	HPR1	Polypropylene +ABS	Fibreglass	M6	65%	Deep smooth dihedral	
	HPR2			F7	85%		
	HPR3			F8	95%		
HPR4	F9			98%			
HPR H10	ABS			E10	85% MPPS		
H10		E10	85% MPPS				
H12		E12	99.5% MPPS				
H13		H13	99.95% MPPS				
H14		H14	99.995% MPPS				
Activated carbon filter	HPR CARB	Polypropylene	Synthetic	Urban pollution			
	CARBOC	Galv.	Nonwoven + carbon	Specific pollution			Dihedral carbon squares

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Lift-off panel or hinged door	X	X
Galvanised safety container	X	X
Stainless steel safety container		X
Pressure tapping per filter stage	standard	standard
Liquid pressure gauge	kit	kit
Contact pressure gauge	kit	kit
Magnehelic pressure gauge	kit or assembled	kit or assembled
Double glass porthole	X	X
Lighting not connected	kit	kit
Lighting wired to switch	X	X
Door contact	kit or assembled	assembled
Polyurethane or epoxy paint on tracks and frames	X	X
Paint on frame:	X	standard
polyurethane	X	
Stainless steel tracks	X	standard
Stainless steel universal frame (•F" fine filters)	X	X
Stainless steel large-media frame (HEPA •H" filters)	X	X
Pressurised door (assembly 3 downstream of the fan)	standard	standard
Opening for DOP injection/Hatch for DOP measurement		X

DESCRIPTION

Heating coil

- For hot water
 - Construction with copper tubes and aluminium fins.
 - Maximum primary fluid temperature = 120 °C.
 - Operating pressure for water: 8 bar as standard - Higher pressures on consultation.

Depending on the type of coil and the diameters required, the manifolds and supply tubes are:

- Copper or steel tubes with unions up to 3" diameter.
- Steel tubes with smooth ends for larger diameters.
- Removable sealing flanges between the casing and manifolds (up to 3" diameter prevent damage to the sealing system during connection operations).

- For superheated water
 - Construction with steel tubes and aluminium fins.
 - Maximum primary fluid temperature = 200 °C.
 - Operating pressure for water: 30 bar max.
 - Supply manifolds and tubes made from steel with smooth ends.

- For refrigerant fluid
 - Construction with steel tubes and aluminium fins.
 - Supply tubes made from copper with smooth ends.
- For steam (on consultation)
 - Low pressure < 2 bar - copper tubes, aluminium fins.
 - High pressure 2 to 8 bar - cupronickel or stainless steel tubes depending on the size of the AHU, the pressure and the steam quality.
 - Supply manifolds and tubes made from steel or stainless steel with smooth ends.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Hot water coil in stock	X	X
Standard circuit coil	X	X
Superheated water coil	X	X
Steam coil	X	X
Condensation coil	X	X
Antifreeze probe slide	X	X
Frost protection thermostat supplied in a kit	X	X
Frost protection thermostat supplied mounted	X	X
Pressure tapplings, upstream and downstream	X	X
Precoated fins/primary fluid max. T° 110°C	X	X
Coil with ALTENA treatment max. T° 160°C	X	X
Coil with HERESITE treatment max. T° 180°C	X	X
Copper fins	X	X
Galvanised steel safety container	X	X
Stainless steel safety container	X	X
Epoxy paint on tracks	X	standard
Stainless steel tracks	X	X
Stainless steel coil panels	X	X
Screw flanges and counter-flanges	kit	kit
Tubes with quick connections	X	X

Electric heater

- Shielded resistors in scrolled stainless steel finned tubes
- Connection to copper strips.
- Double insulation assembly.
- Safety thermostat with automatic and manual reset as standard.

- To commission the heater: refer to the manual supplied with each unit.
- Take the necessary precautions to prevent abnormal heating when the fan is switched off (ensure post ventilation).

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Safety thermostat with automatic reset	standard	standard
Three-phase or single-phase connection	X	X
Painted tracks	X	standard
Stainless steel tracks	X	X
Stainless steel heater panels	X	X

DESCRIPTION

Cooling coil

Inclined condensate drain pan in accordance with EN 13053,

■ Chilled water

- Construction with copper tubes and aluminium fins.
- Operating pressure for water: 8 bar as standard - Higher pressures on consultation.
- Inclined condensate drain pan with drain pipes to be connected to a siphon on site.
- Droplet separator as standard if necessary, as an option on request.

Depending on the type of coil and the diameters required, the manifolds and supply tubes are:

- Copper or steel tubes with unions up to 3" diameter.
- Steel tubes with smooth ends for larger diameters.
- Removable sealing flanges between the casing and manifolds up to 3" diameter prevent damage to the sealing system during connection operations.

■ Direct expansion evaporation

- Construction with copper tubes and aluminium fins.
- Inclined condensate drain pan with drain pipes to be connected to a siphon on site.
- Droplet separator as standard if necessary, as an option on request.
- Standard smooth copper refrigerant supply tubes (supplied capped)
- Manifold on fluid intake as standard.
- Removable panel for accessing the expansion valve and solenoid valve incorporated in the casing (the valve and solenoid valve may be supplied assembled if the coil is connected to a CARRIER condensation unit).

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Chilled water coil in stock	X	X
Standard circuit chilled water coil	X	X
Direct expansion evaporation coil	X	X
Access panel on droplet separator	as standard if compulsory	
Pressure tappings, upstream and downstream	X	X
Precoated fins	X	X
Coil with ALTENA treatment	X	X
Coil with HERESITE treatment	X	X
Copper fins	X	X
Stainless tube exchanger, aluminium fins	X	X
Stainless steel condensate drain pan	X	standard
Heat insulation of pan, elbows and manifolds	X	X
Painted tracks	X	standard
Stainless steel tracks	X	X
Hygiene pan		X standard on HE
Stainless steel heater panels	X	X
Fully galvanised droplet separator	as standard if compulsory	
Droplet separator with galvanised frame, stainless steel medium	X	X
100% stainless steel droplet separator, frame and medium	X	as standard if compulsory
Droplet separator with polypropylene blades	as standard if compulsory	
Screw flanges and counter-flanges	kit	kit
Tubes with quick connections	X	X

DESCRIPTION

Adiabatic humidifiers

■ Spray - Efficiency 80 to 90%

- Stainless steel module with sloped bottom, door for inspection, maintenance and replacement of the drain screens and droplet separator.
- 2 or 3 spray ramps (depending on efficiency).
- Drain screens.
- Water tank with its supply equipment.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
400 V three-phase pump and recirculation accessories	X	X
Double glass porthole	X	standard
Lighting not connected	kit	kit
Lighting connected on switch	X	X
Droplet separator with galvanised frame with stainless steel mesh	X	standard
Fully stainless steel droplet separator	X	X
Water tank pan spray washer	X	X
Hydraulic connection for UV treatment of recirculated water	X	X

Steam humidifiers

■ Without steam production

The supply includes:

- Stainless steel steam distributor
- Permissible steam pressure range (0.2 to 3.5 bar)
- Cast iron steam/water separator
- Main steam valve
- 24 V or 240 V on/off or progressive servomotor

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Galvanised steel safety container	X	X
Stainless steel safety container	X	X
Fully galvanised droplet separator	X	X
Droplet separator with galvanised frame, stainless steel mesh	X	X
Fully stainless steel droplet separator	X	X
Double glass porthole	X	X
Lighting not connected	kit	kit
Lighting connected on switch	X	X
Lift-off panel	X	X

■ With steam production (standalone with electrodes)

The supply includes:

- Aluminium steam distributor.
- Steamer with electrical cabinet and controller (IP 20).
- Proportional or on/off control.
- Humidity controller or control sensor.
- Duct/cylinder connection.
- Condensate return tubes and connections.
- 230 V single-phase or 400 V - 415 V three-phase supply voltage.
- Min and max supply water conductivity limits 125 - 1250 microsiemens/cm (8000 - 800 ohm).
- Hardness of supply water 15 - 30 degrees (French).

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Galvanised safety container	X	X
Stainless steel safety container	X	X
Fully galvanised droplet separator	X	X
Droplet separator with galvanised frame, stainless steel mesh	X	X
Fully stainless steel droplet separator	X	X
Double glass porthole	X	standard
Lighting not connected	kit	kit
Lighting connected on switch	X	standard
Lift-off panel	X	X

■ With steam production (standalone with heaters) on consultation

DESCRIPTION

Fans

- Forward-curved dual-inlet fan.
- Backward-curved dual-inlet fan.
- Plug fan.
- EC plug fan.
- Steel scroll and impeller.
- Assembly on anti-vibration frame.
- Connection via internal flexible sleeve.
- Ball bearings mounted in fan inlets.
- Belt and pulley transmission on the dual-inlet fans.
- Standard motor: asynchronous three-phase, 230 / 400 V - 50 Hz up to 4 kW - 400 V - 50 Hz from 5.5 kW, IP 55 protection, class F with PTC.
- Inspection hatch with bolts in compliance with the "MECHANICAL SAFETY" specification in the EN 1886 standard and the machinery directive.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Fan with forward-curved blades and transmission	X	X
Fan with backward-curved blades and transmission	X	X
Plug fan	X	standard
EC plug fan	X	X
Sparkproof fan	X	X
Spring mounts	standard	standard
Lift-off panel	X	X
Hinged door	standard	standard
Pressurised door (plug fan), hinged for sizes > 250	standard	standard
Pressure connections	X	X
Holes with blanking covers	X	X
Door contact	kit or assembled	kit or assembled
Galvanised steel safety container	X	X
Stainless steel safety container	X	X
Double glass porthole	X	X
Smoke detector (NF S61961)	kit	kit
Lighting not connected	kit	kit
Lighting connected on switch	X	X
Paint on casing and bracket	X	standard
Stainless steel casing, bracket	X	X
Inspection hatch and vent on scroll	X	X
Epoxy painted scroll and impeller	X	standard
Screens on inlets	X	X
Door protection	X	X
Belt housing	X	X
2 motors fitted	X	X

Heat recovery unit

■ Plate

- Standard construction or HEE plate heat exchanger.
- The heat exchanger has aluminium plates. This component can be used normally up to an air temperature of 150 °C (if the plate heat exchanger is an AHU component, the standard temperature limit is 80 °C with a differential pressure of 1000 Pa and a leak flow rate between the 2 air streams (EXHAUST/INTAKE) of less than 1 %).
- Condensate drain pan on exhaust air side, made from galvanised steel with condensate drain piping as standard.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
For stacked AHUs	X	X
For adjacent AHUs	X	X
G4 prefilter and M5 filter incorporated depending on size	X	X
Bypass on fresh air	X	X
Coated aluminium plates	X	X
Epoxy paint on internal panels	X	X
Pressure tapping on the 4 air handling orifices	X	X
Stainless steel condensate drain pan	X	X
Damper control, manual, motorised or ready to be motorised	X	X

DESCRIPTION

■ Heat pipe (gravity type)

- Constructed in the same way as a coil with several rows of finned tubes; the assembly is mounted in a casing with an intermediate partition separating the cooling and heating areas.
- Standard construction: copper tubes, aluminium fins, galvanised steel casing.

- Transfer fluid: refrigerant, operation from -25 to +50 °C.
- Assembly in either vertical, fixed horizontal or mobile horizontal position on shaft.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
For stacked or adjacent AHUs	X	X
Bypass on fresh air or exhaust air	X	X
Sensor, controller, servomotor for mobile model	X	X
Precoated fins	X	X
Fins with ALTENA treatment	X	X
Fins with HERESITE treatment	X	X
Stainless steel heater panels	X	X
Stainless steel condensate drain pan	X	X
Pressure tapping on the 4 air handling orifices	X	X

■ Rotating

- Corrugated aluminium exchange medium.
- Adjustable midway and peripheral gasket to guarantee a minimum leak flow rate.
- Lateral inspection panel.

- Constant speed gear motor (230/400 V three-phase power supply).
- Maintenance-free ball bearing.
- For sensible power exchange as standard.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Gear motor and variable frequency drive for variable speeds from 0 to 10 rpm – 230 V single-phase	X	X
Coated aluminium rotor	X	X
Hygroscopic rotor for total power exchange	X	X
Polyurethane or epoxy painted internal panels	X	X
Stainless steel internal panels	X	X
Pressure tapping on the 4 air handling orifices	X	X

Sound attenuators

- Baffles.
- Mineral wool of different densities, the faces are covered with an anti-erosion shield.
- Galvanised panels.

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Baffle length	500 - 900 - 1200 - 1500	
Coating with fray-resistant fabric	X	standard
Painted mounting tracks	X	standard
Painted baffle panels	X	standard
Stainless steel baffle panels	X	X

Accessories

OPTIONS AVAILABLE PER RANGE	39 CZ ST	39 CZ CL & HE
Standard flexible sleeves for the outside of the casing	X	X
Insulated flexible sleeves for the outside of the casing	X	X
Rain protection frame with bird screen	X	X
Grille frame for protection of the air handling orifices on AHUs	X	X

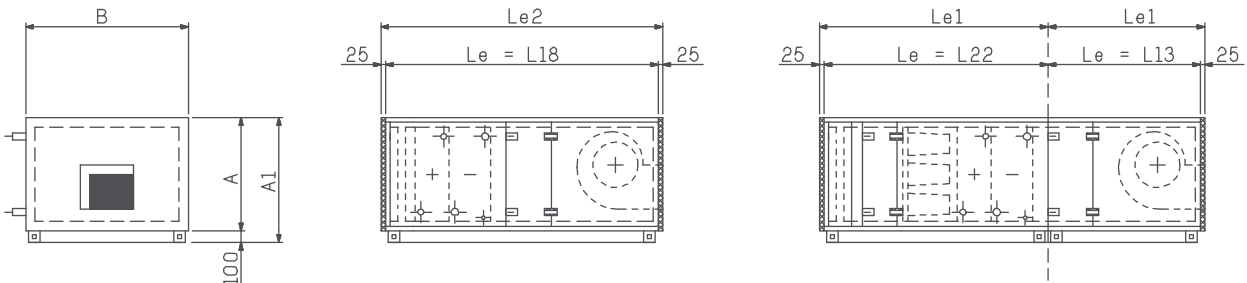
BLOCK AND AHU DIMENSIONS

Table of "L" block lengths available (all integrated elements), the total length of the AHUs is obtained by adding 25 mm to each end.

		Unit No.	25 to 50	75	100 to 450	400 & 600	
block/AHU maximum length	length "L"	L2			200		
		L3			300		
		L4			400		
		L5			500		
		L6			600		
		L7			700		
		L8			800		
		L9			900		
		L10			1000		
		L11			1100		
		L12			1200		
		L13			1300		
		L14			1400		
		L15			1500		
		L16			1600		
		L17			1700		
		L18			1800		
		L19			1900		
		L20			2000		
		L21			2100		
		75		L22	2200	2200	2200
400 & 600		L23	2300		2300	2300	
25 to 50		L24	2400		2400		
		L25			2500		
		L26			2600		
		L27			2700		
		L28			2800		
		L29			2900		
		L30			3000		
		L31			3100		
	100 to 450		L32			3200	

■ AHU dimensions

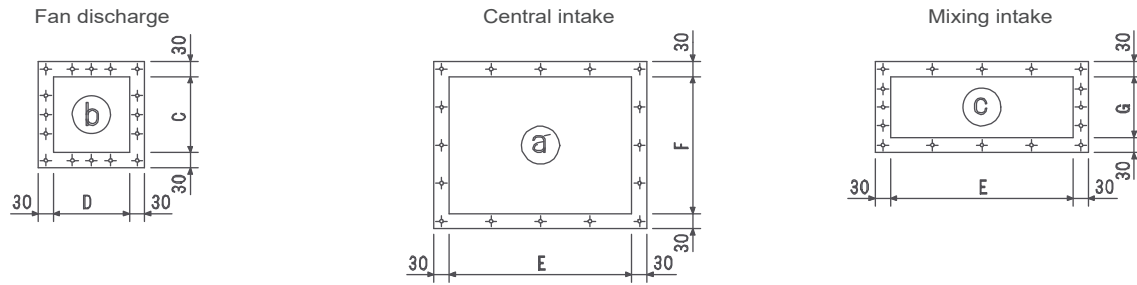
- L length of integrated elements
- Le 1 length of integrated elements + 1 end panel
- Le 2 length of integrated elements + 2 end panels



Unit No.	25	50	75	100	150	140	200	190	250	300	375	400	450	600
A	593	865	865	946	1236	946	1566	1236	1566	1566	1886	1566	2226	2226
A1	693	965	965	1046	1336	1046	1666	1336	1666	1668	1986	1666	2326	2326
B	875	875	1185	1516	1516	2172	1516	2172	1817	2172	2172	2812	2172	2812

BLOCK AND AHU DIMENSIONS

■ Connection flanges



Unit No.	25	50	75	100	150	140	200	190	250	300	375	400	450	600
C	299	415	464	514	574	514	724	574	814	914	1024	914	1144	1144
D	299	415	464	514	574	514	724	574	814	914	1024	914	1144	1144
E	610	610	910	1260	1260	1860	1260	1860	1560	1860	1860	2510	1860	2510
F	310	610	610	610	1010	610	1310	1010	1310	1310	1510	1310	1810	1810
G	160	310	310	310	410	310	610	410	610	610	760	610	910	910