Air Handling Unit

Envistar

Airflow Range: 0.1 - 3.5 m³/s

IV PRODUKT

Air handling with the focus on LCC

Envistar

– a new generation with the focus on LCC

A compact air handling unit with optional cooling unit – an obvious necessity in many applications.
The Envistar series is the result of the know-how that we at IV Produkt have acquired through many years of experience in the ventilation and cooling trade.
The unit is made of aluminium and ALC sheet steel that conforms to the provisions of Corrosion Resistance Class C4.
The integrated automated control equipment makes commissioning the unit a quick and simple task.

The Envistar offers many new features. Among these are the newly developed fans with integrated frequency inverter for even better overall efficiency.
The aluminium casing frame is new and is also available in our Flexomix S air handling unit series.
The unit casing panels are now also available with insulation that conforms to Fire Resistance Class EI30.
Another new feature is that you can choose between a unit with rotary heat exchanger and one with plate heat exchanger.
The series has also been supplemented with additional sizes and more intelligent control systems.

Envistar

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The New Generation of Envistar

The Envistar contains a large number of solutions for optimal useful life, simplicity and operating economy.
- Some are shown here, but there are many more...

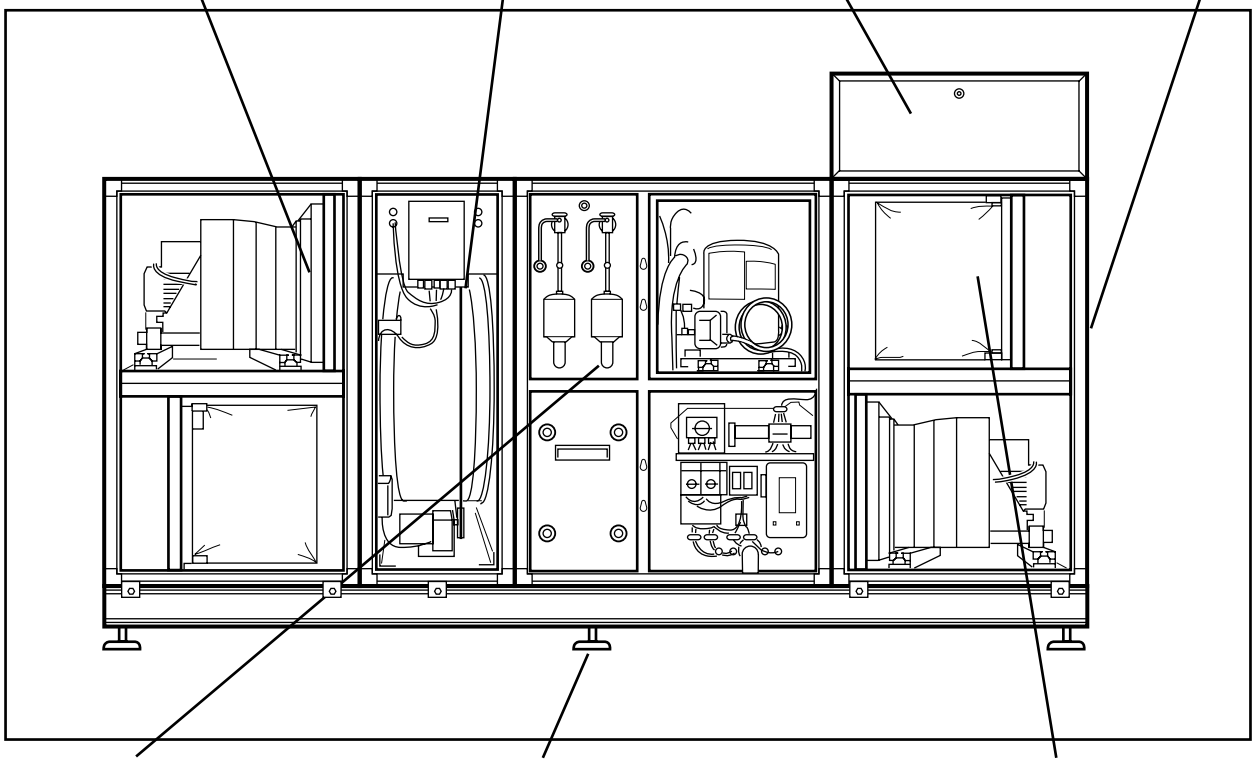
Naturally, we supply all our units with an environmental product declaration, on which we specify all the materials used in their manufacture and their suitability for recycling. This is one of our many production procedures aimed at protecting the environment.

The Windstrong fan system with up to approx. 60% overall efficiency

Choose between a rotary heat exchanger and a plate heat exchanger

Can be supplied with an integrated control system

Attractive unit casing made of ALC sheet steel, conforms to Corrosion Resistance Class C4 for excellent corrosion resistance and a long useful product life



Optional cooling unit – an obvious necessity in many applications

Base frame with adjustable feet facilitates cleaning and servicing in the plant room

Filters made of synthetic material for low pressure drops. Available in standard sizes for simpler servicing.

Envistar Air handling unit

General

The Envistar Air handling unit has been developed for meeting present day and future demands made in the world around us on environmentally compatible and energy efficient equipment for ventilation.

Design

Casing

The sections of the unit are built on a framework consisting of extruded, anodised aluminium profiled frame members. The covers and panels are of double-skin design made of aluminium-zinc-plated sheet steel with a protective finish (ALC) that meets the provisions of Corrosion Resistance Class C4. The standard intervening insulation used is 25 mm thick fire-retardant mineral wool. Insulation to Fire-resistance Class EI 30 is also available. All the inspection covers are hung on adjustable hinges. The casing conforms to the provisions of Tightness Class A and Total Heat Transfer Coefficient T4 in accordance with CEN preEN 1886.

Installation Conditions

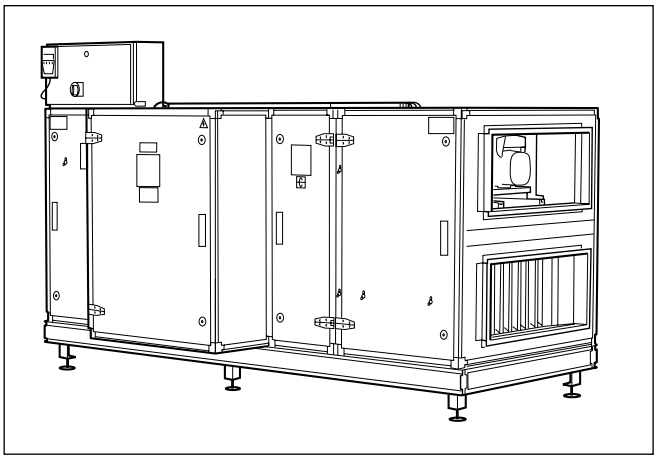
The Envistar unit shall be installed in a space where temperatures ranging from ±0 to +30 °C and in the winter humidity < 3.5 g/kg air in the fan room can be maintained.

Fields of Application

The Envistar can be used in most types of buildings for various applications such as in hospitals, offices, workshops, schools, banks, hotels, factories, department stores etc. that require ventilation.

Quality

Through our Quality Assurance System to ISO 9001 Standard, we guarantee that our products are quality-assured to offer our customers and the end users alike excellent performance and reliability throughout their useful product life.



Environment

To safeguard our environment and to give our children a more secure future, we produce and develop our products under the control of our Environmental Management System to ISO 14001.

By affixing an environmental product declaration on our air handling units, we show what materials they contain. You'll see that the majority of these materials can be recycled.

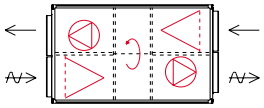
LCC - Life Cycle Cost

An air handling unit like the Envistar will have to operate and ventilate premises for many years to come. It is customary to calculate on a useful life of 15 – 20 years. The highest cost during this period is the cost of operating the unit. The LCC is the combined cost of purchasing, operating, servicing a product and the costs related to its environmental impact. The Envistar has been developed with the focus on LCC aimed having the lowest possible LCC. Our computer program for calculating the LCC will help you select the right air handling unit for your application.

This product catalogue is intended for presenting facts about the products in the Envistar series and should be regarded as a complement to the IV Produkt AHU Selection Program.

Prior to ordering products, always use the IV Produkt AHU Selection Computer Program for sizing.

Type ESER



Design

One-piece unit containing the following:

Windstar, speed-controlled direct-driven centrifugal fans with fan casing and forward-curved blades.
(Sizes: 03, 05, 08)

Windstrong, speed-controlled, direct-driven, open discharge centrifugal fans with backward-curved blades.
(Unit size: 12)
N.B. Certain components in the fan systems do not conform to the C4 version.

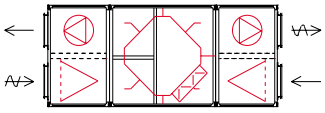
Regenerative rotary heat exchanger with electronic control of the efficiency. The rotor consists of alternate flat and corrugated strips of aluminium foil.

Deep-pleated bag filter. Filters mounted on guide rails with eccentric locking devices for maximum tightness.

Filter material: Synthetic. Filter Class: F6 and F7

The size 12 unit is available in a left-hand or right-hand version

Type ESBP



Design

Block unit containing the following:

Windstrong, speed-controlled, direct-driven, open discharge centrifugal fans with backward-curved blades.
(Sizes: 09, 13, 18, 28 and 33)
N.B. Certain components in the fan systems do not conform to the C4 version.

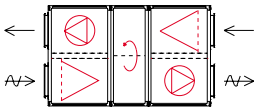
Plate heat exchanger of cross-flow type made of aluminium with by-pass damper.

Deep-pleated bag filter. Filters mounted on guide rails with eccentric locking devices for maximum tightness.

Filter material: Synthetic. Filter Class: F6 and F7

Filters in standard sizes for sizes: 13, 18, 28 and 33.

Type ESBR



Design

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Windstrong, speed-controlled, direct-driven, open discharge centrifugal fans with backward-curved blades.
(Sizes: 09, 13, 18, 28 and 33)
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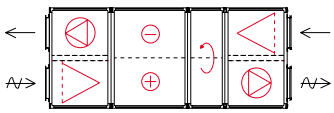
Regenerative rotary heat exchanger with electronic control of the efficiency. The rotor consists of alternate flat and corrugated strips of aluminium foil.

Deep-pleated bag filter. Filters mounted on guide rails with eccentric locking devices for maximum tightness.

Filter material: Synthetic. Filter Class: F6 and F7

Filters in standard sizes for sizes: 13, 18, 28 and 33.

Type ESCR



Design

Block unit containing the following:

Windstrong, speed-controlled, direct-driven, open discharge centrifugal fans with backward-curved blades..
(Sizes: 09, 13, 18, 28 and 33)
N.B. Certain components in the fan systems do not conform to the C4 version.

Regenerative rotary heat exchanger with electronic control of the efficiency. The rotor consists of alternate flat and corrugated strips of aluminium foil.

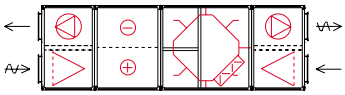
A complete cooling section for cooling the supply air, containing compressor, condenser, evaporator, etc.

Deep-pleated bag filter. Filters mounted on guide rails with eccentric locking devices for maximum tightness.

Filter material: Synthetic. Filter Class: F6 and F7

Filters in standard sizes for sizes: 13, 18, 28 and 33.

Type ESCP



Design

Block unit containing the following:

Windstrong, speed-controlled, direct-driven, open discharge centrifugal fans with backward-curved blades.
(Sizes: 09, 13, 18, 28 and 33)
N.B. Certain components in the fan systems do not conform to the C4 version.

Plate heat exchanger of cross-flow type made of aluminium with by-pass damper.

A complete cooling section for cooling the supply air, containing compressor, condenser, evaporator, etc.

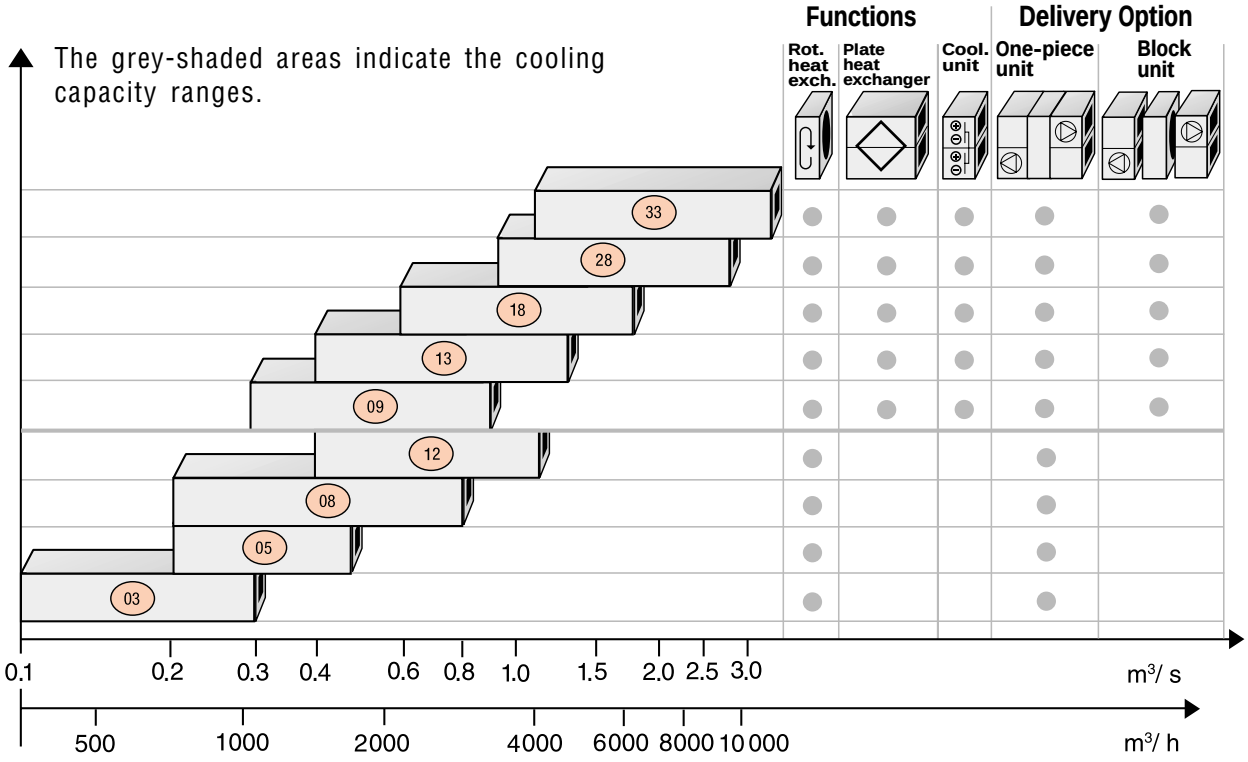
Deep-pleated bag filter. Filters mounted on guide rails with eccentric locking devices for maximum tightness.

Filter material: Synthetic. Filter Class: F6 and F7

Filters in standard sizes for sizes: 13, 18, 28 and 33.

Technical Details

Airflow Range and Technical Particulars

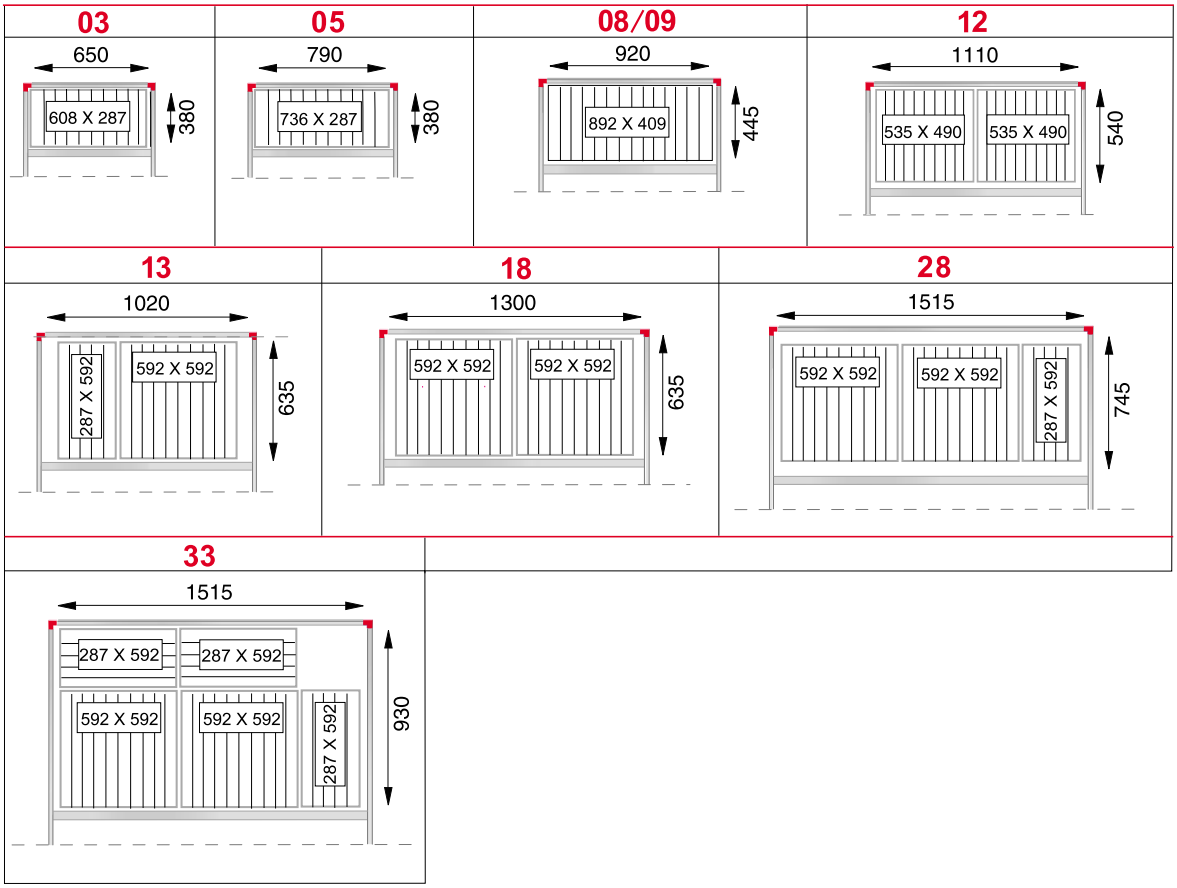


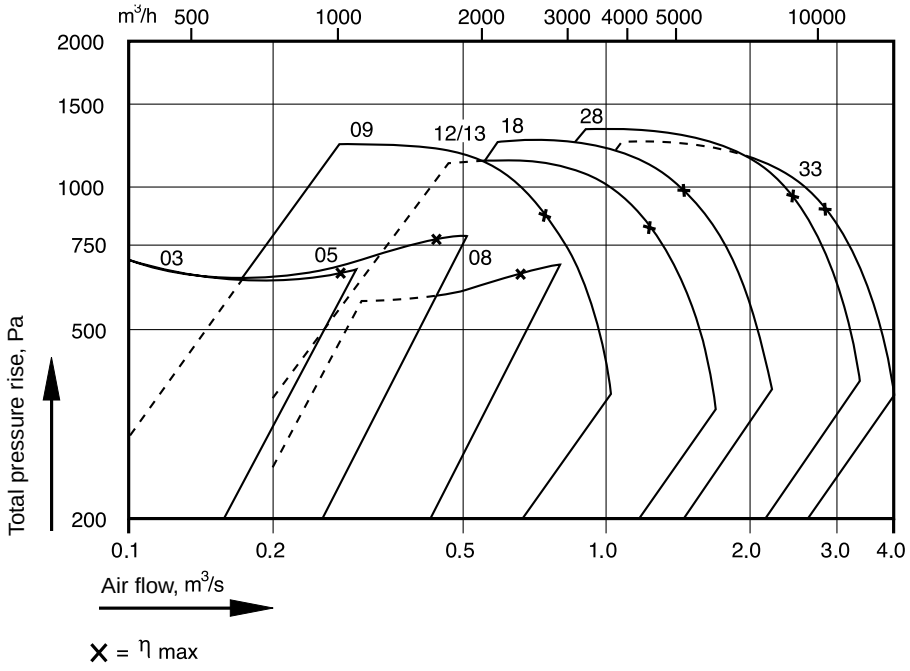
	Unit size								
	03	**05**	**08**	**09**	**12**	**13**	**18**	**28**	**33**
Airflow ranges (m³/s)									
One-piece AHU with rotor	0.1–0.3	0.2–0.5	0.3–0.8	–	0.4–1.2	–	–	–	–
Block AHU with rotory or plate heat exchanger	–	–	–	0.3–0.9	–	0.4–1.3	0.6–1.8	1.0–2.8	1.2–3.5
Block AHU with rotory or plate heat exch. and cooling unit	–	–	–	0.4–0.8	–	0.7–1.3	0.9–1.8	1.4–2.8	1.7–3.3
Dimensions and weight									
Length, see page:	12	12	12	13–16	12	13–16	13–16	13–16	13–16
Width* (mm)	710	850	980	980	1170	1080	1360	1575	1575
Height (mm)**	850	850	980	1010	1170	1390	1390	1610	1980
Weight, see page:	12	12	12	13–16	12	13–16	13–16	13–16	13–16
Duct conn. size (mm)	Ø250	Ø315	Ø400	700×300	800×400	800×500	1000×500	1200×600	1200×800
Cooling output, *StarCooler* (kW)	–	–	–	9.0–10.8	–	14.6–17.5	18.3–22.4	27.6–33.7	33.2–40.3
External fuse									
StarCooler, 3-phase, 400 V	–	–	–	10 A	–	16 A	16 A	25A	35 A
AHU Control unit, 3-phase, 400V	16 A	16 A	16 A	20 A	16 A	16 A	16 A	25 A	25 A

* Add 300 mm for the *StarCooler*
** Add 350 mm for the automated control equipment cubicle

Technical Details

Internal Dimensions, Filter Sizes and Fan Performance





Internal pressure drop

Size 03

		Air flow, m³/s				
		0.10	0.15	0.20	0.25	0.30
DAMPER	**UM and SP**	2	5	9	14	20
FILTERS	**EU 6** **EU 7**	86 112	91 120	96 128	102 134	107 141
ROTARY HEAT EXCHANGER		44	68	91	116	140
PLATE HEAT EXCHANGER		-	-	-	-	-
COOLING UNIT	**Supply air** **Extract air**	- -	- -	- -	- -	- -
AIR HEATER	**VV, Output var. 1** **VV, Output var. 2**	4 -	7 -	11 -	16 -	22 -
AIR HEATER	**EV, Output var. 1–4**	4	8	15	23	34
AIR COOLER	**VK**	6	12	20	30	42
SOUND ATTENUATOR, LD		0	0	1	1	1
INSERTION LOSS		3	7	11	17	25

Size 05

		Air flow, m³/s				
		0.2	0.28	0.35	0.43	0.5
DAMPER	**UM and SP**	3	7	11	16	22
FILTERS	**EU 6** **EU 7**	92 123	100 132	106 140	113 150	120 158
ROTARY HEAT EXCHANGER		69	96	120	147	172
PLATE HEAT EXCHANGER		-	-	-	-	-
COOLING UNIT	**Supply air** **Extract air**	- -	- -	- -	- -	- -
AIR HEATER	**VV, Output var. 1** **VV, Output var. 2**	7 -	13 -	19 -	28 -	36 -
AIR HEATER	**EV, Output var. 1–4**	6	12	18	27	37
AIR COOLER	**VK**	12	21	31	46	61
SOUND ATTENUATOR, LD		6	11	17	26	35
INSERTION LOSS		7	13	21	31	43

Size 08

		Air flow, m³/s				
		0.3	0.43	0.55	0.68	0.8
DAMPER	**UM and SP**	3	6	10	15	21
FILTERS	**EU 6** **EU 7**	90 119	96 127	102 135	108 143	114 150
ROTARY HEAT EXCHANGER		57	82	105	130	152
PLATE HEAT EXCHANGER		-	-	-	-	-
COOLING UNIT	**Supply air** **Extract air**	- -	- -	- -	- -	- -
AIR HEATER	**VV, Output var. 1** **VV, Output var. 2**	7 -	13 -	20 -	29 -	37 -
AIR HEATER	**EV, Output var. 1–4**	5	10	17	26	36
AIR COOLER	**VK**	12	22	34	50	69
SOUND ATTENUATOR, LD		3	6	10	15	20
INSERTION LOSS		6	13	21	32	44

Internal Pressure Drop

Size 09

		Air flow, m³/s				
		0.3	0.45	0.6	0.75	0.9
DAMPER	**UM and SP**	1	2	4	7	10
FILTERS	**EU 6**	90	97	104	112	119
	EU 7	119	128	138	148	157
ROTARY HEAT EXCHANGER		57	86	115	143	173
PLATE HEAT EXCHANGER		27	40	58	81	109
COOLING UNIT	**Supply air**	-	54	86	122	-
	Extract air	-	48	75	108	-
AIR HEATER	**VV, Output var. 1**	7	14	23	34	44
	VV, Output var. 2	14	28	46	66	90
AIR HEATER	**EV, Output var. 1–4**	2	4	7	11	17
AIR COOLER	**VK**	15	31	53	-	-
SOUND ATTENUATOR, LD		4	8	15	23	34
INSERTION LOSS		1	3	5	8	11

Size 12

		Air flow, m³/s				
		0.4	0.6	0.8	1.0	1.2
DAMPER	**UM and SP**	1	2	3	5	7
FILTERS	**EU 6**	90	98	106	113	120
	EU 7	120	130	140	149	159
ROTARY HEAT EXCHANGER		51	76	102	127	152
PLATE HEAT EXCHANGER		-	-	-	-	-
COOLING UNIT	**Supply air**	-	-	-	-	-
	Extract air	-	-	-	-	-
AIR HEATER	**VV, Output var. 1**	8	16	26	37	51
	VV, Output var. 2	-	-	-	-	-
AIR HEATER	**EV, Output var. 1–4**	1	3	6	9	13
AIR COOLER	**VK**	10	21	36	53	64
SOUND ATTENUATOR, LD		4	10	17	27	38
INSERTION LOSS		1	2	4	6	8

Size 13

		Air flow, m³/s				
		0.4	0.63	0.85	1.08	1.3
DAMPER	**UM and SP**	1	2	4	6	9
FILTERS	**EU 6**	84	88	94	98	103
	EU 7	111	118	124	130	136
ROTARY HEAT EXCHANGER		51	80	108	137	165
PLATE HEAT EXCHANGER		35	56	87	130	181
COOLING UNIT	**Supply air**	-	-	55	80	108
	Extract air	-	-	51	75	101
AIR HEATER	**VV, Output var. 1**	4	9	14	21	29
	VV, Output var. 2	7	16	26	40	55
AIR HEATER	**EV, Output var. 1–4**	-	3	6	10	15
AIR COOLER	**VK**	8	18	31	48	69
SOUND ATTENUATOR, LD		3	7	13	22	31
INSERTION LOSS		1	3	4	7	10

Internal pressure drop

Size 18

		Air flow, m³/s				
		0.6	0.9	1.2	1.5	1.8
DAMPER	**UM and SP**	1	2	3	5	7
FILTERS	**EU 6**	85	90	94	100	104
	EU 7	112	119	126	132	138
ROTARY HEAT EXCHANGER		49	73	98	122	146
PLATE HEAT EXCHANGER		40	66	104	153	214
COOLING UNIT	**Supply air**	-	39	62	88	118
	Extract air	-	36	57	81	109
AIR HEATER	**VV, Output var. 1**	4	8	13	19	25
	VV, Output var. 2	8	15	25	36	49
AIR HEATER	**EV, Output var. 1–4**	-	3	5	8	12
AIR COOLER	**VK**	11	21	35	53	-
SOUND ATTENUATOR, LD		4	8	15	23	34
INSERTION LOSS		1	2	3	5	8

Size 28

		Air flow, m³/s				
		1.0	1.45	1.9	2.35	2.8
DAMPER	**UM and SP**	1	2	4	6	8
FILTER	**EU 6**	88	94	100	106	112
	EU 7	117	124	132	140	147
ROTARY HEAT EXCHANGER		53	78	101	125	149
PLATE HEAT EXCHANGER		29	66	97	145	201
COOLING UNIT	**Supply air**	-	39	73	103	136
	Extract air	-	36	69	97	128
AIR HEATER	**VV, Output var. 1**	5	8	16	22	30
	VV, Output var. 2	10	20	30	43	58
AIR HEATER	**EV, Output var. 1–4**	-	4	6	10	14
AIR COOLER	**VK**	14	27	43	65	-
SOUND ATTENUATOR, LD		5	10	18	27	38
INSERTION LOSS		1	2	4	6	9

Size 33

		Air flow, m³/s				
		1.3	1.8	2.3	2.8	3.3
DAMPER	**UM and SP**	1	2	3	5	6
FILTERS	**EU 6**	87	92	96	101	106
	EU 7	116	122	128	134	140
ROTARY HEAT EXCHANGER		70	96	123	149	178
PLATE HEAT EXCHANGER		32	63	104	155	215
COOLING UNIT	**Supply air**	-	45	66	91	118
	Extract air	-	43	63	87	113
AIR HEATER	**VV, Output var. 1**	5	9	14	18	24
	VV, Output var. 2	10	17	25	36	47
AIR HEATER	**EV, Output var. 1–4**	2	3	5	8	11
AIR COOLER	**VK**	11	18	28	39	-
SOUND ATTENUATOR, LD		5	10	16	23	32
INSERTION LOSS		1	2	3	5	7

Ordering Key

SPECIFICATION

Envistar	**-a -b -c -d**
a - Type	ESER, ESBR ESBP, ESCR, ESCP
b - Size	03, 05, 08, 12 (ESER only) 09, 13, 18, 28, 33 (other)
c - Casing	00 = Standard E3 = EI30
d - Electric wiring	00 = Without electric wiring 11 = Electric wiring for the one-piece unit 12 = Electric wiring for the block unit

Specify the configuration and inspection side (right-hand or left-hand) when ordering.

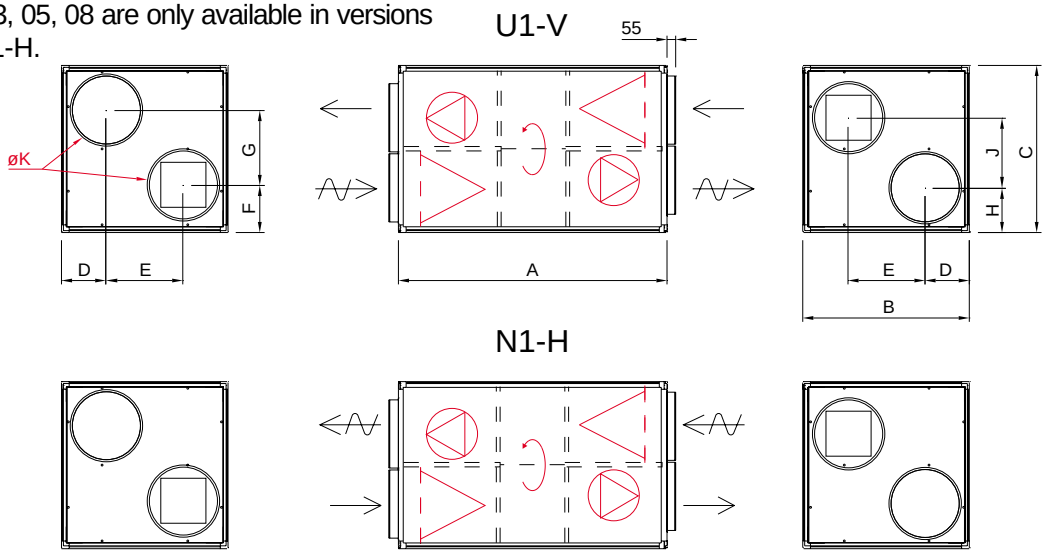
GENERAL ACCESORIES

Thermometer	**EMMT-16**
Water trap	**MIET-CL 04**
	Necessary for the ESBP, ESCR, ESCP and if the air cooler for chilled water is selected (ESET-VK).

Dimensions and Weights

ESER

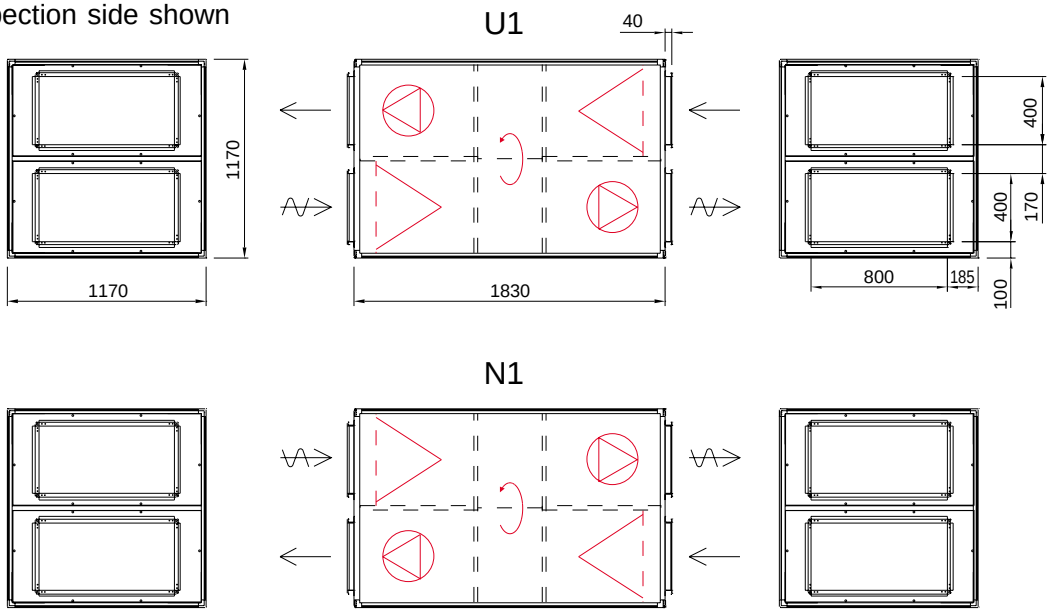
The ESER-03, 05, 08 are only available in versions U1-V and N1-H.



Size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	J mm	øK mm	Wgt. kg
03	1450	710	850	205	300	230	390	230	365	250	190
05	1450	850	850	245	365	240	380	230	355	315	215
08	1575	980	980	265	450	280	440	260	410	400	280

ESER

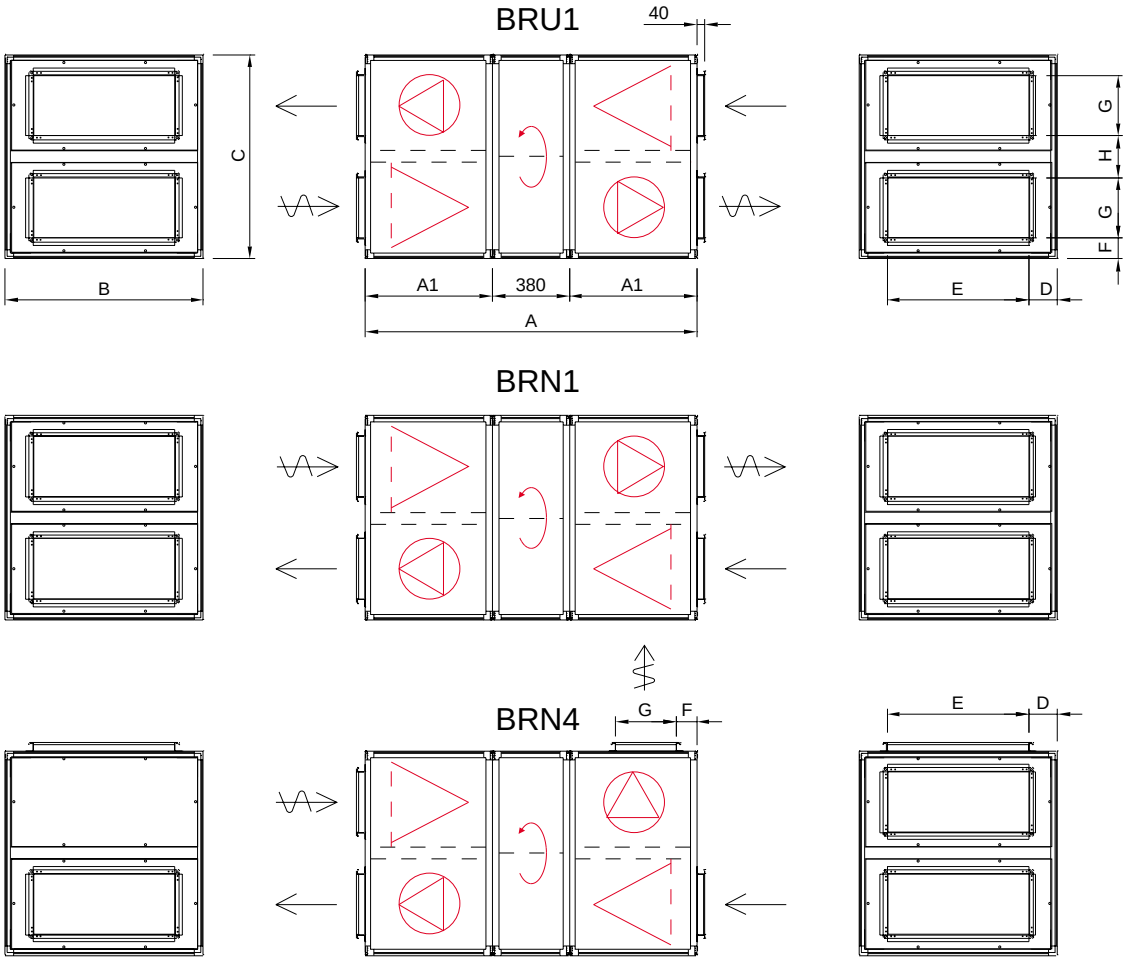
Left-hand inspection side shown



Size	Length mm	Width mm	Height mm	Wgt. kg
12	1830	1170	1170	340

ESBR

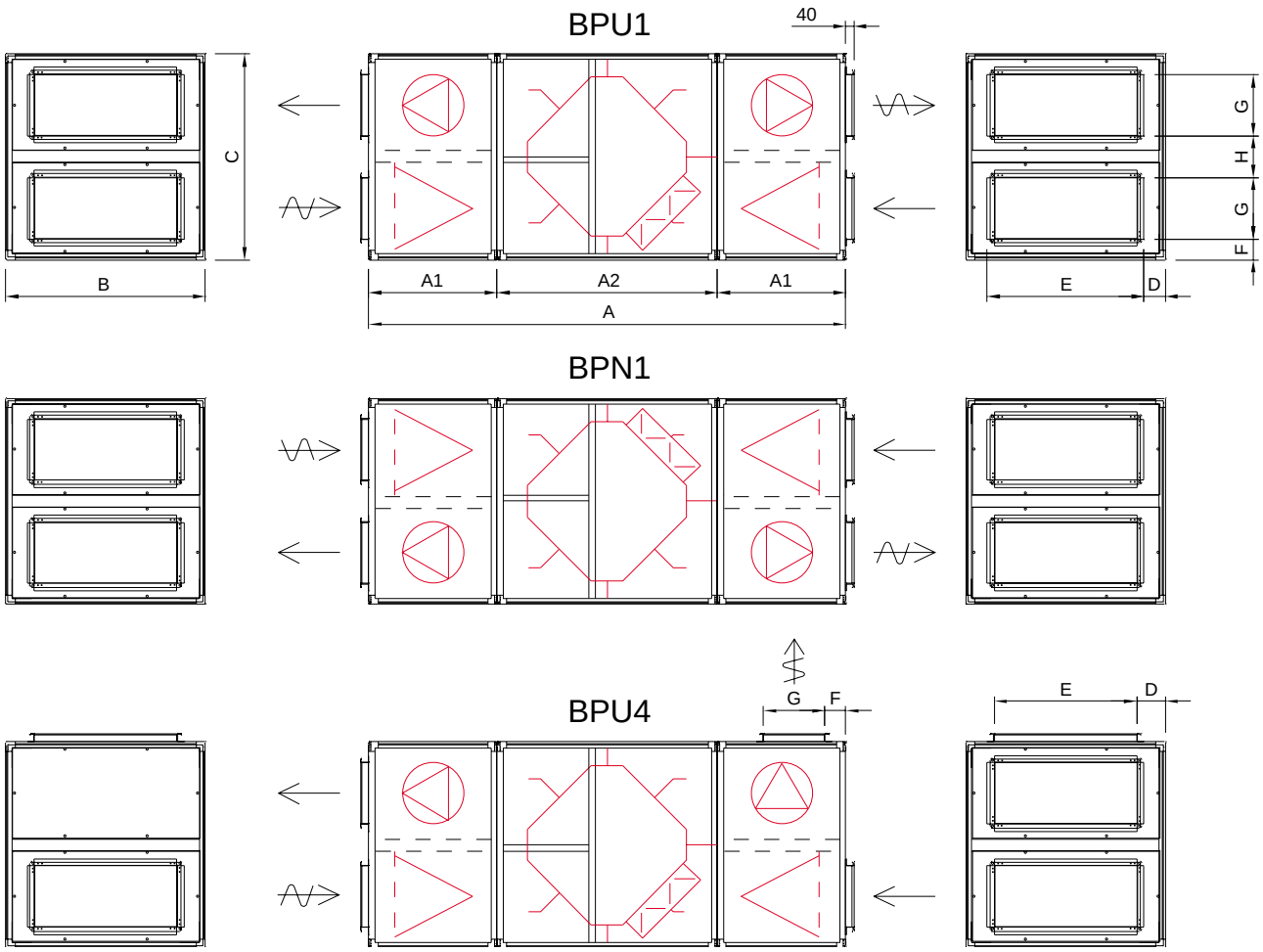
Left-hand inspection side shown



Size	A mm	A1 mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	Wgt. kg
09	1645	630	980	1010	140	700	105	300	200	360
13	1945	780	1080	1390	140	800	100	500	190	475
18	2245	930	1360	1390	180	1000	100	500	190	580
28	2245	930	1575	1605	190	1200	100	600	205	745
33	2545	1080	1575	1980	190	1200	95	800	190	875

ESBP

Left-hand inspection side shown

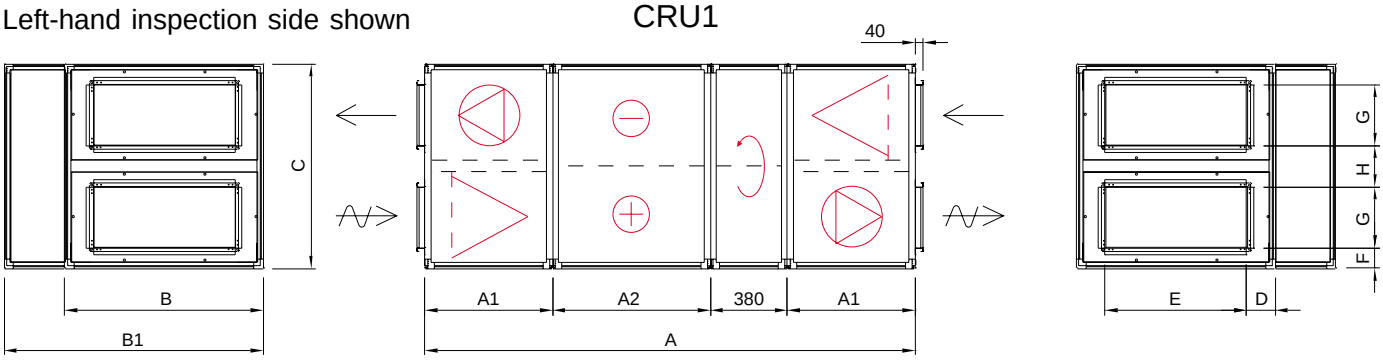


Size	A mm	A1 mm	A2 mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	Wgt. kg
09	2345	630	1080	980	1010	140	700	105	300	200	410
13	2795	780	1230	1080	1390	140	800	100	500	190	535
18	3095	930	1230	1360	1390	180	1000	100	500	190	645
28	3395	930	1530	1575	1605	190	1200	100	600	205	860
33	4145	1080	1980	1575	1980	190	1200	95	800	190	1110

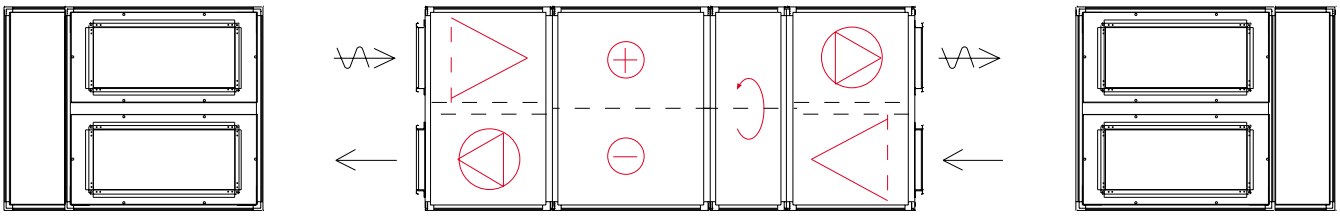
ESCR

Left-hand inspection side shown

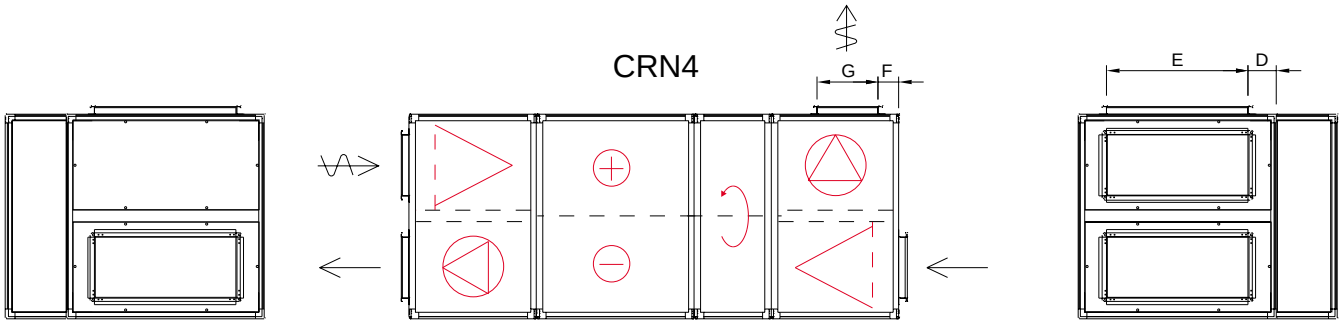
CRU1



CRN1



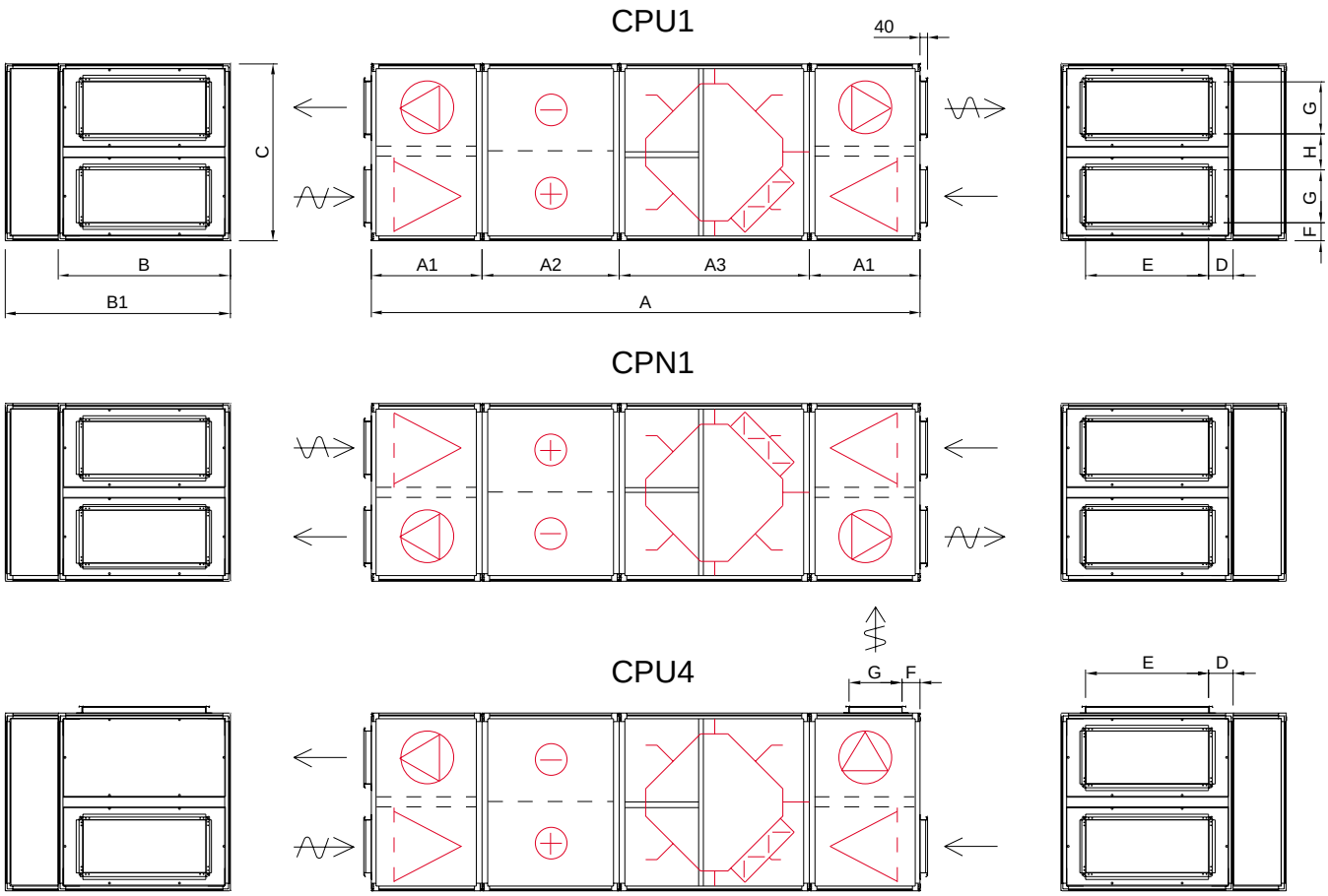
CRN4



Size	A mm	A1 mm	A2 mm	B mm	B1 mm	C mm	D mm	E mm	F mm	G mm	H mm	Wgt. kg
09	2430	630	780	980	1280	1010	140	700	105	300	200	620
13	2730	780	780	1080	1380	1390	140	800	100	500	190	815
18	3030	930	780	1360	1660	1390	180	1000	100	500	190	975
28	3030	930	780	1575	1870	1605	190	1200	100	600	205	1235
33	3480	1080	930	1575	1870	1980	190	1200	95	800	190	1480

ESCP

Left-hand inspection side shown



Size	A mm	A1 mm	A2 mm	A3 mm	B mm	B1 mm	C mm	D mm	E mm	F mm	G mm	H mm	Wgt. kg
09	3130	630	780	1080	980	1280	1010	140	700	105	300	200	670
13	3580	780	780	1230	1080	1380	1390	140	800	100	500	190	875
18	3880	930	780	1230	1360	1660	1390	180	1000	100	500	190	1040
28	4180	930	780	1530	1575	1870	1605	190	1200	100	600	205	1350
33	5080	1080	930	1980	1575	1870	1980	190	1200	95	800	190	1715

Heat Recovery Section, Rotory Heat Exchanger

General

The heat recovery section is a complete unit with a rotary heat exchanger that transfers heat according to the air-to-air principle.

Design

- The rotor inside the heat recovery section consists of alternate flat and corrugated strips of aluminium foil. This forms smooth passages through which the air flows in a laminar pattern. This ensures a low pressure drop and little risk of dust or other impurities collecting on the rotor surfaces.
- The rotor, which is withdrawable from the frame-work, is journalled in permanently lubricated spherical ball bearings.
- An effective brush seal is fitted along the periphery of the rotor and between the supply air and the extract air paths.
- An adjustable purging sector continuously blows the rotor surfaces clean.
- The rotor is driven by a worm-gear motor with electronic output (speed) control.

Electronic Speed Control

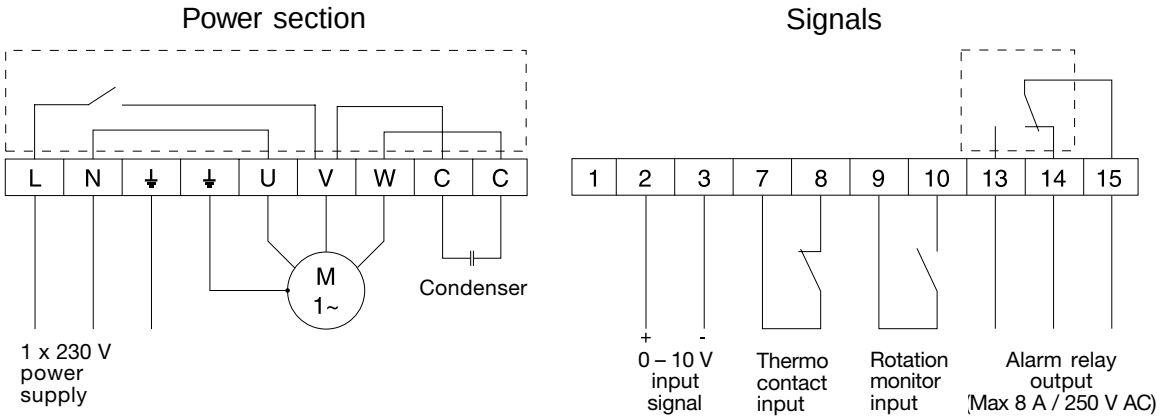
The electronic controller and the drive motor are components of the electronic speed control system.

The controller is integrated into the heat recovery section and includes ready-to-use functions for purging, rotation monitoring, motor protection and alarms. The pulse detector of the rotation monitor is included in the standard supply. The equip-ment is pre-wired for connection to a 0–10 V control signal. The controller should be connected to a single-phase, 230 V mains power supply and should be protected by a delayed-action fuse.

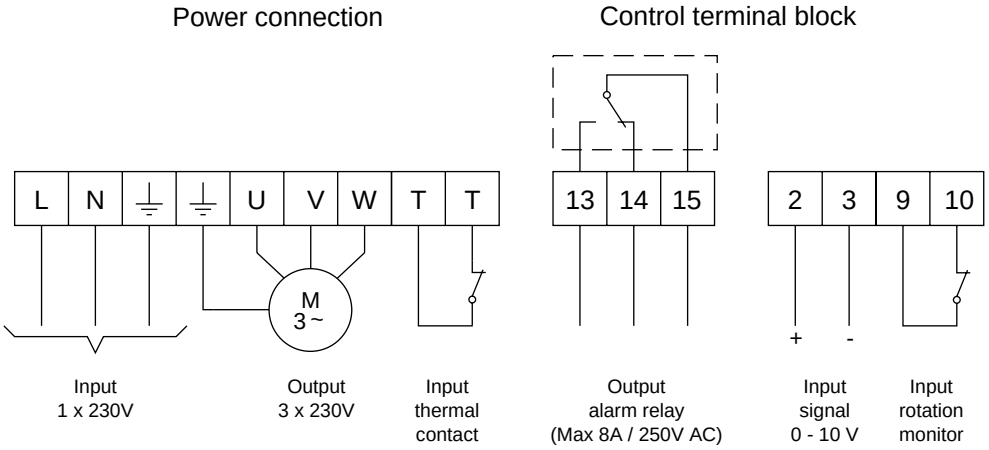
Motor Data

Ver.	Size	Output W	Power supply	Rated current/fuse
Speed control	03-09	40	1×230 V	6 A/delayed
	12-33	40	1×230 V	6 A/delayed

Wiring Diagram for sizes 03-09



Wiring Diagram for sizes 12 - 33

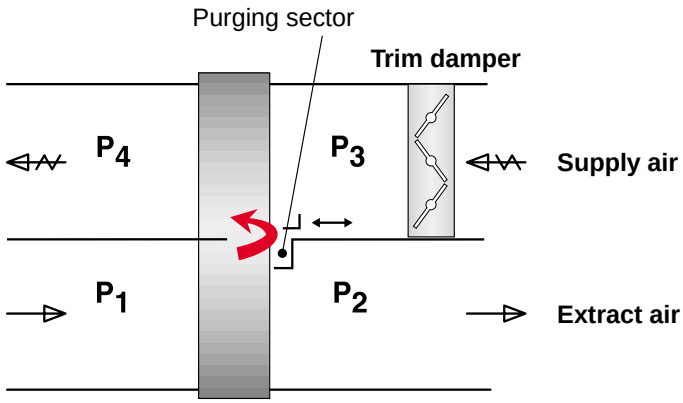


Purging and Leakage Airflows

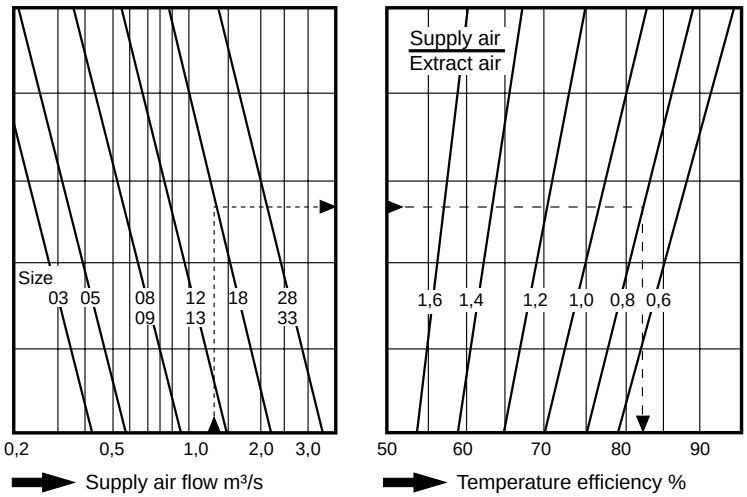
Rotary heat exchangers always carry over a certain volume of extract air to the supply air and vice versa as the rotor rotates.

The use of a purging sector blows the rotor clean of impurities and eliminates extract air carry-over to the supply air. When installing heat exchangers with a purging sector, the fans shall be arranged to provide the following pressure conditions: P1 > P4 and P2 > P3 as illustrated in the figure below.
A trim (pressure-adjusting) damper can be fitted to achieve the appropriate pressure balance, if necessary.

The flow can be adjusted with the adjustable purging sector.



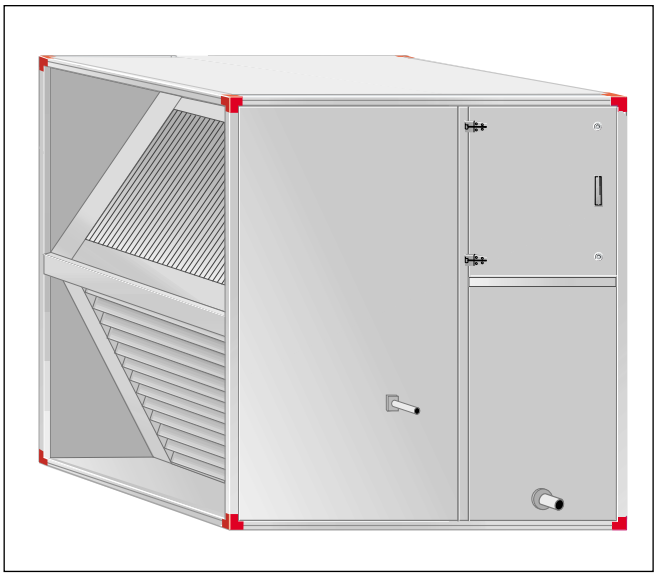
Temperature Efficiency



Heat Recovery Section, Plate Heat Exchanger

General

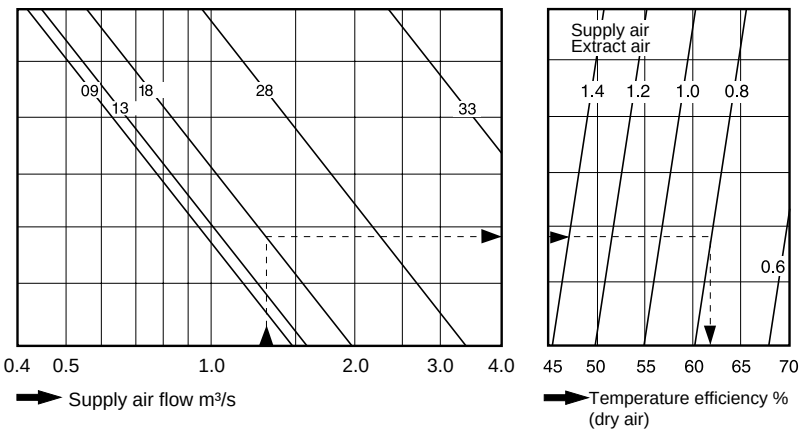
The plate heat exchanger section is a complete unit with a cross-flow heat exchanger element that transfers heat according to the air-to-air principle.



Design

- The heat exchanger assembly consists of aluminium plates that are also available epoxy-coated The plates are arranged at right angles to one another. This provides smooth air passages that enable low pressure drop and minimal risk of dust or other impurities collecting inside them.
- A special jointing technique makes the exchanger assembly very tight and minimises the risk of leakage between the supply air and the extract air passages. Pressed area enlargements in the direction of air flow provide ample heat transfer surface and stability that permits substantial pressure differentials.
- Moisture cannot be recovered from the extract air. However, whenever the outdoor air temperature is low, any moisture in the extract air will be precipitated and this will release energy. The condensate will be collected in a drip tray with drain connection. Under normal humidity and temperature conditions, this increases the temperature efficiency of the heat exchanger by approx. 3 percentage units.
- Moisture precipitation also invoves the risk of ice forming inside the heat exchanger. This is counteracted by opening the by-pass damper to permit a portion of the outdoor air to flow past the heat exchanger.
- The by-pass and shut-off dampers are of type KJS, Tightness Class 2 to VVS AMA-98 and Corrosion Resistance Class C4.

Temperature Efficiency



StarCooler Cooling Unit

General

The StarCooler is a complete cooling unit, designed for cooling the supply air whenever cooling is needed. The unit contains an evaporator and condenser coils, cooling machine and electric power supply and safety equipment.

- Five sizes for airflows ranging from 0.4 to 3.3 m³/s, with cooling power from 10 to 40 kW at max. airflow.
- One output variant.
- The cooling power is divided into and controlled in 3 steps. (size 09: 2 steps).
- Uses environmentally compatible type R 407 C refrigerant.
- Supplied CE labelled, tested and documented as a ready-to-use cooling installation.
- Has an easy-to-service design, is simple to plan into the project and is easy to install.

Design

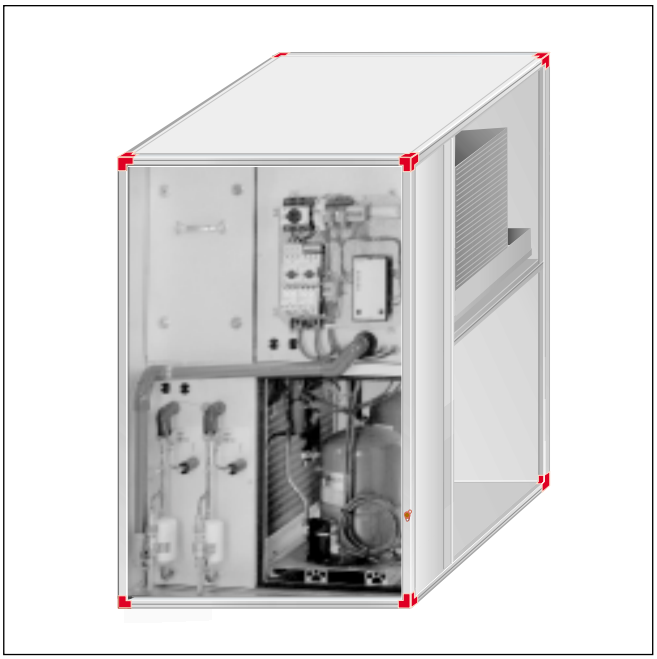
The StarCooler is designed as a direct-expansion system, contains a minimum volume of refrigerant and has a high ”cooling efficiency factor”. Two compressor circuits cool the supply air as it flows through the evaporator coil where the heat is absorbed and is transferred to a condenser located in the extract air. The unit has a compact design. Its casing is constructed like the other functional sections in the Envistar series and conforms to Corrosion Resistance Class C4. The front panel has a lockable cover for access to components inside for adjustments and servicing. The unit has removable covers for inspecting the coils, compressors, etc. The compressors are anti-vibration isolated and are mounted on a withdrawable base plate. The condensate drainpipe is made of plastic. The unit is supplied without a base frame.

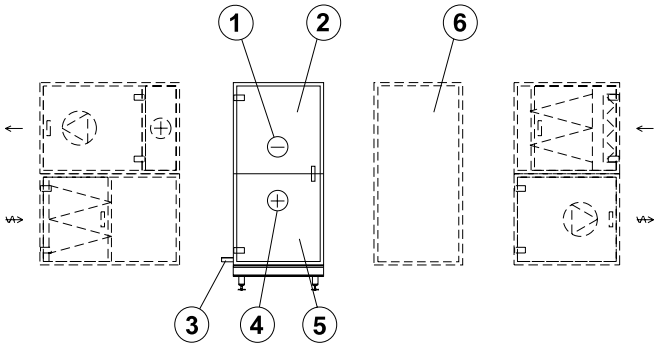
Refrigerant Circuits

The refrigerant circuits consist of: Completely hermetical reciprocating compressors with oil sight glass and temperature and current-sensing phase switches.

Evaporator coil with drip tray, condenser coil, drying filter, throttling device for expansion, low and high pressure switch, pressure relief equipment.

Refrigerant tubing made of copper jointed by welding, service tappings and refrigerant.





1. Evaporator
2. Electrical equipment
3. Condensate drain
4. Condenser
5. Compressor
6. Heat exchanger

Project Design

The cooling unit can be planned for optional supply and extract air flows within specified min. and max. flows. Use the Envistar product selection computer programme for more accurate sizing.

Electrical Equipment

The electrical equipment includes a main switch, a motor protection, contactors, control equipment for the compressors. The cooling power can be controlled from the external 0–10 V DC input together with the 24 V AC supply. The cooling machine is started while both fans are running by closure of the external potential-free contacts (24V).In the event that the pressure switch or motor protection trips, each circuit is switched out and a group alarm is obtained across potential-free contacts.

Overview of the Capacities

Size		09	13	18	28	33
Output variant		1	1	1	1	1
Air volumes :Min. supply/extract air	(m^3/s)	0.4	0.7	0.9	1.4	1.7
Air volumes :Max. supply/extract air	(m^3/s)	0.8	1.3	1.8	2.8	3.3
Cooling power at max airflow ^{t} outdoor air: 26°C; RH 50% ^{t} extract air: 22°C	(kW)	10.8	17.5	22.4	33.7	40.3
Cooling efficiency factor	(C.O.P)	4.5	4.3	4.5	4.2	4.0
Number of compressors	(each)	2	2	2	2	2
Number of control steps	(each)	2	3	3	3	3
Max conn. power, compressor	(kW)	2.6	4.3	5.4	8.1	9.8
Max operating current 3×400V ; 50 Hz	(A)	5.8	9.6	11.4	17.7	21.8
Recommended fuse 3×400V ; 50 Hz	(A)	10	16	16	25	35
R407C refrigerant ; Circuit 1	(kg)	1.8	2.0	2.0	3.7	4.7
R407C refrigerant ; Circuit 2	(kg)	1.8	3.0	3.0	6.5	8.6

Filter

Design

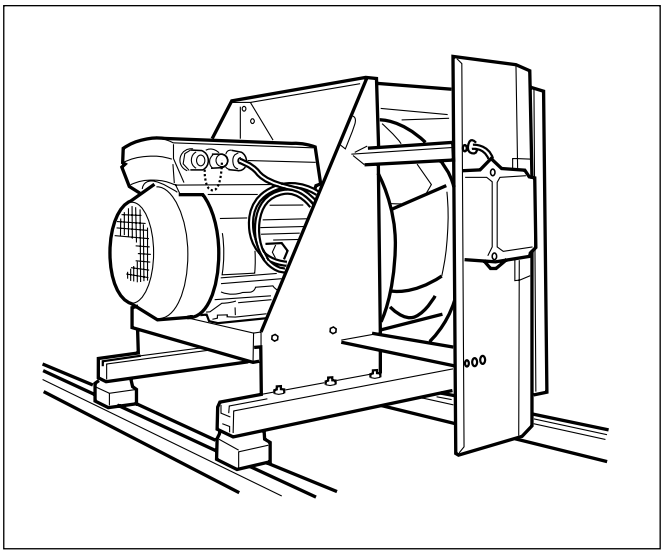
- The Class F6 andF7 filters consist of deep-pleated filter bags mounted in a metal frame. The filter material consists of synthetic fibres.
- The filters are fitted in guide rails and can easily be withdrawn from the section and be replaced.
- The filter guide rails are fitted with effective sealing strips for minimising the risk of air leakage past the filter.
- The section is fitted with measurement tappings for connection to a differential-pressure gauge supplied with the unit.

Filter Sizes

Size	Filter modules (qty.) 608×287 mm	736×287 mm	535×490 mm	892×409 mm	592×287 mm	592×592 mm	Filter area (m^2) F6, F7
03	1						2.0
05		1					2.4
08/09				1			4.3
12			2				5.6
13					1	1	9.8
18						2	13.0
28					3	2	22.9
33					3	3	29.4

Recommended final pressure drop F6 150 Pa
F7 200 Pa

Fan Fitting



General

The fan fitting consists of mounting components, front casing panel and fan. The fitting can be used either as a supply air fan or an extract air fan in ventilation systems together with the other functional sections in the Envistar series.

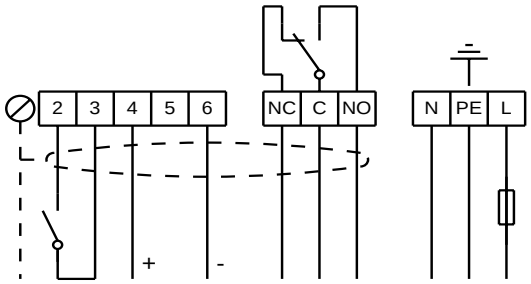
Design

- WR - Windstar, speed-controlled, direct-driven centrifugal fan with fan casing and forward-curved blades. (sizes 03 – 08)

  WD - Windstrong, speed-controlled, direct-driven open-discharge centrifugal fan, backward-curved blades and frequency inverter fitted to it. (sizes 09 – 33)

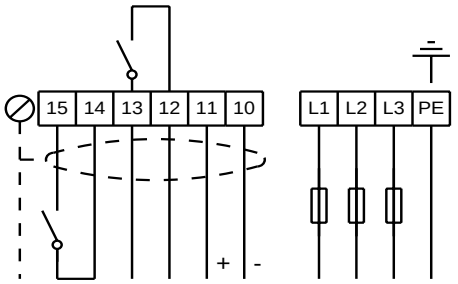
**Certain components in the fan system are not of M3 design.*

WIRING DIAGRAM UNIT SIZES 03-09



START/ STOP | CONTROL 0-10V= | ALARM (CLOSES BETWEEN C-NC IN THE EVENT OF AN ALARM AND A POWER FAILURE) | 230V~ POWER SUPPLY

WIRING DIAGRAM UNIT SIZES 12-33

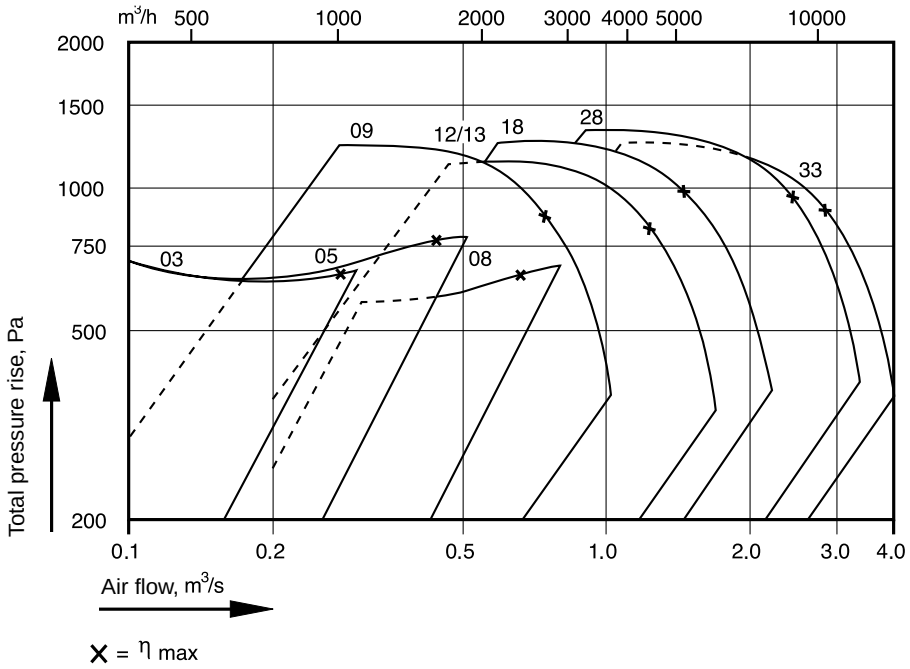


START/ STOP | CONTROL 0-10V= | ALARM (CLOSES IN THE EVENT OF AN ALARM) | 400V~ POWER SUPPLY

Electrical Details for theWindstar/Windstrong

Size	Fan system with speed control	Type of motor	Motor output, kW	Power supply	Rated current, A	Rec. fuse, AT
03	Windstar	AC	0.37	230V, 1-phase	3.0	10
05	Windstar	AC	0.55	230V, 1-phase	4.3	10
08	Windstar	AC	0.81	230V, 1-phase	5.6	10
09	Windstrong	AC	1.1	230V, 1-phase	8.2	10
12/13	Windstrong	AC	1.5	400V, 3-phase	3.3	10
18	Windstrong	AC	2.2	400V, 3-phase	4.7	10
28	Windstrong	AC	3.0	400V, 3-phase	6.4	10
33	Windstrong	AC	4.0	400V, 3-phase	7.9	10

Fan Performance Chart



ESET-VV Air Heater

General

The air heater is a built-in finned tube heat exchanger for hot water. The air heater is designed for connection in the ducting.

Design

- The casing is made of galvanised sheet steel.
- The coil body consists of copper pipes and aluminium fins.
- The headers have male-threaded connections.
- Max. operating pressure: 15 bar.
- The size 03, 05 and 08 air heaters have circular connections fitted with rubber gaskets.
- The size 09, 12, 13, 18, 28 and 33 air heaters have rectangular connections with PG joints.

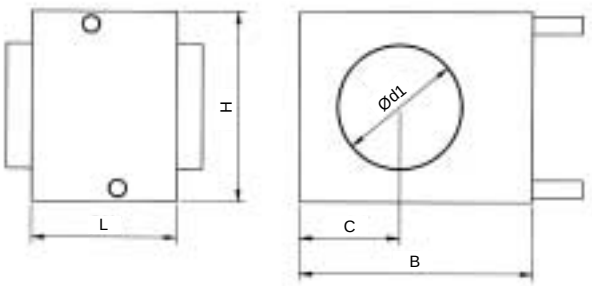
SPECIFICATION

Air Heater, water	**ESET-VV -b -g**	
b - Size	03, 05, 08, 09, 12, 13, 18, 28, 33	
g - Output variant	03, 05, 08, 12	= Var. 1
	09, 13, 18, 28, 33	= Var. 1, 2

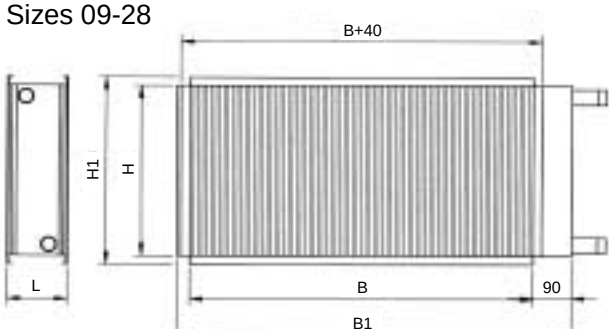
Dimensions and Weights

Size	Ø d_1 mm	B mm	B_1 mm	C mm	H mm	H1 mm	L mm	Connection Output var. 1	Connection Output var. 2	Wgt. kg
03	250	465	-	232	440	-	300	15	-	10
05	315	515	-	257	480	-	300	15	-	10
08	400	615	-	307	560	-	300	20	-	15
09	-	700	820	-	300	340	150	20	20	10
12	-	800	920	-	400	440	150	15	-	15
13	-	800	920	-	500	540	150	20	25	20
18	-	1000	1360	-	500	590	380	20	25	20
28	-	1200	1570	-	600	690	380	25	25	25
33	-	1200	1570	-	800	890	380	25	25	25

Sizes 03-08



Sizes 09-28



ESET-EV Air Heater

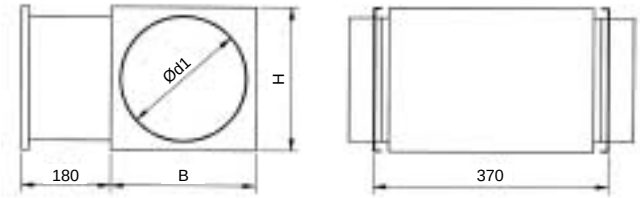
General

The air heater is a built-in electric heat exchanger in a high temperature version. It can be connected directly to the air handling unit or in the ducting.

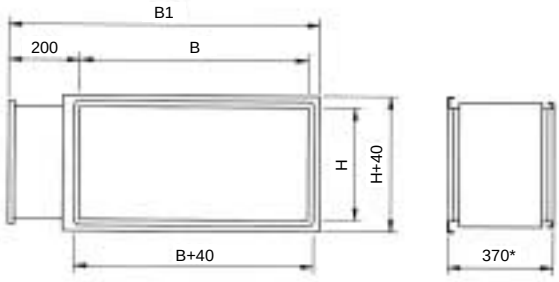
Design

- The casing is made of galvanised sheet steel.
- Contains complete control equipment for regulating the output.
- Requires a separate power supply.
- The heating rods consist of stainless steel tubular elements.
- The heaters have double thermal overload protections. One of them, that must be manually reset, isolates the power supply if overheating is likely.
- Degree of protection S 32 in accordance with SEN 2121.
- The size 03, 05 and 08 air heaters have circular connections fitted with rubber gaskets.
- The size 09, 12, 13, 18, 28 and 33 air heaters have rectangular connections with PG joints.

Sizes 03-08



Sizes 09-33



*Size 33, output var. 4 = 500 mm

Dimensions and Weights

Size	Ø d_1 mm	B mm	B_1 mm	H mm	Wgt. kg
03	250	290	-	290	10
05	315	340	-	340	10
08	400	440	-	440	15
09	-	700	900	300	20
12	-	800	1005	400	25
13	-	800	1020	500	25
18	-	1000	1180	500	30
28	-	1200	1405	600	45
33	-	1200	1405	800	70

SPECIFICATION

Air Heater, electric	**ESET-EV -b -g**	
b - Size	03, 05, 08, 09, 12, 13, 18, 28, 33	
g - Output variant	03	= Var. 1
	05, 08	= Var. 1, 2
	09, 12	= Var. 1, 2, 3
	13, 18, 28, 33	= Var. 1, 2, 3, 4

Size	Output variant 1 kW/rec. fuse, A	Output variant 2 kW/rec. fuse, A	Output variant 3 kW/rec. fuse, A	Output variant 4 kW/rec. fuse, A
ESET-EV-03	6.0/10	-	-	-
ESET-EV-05	6.0/10	10.0/16	-	-
ESET-EV-08	6.0/10	13.5/20	-	-
ESET-EV-09	6.0/10	13.5/20	27.0/40	-
ESET-EV-12	6.5/10	15.5/25	25.0/40	-
ESET-EV-13	6.5/10	15.5/25	25.0/40	39.0/63
ESET-EV-18	10.0/16	21.5/40	34.5/50	54.0/80
ESET-EV-28	15.0/25	30.0/50	49.5/80	84.0/125
ESET-EV-33	18.0/32	36.0/63	60.0/100	100.0/160

Power supply: 3-phase, 400 V, 4 conductors.

ESET-VK Air Cooler

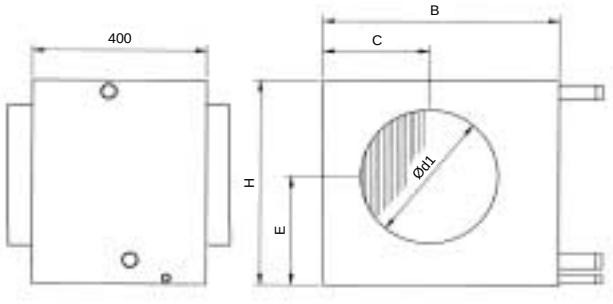
General

The air cooler is a built-in finned tube air cooler for chilled water. The air cooler is designed for connection in the ducting.

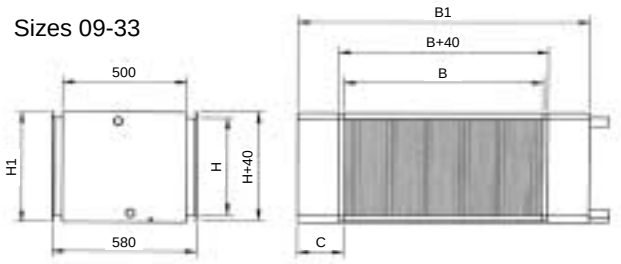
Design

- The casing is made of galvanised sheet steel.
- The coil body consists of copper pipes and aluminium fins.
- The headers have male-threaded connections.
- Max. operating pressure: 15 bar.
- The bottom of the air cooler is fitted with an anti-corrosion protected drip tray with drainage connection.
- The size 03, 05 and 08 air heaters have circular connections fitted with rubber gaskets.
- The size 09, 12, 13, 18, 28 and 33 air heaters have rectangular connections with PG joints.

Sizes 03-08



Sizes 09-33



Dimensions and Weights

Size	Ø d_1 mm	B mm	B_1 mm	C mm	H mm	H_1 mm	Conn.	Wgt. kg
03	250	490	-	245	440	-	15	10
05	315	560	-	280	480	-	20	15
08	400	660	-	330	560	-	20	15
09	-	700	980	-	300	390	20	15
12	-	800	1170	-	400	490	25	20
13	-	800	1080	-	500	590	25	20
18	-	1000	1360	-	500	590	32	25
28	-	1200	1570	-	600	690	32	35
33	-	1200	1570	-	800	890	32	45

SPECIFICATION

Air Cooler, water	**ESET-VK -b**
b - Size	03, 05, 08, 09, 12, 13, 18, 28, 33

ACCESSORY

Water trap	**MIET-CL 04**

ESET-LD Sound Attenuator

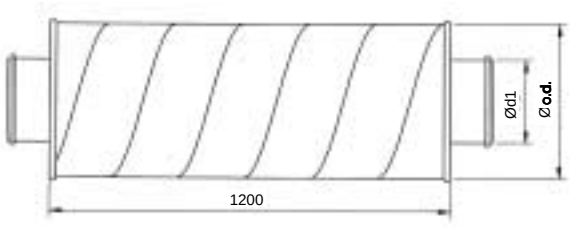
General

The sound attenuator is an absorption type silencer for connection in the ducting.

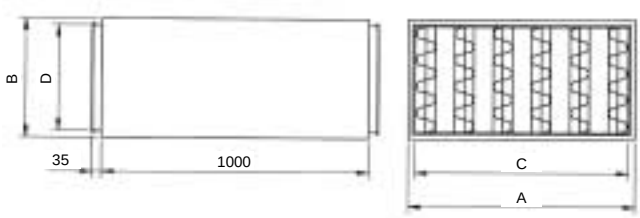
Design

- The size 03, 05 and 08 air heaters have circular connections fitted with rubber gaskets.
- The casing consists of a spiral-tube ventilation duct and an inner casing made of perforated galvanised sheet steel. The enclosed space is filled with mineral wool, which is backed with staple fibre fabric. The size 05 and 08 sound attenuators also have an interior baffle, made of similar material to increase its silencing capability.
- The size 09, 12, 13, 18, 28 and 33 air heaters have rectangular connections with PG joints.
- The casing is made of galvanised sheet steel.
- The 200 mm thick baffle elements consist of mineral wool with exterior covering of type-approved cleanable woven fabric. The baffles have a tapered front edge designed to minimize the pressure drop.

Sizes 03-08



Sizes 09-33



CAUTION!
Due to spatial considerations, size 03, 05, and 08 sound absorbers and coils cannot be installed right in front of one another.

Sound Attenuation in dB

Octave band	1	2	3	4	5	6	7	8
Centre frequency, Hz	63	125	250	500	1000	2000	4000	8000
Size 03	6	9	22	35	39	33	20	21
05	6	11	22	37	46	54	40	30
08	6	10	22	33	44	44	31	24
09-33	8	11	19	29	40	35	27	19

Dimensions and Weights

Size	Ø d_1 mm	Ø o.d. mm	A mm	B mm	C mm	D mm	Wgt. kg
03	250	465	-	-	-	-	25
05	315	510	-	-	-	-	35
08	400	625	-	-	-	-	45
09	-	-	900	400	700	300	50
12	-	-	900	500	800	400	60
13	-	-	900	600	800	500	65
18	-	-	1200	600	1000	500	95
28	-	-	1500	700	1200	600	130
33	-	-	1500	900	1200	800	150

SPECIFICATION

Sound Attenuator	**ESET-LD -b**
b - Size	03, 05, 08, 09, 12, 13, 18, 28, 33

ESET-UM Shut-off Damper

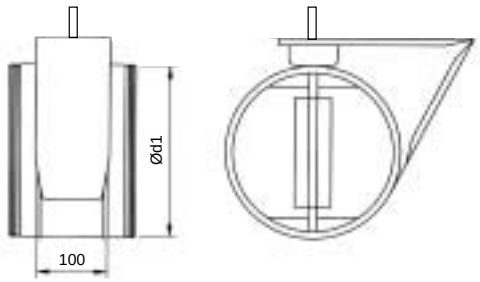
General

The ESET-SP is a shut-off damper to Tightness Class 3. The damper can be connected directly to the air handling unit or in the ducting.

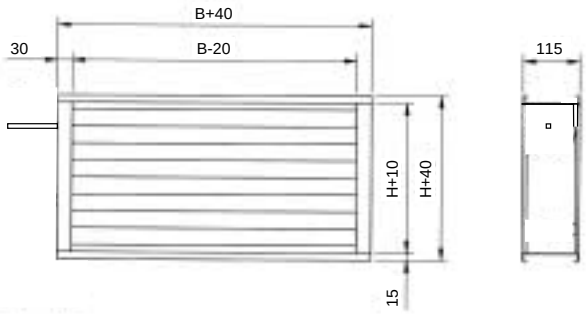
Design

- The damper connections are fitted with a rubber gasket.
- The size 09, 12, 18, 28 and 33 dampers are similar in design to our KJS damper for duct mounting i.e. with rectangular PG joints.
- Anodised aluminium profiles to Environmental Class 3.
- The damper blades are driven by ABS plastic gear wheels and the blade edges are fitted with a tubular combined silicone rubber gasket.

Sizes 03-08



Sizes 09-33



ESET-TR Trim Damper

General

The ESET-TR trim damper can be fitted, if necessary, in the extract air duct to guarantee the purging operation of the heat exchanger rotor.

Design

- Similar to the ESET-UM, but it has a lever for manual operation.

Dimensions and Weights

Size	Ø d_1 mm	B mm	H mm	Wgt. kg
03	250	-	-	5
05	315	-	-	6
08	400	-	-	7
09	-	700	300	7
12	-	800	400	9
13	-	800	500	10
18	-	1000	500	11
28	-	1200	600	15
33	-	1200	800	18

SPECIFICATION

Damper w/o motor	**ESET-UM -b**
b - Size	03, 05, 08, 09, 12, 13, 18, 28, 33

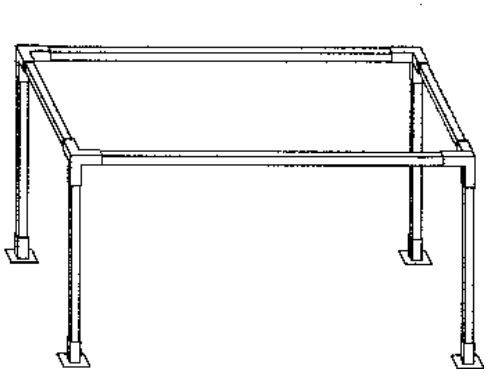
SPECIFICATION

Trim Damper incl. lever	**ESET-TR -b**
b - Size	03, 05, 08, 09, 12, 13, 18, 28, 33

ESET-01 Base Frame For the Envistar Unit

General

The base frame kit for the Envistar AHU, sizes 03-12 consists of corner pieces, support feet and frame members with square cross section..



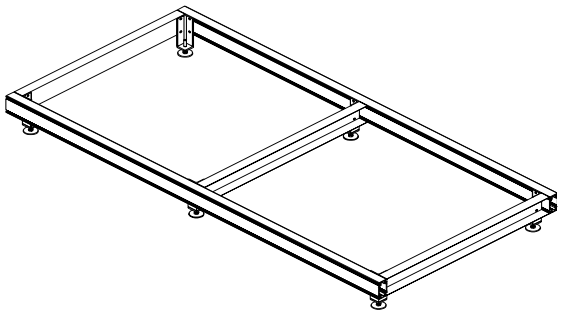
Design

- Supplied in kit form.
- The entire base frame is galvanised.
- Height: 700 mm, can be shortened if needed.

For the Envistar Block Unit/ Cooling Unit

General

The base frame kit for the Envistar Block AHU and Cooling unit consists of extruded anodised aluminium profiles and adjustable feet.



Design

- Supplied in kit form. Frame members are secured to one another by means of bolts.
- Its height is adjustable: 195 – 245 mm.

SPECIFICATION

Base frame	**ESET-01 -a -b**
a - Type	ESER, ESBR, ESBP, ESCR, ESCP
b - Size	03, 05, 08, 09, 12, 13, 18, 28, 33

ESET-02 Flexible Connection

General

Flexible connection for connection to ducting.

Design

- Supplied in sets of four.
- Made of flexible woven fabric .

SPECIFICATION

Flexible connection	**ESET-02 -b**
b - Size	03, 05, 08, 09, 12, 13, 18, 28, 33

Control System

General

All the AHUs in the Envistar series are available with or without control equipment.

The cubicle is supplied mounted on the unit. If the AHU is ordered without electrical wiring, the cubicle is delivered separately for wall mounting.

In units supplied with the cubicle mounted, the fans, heat recovery sections, and sensor installed in the unit are factory wired. If the circulation pumps for the cooling coil and heating coil are wired for single-phase, 230 V, power can be supplied from the cubicle.

The factory-wired air handling units are **CE** labelled and comply with the Standard for electrical safety **ELSÄK-FS 1999:5**, **SS-EN 60204-1** and the provisions of the EMC Directives **EN 50081-1**, **EN 61000-6-2**. The electrical equipment cubicle has Enclosure Class **IP 43**.

Cooling machines and electric air heaters cannot be supplied with power from this cubicle.

The location of the cubicle varies depending on the size of the air handling unit.

If block units are supplied, the electric cables between the blocks are equipped with plug-in connectors.

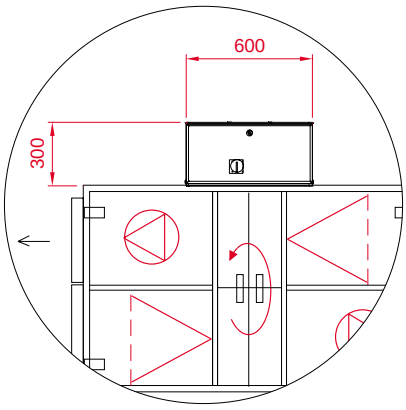
Two types of control equipment can be selected

The **SIEMENS RWI 65.02** is a simple and easy-to-use control unit that can handle all the usual temperature control functions and control the air handling unit between high and low speed fan operation by means of a one-week timer. This control unit can communicate with a type Desigo Insight monitoring system from Siemens.

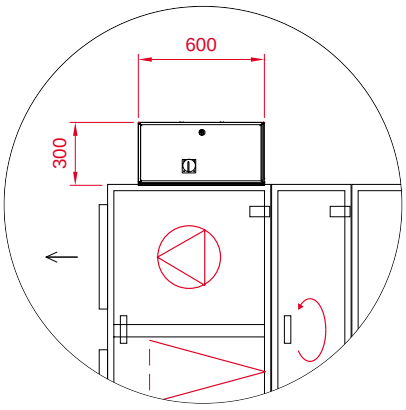
The **SIEMENS SAPHIR** is a control unit that besides all the RWI functions can also be supplied with air pressure or air flow control, fire damper exercise mode, etc.

All the inputs can be altered from the hand-held terminal supplied with the control unit. The terminal has an 8-text-line display. The control equipment can equipped with a communications circuit board for e.g. **SMS/GSM**, **TCP/IP**, **WEBB server**, **BACnet/IP**, **LONtalk** and **OPC**.

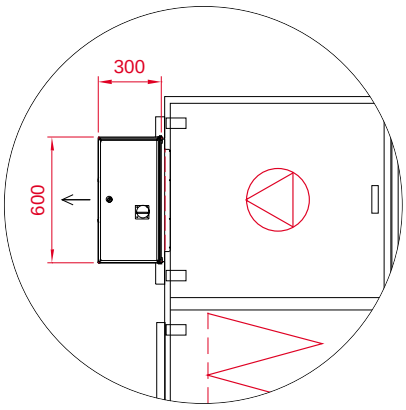
Location of the Equipment Cubicle



Equipment cubicle installation
Sizes 03, 05, 08, 12



Equipment cubicle installation
Sizes 09, 13, 18



Equipment cubicle installation
Sizes 28, 33

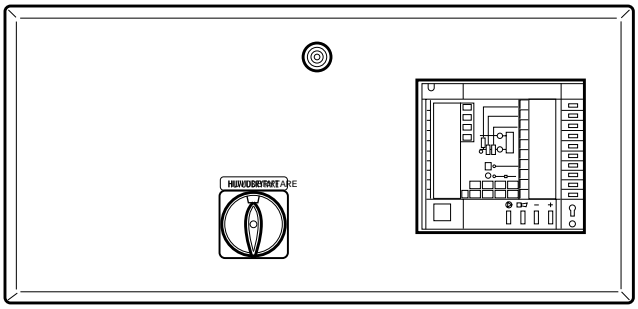
Always mount the equipment cubicle on the supply air side of the block unit.
On the one-piece units, it should be centred on the unit. The depth of the cubicle is 230 mm.

SIEMENS RWI 65.02

Description

The **SIEMENS RWI 65.02** is available as control system option for all the AHUs in the Envistar series and is a communications-capable control unit with provision for accessing a master computer system.

The control system is easy to use. All information is displayed in clear text for reading and adjusting the settings. It is supplied pre-programmed and its functions have been tested according to the factory settings. The control system has provision for switching between the various control functions, such as supply and extract air control.



Control Functions

Supply air temperature control. The set point can be offset according to a control graph, depending on the outdoor temperature.

Extract air temperature control. The set point can be offset according to a control graph, depending on the outdoor temperature. The min. and max. supply air temperature is limited to the preset values.

Room temperature control. The set point can be offset according to a control graph, depending on the outdoor temperature. The min. and max. supply air temperature is limited to the preset values.

Heat Recovery

Rotary heat exchanger. The output of the heat exchanger is controlled in sequence with the air heater and cooling coil, if fitted.

Plate heat exchanger. The output of the heat exchanger is controlled in sequence with the air heater and cooling coil, if fitted.
The anti-freeze sensor forces the by-pass damper to open when the outdoor temperature is below the preset limit.

Additional Heating

Electric heating. If an electric heating is used, the necessary equipment for controlling the output is integrated with the electric air heater. Normally whenever the AHU is shut down, the fans will continue to run to cool the electric heating elements.

Hot water heating. If hot water heating is used, an anti-freeze sensor is supplied. If frosting is likely, the sensor transmits a signal to force the valve to open. The controller then stops the air handling unit and keeps the coil warm until it starts up again.

Cooling

StarCooler. The output of the cooling unit is controlled in sequence with the heat exchanger and air heater.

Cooling coil for chilled water. The valve actuator for the cooling circuit is controlled in sequence with the heat exchanger and air heater. (Control signal: 0-10V DC)

Dx cooling, 1 step. 1-step cooling is controlled in sequence with the heat exchanger and air heater. Control signal: 230V AC. Must not be used while supply air temperature control is switched in.

Dx cooling, 2-3 steps: 2-3-step cooling is controlled in sequence with the heat exchanger and air heater. Normally open potential-free contacts. Must not be used while supply air temperature control is switched in.

Nighttime cooling. The unit is started at full speed at night to cool the premises when the outdoor air and room air reach the preset set point temperatures.

Cooling recovery via rotary heat exchanger. If cooling is required and the outdoor air temperature exceeds that of the extract air by a preset differential, the heat exchanger is started at full speed.
Does not work together with the StarCooler.

Control Functions

Control via one-week timer: The one-week programme is a seven-day programme for start and stop and for full and half-speed operation.

Two-speed operation: Each fan can be controlled to run at one of two speeds that correspond to the preset air flows. Each air flow is easy to preset from a potentiometer, located in the automatic equipment cubicle.

Speed 2 interlock for low outdoor temperature: At the preset outdoor temperature, speed 2 can be interlocked.

Circulation pump for air heater: The circulation pump is switched out whenever heating isn't needed. While switched out, the pump is in the exercise mode. The operating voltage 230V for circulation pump can be loaded with 1.5 Amp. Install a type **SRT-29** undercurrent protection**.**

Circulation pump for cooling coil: The circulation pump is switched out whenever cooling isn't needed. While the pump is switched out, it is in the exercise mode. The operating voltage 230V for circulation pump can be loaded with 1.5 Amp. Install a type **SRT-30** undercurrent protection**.**

Actual air temperature Indication: The actual supply air, extract air, and outdoor air temperature, readings, and the hot water temp. if a coil is fitted, can be viewed in the display.

Purging the rotary heat exchanger:
During periods when the heat exchanger isn't in use, the rotor is purged at fixed time intervals.

Alarm and In-operation Indications

The indications are easy to see on the automated control unit.

The following activities are indicated:
Alarms from rotary heat exchanger, cooling unit, electric air heater, anti-freeze monitor, supply/extract air fan and external fire/smoke detectors. Common group alarms and in-operation indications are connected to terminals in the AHU for further connection, if necessary.

SIEMENS SAPHIR

Description

SIEMENS SAPHIR is available as a control option for all the AHUs in the Envistar series and is a processor unit with various connection options, such as to a cellular telephone alarm system via **SMS/GSM** and/or hand computer (PDA). Communication options:

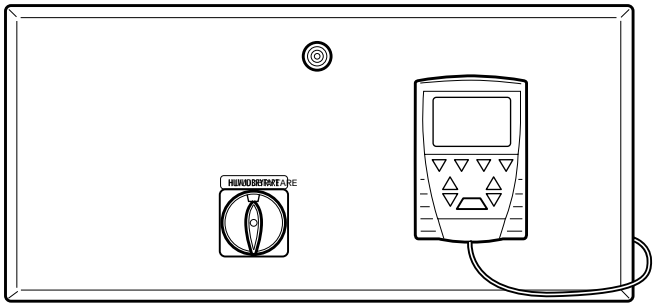
- Internet (**TCP/IP**) to built-in **WEBB server**
- **BACnet/IP**
- **LON** with standard profile in accordance with **LONmark**
- **OPC server** with open interface for communication with Window-based monitoring system such as **DESIGO INSIGHT**.

The control system is easy to use. All information is displayed in clear text via the hand-held terminal for reading and adjusting settings. It is supplied pre-programmed and its functions have been tested according to the factory settings. The control system enables switching between the various control functions, such as supply and extract air control from the hand-held terminal.

Control Functions

Supply air temperature control. The set point can be offset according to a curve depending on the outdoor temperature.

Extract air temperature control. The set point can be offset according to a control graph depending on the outdoor temperature. The min. and max. supply air temperature is limited to the preset values.



Room temperature control. The set point can be offset according to a control graph depending on the outdoor temperature. The min. and max. supply air temperature is limited to the preset values.

Fan control

Pressure control TF/FF: The pressure in supply- and exhaust air duct is kept constant by the fans in response to signals from the pressure sensor and speed controller. Set points for full speed and half speed can be preset from the hand-held terminal, switching between full speed and half speed is carried out via a time channel.
In ventilation systems that include the StarCooler, the basic air flow should exceed the min. permissible flow of the cooling machine.

SA/EA Flow control: The airflow in the AHU is kept constant via a measurement probe in each fan inlet, and speed control of the fans. The set points for full and half speed can be preset via the hand-held terminal, switching between full and half speed is carried out via a time channel.

Outdoor temp. compensated air volume. In response to the outdoor temperature, it is possible to either increase or decrease the air volume via a linear curve.

Fan control – single or dual speed:
Each fan can be controlled to operate at one or two speeds according to adjusted air flows. Each airflow is easy to adjust via the hand-held terminal.

Speed 2 interlock for low outdoor temp:
Speed two can be interlocked at a preset outdoor temperature.

Heat Recovery

Rotary heat exchanger. The output of the heat exchanger is controlled in sequence with the air heater and cooling coil, if fitted.

Plate heat exchanger. The output of the heat exchanger is controlled in sequence with the air heater and cooling coil, if fitted.

The anti-freeze sensor forces the by-pass damper to open when the outdoor temperature is below the preset limit.

Additional Heat

Electric heating. If an electric heating is used, the necessary equipment for controlling the output is integrated into the electric air heater. Normally whenever the AHU is shut down, the fans will continue to run to cool the electric heating elements.

Hot water heating. If hot water heating is used, an anti-freeze sensor is supplied. If frosting is likely, the sensor transmits a signal to force the valve to open. The controller then stops the air handling unit and keeps the coil warm until it starts up again.

Cooling

StarCooler. The output of the cooling unit is controlled in sequence with the heat exchanger and air heater.

Cooling coil for chilled water. The valve actuator for the cooling circuit is controlled in sequence with the heat exchanger and air heater. (Control signal: 0-10V DC)

Dx cooling, 1 step. 1-step cooling is controlled in sequence with the heat exchanger and air heater. Normally open, potential-free contacts: 230V AC. Must not be used while supply air temperature control is switched in.

Dx cooling, 2-3 steps: 2-3-step cooling is controlled in sequence with the heat exchanger and air heater. Normally open potential-free contacts. Must not be used while supply air temperature control is switched in.

Nighttime cooling. The unit is started at full speed at night to cool the premises when the outdoor air and room air reach the preset set point temperatures.

Cooling recovery via rotary heat exchanger. If cooling is required and the outdoor air temperature exceeds that of the extract air by a preset differential, the heat exchanger is started at full speed.
Does not work together with the StarCooler.

Control Functions

Control via one-week timer: The 1-week programme is a seven-day programme for start and stop and for full and half-speed operation with provision to control the AHU using various weekend programmes.

Actual air temperature indication: The actual supply air, extract air and outdoor air temperature readings, and the hot water temp. if a coil is fitted, can be viewed in the hand-held terminal display.

Circulation pump for air heater: The circulation pump is switched out whenever heating isn't needed. While switched out, the pump is in the exercise mode. The operating voltage 230V for circulation pump can be loaded with 1.5 Amp. Install a type **SRT-29** undercurrent protection**.**

Circulation pump for cooling coil: The circulation pump is switched out whenever cooling isn't needed. While the pump is switched out, it is in the exercise mode. The operating voltage 230V for circulation pump can be loaded with 1.5 Amp. Install a type **SRT-30** undercurrent protection**.**

Actual pressure or flow indication: The actual pressure or flow can be read in the hand-held terminal display.

Operating hour count: The total number of in-operation hours can be read in the display.

Purging the rotary heat exchanger:
During periods when the heat exchanger isn't in use, the rotor is purged at fixed time intervals.

Alarms and In-operation Indication

Clearly indicated on the hand-held terminal.
The following activities are indicated:
Deviation from air temperature set points, deviation in differential pressure/air flow, alarms from the rotary heat exchanger, cooling unit, electric air heater, anti-freezing monitor, supply air/extract air fan, sensor errors, filter monitors and remote smoke/fire detectors. Type A and B group alarm and in-operation indication signals are wired to terminal blocks in the air handling unit for possible rerouting of this information.

SPECIFICATION

Control Equipment	SR -a -b -c -d -e
a - Motor control	V110 = Speed-controlled 1-phase , 10A-230V V310 = Speed-controlled 3-phase , 10A-400V
b - Control unit	SS = Siemens Saphir RW = Siemens RWI65.02
c - Heat recovery	R = Rotary heat exchanger P = Plate heat exchanger
d - Reheating	OO = No reheating VA = Hot water, in-duct EI = Electric, in-duct, with integrated controller
e - Control	TR = Supply air control FR = Extract air control RR = Room control

Accessories for the Control System

SRT-01 Pressure control, SA/EA: The pressure in the supply air and exhaust air ducts is kept constant via pressure sensors and speed control of the fans. Set points for full and half speed can be preset from the hand-held terminal. Switching between full and half speed is carried out via a time channel. Not possible in units with RWI.
In systems that include the StarCooler, the basic airflow must exceed the mini flow of the cooling machine,

SRT-02 Airflow control, SA/EA: The air flow in the AHU is kept constant via a measurement probe in each fan inlet, and speed control of the fans. The set points for full and half speed can be preset from the hand-held terminal. Switching between full and half speed is carried out via a time channel. Not possible in units with RWI.

SRT-03 Timer, 1/2 speed: Electronic timer (1-5 hours) for surface or flush mounting. Not possible in units with RWI.

SRT-04 Timer, 1/1 speed: Electronic timer (1-5 hours) for surface or flush mounting.

SRT 05 External stop, AHU: The unit can be stopped in an emergency via external potential-free contacts. Not possible in units with RWI.

SRT-06 Demand-controlled ventilation via a presence sensor: When the presence sensor is activated, the unit starts at full speed. The unit returns to selected weekly program according to the time preset on the presence sensor.

SRT-07 Demand-controlled ventilation via CO_2 sensor: The unit starts at full speed when the CO_2 sensor exceeds the preset limit. The unit returns to the preselected weekly program according to the time preset on the presence CO_2 sensor.

SRT-08 Damper motor, outdoor air: Outdoor air damper opens when the AHU is started and shuts off when the AHU is stopped. The damper is shut off via spring return (24V AC, 7Nm) in the event of a power failure.

SRT-09 Damper motor, exhaust air: Exhaust air damper opens when the AHU is started and shuts off when it is stopped. The damper is shut off via spring return (24V AC, 7Nm) in the event of a power failure.

SRT-10 Smoke detector, SA: If the smoke detector trips, the controller stops the AHU and initiates an alarm. This smoke detector for in-duct mounting is of ionising type and must always be wired to a control unit.

SRT-11 Smoke detector, EA: If the smoke detector trips, the controller stops the AHU and initiates an alarm. This smoke detector for in-duct mounting is of ionising type and must always be wired to a control unit.

SRT-12 Smoke detector, control unit: The control unit is fitted inside the equipment cubicle for controlling a smoke gas/fire damper, if fitted. Several smoke detectors can be wired to one control unit.

SRT-13 Smoke damper motor, SA, shut off: If a smoke alarm is initiated in the control unit, the smoke damper in the supply air duct closes. The damper motor is supplied in a version for 24 V with spring return, 16 Nm torque and Enclosure Class IP 54.

SRT-14 Smoke damper motor, EA, shut off: If a smoke alarm is initiated in the control unit, the smoke damper in the extract air duct closes. The damper motor is supplied in a version for 24 V with spring return, 16 Nm torque and Enclosure Class IP 54.

SRT-15 Smoke damper motor, SA, extraction: If a smoke alarm is initiated in the control unit, the smoke damper in the supply air duct opens. The damper motor is supplied in a version for 24 V with spring return, 16 Nm torque and Enclosure Class IP 54.

SRT-16 Smoke damper motor, EA, extraction: If a smoke alarm is initiated in the control unit, the smoke damper in the extract air duct opens. The damper motor is supplied in a version for 24 V with spring return, 16 Nm torque and Enclosure Class IP 54.

SRT-17 Fire damper exercise mode: Fire/smoke damper is intermittently briefly run at preset times (e.g. every 48th hour). The unit is stopped during this exercise. An alarm is initiated if any of the damper blades seizes (common alarm). If dampers from other supplier are fitted, the motor actuators should have limit contacts and use 24V AC. Not possible in units with RWI.

SRT-18 Filter monitors, SA/ EA: An alarm is initiated if the pressure exceeds the value preset on the filter monitors (common alarm). Not possible in units with RWI.

SRT-19 StarCooler: The StarCooler is a built-in cooling machine in the Envistar. Its cooling power is controlled in sequence with the heat exchanger and air heater.

SRT-20 Cooling coil, water: The valve actuator (chilled water) is controlled in sequence with the heat exchanger and air heater. (Control signal 0-10V DC)

SRT-21 Dx cooling, 1 step: 1-step cooling is controlled in sequence with the heat exchanger and the heating coil. Control signal: 230V AC on the RWI and normally open, potential-free contacts on the SAPHIR. Must not be used while supply air temperature control is switched in.

SRT-22 Dx cooling, 2-3 steps: 2-3 step cooling is controlled in sequence with the heat exchanger and heating coil. Control signal: 230V AC on the RWI and normally open, potential-free contacts on the SAPHIR. Must not be used while supply air temperature control is switched in.

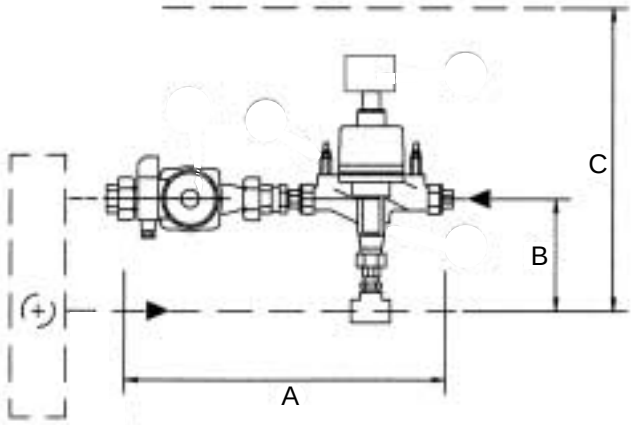
SRT-23 Nighttime cooling: The AHU is started at full speed at night to cool the premises when the outdoor air and room air reach the preset set point temperatures. SAPHIR also enables nighttime cooling via outdoor air and extract air sensors. The AHU starts up at night during the summer months to sense whether the premises need to be cooled with outdoor air.

SRT-24 Intermittent nighttime operation: The AHU is started at night at full speed to heat the premises if the room temp. is below the set point. SAPHIR also enables nighttime heating via an extract air sensor. The AHU starts up at night during the winter months to sense whether the premises need to be heated.

SRT-25 Remote set point selector switch: The main set point can be altered from a remote set point selector switch.

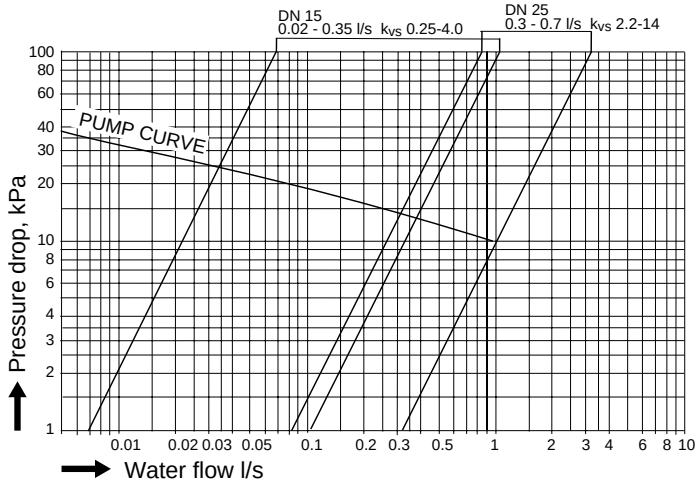
SRT-26 Valve with motor for heating coil: Valve and valve actuator suitable for a heating coil.

SRT-27 Pipework package DN15 0.02-0.35 l/s: A shunt unit for hot water heater with variable flow on the primary side. The valve is made of cast iron and has threaded connections and fittings. It has a modifiable k_{vs} value that can be altered while the unit is operating and maintains its head without having to empty the water system. Includes a wet circulation pump with non-blocking 3-speed motor. The motorised valve actuator is suppled with the SRT-27.



Dimensions – Shunt unit

ESST-RK	A mm	B mm	C mm
DN 15	450	≈ 160	≈ 550
DN 25	500	≈ 210	≈ 650



SRT-28 Pipework Package, DN25 0.3-0.7 l/s:
A shunt unit for hot water heater with variable flow on the primary side. The valve is made of cast iron and has threaded connections and fittings. It has a modifiable k_{vs} value that can be altered while the unit is operating and maintains its head without having to empty the water system.
Includes a wet circulation pump with non-blocking 3-speed motor. The motorised valve actuator is supplied with the pipework package.

SRT-29 Undercurrent protection for circulation pump for hot water circuit:
If the circulation pump should abnormally stop, the undercurrent protection will trip and an alarm will be initiated.

SRT-30 Undercurrent protection for circulation pump for chilled water circuit:
If the circulation pump should abnormally stop, the undercurrent protection will trip and an alarm will be initiated.

SRT-31 Wiring diagram adapted to customer specifications: The order number, name of the application, flow chart, descriptive text of the function and the circuit diagram are entered in the drawing identification bill and the electrical circuit diagram is adapted to suit the application. Included in the SAPHIR.

020210

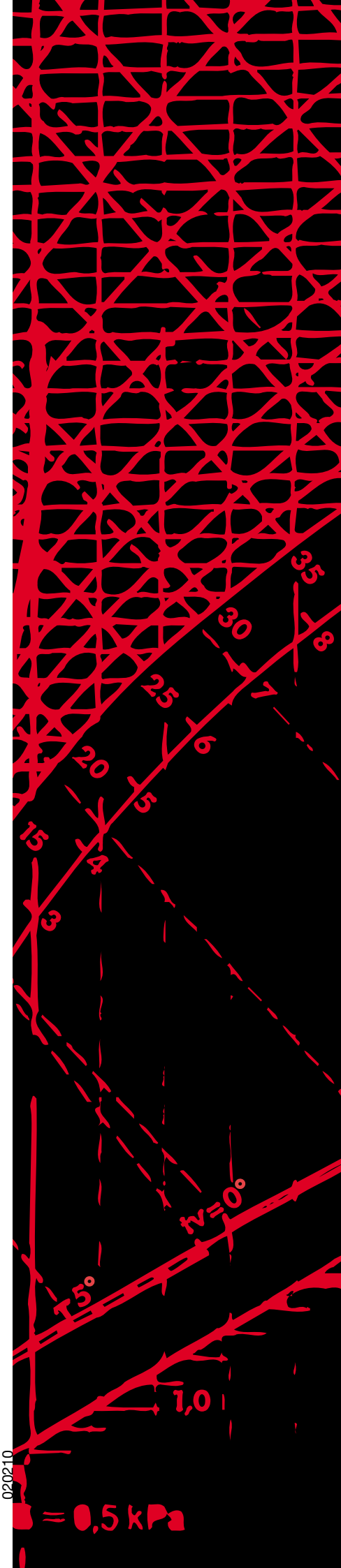
You breathe 30,000 litres of air each day. Have you read its declaration of contents?

Recommended by the Asthma and Allergy Association in Sweden

Astma och Allergi Förbundet

The Envistar is the first and up to now only air handling unit that has been recommended by the Asthma and Allergy Association in Sweden.

We at IV Produkt have selected the component materials used in the air handling unit with great care to completely eliminate allergens and other irritating substances.
The Recommendation also includes a so-called Climate Declaration, which is your assurance that the entire ventilation system meets the requirements expected of it. Our Envistar air handling unit guarantees a healthy indoor environment – one we all expect and deserve.



PRODUKT

Air handling with the focus on LCC

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