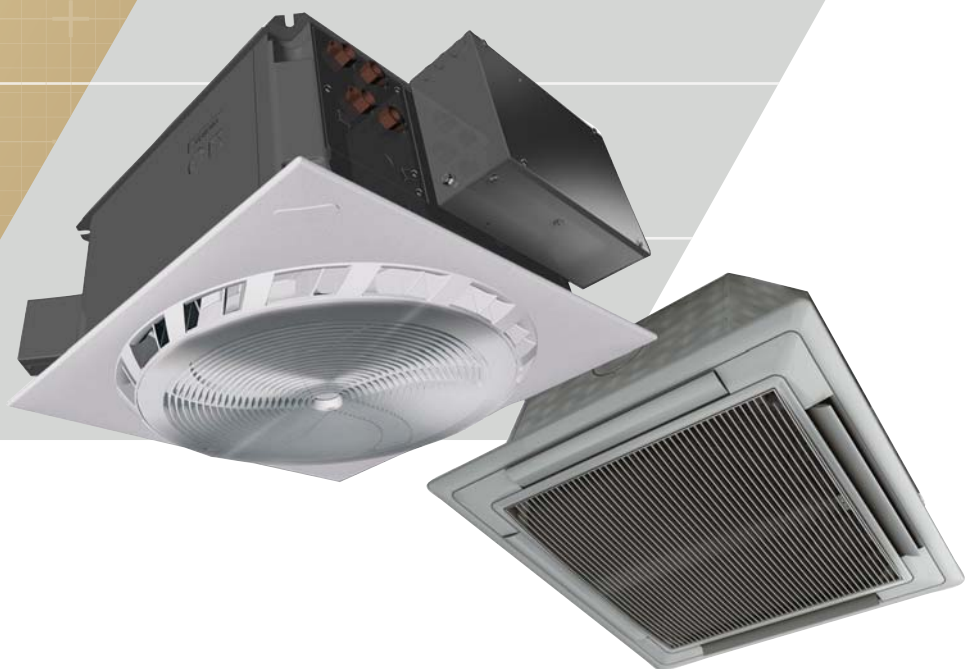


FläktGroup

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Cassette- & HyCassette-Geko

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Copyright note

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System	Motor type	CS ¹⁾	Air volume flow [m ³ /h]	Sound pressure level ²⁾ [dB(A)]	Capacity		EnEff class ⁴⁾	
					Heating capacity Q _H ³⁾ [kW]	Cooling capacity Q _K ³⁾ [kW]		
2-pipe	AC	0	210-460	22-34	1.1-2,2	2.2-4,6	ABCDEFG ABCDEFG	
		1	270-660	24-43	1.8-3,8	3.5-7,7	ABCDEFG ABCDEFG	
		2	250-620	24-44	2.0-4,4	3.6-8,3	ABCDEFG ABCDEFG	
		3	410-850	34-50	2.6-4,7	5.1-9,5	ABCDEFG ABCDEFG	
		4	390-830	35-51	2.6-5,6	5.5-10,8	ABCDEFG ABCDEFG	
	EC	1	210-850	<20-50	1.4-4,7	2.8-9,5	ABCDEFG ABCDEFG	
		2	210-830	<20-50	1.7-5,6	3.1-10,8	ABCDEFG ABCDEFG	
	4-pipe	AC	0	210-460	22-34	1.1-1,9 1.4-2,9		ABCDEF G ABCDEF G
			1	270-660	24-43	1.3-2,4 1.8-3,9		ABCDEF G ABCDEF G
			2	410-850	34-50	1.8-2,9 2.6-4,7		ABCDEF G ABCDEF G
EC		1	210-850	<20-50	1.1-2,9 1.4-4,7		ABCDEF G ABCDEF G	

1) CS = capacity stage ²⁾ambient conditions refer to page 40 „Acoustics“.

3) Capacity data only apply to units without electrical heating. Input parameters: PWW 70/50°C, tL1 = +20°C; PCW 6/12°C, tL1 = 27°C/46%r.h.

4) EnEff class = Energy Efficiency Class according to EUROVENT refer to page 13.

Correction factors ⁵⁾

Correction factors f_K for cooling capacity Q_K

The correction factors listed below can be used to calculate the capacity data in accordance with EUROVENT classification conditions:
Cooling (2+4-pipe system): 0.99

Heating (2-pipe system): 0.67

Heating (4-pipe system): 1.23

Chilled water temp. [°C]	Air intake: t _{L1} [°C], φ ₁ [% r.h.]				
	32/40	30/40	27/46	26/50	24/50
6/12	1.36	1.16	1.00	0.99	0.77
7/13	1.31	1.11	0.97	0.96	0.74
8/12	1.27	1.06	0.92	0.92	0.70
8/14	1.15	0.93	0.78	0.77	0.56
10/15	0.99	0.81	0.67	0.62	0.51
12/16	0.85	0.76	0.61	0.56	0.46
12/18	0.77	0.68	0.52	0.47	0.36
14/18	0.75	0.65	0.51	0.46	0.36

Sound power level ⁶⁾ +2 dB

Correction factors f_H for heating capacity Q_H

Warm water temp. [°C]	2-pipe system Air intake: t _{L1} [°C]			4-pipe system Air intake: t _{L1} [°C]		
	+10	+15	+20	+10	+15	+20
80/60	1.57	1.41	1.27	1.63	1.47	1.31
70/55	1.37	1.22	1.07	1.44	1.28	1.12
70/50	1.30	1.15	1.00	1.32	1.16	1.00
60/50	1.17	1.02	0.88	1.25	1.09	0.93
60/40	1.02	0.87	0.70	1.00	0.84	0.68
50/40	0.90	0.76	0.62	0.94	0.79	0.64
40/30	0.63	0.49	0.33	0.63	0.48	-

5) All indicated correction factors are arithmetically calculated for different unit configurations and are meant for approximate calculations of capacity data using other parameters. Exact data and other parameters can be obtained from our staff.

6) Maximum indication due to EUROVENT zero tolerance.

Model size	Motor type	CS ¹⁾	Length x Width [mm]	Air volume flow [m ³ /h]	Sound pressure level ²⁾ [dB(A)]	Capacity		EnEff class ⁴⁾
						Heating capacity Q _H ³⁾ [kW]	Cooling capacity Q _K ³⁾ [kW]	
Single	AC	0	575x575	250-460	25-35	2.2-4,7 1.5-2,5	ABCDEF G ABCDEF G	
		1		330-660	26-43	2.8-7,6 1.9-4,2	ABCDEF G ABCDEF G	
		2		480-850	35-49	3.7-9,2 2.6-5,0	ABCDEF G ABCDEF G	
	EC	1	250-850	25-49	2.2-9,2 1.5-5,0	ABCDEF G ABCDEF G		
Double	AC	1	1175x575	530-1000	30-47	4.7-12,4 3.2-6,8	ABCDEF G ABCDEF G	
		2		840-1400	40-54	6.7-16,0 4.6-8,8	ABCDEF G ABCDEF G	
	EC	1		530-1400	30-54	4.7-16,0 3.2-8,8	ABCDEF G ABCDEF G	
Big Single	AC	1	822x822	620-1200	24-42	5.3-14,6 3.5-8,2	ABCDEF G ABCDEF G	
	EC	1		620-1530	24-49	5.3-17,5 3.5-9,8	ABCDEF G ABCDEF G	

1) CS = capacity stage

2) Ambient conditions refer to page 40 "Acoustics".

3) Capacity data only apply to units without electrical heating. Input parameters: PWW 70/50°C, tL1 = +20°C; PCW 6/12°C, tL1 = 27°C/46%r.h.

4) EnEff class = Energy Efficiency Class according to EUROVENT refer to page 13.

Correction factors⁵⁾

Correction factors f_K for cooling capacity Q_K

Chilled water temp. [°C]	Air intake: t _{L1} [°C], φ ₁ [% r.h.]				
	32/40	30/40	27/46	26/50	24/50
6/12	1.41	1.19	1.00	0.96	0.74
7/13	1.31	1.09	0.90	0.87	0.65
8/12	1.37	1.15	0.97	0.94	0.73
8/14	1.22	1.00	0.81	0.76	0.56
10/15	1.09	0.89	0.70	0.66	0.49
12/16	0.97	0.77	0.60	0.56	0.43
12/18	0.82	0.65	0.49	0.43	0.33
14/18	0.77	0.64	0.48	0.43	0.33

Correction factors f_H for heating capacity Q_H

Warm water temperature [°C]	2-pipe system Air intake: t _{L1} [°C]			4-pipe system Air intake: t _{L1} [°C]		
	+10	+15	+20	+10	+15	+20
80/60	1.53	1.40	1.27	1.60	1.45	1.31
70/55	1.33	1.21	1.08	1.40	1.26	1.12
70/50	1.26	1.13	1.00	1.29	1.14	1.00
60/50	1.14	1.01	0.89	1.22	1.08	0.93
60/40	0.98	0.85	0.71	0.98	0.82	0.67
50/40	0.88	0.75	0.62	0.91	0.78	0.63
40/30	0.61	0.47	0.33	0.62	0.47	0.31

The correction factors listed below can be used to calculate the capacity data in accordance with EUROVENT classification conditions:
Cooling
(2+4-pipe system): 1.01

Heating
(2-pipe system): 0.68

Heating
(4-pipe system): 1.23

Sound power level⁶⁾ +2 dB

5) All indicated correction factors are arithmetically calculated for different unit configurations and are meant for approximate calculations of capacity data using other parameters. Exact data and other parameters can be obtained from our staff.

6) Maximum indication due to EUROVENT zero tolerance.

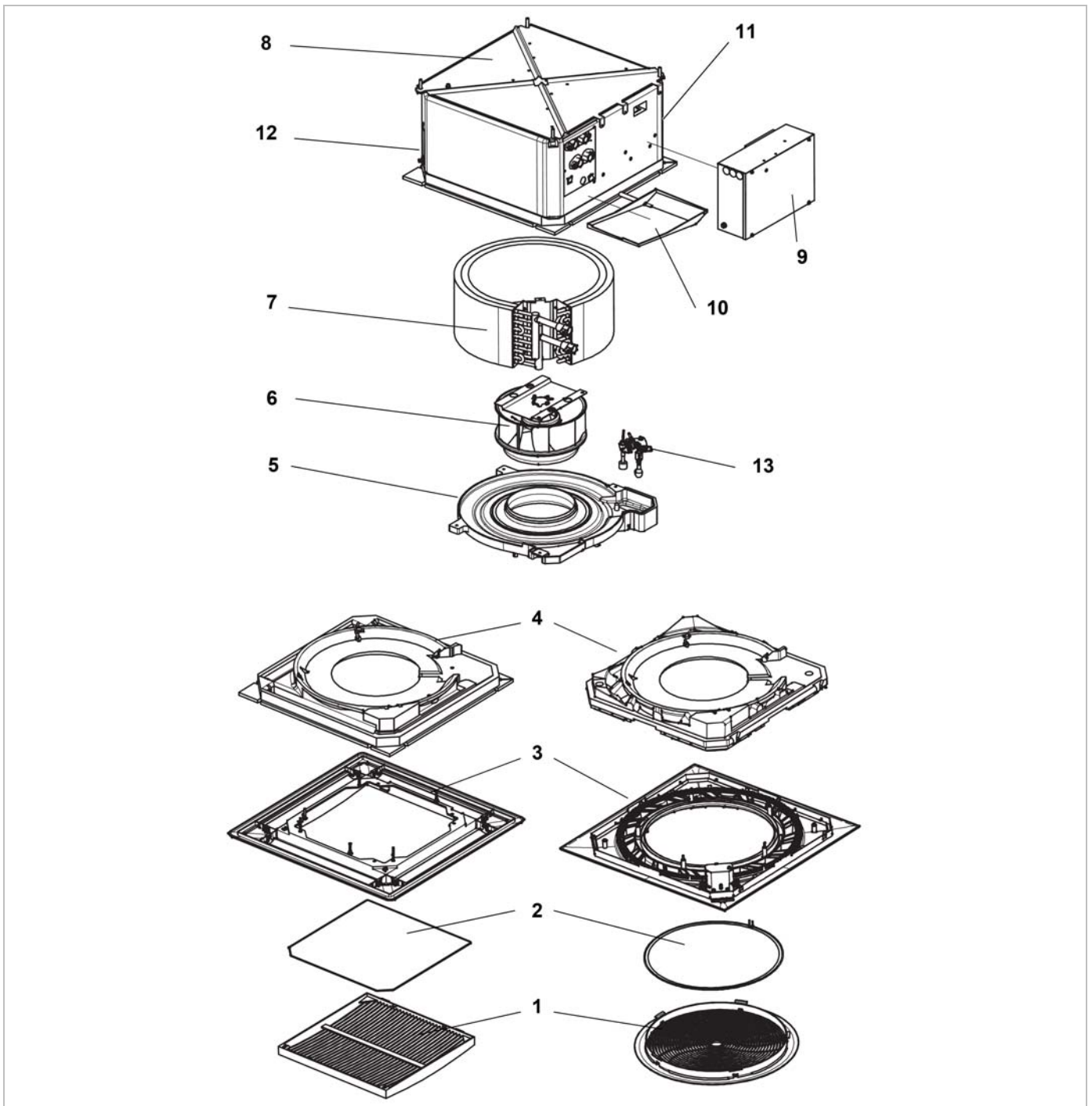


Fig. 1: Unit components HyCassette-Geko (depending on unit type)

- | | |
|---|--|
| Pos. 1: Suction grille | Pos. 8: Mounting plate with suspension brackets |
| Pos. 2: Filter fleece | Pos. 9: Metal-sheet electric switch cabinet with control electronics |
| Pos. 3: Design panel (4-way and SWIRL) | Pos. 10: Lateral condensate pan |
| Pos. 4: Adapter for panel | Pos. 11: Basic casing |
| Pos. 5: Main drain pan | Pos. 12: Primary air connection |
| Pos. 6: Fan with casing | Pos. 13: Condensate pump |
| Pos. 7: Heat exchanger (incl. optional electrical heater) | |



The HyCassette-Geko unit can be equipped optionally with a special hygiene version according to VDI 6022 and DIN 1946 T4 (code number „GC##.H##.###“, see unit type code on page 61).

A cooling system without condensation is recommended if the unit is used in buildings or rooms of healthcare facilities and rooms of class II according to DIN 1946-4.

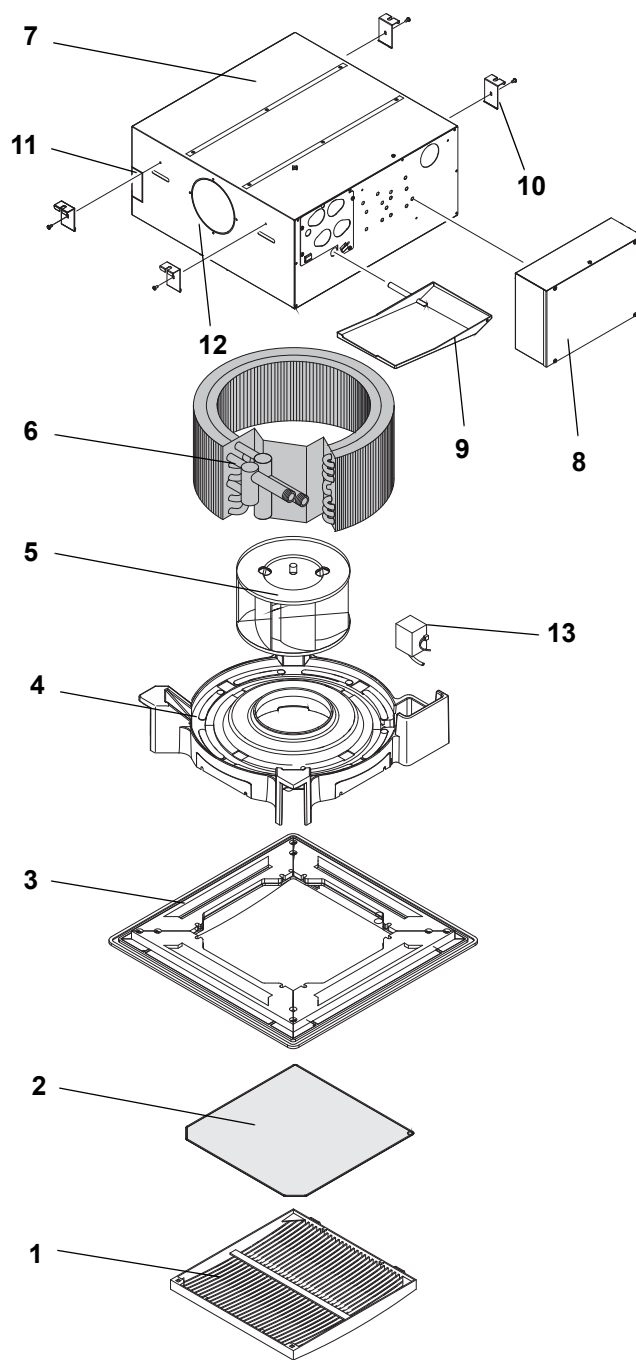


Fig. 2: Unit components Cassette-Geko















- | | |
|---|--|
| Pos. 1: Suction grille | Pos. 8: Metal-sheet electric switch cabinet with control electronics |
| Pos. 2: Filter fleece | Pos. 9: Lateral condensate pan |
| Pos. 3: Design panel with air deflection vanes | Pos. 10: Suspension brackets |
| Pos. 4: Main drain pan | Pos. 11: Primary air connection |
| Pos. 5: Fan with casing | Pos. 12: Opening for external air outlet |
| Pos. 6: Heat exchanger (including optional electrical heater) | Pos. 13: Condensate pump |
| Pos. 7: Basic casing | |








FläktGroup is a participant in the EUROVENT certification programme. The certified products are listed in the corresponding EUROVENT lists.



Fans meet requirements of (EU) Regulation No. 327/2011 of the Commission as of 30th March 2011 to implement Directive 2009/125/EG (ErP-regulation).

			Unit Description	6
Recirculation air HyCassette 	Cooling and heating	 + 	4-pipe system chilled and warm water (4-pipe system chilled and warm water with auxiliary electrical heating)*	14
			2-pipe chilled water and electrical heating	16
	Cooling or Heating	 / 	2-pipe system chilled or warm water	18
			2-pipe chilled or warm water with (auxiliary) electric heating	18
	Heating		2-pipe warm water (2-pipe system warm water with auxiliary electrical heating)*	20
	Cooling		2-pipe system chilled water	22
Recirculation air Cassette 	Cooling and heating	 + 	4-pipe system chilled and warm water	24
			2-pipe chilled water and electrical heating	26
	Cooling or Heating	 / 	2-pipe system chilled or warm water	28
	Heating		2-pipe system warm water	30
	Cooling		2-pipe system chilled water	32

*On request our sales representatives will provide you data on the units indicated in brackets.

  	Technical Data, Dimensions and description of accessories	32
 	Valves	45
	Control System/Thermostat switch	52

HyCassette basic unit with SWIRL air outlet



HyCassette basic unit with 4-way air outlet



HyCassette-Geko with SWIRL and 4-way air outlet

Innovative cassette unit as single unit in plastic/metal hybrid design with exterior insulation made of PET. Optional with adjustable SWIRL- or classic 4 way air outlet.

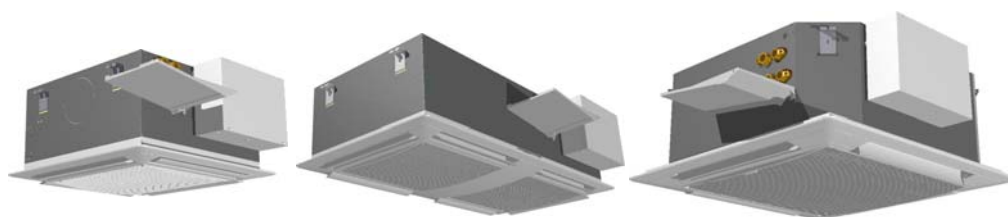
Optional as VDI 6022 hygiene standard for use in hospitals, etc. cooling and heating in a 2- or 4-pipe system, heating with water or electrical heating.

Fig. 1

Cassette basic unit Single type

Double

Big Single



Cassette-Geko a proven cassette unit as Single, Double and Big Single unit type. Basic unit made of sendzimir-galvanized sheet steel of double-shell construction with interior insulation made of polyethylene. Cooling and heating in a 2- or 4-pipe system with water (optionally electrical heating)

Fig. 2

Valves



Valve equipment

2 and 3-way valves with actuators for

2-point 230/24 V~ 50/60 Hz,
3-point 230/24 V~ 50/60 Hz
continuous 24 V~, control signal 0-10 V

Fig. 3

Heat exchanger Single
for warm and chilled water



Heat exchanger Big Single
for warm and chilled water

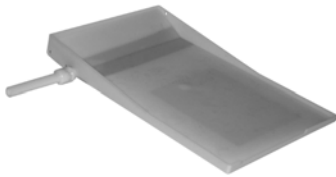


Heat exchanger

Copper pipes with attached aluminium fins, connection 1/2" or 3/4" internal thread (3/4" connection on Double and Big Single 2-pipe units and in cooling circuit on Double and Big Single 4-pipe units), air vent/drain valves
Inlet temperature
Heating: max. 80 °C
Cooling: min. 6 °C
max. operating pressure: 16 bar

Fig. 4

Lateral condensate pan



Centrifugal fan



Lateral condensate pan

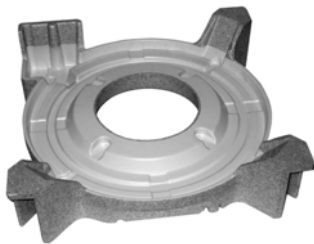
for collecting condensate from valve pipework and transporting it to the main drain pan

Centrifugal fan

with selectable AC or high-efficiency EC motors with backward curved blades, single inlet, with low-noise and maintenance-free ball bearings, IP44 protection type, building material class B

Fig. 5

Main drain pan Single



Main drain pan Big Single

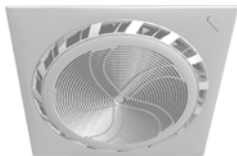


Main drain pan

made of foamed polystyrene with integrated air intake nozzle for fan, fire protection type B1

Fig. 6

HyCassette-Geko SWIRL-air outlet



HyCassette-Geko basic unit with 4-way air outlet



Design panel HyCassette-Geko

Design panel either with a controllable SWIRL-outlet for radial air distribution and optimized comfort or a classic 4-way air outlet with manual adjustable profile air-directing vanes.

Fig. 7

Design panel Single

Design panel Double

Design panel Big Single



Design panel Cassette-Geko cover in appealing and elegant design, consisting of:

- Plastic frame and air intake grille
- Air deflection fins, individually adjustable

Fig. 8

High-efficiency EC motors

All FläktGroup fan coils can be configured optionally with modern, highly efficient EC motors (= electronically commutated motors). The integrated control electronics constantly ensures alternating magnetic field which adjusts itself to the relevant speed.

Benefits

- The motor always operates under optimal conditions with a maximum torque and minimum losses.
- High efficiency factor, especially in part-load mode.
- Continuous operation possible.
- Considerable reduction of electrical power consumption, i.e. lower operating costs (see fig. 11)

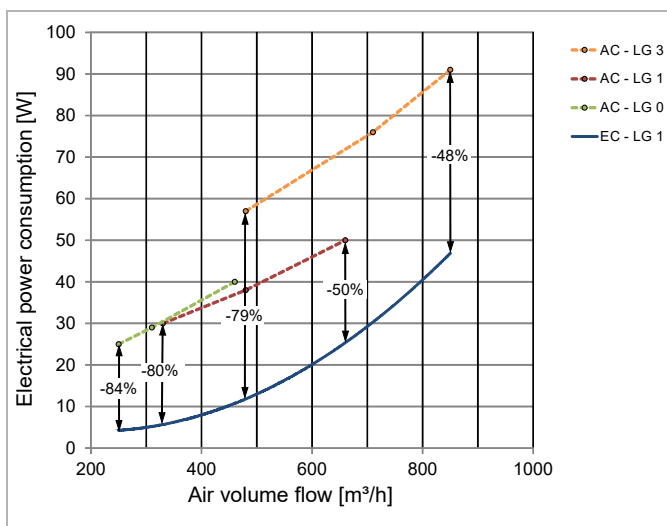


Fig. 1: Comparison of AC/EC fan - HyCassette-Geko

Operating with FläktGroup ISYteq increased comfort.

The intelligent control system FläktGroup ISYteq enables you to enjoy full benefits of continuously variable fan operation:

- Precise and highly flexible room temperature control, especially in connection with modulating control valves.
- Fast and efficient compensation of changing parameters, as cooling and heating loads and fluctuation of medium mass flow and/or -temperatures
- The AC fans have no "hard" speed changes, which enables a high acoustic comfort.

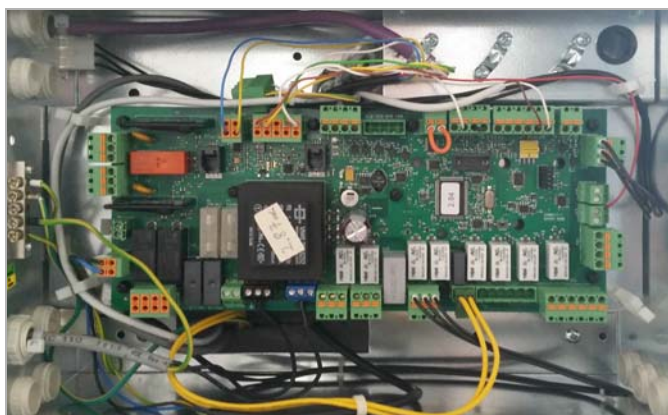


Fig. 2: Electric switch cabinet with FläktGroup ISYteq 3500 PCB

The user can select between automatic and manual mode.

Automatic operation

- Room temperature control with continuous regulation (1.5-10 V) of a continuously variable EC fan.
- Using the display control panel OP50/51 a speed limitation can be activated (mute function) in order to prevent an acoustic overshoot in automatic mode. This upper RPM limit can be separately set for each control panel.
- As an additional measure to avoid possible on-site acoustical resonance occurrences, up to three speed ranges can be hidden using ISYteq.PC software.

Manual mode

- Control panel 50/51 (with display): continuous fan setting using rotary switch between minimum and maximum air volume flow.
- OP30/31 and OP44: (speed-stage control panel): 5-speed fan setting with speed 1 = minimum air volume flow and speed 5 = maximum air volume flow.
- Percentage values (regarding maximum air volume flow) for speeds 2-4 are pre-configured by the factory (default values) and can be changed on site by others using ISYteq.PC.

SWIRL outlet – patent registration completed

HyCassette-Geko with SWIRL outlet is equipped with a motorized outlet. The control system ISYteq 3500 ensures that the outlet is adjusted to the changing thermal conditions indoors. The purpose is a uniform distribution of indoor air and a maximum comfort for users.

In cooling mode the unit allows to prevent cold-air zones, uneven thermal distribution within a room, as well as draughts in the occupied zone. Even if the unit is designed for a minimum temperature of coolant or supply air, the conditions are still perceived as comfortable.

In heating mode the unit allows to prevent formation of extreme temperature layers, in order to ensure thermal comfort and minimize disproportional transmission losses in the ceiling area.

Both operating modes enable uniform air diffusion and mixing within a room which leads to an increase in thermal well-being.

Circular SWIRL outlet supplies conditioned air in portions and with twists. Using comfort and room-airflow control velocity and direction of supply air are monitored.

If a remote control with cable is used, e.g. control panel with display, OP50C or OP51C, four different airflow control modes are available: Automatic, Manual, Turbo and Breath.

If remote controls OP30C, OP31C, OP44C is used, only „Automatic“ mode is available.

Automatic

In cooling mode supply air is regulated on the basis of a factory-calibrated or user-set reference value and is adjusted to the working condition of unit. The purpose is to keep the air throw or comfort zone constant regardless of small or large cooling demand. In such a way, if part-load mode with low fan speed is selected, downthrust of cold supply air into the occupied zone can be prevented. Such downthrust usually results in cold-air draughts and zones.

Besides the fan speed, the control system considers the room and supply-air temperature. The larger the temperature difference between room and supply air or the lower the fan speed is, the smaller the discharge angle is set to parallel ceiling. Thus the Coanda effect is used much more effectively and the air-throw depth is increased. Moreover, the discharge cross section is decreased in order to increase the discharge velocity and air throw.

Depending on room size, utilization and personal comfort requirements - flow pattern can be individually calibrated. Calibration is performed via the service tool ISYteq.PC or control panel OP50C / OP51C.

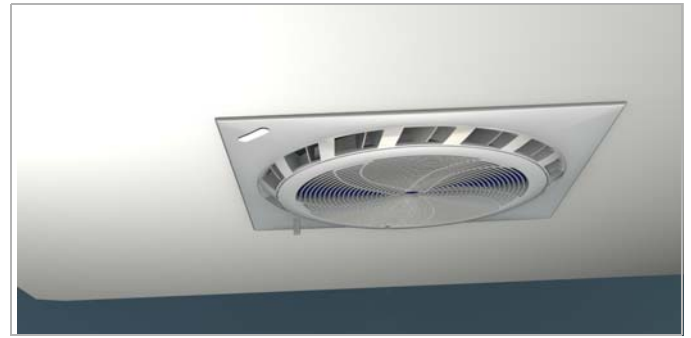


Fig. 3: SWIRL air outlet

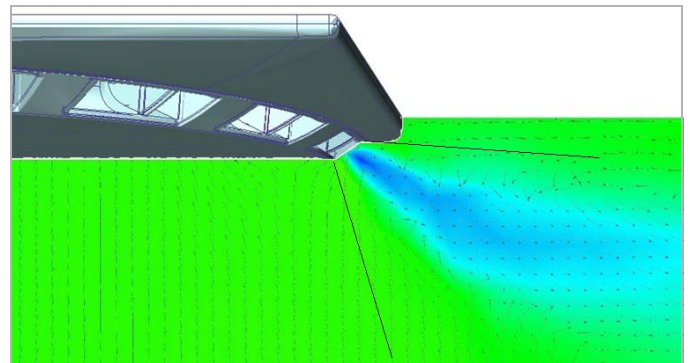


Fig. 4: Supply-air flow of SWIRL outlet segment

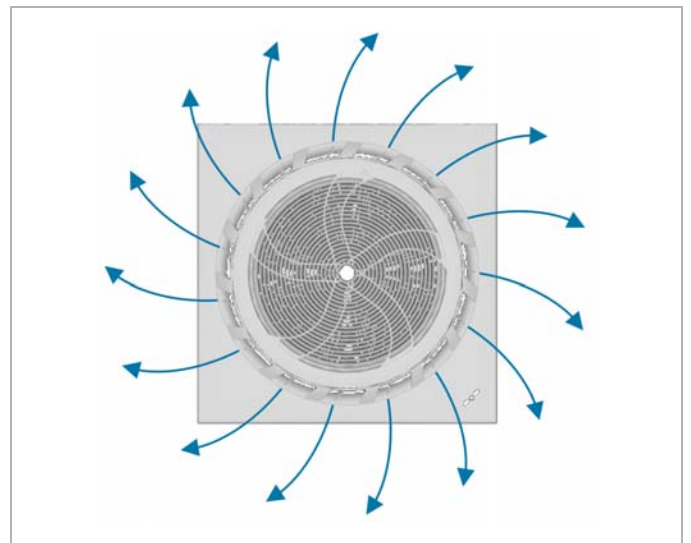


Fig. 5: Supply flow with air twists

In heating mode supply air flow is adjusted to the selected fan speed.

With low fan speed air is supplied within a smaller discharge cross section in accordance with a higher inlet velocity and at a large angle to the ceiling parallels. Thus the system ensures that air is supplied downwards, despite the effect of thermal upward movement. At higher fan speed the discharge angle is decreased and the discharge cross section is increased.

Manual

In order to better meet individual requirements of users and in addition to the OP50C or OP51C - manual mode is also available. In this mode the inlet cross section and connected inlet direction can be kept constant. The position of the orifice remains constant regardless of the fan speed, room or supply-air temperature or cooling or heating mode. This setting is especially suitable for users who prefer to keep the fan speed at a constant level. This setting is also available for modes „Automatic“ or „Auto Low-Noise“. Moreover, a user can set the SWIRL® outlet at permanent open position (middle setting in the figure) or max. air throw (see left or right in the figure).

Turbo

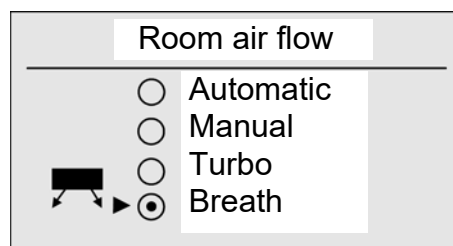
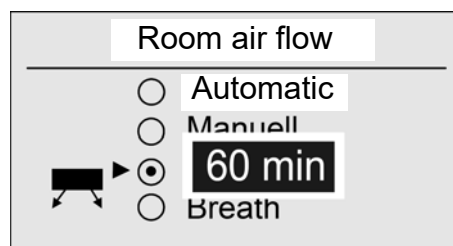
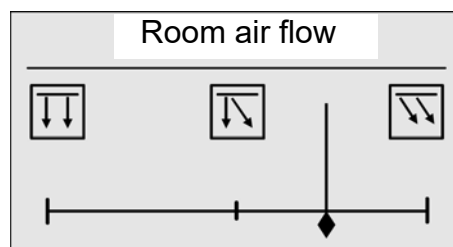
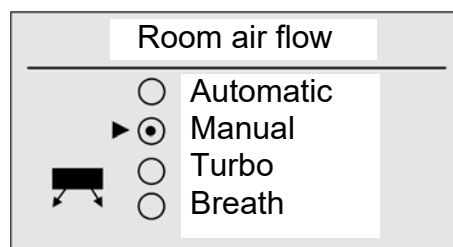
The "Turbo"operating mode enables rapid changing of the room temperature to reach the new temperature set-point. A conference room, for example, can be brought to a comfortable temperature before a meeting within a short time. Air is discharged downward into the room at maximum speed, so that the room is filled with cold air from the bottom. User can set the time interval between one minute and one hour in one-minute steps.

The Turbo-mode is terminated as soon as the setpoint temperature is reached. Depending on the unit and room layout, a conference room can be cooled down from 25 °C to 22 °C within five minutes. In Turbo mode comfort aspects are not considered during operation.

Breath

In Breath mode complete range of discharge directions and velocities is operated and permanently changed. This results in chaotic flow conditions with changing local flow directions which allows good mixture of air layers. Some users find this especially pleasant.

The duration of the Breath mode can be activated between ten minutes and four hours. This operating mode is only available for cooling.



EUROVENT Energy Efficiency Label

Within the framework of EU regulations (Eco-Design Directive) clear limits will be set in the future with respect to the energy efficiency of state-of-the-art technological standards.

EUROVENT, the European Association of Manufacturers of HVAC equipment, anticipates this development by having published Energy Label for fan coil units to include 5 energy efficiency classes (A to E) in January 2014.

Cooling		
FCEER (Total)		
Class		Value
A	>=	185
B	>=	120
C	>=	80
D	>=	55
E	>=	40

Heating		
FCCOP		
Class		Value
A	>=	265
B	>=	160
C	>=	100
D	>=	70
E	>=	50

In this case the energy efficiency is composed of time-weighted relationship between cooling or heating output and consumed electrical power of the fan in three speeds High/Medium/Low. The relationship is explained in the following formula.

Cooling (FCEER):

$$FCEER = \frac{A \times \dot{Q}_{KHighSpeed} + B \times \dot{Q}_{KMediumSpeed} + C \times \dot{Q}_{KLowSpeed}}{A \times Pe_{HighSpeed} + B \times Pe_{MediumSpeed} + C \times Pe_{LowSpeed}}$$

Fan Coil Energy Efficiency Ratio - total cooling capacity
(= Energy efficiency relationship)

Heating (FCCOP):

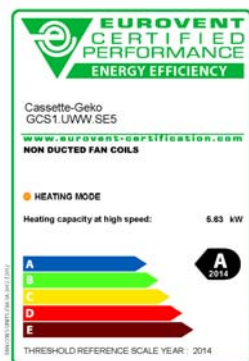
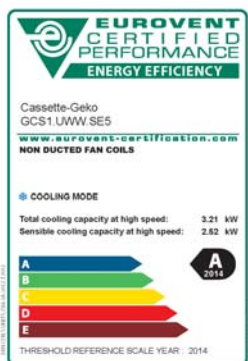
$$FCCOP = \frac{A \times \dot{Q}_{HHighSpeed} + B \times \dot{Q}_{HMediumSpeed} + C \times \dot{Q}_{HLowSpeed}}{A \times Pe_{HighSpeed} + B \times Pe_{MediumSpeed} + C \times Pe_{LowSpeed}}$$

Fan Coil Coefficient Of Performance
(=Performance coefficient of fan coil unit)

with Q_K = Total cooling capacity; with Q_H = heating capacity; Pe = electrical power consumption of fan and time factors (coefficients)

Fan stage	Coefficient	Time share	
		Cooling	Heating
High (maximum)	A	5 %	5 %
Medium	B	30 %	25 %
Low (minimum)	C	65 %	70 %

HyCassette-Geko and Cassette-Geko with EC-fans reach the highest energy-efficiency class A:



NOTICE!

Data for unit types as defined by the EUROVENT classification can be calculated using our DesignAIR layout software or provided by our sales representatives.

Outlet variant	Motor type	Capacity stage	Speeds	Air volume flow m ³ /h	Capacity stage 0				Capacity stage 1				Capacity stage 2				Sound power dB(A)	Sound pressure* dB(A)
					Cooling capacity Q _K kW	Pressure drop Δp _K kPa	Heating capacity Q _H kW	Pressure drop Δp _H kPa	Cooling capacity Q _K kW	Pressure drop Δp _K kPa	Heating capacity Q _H kW	Pressure drop Δp _H kPa	Cooling capacity Q _K kW	Pressure drop Δp _K kPa	Heating capacity Q _H kW	Pressure drop Δp _H kPa		
SWIRL	AC	0	1	210	1,4	1,1	1,1	0,4	-	-	-	-	-	-	-	-	31	22
			2	250	1,7	1,4	1,2	0,5	-	-	-	-	-	-	-	-	32	23
			3	380	2,4	2,7	1,7	0,8	-	-	-	-	-	-	-	-	43	34
		1	1	270	-	-	-	-	1,8	1,6	1,3	0,5	-	-	-	-	34	25
			2	390	-	-	-	-	2,5	2,8	1,7	0,8	-	-	-	-	43	34
			3	530	-	-	-	-	3,2	4,4	2,1	1,1	-	-	-	-	52	43
	2	1	410	-	-	-	-	-	-	-	-	-	2,6	3,0	1,8	0,8	45	36
		2	580	-	-	-	-	-	-	-	-	-	3,5	5,0	2,2	1,3	55	46
		3	670	-	-	-	-	-	-	-	-	-	3,9	6,2	2,5	1,5	59	50
	EC	1	1	210	-	-	-	-	1,4	1,1	1,1	0,4	-	-	-	-	28	<20
			2	270	-	-	-	-	1,8	1,6	1,3	0,5	-	-	-	-	34	25
			3	390	-	-	-	-	2,5	2,8	1,7	0,8	-	-	-	-	44	35
			4	530	-	-	-	-	3,2	4,4	2,1	1,1	-	-	-	-	52	43
			5	670	-	-	-	-	3,9	6,2	2,5	1,5	-	-	-	-	59	50
	4-way	AC	0	1	250	1,7	1,4	1,2	0,5	-	-	-	-	-	-	-	-	30
2				310	2,0	2,0	1,4	0,6	-	-	-	-	-	-	-	-	33	24
3				460	2,9	3,6	1,9	1,0	-	-	-	-	-	-	-	-	42	33
1			1	330	-	-	-	-	2,2	2,2	1,5	0,6	-	-	-	-	33	24
			2	480	-	-	-	-	3,0	3,8	2,0	1,0	-	-	-	-	42	33
			3	660	-	-	-	-	3,9	6,0	2,4	1,5	-	-	-	-	51	42
2		1	480	-	-	-	-	-	-	-	-	-	3,0	3,8	2,0	1,0	43	34
		2	710	-	-	-	-	-	-	-	-	-	4,1	6,7	2,6	1,6	54	45
		3	850	-	-	-	-	-	-	-	-	-	4,7	8,7	2,9	2,0	58	49
EC		1	1	250	-	-	-	-	1,7	1,4	1,2	0,5	-	-	-	-	24	<20
			2	330	-	-	-	-	2,2	2,2	1,5	0,6	-	-	-	-	31	22
			3	480	-	-	-	-	3,0	3,8	2,0	1,0	-	-	-	-	40	31
			4	660	-	-	-	-	3,9	6,0	2,4	1,5	-	-	-	-	49	40
			5	850	-	-	-	-	4,7	8,7	2,9	2,0	-	-	-	-	56	47

0

1

2

Capacity stage

Terminal box (select sheet steel electric switch cabinet with FläktGroup ISYteq) (only for model design 4-way outlet)



Speed combination

1 - 2 - 3 **A**

Metal-sheet electric switch cabinet with terminal strip or integrated controls



Speed combination

1 - 2 - 3	K
min...max	S
2-3-4	L**
3-4-5	M**
1-3-5	O**

Motor		
3-speed motor	integrated TC	0
	TC led out	1
EC motor		E





Color	
3	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL7035 (light grey)
5	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL 9003 (signal white)
9	Color shade of choice (design panel and unflocked air fins only)

G **C** . **U** **W** **W** . **Order Code**

* Ambient conditions refer to. page 40 "Acoustics"
** Only in connection with EC motor available

4-pipe chilled or warm water, model design SWIRL air outlet and 4-way outlet

Accessories

	Spare filter (model design as SWIRL-air outlet) (set = 4 items)	1	1	1
	Spare filter (model design as 4-way air outlet) (set = 4 items)	1	1	1
	Mounting bracket set	1	1	2
	Adapter for primary air supply	1	1	3

Model design Air outlet C, F, 0 *

Order code



* 0 - if regardless of model size

Valves

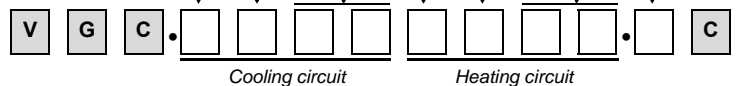
Terminal box	Drive	Operating voltage/circuit	
•	2-point	230 V AC ²⁾	T
	open/close	24 V AC ¹⁾ , 2)	Q
•	3-point open/stop/ close	230 V AC	R
		24 V AC ¹⁾	N
		230 V AC + 2 contacts	C
•	Continuous	0/2 ... 10 V = 24 V AC ¹⁾	S

Connection/shut-off	
Inlet/outlet flow with external screw thread	0
Inlet/outlet with solder fitting	1
Inlet/outlet + ball trap with external thread	2
Inlet/outlet + ball trap with solder fitting	3
Inlet + ball trap/ outlet + shut-off valve with external thread	4
Inlet + ball trap/ outlet + shut-off valve with solder fitting	5

k _{vs} values		
Cooling/Heating		
0.25	≡	03
0.40	≡	04
0.63	≡	06
1.00	≡	10
1.60 ²⁾	≡	16
2.50 ²⁾	≡	25
4.00	≡	40

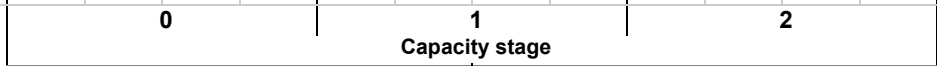


Order code



1) 24 V-transformer to be provided by others
2) kvs-values for open/close actuators (T,Q) only kvs 1.6 and 2.5 possible

Outlet variant	Motor type	Capacity stage	Speeds	Air volume flow m ³ /h	Capacity stage 0				Capacity stage 1				Capacity stage 2				Sound power dB(A)	Sound pressure* dB(A)		
					Cooling capacity	Pressure drop	Heating capacity	Pressure drop	Cooling capacity	Pressure drop	Heating capacity	Pressure drop	Cooling capacity	Pressure drop	Heating capacity	Pressure drop				
					Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa				
SWIRL	AC	1	1	270	-	-	-	-	1.8	1.5	0.75	-	-	-	-	-	-	34	25	
			2	390	-	-	-	-	2.5	2.6	0.75	-	-	-	-	-	-	43	34	
			3	530	-	-	-	-	3.2	4.1	0.75	-	-	-	-	-	-	52	43	
		2	1	410	-	-	-	-	-	-	-	-	-	2.6	2.8	1.50	-	-	45	36
			2	580	-	-	-	-	-	-	-	-	-	3.5	4.7	1.50	-	-	55	46
			3	670	-	-	-	-	-	-	-	-	-	3.9	5.8	1.50	-	-	59	50
	EC	1	1	210	-	-	-	-	1.4	1.0	0.75	-	-	-	-	-	-	28	<20	
			2	270	-	-	-	-	1.8	1.5	0.75	-	-	-	-	-	-	34	25	
			3	390	-	-	-	-	2.5	2.6	1.50	-	-	-	-	-	-	44	35	
			4	530	-	-	-	-	3.2	4.1	1.50	-	-	-	-	-	-	52	43	
			5	670	-	-	-	-	3.9	5.8	1.50	-	-	-	-	-	-	59	50	
	4-way	AC	0	1	250	1.3	1.0	0.75	-	-	-	-	-	-	-	-	-	-	30	21
				2	310	1.6	1.4	0.75	-	-	-	-	-	-	-	-	-	-	33	24
				3	460	2.2	2.5	0.75	-	-	-	-	-	-	-	-	-	-	42	33
			1	1	330	-	-	-	-	2.1	2.0	0.75	-	-	-	-	-	-	-	33
2				480	-	-	-	-	2.9	3.6	0.75	-	-	-	-	-	-	-	42	33
3				660	-	-	-	-	3.8	5.7	0.75	-	-	-	-	-	-	-	51	42
2		1	480	-	-	-	-	-	-	-	-	-	2.9	3.6	1.50	-	-	43	34	
		2	710	-	-	-	-	-	-	-	-	-	4.1	6.3	1.50	-	-	54	45	
		3	850	-	-	-	-	-	-	-	-	-	4.7	8.2	1.50	-	-	58	49	
EC		1	1	250	-	-	-	-	1.7	1.3	0.75	-	-	-	-	-	-	-	24	<20
			2	330	-	-	-	-	2.1	2.0	0.75	-	-	-	-	-	-	-	31	22
			3	480	-	-	-	-	2.9	3.6	1.50	-	-	-	-	-	-	-	40	31
			4	660	-	-	-	-	3.8	5.7	1.50	-	-	-	-	-	-	-	49	40
			5	850	-	-	-	-	4.7	8.2	1.50	-	-	-	-	-	-	-	56	47



Speed combination

1 – 2 – 3	K
min...max	S
2-3-4	L**
3-4-5	M**
1-3-5	O**

motor

3-speed motor	integrated TC	0
	TC led out	1
EC motor		E

Color





3	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL 7035 (light grey)
5	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL 9003 (signal white)
9	Color shade of choice (design panel and unflocked air fins only)

G **C** **.U** **W** **E** **Order Code**

* Ambient conditions refer to page 40 „Acoustics“
**) Only in connection with EC motor available

2-pipe chilled water and electric heating, model design SWIRL air outlet and 4-way outlet

Accessories

	Spare filter (model design as SWIRL-air outlet) (set = 4 items)	1	1	1
	Spare filter (model design as 4-way air outlet) (set = 4 items)	1	1	1
	Mounting bracket set	1	1	2
	Adapter for primary air supply	1	1	3

Model design Air outlet C, F, 0 *

Order code **Z** **G** **C** **1** **1** **1**

* 0 - if regardless of model size

Valves

Terminal box	Drive	Operating voltage/circuit	
•	2-point open/close	230 V AC ²⁾	T
		24 V AC ^{1), 2)}	Q
•	3-point open/stop/close	230 V AC	R
		24 V AC ¹⁾	N
		230 V AC + 2 contacts	C
•	Continuous	0/2 ... 10 V = 24 V AC ¹⁾	S

Connection/shut-off	
Inlet/outlet flow with external screw thread	0
Inlet/outlet with solder fitting	1
Inlet/outlet + ball trap with external thread	2
Inlet/outlet + ball trap with solder fitting	3
Inlet + ball trap/outlet + shut-off valve with external thread	4
Inlet + ball trap/outlet + shut-off valve with solder fitting	5

k _{vs} values		
Cooling		
0.25	≡	03
0.40	≡	04
0.63	≡	06
1.00	≡	10
1,60 ²⁾	≡	16
2,50 ²⁾	≡	25
4.00	≡	40

Cool circuit

Order code **V** **G** **C** **.** **.** **C**

Cooling circuit

¹⁾ 24 V-transformer to be provided by others
²⁾ kvs-values for open/close actuators (T, Q) only kvs 1.6 and 2.5 possible

Outlet	Motor type	Capacity size	Speed stages	Air volume flow m ³ /h	Capacity stage 0				Capacity stage 1				Capacity stage 2				Capacity stage 3				Capacity stage 4				Sound power	Sound pressure *					
					Q _K	Δp _K	Q _H	Δp _H	Q _K	Δp _K	Q _H	Δp _H	Q _K	Δp _K	Q _H	Δp _H	Q _K	Δp _K	Q _H	Δp _H	Q _K	Δp _K	Q _H	Δp _H			Q _K	Δp _K	Q _H	Δp _H	
					kW	kPa	kW	kPa	kW	kPa	kW	kPa	kW	kPa	kW	kPa	kW	kPa	kW	kPa	kW	kPa	kW	kPa			kW	kPa	kW	kPa	kW
SWIRL	AC	0	1	210	1.1	0.8	2.4	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31	22			
			2	250	1.3	1.0	2.7	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	23		
			3	380	1.9	1.9	3.9	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43	34	
		1	1	270	-	-	-	-	1.8	1.5	3.5	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34	25	
			2	390	-	-	-	-	2.5	2.6	4.9	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43	34	
			3	530	-	-	-	-	3.2	4.1	6.4	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	43	
		2	1	250	-	-	-	-	-	-	-	-	-	-	-	2.0	2.2	3.6	0.6	-	-	-	-	-	-	-	-	-	-	35	26
			2	360	-	-	-	-	-	-	-	-	-	-	-	2.7	3.7	5.1	1.1	-	-	-	-	-	-	-	-	-	-	44	35
			3	500	-	-	-	-	-	-	-	-	-	-	-	3.6	6.3	6.9	1.8	-	-	-	-	-	-	-	-	-	-	53	44
		3	1	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	2.8	5.1	0.9	-	-	-	-	-	-	45	36
			2	580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	4.7	6.9	1.5	-	-	-	-	-	-	55	46
			3	670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.9	5.8	7.8	1.9	-	-	-	-	-	-	59	50
	4	1	390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	4.2	5.5	1.2	-	-	46	37	
		2	550	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.9	7.2	7.5	2.2	-	-	56	47	
		3	640	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5	9.4	8.6	2.7	-	-	60	51	
	EC	1	1	210	-	-	-	-	1.4	1.0	2.8	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	<20	
			2	270	-	-	-	-	1.8	1.5	3.5	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34	25	
			3	390	-	-	-	-	2.5	2.6	4.9	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	44	35	
			4	530	-	-	-	-	3.2	4.1	6.4	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	43	
			5	670	-	-	-	-	3.9	5.8	7.8	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	59	50	
		2	1	210	-	-	-	-	-	-	-	-	-	1.7	1.7	3.1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	31	22
			2	250	-	-	-	-	-	-	-	-	-	2.0	2.2	3.6	0.6	-	-	-	-	-	-	-	-	-	-	-	-	35	26
			3	360	-	-	-	-	-	-	-	-	-	2.7	3.7	5.1	1.1	-	-	-	-	-	-	-	-	-	-	-	-	44	35
			4	500	-	-	-	-	-	-	-	-	-	3.6	6.3	6.9	1.8	-	-	-	-	-	-	-	-	-	-	-	-	53	44
5			640	-	-	-	-	-	-	-	-	-	4.5	9.4	8.6	2.7	-	-	-	-	-	-	-	-	-	-	-	-	59	50	
3			1	250	1.3	1.0	2.7	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	21
			2	310	1.6	1.4	3.3	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33	24
	3	460	2.2	2.5	4.6	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42	33		
	1	330	-	-	-	-	2.1	2.0	4.2	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33	24		
	2	480	-	-	-	-	2.9	3.6	5.8	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42	33		
4-way	AC	1	3	660	-	-	-	-	3.8	5.7	7.7	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51	42		
			1	310	-	-	-	-	-	-	-	-	2.4	2.9	4.4	0.9	-	-	-	-	-	-	-	-	-	-	-	33	24		
			2	450	-	-	-	-	-	-	-	-	3.3	5.3	6.2	1.6	-	-	-	-	-	-	-	-	-	-	-	43	34		
	2	3	620	-	-	-	-	-	-	-	-	4.4	8.9	8.3	2.6	-	-	-	-	-	-	-	-	-	-	-	-	51	42		
		1	480	-	-	-	-	-	-	-	-	-	-	-	-	2.9	3.6	5.8	1.1	-	-	-	-	-	-	-	-	43	34		
		2	710	-	-	-	-	-	-	-	-	-	-	-	-	4.1	6.3	8.2	2.0	-	-	-	-	-	-	-	-	54	45		
	3	3	850	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58	49		
		1	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	5.9	6.6	1.7	-	-	44	35	
		2	710	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9	10.8	9.4	3.2	-	-	55	46	
	4	3	830	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6	13.8	10.8	4.1	-	-	59	50	
		1	250	-	-	-	-	1.7	1.3	3.3	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	<20		
		2	330	-	-	-	-	2.1	2.0	4.2	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31	22		
EC	1	3	480	-	-	-	-	2.9	3.6	5.8	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	31		
		4	660	-	-	-	-	3.8	5.7	7.7	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49	40		
		5	850	-	-	-	-	4.7	8.2	9.5	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56	47		
		1	250	-	-	-	-	-	-	-	-	2.0	2.2	3.6	0.6	-	-	-	-	-	-	-	-	-	-	-	-	24	<20		
		2	310	-	-	-	-	-	-	-	-	2.4	2.9	4.4	0.9	-	-	-	-	-	-	-	-	-	-	-	-	31	22		
	2	3	450	-	-	-	-	-	-	-	-	3.3	5.3	6.2	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	40	31	
		4	620	-	-	-	-	-	-	-	-	4.4	8.9	8.3	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	50	41	
		5	830	-	-	-	-	-	-	-	-	5.6	13.8	10.8	4.1	-	-	-	-	-	-	-	-	-	-	-	-	58	49		

Capacity stage

Terminal box
(select metal-sheet electric switch cabinet with FläktGroup ISYteq) (only for model design 4-way outlet)

Speed combination

1 - 2 - 3 **A**



Metal-sheet electric switch cabinet with terminal block or integrated controls

Speed combination

1 - 2 - 3	K
min...max	S
2-3-4	L**
3-4-5	M**
1-3-5	O**



motor	
3-speed motor	integrated TC 0
	TC led out 1
EC motor	E

Color





3	Design panel similar to RAL 9003 (signal white), Air vanes similar to RAL 7035 (light grey)
5	Design panel similar to RAL 9003 (signal white), Air vanes similar to RAL 9003 (signal white)
9	Color shade of choice (design panel and unflocked air vanes only)

G C . U W C Order Code

* Ambient conditions refer to page 42 "Acoustics"
** Only in connection with EC motor available

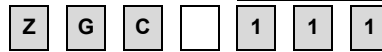
2-pipe chilled or warm water, model design SWIRL air outlet and 4-way outlet

Accessories

	Spare filter (model design as SWIRL-air outlet) (set = 4 items)	1	1	1
	Spare filter (model design as 4-way air outlet) (set = 4 items)	1	1	1
	Mounting bracket set	1	1	2
	Adapter for primary air supply	1	1	3

Model design Air outlet C, F, 0 *

Order code



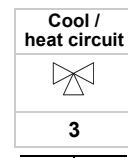
* 0 - if regardless of model size

Valves

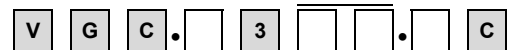
Terminal box	Drive	Operating voltage/circuit	
•	2-point	230 V AC ²⁾	T
	open/close	24 V AC ^{1), 2)}	Q
•	3-point open/stop/ close	230 V AC	R
		24 V AC ¹⁾	N
		230 V AC + 2 contacts	C
•	Continu- ous	0/2 ... 10 V = 24 V AC ¹⁾	S

Connection/shut-off	
Inlet/outlet flow with external screw thread	0
Inlet/outlet with solder fitting	1
Inlet/outlet + ball trap with external thread	2
Inlet/outlet + ball trap with solder fitting	3
Inlet + ball trap/ outlet + shut-off valve with external thread	4
Inlet + ball trap/ outlet + shut-off valve with solder fitting	5

k _{vs} values		
Cooling/Heating		
0.25	≡	03
0.40	≡	04
0.63	≡	06
1.00	≡	10
1.60 ²⁾	≡	16
2.50 ²⁾	≡	25
4.00	≡	40



Order code







Cooling/heating circuit

¹⁾ 24 V-transformer to be provided by others

²⁾ kvs-values for open/close actuators (T, Q) only kvs 1,6 and 2,5 possible

2-pipe chilled or warm water with auxiliary electric heating, model design air outlet SWIRL and 4-way outlet

Accessories

	Spare filter (model design as SWIRL-air outlet) (set = 4 items)	1	1	1
	Spare filter (model design as 4-way air outlet) (set = 4 items)	1	1	1
	Mounting bracket set	1	1	2
	Adapter for primary air supply	1	1	3

Model design Air outlet C, F, 0 *

Order code



* 0 - if regardless of model size

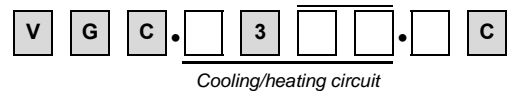
Valves

Terminal box	Drive	Operating voltage/circuit	
•	2-point	230 V AC ²⁾	T
	open/close	24 V AC ^{1), 2)}	Q
•	3-point open/stop/ close	230 V AC	R
		24 V AC ¹⁾	N
		230 V AC + 2 contacts	C
•	Continu- ous	0/2 ... 10 V = 24 V AC ¹⁾	S

Connection/shut-off	
Inlet/outlet flow with external screw thread	0
Inlet/outlet with solder fitting	1
Inlet/outlet + ball trap with external thread	2
Inlet/outlet + ball trap with solder fitting	3
Inlet + ball trap/ outlet + shut-off valve with external thread	4
Inlet + ball trap/ outlet + shut-off valve with solder fitting	5

k _{vs} values		
Cooling/Heating		
0.25	≡	03
0.40	≡	04
0.63	≡	06
1.00	≡	10
1.60 ²⁾	≡	16
2.50 ²⁾	≡	25
4.00	≡	40

Order code



¹⁾ 24 V-transformer to be provided by others

²⁾ k_{vs}-values for open/close actuators (T, Q) only k_{vs} 1.6 and 2.5 possible

Outlet variant	Motor type	Capacity size	Speed stages	Air volume flow m ³ /h	Capacity stage 0		Capacity stage 2		Capacity stage 1		Capacity stage 3		Capacity stage 4		Sound power dB(A)	Sound pressure* dB(A)
					Heating capacity	Pressure drop	Heating capacity	Pressure drop	Heating capacity	Pressure drop	Heating capacity	Pressure drop	Heating capacity	Pressure drop		
					Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa		
SWIRL	AC	0	1	210	2.4	0.3	-	-	-	-	-	-	-	-	31	22
			2	250	2.7	0.3	-	-	-	-	-	-	-	-	32	23
			3	380	3.9	0.6	-	-	-	-	-	-	-	-	43	34
		1	1	270	-	-	3.5	0.5	-	-	-	-	-	-	34	25
			2	390	-	-	4.9	0.8	-	-	-	-	-	-	43	34
			3	530	-	-	6.4	1.3	-	-	-	-	-	-	52	43
		2	1	250	-	-	-	-	3.6	0.6	-	-	-	-	35	26
			2	360	-	-	-	-	5.1	1.1	-	-	-	-	44	35
			3	500	-	-	-	-	6.9	1.8	-	-	-	-	53	44
		3	1	410	-	-	-	-	-	-	5.1	0.9	-	-	45	36
			2	580	-	-	-	-	-	-	6.9	1.5	-	-	55	46
			3	670	-	-	-	-	-	-	7.8	1.9	-	-	59	50
	4	1	390	-	-	-	-	-	-	-	-	5.5	1.2	46	37	
		2	550	-	-	-	-	-	-	-	-	7.5	2.1	56	47	
		3	640	-	-	-	-	-	-	-	-	8.6	2.7	60	51	
	EC	1	1	210	-	-	2.8	0.3	-	-	-	-	-	-	28	<20
			2	270	-	-	3.5	0.5	-	-	-	-	-	-	34	25
			3	390	-	-	4.9	0.8	-	-	-	-	-	-	44	35
			4	530	-	-	6.4	1.3	-	-	-	-	-	-	52	43
			5	670	-	-	7.8	1.9	-	-	-	-	-	-	59	50
2		1	210	-	-	-	-	3.1	0.4	-	-	-	-	31	22	
		2	250	-	-	-	-	3.6	0.6	-	-	-	-	35	26	
		3	360	-	-	-	-	5.1	1.1	-	-	-	-	44	35	
		4	500	-	-	-	-	6.9	1.8	-	-	-	-	53	44	
		5	640	-	-	-	-	8.6	2.7	-	-	-	-	59	50	
4-way	AC	0	1	250	2.7	0.3	-	-	-	-	-	-	-	-	30	21
			2	310	3.3	0.5	-	-	-	-	-	-	-	-	33	24
			3	460	4.6	0.8	-	-	-	-	-	-	-	-	42	33
		1	1	330	-	-	4.2	0.6	-	-	-	-	-	-	33	24
			2	480	-	-	5.8	1.1	-	-	-	-	-	-	42	33
			3	660	-	-	7.7	1.8	-	-	-	-	-	-	51	42
		2	1	310	-	-	-	-	4.4	0.9	-	-	-	-	33	24
			2	450	-	-	-	-	6.2	1.6	-	-	-	-	43	34
			3	620	-	-	-	-	8.3	2.6	-	-	-	-	51	42
		3	1	480	-	-	-	-	-	-	5.8	1.1	-	-	43	34
			2	710	-	-	-	-	-	-	8.2	2.0	-	-	54	45
			3	850	-	-	-	-	-	-	9.5	2.7	-	-	58	49
	4	1	480	-	-	-	-	-	-	-	-	6.6	1.7	44	35	
		2	710	-	-	-	-	-	-	-	-	9.4	3.2	55	46	
		3	830	-	-	-	-	-	-	-	-	10.8	4.1	59	50	
	EC	1	1	250	-	-	3.3	0.4	-	-	-	-	-	-	24	<20
			2	330	-	-	4.2	0.6	-	-	-	-	-	-	31	22
			3	480	-	-	5.8	1.1	-	-	-	-	-	-	40	31
			4	660	-	-	7.7	1.8	-	-	-	-	-	-	49	40
			5	850	-	-	9.5	2.7	-	-	-	-	-	-	56	47
2		1	250	-	-	-	-	3.6	0.6	-	-	-	-	24	<20	
		2	310	-	-	-	-	4.4	0.9	-	-	-	-	31	22	
		3	450	-	-	-	-	6.2	1.6	-	-	-	-	40	31	
4	1	620	-	-	-	-	8.3	2.6	-	-	-	-	50	41		
	2	830	-	-	-	-	10.8	4.1	-	-	-	-	58	49		

0 1 2 3 4 Capacity stage

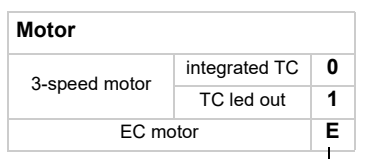
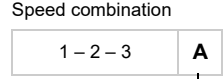
Terminal box
(select metal-sheet electric switch cabinet with FläktGroup ISYteq) (only for model design 4-way outlet)



Metal-sheet electric switch cabinet with terminal block or integrated controls

Speed combination

1 – 2 – 3	K
min...max	S
2-3-4	L**
3-4-5	M**
1-3-5	O**



Color

3	Design panel similar to RAL 9003 (signal white), Air vanes similar to RAL 7035 (light grey)
5	Design panel similar to RAL 9003 (signal white), Air vanes similar to RAL 9003 (signal white)
9	Color shade of choice (design panel and unflocked air vanes only)





Order Code

G C . U 0 W .

* Ambient conditions refer to page 40 "Acoustics"
** Only in connection with EC motor available

2-pipe chilled or warm water, model design SWIRL air outlet and 4-way outlet

Accessories

	Spare filter (model design as SWIRL-air outlet) (set = 4 items)	1	1	1
	Spare filter (model design as 4-way air outlet) (set = 4 items)	1	1	1
	Mounting bracket set	1	1	2
	Adapter for primary air supply	1	1	3

Model design Air outlet C, F, 0 *

Order code



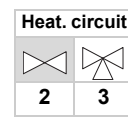
* 0 - if regardless of model size

Valves

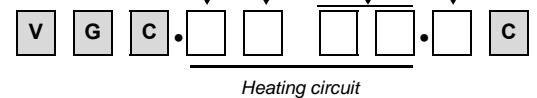
Terminal box	Drive	Operating voltage/circuit	
•	2-point open/close	230 V AC ²⁾	T
		24 V AC ^{1), 2)}	Q
•	3-point open/stop/close	230 V AC	R
		24 V AC ¹⁾	N
		230 V AC + 2 contacts	C
•	Continuous	0/2 ... 10 V = 24 V AC ¹⁾	S

Connection/shut-off	
Inlet/outlet flow with external screw thread	0
Inlet/outlet with solder fitting	1
Inlet/outlet + ball trap with external thread	2
Inlet/outlet + ball trap with solder fitting	3
Inlet + ball trap/outlet + shut-off valve with external thread	4
Inlet + ball trap/outlet + shut-off valve with solder fitting	5

kvs values		
Cooling		
0.25	≡	03
0.40	≡	04
0.63	≡	06
1.00	≡	10
1.60 ²⁾	≡	16
2.50 ²⁾	≡	25
4.00	≡	40



Order code



¹⁾ 24 V-transformer to be provided by others

²⁾ kvs-values for open/close actuators (T,Q) only kvs 1.6 and 2.5 possible

Outlet variant	Motor type	Capacity size	Speed stages	Air volume flow m ³ /h	Capacity stage 0		Capacity stage 2		Capacity stage 1		Capacity stage 3		Capacity stage 4		Sound power dB(A)	Sound pressure* dB(A)	
					Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa			
					Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa			
SWIRL	AC	0	1	210	1.1	0.8	-	-	-	-	-	-	-	-	31	22	
			2	250	1.3	1.0	-	-	-	-	-	-	-	-	32	23	
			3	380	1.9	1.9	-	-	-	-	-	-	-	-	43	34	
		1	1	270	-	-	1.8	1.5	-	-	-	-	-	-	-	34	25
			2	390	-	-	2.5	2.6	-	-	-	-	-	-	-	43	34
			3	530	-	-	3.2	4.1	-	-	-	-	-	-	-	52	43
		2	1	250	-	-	-	-	2.0	2.2	-	-	-	-	-	35	26
			2	360	-	-	-	-	2.7	3.7	-	-	-	-	-	44	35
			3	500	-	-	-	-	3.6	6.3	-	-	-	-	-	53	44
		3	1	410	-	-	-	-	-	-	2.6	2.8	-	-	-	45	36
			2	580	-	-	-	-	-	-	3.5	4.7	-	-	-	55	46
			3	670	-	-	-	-	-	-	3.9	5.8	-	-	-	59	50
	4	1	390	-	-	-	-	-	-	-	-	2.9	4.2	-	46	37	
		2	550	-	-	-	-	-	-	-	-	3.9	7.2	-	56	47	
		3	640	-	-	-	-	-	-	-	-	4.5	9.4	-	60	51	
	EC	1	1	210	-	-	1.4	1.0	-	-	-	-	-	-	28	<20	
			2	270	-	-	1.8	1.5	-	-	-	-	-	-	34	25	
			3	390	-	-	2.5	2.6	-	-	-	-	-	-	44	35	
			4	530	-	-	3.2	4.1	-	-	-	-	-	-	52	43	
			5	670	-	-	3.9	5.8	-	-	-	-	-	-	59	50	
		2	1	210	-	-	-	-	1.7	1.7	-	-	-	-	-	31	22
			2	250	-	-	-	-	2.0	2.2	-	-	-	-	-	35	26
			3	360	-	-	-	-	2.7	3.7	-	-	-	-	-	44	35
			4	500	-	-	-	-	3.6	6.3	-	-	-	-	-	53	44
5			640	-	-	-	-	4.5	9.4	-	-	-	-	-	59	50	
4-way		AC	0	1	250	1.3	1.0	-	-	-	-	-	-	-	-	30	21
				2	310	1.6	1.4	-	-	-	-	-	-	-	-	33	24
	3			460	2.2	2.5	-	-	-	-	-	-	-	-	42	33	
	1		1	330	-	-	2.1	2.0	-	-	-	-	-	-	33	24	
			2	480	-	-	2.9	3.6	-	-	-	-	-	-	42	33	
			3	660	-	-	3.8	5.7	-	-	-	-	-	-	51	42	
	2	1	310	-	-	-	-	2.4	2.9	-	-	-	-	33	24		
		2	450	-	-	-	-	3.3	5.3	-	-	-	-	43	34		
		3	620	-	-	-	-	4.4	8.9	-	-	-	-	51	42		
	3	1	480	-	-	-	-	-	-	2.9	3.6	-	-	43	34		
		2	710	-	-	-	-	-	-	4.1	6.3	-	-	54	45		
		3	850	-	-	-	-	-	-	4.7	8.2	-	-	58	49		
	4	1	480	-	-	-	-	-	-	-	-	3.5	5.9	44	35		
		2	710	-	-	-	-	-	-	-	-	4.9	10.8	55	46		
		3	830	-	-	-	-	-	-	-	-	5.6	13.8	59	50		
EC	1	1	250	-	-	1.7	1.3	-	-	-	-	-	-	24	<20		
		2	330	-	-	2.1	2.0	-	-	-	-	-	-	31	22		
		3	480	-	-	2.9	3.6	-	-	-	-	-	-	40	31		
		4	660	-	-	3.8	5.7	-	-	-	-	-	-	49	40		
		5	850	-	-	4.7	8.2	-	-	-	-	-	-	56	47		
	2	1	250	-	-	-	-	2	2.2	-	-	-	-	24	<20		
		2	310	-	-	-	-	2.4	2.9	-	-	-	-	31	22		
		3	450	-	-	-	-	3.3	5.3	-	-	-	-	40	31		
		4	620	-	-	-	-	4.4	8.9	-	-	-	-	50	41		
5	830	-	-	-	-	5.6	13.8	-	-	-	-	58	49				

0 1 2 3 4
Capacity stage

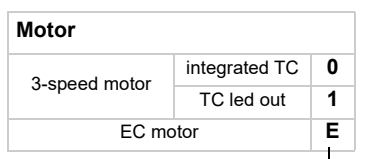
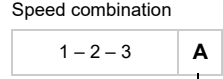
Terminal box
(select metal-sheet electric switch cabinet with FläktGroup ISYteq) (only for model design 4-way outlet)



Metal-sheet electric switch cabinet with terminal block or integrated controls

Speed combination

1 – 2 – 3	K
min...max	S
2-3-4	L**
3-4-5	M**
1-3-5	O**



Color





3	Design panel similar to RAL 9003 (signal white), Air vanes similar to RAL 7035 (light grey)
5	Design panel similar to RAL 9003 (signal white), Air vanes similar to RAL 9003 (signal white)
9	Color shade of choice (design panel and unflocked air vanes only)

G C . U W 0 Order Code

* Ambient conditions refer to page 40 "Acoustics"
** Only in connection with EC motor available

2-pipe chilled water and electric heating, model design SWIRL air outlet and 4-way outlet

Accessories

	Spare filter (model design as SWIRL-air outlet) (set = 4 items)	1	1	1
	Spare filter (model design as 4-way air outlet) (set = 4 items)	1	1	1
	Mounting bracket set	1	1	2
	Adapter for primary air supply	1	1	3

Model design Air outlet C, F, 0 *

Order code



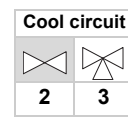
* 0 - if regardless of model size

Valves

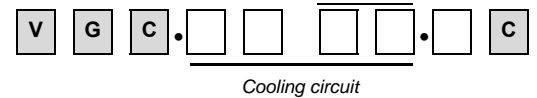
Terminal box	Drive	Operating voltage/circuit	
•	2-point open/close	230 V AC ²⁾	T
		24 V AC ^{1), 2)}	Q
•	3-point open/stop/close	230 V AC	R
		24 V AC ¹⁾	N
		230 V AC + 2 contacts	C
•	Continuous	0/2 ... 10 V = 24 V AC ¹⁾	S

Connection/shut-off	
Inlet/outlet flow with external screw thread	0
Inlet/outlet with solder fitting	1
Inlet/outlet + ball trap with external thread	2
Inlet/outlet + ball trap with solder fitting	3
Inlet + ball trap/ outlet + shut-off valve with external thread	4
Inlet + ball trap/ outlet + shut-off valve with solder fitting	5

kvs values		
Cooling		
0.25	≡	03
0.40	≡	04
0.63	≡	06
1.00	≡	10
1.60 ²⁾	≡	16
2.50 ²⁾	≡	25
4.00	≡	40



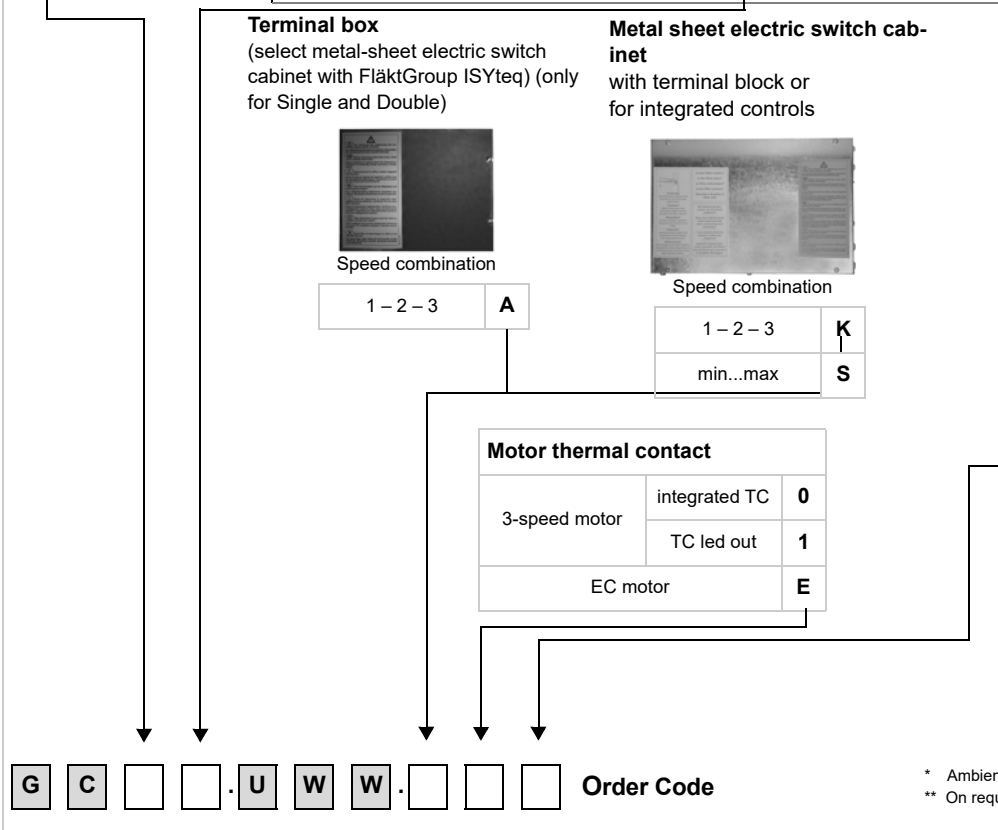
Order code



¹⁾ 24 V-transformer to be provided by others

²⁾ kvs-values for open/close actuators (T,Q) only kvs 1.6 and 2.5 possible



Model size	Motor type	Speeds	Air volume flow m ³ /h	Capacity stage 0				Capacity stage 1				Capacity stage 2				Sound power dB(A)	Sound pressure * dB(A)			
				Cooling capacity	Pressure drop	Heating capacity	Pressure drop	Cooling capacity	Pressure drop	Heating capacity	Pressure drop	Cooling capacity	Pressure drop	Heating capacity	Pressure drop					
				Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa					
S	AC	1	250	1.5	1.9	2.2	0.8	-	-	-	-	-	-	-	-	-	-	34	25	
		2	310	1.8	2.7	2.7	1.2	-	-	-	-	-	-	-	-	-	-	35	26	
		3	460	2.5	4.6	3.6	2.0	-	-	-	-	-	-	-	-	-	-	44	35	
		1	330	-	-	-	-	1.9	2.9	2.8	1.3	-	-	-	-	-	-	-	35	26
		2	480	-	-	-	-	2.6	4.9	3.7	2.1	-	-	-	-	-	-	-	43	34
		3	660	-	-	-	-	3.2	7.3	4.5	3.1	-	-	-	-	-	-	-	52	43
	EC	1	480	-	-	-	-	-	-	-	-	-	-	2.6	4.9	3.7	2.1	44	35	
		2	710	-	-	-	-	-	-	-	-	-	-	3.3	8.0	4.8	3.4	54	45	
		3	850	-	-	-	-	-	-	-	-	-	-	3.7	9.6	5.4	4.3	58	49	
		min	250	-	-	-	-	1.5	1.9	2.2	0.8	-	-	-	-	-	-	28	19	
		2	330	-	-	-	-	1.9	2.9	2.8	1.3	-	-	-	-	-	-	35	26	
		3	480	-	-	-	-	2.6	4.9	3.7	2.1	-	-	-	-	-	-	44	35	
	D	AC	3	660	-	-	-	-	3.2	7.3	4.5	3.1	-	-	-	-	-	-	52	43
			4	660	-	-	-	-	3.2	7.3	4.5	3.1	-	-	-	-	-	-	52	43
max			850	-	-	-	-	3.7	9.6	5.4	4.3	-	-	-	-	-	-	58	49	
1			530	-	-	-	-	3.2	2.1	4.7	0.9	-	-	-	-	-	-	38	30	
2			740	-	-	-	-	4.2	3.5	6.1	1.5	-	-	-	-	-	-	47	39	
3			1000	-	-	-	-	5.3	5.2	7.6	2.2	-	-	-	-	-	-	56	47	
EC		1	840	-	-	-	-	-	-	-	-	-	4.6	4.1	6.7	1.8	48	40		
		2	1220	-	-	-	-	-	-	-	-	-	6.0	6.6	8.7	2.9	59	50		
		3	1400	-	-	-	-	-	-	-	-	-	6.6	7.9	9.4	3.4	62	54		
		min	530	-	-	-	-	3.2	2.1	4.7	0.9	-	-	-	-	-	-	38	29	
		2	740	-	-	-	-	4.2	3.5	6.1	1.5	-	-	-	-	-	-	46	37	
		3	1000	-	-	-	-	5.3	5.2	7.6	2.2	-	-	-	-	-	-	53	45	
B		AC	4	1220	-	-	-	-	6.0	6.6	8.7	2.9	-	-	-	-	-	-	58	50
			max	1400	-	-	-	-	6.6	7.9	9.4	3.4	-	-	-	-	-	-	62	53
	1		620	-	-	-	-	3.5	1.8	5.3	1.1	-	-	-	-	-	-	34	25	
	EC	2	920	-	-	-	-	4.9	3.3	7.2	2.0	-	-	-	-	-	-	43	35	
		3	1200	-	-	-	-	5.9	4.7	8.7	2.8	-	-	-	-	-	-	50	42	
		min	620	-	-	-	-	3.5	1.8	5.3	1.1	-	-	-	-	-	-	34	25	
		2	770	-	-	-	-	4.3	2.6	6.3	1.6	-	-	-	-	-	-	38	29	
		3	920	-	-	-	-	4.9	3.3	7.2	2.0	-	-	-	-	-	-	43	34	
		4	1150	-	-	-	-	5.8	4.5	8.4	2.7	-	-	-	-	-	-	49	40	
		max	1530	-	-	-	-	6.9	6.2	10.1	3.7	-	-	-	-	-	-	56	48	



Color	
1**	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL 6034 (pastel turquoise)
2**	Design panel similar to RAL 9003 (signal white), flocked air-directing fins similar to RAL 6034 (pastel turquoise)
3	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL 7035 (light grey)
4**	Design panel similar to RAL 9003 (signal white), air-directing fins flocked, similar to RAL 7035 (light grey)
5	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL 9003 (signal white)
9	Color shade of choice (design panel and unflocked air fins only)

* Ambient conditions refer to page 64 Acoustics
** On request

Accessories

	Spare filter (Single and Big Single = 4 pieces, Double = 8 pieces)	1	1	1
	Mounting bracket set	1	1	2

Model sizes **S, D, B, 0** *

Order code

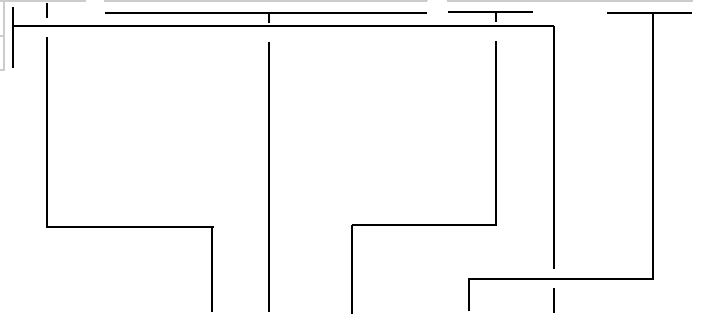


* 0 - if regardless of model size

Valves

Terminal box	Drive	Operating voltage/circuit		Heating circuit				Cooling circuit				k _{vs} values			
				Cooling/Heating											
•	2-point open/close	230 V AC	T									1.60	≡	1	6
		24 V AC *	Q									2.50	≡	2	5
•	3-point open/stop/ close	230 V AC	R									0.25	≡	0	3
		24 V AC *	N									0.40	≡	0	4
		230 V AC with auxiliary switch	C									0.63	≡	0	6
•	Continuous	0/2...10 V = 24 V AC *	S									1.00	≡	1	0
•	mixed	230 V AC Heating circuit 3-P 230 V AC Cooling circuit 2-P	1									1.60	≡	1	6
		24 V AC Heating circuit 3-P * 24 V AC Cooling circuit 2-P *	3									2.50	≡	2	5

With shut off valve	1
Without shut off valve	0



Design sizes	
Single	S
Double	D
Big Single	B

Order code



* 24 V transformer to be provided by others

Cassette-Geko cooling and heating

2-pipe chilled water and E-heating

Sizes Single, Double and Big Single

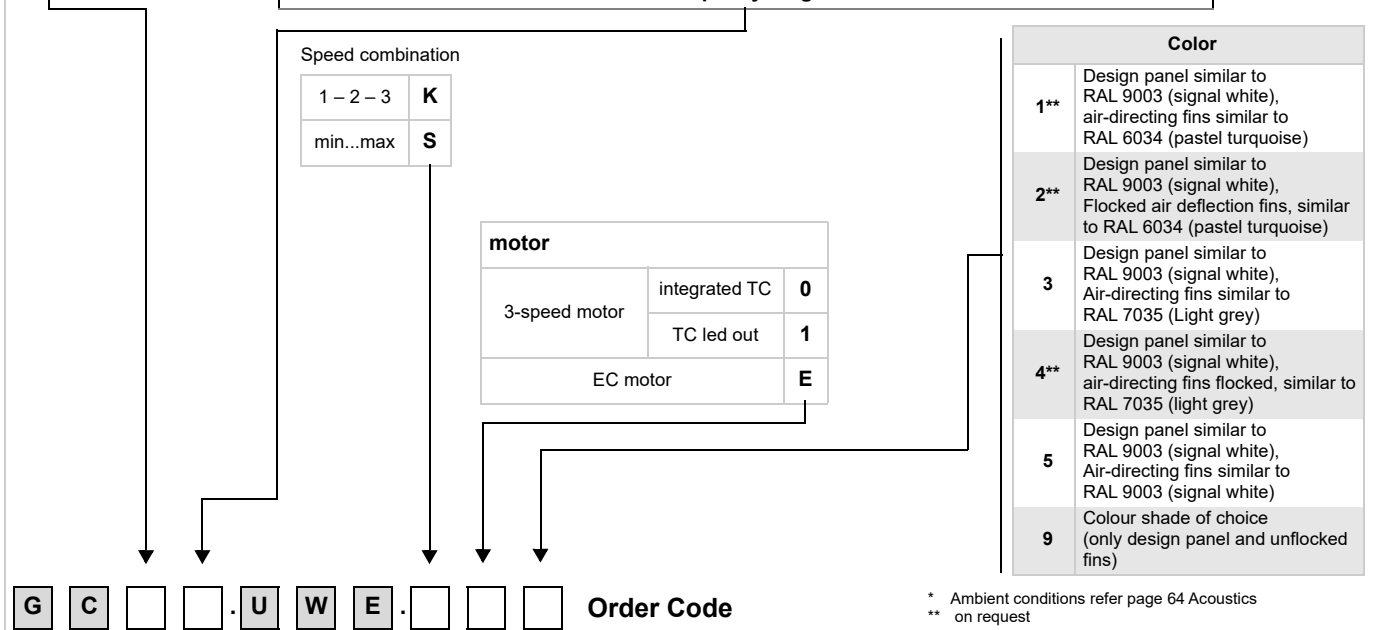
CWP 6/12 °C
 $t_{L1} = +27\text{ °C}$
 $\phi_1 = 46\% \text{ r.h.}$

Electric heater
 230V~N/P/E
 50Hz



HyCassette-Geko
 Cassette-Geko

Model size	Motor type	Speed	Air volume flow m ³ /h	Capacity stage 0				Capacity stage 1				Capacity stage 2				Sound power dB(A)	Sound pressure * dB(A)				
				Cooling capacity	Pressure drop	Heating capacity	Pressure drop	Cooling capacity	Pressure drop	Heating capacity	Pressure drop	Cooling capacity	Pressure drop	Heating capacity	Pressure drop						
				Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa						
S	AC	1	250	1.5	1.9	1.0	-	-	-	-	-	-	-	-	-	-	34	25			
		2	310	1.8	2.7	1.0	-	-	-	-	-	-	-	-	-	-	35	26			
		3	460	2.5	4.6	1.0	-	-	-	-	-	-	-	-	-	-	44	35			
		1	330	-	-	-	-	2.4	3.4	1.0	-	-	-	-	-	-	-	35	26		
		2	480	-	-	-	-	3.3	5.9	1.0	-	-	-	-	-	-	-	43	34		
		3	660	-	-	-	-	4.2	9.4	1.0	-	-	-	-	-	-	-	52	43		
		1	480	-	-	-	-	-	-	-	-	3.3	5.9	2.0	-	-	-	44	35		
		2	710	-	-	-	-	-	-	-	-	4.4	10.3	2.0	-	-	-	54	45		
		3	850	-	-	-	-	-	-	-	-	5.0	12.8	2.0	-	-	-	58	49		
	EC	min	250	-	-	-	-	1.9	2.1	1.0	-	-	-	-	-	-	-	28	19		
		2	330	-	-	-	-	2.4	3.4	1.0	-	-	-	-	-	-	-	35	26		
		3	480	-	-	-	-	3.3	5.9	1.0	-	-	-	-	-	-	-	44	35		
		4	660	-	-	-	-	4.2	9.4	1.0	-	-	-	-	-	-	-	52	43		
		max	850	-	-	-	-	5.0	12.8	1.0	-	-	-	-	-	-	-	58	49		
		min	480	-	-	-	-	-	-	-	-	3.3	5.9	2.0	-	-	-	44	35		
		2	570	-	-	-	-	-	-	-	-	3.8	7.8	2.0	-	-	-	48	39		
		3	660	-	-	-	-	-	-	-	-	4.2	9.4	2.0	-	-	-	52	43		
		4	710	-	-	-	-	-	-	-	-	4.4	10.3	2.0	-	-	-	54	45		
		max	850	-	-	-	-	-	-	-	-	5.0	12.8	2.0	-	-	-	58	49		
		D	AC	1	530	-	-	-	-	4.0	2.4	2.0	-	-	-	-	-	-	38	30	
				2	740	-	-	-	-	5.3	4.1	2.0	-	-	-	-	-	-	47	39	
				3	1000	-	-	-	-	6.8	6.3	2.0	-	-	-	-	-	-	56	47	
				1	840	-	-	-	-	-	-	-	-	5.9	4.9	4.0	-	-	-	48	40
				2	1220	-	-	-	-	-	-	-	-	8.0	8.5	4.0	-	-	-	59	50
3	1400			-	-	-	-	-	-	-	-	8.8	10.1	4.0	-	-	-	62	54		
EC	min		530	-	-	-	-	4.0	2.4	2.0	-	-	-	-	-	-	-	38	29		
	2		740	-	-	-	-	5.3	4.1	2.0	-	-	-	-	-	-	-	46	37		
	3		1000	-	-	-	-	6.8	6.3	2.0	-	-	-	-	-	-	-	53	45		
	4		1220	-	-	-	-	8.0	8.5	2.0	-	-	-	-	-	-	-	58	50		
	max		1400	-	-	-	-	8.8	10.1	2.0	-	-	-	-	-	-	-	62	53		
	min		840	-	-	-	-	-	-	-	-	5.9	4.9	4.0	-	-	-	49	40		
	2		1000	-	-	-	-	-	-	-	-	6.8	6.3	4.0	-	-	-	53	45		
	3		1110	-	-	-	-	-	-	-	-	7.4	7.4	4.0	-	-	-	56	47		
	4		1220	-	-	-	-	-	-	-	-	8.0	8.5	4.0	-	-	-	58	50		
	max		1400	-	-	-	-	-	-	-	-	8.8	10.1	4.0	-	-	-	62	53		
	B		AC	1	620	-	-	-	-	4.8	4.8	2.0	-	-	-	-	-	-	34	25	
				2	920	-	-	-	-	6.7	8.6	2.0	-	-	-	-	-	-	43	35	
				3	1200	-	-	-	-	8.2	12.3	2.0	-	-	-	-	-	-	50	42	
				min	620	-	-	-	-	4.8	4.8	2.0	-	-	-	-	-	-	-	34	25
				2	770	-	-	-	-	5.8	6.6	2.0	-	-	-	-	-	-	-	38	29
				3	920	-	-	-	-	6.7	8.6	2.0	-	-	-	-	-	-	-	43	34
			EC	4	1150	-	-	-	-	7.9	11.6	2.0	-	-	-	-	-	-	-	49	40
				max	1530	-	-	-	-	9.7	17.0	2.0	-	-	-	-	-	-	-	56	48
min		770		-	-	-	-	-	-	-	-	5.8	6.6	3.0	-	-	-	38	29		
2		920		-	-	-	-	-	-	-	-	6.7	8.6	3.0	-	-	-	43	34		
3		1150		-	-	-	-	-	-	-	-	7.9	11.6	3.0	-	-	-	49	40		
4		1340		-	-	-	-	-	-	-	-	8.9	14.4	3.0	-	-	-	53	44		
max		1530		-	-	-	-	-	-	-	-	9.7	17.0	3.0	-	-	-	56	48		

0 Capacity stage 1 2



Accessories

	Spare filter (Single and Big Single = 4 pieces, Double = 8 pieces)	1	1	1
	Mounting bracket set	1	1	2

Model sizes **S, D, B, 0***

Order code: **Z G C** [] **1 1 1**

* 0 - if regardless of model size

Valves

Terminal box	Drive	Operating voltage/circuit		Cooling circuit	
				2	3
•	2-point open/close	230 V AC	T		
		24 V AC *	Q		
•	3-point open/stop/ close	230 V AC	R		
		24 V AC *	N		
		230 V AC with auxiliary switch	C		
•	Continuous	0/2...10 V = 24 V AC *	S		

k _{VS} values			
Cooling			
1.60	≡	1	6
2.50	≡	2	5
0.25	≡	0	3
0.40	≡	0	4
0.63	≡	0	6
1.00	≡	1	0
1.60	≡	1	6
2.50	≡	2	5
4.00	≡	4	0

k_{VS}-values as indicated above for open/close actuators (T,Q) only k_{VS} 1.6 and 2.5 possible

Design sizes	
Single	S
Double	D
Big Single	B

With shut off valve **1**
Without shut off valve **0**

Order code: **V** [] [] [] [] [] []

* 24 V transformer to be provided by others

Cassette-Geko cooling or heating

2-pipe chilled or warm water

Sizes Single, Double and Big Single

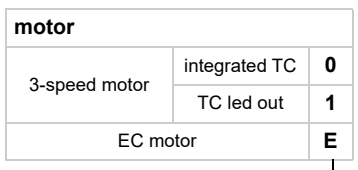
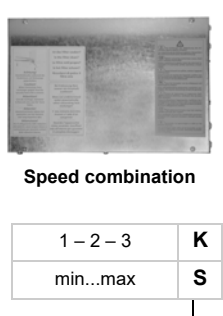
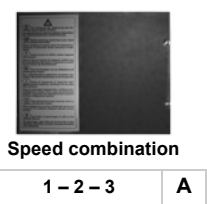
CWP 6/12 °C PWW 70/50 °C
 $t_{L1} = +27$ °C $t_{L1} = +20$ °C
 $\phi_1 = 46$ % r.h.

HyCassette-Geko
 Cassette-Geko

Model size	Motor type	Speeds	Air volume flow m ³ /h	Capacity stage 0				Capacity stage 1				Capacity stage 2				Sound power dB(A)	Sound pressure* dB(A)	
				Cooling capacity	Pressure drop	Heating capacity	Pressure drop	Cooling capacity	Pressure drop	Heating capacity	Pressure drop	Cooling capacity	Pressure drop	Heating capacity	Pressure drop			
				Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa			
S	AC	1	250	1.5	1.9	2.9	0.6	-	-	-	-	-	-	-	-	-	34	25
		2	310	1.8	2.7	3.5	0.8	-	-	-	-	-	-	-	-	-	35	26
		3	460	2.5	4.6	4.7	1.4	-	-	-	-	-	-	-	-	-	44	35
		1	330	-	-	-	-	2.4	3.4	4.4	0.9	-	-	-	-	-	35	26
		2	480	-	-	-	-	3.3	5.9	6.0	1.7	-	-	-	-	-	43	34
		3	660	-	-	-	-	4.2	9.4	7.6	2.6	-	-	-	-	-	52	43
	EC	1	480	-	-	-	-	-	-	-	-	-	3.3	5.9	6.0	1.7	44	35
		2	710	-	-	-	-	-	-	-	-	-	4.4	10.3	8.1	2.9	54	45
		3	850	-	-	-	-	-	-	-	-	-	5.0	12.8	9.2	3.7	58	49
		min	250	-	-	-	-	1.9	2.1	3.5	0.6	-	-	-	-	-	28	19
		2	330	-	-	-	-	2.4	3.4	4.4	0.9	-	-	-	-	-	35	26
		4	660	-	-	-	-	3.3	5.9	6.0	1.7	-	-	-	-	-	44	35
D	AC	1	530	-	-	-	-	4.0	2.4	7.3	0.7	-	-	-	-	-	38	30
		2	740	-	-	-	-	5.3	4.1	9.7	1.1	-	-	-	-	-	47	39
		3	1000	-	-	-	-	6.8	6.3	12.4	1.8	-	-	-	-	-	56	47
		1	840	-	-	-	-	-	-	-	-	5.9	4.9	10.8	1.4	48	40	
		2	1220	-	-	-	-	-	-	-	-	8.0	8.5	14.4	2.4	59	50	
		3	1400	-	-	-	-	-	-	-	-	8.8	10.1	16.0	2.8	62	54	
	EC	min	530	-	-	-	-	4.0	2.4	7.3	0.7	-	-	-	-	-	38	29
		2	740	-	-	-	-	5.3	4.1	9.7	1.1	-	-	-	-	-	46	37
		3	1000	-	-	-	-	6.8	6.3	12.4	1.8	-	-	-	-	-	53	45
		4	1220	-	-	-	-	8.0	8.5	14.4	2.4	-	-	-	-	-	58	50
		max	1400	-	-	-	-	8.8	10.1	16.0	2.8	-	-	-	-	-	62	53
		B	AC	1	620	-	-	-	-	4.9	5.2	8.6	1.4	-	-	-	-	-
2	920			-	-	-	-	6.7	9.2	11.8	2.4	-	-	-	-	-	43	35
3	1200			-	-	-	-	8.2	13.2	14.6	3.6	-	-	-	-	-	50	42
min	620			-	-	-	-	4.9	5.2	8.6	1.4	-	-	-	-	-	34	25
2	770			-	-	-	-	5.9	7.2	10.2	1.8	-	-	-	-	-	38	29
3	920			-	-	-	-	6.7	9.2	11.8	2.4	-	-	-	-	-	43	34
EC	4		1150	-	-	-	-	7.9	12.4	14.2	3.4	-	-	-	-	-	49	40
	max		1530	-	-	-	-	9.8	18.2	17.5	4.9	-	-	-	-	-	56	48

Terminal box (select metal sheet electric switch cabinet with FläktGroup ISYteq) (only for Single and Double)

Metal-sheet electric switch cabinet with terminal strip or integrated controls





Color	
1	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL 6034 (pastel turquoise)
2	Design panel similar to RAL 9003 (signal white), flocked air-directing fins, similar to RAL 6034 (pastel turquoise)
3	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL 7035 (light grey)
4	Design panel similar to RAL 9003 (signal white), air-directing fins flocked, similar to RAL 7035 (light grey)
5	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL 9003 (signal white)
9	Color shade of choice (only design panel and unflocked air fins)

Order Code

* Ambient conditions refer to Page 64 Acoustics

Accessories

	Spare filter (Single and Big Single = 4 pieces, Double = 8 pieces)	1	1	1
	Mounting bracket set	1	1	2


Model sizes S, D, B, 0 *

Order code



* 0 - if regardless of model size

Valves

Terminal box	Drive	Operating voltage/circuit		Heating circuit/cooling circuit		k _{VS} values			
						Cooling/Heating			
•	2-point open/close	230 V AC	T	3	1.60	≡	1	6	
		24 V AC *	Q		2.50	≡	2	5	
•	3-point open/stop/ close	230 V AC	R	3	0.25	≡	0	3	
		24 V AC *	N		0.40	≡	0	4	
		230 V AC with auxiliary switch	C		0.63	≡	0	6	
•	Continuous	0/2...10 V = 24 V AC *	S	3	1.00	≡	1	0	

With shut off valve	1
Without shut off valve	0

Design sizes	
Single	S
Double	D
Big Single	B

Order code

* 24 V transformer to be provided by others

Model size	Motor type	Speeds	Air volume flow m ³ /h	Capacity stage 0				Capacity stage 1				Capacity stage 2				Sound power dB(A)	Sound pressure * dB(A)	
				Cooling capacity	Pressure drop	Heating capacity	Pressure drop	Cooling capacity	Pressure drop	Heating capacity	Pressure drop	Cooling capacity	Pressure drop	Heating capacity	Pressure drop			
				Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa			
S	AC	1	250	-	-	2.9	0.6	-	-	-	-	-	-	-	-	-	34	25
		2	310	-	-	3.5	0.8	-	-	-	-	-	-	-	-	-	35	26
		3	460	-	-	4.7	1.4	-	-	-	-	-	-	-	-	-	44	35
		1	330	-	-	-	-	-	-	4.4	0.9	-	-	-	-	-	35	26
		2	480	-	-	-	-	-	-	6.0	1.7	-	-	-	-	-	43	34
		3	660	-	-	-	-	-	-	7.6	2.6	-	-	-	-	-	52	43
	EC	1	480	-	-	-	-	-	-	-	-	-	6.0	1.7	-	-	44	35
		2	710	-	-	-	-	-	-	-	-	-	8.1	2.9	-	-	54	45
		3	850	-	-	-	-	-	-	-	-	-	9.2	3.7	-	-	58	49
		min	250	-	-	-	-	-	-	3.5	0.6	-	-	-	-	-	28	19
		2	330	-	-	-	-	-	-	4.4	0.9	-	-	-	-	-	35	26
		3	480	-	-	-	-	-	-	6.0	1.7	-	-	-	-	-	44	35
	D	AC	4	660	-	-	-	-	-	-	7.6	2.6	-	-	-	-	52	43
			max	850	-	-	-	-	-	-	9.2	3.7	-	-	-	-	58	49
1			530	-	-	-	-	-	-	7.3	0.7	-	-	-	-	38	30	
2			740	-	-	-	-	-	-	9.7	1.1	-	-	-	-	47	39	
3			1000	-	-	-	-	-	-	12.4	1.8	-	-	-	-	56	47	
1			840	-	-	-	-	-	-	-	-	10.8	1.4	-	-	48	40	
EC		2	1220	-	-	-	-	-	-	-	-	14.4	2.4	-	-	59	50	
		3	1400	-	-	-	-	-	-	-	-	16.0	2.8	-	-	62	54	
		min	530	-	-	-	-	-	-	7.3	0.7	-	-	-	-	38	29	
		2	740	-	-	-	-	-	-	9.7	1.1	-	-	-	-	46	37	
		3	1000	-	-	-	-	-	-	12.4	1.8	-	-	-	-	53	45	
		4	1220	-	-	-	-	-	-	14.4	2.4	-	-	-	-	58	50	
B		AC	max	1400	-	-	-	-	-	-	16.0	2.8	-	-	-	-	62	53
			1	620	-	-	-	-	-	-	8.6	1.4	-	-	-	-	34	25
	2		920	-	-	-	-	-	-	11.8	2.4	-	-	-	-	43	35	
	EC	3	1200	-	-	-	-	-	-	14.6	3.6	-	-	-	-	50	42	
		min	620	-	-	-	-	-	-	8.6	1.4	-	-	-	-	34	25	
		2	770	-	-	-	-	-	-	10.2	1.8	-	-	-	-	38	29	
		3	920	-	-	-	-	-	-	11.8	2.4	-	-	-	-	43	34	
		4	1150	-	-	-	-	-	-	14.2	3.4	-	-	-	-	49	40	
		max	1530	-	-	-	-	-	-	17.5	4.9	-	-	-	-	56	48	

0 Capacity stage 1 2

Terminal box (select metal-sheet electric switch cabinet with FläktGroup ISYteq) (only with terminal strip or integrated controls)



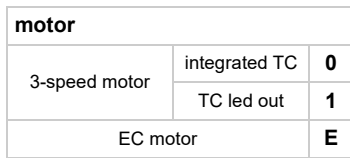
Speed combination

1 - 2 - 3 A



Speed combination

1 - 2 - 3 K
min...max S





Color	
1**	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL 6034 (pastel turquoise)
2**	Design panel similar to RAL 9003 (signal white), flocked air-directing fins, similar to RAL 6034 (pastel turquoise)
3	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL 7035 (light grey)
4**	Design panel similar to RAL 9003 (signal white), air-directing fins flocked, similar to RAL 7035 (light grey)
5	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL 9003 (signal white)
9	Color shade of choice (only design panel and unflocked air fins)

G C . U 0 W . Order Code

* Ambient conditions refer to page 64 Acoustics
** On request

Accessories



	Spare filter (Single and Big Single = 4 pieces, Double = 8 pieces)	1	1	1
	Mounting bracket set	1	1	2

Model sizes **S, D, B, 0***

Order code: **Z G C** [] [] [] [] [] []

* 0 - if regardless of model size

Valves

Terminal box	Drive	Operating voltage/circuit		Heating circuit	
				2	3
•	2-point open/close	230 V AC	T		
		24 V AC *	Q		
•	3-point open/stop/ close	230 V AC	R	2	3
		24 V AC *	N		
		230 V AC with auxiliary switch	C		
•	Continuous	0/2...10 V = 24 V AC *	S		

k _{vs} values			
Heating			
1.60	≡	1	6
2.50	≡	2	5
0.25	≡	0	3
0.40	≡	0	4
0.63	≡	0	6
1.00	≡	1	0
1.60	≡	1	6
2.50	≡	2	5
4.00	≡	4	0

k_{vs}-values as indicated above for open/close actuators (T,Q) only k_{vs} 1.6 and 2.5 possible

Design sizes	
Single	S
Double	D
Big Single	B

With shut off valve	1
Without shut off valve	0

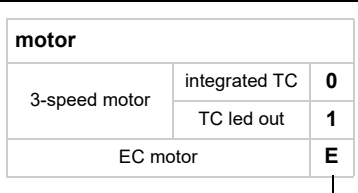
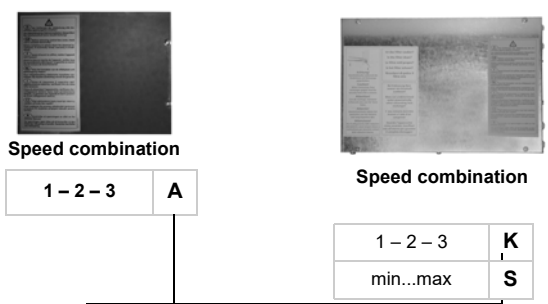
Order code: **V** [] [] [] [] [] [] [] []

* 24 V transformer to be provided by others

Model size	Motor type	Speeds	Air volume flow m ³ /h	Capacity stage 0				Capacity stage 1				Capacity stage 2				Sound power dB(A)	Sound pressure* dB(A)	
				Cooling capacity	Pressure drop	Heating capacity	Pressure drop	Cooling capacity	Pressure drop	Heating capacity	Pressure drop	Cooling capacity	Pressure drop	Heating capacity	Pressure drop			
				Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa	Q _K kW	Δp _K kPa	Q _H kW	Δp _H kPa			
S	AC	1	250	1.5	1.9	-	-	-	-	-	-	-	-	-	-	-	34	25
		2	310	1.8	2.7	-	-	-	-	-	-	-	-	-	-	-	35	26
		3	460	2.5	4.6	-	-	-	-	-	-	-	-	-	-	-	44	35
		1	330	-	-	-	-	2.4	3.4	-	-	-	-	-	-	-	35	26
		2	480	-	-	-	-	3.3	5.9	-	-	-	-	-	-	-	43	34
		3	660	-	-	-	-	4.2	9.4	-	-	-	-	-	-	-	52	43
	EC	1	480	-	-	-	-	-	-	-	-	-	3.3	5.9	-	-	44	35
		2	710	-	-	-	-	-	-	-	-	-	4.4	10.3	-	-	54	45
		3	850	-	-	-	-	-	-	-	-	-	5.0	12.8	-	-	58	49
		min	250	-	-	-	-	1.9	2.1	-	-	-	-	-	-	-	28	19
		2	330	-	-	-	-	2.4	3.4	-	-	-	-	-	-	-	35	26
		3	480	-	-	-	-	3.3	5.9	-	-	-	-	-	-	-	44	35
D	AC	1	530	-	-	-	-	4.0	2.4	-	-	-	-	-	-	-	38	30
		2	740	-	-	-	-	5.3	4.1	-	-	-	-	-	-	-	47	39
		3	1000	-	-	-	-	6.8	6.3	-	-	-	-	-	-	-	56	47
		1	840	-	-	-	-	-	-	-	-	-	5.9	4.9	-	-	48	40
		2	1220	-	-	-	-	-	-	-	-	-	8.0	8.5	-	-	59	50
		3	1400	-	-	-	-	-	-	-	-	-	8.8	10.1	-	-	62	54
	EC	min	530	-	-	-	-	4.0	2.4	-	-	-	-	-	-	-	38	29
		2	740	-	-	-	-	5.3	4.1	-	-	-	-	-	-	-	46	37
		3	1000	-	-	-	-	6.8	6.3	-	-	-	-	-	-	-	53	45
		4	1220	-	-	-	-	8.0	8.5	-	-	-	-	-	-	-	58	50
		max	1400	-	-	-	-	8.8	10.1	-	-	-	-	-	-	-	62	53
		B	AC	1	620	-	-	-	-	4.9	5.2	-	-	-	-	-	-	-
2	920			-	-	-	-	6.7	9.2	-	-	-	-	-	-	-	43	35
3	1200			-	-	-	-	8.2	13.2	-	-	-	-	-	-	-	50	42
min	620			-	-	-	-	4.9	5.2	-	-	-	-	-	-	-	34	25
2	770			-	-	-	-	5.9	7.2	-	-	-	-	-	-	-	38	29
3	920			-	-	-	-	6.7	9.2	-	-	-	-	-	-	-	43	34
EC	4		1150	-	-	-	-	7.9	12.4	-	-	-	-	-	-	-	49	40
	max		1530	-	-	-	-	9.8	18.2	-	-	-	-	-	-	-	56	48

Terminal box (select metal-sheet electric switch cabinet with FläktGroup ISYteq) (only for Single and Double)

Metal-sheet electric switch cabinet with terminal strip or integrated controls





Color	
1**	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL 6034 (pastel turquoise)
2**	Design panel similar to RAL 9003 (signal white), flocked air-directing fins, similar to RAL 6034 (pastel turquoise)
3	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL 7035 (light grey)
4**	Design panel similar to RAL 9003 (signal white), air-directing fins flocked, similar to RAL 7035 (light grey)
5	Design panel similar to RAL 9003 (signal white), air-directing fins similar to RAL 9003 (signal white)
9	Color shade of choice (only design panel and unflocked air fins)

Order Code G C . U W 0 .

* Ambient conditions refer to Page 64 Acoustics
** on request

Accessories

	Spare filter (Single and Big Single = 4 pieces, Double = 8 pieces)	1	1	1
	Mounting bracket set	1	1	2

Model sizes **S, D, B, 0***

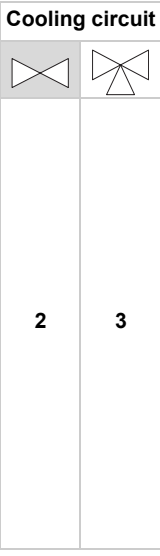
Order code: **Z G C** [] **1 1 1**

* 0 - if regardless of model size

Valves

Terminal box	Cooling circuit		
	Drive	Operating voltage/circuit	
• 2-point open/close	230 V AC	24 V AC *	T
			Q
• 3-point open/stop/close	230 V AC		R
	24 V AC *		N
	230 V AC with auxiliary switch		C
• Continuous	0/2...10 V = 24 V AC *		S

With shut off valve	1
Without shut off valve	0



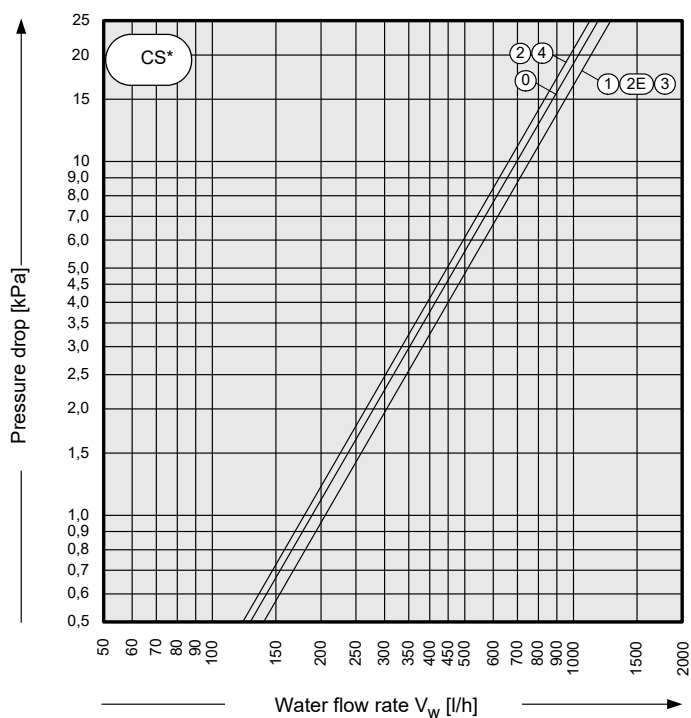
k _{vs} values			
Cooling			
1.60	≡	1	6
2.50	≡	2	5
0.25	≡	0	3
0.40	≡	0	4
0.63	≡	0	6
1.00	≡	1	0
1.60	≡	1	6
2.50	≡	2	5
4.00	≡	4	0

Order code: **V** [] [] [] [] [] []

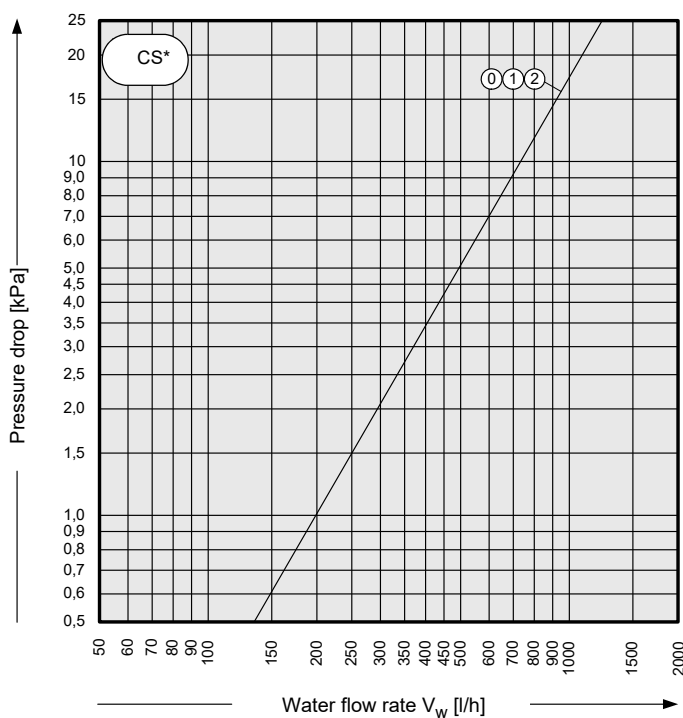
Design sizes	
Single	S
Double	D
Big Single	B

* 24 V transformer to be provided by others

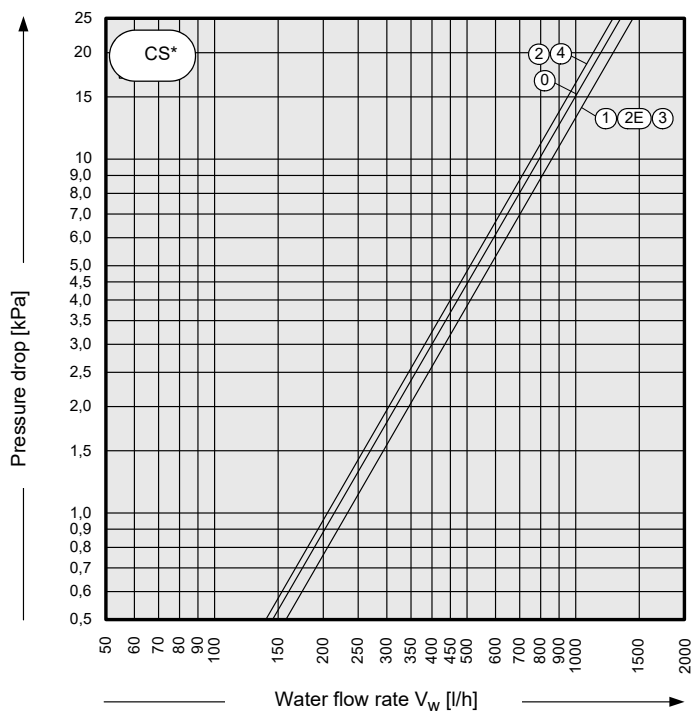
Cooling in 2-pipe system



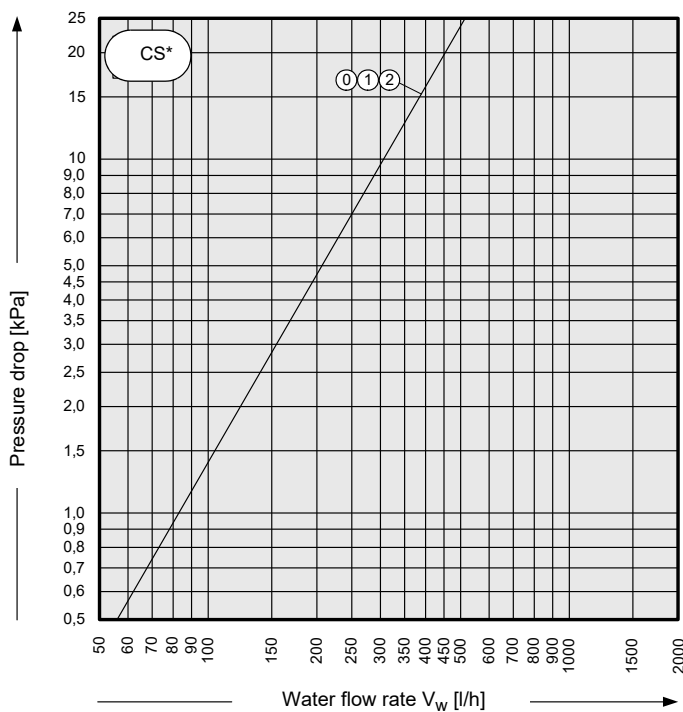
Cooling in 4-pipe system



Heating in 2-pipe system



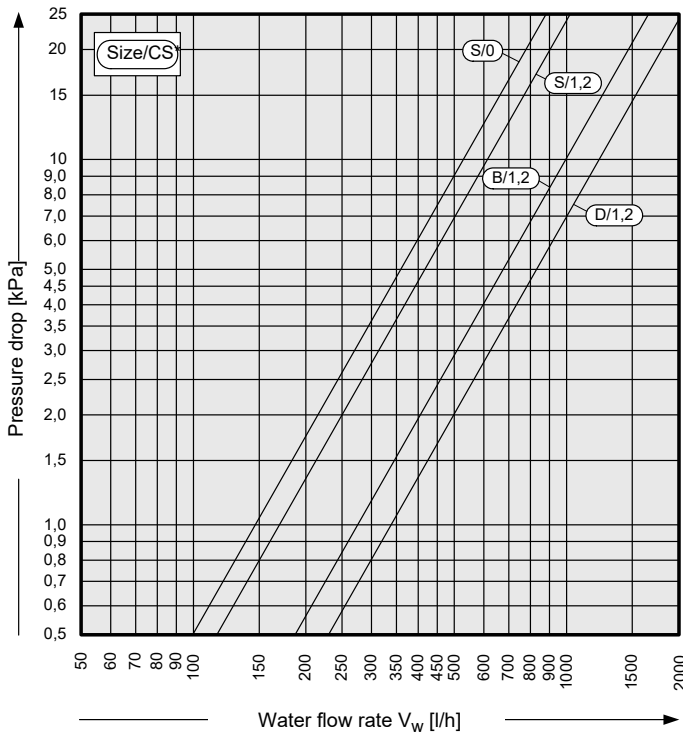
Heating in 4-pipe system



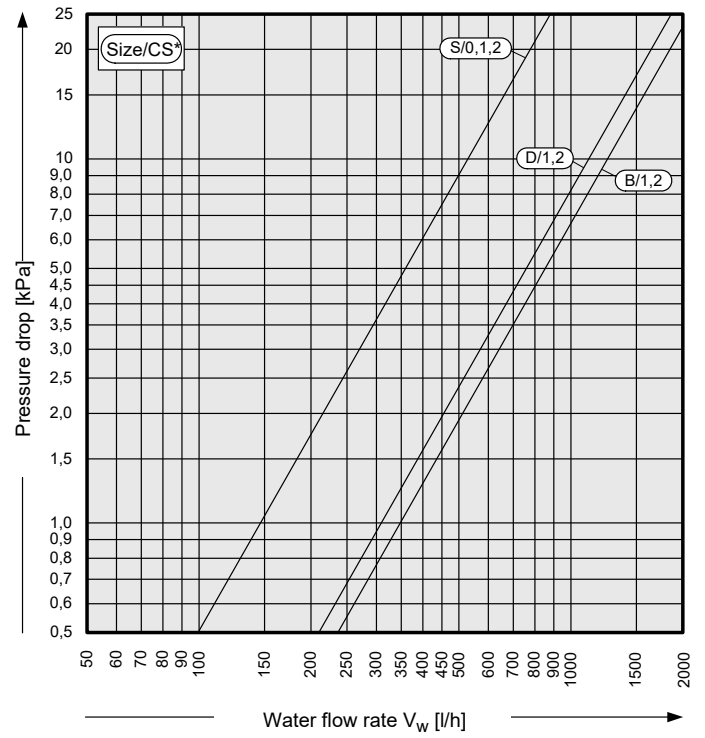
* CS = capacity stage

Fig. 1: Pressure drop in heat exchanger, warm and chilled water **HyCassette-Geko**

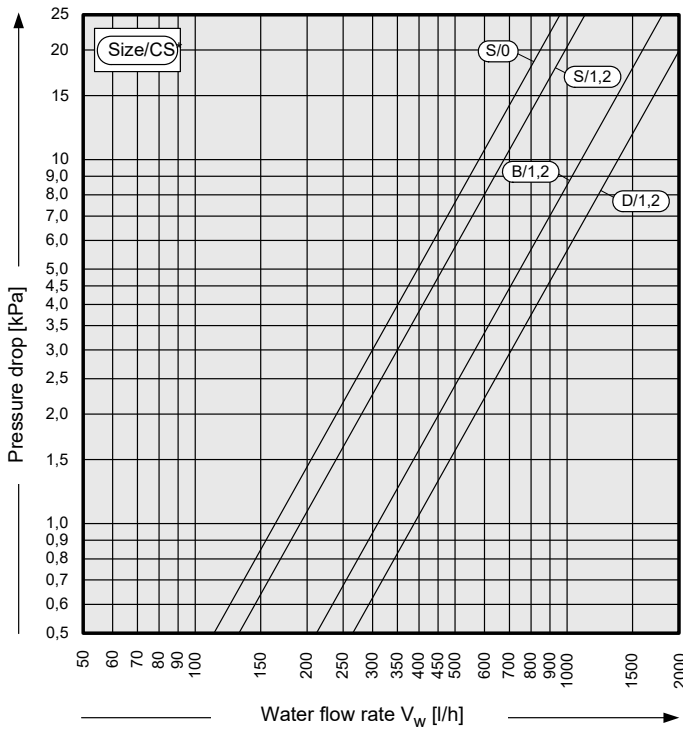
Cooling in 2-pipe system



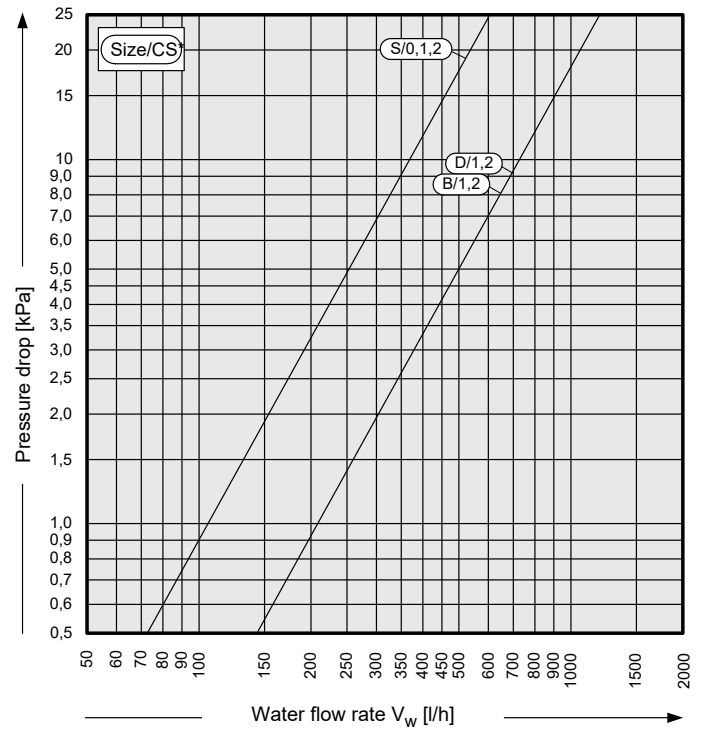
Cooling in 4-pipe system



Heating in 2-pipe system



Heating in 4-pipe system



* Size = Size, CS = Capacity stage

Fig. 2: Pressure drop in heat exchanger, warm and chilled water **Cassette-Geko**

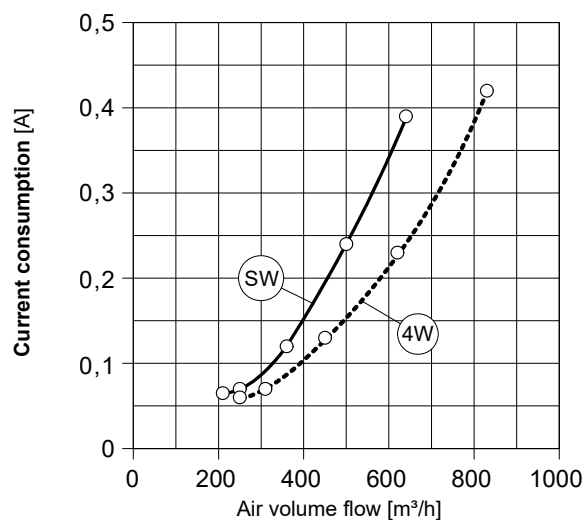
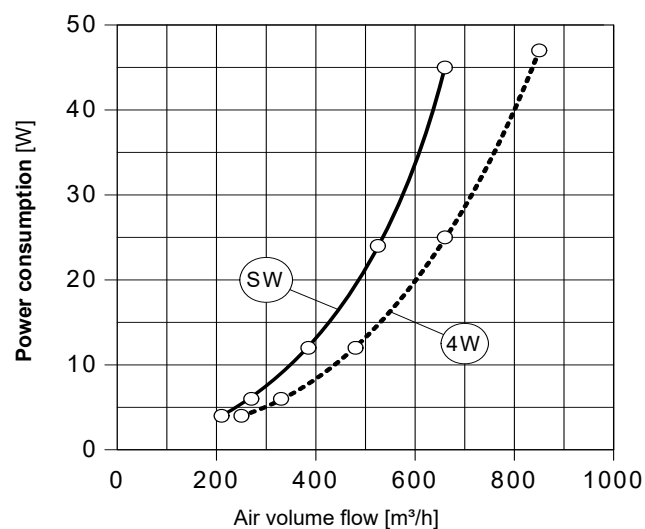
Power and current consumption (units with AC motors)

System	Speed	Air volume flow *	AC motor										
			Power consumption [W] **					Current consumption [A] **					
			LG0	LG1	LG2	LG3	LG4	LG0	LG1	LG2	LG3	LG4	
2-pipe	1	210 (250)	25	-	-	-	-	0.12	-	-	-	-	
	2	250 (310)	30	-	-	-	-	0.14	-	-	-	-	
	3	380 (460)	40	-	-	-	-	0.18	-	-	-	-	
	1	270 (330)	-	31	-	-	-	-	0.15	-	-	-	
	2	390 (480)	-	38	-	-	-	-	0.18	-	-	-	
	3	530 (660)	-	51	-	-	-	-	0.22	-	-	-	
	1	250 (310)	-	-	31	-	-	-	-	-	0.15	-	-
	2	360 (450)	-	-	39	-	-	-	-	-	0.18	-	-
	3	500 (620)	-	-	52	-	-	-	-	-	0.22	-	-
	1	410 (480)	-	-	-	57	-	-	-	-	-	0.28	-
	2	580 (710)	-	-	-	74	-	-	-	-	-	0.34	-
	3	670 (850)	-	-	-	88	-	-	-	-	-	0.39	-
	1	390 (480)	-	-	-	-	56	-	-	-	-	-	0.27
	2	550 (710)	-	-	-	-	73	-	-	-	-	-	0.34
	3	640 (830)	-	-	-	-	88	-	-	-	-	-	0.40
4-pipe	1	210 (250)	25	-	-	-	-	0.12	-	-	-	-	
	2	250 (310)	30	-	-	-	-	0.14	-	-	-	-	
	3	380 (460)	40	-	-	-	-	0.18	-	-	-	-	
	1	270 (330)	-	31	-	-	-	-	0.15	-	-	-	
	2	390 (480)	-	38	-	-	-	-	0.18	-	-	-	
	3	530 (660)	-	51	-	-	-	-	0.22	-	-	-	
	1	410 (480)	-	-	57	-	-	-	-	0.28	-	-	
	2	580 (710)	-	-	74	-	-	-	-	0.34	-	-	
	3	670 (850)	-	-	88	-	-	-	-	0.39	-	-	
2/4-pipe + E heating	1	--- (250)	25	-	-	-	-	0.12	-	-	-	-	
	2	--- (310)	30	-	-	-	-	0.14	-	-	-	-	
	3	--- (460)	40	-	-	-	-	0.18	-	-	-	-	
	1	270 (330)	-	31	-	-	-	-	0.15	-	-	-	
	2	390 (480)	-	38	-	-	-	-	0.18	-	-	-	
	3	530 (660)	-	51	-	-	-	-	0.22	-	-	-	
	1	410 (480)	-	-	57	-	-	-	-	0.28	-	-	
	2	580 (710)	-	-	74	-	-	-	-	0.34	-	-	
	3	670 (850)	-	-	88	-	-	-	-	0.39	-	-	

*) Values in brackets apply to 4-way outlet

**) Following values are the respective maximum values for SWIRL or 4-way outlet

Power and current consumption (units with EC motors)



SW = HyCassette-Geko with SWIRL outlet
4W = HyCassette-Geko mit 4-Wege-Auslass

Samples for capacity definition

The tables on page 14 to page 32 specify heating capacity for PWW 70/50 °C and air intake temperature t_{L1}= +20 °C as well as cooling capacity for PCW 6/12 °C and air intake condition t_{L1}=+27 °C/46 % r.h.. Capacity for other operating conditions can be determined using the correction factors on Page 3 (HyCassette-Geko) or Page 4 (Cassette-Geko).

Sample calculation for Cassette FCU for cooling and heating with 4-pipe system with a heating capacity of min. 4.5 kW for warm water 70/50/+15 °C and cooling capacity of at least 2.0 kW for chilled water 8/12 (24 °C/50 % r.h.)

Selected unit type:

GCS1.UWW.K##

See page 24

Sample speed 3 = 660 m³/h

Heating capacity with PWW 70/50 °C and t_{L1} = +15 °C

Q_H (70/50/+15) = **new heating capacity**
f_H (70/50/+15) = 1.14 (s. Page 4)
Q_H (70/50/+20) = 4.5 (see page 24)



$$Q_H (70/50/+15) = f_H (70/50/+15) \cdot Q_H (70/50/+20)$$

$$Q_H (70/50/+15) = 1.14 \cdot 4.5 \text{ kW} = \underline{\underline{5.1 \text{ kW}}}$$

Cooling capacity with CWW 8/12 °C and t_{L1} = +24 °C/50% r.F.

Q_K (8/12/+24/50%) = **new cooling capacity**
f_K (8/12/+24/50%) = 0.73
Q_K (6/12/+27/46%) = 3.2 (see page 24)



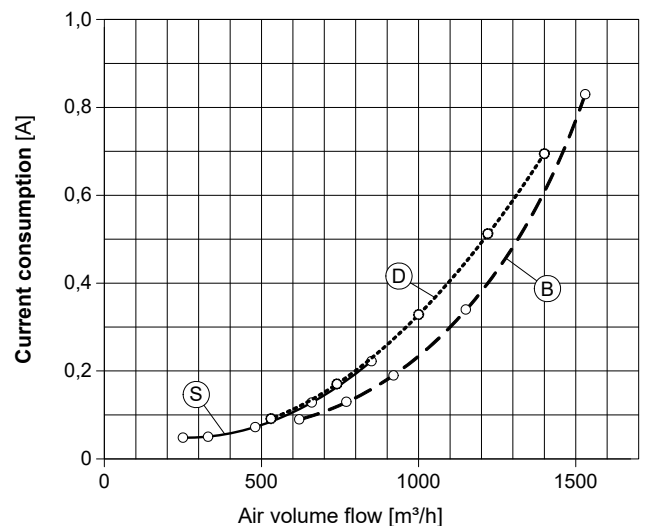
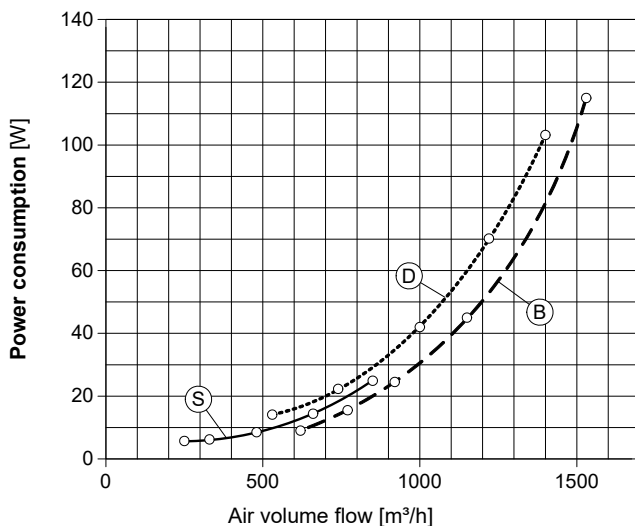
$$Q_K (8/12/+24/50\%) = f_K (8/12/+24/50\%) \cdot Q_K (6/12/+27/46\%)$$

$$Q_K (8/12/+24/50\%) = 0.73 \cdot 3.2 \text{ kW} = \underline{\underline{2.3 \text{ kW}}}$$

Power and current consumption (units with AC motors)

Model size	Speed	Air volume m ³ /h]	3-speed motor					
			Power consumption [W]			Current consumption [A]		
			LG0	LG1	LG2	LG0	LG1	LG2
Single	1	250	25	-	-	0.12	-	-
	2	310	29	-	-	0.14	-	-
	3	460	40	-	-	0.18	-	-
	1	330	-	30	-	-	0.14	-
	2	480	-	38	-	-	0.17	-
	3	660	-	50	-	-	0.22	-
	1	480	-	-	57	-	-	0.28
	2	710	-	-	74	-	-	0.34
	3	850	-	-	88	-	-	0.39
Double	1	530	-	59	-	-	0.30	-
	2	740	-	74	-	-	0.35	-
	3	1000	-	100	-	-	0.44	-
	1	840	-	-	111	-	-	0.54
	2	1220	-	-	147	-	-	0.67
	3	1400	-	-	176	-	-	0.78
Big Single	1	620	-	42	-	-	0.37	-
	2	920	-	74	-	-	0.49	-
	3	1200	-	103	-	-	0.58	-

Power and current consumption (units with EC motors)



Outlet variant	Capacity stage	System	Speed	Air volume current m ³ /h	Sound power level (dB)									Sound pressure level *)					
					Octave centre frequency (Hz)									un-rated	rated	un-rated	rated according to		
					63	125	250	500	1000	2000	4000	8000	dB	dB(A)	dB	dB(A)	NR	NC	
SWIRL	0		1	210	24	40	30	28	27	20	<20	<20	41	31	32	22	19	17	
			2	250	24	38	34	30	28	20	<20	<20	41	32	32	23	19	17	
			3	380	32	48	46	42	38	30	<20	<20	51	43	42	34	29	27	
	1		1	270	30	40	36	32	26	<20	<20	<20	43	34	34	25	20	17	
			2	390	31	44	42	41	40	31	<20	<20	48	43	39	34	31	30	
			3	530	40	51	49	48	50	44	33	<20	56	52	47	43	41	39	
	2	2-pipe	1	250	25	40	37	31	31	26	<20	<20	43	35	34	26	22	21	
			2	360	30	44	43	40	37	40	26	<20	48	44	39	35	34	32	
			3	500	42	51	51	49	47	48	41	30	57	53	48	44	42	40	
		2-pipe system + E-heating	1	410	37	51	46	43	41	33	<20	<20	53	45	44	36	32	31	
			2	580	43	55	54	51	52	47	37	25	60	55	51	46	43	42	
			3	670	46	59	57	55	56	51	43	33	63	59	54	50	47	46	
	3		1	410	37	51	46	43	41	33	<20	<20	53	45	44	36	32	31	
			2	580	43	55	54	51	52	47	37	25	60	55	51	46	43	42	
			3	670	46	59	57	55	56	51	43	33	63	59	54	50	47	46	
	4		1	390	37	50	47	42	39	41	28	<20	53	46	44	37	35	34	
			2	550	43	55	55	52	50	49	46	35	60	56	51	47	43	41	
			3	640	47	59	58	56	55	52	51	41	64	60	55	51	47	45	
4-way	0		1	250	<20	36	33	28	25	<20	<20	<20	39	30	31	21	16	14	
			2	310	25	39	35	31	29	21	<20	<20	42	33	33	24	20	18	
			3	460	31	46	44	40	36	28	<20	<20	49	42	40	33	28	26	
	1		1	330	27	38	39	32	20	<20	<20	<20	42	33	33	24	20	17	
			2	480	31	43	45	41	36	28	<20	<20	48	42	39	33	29	27	
			3	660	42	51	51	50	46	41	32	<20	56	51	47	42	37	36	
	2	2-pipe	1	310	20	37	37	30	27	18	<20	<20	41	33	32	24	18	16	
			2	450	30	43	45	41	37	35	23	<20	48	43	39	34	29	27	
			3	620	38	49	50	49	45	44	37	26	55	51	46	42	38	36	
		2-pipe system + E-heating	1	480	37	46	46	42	37	29	<20	<20	50	43	41	34	30	28	
			2	710	43	54	54	53	49	44	36	<20	59	54	50	45	40	39	
			3	850	45	59	58	56	53	49	42	30	63	58	54	49	44	43	
	3		1	480	37	46	46	42	37	29	<20	<20	50	43	41	34	30	28	
			2	710	43	54	54	53	49	44	36	<20	59	54	50	45	40	39	
			3	850	45	59	58	56	53	49	42	30	63	58	54	49	44	43	
	4		1	480	42	48	47	42	38	36	24	<20	52	44	43	35	30	28	
			2	710	43	57	55	53	49	47	42	33	61	55	52	46	41	39	
			3	830	45	60	58	56	54	50	48	40	64	59	55	50	45	43	

*) Sound pressure level relates to a reverberation field of a 100 m³ room and reverberation time of 0.5 s

The stated air volume flow values and noise level values apply only for a fully open cross section

Outlet variant	Capacity stage	Speed	Air volume flow m³/h	Sound power level (dB)										Sound pressure level *)					
				Octave centre frequency (Hz)										unrated	rated	unrated	rated according to		
				63	125	250	500	1000	2000	4000	8000	dB	dB(A)	dB	dB(A)	NR	NC		
SWIRL	1	min	210	15	33	32	25	23	<20	<20	<20	36	28	27	19	13	11		
		2	270	20	37	36	31	29	<20	<20	<20	41	34	32	25	21	19		
		3	390	30	45	44	41	40	32	20	<20	49	44	40	35	31	30		
		4	530	38	51	51	49	49	43	32	<20	56	52	47	43	40	39		
		max	670	45	56	56	56	56	52	43	32	62	59	53	50	47	46		
	2	min	210	<20	34	35	27	26	22	<20	<20	38	31	29	22	17	15		
		2	250	22	36	37	30	29	25	<20	<20	40	35	31	26	21	20		
		3	360	33	45	45	41	40	37	27	20	50	44	41	35	31	29		
		4	500	42	52	52	50	48	46	40	32	57	53	48	44	39	38		
		max	640	49	57	56	56	54	52	50	40	63	59	54	51	46	45		
4-way	1	min	250	<20	<20	23	25	<20	<20	<20	<20	28	24	19	15	12	9		
		2	330	<20	21	29	31	26	<20	<20	<20	34	31	25	22	18	16		
		3	480	<20	29	37	39	36	29	21	<20	43	40	34	31	28	26		
		4	660	<20	37	43	47	45	41	33	21	51	49	42	40	36	35		
		max	850	25	42	48	53	52	49	43	27	57	56	48	47	43	42		
	2	min	250	<20	30	33	25	22	<20	<20	<20	35	28	26	19	13	11		
		2	310	<20	34	37	30	27	23	<20	<20	40	33	31	24	18	16		
		3	450	28	43	45	40	37	34	25	<20	49	43	40	34	28	26		
		4	620	37	51	52	49	45	42	37	28	56	51	47	42	37	35		
		max	830	44	58	58	57	53	50	47	39	63	59	54	50	44	43		

*) Sound pressure level relates to a reverberation field of a 100 m³ room and reverberation time of 0.5 s
The stated air volume flow values and noise level values apply only for a fully open cross section

type of unit	Capacity size	Speed	Air volume flow m ³ /h	Sound power level (dB)										Sound pressure level *)					
				Octave centre frequency (Hz)										unrated	rated	unrated	rated according to		
				63	125	250	500	1000	2000	4000	8000	dB	dB(A)	dB	dB(A)	NR	NC		
Single	0	1	250	27	43	33	31	30	23	<20	<20	44	34	35	25	22	20		
		2	310	27	41	37	33	31	23	<20	<20	44	35	36	26	22	20		
		3	460	33	48	46	42	38	30	<20	<20	51	44	42	35	30	28		
	1	1	330	22	42	39	33	26	<20	<20	<20	44	35	35	26	20	18		
		2	480	35	48	48	42	35	29	<20	<20	52	43	43	34	29	27		
		3	660	43	56	55	50	45	40	30	21	60	52	51	43	38	37		
	2	1	480	37	47	47	44	38	31	<20	<20	51	44	42	35	31	29		
		2	710	44	57	56	53	49	44	34	<20	61	54	52	45	40	39		
		3	850	47	62	59	57	53	49	41	28	65	58	56	49	44	43		
	Double	1	1	530	30	44	43	37	29	<20	<20	24	47	38	39	30	24	22	
			2	740	38	52	52	46	40	32	23	27	55	47	47	39	34	32	
			3	1000	46	59	59	55	49	45	35	27	63	56	54	47	42	41	
2		1	840	40	54	53	47	41	34	24	<20	57	48	49	40	35	33		
		2	1220	49	63	62	57	52	49	40	29	66	59	57	50	45	44		
		3	1400	53	67	65	60	56	53	45	35	70	62	62	54	48	48		
Big Single	1	1	620	<20	<20	39	33	<20	<20	<20	<20	40	32	31	23	20	17		
		2	920	36	43	45	42	40	29	<20	<20	49	43	41	35	31	29		
		3	1200	49	50	51	48	47	41	30	<20	56	50	48	42	38	36		

*) Sound pressure level relates to a reverberation field of a 100 m³ room and reverberation time of 0.5 s

 =for values extracted for the sample calculation, see page 29/30.

The stated air volume flow values and noise level values apply only for a fully open cross section

type of unit	Unit with e-heating	Capacity size	Speed	Air volume flow m ³ /h	Sound power level (dB)										Sound pressure level *)			
					Octave centre frequency (Hz)										unrated dB	rated dB(A)	unrated dB	rated according to dB(A) NR NC
					63	125	250	500	1000	2000	4000	8000						
Single	No	1	min	250	21	36	33	28	23	<20	<20	<20	39	28	30	19	13	10
			2	330	28	41	39	34	29	<20	<20	<20	44	35	35	26	20	18
			3	480	36	49	48	43	39	32	24	<20	52	44	43	35	30	28
			4	660	44	55	55	51	47	42	33	<20	60	52	51	43	38	37
			max	850	50	61	61	58	54	50	40	26	66	58	57	49	44	43
	Yes	1	min	250	21	36	33	28	23	<20	<20	<20	39	28	30	19	13	10
			2	330	28	41	39	34	29	<20	<20	<20	44	35	35	26	20	18
			3	480	36	49	48	43	39	32	24	<20	52	44	43	35	30	28
			4	660	44	55	55	51	47	42	33	<20	60	52	51	43	38	37
			max	850	50	61	61	58	54	50	40	26	66	58	57	49	44	43
		2	min	480	36	49	48	43	39	32	24	<20	52	44	43	35	30	28
			2	570	40	52	52	48	43	37	28	<20	56	48	47	39	34	33
			3	660	44	55	55	51	47	42	33	<20	60	52	51	43	38	37
			4	710	46	57	57	53	49	44	35	<20	61	54	52	45	40	39
Double	No	1	min	530	28	42	40	34	29	<20	<20	<20	44	38	36	29	23	21
			2	740	36	49	47	43	38	30	23	<20	52	46	43	37	32	30
			3	1000	43	55	55	50	46	40	31	<20	59	53	51	45	40	38
			4	1220	48	59	59	55	51	46	37	<20	64	58	56	50	45	44
			max	1400	51	62	63	59	55	51	41	26	67	62	58	53	48	47
	Yes	1	min	530	28	42	40	34	29	<20	<20	<20	44	38	36	29	23	21
			2	740	36	49	47	43	38	30	23	<20	52	46	43	37	32	30
			3	1000	43	55	55	50	46	40	31	<20	59	53	51	45	40	38
			4	1220	48	59	59	55	51	46	37	<20	64	58	56	50	45	44
			max	1400	51	62	63	59	55	51	41	26	67	62	58	53	48	47
		2	min	840	39	51	50	46	41	34	26	<20	55	49	46	40	35	34
			2	1000	43	55	55	50	46	40	31	<20	59	53	51	45	40	38
			3	1110	46	57	57	53	49	43	34	<20	61	56	52	47	42	41
			4	1220	48	59	59	55	51	46	37	<20	64	58	56	50	45	44
Big Single	No	1	min	620	<20	<20	38	32	<20	<20	<20	<20	39	34	30	25	19	16
			2	770	30	43	41	38	31	<20	<20	<20	46	38	37	29	24	22
			3	920	36	43	45	42	40	29	<20	<20	49	43	40	34	29	27
			4	1150	47	49	49	46	46	40	31	<20	55	49	46	40	36	34
			max	1530	50	54	55	53	53	48	37	27	61	56	53	48	44	43
	Yes	1	min	620	<20	<20	38	32	<20	<20	<20	<20	39	34	30	25	19	16
			2	770	30	43	41	38	31	<20	<20	<20	46	38	37	29	24	22
			3	920	36	43	45	42	40	29	<20	<20	49	43	40	34	29	27
			4	1150	47	49	49	46	46	40	31	<20	55	49	46	40	36	34
			max	1530	50	54	55	53	53	48	37	27	61	56	53	48	44	43
		2	min	770	30	43	41	38	31	<20	<20	<20	46	38	37	29	24	22
			2	920	36	43	45	42	40	29	<20	<20	49	43	40	34	29	27
			3	1150	47	49	49	46	46	40	31	<20	55	49	46	40	36	34
			4	1340	47	51	52	49	49	44	33	24	57	53	48	44	40	39
max	1530	50	54	55	53	53	48	37	27	61	56	53	48	44	43			

*) Sound pressure level relates to a reverberation field of a 100 m³ room and reverberation time of 0.5 s
The stated air volume flow values and noise level values apply only for a fully open cross section

Sound pressure level dB(A)

The sound pressure specifications in the tables on pages 6 - 25 and page 28 apply to the reverberation sound field of a room with a volume of 100 m³ and reverberation time of 0.5 s.

To determine the expected sound pressure level at the installation location, refer to the A-rated sound power level in conjunction with the conversion diagram in Fig. 20.

Example:

In a conference room with dimensions of (20 x 10 x 4 m) 3 Cassette fan coil units of type GCS1 should be installed. The units are to be operated at speed 2, which means that the sound power level amounts to 43 dB(A), see page 28.

Determining the sound pressure level

1. Based on the room volume (800 m³), an absorption surface of approx. 100 m² Sabin is estimated in accordance with the diagram Fig. 20 "Homes, offices, hotel rooms, conference rooms".
2. The mean distance to Cassette unit is assumed to be approx. 3 m and the direction coefficient to be "2", Fig. 19. The intersection of the dotted sample lines in the diagram Fig. 18 makes up the sound level difference: DL~12 dB.
3. The anticipated A-rated sound pressure level L_p for the unit is thus:

$$L_p = L_w - \Delta L = 43 \text{ dB(A)} - 12 \text{ dB} = \underline{31 \text{ dB(A)}}$$

Increase in sound level of 3 units amounts to **approx. 4.5 dB** and is specified in the diagram Fig. 18.

Thus, the anticipated sound pressure level in the room amounts to:

$$L_{p_{ges.}} = L_p + 4.5 \text{ dB} = 31 \text{ dB(A)} + 4.5 \text{ dB} = \underline{35.5 \text{ dB(A)}}$$

The value of the minimum requirements, as specified in Tab. 1, is thus reached.

Table „A-sound pressure level“ LP¹⁾ as standard value according to VDI 2081

Room type	A-sound level dB(A)		average reverberation time s
Apartment	*	**	
(Hotel room) night	35/30	30/25	0.5
Residential rooms day	35	30	0.5
Auditoriums			
TV studio	30	25	1.5
Concert halls	30	25	2.0
Operas	30	25	1.5
Theatre	35	30	1.0
Cinema	40	30	1.0
Lecture halls	40	35	1.0
Reading rooms	40	35	1.0
Seminar rooms	40	35	1.0
Classrooms	40	35	1.0
Offices			
Conference rooms	40	35	1.0
Leisure rooms	40	35	0.5
Break rooms	40	35	0.5
small offices	40	35	0.5
Large offices	50	45	0.5
Church	35	25	3.0
Museum	40	35	1.5
Service halls	45	40	1.5
IT/Telecom. room	55	40	1.5

Tab. 1

* = Minimum requirements
** = Increased requirements

1) Also refer to applicable building regulations, DIN standards and VDI guidelines (e.g. DIN 4109, DIN 1946, VDI 2058);
2) depending on use

Sound level increase (dB)

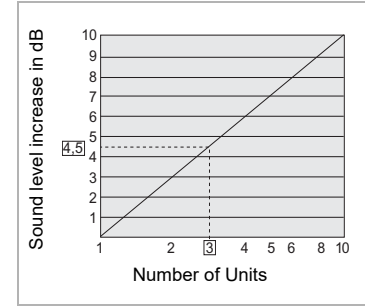


Fig. 1

Direction coefficient

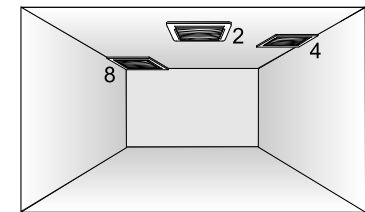


Fig. 2

Direction coefficient 2

(hemispherical radiation)
Unit is mounted stand-alone in the middle of a surface

Direction coefficient 4

(quarter-spherical radiation):
Unit borders with 2 indoor surfaces

Direction coefficient 8

(eight-spherical radiation):
Unit borders with 3 indoor surfaces

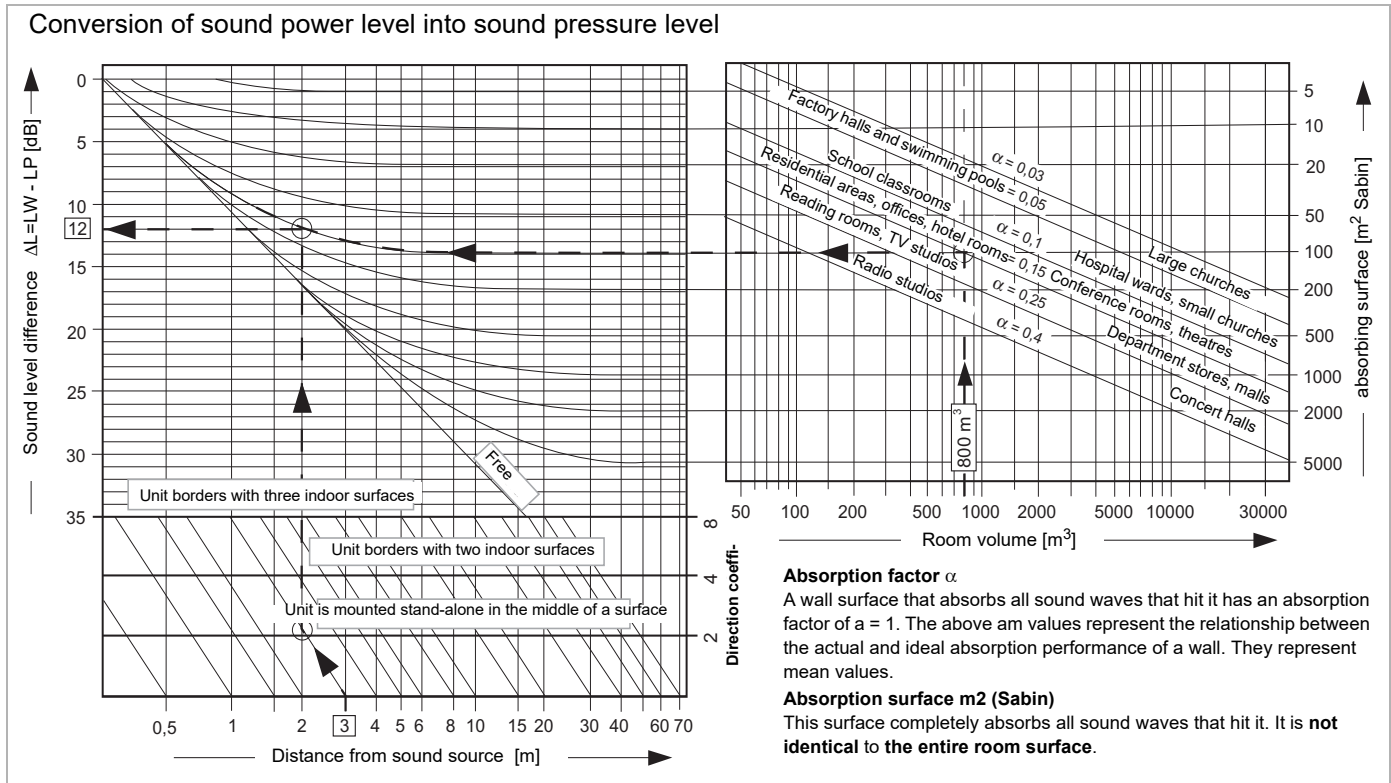


Fig. 3

Absorption factor α
A wall surface that absorbs all sound waves that hit it has an absorption factor of $\alpha = 1$. The above values represent the relationship between the actual and ideal absorption performance of a wall. They represent mean values.

Absorption surface m² (Sabin)
This surface completely absorbs all sound waves that hit it. It is not identical to the entire room surface.

Limiting curves

If narrower frequency components or outstanding single tones with high intensity peaks occur in a broad frequency range (e.g. on a fan), the dB(A) specification (sum level) is not sufficient as the latter does not sufficiently address the annoying noise nature. Thus, for the purposes of noise evaluation, so-called limiting curves (curves which produce the same level of inconvenience) are added. These curves also consider the combination of noise frequencies.

Although various noise-rating curves are used, NR (Noise Rating) curves specified in Fig. 30-2 became internationally accepted. Today NC curves (Noise Criteria) are only used for noise rating in the USA, as specified in Fig. 30-3.

If the observance of a particular NR or NC limiting curve is required for a room, the measured sound pressure may not exceed this limiting curve in any octave.

The sum level across all eight octave bands as per DIN is always around 7 to 10 dB higher than the value in the limiting curve. For HVAC equipment the difference of the sound pressure level lies in the medium range at 5 dB(A) because the noise spectrum does not always reach the same limiting curve in all octaves.

Example

The requirement of NR 28 or NC 26 must be observed.

The basic data in frame on page 28. In order to identify the sound pressure level in the individual octaves, the sound power values should be entered for Single type, capacity stage 1 and speed 2 in a table, see Table 2.

In order to obtain the sound pressure levels in the individual octaves, 12 dB must be subtracted from the sound power specifications entered in Table 2 on page 42. The new values can now be entered in the nomograms fig. 21 (NR) or fig. 22 (NC).

The highest point in the NR evaluation stands at NR 26 (1000 Hz) and NC 24 (1000 Hz) in the NC evaluation.

The requirement of NR 28 (NR 26 lies below NR 28) or NC 26 (NC 24 is below NC 26), is thus met.

Octave medium frequency for Single model capacity stage 1 and fan speed 2								
63	125	250	500	1000	2000	4000	8000	[Hz]
35	48	48	42	35	29	<20	<20	[dB]
-12	-12	-12	-12	-12	-12	-12	-12	[dB]
23	36	36	30	23	17	<8	<8	[dB]

Tab. 1

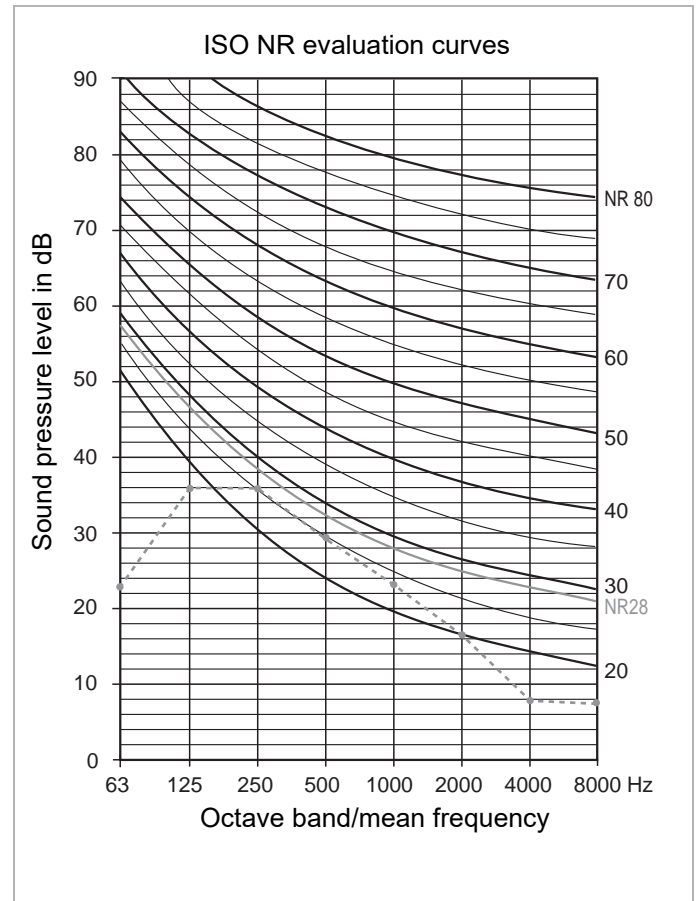


Fig. 1

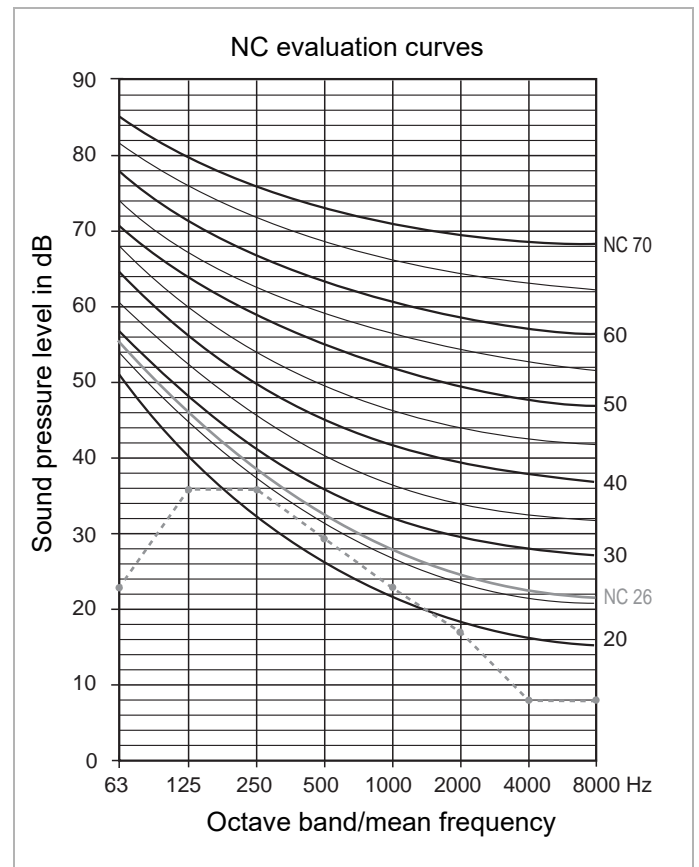


Fig. 2

Outlet variant SWIRL

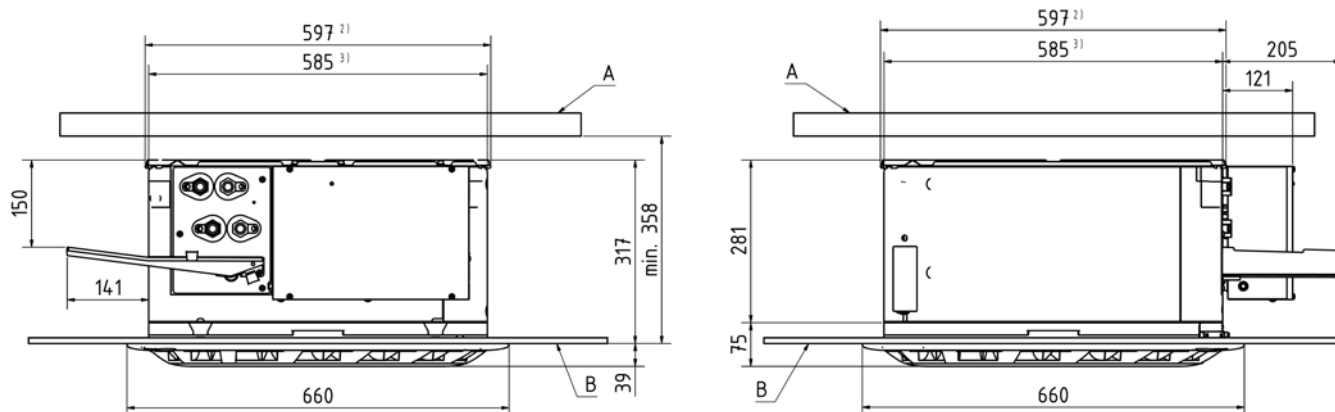


Fig. 1

4-way outlet variant

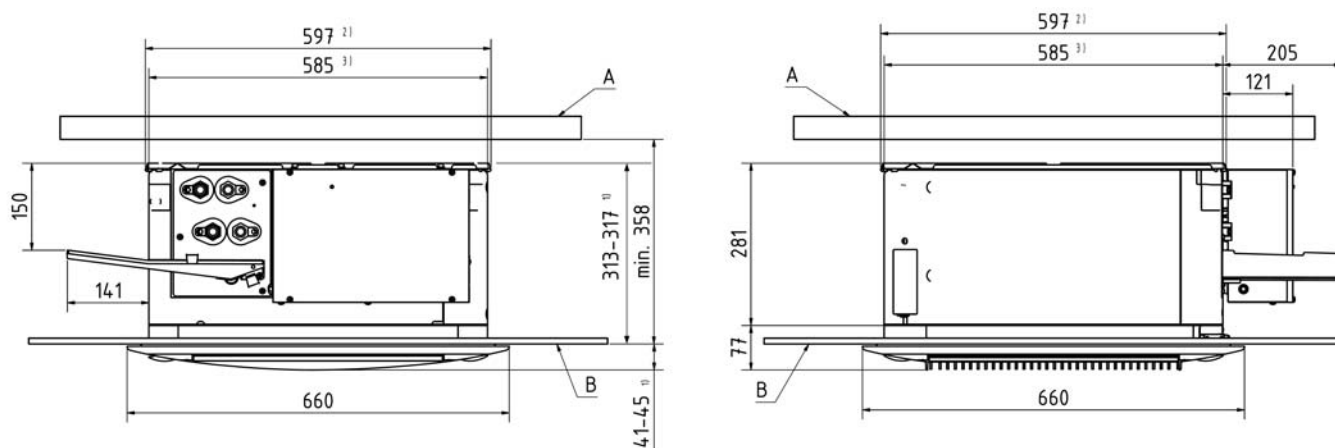


Fig. 2

1) Dimension depends on type of installation (s. Fig. 28/29, page 47)

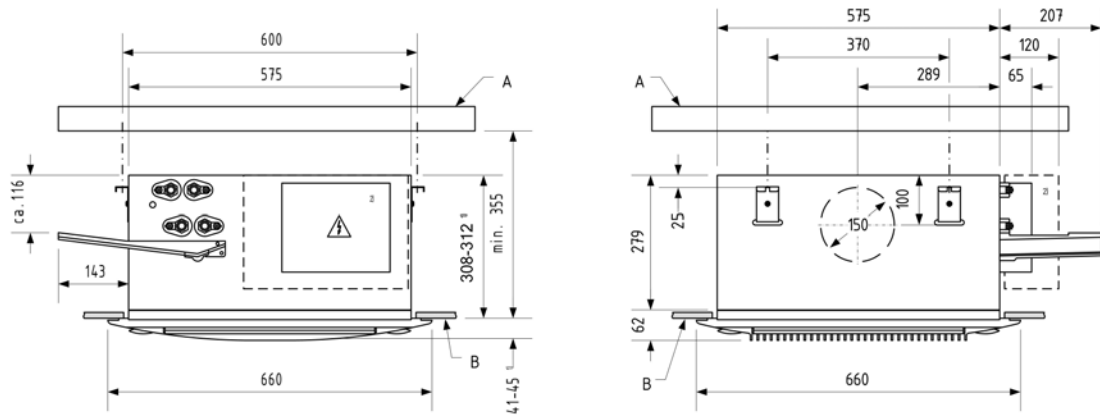
2) External dimension mounting plate

3) External dimension basic casing

A) Storey ceiling

B) Suspended ceiling

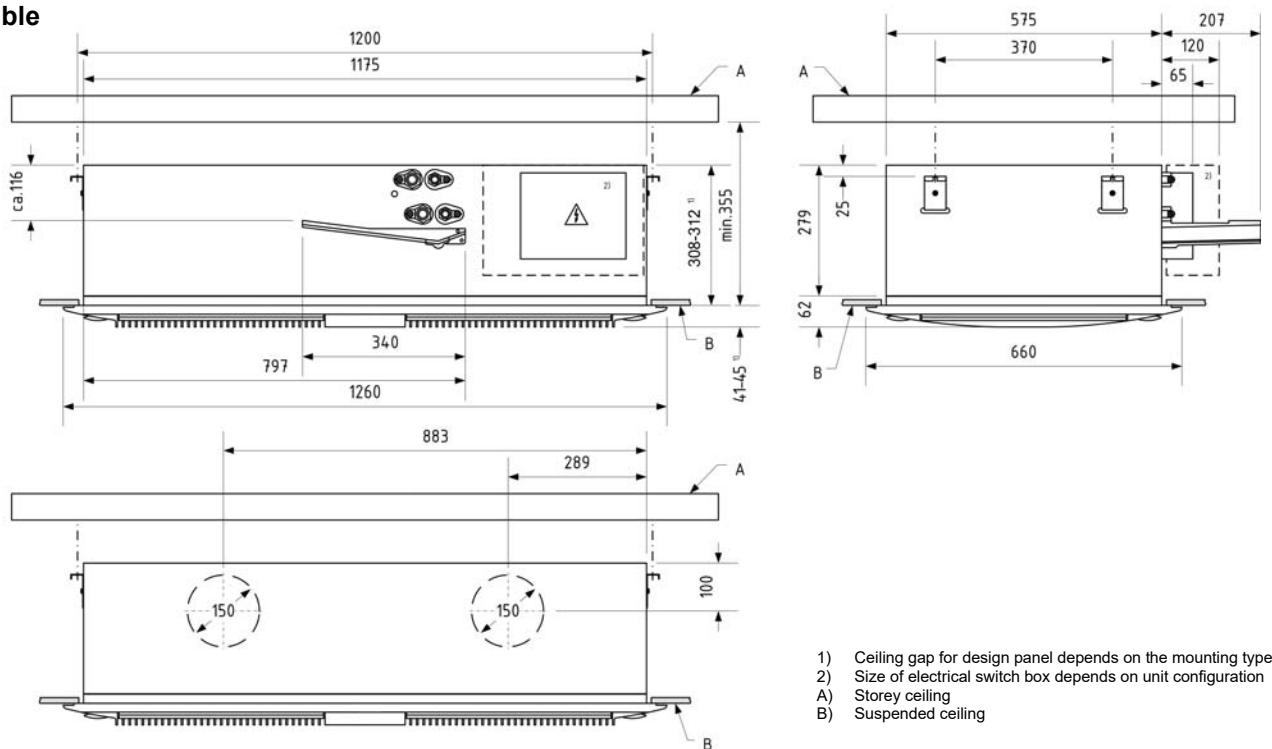
Single



- 1) Size of electrical switch box depends on unit configuration
- 2) Ceiling gap for design panel depends on the mounting type
- A) Storey ceiling
- B) Suspended ceiling

Fig. 3

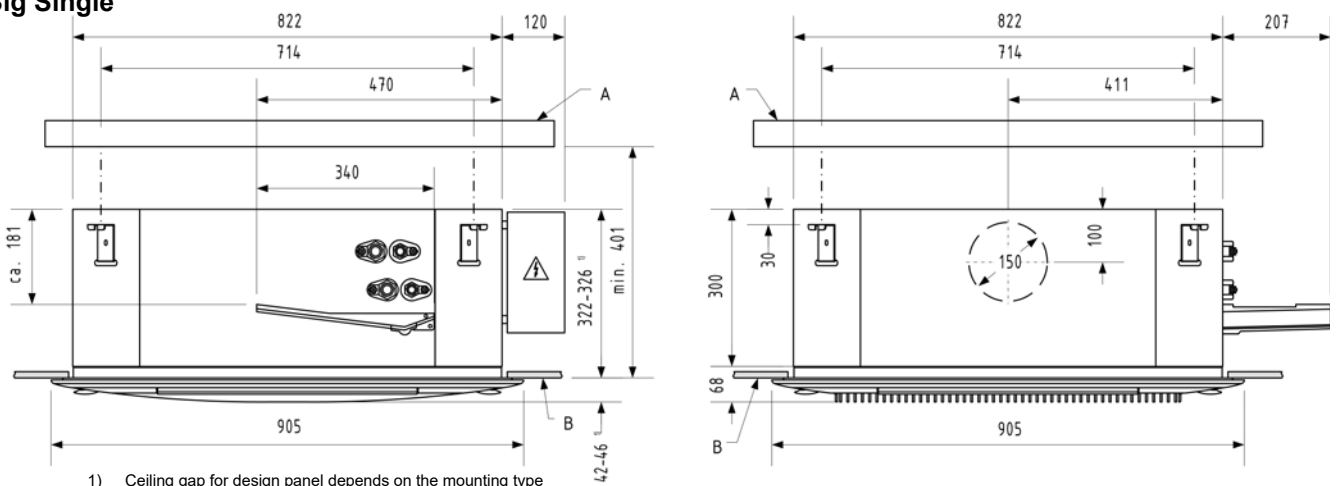
Double



- 1) Ceiling gap for design panel depends on the mounting type
- 2) Size of electrical switch box depends on unit configuration
- A) Storey ceiling
- B) Suspended ceiling

Fig. 4

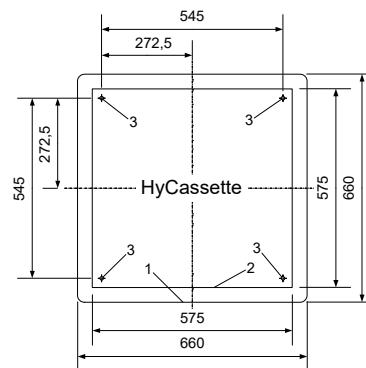
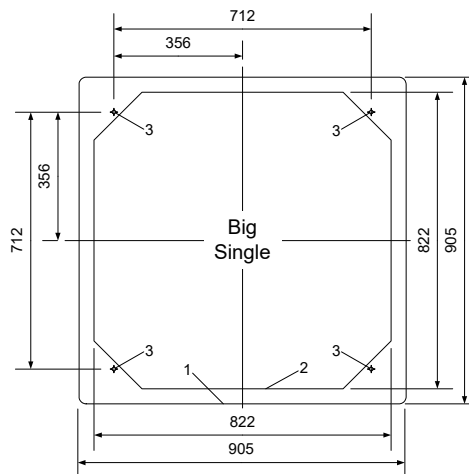
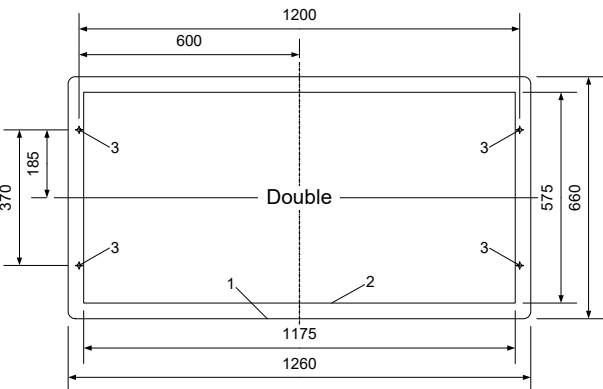
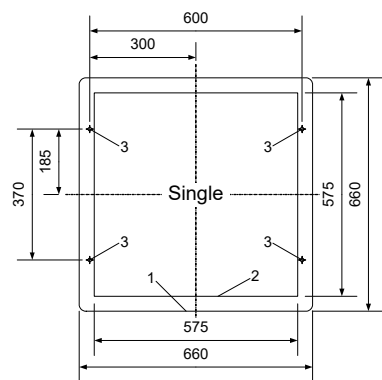
Big Single



- 1) Ceiling gap for design panel depends on the mounting type
- A) Storey ceiling
- B) Suspended ceiling

Fig. 5

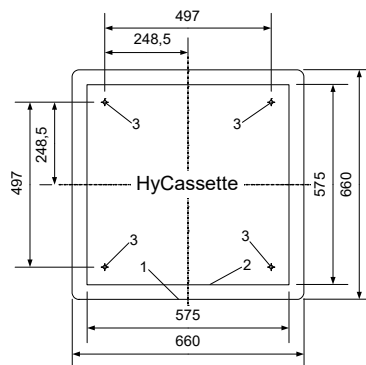
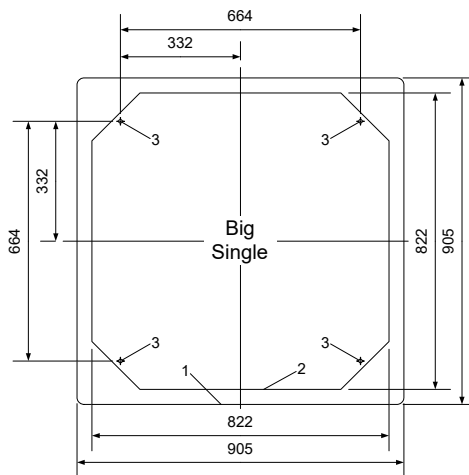
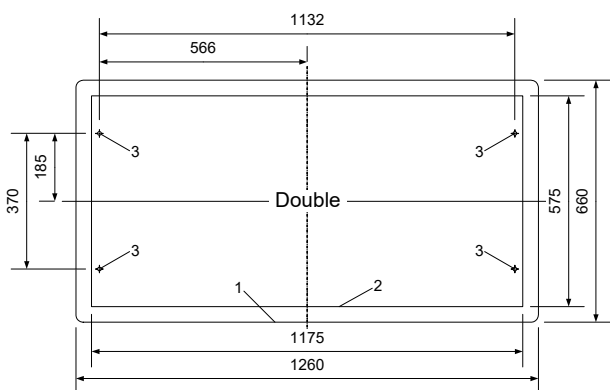
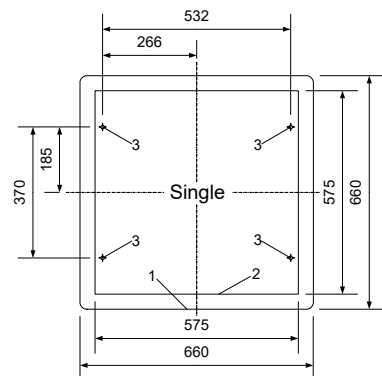
**Mounting sizes for installation
without mounting brackets**



- Pos. 1: Outline of design panel
- Pos. 2: Outline of basic unit
- Pos. 3: Mounting drill holes

Fig. 6

**Mounting sizes for installation with
mounting brackets (accessory items
ZGC0112)**



- Pos. 1: Outline of design panel
- Pos. 2: Outline of basic unit
- Pos. 3: Mounting drill holes

Fig. 7

Necessary clear opening in the intermediate ceiling

Depending on the selected section in the intermediate ceiling - the installation of the design panel requires a shadow gap of around 4 mm running around the entire perimeter (for variant 1 - see fig. 30), that can optionally be filled with a standard enclosed sealing strip (for variant 2, see fig. 30), or the design panel directly contacts the ceiling (for variant 3, see fig. 31).

Only mounting variant 3 is provided for HyCassette with SWIRL outlet.

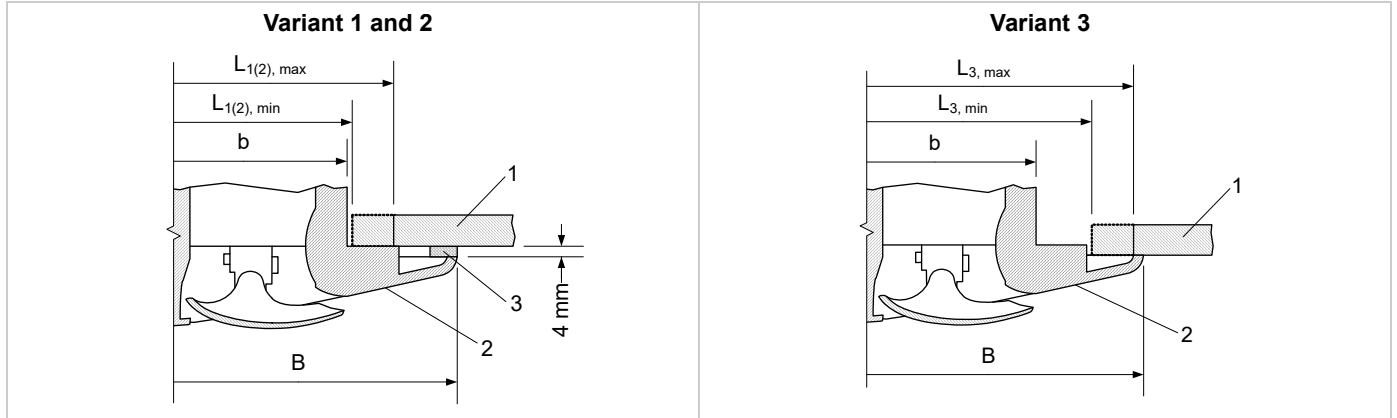


Fig. 8

Fig. 9

Pos. 1: Ceiling panel
Pos. 2: Design panel
Pos. 3: Sealing strip (optional)

Pos. 1: Ceiling panel
Pos. 2: Design panel

Clear opening	Unit type HyCassette		Unit type Single	Unit type Double	Unit type Big Single	
	SWIRL	4-way				
Variant 1 + 2	L _{1, min} [mm]	-	600 x 600	585 x 585	1185 x 585	832 x 832
	L _{1, max} [mm]	-	600 x 600	600 x 600	1200 x 600	850 x 850
	b [mm]	-	585 x 585	575 x 575	1175 x 575	822 x 822
	B [mm]	-	660 x 660	660 x 660	1260 x 660	905 x 905
Variant 3	L _{3, min} [mm]	600 x 600	615 x 615	615 x 615	1215 x 615	862 x 862
	L _{3, max} [mm]	640 x 640	640 x 640	640 x 640	1240 x 640	885 x 885
	b [mm]	585 x 585	585 x 585	575 x 575	1175 x 575	822 x 822
	B [mm]	660 x 660	660 x 660	660 x 660	1260 x 660	905 x 905

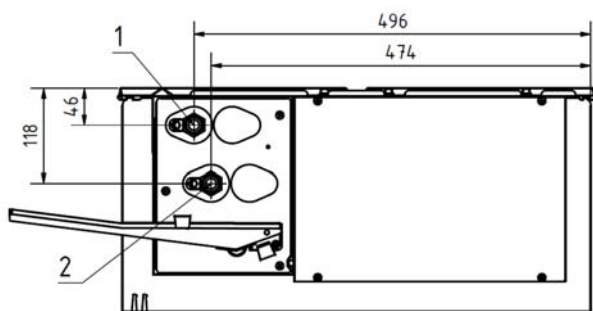
Weights

Unit type	CS ¹⁾	2-pipe [kg]	4-pipe [kg]
HyCassette	0	29	31
	1	31	31
	2	32	31
	3	30	-
	4	32	-
Single	0	27	28
	1	27	28
	2	27	28
Double	1	53	54
	2	53	54
Big Single	1	44	46
	2	44	46

¹⁾ CS = capacity stage

The specified weight data apply to empty heat exchangers including a design panel

Medium connections (warm/chilled water) 2-pipe system



- ① Supply line
- ② Return line

All connections: R 1/2" internal thread

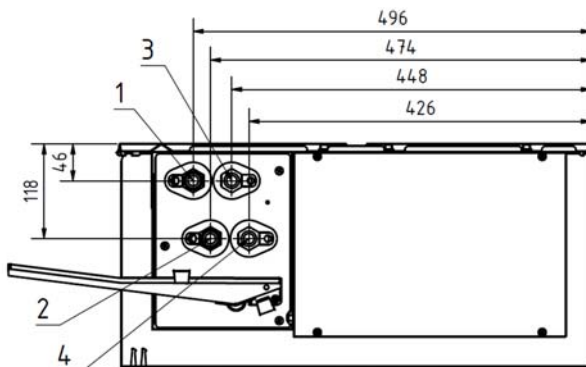
Fig. 10

Air Handling Unit Type	CS ¹⁾	Water charge[l]	
		2-pipe system	2-pipe system + E-heating
HyCassette	0	1.8	1.5
	1	2.3	2.3
	2	3.1	3.1
	3	2.3	2.3
	4	3.1	3.1

¹⁾ CS = capacity stage

Specified dimensions are "standard values". The total of tolerances may result in deviations of up to 10 mm (or more in some cases).

Medium connections (warm/chilled water) 4-pipe system



- ① Supply line cooling
- ② Return line cooling
- ③ Supply line heating
- ④ Return line heating

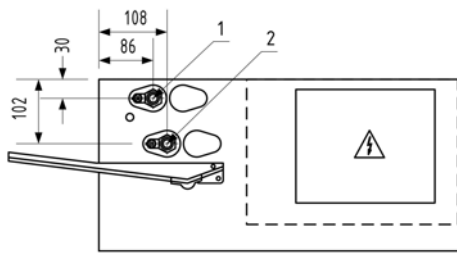
All connections: R 1/2" internal thread

Fig. 11

Air Handling Unit Type	CS ¹⁾	Water charge[l]			
		4-pipe system		4-pipe system + E heating	
		Cooling	Heating	Cooling	Heating
HyCassette SWIRL	0	2.1	0.4	1.7	0.4
	1	2.1	0.4	1.7	0.6
	2	2.1	0.4	1.7	0.6
HyCassette 4-way	0	2.1	0.4	1.7	0.6
	1	2.1	0.4	1.7	0.6
	2	2.1	0.4	1.7	0.6

¹⁾ CS = capacity stage

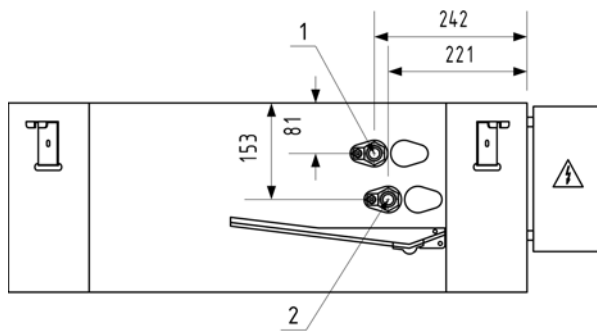
Coil connections internal screw thread (warm/chilled water) 2-pipe system (position of connections identical on single and double models)



① supply line ② return line

Fig. 12

Coil connections internal screw thread (warm/chilled water) 2-pipe system on Big Single model



① supply line ② return line

Fig. 14

Air Handling Unit Type	Heating or cooling connections	
	Inlet line [R]	Outlet line [R]
Single	1/2"	1/2"
Double	3/4"	3/4"
Big Single	3/4"	3/4"

Unit type	CS ¹⁾	Water charge[l]	
		2-pipe system	
Single	0	1.5	
	1	2.1	
	2	2.1	
Double	1	4.2	
	2	4.2	
Big Single	1	4.6 ²⁾	4.3 ³⁾
	2	4.6 ²⁾	4.3 ³⁾

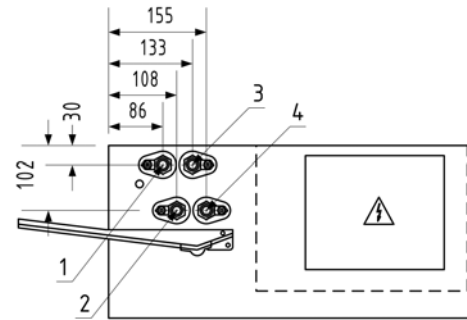
Specified dimensions are "standard values". The total of tolerances may result in deviations of up to 10 mm (or more in some cases).

¹⁾ CS = capacity stage

²⁾ without e-heating

³⁾ with e-heating

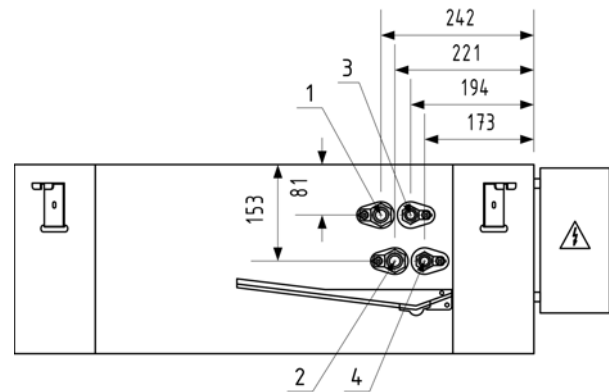
Coil connections internal screw thread (warm/chilled water) 4-pipe system (position of connections identical on single and double models)



① supply line cooling ② return line cooling
③ supply line heating ④ return line heating

Fig. 13

Coil connections internal screw thread (warm/chilled water) 4-pipe system on Big Single model



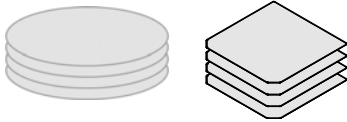
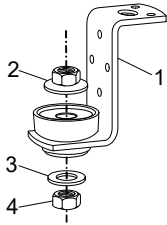
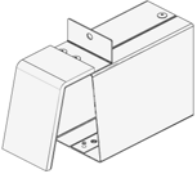
① supply line cooling ② return line cooling
③ supply line heating ④ return line heating

Fig. 15

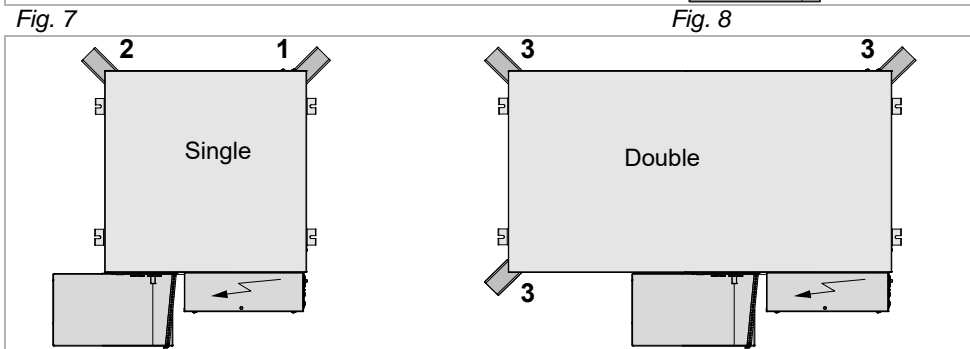
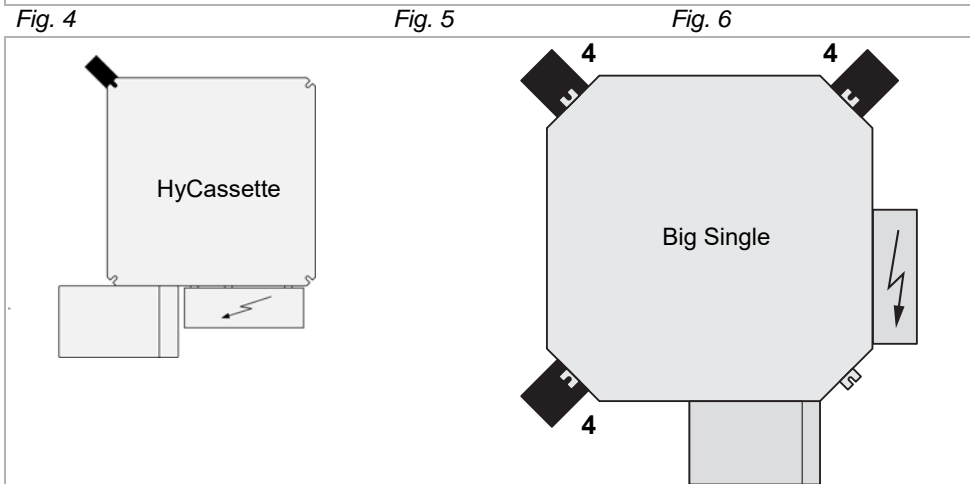
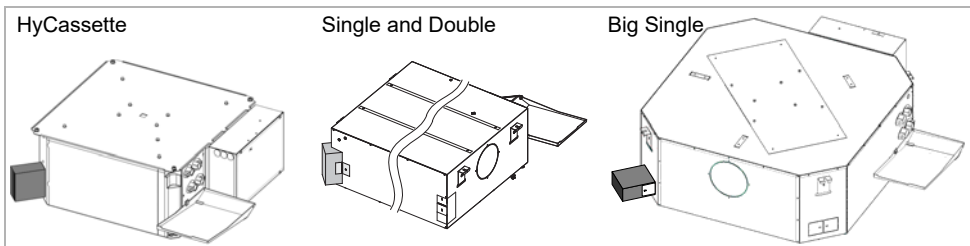
Unit type	Cooling connection		Heating connection	
	Inlet line [R]	Outlet line [R]	Inlet line [R]	Outlet line [R]
Single	1/2"	1/2"	1/2"	1/2"
Double	3/4"	3/4"	1/2"	1/2"
Big Single	3/4"	3/4"	1/2"	1/2"

Unit type	CS ¹⁾	Water charge[l]	
		4-pipe system	
		Heating	Cooling
Single	0	0.8	1.5
	1	0.8	1.5
	2	0.8	1.5
Double	1	1.6	3.0
	2	1.6	3.0
Big Single	1	1.6	3.1
	2	1.6	3.1

¹⁾ CS = capacity stage

 <p>Fig. 1</p>	<p>Spare filter set (HyCassette Single and Big Single = 4 pieces, Double = 8 pieces) Plastic filter with frame, filter grade G1 (EN 779), regenerative filter medium</p> <table border="1"> <thead> <tr> <th rowspan="3">Order No.</th> <th colspan="2">HyCassette</th> <th rowspan="2">Single</th> <th rowspan="2">Double</th> <th rowspan="2">Big Single</th> </tr> <tr> <th>SWIRL</th> <th>4-Wege</th> </tr> </thead> <tbody> <tr> <td>ZGCC111</td> <td>ZGCS111</td> <td>ZGCS111</td> <td>ZGCD111</td> <td>ZGCB111</td> </tr> </tbody> </table>					Order No.	HyCassette		Single	Double	Big Single	SWIRL	4-Wege	ZGCC111	ZGCS111	ZGCS111	ZGCD111	ZGCB111
	Order No.	HyCassette		Single	Double		Big Single											
SWIRL		4-Wege																
ZGCC111		ZGCS111	ZGCS111	ZGCD111	ZGCB111													
<p>Spare filter single, plastic filter with frame, filter grade G1 (EN 779), regenerative</p> <table border="1"> <thead> <tr> <th rowspan="3">Order No.</th> <th colspan="2">HyCassette</th> <th rowspan="2">Single</th> <th rowspan="2">Double</th> <th rowspan="2">Big Single</th> </tr> <tr> <th>SWIRL</th> <th>4-Wege</th> </tr> </thead> <tbody> <tr> <td>ZGCC112</td> <td>ZGCS112</td> <td>ZGCS112</td> <td>ZGCD112</td> <td>ZGCB112</td> </tr> </tbody> </table>					Order No.	HyCassette		Single	Double	Big Single	SWIRL	4-Wege	ZGCC112	ZGCS112	ZGCS112	ZGCD112	ZGCB112	
Order No.	HyCassette		Single	Double		Big Single												
	SWIRL	4-Wege																
	ZGCC112	ZGCS112	ZGCS112	ZGCD112	ZGCB112													
 <p>Fig. 2</p>	<p>Mounting bracket set, galvanized steel, rubber 1 set comprising:</p> <ul style="list-style-type: none"> – Mounting bracket with anti-vibration isolators (4 pieces, Pos. 1) – Nut M8 with permanently attached disk (8 pieces, Pos. 2) – Washer (8 pieces, Pos. 3) – Nut M8 (8 pieces, Pos. 4) <p>Order number: ZGC0112</p>																	
	 <p>Fig. 3</p>	<p>Adapter for primary air supply Necessary accessories:</p> <ul style="list-style-type: none"> – Galvanized metal sheet – Partial polyethylene insulation – securing bolt included <p>Order number: ZGC0113</p>																

Supply of treated air



All FläktGroup Cassette-Geko units are fitted with connections for primary air on the unit corners.

The primary air openings make it possible to insert a standard rectangular duct with dimensions 110 x 55 mm. The HyCassette-Geko unit needs an adapter (FläktGroup accessories ZGC0113).

The maximum primary air volume flow may not exceed 20 % of the unit air volume flow at medium fan speed. The primary air opening is limited to 100 m³/h primary air supply

On HyCassette and Single unit type with electric heating, primary air supply is possible on one unit corner (fig. 44 and fig. 46, Pos. 1).

On Single type without electric heating primary air opening is possible on two unit corners (fig. 46, Pos. 1 + Pos. 2).

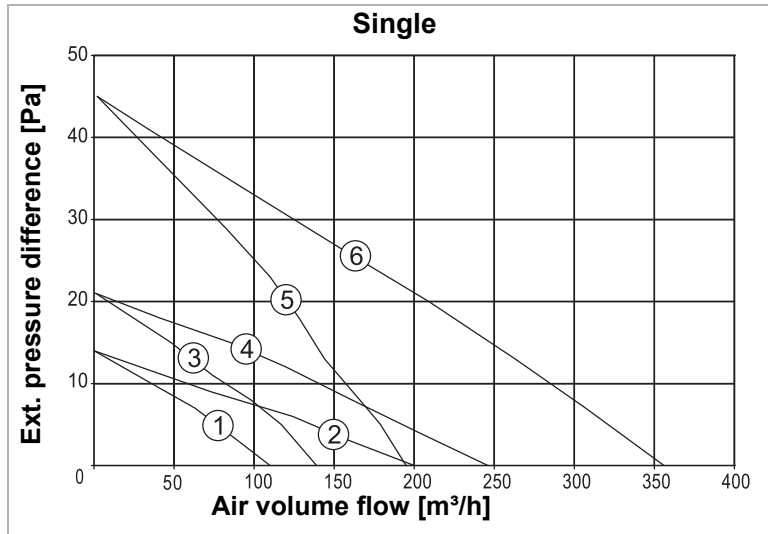
On Big Single type primary air opening is possible on three unit corners (fig. 45, Pos. 4).

On Double unit type primary air opening is possible on three unit corners (fig. 47, Pos. 3).

Note:
Primary air is treated air - filtered and conditioned to cover the base load.

The FläktGroup Cassette fan coil units are fitted with 2 air distribution openings in the lateral sides. These openings enable connection of on-site ducts (e. g. Flex-pipe DN 150) to enable delivery of supply air to distant room zones or adjacent rooms with primary air. Unit air-directing fins can be opened or closed.

Please consider that depending on the quantity of the air outlets - air volume and pressure can change. The resulting air volume which flows through these outlets depends on the pressure difference of the on-site duct system. Refer to the diagrams below for the exact data. The diagrams apply for the maximum speed of the unit.

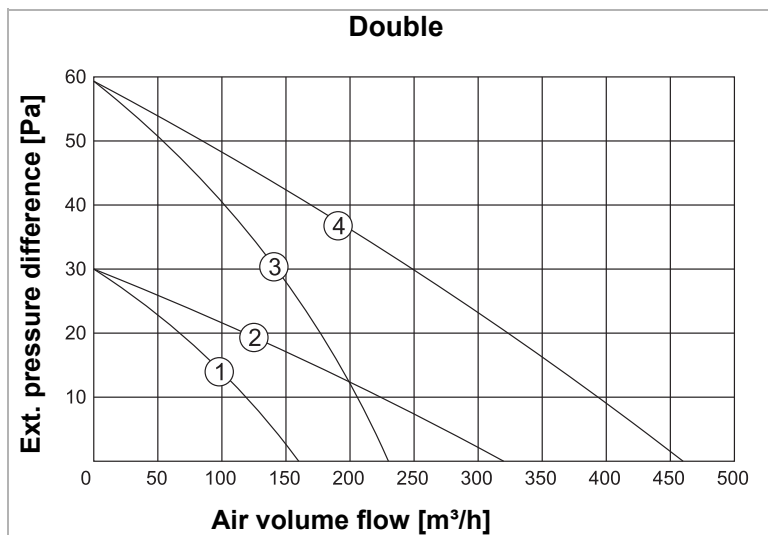


Dimensioning:

For unit layout and technical specification, it is assumed that the total air volume flow is not influenced by using air outlets. The sum of air volume flow through air-directing fins and external air outlets corresponds to data on pages 6 to 25.

- Pos. 1: CS0 - 1 Outlet used
- Pos. 2: CS0 - 2 Outlets used
- Pos. 3: CS1 - 1 Outlet used
- Pos. 4: CS1 - 2 Outlets used
- Pos. 5: CS2 - 1 Outlet used
- Pos. 6: CS2 - 2 Outlets used

Fig. 11

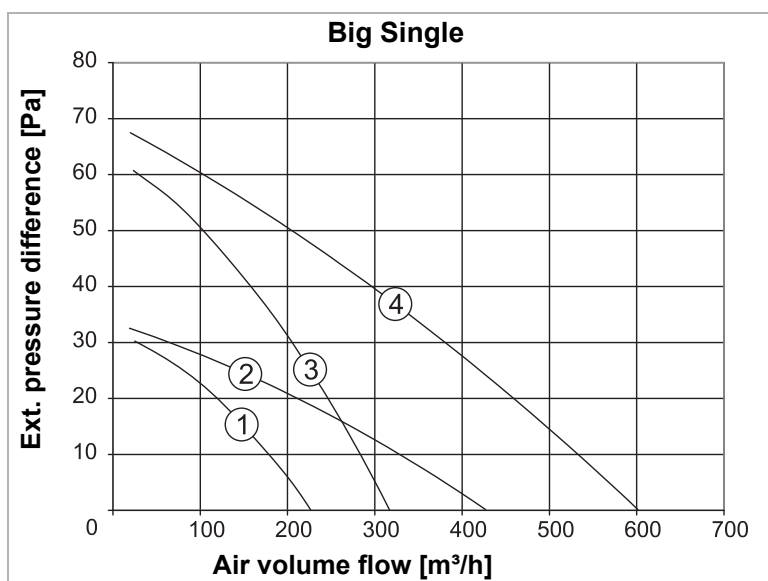


Note:

All air duct leading from unit must be thermally insulated. Otherwise there is a risk of condensation on the external sides of the ductwork.

- Pos. 1: CS1 - 1 Outlet used
- Pos. 2: CS1 - 2 Outlets used
- Pos. 3: CS2 - 1 Outlet used
- Pos. 4: CS2 - 2 Outlets used

Fig. 12



Note:

All air duct leading from unit must be thermally insulated. Otherwise there is a risk of condensation on the external sides of the ductwork.

- Pos. 1: CS1 - 1 Outlet used
- Pos. 2: CS1 - 2 Outlets used
- Pos. 3: CS2 - 1 Outlet used
- Pos. 4: CS2 - 2 Outlets used

Fig. 13

2-point open/close operation

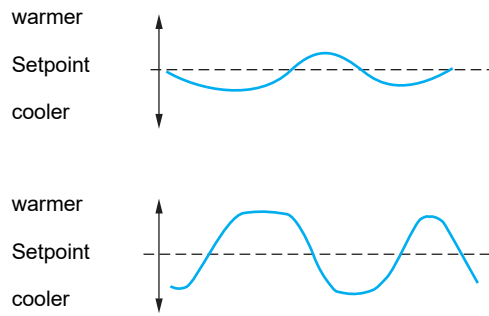
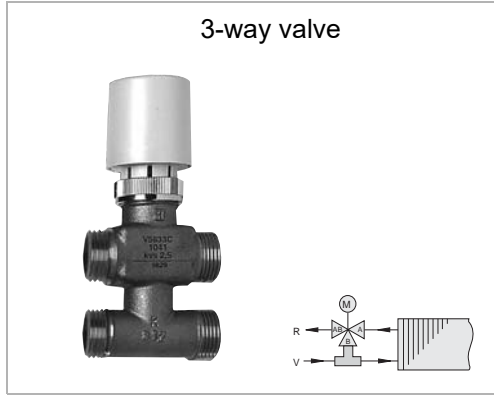


Fig. 1: (2-point open/close operation)

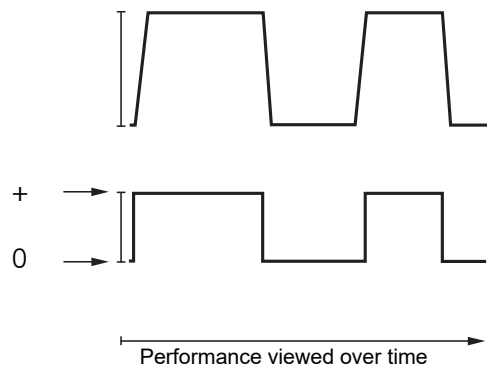
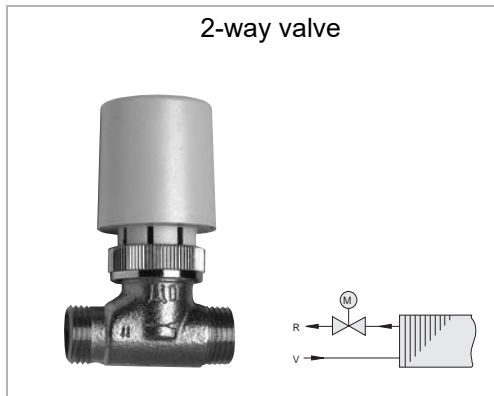


Fig. 2: (2-point open/close operation)

3-point modulating operation

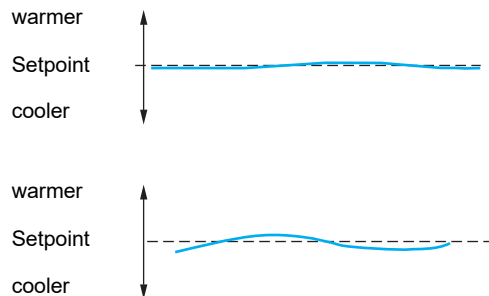
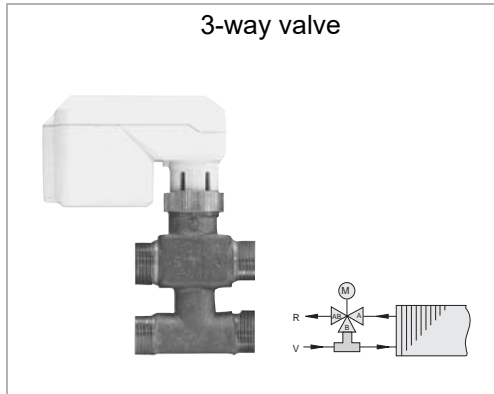


Fig. 3: (modulating operation)

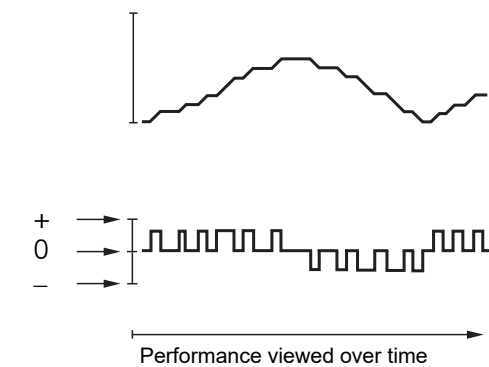
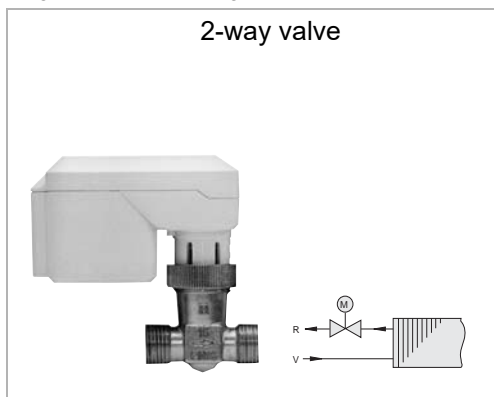


Fig. 4: (modulating operation)

2-point modulating operation

Room temperature is controlled with 2-point control mode.

Temperature is controlled in centre in 2-point mode at air outlet.

The valve is either open or closed.

Set command for valve
+ = valve "open"
0 = valve "closed"

3-point modulating operation

Room temperature is controlled with 3-point control mode.

Temperature is controlled in centre in 3-point mode at air outlet.

The valve setting corresponds in percent to the mass flow (0 . . 100 %).

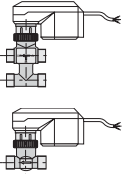
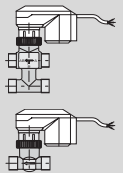
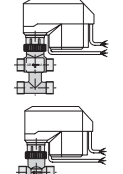
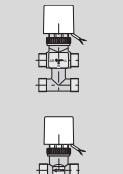
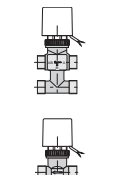
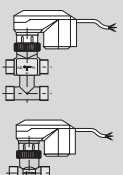
Set command for valve
+ = valve "Open"
- = valve "Close"

The following table presents all available valves models with main features and compatible control equipment.

The following symbols are used:

„•“ = Valve type compatible with the corresponding control panel or electric equipment.

„–“ = Valve type **not** compatible with the corresponding control panel or electrical equipment.

Valve Type	Function type	Control type	Voltage	Compatible control equipment	On-site controls
				Thermostat switch / CET.ACEC Controller	
	R	3 point (modulating)	230 V~	–	✓
	N	3 point (modulating)	24 V~	–	✓
	C	3 point (modulating) (2 floating auxiliary switches)	230 V~	–	✓
	T	2 point (modulating)	230 V~	✓	✓
	Q	2 point (modulating)	24 V~	–	✓
	S	continuous	24 V~ (analogsignal 0..10 V)	–	✓

Reversible modulating actuator 24 V AC and 0-10 V AC / Thermoelectric actuator 230 V AC and 24 V AC

Continuous and virtually continuous valve actuators

Plastic motor casing

Floating auxiliary switch:

Switch S1 (valve signal 100% open)

Switch S2 (valve signal setting settable 0..100%)

Specifications:

Function type	R	C	N	S
Control type	3 point (modulating)	3 point (modulating)	3 point (modulating)	Continuous
Order number Actuator (supplied separately)	308 173	312 370	311 947	311 948
Operating voltage	230 V AC 50/60 Hz	230 V AC 50/60 Hz	24 V AC 50/60 Hz	0-10 V/24 V AC 50/60Hz
Power consumption	7 VA	7 VA	0.7 VA	1.4 VA
Protection class	IP43	IP43	IP43	IP43
Running time (approx.)	120 s/50 Hz	150 s/50 Hz	120 s/50 Hz	120s/50 Hz
Operating force [N]	180	180	180	180
Control stroke [mm]	6,5	6,5	6,5	6,5
Max. allowed ambient temp.	60 °C	60 °C	60 °C	60 °C
Connection-cable [m]	2,7	2,7	2,7	2,7
Load capacity Auxiliary switch	-	max. 5 (1) A/250 V max. 100 mA/24 V	-	-
Rated dimensions [mm]				

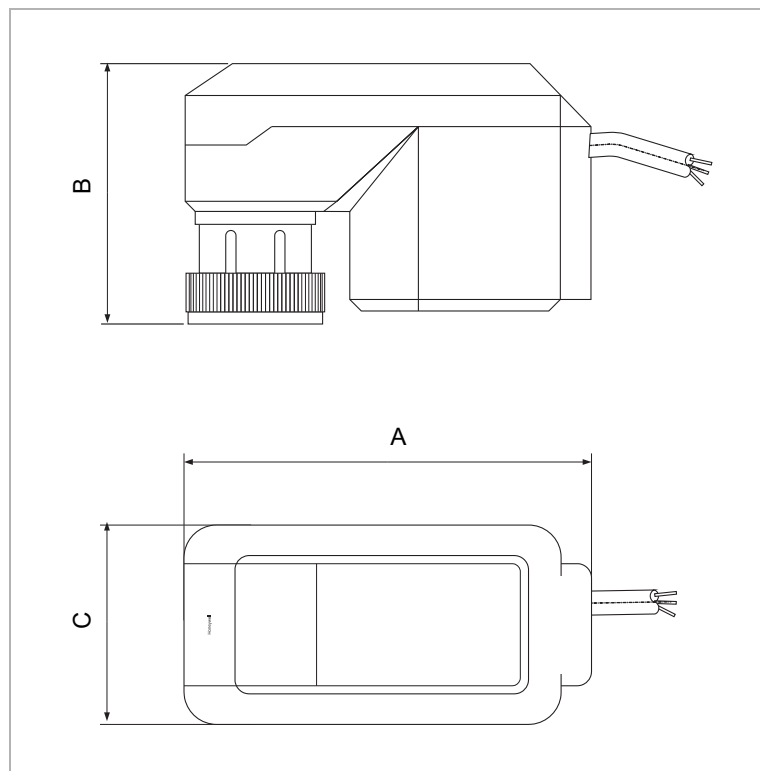


Fig. 1: For dimensions of continuous and virtually continuous valve actuators refer to table

Thermoelectric valve actuators

Plastic actuator casing

Technical Data:

Function type	T		Q	
Control type	2 point (modulating)		2 point (modulating)	
Type of valve body	2-way	3-way	2-way	3-way
Order-Nr. actuator (supplied separately)	313455	313522	313457	313520
Operating voltage	230 V AC 50/60 Hz		24 V AC 50/60 Hz	
Power consumption [W]	3		3	
Heat up current [A]	0,3		0,6	
Rated current [A]	0,013		0,09	
Protection class	IP43		IP43	
Running time approx. [min]	3		3	
Operating force [N]	90		90	
Control stroke [mm]	4		4	
Max. allowed ambient temp. [°C]	50		50	

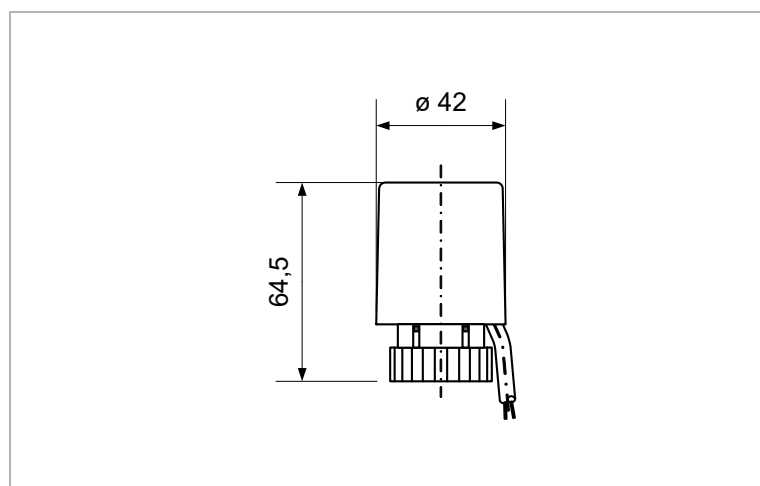


Fig. 2: Dimensions of thermoelectric valve actuators in mm

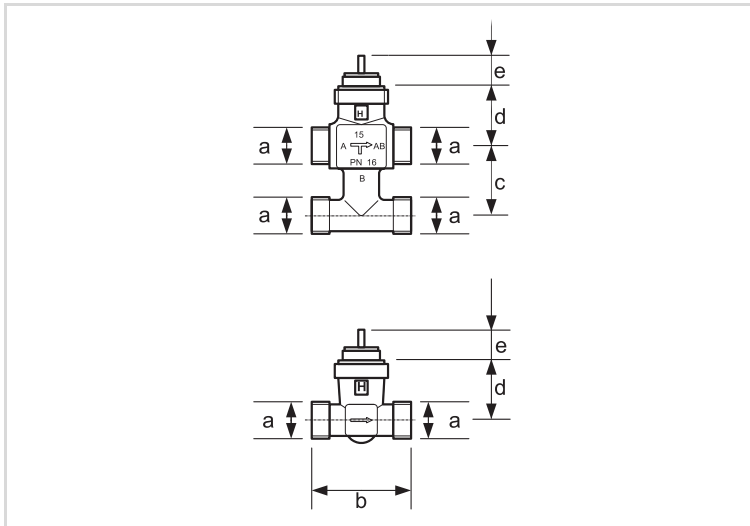


Fig. 3: Dimensions of two and three-way valves

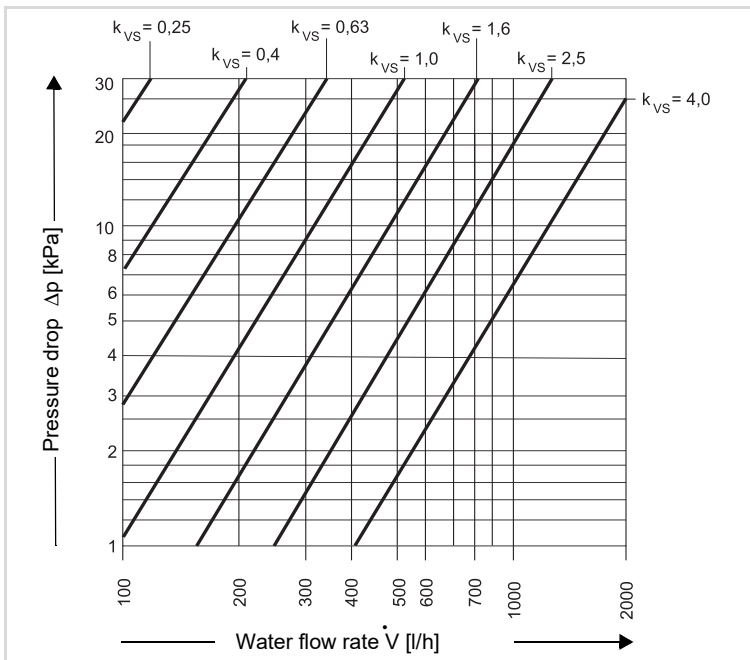


Fig. 4: k_{VS} -values for valves with spindle hub 6.5 mm

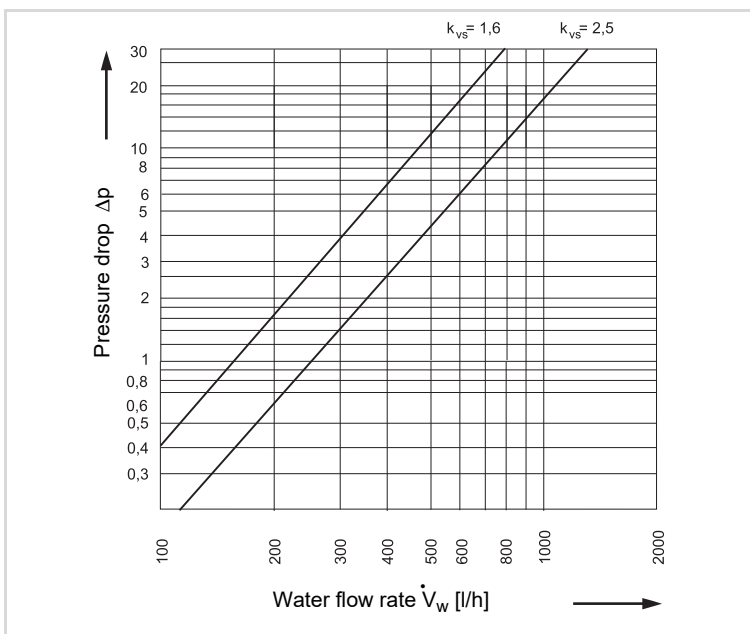


Fig. 5: k_{VS} -values for valves with spindle stroke 2.5 mm

Two and three-way valves

- Brass or red brass valve body
- Stainless steel spindle and cone

Technical Data:

Rated pressure	16 bar					
Max. temperature of medium	110 °C					
max. glycol concentration	50 %					
Rated dimensions [mm]		a	b	c	d	e
	Stroke 2.5 mm	G 1/2" A G 3/4" A	56 66	40 40	24 (34)* 24.5 (33)*	5 5
	Stroke 6.5 mm	G 1/2" A G 3/4" A	56 66	40 40	34 33	18 18

*) Values in brackets apply to 4-way valve

Three-way valves

Valve body with spindle stroke 2.5 mm:

DN	k_{VS} A-AB [m ³ /h]	k_{VS} B-AB [m ³ /h]	Valve external thread	$D_{p_{max}}$ [kPa]	Order-Nr. (loose)
15	1,6	1,6	G 1/2" A	150	313453
20	2,5	2,5	G 3/4" A	50	313452

For suitable thermoelectric valve actuator refer to Page 54

Valve body with spindle stroke 6.5 mm:

DN	k_{VS} A-AB [m ³ /h]	k_{VS} B-AB [m ³ /h]	Valve external thread	$D_{p_{max}}$ [kPa]	Order-Nr. (loose)
15	0,25	0,16	G 1/2" A	800	308209
15	0,40	0,25	G 1/2" A	800	308143
15	0,63	0,40	G 1/2" A	800	308142
15	1,00	0,63	G 1/2" A	250	308141
15	1,60	1,00	G 1/2" A	250	308140
20	2,50	1,60	G 3/4" A	100	308139
20	4,00	2,50	G 3/4" A	100	308138

For suitable continuous/continuous valve actuators refer to Page 54

Two-way valves

Valve body with spindle stroke 2.5 mm:

DN	k_{VS} [m ³ /h]	Valve external thread	$D_{p_{max}}$ [kPa]	Order-Nr. (loose)
15	1,6	G 1/2" A	200	313451
20	2,5	G 3/4" A	200	313450

For suitable thermoelectric valve actuator refer to Page 54

Valve body with spindle stroke 6.5 mm:

DN	k_{VS} [m ³ /h]	Valve external thread	$D_{p_{max}}$ [kPa]	Order-Nr. (loose)
15	0,25	G 1/2" A	1600	310320
15	0,40	G 1/2" A	1600	310319
15	0,63	G 1/2" A	1600	310318
15	1,00	G 1/2" A	1200	310317
15	1,60	G 1/2" A	1200	310316
20	2,50	G 3/4" A	400	310315
20	4,00	G 3/4" A	400	310314

For suitable continuous/continuous valve actuators refer to Page 54

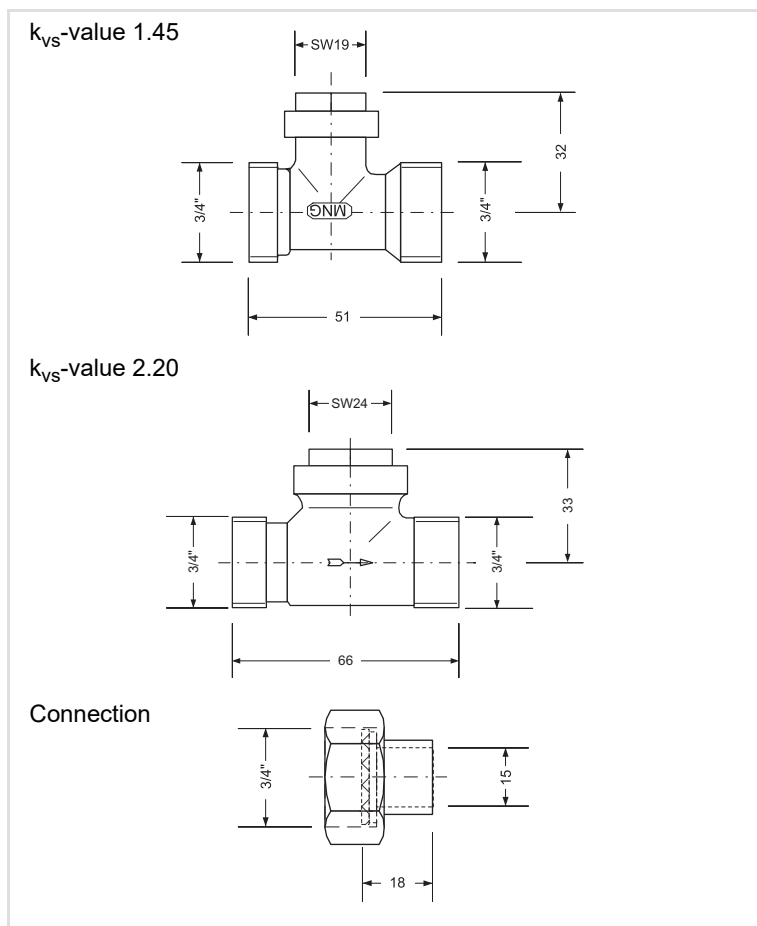


Fig. 1

All valves can be optionally supplied with shut-off valves at the outlet.

These valves are used for shutting off the cooling and/or heating medium as well as for adjusting and equalizing medium flow rate.

Depending on rated size of the control valve, shut-off valves are used with k_{VS} -value of 1.45 or k_{VS} -value 2.20.

Technical data:

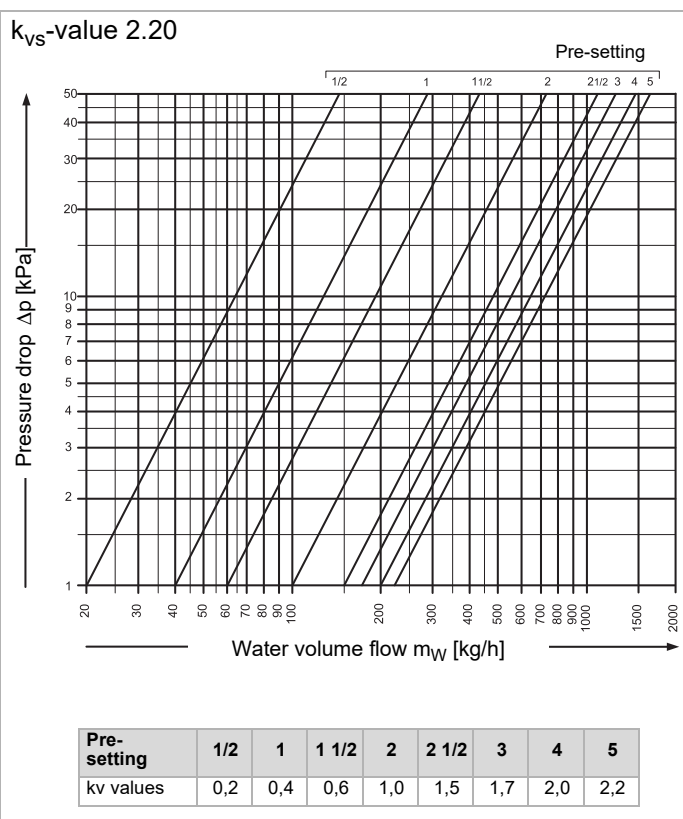
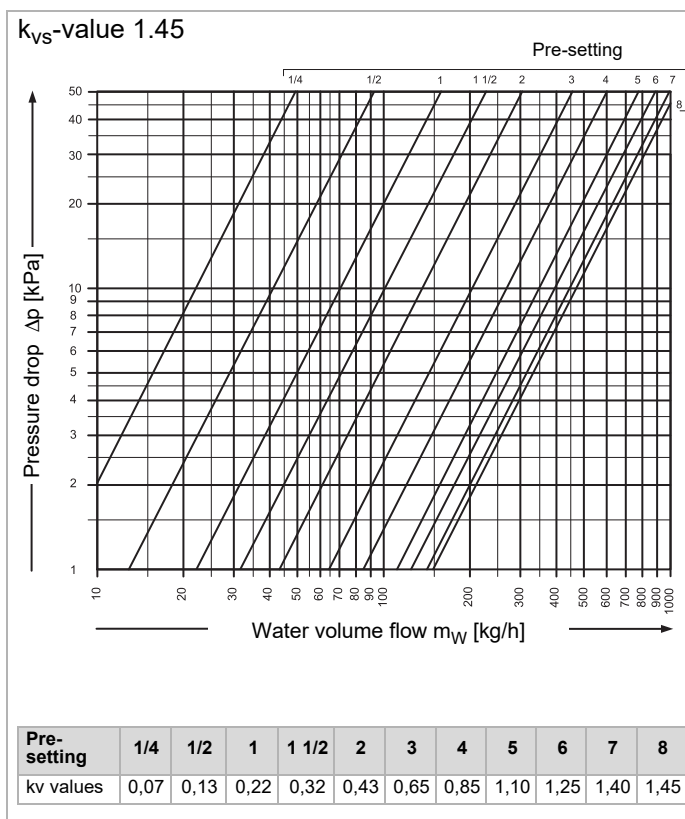
Rated pressure: 10 bar
Max. water inlet temperature: 130 °C
pH-value: 8 - 9,5

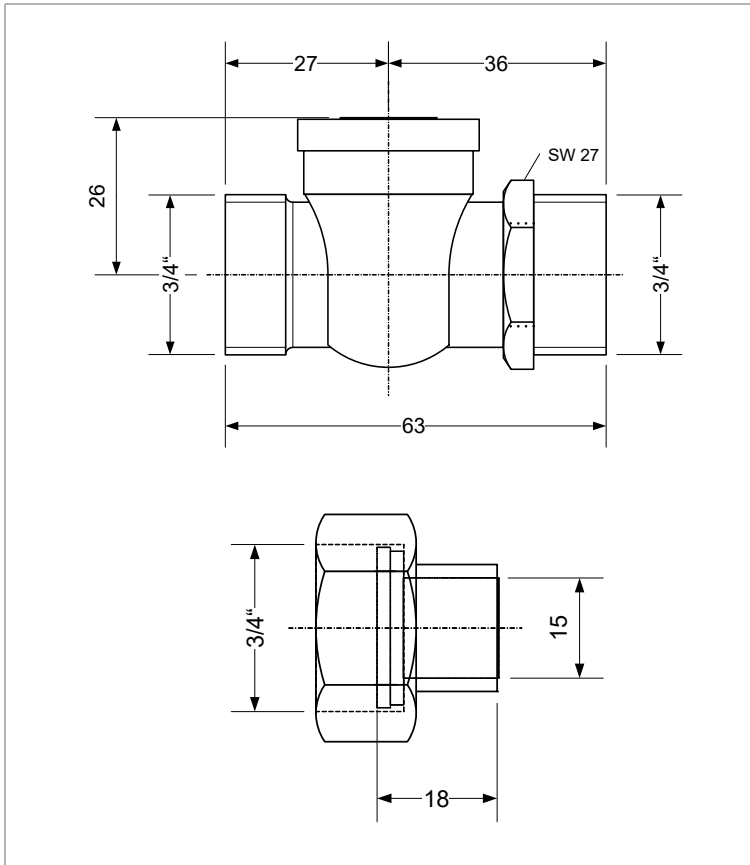
As medium water with a max. 50% glycol rate is allowed.

Depending on the fitted valves, the shut-off valves are supplied with outer thread connection (only HyCassette-Geko: designation number „4“, see unit type code Page 61) or with connecting nut and solder fitting (HyCassette-Geko: designation number „5“, refer to unit type code Page 61, or Cassette-Geko: designation number "1", see unit type code Page 61).

Control valve		Shut-off valve		
k_{VS} -values	Connection thread	k_{VS} -values	Connection thread	Solder fitting for Cu pipe
0.25-1,60	G 1/2" A	1,45	G 3/4" A	Ø 15
2.50-4,00	G 3/4" A	2,20	G 3/4" A	Ø 15

The setting of the necessary medium flow rate is carried out on the basis of the following diagrams. The pre-setting corresponds to the number of rotations to the left of the setting/adjustment screw starting from the right stop position (valve closed).





All HyCassette valves can be optionally supplied with ball traps.

These are necessary to shut off cooling or heating medium.

Material:

Valve body: brass
Ball: brass, ground
Gasket: rubber

Technical data:

Rated pressure: 10 bar
Max. water inlet temperature: 110 °C
 k_{VS} -value: 6.70 m³/h

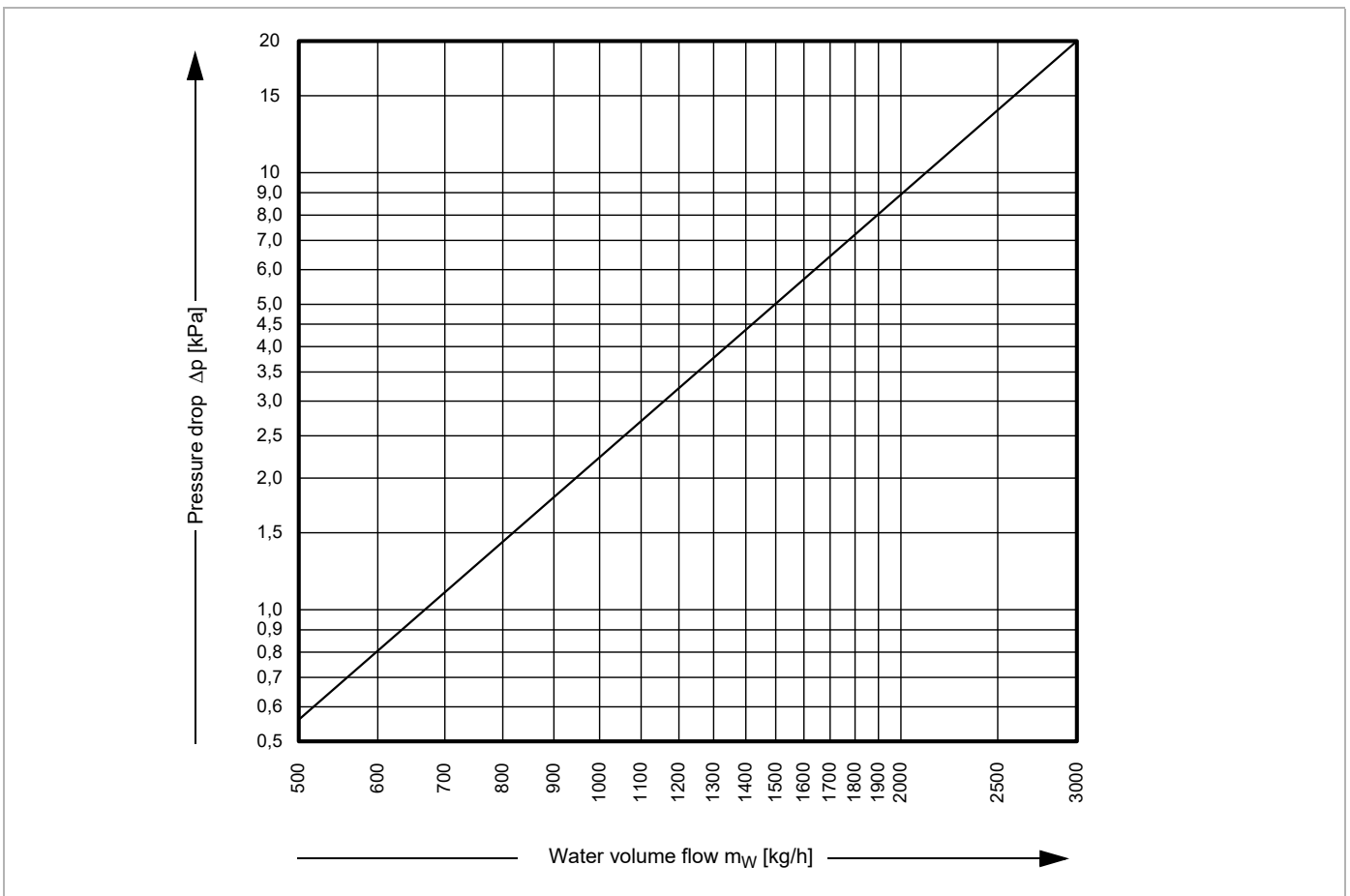
As a medium water and water/glycol is allowed.

Depending on the fitted valves, ball cocks are supplied with outer thread connection (designations 2 and 4, see Unit type code Page 61) or with connecting nut and solder fitting (designations 3 and 5, see Unit type code Page 61).



Ball valve		
k_{VS} -value	Connection thread	Solder fitting for Cu pipe
6,70	G 3/4" A	Ø 15

Fig. 2

The servicing of the ball cock is performed via a flat-bladed screwdriver.



Terminal box with connections for Geko units

Order code basic unit	
Terminal box 	GCxx.xxx.Axx
Metal-sheet electric switch cabinet 	GCxx.xxx.Kxx GCxx.xxx.Lxx GCxx.xxx.Mxx GCxx.xxx.Oxx GCxx.xxx.Sxx

For the connection to the control system all components such as fan(s) and valve(s) are wired in the terminal box.
Depending on the selected unit configuration and valve equipment, the terminal box is performed in metal sheet hood or metal-sheet electric switch cabinet.
The selection is performed using the product type code, as illustrated.

Using thermostat and miniature switches of series C standard control is provided for fan coil units.

HyCassette-Geko (only with 4-way outlet)									
The switches can be used with:			Valve type		Switch type	Return air sensor		Order number	
						without	with	EC-motor	AC-motor
Cooling and Heating		4-pipe system chilled and warm water			CET.ACEC	0	5	J	
					CET.ACEC	0	5	J	
Cooling or Heating		2-pipe system chilled or warm water			CET.ACEC with flow sensor (flow sensor included in the package)	1	6	J	
Heating		2-pipe system warm water			CET.ACEC	0	5	J	
Cooling		2-pipe system Chilled Water			CET.ACEC	0	5	J	
Cassette-Geko									
Cooling and Heating		4-pipe system chilled and warm water			CMT4D (continuous fan mode)	0	-	-	2
					CET.ACEC	0	5	J	
Cooling or Heating		2-pipe system chilled Water and el. heating			CMT2Z (fan and valve control); order separately the temperature thermostat using order number 902135.	0	-	-	4
					CMT2D (fan continuous mode); order separately the temperature thermostat using order number 902135.	0	-	-	3
					CET.ACEC with flow sensor (flow sensor included in the package)	1	6	J	
Heating		2-pipe system warm water			CMT2Z (fan and valve control))	0	-	-	4
					CMT2D (continuous fan mode)	0	-	-	3
					CET.ACEC	0	5	J	
Cooling		2-pipe system warm water			CMS	0	-	-	1
					CMT2Z (fan and valve control))	0	-	-	4
					CMT2D (continuous fan mode)	0	-	-	3
					CET.ACEC	0	5	J	
					CMS	0	-	-	1

Alternatively to a return air sensor, a room temperature sensor can also be connected to a CET type switch.
If a return air sensor is used, the fan must be operating continuously.

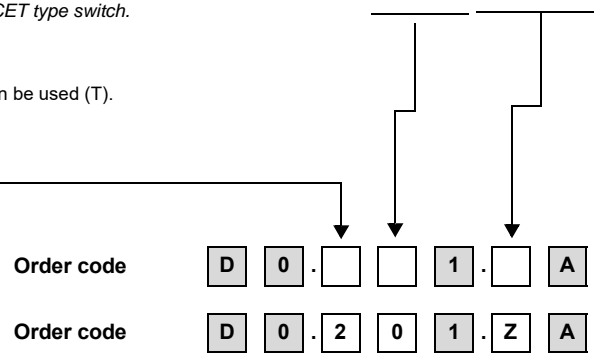
Please consider:

In connection with thermostat-miniature switches only 2-point open/close valve actuators can be used (T).

Relay kit
is necessary if a maximum of four fan coil units ,with staged motor, are switched in parallel. Mixing of different Cassette-Geko types and sizes is allowed.

With kit	2
Without kit	0

Slave unit with Relay kit





NOTICE!

If you want to use **several units** with an AC motor with **one switch** you will need a relay kit for **each unit**.

For units with cooling function we recommend fan continuous operation (fin drying).



NOTICE!

With the following switches the maximum number of specified units can be connected without a relay kit:

CMS, CMT switches:




- 2 units of Double type or
- 2 units of Big Single type or 4 units of Single type





CET.ACEC switch (only for units with AC motor):

- 1 unit of HyCassette Single, Double or Big Single type

Combination of unit types is not allowed. The capacity stage of commonly used units must be identical too.

Functions of thermostat and miniature switch

Switch type		Functions
CMS		<ul style="list-style-type: none"> - On/off switch - Fan speed selection switch 1-2-3 - Plastic casing: white, similar to RAL 9016 - Control elements: grey, similar to RAL 7044 - Protection type IP30
CMT		<ul style="list-style-type: none"> - On/off switch - Fan speed selection switch 1-2-3 - Setpoint setting room temperature 10..30 °C (mechanical setting range limitation as accessory on request) - Thermostat with neutral zone (only CMT4D) - Plastic casing: white, similar to RAL 9016 - Control elements: grey, similar to RAL 7044 - Protection type IP30
CET.ACEC		<ul style="list-style-type: none"> - Fan speed selection switch standby auto 1-2-3 - AC or EC fan control - External valve control possible (e.g. floor heating, chilled ceiling) - Setpoint setting for room temperature 10..30 °C (adjustable setting range limitation) - Thermostat with settable neutral zone - Input for unit enabling via volt free dry contact by others - Room frost protection, connection possibilities for external room or return-air sensor and flow sensor - Integrated room temperature sensor - Interface MODbus RS485 RTU - Factory pre-configured - Plastic casing: white, similar to RAL 9016 - Protection class IP 30

Sensors		Functions
Room temperature sensor 903 414		Thermistor sensor for on-wall mounting <ul style="list-style-type: none"> – NTC-sensor element; resistance coefficient at 25 °C = 10 kΩ – Plastic casing: white, similar to RAL 9010 – Protection class IP 20 – Dimensions in mm (W x H x D): 84 x 84 x 22
Flow sensor 903 435		Thermistor sensor for mounting at inlet with clip <ul style="list-style-type: none"> – NTC-sensor element; resistance coefficient at 25 °C = 10 kΩ – Sensor dimensions (D x L): 6.25 x 27 mm; cable length 2.5 m – Max. ambient temperature 100 °C
Return-air sensor 903 475		Thermistor sensor for mounting in unit <ul style="list-style-type: none"> – NTC-sensor element; resistance coefficient at 25 °C = 10 kΩ – Sensor dimensions (D x L): 6.25 x 27 mm; cable length 2.5 m – Max. ambient temperature 60 °C
Contact thermostat 902 135		Contact temperature thermostat for change-over between heating or cooling mode <ul style="list-style-type: none"> – For mounting on pipework with diameter from 15 mm to 28 mm – Operating voltage 250 VAC 50/60 Hz – Dimensions in mm (W x H x D): 79 x 50 x 44

Additional sensors which are supplied loose and wired on-site by others should be ordered optionally (not in connection with the above-mentioned switch types CMT and CMS).



NOTICE!

Flow and return air sensor are integrated in the relevant controls packages and do not have to be selected separately if ordered using the package number.

Unit type code

G	C	B	1	U	0	W	S	E	5
Geko		Cassette series	Model size	Capacity stage	Air-flow function	Medium function	Speeds/switch cabinet	Motor design	Color
G									
C									
S	Single								
D	Double								
B	Big Single								
0	Capacity stage 0								
1	Capacity stage 1								
2	Capacity stage 2								
U	Recirculating-air unit								
0W	Heating only/ PWW								
W0	Cooling only/PKW								
WC	Cooling or heating/PCW - PWW								
WE	Cooling and heating/PCW + electric heating								
WW	Cooling and heating/PCW - PWW								
	Terminal box with terminal strip								
A	Speed 1, 2, 3 Sheet steel box with terminal strip or for regulation								
K	Speed stage 1, 2, 3								
L	Speed 2, 3, 4 **								
M	Speed 3, 4, 5 **								
O	Speed 1, 3, 5 **								
S	Min..Max (EC motor) metal sheet switch box with terminal block or for controls								
0	AC motor with integrated thermal contacts								
1	AC motor with exiting thermal contacts								
E	EC motor								
1*	Design panel colour shade similar to RAL 9003 (signal white) Air deflection fins similar to RAL 6034 (pastel turquoise)								
2*	Design panel colour shade similar to RAL 9003 (signal white) Flocked air deflection fins, similar to RAL 6034 (pastel turquoise)								
3*	Design panel colour shade similar to RAL 9003 (signal white) Air-directing fins similar to RAL 7035 (light grey)								
4*	Design panel colour shade similar to RAL 9003 (signal white) Air-directing fins flocked, similar to RAL 7035 (light grey)								
5	Design panel colour shade similar to RAL 9003 (signal white) Air-directing fins similar to RAL 9003 (signal white)								
9*	Colour shade of choice (only design panel and unflocked fins)								

* Color shades on request

** Only in connection with EC motor

Valve code

V	R	3	2	5	1	0	1	S
Valves		Function type	Water-side interconnection	Circuit 1 (2-pipe cooling/heating, 4-pipe cooling)	Circuit 2 (4-pipe heating)	Shut-off valves in inlet and outlet piping	Model size	
V								
2-pipe/4-pipe								
T	Thermoelectrical (230 V, 2-point)							
Q	Thermoelectrical (24 V, 2-point)							
R	Modulating drive (230 V, 3-point)							
N	Modulating drive (24 V, 3-point)							
S	Motorized continuously (24 V, analog signal 0 - 10 V)							
C	Modulating drive (230 V, 3-point) + 2 contacts							
Combination (4-pipe)								
1	Cooling Thermoelectrical (230 V, 2-point) Heating Modulating Actuator (230 V, 3-point)							
2	Cooling Modulating Actuator (230 V, 3-point) Heating = Thermoelectrical (230 V, 2-point)							
3	Cooling Thermoelectrical (24 V, 2-point) Heating Modulating Actuator (24 V, 3-point)							
4	Cooling Modulating Actuator (24 V, 3-point) Heating = Thermoelectrical (24 V, 2-point)							
5	Cooling Modulating Actuator with 2 additional switches (230 V, 3-point) Heating=Actuator (230 V, 3-point)							
2	2-way (cooling), 2-way (heating)							
3	3-way (cooling), 3-way (heating)							
8	2-way (cooling), 3-way (heating)							
9	3-way (cooling), 2-way (heating)							
03	K _{vs} 0.25 (R, N, S, C)							
04	K _{vs} 0.40 (R, N, S, C)							
06	K _{vs} 0.63 (R, N, S, C)							
10	K _{vs} 1.0 (R, N, S, C)							
16	K _{vs} 1.6 (R, N, S, C, T, Q)							
25	K _{vs} 2.5 (R, N, S, C, T, Q)							
40	K _{vs} 4.0 (R, N, S, C)							
03	K _{vs} 0.25 (R, N, S, C)							
04	K _{vs} 0.40 (R, N, S, C)							
06	K _{vs} 0.63 (R, N, S, C)							
10	K _{vs} 1.0 (R, N, S, C)							
16	K _{vs} 1.6 (R, N, S, C, T, Q)							
25	K _{vs} 2.5 (R, N, S, C, T, Q)							
40	K _{vs} 4.0 (R, N, S, C)							
0	Without shut-off valves							
1	With shut-off valves							
S	Single							
D	Double							
B	Big Single							



A large grid of small dots for taking notes, consisting of 20 columns and 30 rows.

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