

PARAGON

Compact comfort module for hotels and hospital wards



QUICK FACTS

- Cooling, heating and ventilation
- Low installation height
- High capacity
- Built-in control equipment
- Simple Installation
- Closed system
- Flexible airflow (VariFlow)
- Adjustable air direction ADC and adjustable grille louvres
- CCO valve for maximum capacity

Airflow range:		Pressure range:	Cooling capacity total:	Heating capacity:
l/s	m³/h	Pa	W	W
9 - 77	32 - 278	50 - 200	Upp till 2820	Upp till 4580

Size		
Lengths: mm	Widths: mm	Heights: mm
775, 900, 1100, 1300, 1500	765	220

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Technical description

Comfort module PARAGON

PARAGON is the name of a new family of compact comfort modules especially designed for use in hotels and hospitals.

PARAGON provides high cooling/heating capacity through optimal utilisation of its cooling/heating coil already while the air pressure and airflows are low. At the same time, the installation height of the product is kept at an absolute minimum which enables maximum room height in e.g. the entrance to a hotel room.



Figure 1. PARAGON

PARAGON in a nutshell

- Plug & Play
- Factory-installed controls
- Low sound level
- Draught-free indoor climate
- No fan in the room
- Dry system without condensation
- No need for any drainage system
- No filter
- Requires minimal maintenance
- Low energy consumption
- Flexible adjustment of the air volume (VariFlow)
- Guaranteed comfort through flexible adjustment of the direction of air discharge (ADC)
- Can ordered with or without grille.
- CCO valve for maximum capacity



www.eurovent-certification.com
www.certiflash.com

Design

The PARAGON is available in the following variants:

Variant A: Ventilation, waterborne cooling.

Variant B: Ventilation, waterborne cooling and heating from a coil.

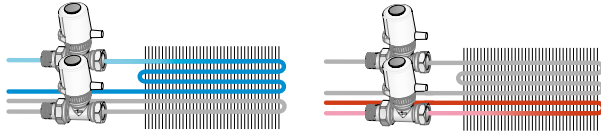
Outstanding features of the PARAGON comfort module

The PARAGON has been developed for the purpose of creating an optimal indoor climate mainly in hotel rooms and hospital wards. Strong focus has been directed on a high degree of comfort as well as low running costs in these applications. Since the PARAGON is driven by a central air handling unit, there is no built-in fan that would otherwise generate noise and require servicing.

The Paragon product family includes the following variants:

PARAGON c B-NC

Normal capacity Paragon with 4 tube coil, that is separate cooling and heating coils

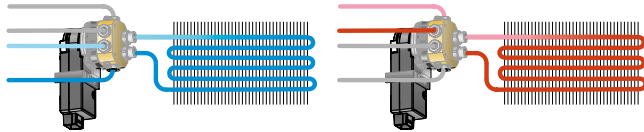


PARAGON c B-HC CCO

Paragon B-HC CCO is a high capacity variant of Paragon where a CCO valve Compact Change Over is used to utilise the whole coil of both cooling and heating.

Advantages:

- Compact PARAGON unit with high output means simpler project planning.
- Smaller units can be used. Lower investment cost and less space needed.
- Faster conditioning of a room that has been left empty. High and consistent comfort
- Permits a higher cooling water temperature and lower heating water temperature, which gives lower operating costs for the chiller and heat pump, i.e. less environmental impact.

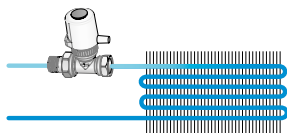


Room control system CONDUCTOR is used to control the CCO valve. For more information about the CCO valve, see the CCO product data sheet at www.swegon.se

PARAGON c A-HC

High capacity Paragon for cooling only. The capacity of the heat exchanger is utilised optimally by maximising the cooling circuit through the coil.

- Lower energy consumption gives a lower operating cost and with that less environment impact.
- A smaller Paragon unit than before can be used, which results in a lower investment cost and more space for other installations
- The high output gives faster cooling of hotel rooms that have stood empty.



Basic function diagram

PARAGON

Hotel & Hospital

The primary air is supplied via duct connection in the rear edge of the unit and this builds up positive pressure inside the unit. The positive pressure distributes the primary air with relatively high velocity via two rows of nozzle holes, one row in the upper edge and one row in the lower edge of the outlet. The high velocity of the primary air creates negative pressure which generates induction of the room air. The recirculation air is sucked up through the recirculation grille of the unit and flows on through the coil where it is cooled, heated, if required, or just passes untreated, before it mixes with the primary air and is discharged into the room.

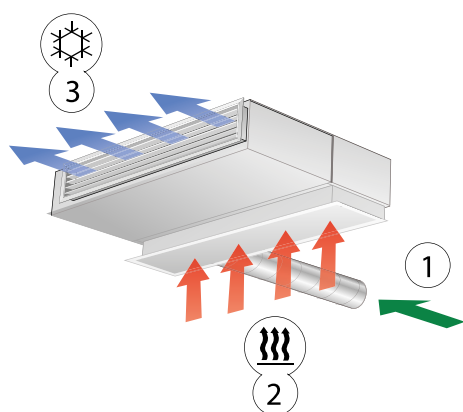


Figure 2 – PARAGON cooling function

1 = Primary air

2 = Induced room air

3 = Primary air mixed with chilled room air

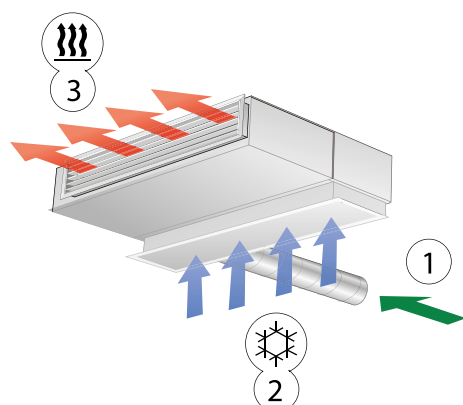


Figure 3 – PARAGON heating function (waterborne)

1 = Primary air

2 = Induced room air

3 = Primary air mixed with heated room air

The supply air discharged into hotel rooms and hospital wards is advantageously distributed as straight as possible by allowing it to follow the ceiling, i.e. utilising the Coanda effect. This enables the air to reach all the way to the perimeter wall. If horizontal air distribution is desirable, this is simply achieved by means of the ADC (Anti Draught Control) feature, which is included as standard in all PARAGON comfort modules. If vertical air distribution is desirable, this is achieved by setting the outlet grille vanes to slant upward or downward. If you like, you can lock the angle setting of the outlet grille using an accessory that secures the vanes in fixed position.

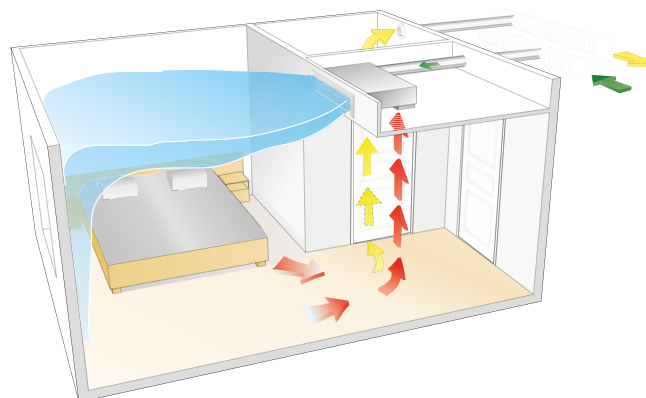


Figure 4 – Air distribution with the PARAGON in a hotel room

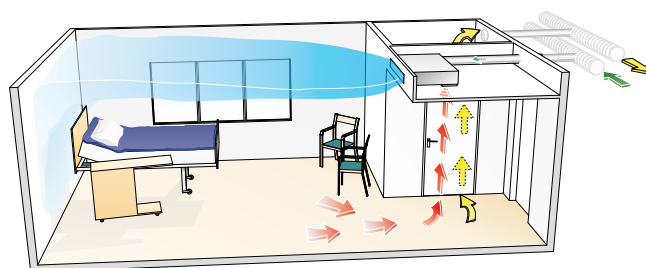


Figure 5 – Air distribution with the PARAGON in a hospital ward

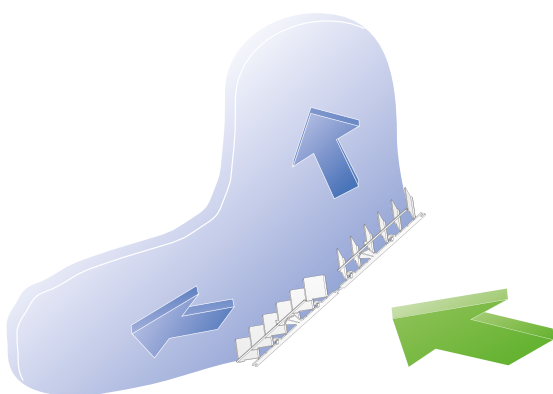


Figure 6 – Horizontal air distribution with ADC

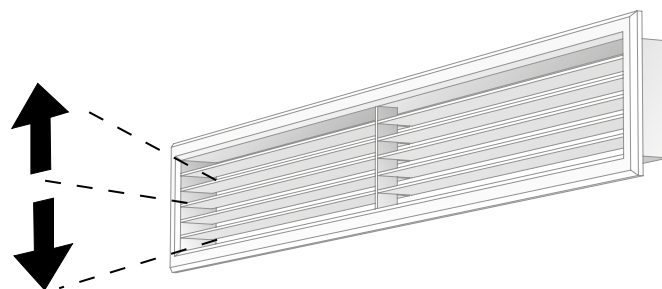


Figure 8. Vertical air distribution with adjustable louvers in the supply air grille.

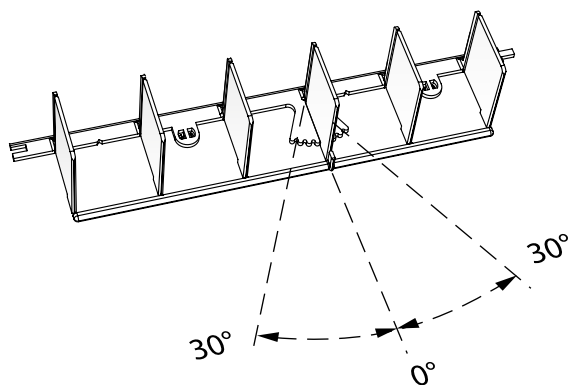


Figure 7. PARAGON ADC



Figure 9. Commissioning, nozzle, L

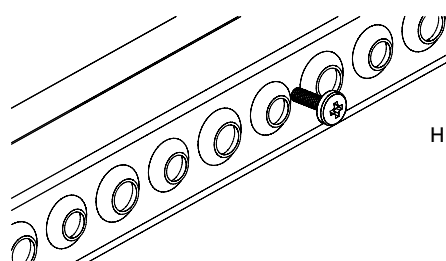
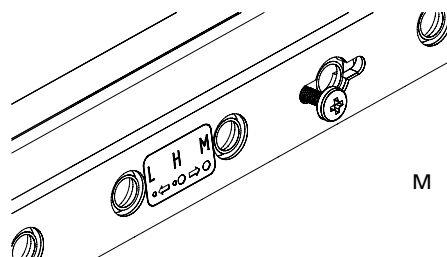
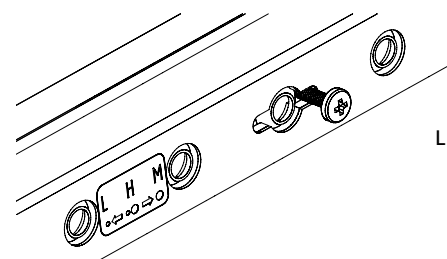


Figure 12. Adjustment of nozzles L, M and H

(The throttling strip for nozzle H has been removed)



Figure 10. Commissioning, nozzle, M



Figure 11. Commissioning, nozzle, H

Control equipment

CONDUCTOR

Energy efficient

The control equipment for the PARAGON in the standard version is based on the CONDUCTOR in order to save on energy to the fullest possible extent. The CONDUCTOR is Swegon's in-house designed controller specially designed for controlling water-borne and airborne indoor climate systems.

The W3/W4.1 application demand-controls both the room temperature and the air quality in the room. When someone is in the room, the functions of the controller adapt to provide comfort feed-back control. If no one is in the room, the controls activate the economy comfort mode, allowing the room temperature to deviate more from the preset setpoint. At the same time, the system reduces the airflow to the relevant room to a minimum in order to save fan energy. In addition, there are a number of other functions for both comfort and energy feed-back control coupled to temperature deviations, open/closed windows and possible condensation precipitation.

Communication

CONDUCTOR has been developed as a subsystem in Swegon's electrical and control equipment platform. The GOLD air handling units, used in combination with the Super WISE communication unit, offer unique opportunities for achieving energy-efficient applications all the way from the room level and up to the plant room.

The CONDUCTOR communicates via Modbus RTU. Main control systems can access the entire list of parameters for both reading and writing values.

Simple installation and simple maintenance

Factory-fitted control equipment makes the installation work simple. All components are accessible via the space at the rear of the product or via the openable recirculation grille.

The room controller included in the supply communicates wirelessly or via wired connection to the comfort module controller. Wireless communication reduces the costs for running cables. On the other hand, a wired connection reduces the need for maintenance since the user then does not need to periodically replace batteries.

For more information regarding the CONDUCTOR, see separate product data sheet.

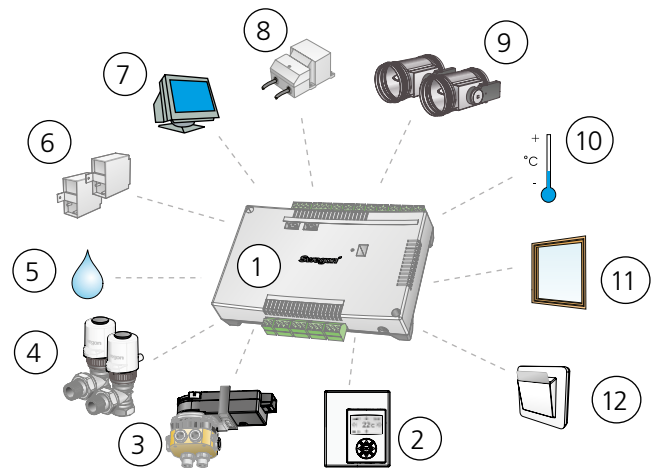


Figure 13. Factory-fitted control equipment CONDUCTOR W4.1

1 = Controller

2 = Room controller

3 = CCO valve and actuator (variant B-HC)

4 = Valves and valve actuators for cooling and heating water (variant B-NC and A-HC)

5 = Condensation sensor

6 = Pressure sensor

7 = Communication via Modbus RTU

Accessories, if required:

8 = Transformer

9 = Motorised ventilation damper

10 = External temperature sensor

11 = Window contact

12 = Key card holder or presence sensor

CCO

6-way change over valve - CCO

With CCO - Compact Change Over, the same single circuit in the coil is used for both heating and cooling, providing maximum utilisation of the coil and thus a higher cooling and heating capacity.

Advantages:

- A higher cooling water temperature and lower heating water temperature give improved operating economy for the chiller and heat pump. Lower energy consumption gives lower operating cost and less environment impact.
- Smaller PARAGON units can be used. Lower investment cost and less space needed.
- Faster conditioning of a hotel room that has been left unoccupied/empty. High and consistent comfort.
- Compact unit with high output means simpler project planning.

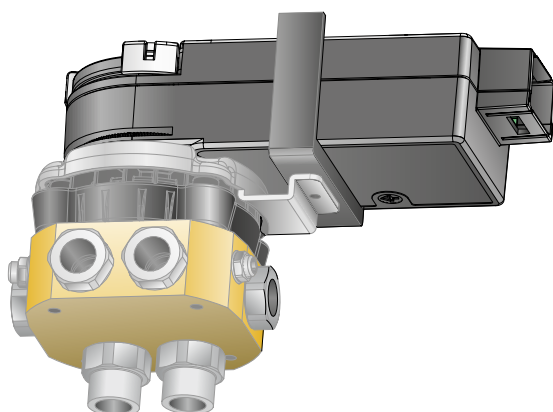


Figure 14. CCO 6-way valve

PARAGON, along with the CONDUCTOR room control system, is the optimum solution for hotel rooms. CONDUCTOR is also used to control the CCO valve.

When the key card (or equivalent) is activated in the room, the airflow increases from the economical low flow to the normal flow, while the temperature adjusts to the comfort level.

When the room is empty, the ventilation and temperature return to economic low flow.

In addition to the automatic room control, the guest can manually adjust the temperature and airflow.

A more basic room control system LUNA can be used for hospital rooms and the like. The temperature can be regulated individually in each room, but the airflow is constant.

For more information about the CCO valve, see the CCO product data sheet at www.swegon.com

LUNA

A simpler form of control equipment is available in applications where the user does not want demand-controlled ventilation in the room and has no need of communication with an external monitoring system. This variant of control is called the LUNA and regulates the temperature in the room only (not the air quality). The PARAGON with factory-fitted LUNA is available to order. Please note that the controller in this case is integrated into the room unit and requires a cable connection from the room to the actuator inside PARAGON. For more information, see the separate datasheet for the LUNA.

LUNA can not be used to control the CCO valve.

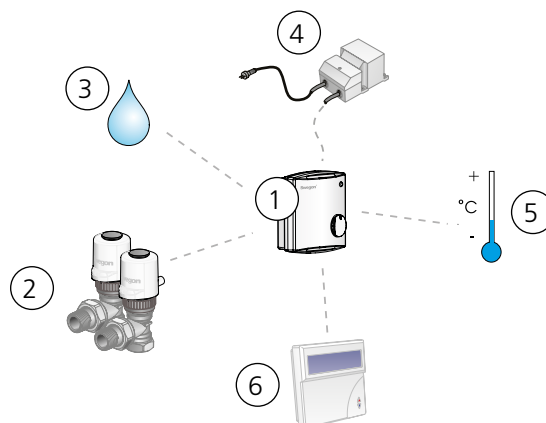


Figure 15. Factory-fitted control equipment LUNA

1 = Room controller with room thermostat

2 = Valves and valve actuators for cooling and heating water

3 = Condensation sensor

Accessories, if required:

4 = Transformer

5 = External temperature sensor

6 = Hand unit for changing the factory settings

Sizing

Designations

P: Capacity (W, kW)

v: Velocity (m/s)

q: Flow (l/s)

p: Pressure, (Pa, kPa)

t_r : Room temperature (°C)

t_m : Mean water temperature (°C)

ΔT_m : Temperature difference [$t_r - t_m$] (K)

ΔT : Temperature difference, between inlet and return (K)

ΔT_i : Temperature difference, between room and supply air (K)

Δp : Pressure drop (Pa, kPa)

k_p : Pressure drop constant

Supplementary index:

k = cooling, l = air, v = heating, i = commissioning

Recommended limit values, water

Max. recommended operating pressure
(across coil only): 1600 kPa *

Max. recommended test pressure
(across coil only): 2400 kPa *

* Applicable without control equipment mounted

Max. recommended pressure drop
across the CCO valve: 20 kPa

Max. recommended pressure drop
across a standard valve: 20 kPa

Min. permissible hot water flow: 0.013 l/s

Max. permissible inlet flow temperature: 60 °C

Min. cooling water flow: 0.04 l/s

Lowest permissible inlet flow temperature: Should always be dimensioned so that the system works without condensation

Project planning

Both planning and sizing are made easier by using Swegon's ProSelect Project design computer program. ProSelect is available under software on the Swegon website: www.swegon.com.

The screenshot displays the ProSelect software interface for configuring a PARAGON c unit. The main window is divided into several sections:

- Top Navigation:** Includes tabs for Induction units, Air diffusers, Displacement units, Air others, Demand Control, and Extract & Transfer.
- Comfort modules:** Shows the selected unit (PARAGON c NC [153]) and function (Cooling & Heating). A technical data update date of 2015-10-05 is noted.
- Primary air flow:** Configured for a size of 1300 mm and a flow rate of 20.0 l/s. The air flow configuration is set to Symmetric.
- Accessories:** A list of available accessories is shown, including Factory Mounted Accessories, General Accessories, and Connection details. The selected accessories are listed on the right.
- Calculation results:** A table showing various parameters such as Primary air flow, Induced air flow, Nozzle pressure, K-factor air, Sound Pressure Level, Total pressure drop, Cooling/Heating capacity, and Calculated outlet air temperature.
- Product:** The selected product is PARAGON c 1300-B-NC-R-125-LL.
- Selected accessories:** A list of selected accessories is shown, including PARAGON c Grilles, PARAGON c Factory Mounted Controls, and various sensors and actuators.

Cooling

Cooling capacity

Cooling capacities achieved from both the primary air and chilled water for various lengths of unit, damper settings and airflows are tabulated in Table 3-8. The total cooling capacity for one unit is the sum of the cooling capacity of the primary air and the chilled water.

The cooling capacity of the primary air can also be calculated using the formula:

$$P_i = 1.2 \cdot q_i \cdot \Delta T_i \text{ where}$$

P_i = Air's cooling capacity (W)

q_i = Airflow (l/s)

ΔT_i = Temperature difference (K)

Pressure drop

The pressure drop on the water side can be calculated using the formula:

$$\Delta p = (q / k_{pk})^2 \text{ where}$$

Δp = Pressure drop in the water circuit (kPa)

q = Water flow (l/s), see Diagram 1

k_{pk} = Pressure drop constant read from table 1.

Table 1. Pressure drop, water

	NC	HC	HC CCO
Length	K_{pk} Cooling	K_{pk} Cooling	K_{pk} Cooling
775	0.0250	0.0178	0.0178
900	0.0231	0.0170	0.0170
1100	0.0215	0.0161	0.0161
1300	0.0205	0.0154	0.0154
1500	0.0194	0.0145	0.0145

NC - Normal design

HC - High Capacity design

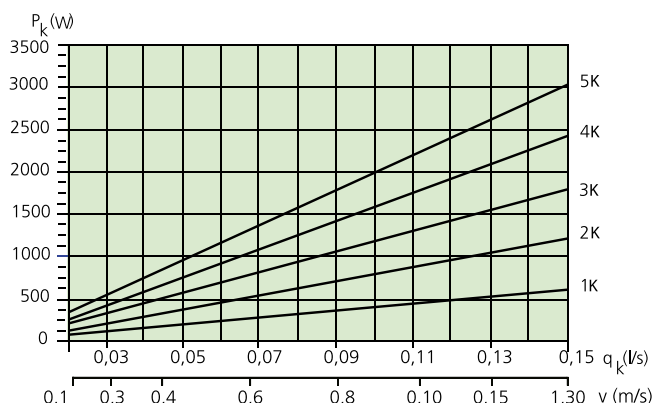
HC - High Capacity design with CCO valve

Table 2. Cooling capacity for natural convection

Natural convection: The cooling capacity of water at ΔT_{mv}								
Size	5	6	7	8	9	10	11	12
775	14	20	26	34	42	51	60	71
900	17	24	32	40	50	61	72	85
1100	22	31	41	53	65	79	94	110
1300	31	42	53	65	79	93	108	124
1500	40	52	64	78	92	107	122	138

Diagram 1 – Cooling capacity

The function between cooling capacity P_k (W), change in temperature ΔT_k (K) and the cooling water flow q_k (l/s).



Capacity correction

Different water flows influence the available cooling effect to a certain degree. To calculate the actual cooling power based on a flow-dependant correction factor, use Swegon's ProSelect computer program, available at www.swegon.com.

Diagram 2. Water flow – capacity correction

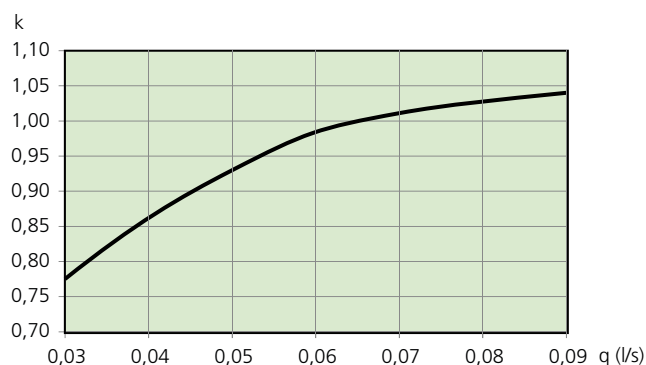


Table 3 – Cooling capacity, NC, 100 Pa

Length of the unit mm	Nozzle setting		Air flow		Sound level ¹⁾ dB(A)	Cooling capacity, primary air (W) ΔT_i				Cooling capacity, water (W) at $\Delta T_{mk}^{2)}$							Pressure drop constant, air k_{pl}
			l/s	m ³ /h		6	8	10	12	6	7	8	9	10	11	12	
775	L	L	12	43	<20	86	115	144	173	286	333	380	427	474	520	567	1.2
775	M	M	15.4	55	24	111	148	185	222	310	361	413	464	515	567	618	1.54
775	H	H	27	97	29	194	259	324	389	368	429	490	551	611	672	732	2.7
900	L	L	14.4	52	<20	104	138	173	207	343	400	456	512	569	625	681	1.44
900	M	M	18.5	67	25	133	178	222	266	372	434	496	557	619	681	742	1.85
900	H	H	32.4	117	30	233	311	389	467	442	515	588	661	734	807	880	3.24
1100	L	L	18.6	67	20	134	179	223	268	448	522	595	668	742	815	888	1.86
1100	M	M	23.9	86	26	172	229	287	344	485	566	646	727	807	888	968	2.39
1100	H	H	41.9	151	31	302	402	503	603	577	672	768	863	958	1053	1147	4.19
1300	L	L	22.2	80	21	160	213	266	320	552	643	734	824	915	1005	1096	2.22
1300	M	M	28.5	103	27	205	274	342	410	599	698	797	897	996	1095	1194	2.85
1300	H	H	50	180	32	360	480	600	720	712	829	947	1064	1181	1298	1415	5
1500	L	L	19.7	71	<20	142	189	236	284	553	645	736	828	920	1011	1103	1.97
1500	M	M	34.3	123	26	247	329	412	494	663	772	881	990	1098	1206	1314	3.43
1500	H	H	54.6	197	32	393	524	655	786	743	866	989	1112	1235	1358	1481	5.46

Table 4 – Cooling capacity, NC, 150 Pa

Length of the unit mm	Nozzle setting		Air flow		Sound level ¹⁾ dB(A)	Cooling capacity, primary air (W) ΔT_i				Cooling capacity, water (W) at $\Delta T_{mk}^{2)}$							Pressure drop constant, air k_{pl}
			l/s	m ³ /h		6	8	10	12	6	7	8	9	10	11	12	
775	L	L	14.7	53	24	106	141	176	212	335	389	444	498	552	606	660	1.2
775	M	M	18.9	68	30	136	181	226	272	361	421	480	540	599	659	718	1.54
775	H	H	33.1	119	35	238	317	397	476	421	491	560	629	699	768	837	2.7
900	L	L	17.6	63	25	127	169	212	254	402	468	533	598	663	728	792	1.44
900	M	M	22.7	82	31	163	218	272	326	434	505	577	648	720	791	863	1.85
900	H	H	39.7	143	36	286	381	476	571	506	589	673	756	839	922	1005	3.24
1100	L	L	22.8	82	26	164	219	273	328	525	610	695	780	865	949	1033	1.86
1100	M	M	29.3	105	32	211	281	351	422	566	659	753	846	939	1032	1125	2.39
1100	H	H	51.3	185	37	369	493	616	739	660	769	878	986	1094	1203	1311	4.19
1300	L	L	27.2	98	27	196	261	326	392	647	752	857	962	1066	1170	1274	2.22
1300	M	M	34.9	126	33	251	335	419	503	698	813	928	1043	1158	1273	1388	2.85
1300	H	H	61.2	220	38	441	588	735	882	814	948	1082	1216	1350	1483	1617	5
1500	L	L	24.1	87	23	174	232	290	347	637	745	852	960	1068	1176	1284	1.97
1500	M	M	42.0	151	32	302	403	504	605	765	890	1016	1141	1266	1390	1515	3.43
1500	H	H	66.9	241	38	481	642	802	963	845	985	1124	1264	1403	1542	1681	5.46

1) The specified sound level is applicable to connection without damper or with fully open damper. In other cases where the airflow is demand-controlled with motor-driven dampers, the required data can be read from Swegon's ProSelect sizing program. Room attenuation = 4 dB

2) The specified capacities are based on a complete unit including standard distribution and recirculation grille. Without grille the water capacity increases by approx. 5%. With ADC adjusted to Fan shape you lose approx. 5% in water capacity. The primary air capacity is not affected.

NOTE! The total cooling capacity is the sum of the airborne and waterborne cooling capacities.

Table 5 – Cooling capacity, NC, 200 Pa

Length of the unit	Nozzle setting		Air flow		Sound level ¹⁾	Cooling capacity, primary air (W) ΔT_l				Cooling capacity, water (W) at ΔT_{mk} ²⁾							Pressure drop constant, air
			l/s	m ³ /h		6	8	10	12	6	7	8	9	10	11	12	
775	L	L	17.0	61	28	122	163	204	244	370	429	489	548	607	666	725	1.2
775	M	M	21.8	78	34	157	209	261	314	398	463	528	594	659	724	789	1.54
775	H	H	38.2	137	40	275	367	458	550	459	534	610	685	761	836	911	2.7
900	L	L	20.4	73	29	147	196	244	293	444	516	587	658	730	800	871	1.44
900	M	M	26.2	94	35	188	251	314	377	477	556	635	713	792	870	948	1.85
900	H	H	45.8	165	40	330	440	550	660	551	642	733	823	913	1004	1094	3.24
1100	L	L	26.3	95	30	189	253	316	379	579	673	766	859	952	1044	1136	1.86
1100	M	M	33.8	122	36	243	324	406	487	623	725	828	930	1033	1135	1237	2.39
1100	H	H	59.3	213	42	427	569	711	853	719	837	956	1074	1192	1309	1427	4.19
1300	L	L	31.4	113	31	226	301	377	452	714	830	945	1059	1174	1288	1401	2.22
1300	M	M	40.3	145	37	290	387	484	580	768	895	1021	1147	1273	1399	1525	2.85
1300	H	H	70.7	255	43	509	679	849	1018	887	1033	1179	1324	1470	1615	1760	5
1500	L	L	27.9	100	27	201	267	334	401	697	816	935	1054	1174	1293	1413	1.97
1500	M	M	48.5	175	37	349	466	582	699	837	974	1111	1248	1384	1521	1657	3.43
1500	H	H	77.2	278	42	556	741	927	1112	918	1069	1220	1371	1522	1672	1823	5.46

Table 6 – Cooling capacity, HC, 100 Pa

Length of the unit	Nozzle setting		Air flow		Sound level ¹⁾	Cooling capacity, primary air (W) ΔT_l				Cooling capacity, water (W) at ΔT_{mk} ²⁾							Pressure drop constant, air
			l/s	m ³ /h		6	8	10	12	6	7	8	9	10	11	12	
775	L	L	12	43	<20	86	115	144	173	310	362	414	467	519	571	623	1.2
775	M	M	15.4	55	24	111	148	185	222	340	397	454	510	568	625	682	1.54
775	H	H	27	97	29	194	259	324	389	409	478	547	616	685	754	823	2.7
900	L	L	14.4	52	<20	104	138	173	207	373	435	498	560	623	686	748	1.44
900	M	M	18.5	67	25	133	178	222	266	408	476	545	613	682	750	819	1.85
900	H	H	32.4	117	30	233	311	389	467	491	574	657	740	822	905	989	3.24
1100	L	L	18.6	67	20	134	179	223	268	486	568	649	731	813	894	976	1.86
1100	M	M	23.9	86	26	172	229	287	344	532	621	711	800	889	979	1068	2.39
1100	H	H	41.9	151	31	302	402	503	603	641	749	857	965	1073	1181	1289	4.19
1300	L	L	22.2	80	21	160	213	266	320	600	700	801	902	1002	1103	1204	2.22
1300	M	M	28.5	103	27	205	274	342	410	656	766	876	986	1097	1207	1317	2.85
1300	H	H	50	180	32	360	480	600	720	790	923	1056	1190	1323	1457	1590	5
1500	L	L	19.7	71	<20	142	189	236	284	623	727	831	936	1040	1145	1249	1.97
1500	M	M	34.3	123	26	247	329	412	494	745	869	993	1117	1241	1365	1489	3.43
1500	H	H	54.6	197	32	393	524	655	786	859	999	1139	1278	1417	1556	1694	5.46

1) The specified sound level is applicable to connection without damper or with fully open damper. In other cases where the airflow is demand-controlled with motor-driven dampers, the required data can be read from Swegon's ProSelect sizing program. Room attenuation = 4 dB

2) The specified capacities are based on a complete unit including standard distribution and recirculation grille. Without grille the water capacity increases by approx. 5%. With ADC adjusted to Fan shape you lose approx. 5% in water capacity. The primary air capacity is not affected.

NOTE! The total cooling capacity is the sum of the airborne and waterborne cooling capacities.

Table 7 – Cooling capacity, HC, 150 Pa

Length of the unit	Nozzle setting		Air flow		Sound level ¹⁾	Cooling capacity, primary air (W) ΔT_l				Cooling capacity, water (W) at $\Delta T_{mk}^{2)}$							Pressure drop constant, air
mm			l/s	m ³ /h	dB(A)	6	8	10	12	6	7	8	9	10	11	12	k _{pl}
775	L	L	14.7	53	24	106	141	176	212	364	426	487	549	611	674	736	1.2
775	M	M	18.9	68	30	136	181	226	272	395	462	529	596	664	731	798	1.54
775	H	H	33.1	119	35	238	317	397	476	469	549	629	709	790	870	951	2.7
900	L	L	17.6	63	25	127	169	212	254	437	511	586	660	734	809	884	1.44
900	M	M	22.7	82	31	163	218	272	326	475	555	636	716	797	878	959	1.85
900	H	H	39.7	143	36	286	381	476	571	563	659	755	852	948	1045	1142	3.24
1100	L	L	22.8	82	26	164	219	273	328	570	667	764	861	958	1055	1153	1.86
1100	M	M	29.3	105	32	211	281	351	422	619	724	829	934	1040	1145	1251	2.39
1100	H	H	51.3	185	37	369	493	616	739	735	860	985	1111	1237	1363	1490	4.19
1300	L	L	27.2	98	27	196	261	326	392	703	823	942	1062	1181	1302	1422	2.22
1300	M	M	34.9	126	33	251	335	419	503	764	893	1022	1152	1282	1412	1543	2.85
1300	H	H	61.2	220	38	441	588	735	882	906	1060	1215	1370	1526	1682	1838	5
1500	L	L	24.1	87	23	174	232	290	347	730	852	975	1098	1221	1343	1466	1.97
1500	M	M	42.0	151	32	302	403	504	605	869	1013	1157	1301	1445	1588	1732	3.43
1500	H	H	66.9	241	38	481	642	802	963	988	1147	1305	1462	1619	1775	1930	5.46

Table 8 – Cooling capacity, HC, 200 Pa

Length of the unit	Nozzle setting		Air flow		Sound level ¹⁾	Cooling capacity, primary air (W) ΔT_l				Cooling capacity, water (W) at $\Delta T_{mk}^{2)}$							Pressure drop constant, air
mm			l/s	m ³ /h	dB(A)	6	8	10	12	6	7	8	9	10	11	12	k _{pl}
775	L	L	17.0	61	28	122	163	204	244	402	471	539	608	677	746	816	1.2
775	M	M	21.8	78	34	157	209	261	314	434	509	583	657	732	806	881	1.54
775	H	H	38.2	137	40	275	367	458	550	511	599	687	775	864	953	1042	2.7
900	L	L	20.4	73	29	147	196	244	293	483	565	648	730	813	897	980	1.44
900	M	M	26.2	94	35	188	251	314	377	522	611	700	789	879	969	1059	1.85
900	H	H	45.8	165	40	330	440	550	660	614	720	825	931	1038	1144	1251	3.24
1100	L	L	26.3	95	30	189	253	316	379	630	737	845	953	1061	1169	1278	1.86
1100	M	M	33.8	122	36	243	324	406	487	681	797	913	1030	1146	1263	1381	2.39
1100	H	H	59.3	213	42	427	569	711	853	801	939	1077	1215	1354	1493	1632	4.19
1300	L	L	31.4	113	31	226	301	377	452	777	909	1042	1175	1309	1442	1576	2.22
1300	M	M	40.3	145	37	290	387	484	580	840	983	1126	1270	1414	1558	1703	2.85
1300	H	H	70.7	255	43	509	679	849	1018	988	1158	1328	1498	1670	1841	2013	5
1500	L	L	27.9	100	27	201	267	334	401	806	941	1077	1213	1349	1485	1621	1.97
1500	M	M	48.5	175	37	349	466	582	699	957	1116	1273	1431	1589	1746	1904	3.43
1500	H	H	77.2	278	42	556	741	927	1112	1081	1252	1423	1593	1762	1930	2098	5.46

1) The specified sound level is applicable to connection without damper or with fully open damper. In other cases where the airflow is demand-controlled with motor-driven dampers, the required data can be read from Swegon's ProSelect sizing program. Room attenuation = 4 dB

2) The specified capacities are based on a complete unit including standard distribution and recirculation grille. Without grille the water capacity increases by approx. 5%. With ADC adjusted to Fan shape you lose approx. 5% in water capacity. The primary air capacity is not affected.

NOTE! The total cooling capacity is the sum of the airborne and waterborne cooling capacities.

Heating

Pressure drop

The pressure drop on the water side can be calculated using the formula:

$$\Delta p = (q / k_{pv})^2 \text{ where}$$

Δp = Pressure drop in the water circuit (kPa)

q = Water flow (l/s), see Diagram 3

k_{pv} = Pressure drop constant read from table 9.

For a more detailed pressure drop calculation, use the Swegon's ProSelect software, which is available on www.swegon.com.

Table 9. Pressure drop, water

	NC	HC	HC CCO
Length	k_{pv} Heating		k_{pv} Heating
775	0.0385		0.0189
900	0.0372		0.0181
1100	0.0348		0.0171
1300	0.0329		0.0163
1500	0.0311		0.0156

NC - Normal design

HC CCO - High Capacity design with CCO valve

Diagram 3 - Heating capacity

The function between the heating capacity P_v (W), the change in temperature ΔT_v (K) and the hot water flow q_v (l/s).

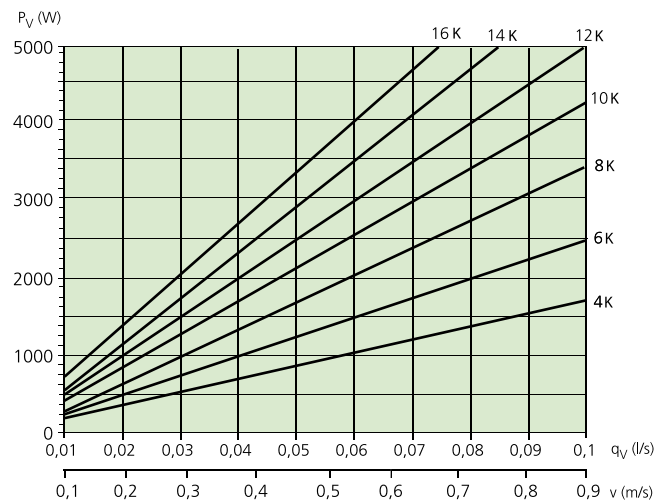


Table 10 - Heating capacity for natural convection

Length	Heat output at ΔT_{mv} [K] (W)						
	5	10	15	20	25	30	35
775	19	44	73	104	137	172	208
900	22	53	87	125	165	207	250
1100	23	56	96	140	188	240	294
1300	23	60	105	156	212	273	338
1500	23	63	113	171	236	307	383

Capacity correction

Different water flow rates to some extent have an effect on the heating capacity output. In order to calculate the actual heating capacity based on a flow-dependant correction factor, use Swegon's ProSelect software, which is available from www.swegon.com.

Diagram 4. Water flow – capacity correction

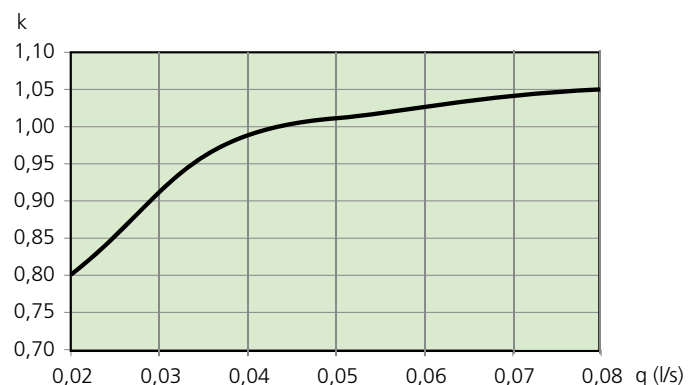


Table 11 – Heating capacity, NC, 100 Pa

Length of the unit	Nozzle setting		Air flow		Sound level ¹⁾	The heating capacity, water (W) at ΔT_{mv}							Pressure drop constant, air
mm			l/s	m3/h	dB(A)	5	10	15	20	25	30	35	k_{pl}
775	L	L	12	43	<20	126	258	392	528	665	803	941	1.2
775	M	M	15.4	55	24	133	272	413	556	700	845	990	1.54
775	H	H	27	97	29	154	315	478	644	812	980	1149	2.7
900	L	L	14.4	52	<20	151	309	471	634	798	964	1131	1.44
900	M	M	18.5	67	25	160	327	497	668	841	1014	1189	1.85
900	H	H	32.4	117	30	185	378	575	774	975	1177	1381	3.24
1100	L	L	18.6	67	20	197	404	614	827	1041	1257	1475	1.86
1100	M	M	23.9	86	26	209	427	648	871	1096	1323	1551	2.39
1100	H	H	41.9	151	31	241	493	750	1009	1271	1535	1801	4.19
1300	L	L	22.2	80	21	243	498	757	1020	1284	1551	1819	2.22
1300	M	M	28.5	103	27	258	526	799	1075	1352	1632	1913	2.85
1300	H	H	50	180	32	297	608	925	1245	1568	1894	2221	5
1500	L	L	19.7	71	<20	249	513	782	1056	1332	1610	1891	1.97
1500	M	M	34.3	123	26	290	595	906	1220	1537	1856	2177	3.43
1500	H	H	54.6	197	32	312	646	988	1337	1689	2045	2403	5.46

Table 12 – Heating capacity, NC, 150 Pa

Length of the unit	Nozzle setting		Air flow		Sound level ¹⁾	The heating capacity, water (W) at ΔT_{mv}							Pressure drop constant, air
mm			l/s	m3/h	dB(A)	5	10	15	20	25	30	35	k_{pl}
775	L	L	14.7	53	24	142	291	442	595	748	903	1059	1.2
775	M	M	18.9	68	30	149	305	463	624	785	948	1112	1.54
775	H	H	33.1	119	35	167	345	527	712	900	1089	1279	2.7
900	L	L	17.6	63	25	171	349	531	714	899	1085	1272	1.44
900	M	M	22.7	82	31	179	366	557	749	943	1139	1335	1.85
900	H	H	39.7	143	36	201	414	633	855	1080	1308	1536	3.24
1100	L	L	22.8	82	26	223	456	692	932	1173	1415	1659	1.86
1100	M	M	29.3	105	32	233	478	726	977	1231	1486	1742	2.39
1100	H	H	51.3	185	37	262	540	826	1116	1409	1706	2004	4.19
1300	L	L	27.2	98	27	275	562	854	1149	1446	1746	2046	2.22
1300	M	M	34.9	126	33	288	589	895	1205	1518	1832	2148	2.85
1300	H	H	61.2	220	38	323	666	1019	1376	1738	2104	2472	5
1500	L	L	24.1	87	23	282	582	889	1201	1517	1835	2156	1.97
1500	M	M	42.0	151	32	324	665	1013	1365	1720	2078	2439	3.43
1500	H	H	66.9	241	38	342	710	1087	1470	1859	2252	2648	5.46

1) The specified sound level is applicable to connection without damper or with fully open damper. In other cases where the airflow is demand-controlled with motor-driven dampers, the required data can be read from Swegon's ProSelect sizing program. Room attenuation = 4 dB

Table 13 – Heating capacity, NC, 200 Pa

Length of the unit	Nozzle setting		Air flow		Sound level ¹⁾	The heating capacity, water (W) at ΔT_{mv}							Pressure drop constant, air
mm			l/s	m3/h	dB(A)	5	10	15	20	25	30	35	k_{pl}
775	L	L	17.0	61	28	154	315	478	642	808	975	1142	1.2
775	M	M	21.8	78	34	160	328	499	672	846	1022	1198	1.54
775	H	H	38.2	137	40	177	366	562	760	962	1166	1371	2.7
900	L	L	20.4	73	29	185	378	574	771	970	1171	1372	1.44
900	M	M	26.2	94	35	192	394	599	807	1016	1227	1439	1.85
900	H	H	45.8	165	40	212	440	675	913	1155	1400	1647	3.24
1100	L	L	26.3	95	30	241	493	748	1006	1266	1527	1790	1.86
1100	M	M	33.8	122	36	251	514	782	1052	1326	1601	1877	2.39
1100	H	H	59.3	213	42	277	574	880	1191	1507	1826	2149	4.19
1300	L	L	31.4	113	31	298	608	923	1241	1561	1884	2208	2.22
1300	M	M	40.3	145	37	309	634	964	1298	1635	1974	2316	2.85
1300	H	H	70.7	255	43	341	708	1085	1469	1859	2253	2650	5
1500	L	L	27.9	100	27	305	631	965	1304	1648	1995	2345	1.97
1500	M	M	48.5	175	37	348	714	1089	1467	1850	2236	2624	3.43
1500	H	H	77.2	278	42	364	755	1156	1566	1980	2399	2822	5.46

Table 14 – Heating capacity, HC, 100 Pa

Length of the unit	Nozzle setting		Air flow		Sound level ¹⁾	The heating capacity, water (W) at ΔT_{mv}							Pressure drop constant, air
mm			l/s	m3/h	dB(A)	5	10	15	20	25	30	35	k_{pl}
775	L	L	12	43	<20	232	470	710	950	1192	1435	1678	1.2
775	M	M	15.4	55	24	266	534	804	1074	1345	1617	1888	1.54
775	H	H	27	97	29	309	628	950	1274	1600	1927	2255	2.7
900	L	L	14.4	52	<20	279	565	852	1141	1432	1723	2015	1.44
900	M	M	18.5	67	25	319	641	965	1290	1616	1942	2268	1.85
900	H	H	32.4	117	30	372	754	1141	1530	1921	2314	2709	3.24
1100	L	L	18.6	67	20	364	736	1112	1489	1868	2248	2629	1.86
1100	M	M	23.9	86	26	416	837	1259	1683	2108	2533	2959	2.39
1100	H	H	41.9	151	31	485	984	1488	1996	2506	3019	3533	4.19
1300	L	L	22.2	80	21	449	908	1371	1836	2303	2772	3242	2.22
1300	M	M	28.5	103	27	513	1032	1553	2076	2600	3124	3649	2.85
1300	H	H	50	180	32	598	1213	1835	2461	3091	3723	4358	5
1500	L	L	19.7	71	<20	472	942	1413	1883	2354	2824	3294	1.97
1500	M	M	34.3	123	26	578	1154	1731	2307	2883	3459	4035	3.43
1500	H	H	54.6	197	32	658	1317	1977	2638	3299	3960	4622	5.46

1) The specified sound level is applicable to connection without damper or with fully open damper. In other cases where the airflow is demand-controlled with motor-driven dampers, the required data can be read from Swegon's ProSelect sizing program. Room attenuation = 4 dB

Table 15 – Heating capacity, HC, 150 Pa

Length of the unit mm	Nozzle setting		Air flow		Sound level ¹⁾ dB(A)	The heating capacity, water (W) at ΔT_{mv}							Pressure drop constant, air k_{pl}
			l/s	m ³ /h		5	10	15	20	25	30	35	
775	L	L	14.7	53	24	276	559	844	1131	1419	1708	1998	1.2
775	M	M	18.9	68	30	308	623	941	1261	1582	1904	2227	1.54
775	H	H	33.1	119	35	355	721	1091	1464	1839	2216	2595	2.7
900	L	L	17.6	63	25	331	671	1013	1358	1704	2052	2400	1.44
900	M	M	22.7	82	31	370	749	1131	1514	1900	2287	2674	1.85
900	H	H	39.7	143	36	426	866	1311	1759	2209	2662	3116	3.24
1100	L	L	22.8	82	26	432	875	1322	1772	2223	2676	3131	1.86
1100	M	M	29.3	105	32	483	977	1475	1975	2478	2983	3489	2.39
1100	H	H	51.3	185	37	556	1129	1709	2294	2882	3472	4065	4.19
1300	L	L	27.2	98	27	533	1079	1630	2185	2742	3301	3862	2.22
1300	M	M	34.9	126	33	596	1205	1819	2436	3057	3679	4303	2.85
1300	H	H	61.2	220	38	686	1393	2108	2829	3554	4282	5014	5
1500	L	L	24.1	87	23	553	1109	1666	2224	2783	3341	3901	1.97
1500	M	M	42.0	151	32	658	1320	1982	2646	3309	3974	4638	3.43
1500	H	H	66.9	241	38	738	1482	2230	2979	3730	4482	5234	5.46

Table 16 – Heating capacity, HC, 200 Pa

Length of the unit mm	Nozzle setting		Air flow		Sound level ¹⁾ dB(A)	The heating capacity, water (W) at ΔT_{mv}							Pressure drop constant, air k_{pl}
			l/s	m ³ /h		5	10	15	20	25	30	35	
775	L	L	17.0	61	28	307	621	939	1259	1580	1902	2226	1.2
775	M	M	21.8	78	34	338	687	1039	1393	1750	2108	2467	1.54
775	H	H	38.2	137	40	387	787	1191	1599	2009	2421	2835	2.7
900	L	L	20.4	73	29	368	746	1128	1512	1898	2285	2673	1.44
900	M	M	26.2	94	35	406	825	1248	1674	2102	2532	2963	1.85
900	H	H	45.8	165	40	465	945	1431	1921	2413	2908	3405	3.24
1100	L	L	26.3	95	30	480	973	1471	1972	2475	2980	3487	1.86
1100	M	M	33.8	122	36	530	1076	1628	2183	2742	3302	3865	2.39
1100	H	H	59.3	213	42	607	1233	1867	2506	3148	3794	4442	4.19
1300	L	L	31.4	113	31	593	1201	1814	2432	3053	3676	4301	2.22
1300	M	M	40.3	145	37	654	1327	2007	2692	3381	4073	4766	2.85
1300	H	H	70.7	255	43	748	1520	2302	3090	3883	4679	5479	5
1500	L	L	27.9	100	27	611	1228	1846	2466	3087	3709	4331	1.97
1500	M	M	48.5	175	37	716	1437	2161	2886	3612	4339	5067	3.43
1500	H	H	77.2	278	42	794	1600	2409	3221	4035	4851	5669	5.46

1) The specified sound level is applicable to connection without damper or with fully open damper. In other cases where the airflow is demand-controlled with motor-driven dampers, the required data can be read from Swegon's ProSelect sizing program. Room attenuation = 4 dB

Acoustics

Natural attenuation

Natural attenuation is the total reduction in sound power from duct to room including the end reflection of the unit.

Table 17. Natural attenuation with cladding

Natural attenuation (dB) at mid frequency f (Hz) ΔL_w [dB]							
63	125	250	500	1k	2k	4k	8k
24	14	9	6	9	14	14	18

Accessories

Supply air kit – PARAGON T-SAK-VAV

A motor-driven damper is needed in applications where the user wants to demand-control the supply air by means of CONDUCTOR control equipment. The damper causes a certain amount of flow-generated sound. Therefore a sound attenuator is also needed to guarantee a low sound level in the room. The following components are included in PARAGON T-SAK-VAV:

Motor-driven damper	CRTc including Swegon motor
Sound attenuator	CLA rectangular sound attenuator with circular connection spigots L=500mm

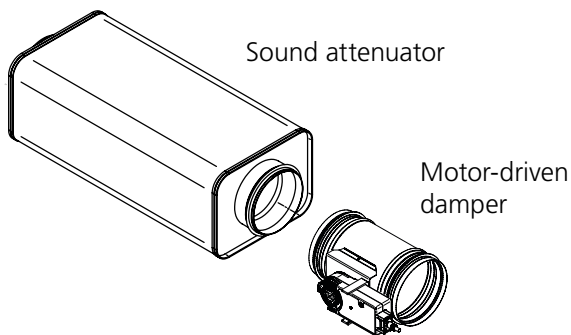


Figure 16. PARAGON T-SAK-VAV

Supply air kit – PARAGON T-SAK-CAV

A commissioning damper is needed to ensure the correct airflow if a simpler feed-back control system with constant airflow has been selected. Commissioning dampers also generate a certain amount of sound. We therefore recommend the use of a sound attenuator for keeping the sound level at a minimum. The following components are included in PARAGON T-SAK-CAV:

Commissioning damper	CRPc-9 Commissioning damper with perforated damper blade and manually adjustable blade
Sound attenuator	CLA rectangular sound attenuator with circular connection spigots L=500mm

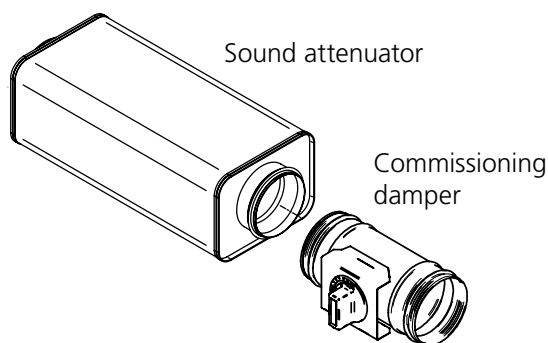


Figure 17. PARAGON T-SAK-CAV

Extract air kit – PARAGON T-EAK-VAV

If the supply air is demand-controlled, the extract air also needs to be feed-back controlled. An extract air kit is needed for balancing the supply air and the extract air. Precisely like the supply air kit, this kit consists of a motor-driven damper and a sound attenuator. In addition an extract air register and two alternative mounting frames are included: one with a nipple and one with a joint.

Motor-driven damper	CRTc including Swegon motor
Sound attenuator	CLA rectangular sound attenuator with circular connection spigots L=500mm
Extract air register	EXCa and accompanying mounting frames: one with a nipple and one with a joint

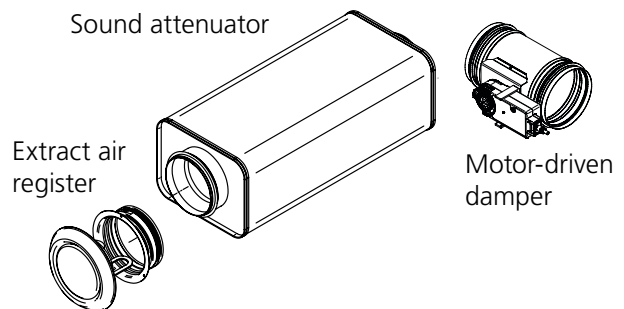


Figure 18. Extract air kit – PARAGON T-EAK-VAV

Extract air kit – PARAGON T-EAK-CAV

A commissioning damper is needed in systems with constant airflows in order to balance the extract airflow with the supply airflow.

Therefore a kit designed for constant airflows is available for simpler systems. This kit contains commissioning damper, sound attenuator, extract air register and mounting frames.

Commissioning damper	CRPc-9 Commissioning damper with perforated damper blade and manually adjustable blade
Sound attenuator	CLA rectangular sound attenuator with circular connection spigots L=500mm
Extract air register	EXCa and accompanying mounting frames: One with a nipple and one with a joint

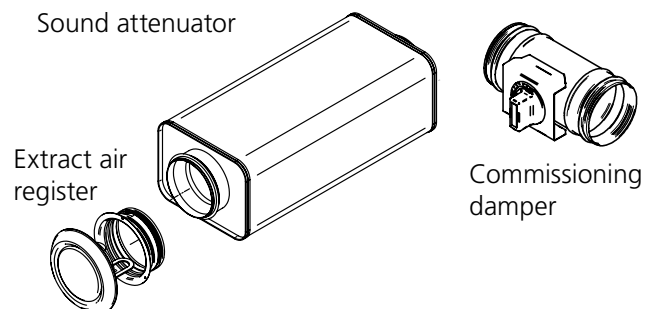


Figure 19. Extract air kit PARAGON T-EAK-CAV

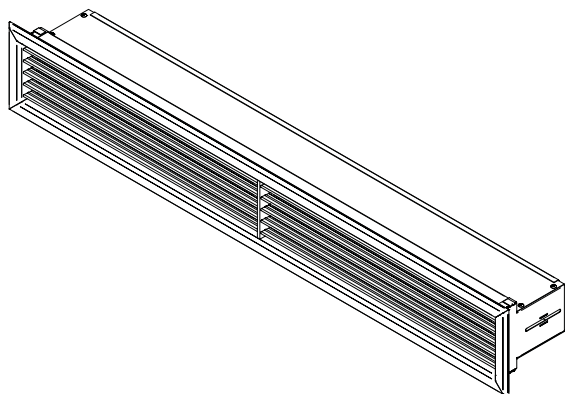
Accessories – Supply air

A supply air grille with a telescopic spigot that covers an interval of 50 - 90 mm is supplied as standard.

The grille is supplied as standard in RAL 9003. Other colours are available on request.

PARAGON c T-SG

Telescopic supply air grille 50-90 mm spigot



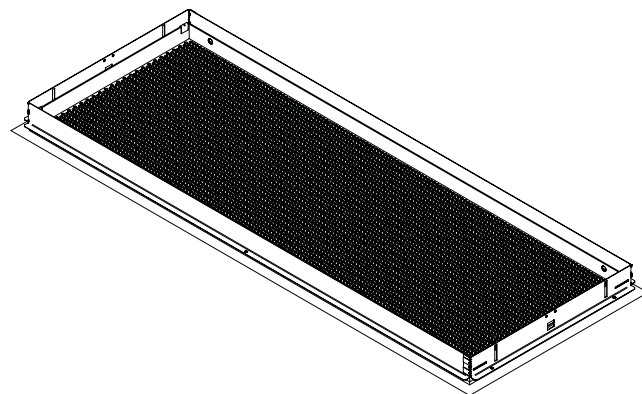
Accessories - Return air

The return air grille is supplied with telescopic spigot/ frame which can be inserted into the module and which then covers the 40-65 mm interval between the module and the ceiling.

The return air grille is supplied as standard in RAL 9003. Available in other colours on request.

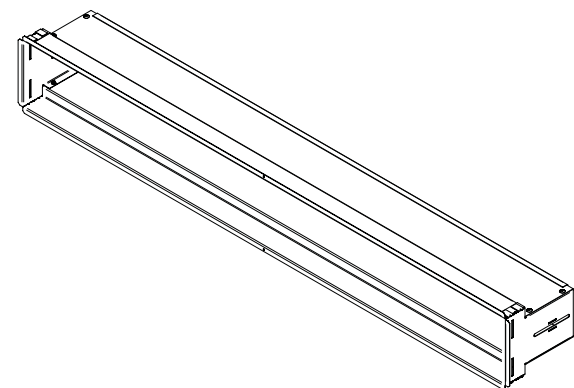
PARAGON c T-RG

Telescopic Return air grille 40-65 mm spigot



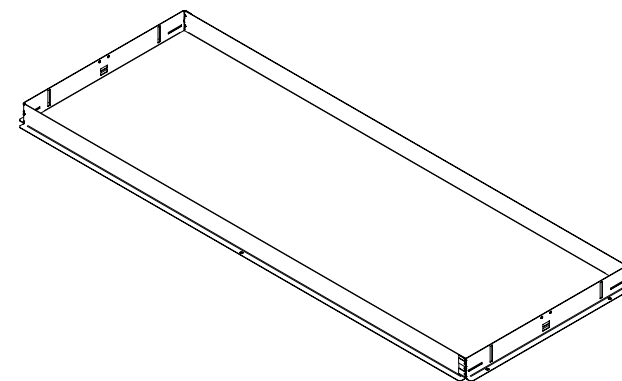
PARAGON c T-OE-SG

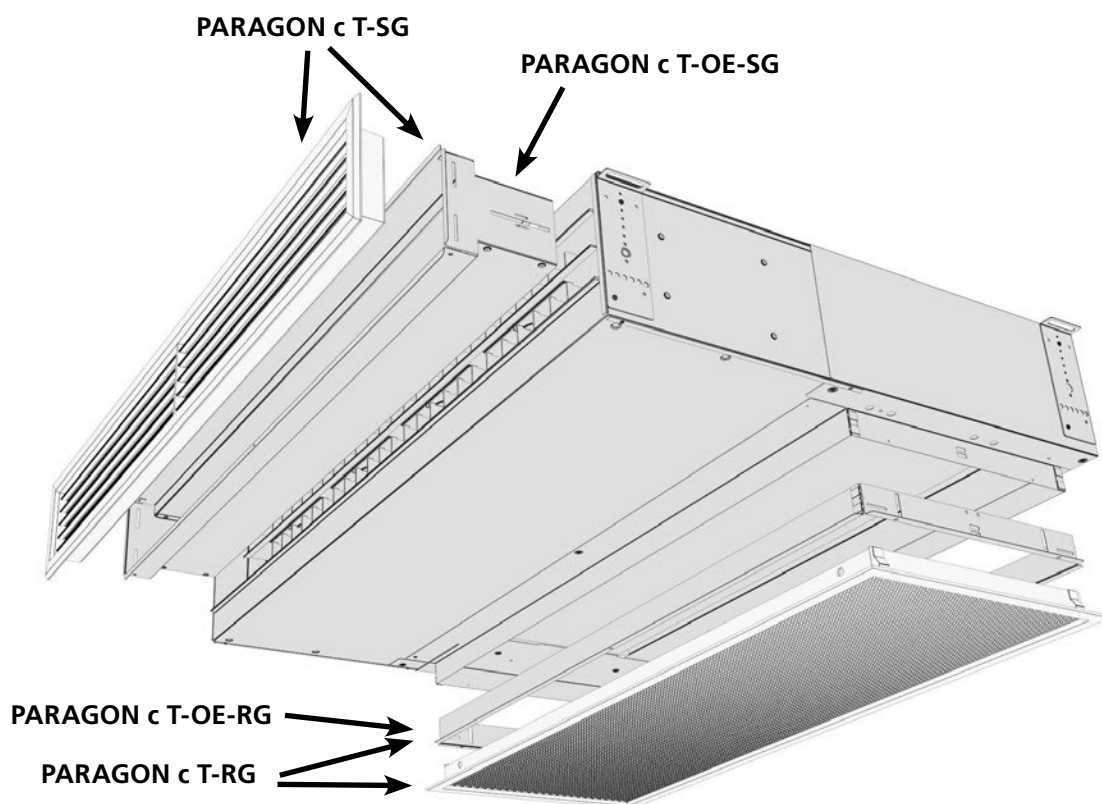
For selection of another grille, only spigots for the supply air grille can be ordered. Spigot dimensions 50-90 mm



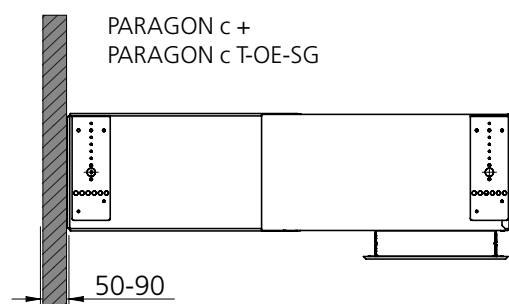
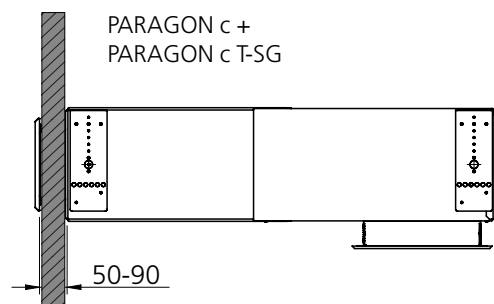
PARAGON c T-OE-RG

For selection of another grille, only spigots for the return air grille can be ordered. Spigot dimensions 40-65 mm

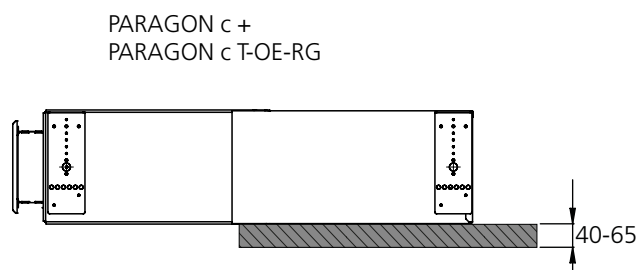
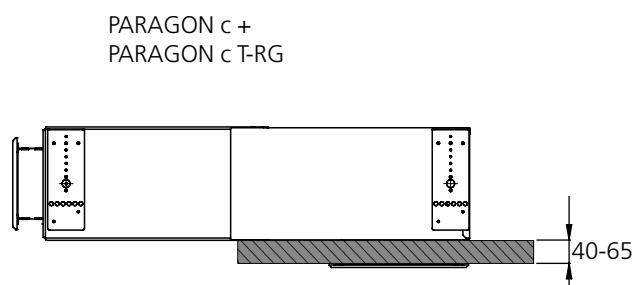




Accessories – Supply air



Accessories - Extract air



Suspension kit SYST MS M8

In the applications in which the PARAGON is not mounted in direct contact with the ceiling, there is a suspension kit available in order to simplify hanging it at the level desired.

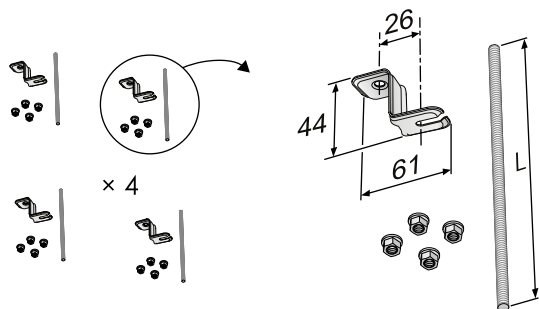


Figure 20. Suspension kit SYST MS M8

Venting nipple

A venting nipple with push-on connection can be utilised in combination with type SYST FS F20 flexible hoses. This is normally not needed, but can be an option if the coil in the PARAGON is the highest point on the water loop.

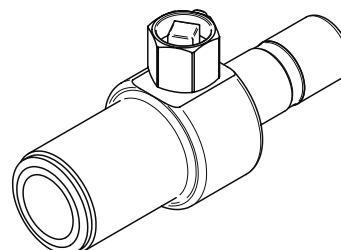


Figure 22. Bleed nipple SYST AR

Flexible hoses

In applications in which you desire to avoid risk of movement in the pipe system caused by heat expansion, you can advantageously utilize flexible hoses for the connection of chilled water and hot water. Eventual vibrations via the pipe system are at the same time diminished to an absolute minimum.

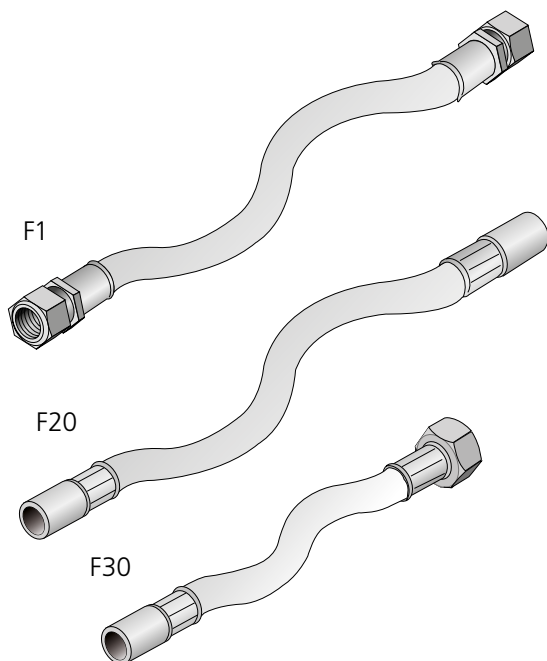


Figure 21. Flexible connection hose, SYST FH

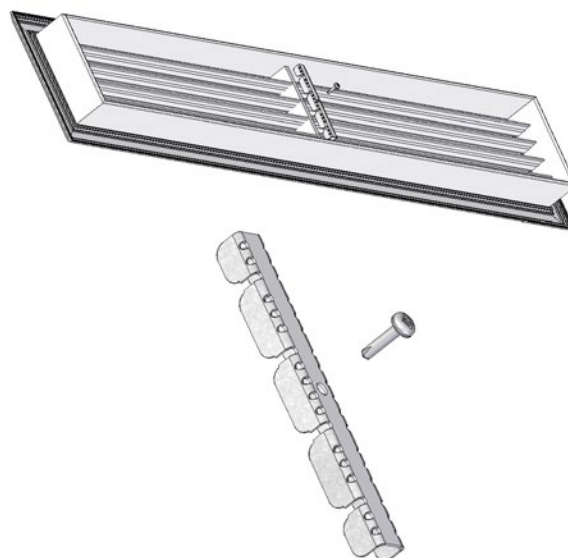


Figure 23. Paragon T- GL. Grille lock for fixing the position of the supply air grille.

Factory-fitted accessories

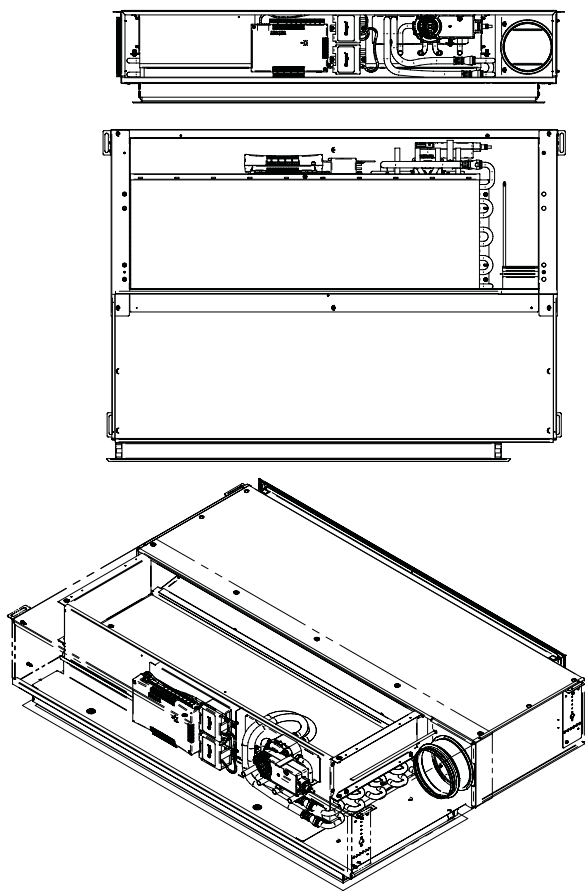


Figure 24. PARAGON c B-HC with factory-fitted Conductor W4.1 controller including 2 pressure sensor room units RU and CCO valve for cooling and heating. Connection on the right hand side –R. See other options in the table below.

ProSelect

ProSelect is Swegon's sizing program which is available at www.swegon.com.

Several options and combinations can be sized in ProSelect.

The factory-fitted control equipment described in Figure

Selected accessories	
PARAGON c Grilles	
PARAGON c Factory Mounted Controls	
Number of accessories 1	
Controller CONDUCTOR W4.1 with 2 x pre	
Valve, Actuator Cool CCO valve	
Valve, Actuator Heat CCO valve	
Condens sensor No	
Room unit / sensors Room unit CONDUCTOR RU (en	

OK

PARAGON Factory Mounted Controls
CONDUCTOR W4.1 with 2 x pressure sensor (supply- and extract)
Compact Changeover (CCO) valve
Compact Changeover (CCO) valve
Room unit CONDUCTOR RU (enclosed with product)

Table 18. Factory-fitted accessories

All the options below and all the possible combinations of the same can be sized in ProSelect.
Conductor RE W1 controller incl. RU room unit
Conductor RE W3 controller incl. RU room unit
Conductor RE W4.1 controller incl. RU room unit and mounted pressure sensor for supply air.
LUNA controller (extra wiring terminals are fitted; the controller is packaged together with the module)
SYST VEN115 angle valve
Angle valve SYST VEN115 + ACTUATOR b 24V NC actuator wired to terminals
Only ACTUATOR b 24V NC actuator wired to terminals
Condensation sensor, WCD2 proactive condensation control, wired to terminals
Condensation sensor, CG-IV reactive condensation control, wired to terminals
Temperature sensor, wired to terminals (Only in combination with Conductor RE)

Installation

Installation

The PARAGON is delivered with four mounting brackets designed for installation directly against the ceiling or installation suspended from the ceiling. The mounting brackets allow a certain amount of further adjustment after the comfort module/ceiling mounting brackets has/have been mounted as accurately as possible. This enables you to position the supply spigot correctly in relation to the wall and the grille. The next step is to connect the air duct, cooling pipes, heating pipes and power supply (24 V AC) to the control equipment. The motor dampers are directly connected to the controller in the PARAGON, if a supply air kit and an extract air kit are included in the installation. The SYST MS M8 suspension kit (must be ordered separately) can be used to advantage in applications in which the PARAGON should not be mounted tight against the ceiling. For detailed mounting instructions, see separate document available for downloading at www.swegon.com.

Water connections

If the PARAGON is supplied with factory-fitted control equipment, the supply water (cooling and heating) is connected to a flat pipe end Ø 12 x 1.0 mm (Cu). The return water (cooling and heating) should be connected to the valves, DN ½" male threads.

If the PARAGON is supplied with factory-fitted control equipment and CCO valve, the supply water (cooling and heating) is connected to a flat pipe end Ø 12 x 1.0 mm (Cu). The return water (cooling and heating) is also connected to a flat pipe end Ø 12 x 1.0 mm (Cu).

If the PARAGON is supplied without control equipment, all the pipes (supply/return – cooling/heating) are connected to a flat pipe end Ø 12 x 1.0 mm (Cu).

NOTE! Support sleeves must be used if compression ring couplings are fitted. It is important use a pipe wrench to adequately restrain the pipe connections when tightening external connections to prevent damage to the connection pipes.

Air connection

A Ø 125 mm air duct including gasket should be connected directly to a fixed nipple.

If the supply air kit is included in the installation, connect the parts in the following order, viewed from the PARAGON:

1. Comfort module PARAGON
2. Air duct, Ø 125 mm
3. Sound attenuator, CLA
4. Air duct, Ø 125 mm
5. CRT motor-driven damper

Note that the supply and extract air kits are also available in Ø 100mm. This kit is suitable for use if the space is limited and low airflows are discharged into the room.

Lining

The work involving lining the terminal can begin when the PARAGON has been completely installed. The PARAGON is designed for use in most common types of load-carrying T-grid ceiling systems with panels, plaster board, etc. To make your work simpler, detailed dimensions for cutting the opening are specified below in the "Dimensions" section on page 26 in this brochure. More detailed information is also available in separate installation instructions at www.swegon.com.

Maintenance

Since the PARAGON operates without any built-in fan, without filter and without a drainage system, very little maintenance is required. In a hotel room or a hospital room, it is normally sufficient to vacuum clean the back side of the coil every six months to remove loose dust. A simple visual inspection of connections and wiping the supply air grille and return air grille with a damp cloth is also recommended. Avoid aggressive cleaning agents which may harm painted surfaces. Normally a mild soap or alcohol solution is fully adequate for cleaning. Note that the dry operation without condensation minimises the risk of bacteria growth that otherwise occurs in wet systems.

The requirement for maintenance is yet lower in an office room, since this type of environment is normally much more dust-free, and this allows longer intervals between scheduled maintenance. It is normally enough to clean the coil in an office room once every second year.

To connect the feed-back control equipment

CONDUCTOR

If the CONDUCTOR control equipment is supplied factory-fitted, the actuator (cooling and heating) or the actuator (cooling/heating CCO valve) is wired to the controller on delivery. The controller must be energized in order to start up the feed-back control functions. This occurs either through the supply of power via a 24 V AC network or through the addition of a separate transformer.

The transformer is available as accessory and must be ordered separately. Note that a transformer normally supplies enough current to operate up to 6 controllers. This assumes that the PARAGON units with factory-fitted mounted CONDUCTOR are situated within a reasonable distance, to avoid too drastic voltage drops in the cables.

The room unit is delivered well packaged together with the PARAGON. The room controller can either operate with wireless remote control or have a wired cable connection. If the controller operates through wireless communication, 4 size AAA batteries supply it with power. If cable connection is used, the room unit is supplied with power via the same cabling used for communication between the module controller and the room controller. As soon as the module controller and the room controller are energized, you simply enter the ID number of the module controller into the room controller to start wireless communication. If the room controller is connected via a cable, you are not required to enter any ID number. There are several accessories available to special order for utilizing the energy saving functions available in the CONDUCTOR with application W4.1 (standard). The motor operated dampers can be easily wired directly to the controller, if the supply and extract air kits are included in the installation.

For hotels there is provision for connecting a key card holder intended to serve as a presence sensor. Of course traditional presence sensors can also be connected, if they are required. There is also an input for a window contact (not accessory), which can be utilized for saving energy when the window is opened. For more information regarding CONDUCTOR W4.1, see the separate product data sheet.

LUNA

If the PARAGON is equipped with LUNA factory-fitted control equipment, the actuator (cooling and heating) is wired to a terminal block, which is simple to reach after removing the recirculation air grille from the underside of the PARAGON. Since the intelligence in the LUNA is integrated into the room controller, there is no controller mounted inside the PARAGON. The controller is then, instead, supplied separately, well packaged together with the PARAGON. The controller must be energized in order to start up the feed-back control functions. This occurs either through the supply of power via a 24 V AC network or through the addition of a separate transformer.

The transformer is available as accessory and must be ordered separately. Note that a transformer normally supplies enough current to operate up to 6 controllers. This assumes that the PARAGON units with factory-fitted mounted LUNA are situated within a reasonable distance, to avoid too drastic voltage drops.

Dimensions and weights

Table 19 – Weight

PARAGON c B-NC / PARAGON c A-HC				
	RYY	RYN	RNY	RNN
Length	Dry, kg	Dry, kg	Dry, kg	Dry, kg
775	21.3	19.7	18.6	17.0
900	24.1	22.3	21.1	19.3
1100	28.2	26.0	24.4	22.2
1300	32.4	29.9	27.9	25.4
1500	36.4	33.5	31.2	28.3
PARAGON c B-HC CCO				
	RYY	RYN	RNY	RNN
Length	Dry, kg	Dry, kg	Dry, kg	Dry, kg
775	23.4	21.8	20.7	19.1
900	26.3	24.5	23.3	21.5
1100	30.4	28.2	26.6	24.4
1300	34.6	32.1	30.1	27.6
1500	38.6	35.7	33.4	30.5

RYY: Connection side R = Right; Supply air grille with spigot
Y = Yes; Recirculation air grille with spigot Y = Yes

Table 20 – Weight water volume

PARAGON c B-NC		
Length	Water volume, l	
	Cooling	Heating
775	0.8	0.3
900	1.0	0.4
1100	1.3	0.5
1300	1.5	0.6
1500	1.8	0.7
PARAGON c A-HC		
Length	Water volume, l	
	Cooling	Heating
775	1.1	
900	1.3	
1100	1.7	
1300	2.0	
1500	2.4	
PARAGON c B-HC CCO		
Length	Water volume, l	
	Cooling	Heating
775	1.1	1.1
900	1.3	1.3
1100	1.7	1.7
1300	2.0	2.0
1500	2.4	2.4

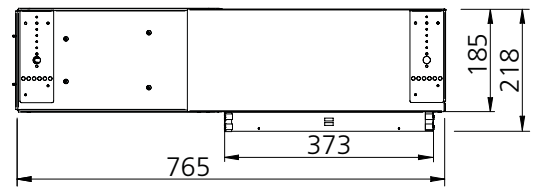


Figure 25. End view excl. spigot and grille

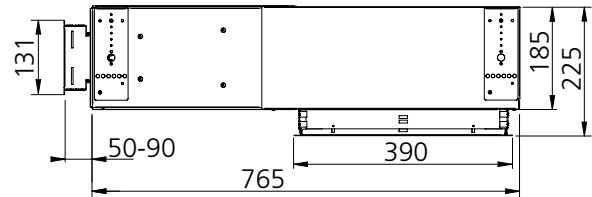


Figure 26. End view excl. grille

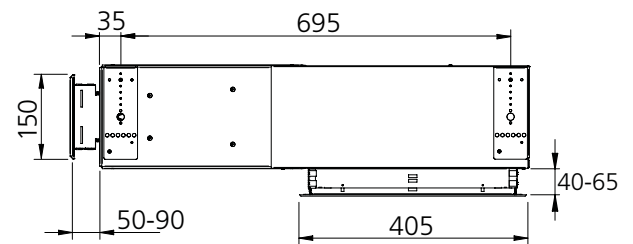


Figure 27. End view incl. grille

Connection on the right hand side –R, for variant HC, NC and CCO

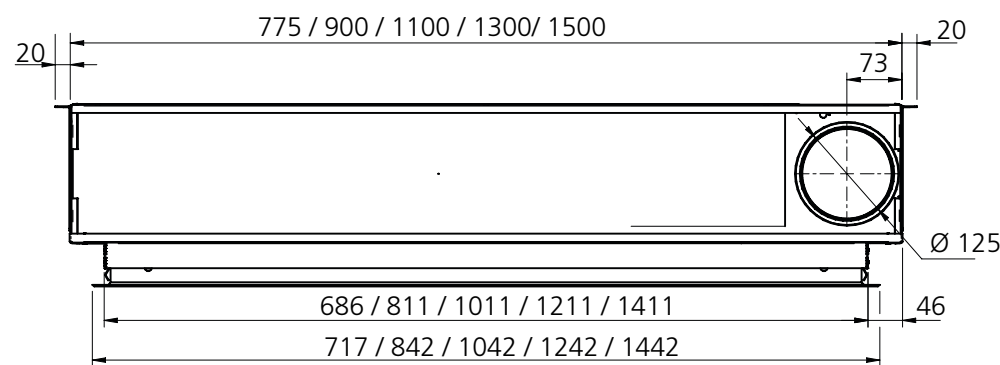
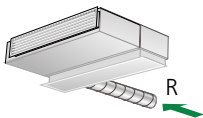


Figure 28. External dimension: View rear, right side - R

L	L+42	A	B
775	817	660	625
900	942	785	750
1100	1142	985	950
1300	1342	1185	1150
1500	1542	1385	1350

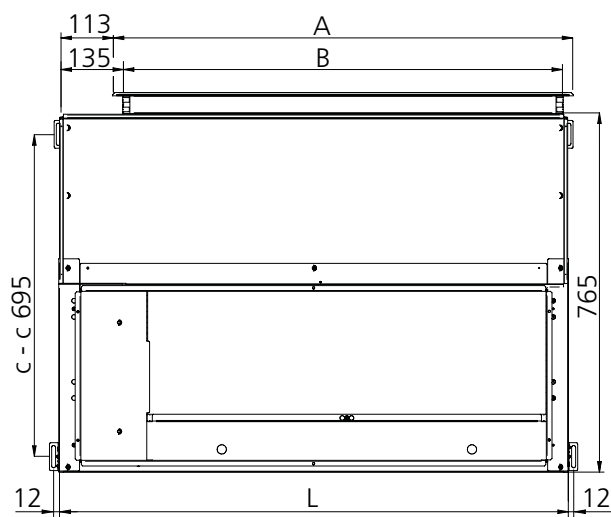


Figure 29. View from below

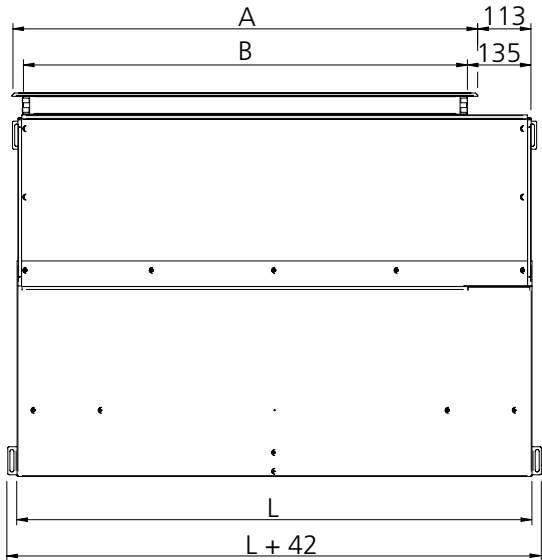


Figure 30. View from above.

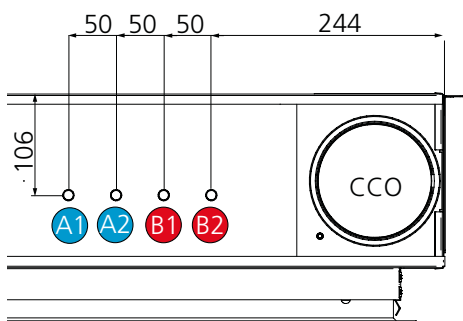
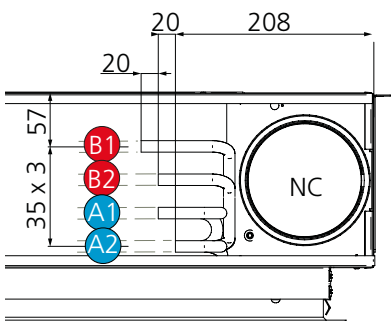
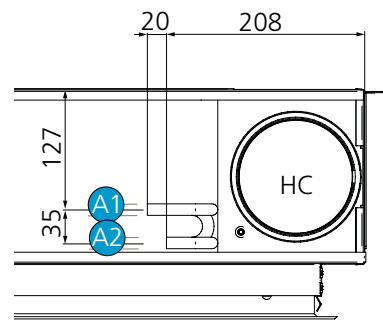
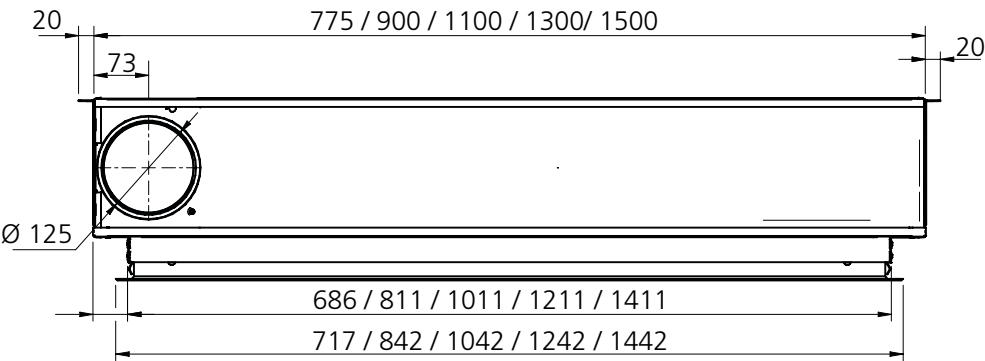
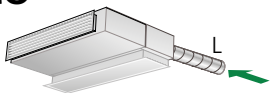


Figure 31. View rear, water connection.

A1 = Cooling water, supply
B1 = Heating water, supply

A2 = Cooling water, return
B2 = Heating water, return

Connection on the left hand side –L, for variant HC, NC and CCO



L	L+42	A	B
775	817	660	625
900	942	785	750
1100	1142	985	950
1300	1342	1185	1150
1500	1542	1385	1350

Figure 32. External dimension: View rear, left side - L

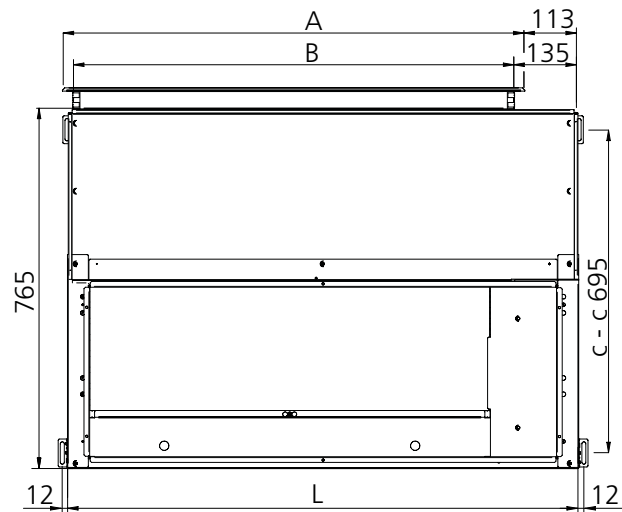


Figure 33. View from below.

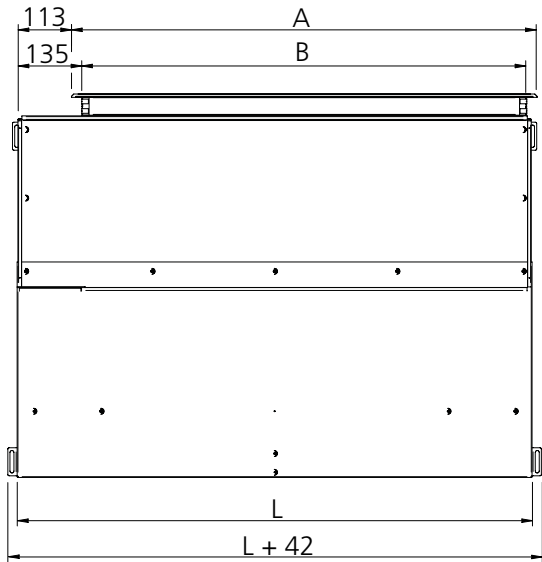


Figure 34. View from above.

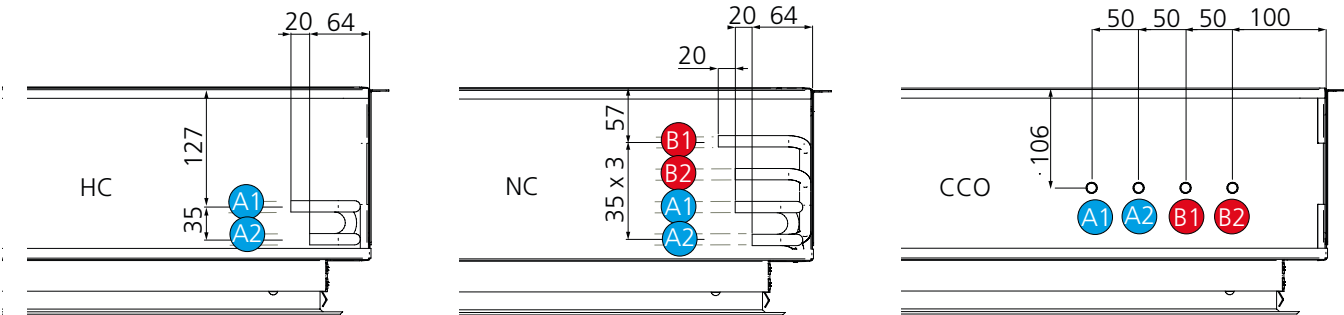


Figure 35. View rear, water connection.

A1 = Cooling water, supply
B1 = Heating water, supply

A2 = Cooling water, return
B2 = Heating water, return

Dimensions, accessories

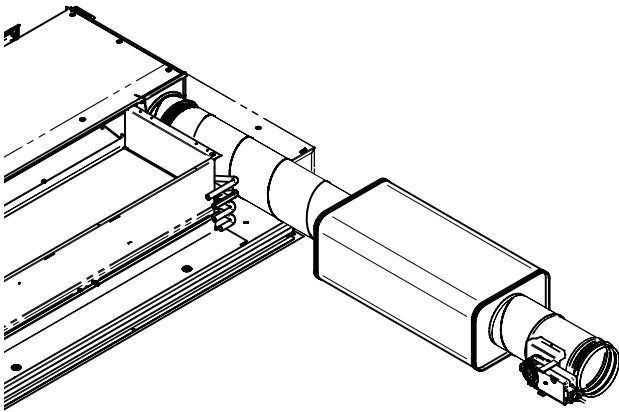


Figure 36. Supply air kit PARAGON T-SAK-VAV

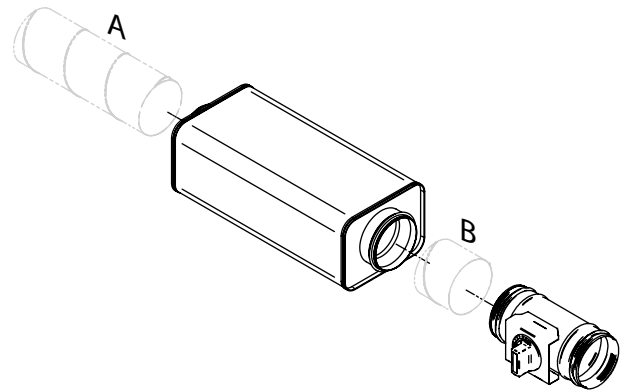


Figure 39. Supply air kit PARAGON T-SAK-CAV-125
Spiral duct not included.

Spiral duct A: Min. length: 330mm
Spiral duct B: Min. length: 70mm

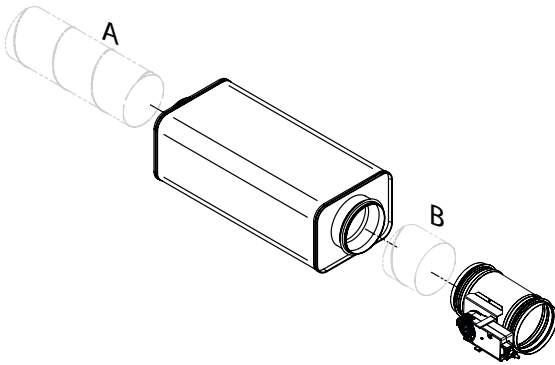


Figure 37. Supply air kit PARAGON T-SAK-VAV-125
Spiral duct not included.

Spiral duct A: Min. length: 330mm
Spiral duct B: Min. length: 70mm

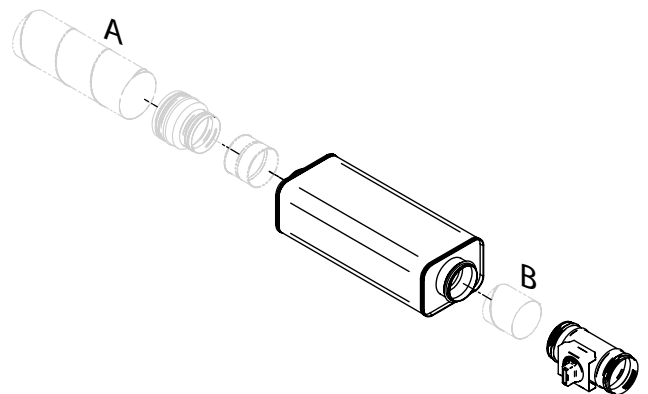


Figure 40. Supply air kit, PARAGON T-SAK-CAV-100

Spiral duct and jointing sleeves dim. 100 not included.

Spiral duct A: Min. length: 330mm
Spiral duct B: Min. length: 70mm

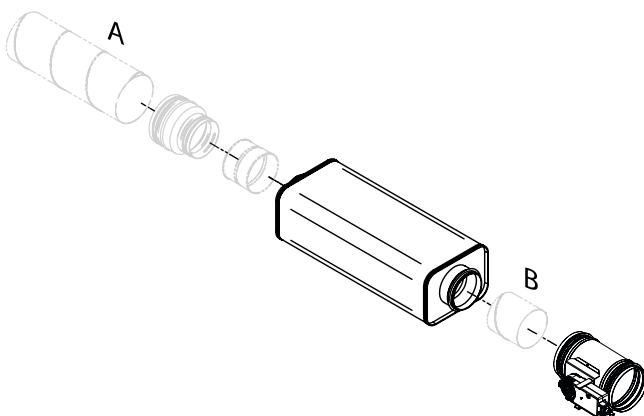


Figure 38. Supply air kit, PARAGON T-SAK-VAV-100
Spiral duct and jointing sleeves dim. 100 not included.

Spiral duct A: Min. length: 330mm
Spiral duct B: Min. length: 70mm

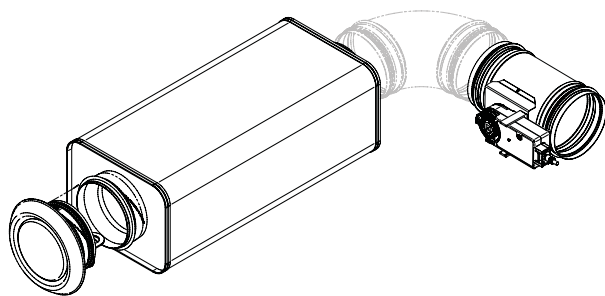


Figure 41. Extract air kit – PARAGON T-EAK

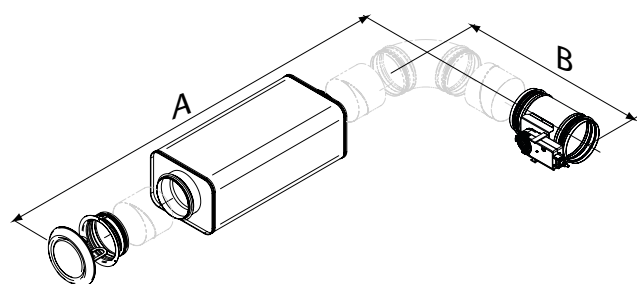


Figure 42. Extract air kit, PARAGON T-EAK-CAV

Available for connection sizes 125 and 100.

Spiral duct and bends are not included

A: Min. length: 770 mm

B: Min. length: 360 mm

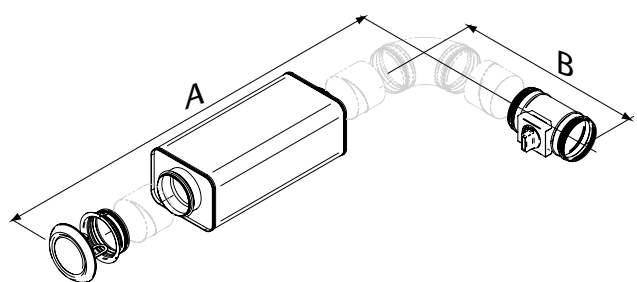


Figure 43. Extract air kit, PARAGON T-EAK-CAV

Available for connection sizes 125 and 100.

Spiral duct and bends are not included

A: Min. length: 770 mm

B: Min. length: 360 mm

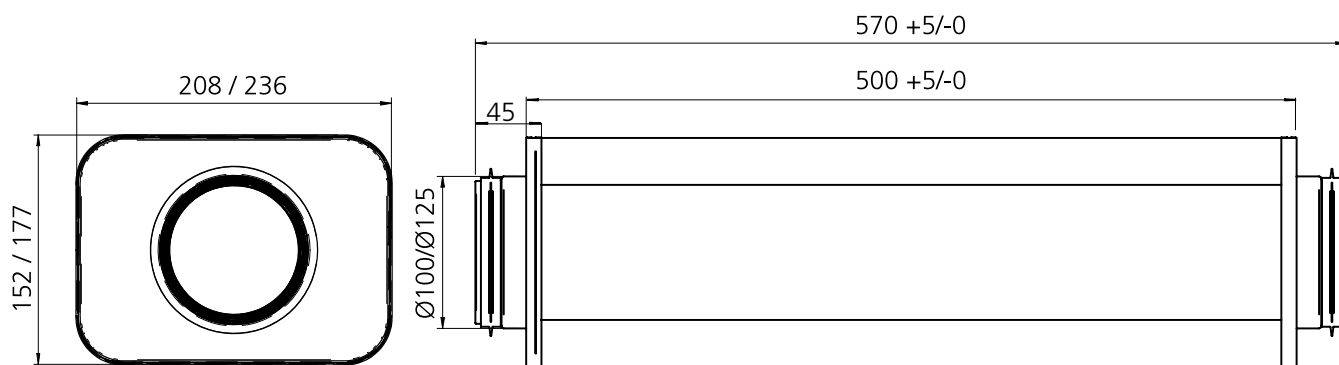


Figure 44. Dimensional drawing sound attenuator CLA Ø 100-500 or Ø125-500. The following components are included in PARAGON T-SAK and PARAGON T-EAK:

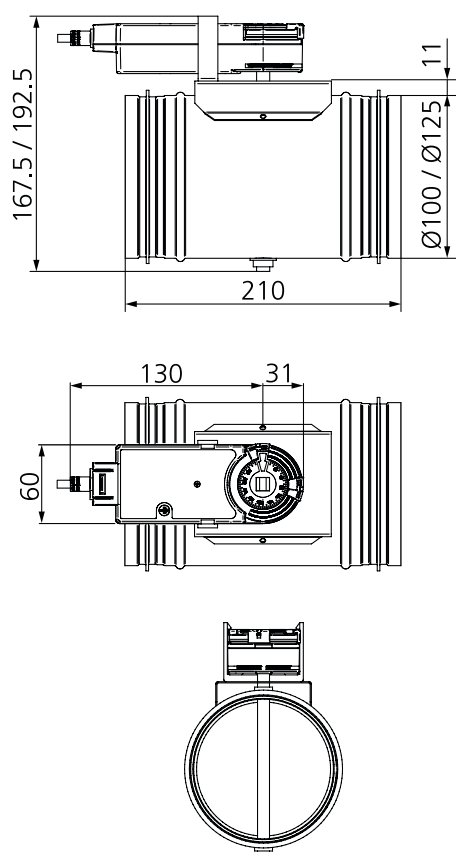


Figure 45. Dimensional drawing motor-driven damper. Included in PARAGON T-SAK-VAV and PARAGON T-EAK-VAV

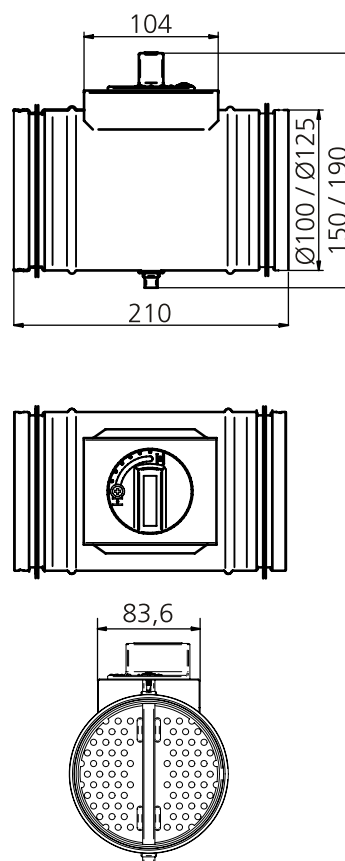


Figure 46. Dimensional drawing commissioning damper. Included in PARAGON T-SAK-CAV and PARAGON T-EAK-CAV

Ordering key

Specification, PARAGON

Type PARAGON comfort module for cooling, heating, ventilation and control. As standard, factory fitted components are included for plug & play installation.

PARAGON delivery demarcation

Swegon's limit of supply are at the connection points for water, primary air and electrical power.

At the connection points, the pipework contractor connects to plain pipe ends and/or male threads towards valves, fills/flushes the pipe system, bleeds it (free of oxygen) and tests the pressure in the pipe circuits.

The ventilation contractor connects to the primary air duct connection with dimensions as specified on the basic size drawing in the section "Dimensions".

EE electrical equipment contractor provides a 24 V AC network power supply or earthed 230 V outlets for a transformer, as well as a junction box, if required, installed in a wall for a room thermostat.

The electrical contractor connects the power (24V) and signal cables to the connection terminals with spring-loaded snap-in connections. Maximum cable cross section 2.5 mm². For safe operation, we recommend cable ends with ferrules.

The building contractor cuts the openings in corridor wall for the supply air duct, in the interior wall and suspended ceiling for the supply air and extract air grilles and in the bathroom ceiling for the extract air duct.

The PARAGON ordering key

PARAGON	c	aaaa-	b-	cccc-	d-	125	ef
Version:							
Length (mm)							
775, 900, 1100, 1300 and 1500							
Function:							
A = Cooling							
B = Cooling and heating							
Capacity variant							
NC - Normal design							
HC - High capacity design							
HC CCO - High capacity design with CCO valve							
Connection side							
R - Right							
L - Left							
Duct connection							
Ø 125							
Flow variant							
Upper nozzle row:							
L, M, H							
Lower nozzle row:							
L, M, H							

Available to order, kit and accessories

Supply air kit	VAV: PARAGON CRTc motor-driven damper with tight damper blade with damper actuator and CLA sound attenuator
	CAV: PARAGON CRPc manually adjustable damper with perforated damper blade and CLA sound attenuator
Extract air kit	VAV: PARAGON CRTc motor-driven damper with tight damper blade with damper actuator, CLA sound attenuator and extract air register with mounting frame
	CAV: PARAGON CRPc manually adjustable damper with perforated damper blade, CLA sound attenuator and extract air register with mounting frame
Flexible connection hose	Connection hose supplied with clamping ring coupling, push-on coupling or union nut.
Assembly piece	Ceiling mounting bracket and threaded rod for mounting in ceiling. Double threaded rods with thread lock are also available.
Venting nipple	Venting nipple with push-on coupling for connection to the return pipe for water, diameter: 12 mm
Grille lock	Grille lock for fixing the position of the supply air grille.
Spigot	Spigot for the supply air grille
	Spigot for the return air grille
For further accessories for the control equipment, see the CONDUCTOR and LUNA product data sheets and the CCO valve data sheet.	

Ordering Key, Accessory kit

Supply air kit	PARAGON	c	T-SAK-VAV-	aaa
Version:				
Kit with motor-driven damper				
Ø100; Ø125				

Supply air kit	PARAGON	c	T-SAK-CAV-	aaa
Version:				
Kit with manually adjustable damper				
Ø100; Ø125				

Extract air kit	PARAGON	c	T-EAK-VAV-	aaa
Version:				
Kit with motor-driven damper				
Ø100; Ø125				

Extract air kit	PARAGON	c	T-EAK-CAV-	aaa
Version:				
Kit with manually adjustable damper				
Ø100; Ø125				

Ordering Key, Accessories

Assembly piece	SYST MS M8	aaaa-	b
Length threaded rod (mm): 200; 500; 1000			
Type: 1=One threaded rod 2=Two threaded rods and one thread lock			

Supply air grille incl. 50-90 mm spigot	PARAGON c T-	SG-	aaaa
L = 775, 900, 1100, 1300, 1500			

Spigot for the supply air grille 50-90 mm	PARAGON c T-	OE-SG	aaaa
L = 775, 900, 1100, 1300, 1500			

Return air grille incl. 40-65 mm spigot	PARAGON c T-	RG-	aaaa
L = 775, 900, 1100, 1300, 1500			

Spigot for the return air grille 40-65 mm	PARAGON c T-	OE-RG	aaaa
L = 775, 900, 1100, 1300, 1500			

Flexible connection hose, (x1) Clamping ring coupling (Ø12 mm) against pipe at both ends (excl. support sleeves)	SYST FH F1-	aaa-	12
Length (mm): 300; 500; 700			

Flexible connection hose, (x1) Quick-fit coupling push-on (Ø12 mm) against pipe at both ends	SYST FH F20-	aaa-	12
Length (mm): 275; 475; 675			

Flexible connection hose, (x1) Quick-fit coupling push-on, (Ø12 mm) against pipe at one end, union nut G20ID at the other end.	SYST FH F30-	aaa-	12
Length (mm): 200; 400; 600			

Venting nipple	SYST AR12
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Grille lock	PARAGON T-GL
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Condensation sensor, wired to terminal, (x1)	aaaa
WCD2 proactive condensation control CG-IV reactive condensation control	

Specification text

Example of a specification text according to VVS AMA.

PCT.312 Duct connected chilled beams.

KB XX

Swegon's PARAGON comfort module that supplies air via a supply air grille in a wall and has integrated circulating air opening in the bottom part.

For rear edge installation in a wall/ceiling, with the following functions:

- Cooling
- Heating, water
- Ventilation
- VariFlow for simple adjustment of the airflows
- ADC
- Ø125 mm duct connection
- Integrated circulating air opening in face plate
- Coil and control equipment, if required, accessible via the rear of the product or via the recirculating air grille
- Cleanable
- Fixed measurement tapping with hose
- Contractor demarcation at connection point for water and air as in outline drawing.
- At the points of connection the pipe contractor connects to 12 mm plain pipe end after which the ventilation contractor connects the Ø125 mm insertion piece (sleeve).
- The pipe contractor fills, bleeds, tests the pressure and assumes responsibility for the design water flows reaching each branch of the system and the unit.
- The ventilation contractor conducts initial commissioning of the airflows
- Eurovent certified
- Grilles in standard colour RAL 9003

Accessory kits:

- PARAGON c-T-SAK-VAV-aaa xx pcs.
- PARAGON c-T-SAK-CAV-aaa xx pcs.
- PARAGON c-T-EAK-VAV-aaa xx pcs.
- PARAGON c-T-EAK-CAV-aaa xx pcs.

Accessories:

- Supply air grille, PARAGON c T-SG-aaa xx pcs.
- Spigot (supply air) PARAGON c T-OE-SG-aaaa xx pcs.
- Grille lock, PARAGON T-GL xx pcs.
- Return air grille, PARAGON c T-RG-aaaa xx pcs.
- Spigot (return air) PARAGON c T-OE-RG-aaaa xx pcs.
- Commissioning damper SYST CRPc 9-125, xx pcs.
- Assembly piece, SYST MS M8 aaaa-b
- Flexible connection hose, SYST FH F1 aaa- 12 xx pcs.
- Flexible connection hose, SYST FH F20 aaa- 12 xx pcs.
- Flexible connection hose, SYST FH F30 aaa- 12 xx pcs.
- Venting nipple, SYST AR 12 xx pcs.

etc.

Specify the quantities individually or with reference to the drawing.