

Adriatic

for individually suspended installation

Exposed active climate beam with cooling, heating and ventilation



ADRIATIC VF

Climate beam Adriatic

- Adriatic is an enclosed climate beam with integrated circulation air openings in the lower section.
- Air supply along the ceiling.
- Side sections including air openings only 150 mm deep.
- An attractive climate beam design for individually suspended installation.

Cooling capacity

P_k (W/m)	q (l/sm)	p_i (Pa)	ΔT_{mk} (°C)	ΔT_l (°C)
450	10	31	10	10
605	15	70	10	10

Heating capacity: 280 W/m ($\Delta T_{mv} = 15$ °C, $q = 10$ l/sm)
 Air flow: Up to 24 l/sm.
 Length: From 1.2 m to 3.9 m.
 Width: 360 mm.
 Height: 172 mm.



Function

- Cooling
- Heating (optional)
- Ventilation
- Comfort guarantee ADC (optional)

Application

Adriatic is suitable for all types of rooms using water based climate cooling:

- Offices and conference rooms
- Hotels
- Lecture theatres
- Computer rooms
- Banks
- Restaurants

Advantages of Adriatic

- Adriatic offers with its fine design and extreme low height the conditions to blend into all environments. Side sections including air openings are only 150 mm deep.
- As Adriatic is an enclosed climate beam with integrated circulation air openings in the lower section it can be surface mounted without interfering the circulation air openings.
- Adriatic combines the ceiling unit's superior air discharge technique with the individually suspended climate beam's stringent design demands. Air discharge takes place along the ceiling providing an optimal Coanda effect, which is necessary to maintain low air velocities in the occupied zone.
- Connection components, valves and dampers are concealed by an attractive connection cover. The cover is fitted once the beam has been installed and connected.
- The Swegon Comfort guarantee ADC gives a unique opportunity to control the air discharge.

Adriatic

Adriatic is a closed climate beam with a two-way air supply. Cooling and ventilation or cooling, heating and ventilation.

Installation

Adriatic is designed for individually suspended installation, either with drop rods or surface mounted.

Connection dimensions:

Cooling (water): plain pipe ends Cu Ø12 x 1.0 mm

Heating (water): plain pipe ends Cu Ø10 x 1.0 mm

Air: push-in fittings (sleeve) Ø125 mm.

Suspension:

The units are supplied without mounting fittings. If mounting fittings are required, they can be ordered separately.

Use the SYST MS for suspended installation.

Use the SYST MD4S for mounting the unit against the ceiling surface

Standard range held in stock

For information about our standard product range, visit our website www.swegon.com

Function

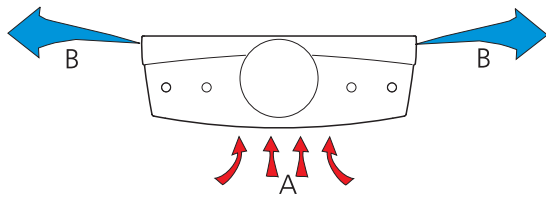


Figure 1. Cooling and ventilation.
 A = Room air
 B = Primary air and chilled room air

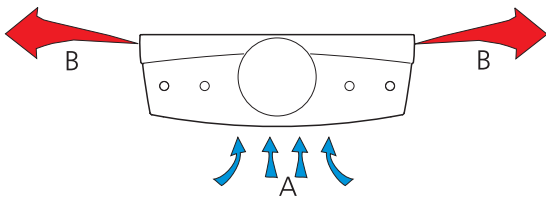


Figure 2. Heating and ventilation.
 A = Room air
 B = Primary air and heated room air

Assembly

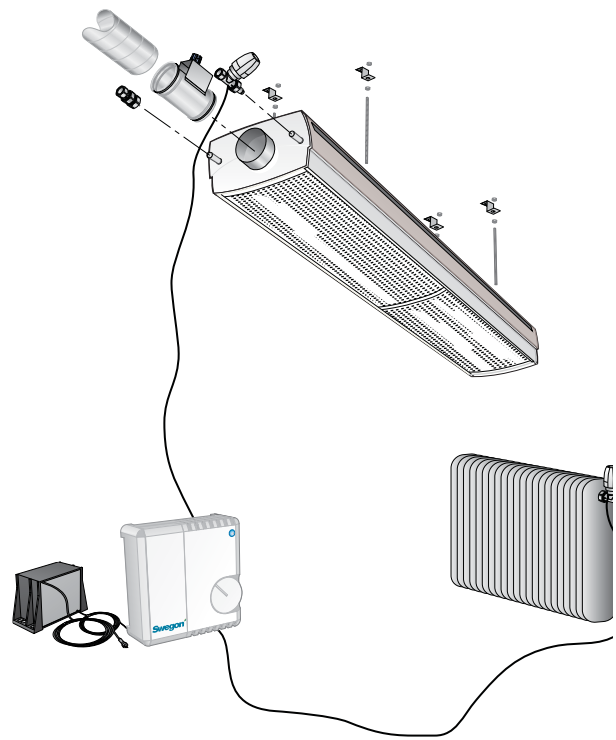


Figure 3. Assembly.

Range available on order

Length: From 1.2 to 3.9 m in increments of 300 mm.

Colour: RAL 9010 gloss value 30 ± 6%.

Design

Nozzle configuration, that is, the number of nozzle holes in the air duct to supply the room with air. For further information see Technical data. The following nozzle configurations are available:
1 = standard, 3 for small air flow rates, 4 for large air flow rates and E and N for standard respective large air flow rates for one-way designs (75/25%).

Water based heating, variant -B

See the heating section further on.

Internal connection -I

With 300 mm compartment and end section without holes for pipes and air duct.
Intended for vertical connection. The active length is calculated as follows for capacity data: $L_{\text{active}} = L_{\text{nominal}} - 300$ mm.

Adriatic with ADC

Swegon comfort guarantee ADC, see Figure 6, can be set to nine different angles and offers a unique opportunity to check the degree of air mixture. Adriatic with ADC gives the following advantages:

- short distance between counter blowing beams
- easy to correct for obstacles with blowing
- easy to adjust on site
- possibility for the user to influence the comfort level
- greater flexibility with conversions.

Special types

- Adriatic can be supplied in an optional colour on request or with a structured finish.
- Extremely low model with a 100 mm diameter connection and 105 mm end plates.

Please contact Swegon for further information on special models.

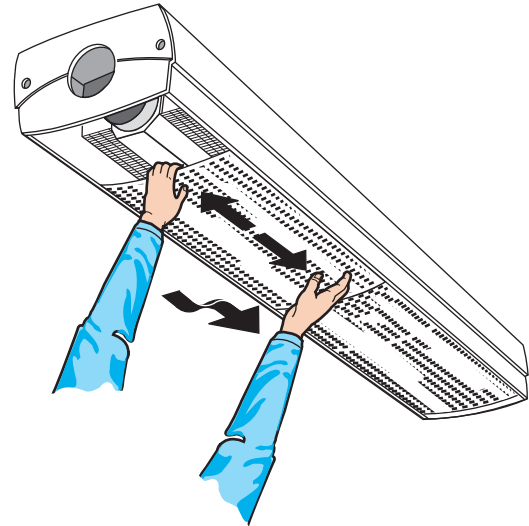


Figure 4. Access from below.

Range available on order

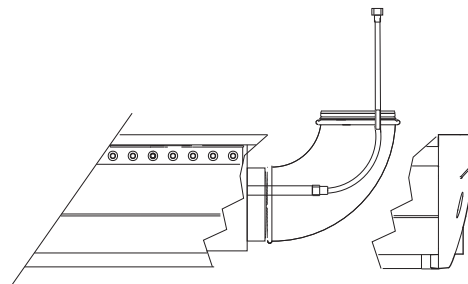


Figure 5. Internal for vertical connection. The duct elbow and hose are ordered separately.

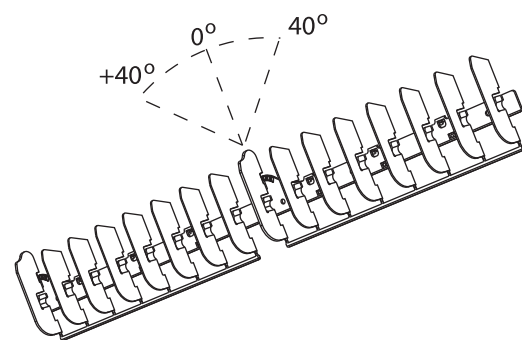


Figure 6. Swegon comfort guarantee ADC.

Accessories

Adjustable damper CRP

Circular adjustment damper Ø 125 with perforated damper and manual control knob.

Flexible connection hose

Flexible hose with either quick-fit coupling on both ends, clamping ring coupling on both ends for connection to 10 mm dia. or 12 mm dia. copper pipe or quick-fit coupling on one end and G20ID sleeve nut on the other end. Supplied piece by piece

Angled duct connection fitting

Connection fitting for vertical connection 90°.

Connection pipe extension

Pipe extension with a compression ring coupling at one end for connection to the climate beam. Supplied in pairs.

Connection cover for connection against the wall

Connection cover is fitted on the climate beam's extension and on towards the wall to conceal the pipe and duct connections.

Nozzle plug

Assembly set MD4S

Special assembly set for surface mounting.

MS assembly set

The assembly set for suspended installation contains threaded rods of various length (200; 500 and 1000 mm). The length desired must be specified as needed. The set also includes plastic sleeves to make the installation more attractive. The ceiling mounting brackets, nuts and washers are included in the set.

Recommended limit values - Water

Max. recommended working pressure:	1600 kPa
Max. recommended testing pressure when testing the completed installation:	2400 kPa
Min. cooling water flow:	0.03 l/s
Temperature increase cooling water:	2–5°C
Min. supply temperature:	Shall always be selected so that the system works without condensation.
Temperature drop warm water:	2 - 10°C
Highest supply temperature:	60°C
Min. warm water flow:	0.013 l/s

The evacuation of air is ensured at the recommended water flow per circuit.

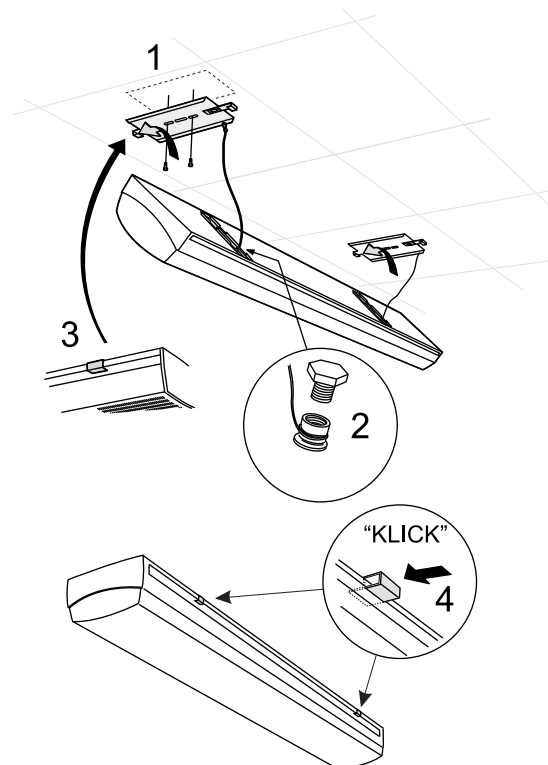


Figure 7. Surface mounted installation, MD4S.

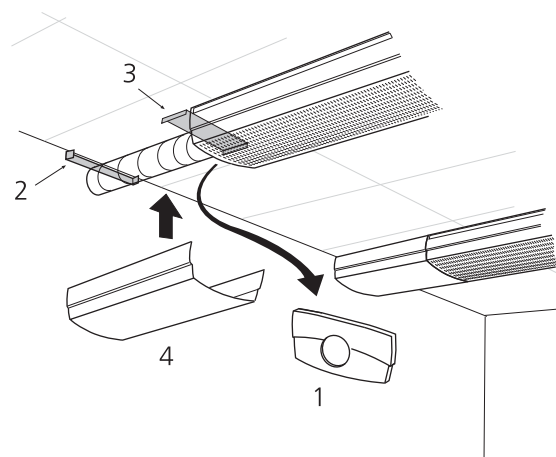


Figure 8. Cover for connection against a wall.
 1. Dismount the plastic end cover of the beam.
 2. Fasten the wall attachment to the wall.
 3. Insert the attachment plate on the top of the beam.
 4. Fit the cover into the wall attachment and to the beam. Lock the position of the cover with the attachment plate by pushing the plate back.

Technical specification

Cooling

The cooling capacities have been measured in accordance with prEN 15 116 and have been converted for constant water flow according to Diagram 3.

On Adriatic with ADC an output factor of 0.95 is used to calculate the capacity from tables 1–5 (water based cooling) and diagram 4 (water based heating).

Selection tables 1-5.

The tables are listed according to the duct pressure and configuration, i.e. the number of nozzles active to supply air to the room. By utilising alternative nozzle configurations (Tables 1–5) the air flow rate, duct pressure and cooling capacity can be influenced.

The following can be read from the selection tables:

- Climate beam length (m)
- Primary air flow (l/s)
- Sound level with open damper, without and with ADC
- Nozzle pressure p_i (Pa)
- Air cooling capacity P_i (W)
- Water based cooling capacity P_k (W)

Important! The total cooling power is the sum of the air-based and the water-based cooling capacities.

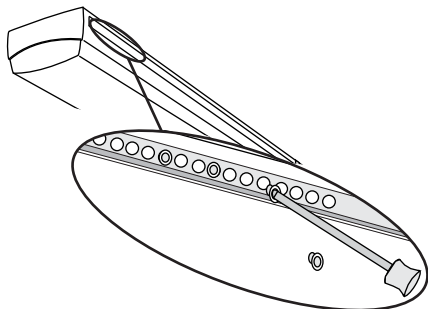


Figure 9. The nozzle configuration can be altered by plugging.

Nozzle configuration (figure 9)

By plugging the nozzle holes in the air duct, the nozzle configuration can be redone as follows:

- From nozzle config. 1 to nozzle config. 3 (small air flows): plug every other hole (both sides).
- From nozzle config. 1 to nozzle config. E (one-way, small air flows): plug two of the three holes on the low flow side.
- From nozzle config. 4 to nozzle config. 1 (medium air flows): plug every other hole (both sides).

Units of measure

P:	Capacity W, kW
t_r :	Room temperature °C
t_m :	Mean water temperature °C
v:	Velocity m/s
q:	Flow l/s
p:	Pressure Pa, kPa
Δp :	Pressure drop Pa, kPa
ΔT_m :	Temperature difference [$t_r - t_m$] °C
ΔT :	Temperature difference between supply - return °C

Supplemental index: v = heating, k = cooling, l = air, i = adjustment

The pressure drop on the water side is calculated according to the formula:

$$\Delta p_k = (q_k / k_{pk})^2 \text{ [kPa] where:}$$

Δp_k = The pressure drop in the water circuit (kPa)

q_k = The water flow (l/s), taken from **Diagram 1**

k_{pk} = Pressure constant, taken from **Tables 7 and 8**.

The air's cooling capacity is calculated according to the formula:

$$P_i \text{ (W)} = q_i \times 1.2 \times \Delta T_i, \text{ where:}$$

P_i = The air's cooling effect (W)

q_i = Air flow (l/s)

ΔT_i = Temperature difference (°C)

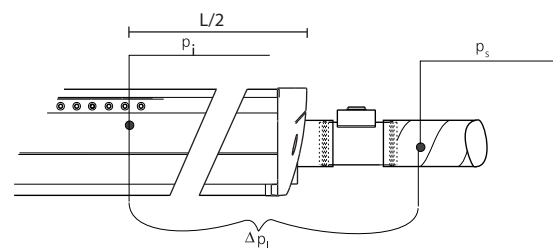


Figure 10. Pressure drop air.

p_i = Nozzle pressure, taken from tables 1-5

p_s = The pressure before the device and damper

Δp_i = Throttling range, assembled damper (taken from diagrams 7)

Table 1. Cooling data. Selection table for symmetrical air flow version LS (8,5-12,5 l/sm) without ADC.

Unit's length	Air flow (l/s)	Sound level dB(A)*		p _i (Pa)	Cooling capacity primary air (W)				Cooling capacity water (W)								
		A	B		ΔT _l	6	8	10	12	ΔT _{mk}	6	7	8	9	10	11	12
1,2m	8	<20	<20	18		58	77	96	115		179	207	235	263	291	319	347
1,2m	11	<20	23	31		79	106	132	158		220	255	290	325	360	395	429
1,2m	14	<20	30	50		104	139	174	209		256	297	339	380	420	461	502
1,2m	16	<20	34	70		115	154	192	230		282	327	373	418	463	508	553
1,5m	11	<20	<20	18		79	106	132	158		230	266	303	339	375	411	446
1,5m	14	<20	23	31		101	134	168	202		283	328	373	418	463	508	552
1,5m	18	<20	30	50		130	173	216	259		329	383	436	488	541	593	646
1,5m	21	<20	34	70		151	202	252	302		362	421	479	538	596	654	711
1,8m	13	<20	<20	18		94	125	156	187		281	236	370	414	458	502	546
1,8m	17	<20	22	31		122	163	204	245		346	401	456	512	566	621	675
1,8m	22	<20	30	50		158	221	264	317		403	468	533	597	661	725	789
1,8m	26	21	35	70		187	250	312	374		443	515	586	657	728	799	870
2,1m	15	<20	<20	18		108	144	180	216		332	385	437	490	542	594	645
2,1m	20	<20	22	31		144	192	240	288		409	474	540	605	669	734	798
2,1m	26	<20	30	50		187	250	312	374		476	553	630	706	782	858	933
2,1m	30	22	34	70		216	288	360	432		524	608	693	777	861	945	1028
2,4m	18	<20	<20	18		130	173	216	259		383	444	505	565	625	685	745
2,4m	23	<20	22	31		166	211	276	331		472	547	623	698	773	847	922
2,4m	30	<20	30	50		216	288	360	432		549	638	727	815	902	990	1077
2,4m	35	23	34	70		252	336	420	504		604	702	800	897	994	1090	1187
2,7m	20	<20	<20	18		144	192	240	288		434	503	572	641	709	776	844
2,7m	26	<20	22	31		187	250	312	374		535	620	706	791	876	960	1045
2,7m	34	<20	30	50		245	326	408	490		623	723	824	923	1023	1122	1221
2,7m	40	25	35	70		288	384	480	576		685	796	906	1016	1126	1236	1345
3,0m	23	<20	<20	18		166	221	276	331		485	563	640	716	792	868	943
3,0m	30	<20	23	31		216	288	360	432		598	694	789	884	979	1073	1168
3,0m	38	22	30	50		274	365	456	547		696	809	921	1032	1143	1254	1365
3,0m	44	26	34	70		317	422	528	634		766	890	1013	1136	1259	1381	1503
3,3m	25	<20	<20	18		180	240	300	360		537	622	707	792	876	959	1043
3,3m	33	<20	24	31		238	317	396	475		661	767	872	977	1082	1187	1291
3,3m	42	24	30	50		302	403	504	605		770	894	1018	1141	1264	1386	1508
3,3m	49	28	35	70		353	470	588	706		846	983	1120	1256	1392	1527	1662
3,6m	27	<20	<20	18		194	259	324	389		588	681	774	867	959	1051	1142
3,6m	36	<20	24	31		259	346	432	518		724	840	955	1071	1185	1300	1414
3,6m	45	25	30	50		324	432	540	648		843	979	1115	1250	1384	1518	1652
3,6m	54	30	36	70		389	518	648	778		927	1077	1227	1376	1524	1672	1820
3,9m	30	<20	<20	18		216	288	360	432		639	741	842	942	1043	1142	1242
3,9m	39	21	24	31		281	374	468	562		786	913	1039	1164	1288	1413	1537
3,9m	49	27	31	50		353	470	588	706		916	1064	1212	1358	1505	1651	1796
3,9m	59	33	36	70		425	566	708	850		1008	1171	1339	1495	1657	1818	1979

For Adriatic with ADC the output factor 0.95 is used for the calculation of the cooling water's capacity: $P_{ADC} = P_k \times 0.95$.

* Room attenuation = 4 dB, open CRPc-damper mounted directly against the air connection of the climate beam.

A = without ADC, B = with ADC

Table 2. Cooling data. Selection table for symmetrical air flow version HS (11,5-18 l/s) without ADC.

Unit's length	Air flow (l/s)	Sound level dB(A)*		p _i (Pa)	Cooling capacity primary air (W)				Cooling capacity water (W)								
		A	B		ΔT _i	6	8	10	12	ΔT _{mk}	6	7	8	9	10	11	12
1,2m	3	<20	<20	11		22	29	36	43		72	83	93	103	113	123	133
1,2m	5	<20	20	31		36	48	60	72		129	150	170	190	209	229	249
1,2m	8	<20	34	70		58	77	96	115		174	202	230	258	285	312	339
1,5m	4	<20	<20	11		29	38	48	58		93	106	120	133	146	159	172
1,5m	7	<20	23	31		50	67	84	101		166	192	218	244	269	295	320
1,5m	11	<20	35	70		79	106	132	158		224	260	296	331	367	402	437
1,8m	5	<20	<20	11		36	48	60	72		113	130	146	162	178	194	210
1,8m	8	<20	21	30		58	77	96	115		201	232	263	294	325	355	386
1,8m	13	<20	34	70		94	125	156	187		274	318	362	405	448	491	534
2,1m	6	<20	<20	11		43	58	72	86		134	154	173	192	211	230	248
2,1m	10	<20	22	31		72	96	120	144		241	278	316	353	389	426	463
2,1m	15	<20	34	70		108	144	180	216		324	376	428	479	530	581	631
2,4m	7	<20	<20	11		50	67	84	101		154	177	200	222	243	265	286
2,4m	12	<20	23	31		86	115	144	173		278	321	364	407	450	492	534
2,4m	18	<20	35	70		130	173	216	259		374	434	494	553	611	670	728
2,7m	8	<20	<20	11		58	77	96	115		175	201	226	251	276	300	325
2,7m	13	<20	22	31		94	125	156	187		315	364	413	461	510	557	605
2,7m	20	<20	34	70		144	192	240	288		424	492	559	626	693	760	826
3,0m	9	<20	<20	11		65	86	108	130		196	225	253	281	308	336	363
3,0m	15	<20	23	31		108	144	180	216		352	407	461	516	570	623	676
3,0m	22	<20	34	70		158	211	264	317		474	550	625	700	775	849	923
3,3m	10	<20	<20	11		72	96	120	144		216	248	280	310	341	371	401
3,3m	16	<20	22	31		115	154	192	230		389	450	510	570	630	689	748
3,3m	25	21	35	70		180	240	300	360		524	608	691	774	856	938	1020
3,6m	11	<20	<20	11		79	106	132	158		237	272	306	340	374	407	439
3,6m	18	<20	23	31		130	173	216	259		426	492	559	624	690	754	819
3,6m	27	21	34	70		194	259	324	389		574	666	757	848	938	1028	1118
3,9m	12	<20	<20	11		86	115	144	173		258	295	333	370	406	442	478
3,9m	19	<20	22	31		137	182	228	274		463	535	607	679	750	820	890
3,9m	29	21	34	70		209	278	348	418		624	724	823	922	1020	1117	1215

For Adriatic with ADC the output factor 0.95 is used for the calculation of the cooling water's capacity: $P_{ADC} = P_k \times 0.95$.

* Room attenuation = 4 dB, open CRPC-damper mounted directly against the air connection of the climate beam.

A = without ADC, B = with ADC

Table 3. Data - cooling. Selection guide with nozzle configuration 4.

Unit's length	Air flow (l/s)	Sound level dB(A)*		p _i (Pa)	Cooling capacity primary air (W)				Cooling capacity water (W)								
		A	B		ΔT _i	6	8	10	12	ΔT _{mk}	6	7	8	9	10	11	12
1,2m	20	<20	20	25		144	192	240	288		239	279	320	360	400	440	481
1,2m	22	<20	23	32		158	211	264	317		261	305	348	391	434	478	521
1,2m	25	<20	27	41		180	240	300	360		283	330	376	423	469	515	561
1,2m	28	<20	30	50		202	269	336	403		301	350	399	448	496	545	593
1,2m	30	20	32	60		216	288	360	432		318	369	420	471	522	572	623
1,5m	25	<20	<20	25		180	240	300	360		308	359	411	463	515	567	619
1,5m	28	<20	23	32		202	269	336	403		336	392	448	503	559	615	670
1,5m	32	<20	27	41		230	307	384	461		365	424	484	544	603	663	722
1,5m	36	21	30	50		259	346	432	518		387	451	513	576	639	701	763
1,5m	39	23	33	60		281	374	468	562		409	475	540	606	671	736	801
1,8m	31	<20	21	25		223	298	372	446		376	439	503	566	629	693	756
1,8m	35	<20	24	32		252	336	420	504		411	479	547	615	683	751	819
1,8m	39	21	27	41		281	374	468	562		446	519	592	665	738	810	883
1,8m	43	24	30	50		310	413	516	619		474	551	628	704	781	857	933
1,8m	48	27	33	60		346	461	576	691		499	580	661	741	821	900	980
2,1m	36	<20	22	25		259	346	432	540		445	519	594	669	744	819	894
2,1m	41	22	25	32		295	394	492	590		486	566	647	727	808	888	969
2,1m	47	26	29	41		338	451	564	677		527	613	700	786	872	958	1043
2,1m	51	28	32	50		367	490	612	734		560	651	742	833	923	1013	1103
2,1m	56	31	34	60		403	538	672	806		590	686	781	876	970	1064	1158
2,4m	42	22	24	25		302	403	504	605		513	599	686	772	859	945	1032
2,4m	47	26	27	32		338	451	564	677		561	654	747	839	932	1025	1118
2,4m	54	30	31	41		389	518	648	778		608	708	808	907	1006	1105	1204
2,7m	48	26	27	25		346	461	576	691		582	679	777	875	973	1072	1170
2,7m	54	30	30	32		389	518	648	778		635	741	846	952	1057	1162	1267
2,7m	61	33	34	41		439	586	732	878		689	803	915	1028	1141	1253	1365
3,0m	53	29	29	25		382	509	636	763		650	759	869	978	1088	1198	1308
3,0m	60	33	33	32		432	576	720	864		710	828	946	1064	1181	1299	1416
3,0m	68	36	37	41		490	653	816	979		711	897	1023	1149	1275	1400	1526
3,3m	59	32	32	25		425	566	708	850		719	839	960	1081	1203	1324	1445
3,3m	66	35	36	32		475	634	792	950		785	915	1046	1176	1306	1436	1566
3,3m	75	39	39	41		540	720	900	1080		852	992	1131	1270	1409	1548	1687
3,6m	64	34	35	25		461	614	768	922		787	919	1052	1185	1317	1450	1583
3,6m	73	38	38	32		526	701	876	1051		860	1003	1145	1288	1430	1573	1715
3,6m	82	42	42	41		590	787	948	1181		933	1086	1239	1391	1544	1696	1874
3,9m	70	37	37	25		504	672	840	1008		856	999	1143	1288	1432	1576	1721
3,9m	79	41	41	32		569	758	948	1138		935	1090	1245	1400	1555	1709	1864
3,9m	90	44	44	41		648	864	1080	1296		1014	1181	1347	1512	1678	1843	2008

ADRIATIC VF

For Adriatic with ADC the output factor 0.95 is used for the calculation of the cooling water's capacity: PADC= Pkx 0.95.

* Room attenuation = 4 dB, open CRPc-damper mounted directly against the air connection of the climate beam.

A = without ADC, B = with ADC

Table 4. Data - cooling. Selection guide with nozzle configuration E (flow distribution 75/25%).

Unit's length	Air flow (l/s)	Sound level dB(A)*		p_i (Pa)	Cooling capacity primary air (W)				Cooling capacity water (W)								
		A	B		ΔT_l	6	8	10	12	ΔT_{mk}	6	7	8	9	10	11	12
1,2m	9	<20	29	49		65	72	108	130		173	201	230	258	286	315	343
1,5m	12	<20	30	53		86	115	144	173		228	266	303	341	378	416	453
1,8m	14	<20	28	48		101	134	168	202		270	315	359	403	448	492	536
2,1m	17	<20	29	50		122	163	204	245		325	379	433	486	540	593	646
2,4m	20	<20	30	52		144	192	240	288		381	443	506	569	631	694	756
2,7m	22	<20	29	49		158	211	264	317		423	493	562	632	701	770	840
3,0m	25	<20	29	50		180	240	300	360		478	557	636	714	793	871	950
3,3m	28	<20	30	52		202	267	336	403		533	621	709	797	885	972	1060
3,6m	30	<20	29	49		216	288	360	432		576	670	765	860	954	1049	1143
3,9m	33	<20	30	50		238	317	396	475		631	735	839	943	1046	1150	1253

Table 5. Data - cooling. Selection guide with nozzle configuration N (flow distribution 75/25%).

Unit's length	Air flow (l/s)	Sound level dB(A)*		p_i (Pa)	Cooling capacity primary air (W)				Cooling capacity water (W)								
		A	B		ΔT_l	6	8	10	12	ΔT_{mk}	6	7	8	9	10	11	12
1,2m	22	<20	28	47		158	211	264	317		257	299	340	381	423	464	505
1,5m	29	<20	29	47		209	278	348	418		333	386	440	493	547	600	653
1,8m	35	<20	29	47		252	336	420	504		408	474	540	605	671	736	802
2,1m	42	23	30	47		302	403	504	605		483	562	640	717	795	873	950
2,4m	48	27	31	47		346	461	576	691		559	650	740	829	919	1009	1098
2,7m	54	30	32	47		389	518	648	778		634	737	840	941	1043	1145	1246
3,0m	61	33	34	47		439	589	732	878		710	825	939	1053	1168	1281	1395
3,3m	67	36	36	47		482	643	804	965		785	913	1039	1165	1292	1417	1543
3,6m	74	39	39	47		533	710	888	1066		861	1000	1139	1277	1416	1554	1691
3,9m	80	41	41	47		576	768	960	1152		936	1088	1239	1389	1540	1690	1839

For Adriatic with ADC the output factor 0.95 is used for the calculation of the cooling water's capacity: $P_{ADC} = P_k \times 0.95$.

* Room attenuation = 4 dB, open CRPc-damper mounted directly against the air connection of the climate beam.

A = without ADC, B = with ADC

Cooling

Diagram 1. The function of the cooling P_k (W), the temperature change ΔT_k (°C) and the cooling water flow q_k (l/s).

Diagram 2. Pressure drop Δp_k (kPa) in the cooling circuit as a function of the cooling water flow q_k (l/s) and unit's length.

Table 6. Cooling capacity with natural convection (without supply air).

Table 7. Pressure constant k_{pk} for the coil cooling circuit.

Diagram 3. The function of the correction factor for the cooling effect P_k (W) and the cooling water flow q_k (l/s). Different water flow rates have some influence on the cooling capacity effect. By checking the obtained water flow rate using **diagram 3**, the specified outputs in **tables 1-5** may need to be adjusted upwards or downwards according to the formula: $P_{corrected} = P_{k(table 1-5)} \cdot k_{(diagram 3)}$.

Diagram 1. Water flow - cooling capacity.

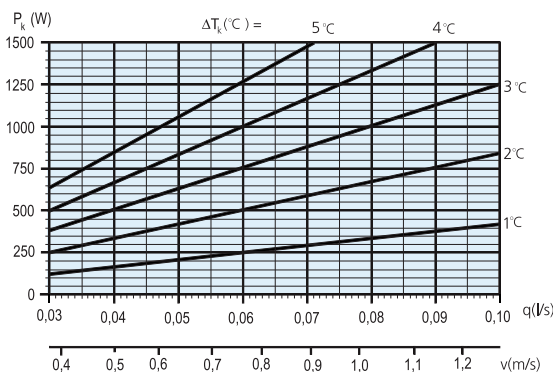


Diagram 3. Water flow - output correction.

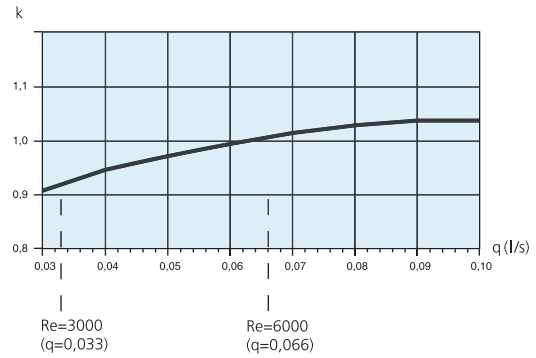


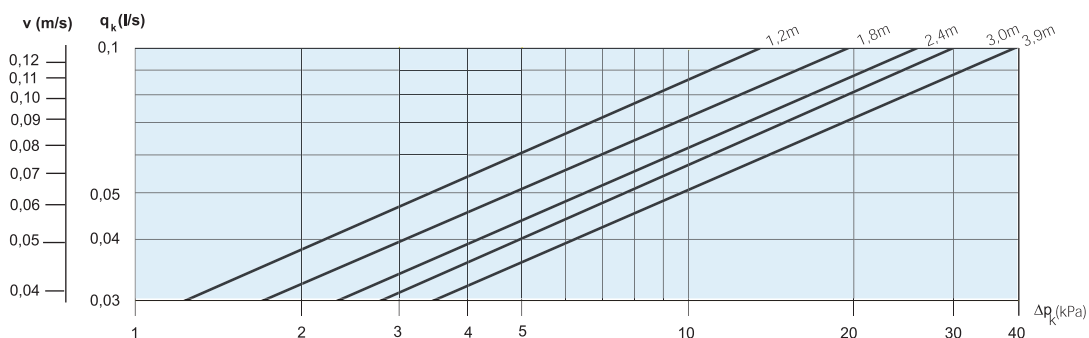
Table 6. Capacity natural convection (W).

Length	Temperature difference room - water °C							
	ΔT_{mk}	6	7	8	9	10	11	12
1.2 m		37	48	55	66	74	85	96
1.5 m		52	67	78	93	104	119	135
1.8 m		67	87	100	120	134	154	174
2.1 m		82	106	123	147	164	188	213
2.4 m		97	126	145	174	194	223	252
2.7 m		112	145	168	201	224	257	291
3.0 m		127	165	190	228	254	292	330
3.3 m		142	184	213	255	284	326	369
3.6 m		157	204	235	282	314	361	408
3.9 m		172	223	258	309	344	395	447

Table 7. Pressure constant for cooling circuit.

Length:	1.2	1.5	1.8	2.1	2.4
k_{pk}	0.0265	0.0240	0.0225	0.0210	0.0195
Length:	2.7	3.0	3.3	3.6	3.9
k_{pk}	0.0185	0.0180	0.0170	0.0165	0.0160

Diagram 2. Pressure drop - water flow, cooling.



Heating

Additional heat - heating coil

The heating function is only intended as an addition in those cases where surplus heat normally prevails, but then under short periods when there is a need of small additional heat, for example during the evenings and at night.

A condition for the additional heat to be of use to the room is that the supply air fan is running. The mixture of hot and cold air takes place with the help of the supply air, which is why the temperature distribution in the room is fully dependent on the condition between the supply air and the capacity taken out of the unit.

Heat is supplied along the ceiling which, in order to work, requires a low supply temperature and a specific impulse. Normally a temperature gradient of 3°C between the floor and ceiling is obtained.

Recommendations for the additional heat function

- Highest supply temperature: 60°C
- Lowest warm water flow: 0.013 l/s
- nozzle pressure, p_i : >30 Pa

It is recommended for facades with large glazed areas that radiation from colder surfaces is compensated for using radiant heat in the ceiling or radiators along the facade. With other conditions please contact Swegon.

Diagram 4. Heating capacity P_v (W) as a function of the mean temperature difference ΔT_{mv} (°C). For Adriatic with ADC the output factor 0.95 is used for the calculation of the heating water's capacity: $P_{ADC} = P_k \times 0.95$.

Diagram 5. Water flow - heating.

The function between warm water flow q_v (l/s), temperature change ΔT_v (°C) and the heating effect P_v (W).

Diagram 6. Pressure drop Δp_v (kPa), in the heating circuit as a function of heating flow q_v (l/s).

Table 8. Pressure constant k_{pv} for the heating coil.

The unit's active length.

A deduction for the inactive length must be made when calculating the capacity per unit. $L_{Akt} = L_{Nom} - 160$ (mm)

Diagram 4. Heating capacity.

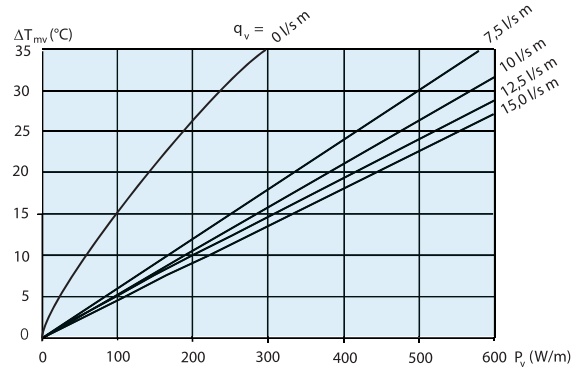


Table 8. Pressure constant for heating circuit.

Length:	1.2	1.5	1.8	2.1	2.4
k_{pv}	0.0220	0.0200	0.0185	0.0175	0.0165
Length:	2.7	3.0	3.3	3.6	3.9
k_{pv}	0.0160	0.0150	0.0145	0.0140	0.0135

Diagram 5. Water flow - heating capacity.

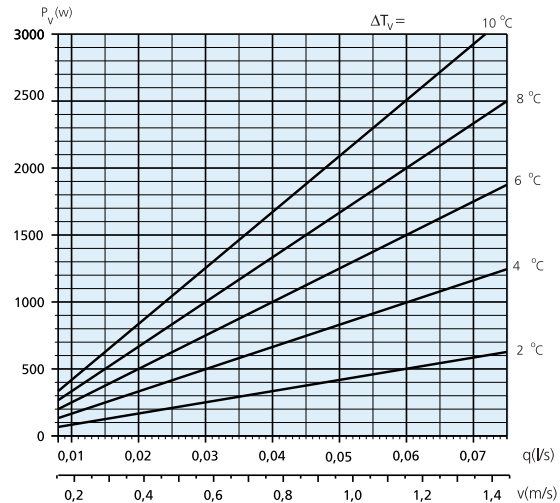
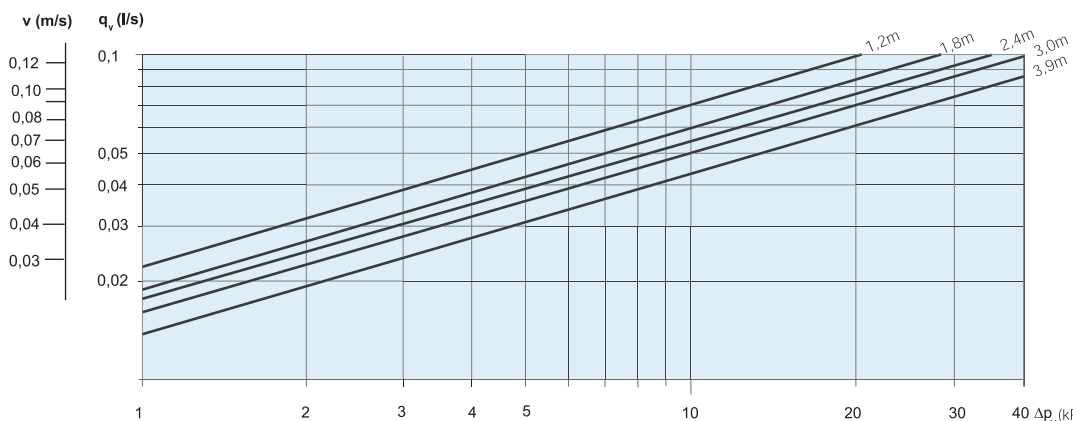


Diagram 6. Pressure drop - water flow, heat.



Sound

Diagram 7. The diagrams show the total generated sound power (L_{Wtot} dB), as a function of the airflow and pressure drop across the damper. By correcting L_{Wtot} with the correction factors from Table 11, the sound power levels for the corresponding octave bands can be obtained ($L_W = L_{Wtot} + K_{ok}$)

Table 9. Natural attenuation of the air ΔL (dB) including end reflection, nozzle configuration 1.

Table 9. Natural attenuation, nozzle configuration 1.

Natural attenuation ΔL (dB), for climate beam with nozzle configuration 1								
63	125	250	500	1k	2k	4k	8k	Hz
13	14	5	1	6	7	7	12	dB

Table 10. Natural attenuation, nozzle configuration 4.

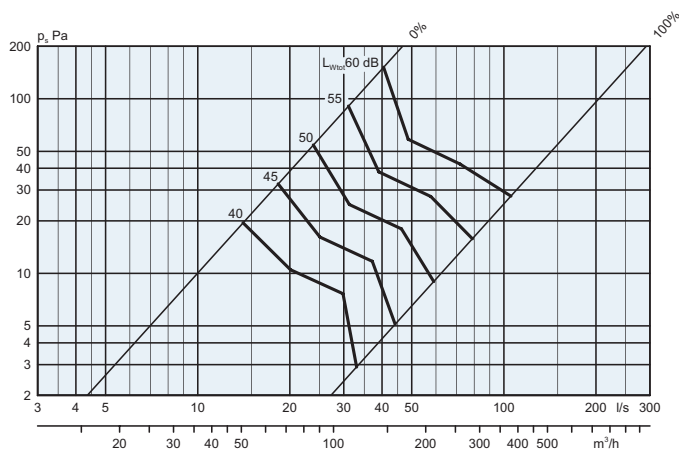
Natural attenuation ΔL (dB), for climate beam with nozzle configuration 4								
63	125	250	500	1k	2k	4k	8k	Hz
10	11	3	1	3	4	4	9	dB

Table 10. Natural attenuation of the air ΔL (dB) including end reflection, nozzle configuration 4.

Table 11. Sound power level for CRPc 9-125 damper, Correction factor, K_{ok}

Storlek CRPc 9	Mittfrekvens (oktavband) Hz							
	63	125	250	500	1k	2k	4k	8k
125	0	-2	-9	-15	-20	-25	-29	-35
Tol. \pm	2	2	2	2	2	2	2	2

Diagram 7. Throttling range, damper CRPc 9-125.



Example, cooling

An office with the dimensions $w \times d \times h = 4.0 \times 3.0 \times 2.7$ m has a cooling requirement of $70 \text{ W/m}^2 = 840 \text{ W}$.

The air flow should be 2 l/s m^2 , which gives 24 l/s in the room. The sound level must not exceed 30 dB(A) .

Selected room temperature summer: 24°C

Chilled water temperature $15/17$ gives: $\Delta T_k = 2^\circ\text{C}$; $\Delta T_{mk} = 8^\circ\text{C}$

Supply air temperature 15°C gives: $\Delta T_l = 9^\circ\text{C}$

Solution**Cooling**

The supply air that maintains a temperature of 15°C

gives $P_l = 1.2 \cdot 9 \cdot 24 = 260 \text{ W}$ in cooling capacity.

Accordingly, Adriatic shall be capable of $840 - 260 = 580 \text{ W}$.

From **Table 1**: length: 2.4 metres and airflow: 24 l/s provides more than 623 W in cooling power, which is sufficient to meet comfort requirements.

Cooling water

With the cooling capacity requirement of 580 W for the cooling water the requisite water flow is taken from **Diagram 1**. With the temperature increase of $\Delta T_k = 2^\circ\text{C}$ the water flow rate is 0.069 l/s .

In **Diagram 3** you read that the water flow 0.069 does not give sufficient turbulent water flow. This means that you can count in full capacity from the beam.

The pressure drop is calculated based on the water flow rate of 0.069 l/s and the pressure constant $k_{pk} = 0.0195$, which is taken **Table 7**. The pressure drop will then be:

$$\Delta p_k = (q_k / k_{pk})^2 = (0.069 / 0.0195)^2 = 12,5 \text{ kPa.}$$

The pressure drop can also be taken **Diagram 2**.

Sound level

In **Table 1**, we see that the sound level is 22 dB(A) or below 20 dB(A) depending on whether or not ADC is used. **Diagram 7** shows the throttling range for the CRPc damper.

Example, heating

An office with the dimensions $w \times d \times h = 4.0 \times 3.0 \times 2.7$ m has a heating requirement of 300 W . The air flow should be 24 l/s .

Selected room temperature winter: 22°C

The warm water temperature $39/35$ gives: $\Delta T_v = 4^\circ\text{C}$; $\Delta T_{mv} = 15^\circ\text{C}$.

Solution**Heating**

The air flow of 24 l/s gives, when considering the active length air flow per meter the following:

$L_{\text{Active}} = L_{\text{Nom}} - 160 = 2400 - 160 = 2240 \text{ mm}$, this give the air flow per metre $q_l = 24 / 2.24 = 10.7 \text{ l/s m}$.

In the same way the heating capacity per metre becomes $P_v = 300 / 2.24 = 134 \text{ W/m}$.

From **Diagram 4** we get $\Delta T_{mv} 15^\circ\text{C}$ and the air flow $10,7 \text{ l/s m}$, the heating effect 290 W/m , which is sufficient to cover the heating requirement.

Warm water

With the heating capacity requirement of 300 W the requisite water flow is taken from **Diagram 5**. With the temperature drop $\Delta T_v = 4^\circ\text{C}$ the water flow rate is 0.018 l/s .

The pressure drop is calculated based on the water flow rate of 0.018 l/s and the pressure constant $k_{pv} = 0.0165$, which is taken from **Table 8**.

The pressure drop will then be: $\Delta p_v = (q_v / k_{pv})^2 = (0.018 / 0.0165)^2 = 1.2 \text{ kPa}$. The pressure drop can also be taken from **Diagram 6**.

Dimensions

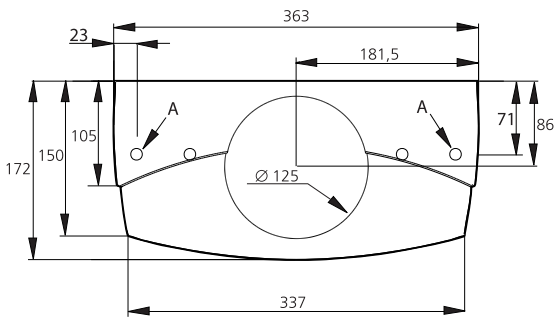


Figure 11. Adriatic duct connection 125 mm, end view.
A = Cooling, pipe Cu 12 x 1.0 mm

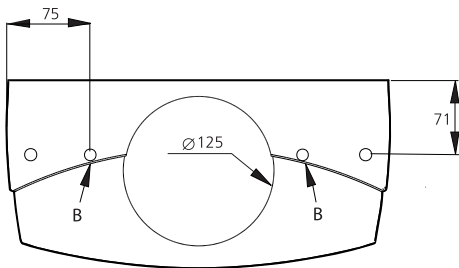


Figure 12. Adriatic duct connection 125 mm, end view.
B = Heating, pipe Cu 10 x 1.0 mm

Length Adriatic

Nominal dimensions Adriatic (m):	1.2; 1.5; 1.8; 2.1; 2.4; 2.7; 3.0; 3.3; 3.6 and 3.9 m.
Length:	Nominal – 15 mm (+4/-2) mm.
Length to the lower sections division $L = L / 2$	

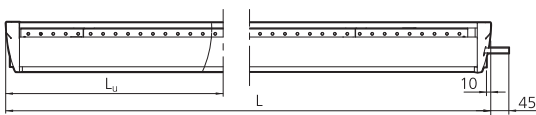


Figure 13. Adriatic horizontal connection at the end, long side view.

L = length Adriatic

L_u = length to the lower section division

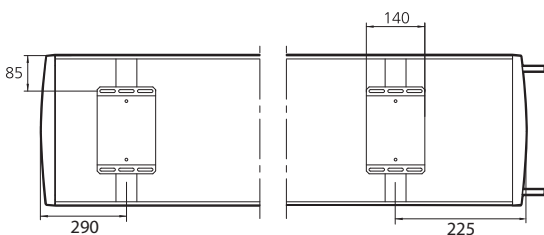


Figure 14. Adriatic horizontal connection at the end, top view.

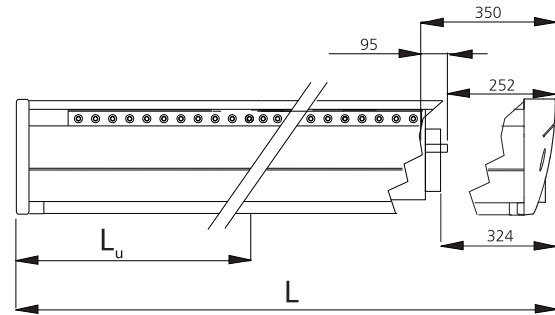


Figure 15. Adriatic inside connection, long side view.

L = length Adriatic

L_u = length to the lower section division

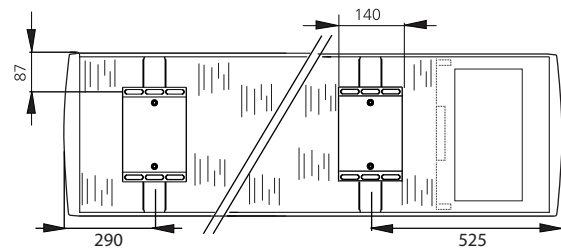


Figure 16. Adriatic inside connection, top view.

Assembly area

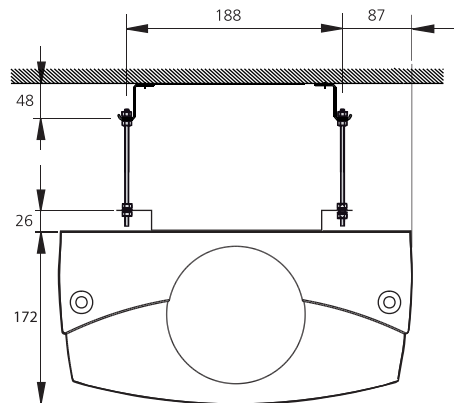


Figure 17. Adriatic with assembly set SYST MS

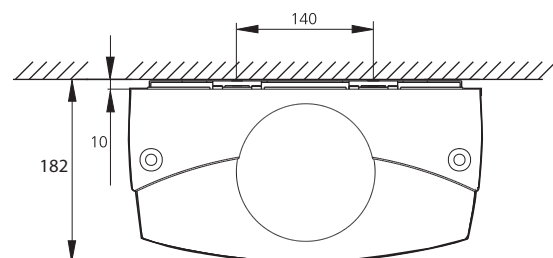


Figure 18. Adriatic with assembly set MD4S.

$a = 182$ mm

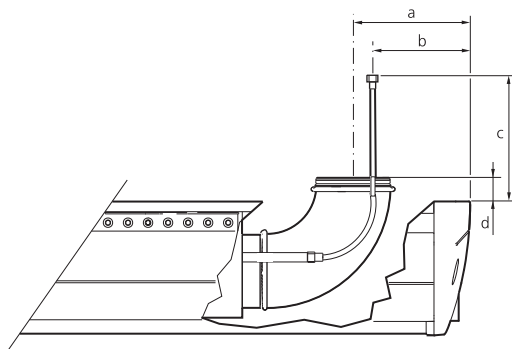


Figure 19. Adriatic with inside connection, vertical connection.

Measurement, vertical connection

a	b	c	d
172 mm	120 mm	hose length -180 mm	70 mm

Accessories

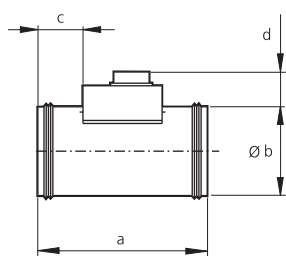


Figure 20. Damper CRPc 9.

Measurement CRPc 9

a	b	c	d
184 mm	124 mm	40 mm	42 mm

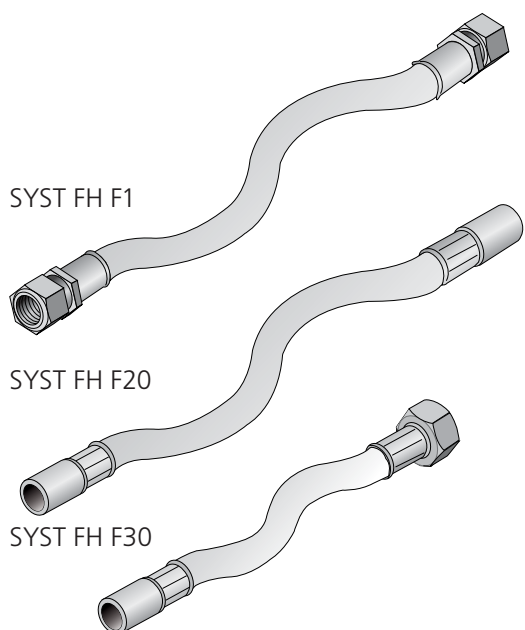


Figure 21. Flexible connection hose.

Limits of contract / connection point

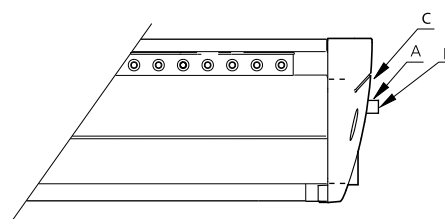


Figure 22. Connection points.

A = Cooling: The plumbing contractor connects to the pipe Cu 12 x 1.0

B = Heating: The plumbing contractor connects to the pipe Cu 10 x 1.0

C = Ventilation: The ventilation contractor connects to the connection fitting (sleeve) dim 125 mm

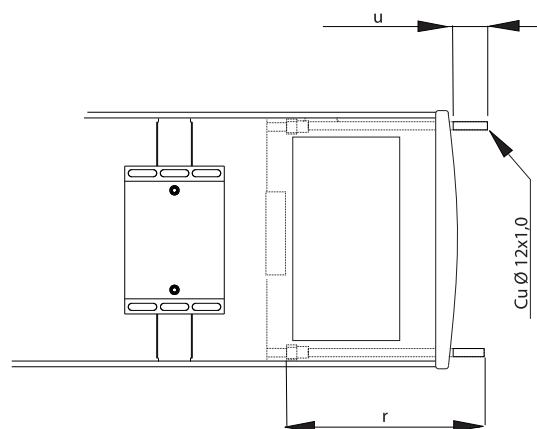


Figure 23. Installed extension pipes.

Pipe length (r)	Protrudes (u)
300 mm	40 mm
430 mm	170 mm

Weight

Weight per metre	Adriatic
Dry weight	10.9 kg/m
Weight filled with water	11.8 kg/m

Specification

Active climate beam type Adriatic for cooling and ventilation or cooling, heating and ventilation. The units are delivered enamelled in Swegon white standard finish RAL 9010 gloss value 30±6%.

Limits of contract

The limits of contract for Swegon are the connection points for water and air. At these connection points the plumbing contractor connects to plain pipe ends, fills the system, vents and performs pressure testing. The ventilation contractor connects to the duct connection with dimensions as set out in "Dimensions - Limits of contract/connection point". When assembling the valve and actuator in the connection section this must be done before connecting the damper and ventilation duct. The units are supplied without assembly fittings for suspension. These are to be ordered separately.

Specification

Product

Active climate beam ADRIATIC	b-	aa-	bb-	cc-	d
Version:					
Length:					
Nozzle configuration:					
1 = Medium flow					
3 = Low flow					
4 = High flow					
ER = 75% of air flow to the right seen from the coil connection.					
EL = 75% of air flow to the left seen from the coil connection.					
NR = 75% of the air flow to the right seen from the coil connection (large air flow).					
NL = 75% of the air flow to the left seen from the coil connection (large air flow).					
Connection:					
I = Inside connection					
OH = Horizontal connection					
Heating function:					
B = Water based heating					

Accessories

Factory-fitted ADC	Adriatic	b	T-	ADC-	aa
Length:					

ADC for subsequent assembly (1 ADC)	SYST	ADC-210
Length:		

Connection cover	Adriatic	a-	T-	KA	aaa
Version:					
Type:					
Length:					

Loose ends	Adriatic	a-	T-	GL	aa
Version:					
Type:					
UH = Without hole					
MH = With hole					

Assembly set (For surface mounting)	SYST	MD	4S
Type:			

Assembly set (for suspended installation)	SYST	MS	aaaa-	b-	RAL9010
Type:					
Length drop rod:					
1 = Only the drop rod					
2 = Double drop rods with thread lock					

ADRIATIC VF

Flexible connection hose	SYST FH F1	aaa-	bb
Clamping ring coupling against pipe on both ends (one piece)			
Length mm: 300, 500 and 700			
Dimension (Ø) mm: 10 or 12			

Flexible connection hose	SYST FH F20	aaa-	bb
Quick-fit coupling (push-on) against pipe on both ends (one piece)			
Length mm: 275; 475 or 675			
Dimension (Ø) mm: 10 or 12			

Flexible connection hose	SYST FH F30	aaa-	bb
Quick-fit coupling (push-on) against pipe on one end, G20ID sleeve nut on the other end			
Length mm: 200; 400 or 600			
Dimension (Ø) mm: 10 or 12			

Extension pipe (2)	SYST FR	aaa	
Length: 300 or 430 mm			

Connection fitting (Duct elbow 90°)	SYST CA-125-90		
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Adjustable damper	SYST CRPc 9-125		
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Nozzle plug, (100 pcs)	SYST DP-5,9-100st		
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Specification, example

Swegon climate beam ADRIATIC which discharges air along the ceiling and has integrated circulation air opening in the lower section. For individually suspended installation in the ceiling with the following functions:

- Cooling
- Heating (optional)
- Ventilation
- ADC (optional)
- Duct connection Ø125 mm
- Integrated circulation air openings in the lower section
- Sliding lower section
- Cleanable
- Fixed metering socket with hose
- Enamelled in white standard finish RAL 9010
- Limit of contract at connection points for water and air according to principal drawing.
- At connection points the plumbing contractor connects to plain pipe ends 12 mm after which the ventilation contractor connects to connecting sleeves, Ø 125 mm.
- The plumbing contractor fills, vents and pressure tests and bears responsibility that the planned water flow reaches each system branch and unit.
- The ventilation contractor adjusts the planned air flow.

Accessories:

- ADC for subsequent assembly SYST ADC-210
- Connection cover Adriatic T-KA-aaa, xx qty.
- Extension pipe SYST FR - aaa, xx qty.
- Adjustable damper SYST CPRc 9-125. xx qty.
- Assembly set, surface mounted SYST MD 4S, xx qty.
- Assembly set, for suspended installation SYST MS aaaa-b-RAL9010.
- Flexible connection hose SYST FH F1 aaa - bb, xx qty.
- Duct elbow 90 SYST CA 125-90, xx qty. etc.
- Number specified separately or given with reference to the drawing
- Size: KB XX-1 Adriatic b aa - bb - cc - d - eee, xx qty
KB XX-2 Adriatic b aa - bb - cc - d - eee, xx qty etc.
- Control equipment, see separate section in the brochure water based climate systems (optional)

Ordering example

Active climate beam for freely suspended installation with cooling and ventilation. 2.4 metres long: Adriatic b – 2.4 – 1 – OH.

Active climate beam for freely suspended installation with cooling and ventilation. 75% of the air volume should be supplied from the right-hand side of the unit seen from the coil connection. The length is 2.4 m: Adriatic b-2.4-ER-OH.