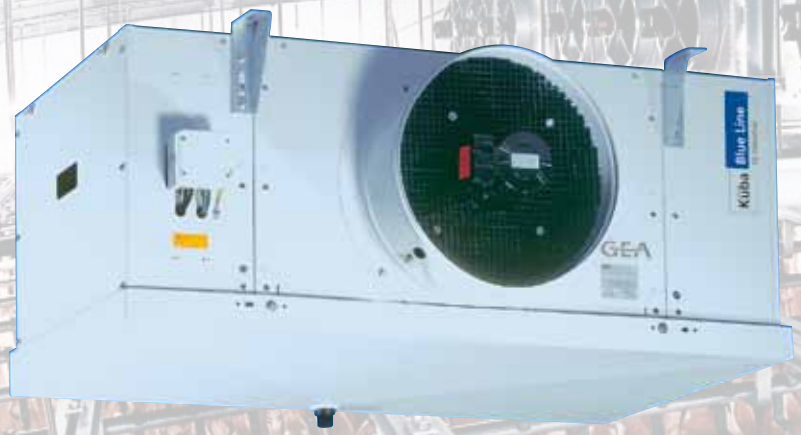
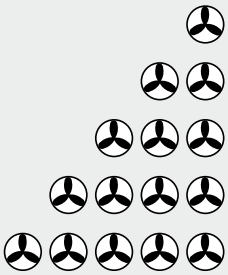
Küba SG *industrial*



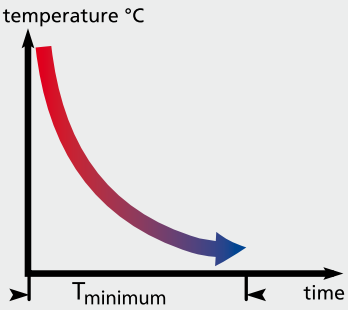
Küba SG *industrial*: Specific Advantages

The Küba SG *industrial* is a master of customisation. No matter how great the demand for power, the Küba SG *industrial* is the answer. Its versatility allows the Küba SG *industrial* to master the most complex refrigeration tasks.

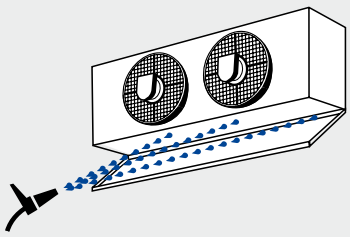
Q_0 5 ▬ ▬ ▬ 170 kW



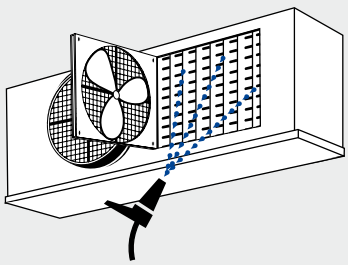
The Küba SG *industrial*'s enormous air volume and directed air flow achieve maximum cooling and freezing speeds.



Even the standard design includes the hinge-down drip tray. This makes it easy to clean and assemble the cooler, to make service work simple.



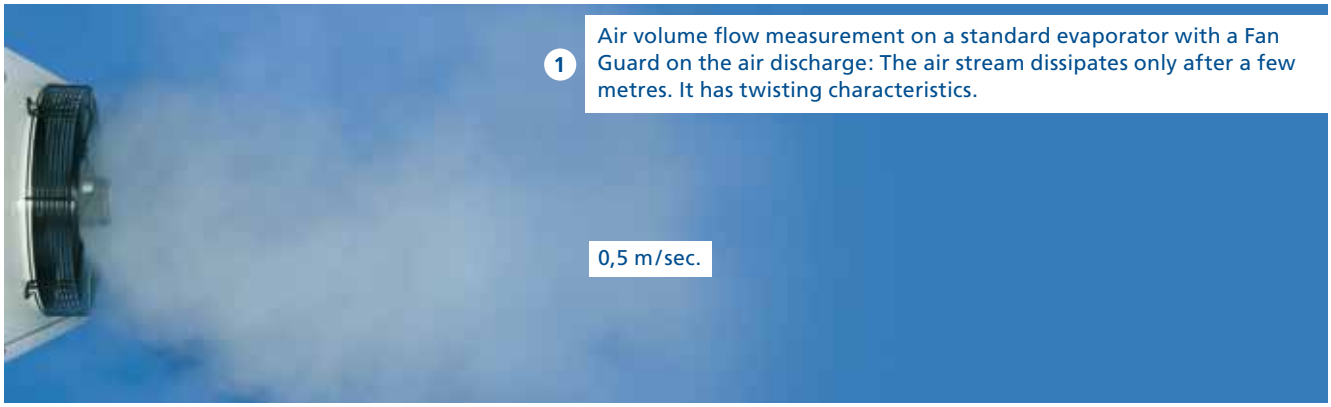
To clean the heat exchanger, hinged fans are an optional accessory. This allows easy access to the heat exchanger.



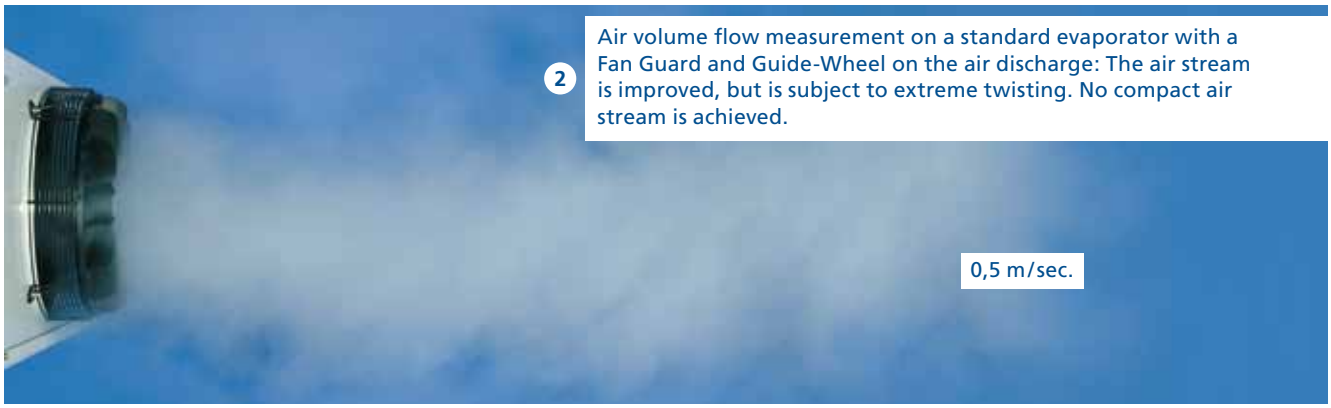
Küba SG *industrial*: Specific Advantages

What are the effects of a long air throw range?

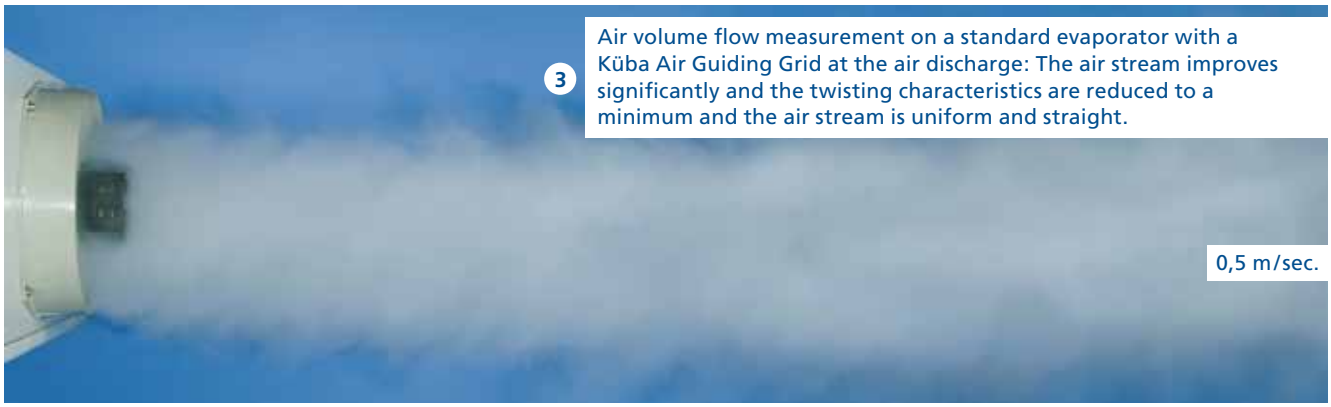
Fan Guard



Fan Guard and Guide-Wheel



Küba Air Guiding Grid



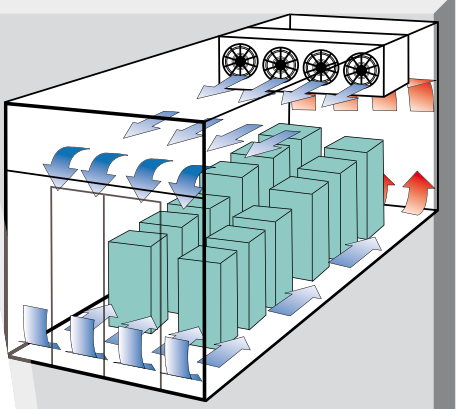
The illustration shows the Küba SG *commercial* line.
The illustrations also apply to the Küba SG *industrial* line.

Air throw comparison at a nominal capacity of 5.95 kW

Küba SG *industrial*: Specific Advantages

Goods stay at a uniform temperature due to improved air distribution

Refrigeration in large, long cold storage areas can be realized with GEA Küba Air Coolers. Very long throw ranges can be achieved with the Air Guiding Grid. This allows the chilled air to reach the most remote corners of the cold storage area. When used in compliance with product specific stacking, room ventilation is trouble-free, and heat pockets are prevented.

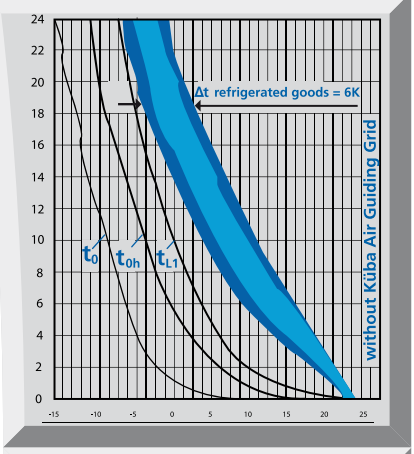


Clear advantages are:
- Even air distribution
- Short cooling times
- Uniform product cooling
- No fluctuations in product temperatures
- Quality is retained

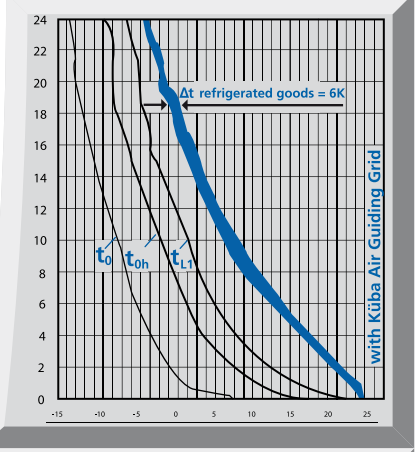
Küba Air Guiding Grid ➧ short cooling times

Cooling curve comparison

Küba high performance SG Air Coolers



Without Küba Air Guiding Grid
- Poor room ventilation
- Large differences in product temperatures: 6K
- Relatively long cooling times



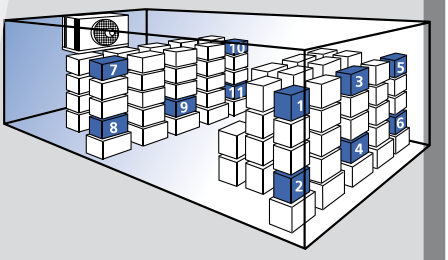
With Küba Air Guiding Grid
- Better distribution of cooled air
- Products are cooled more evenly: 1K
- Short cooling times
- Lower temperature difference (DT1)
- Lower operational costs

Key:
t_0 = Evaporating temperature at coil outlet
t_{0h} = Superheated temperature at coil outlet
t_{L1} = Air entry temperature into the Air Cooler

Küba Air Guiding Grid ➧ More uniform product temperatures

Uniform product temperatures:

As documented by the measurement series in the cold storage area

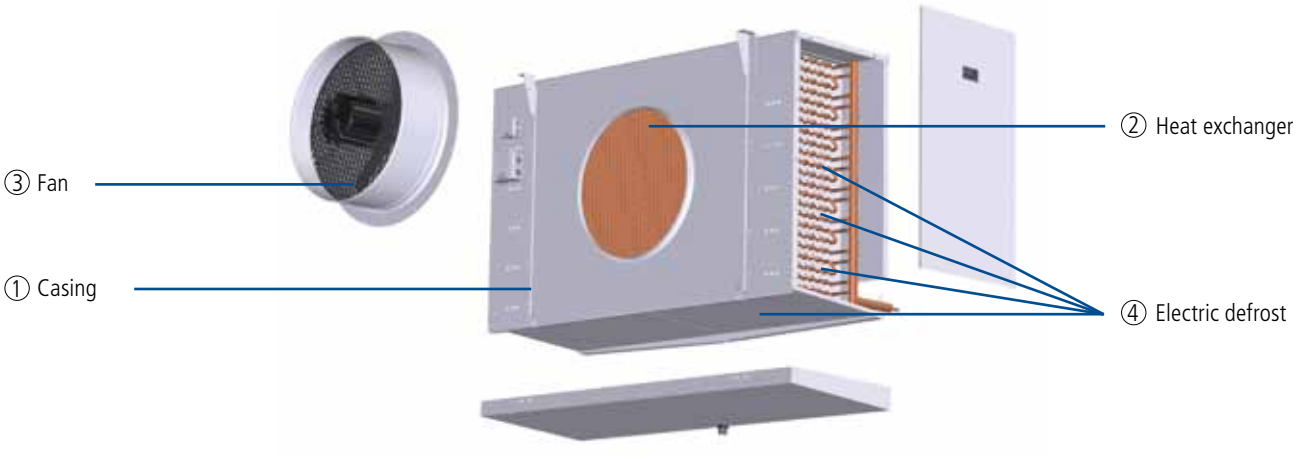


To perform the cooling curve comparison, a cold storage area was filled with stacks of goods. The measuring points 1-11 show the development of the product core temperature in relation to cooling time.

The starting conditions were identical in both trials – entry temperature 24 °C. For the cooler without an Air Guiding Grid, the temperature difference in the stack of goods after 21 hours cooling time was 6K.

The Küba SG with Air Guiding Grid achieved the outstanding result of only a 1K temperature difference.

Construction



1. Casing

- Smooth Sendzimir galvanised steel
- High-grade powder coating, papyrus white RAL 9018
  - Food safe
  - Easy to clean
  - Optimum corrosion protection
- Hinge-down drip tray and removable side panels
- Stainless steel mounting material
- Plastic drain up to 1 1/4", longer than 2", stainless steel

2. Heat exchanger

- Fin spacing
  SGA.I: 4,5 mm
  SGB.I: 7 mm
  SGK.I: 12 mm
- Aligned tube arrangement, spacing 50 x 50 mm
- HFE® tube / fin system
- **SG *industrial*-F: HFC/CO_2**
  Küba-CAL® refrigerant distributor from the entire HFC/CO_2 line (up to 32 bar)
  Tubing: Cu-special
  Fins: Al
  End plates: Al
- **SG *industrial*-G: Glycol**
  Distributor tubes for multiple injections
  Tubing: Cu-special
  Fins: Al
  End plates: Al
- **SG *industrial*-N: Pump operation, NH_3**
  Distributor tubes for multiple injections
  Tubing: VA
  Fins: Al
  End plates: Al

3. Fans

- Ø 500 / 560 / 630 / 710 / 800 mm
- With built-in protector to be connected on site
- Application range: -40 °C to +45 °C
- 400 ± 10% V-3~ 50Hz
- In the standard design the fans are equipped with Air Guiding Grid, air duct and contact protection.
- Protection class IP 66
- Insulation class F
- Operating data can be found with Küba Select or in the technical data.
- Optional Controller:
  Phase control ☐
  Transformer ☐
  Delta / star ☑
  Frequency converter with all-pole sinusoidal filter ☑

⚠ Please observe the manufacturer's information.

Motor label data (max. allowable value +40 °C)

	50 Hz		
	min^{-1}	W	A
SG. 50–F41-F85	1400	800	1,40
SG. 56–F41-F85	1350	1400	2,50
SG. 63–F41-F85	880	680	1,60
SG. 71–F41-F84	900	1200	2,30
SG. 80–F41-F84	930	2200	3,50

4. Electric defrost

- 230 ±10% V-1~ or 400 ±10% V-3~ -Y
- Heaters with CrNi steel sleeve
- Vapour-tight connections
- Connector cable 1,5 mm^2 x 1000 mm
- Designed to defrost the heat exchanger quickly and evenly
- To prevent vapor build-up and to promote heat exchange with little loss, the heaters are mounted in special expanded tube sleeves
- Wired ready for connection to the connection box in accordance with VDE specifications

Technical Data (R404A) SGB-F 7 mm

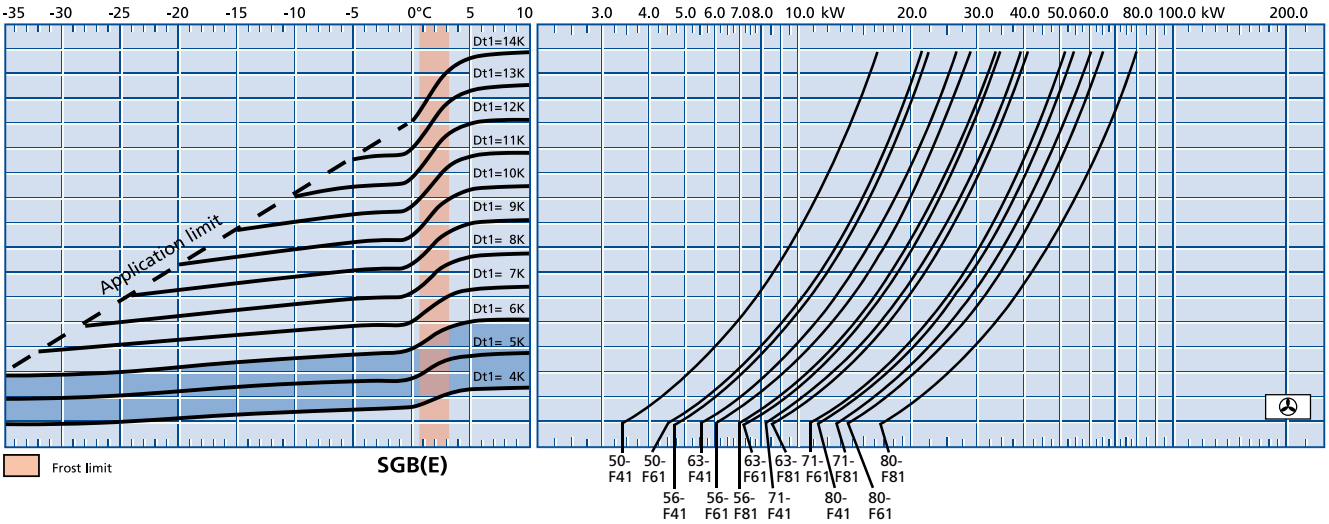
SGB(E)-F

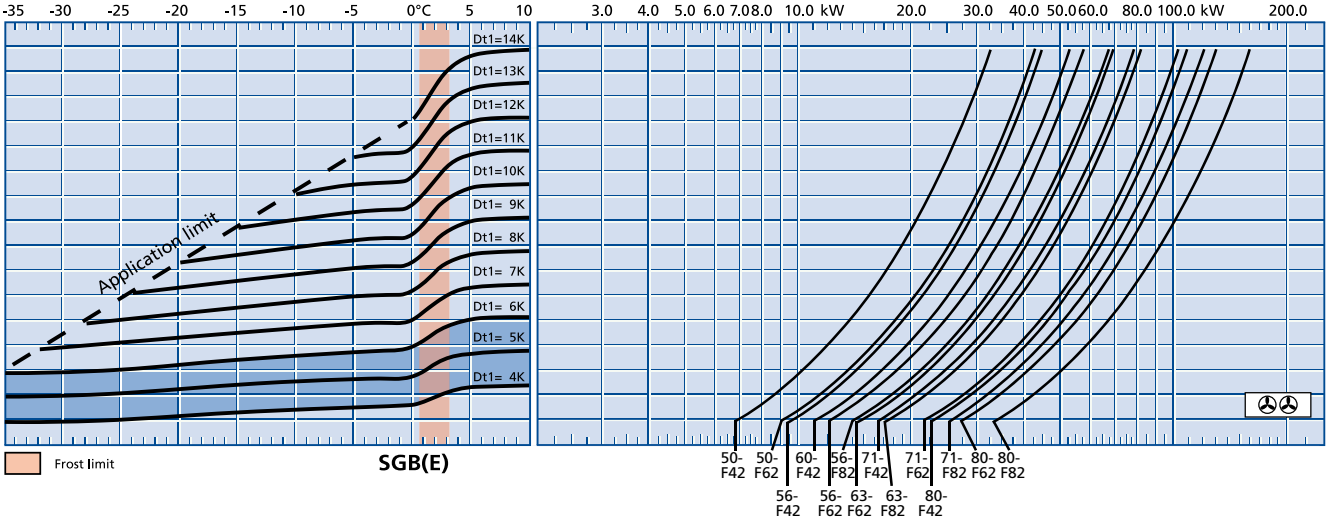
Model SGB(E)		Rating Q_0 at 50 Hz t_{L1} ±0 °C DT1 = 8K	Rating Q_0 at 50 Hz t_{L1} -18 °C DT1 = 7K	Surface	Air flow	Air throw		Tube volume	Connections Inlet	Connections Outlet	Blade	Per Fan 400 ± 10% V-3~ 50Hz (operating values at 50 Hz)		
		kW	kW	m²	m³/h	m	m	dm³	Ø mm	Ø mm	Ø mm	min⁻¹	W	A
50-F41	✇	7,9	6,3	36	6300	25	16	9	10	28	500	1390	657	1,32
50-F61	✇	10,6	8,5	54	5900	25	16	13	10	28	500	1390	657	1,32
56-F41	✇	10,5	8,5	48	7900	30	20	12	10	28	560	1338	813	1,78
56-F61	✇	14,1	11,2	72	7500	30	20	17	15	35	560	1338	813	1,78
56-F81	✇	16,5	13,1	97	7300	30	20	23	15	35	560	1338	813	1,78
63-F41	✇	12,6	10,1	65	8600	35	23	16	15	28	630	919	539	1,38
63-F61	✇	16,6	13,2	98	8400	35	23	23	22	35	630	919	539	1,38
63-F81	✇	19,7	15,7	130	8200	35	23	31	22	35	630	919	539	1,38
71-F41	✇	19,1	15,2	101	12300	45	27	24	15	35	710	940	1140	2,39
71-F61	✇	25,1	20,1	152	12000	45	27	36	22	35	710	940	1140	2,39
71-F81	✇	29,2	23,3	203	11600	45	27	48	22	42	710	940	1140	2,39
80-F41	✇	26,3	21,1	118	20250	50	-	28	15	42	800	940	1630	3,46
80-F61	✇	31,6	25,2	177	19350	50	-	42	22	42	800	940	1630	3,46
80-F81	✇	38,6	30,8	236	18450	50	-	56	22	42	800	940	1630	3,46
50-F42	✇✇	15,8	12,6	72	12600	36	23	17	15	35	500	1390	657	1,32
50-F62	✇✇	21,3	17,1	109	11800	36	23	25	15	35	500	1390	657	1,32
56-F42	✇✇	21,1	16,8	96	15800	42	27	22	15	35	560	1338	813	1,78
56-F62	✇✇	28,1	22,5	145	15000	42	27	34	22	42	560	1338	813	1,78
56-F82	✇✇	32,8	26,2	193	14600	42	27	45	22	42	560	1338	813	1,78
63-F42	✇✇	25,3	20,2	130	17200	48	31	30	22	42	630	919	539	1,38
63-F62	✇✇	33,3	26,6	195	16800	48	31	45	22	42	630	919	539	1,38
63-F82	✇✇	39,5	31,6	260	16400	48	31	60	22	42	630	919	539	1,38
71-F42	✇✇	38,3	30,6	202	24600	61	37	46	22	42	710	940	1140	2,39
71-F62	✇✇	50,3	40,1	304	24000	61	37	70	28	54	710	940	1140	2,39
71-F82	✇✇	58,5	46,7	406	23200	61	37	93	28	54	710	940	1140	2,39
80-F42	✇✇	52,8	42,1	236	40500	66	-	54	22	54	800	940	1630	3,46
80-F62	✇✇	63,2	50,5	354	38700	66	-	82	2x22	2x42	800	940	1630	3,46
80-F82	✇✇	77,2	61,7	472	36900	66	-	108	2x22	2x42	800	940	1630	3,46
50-F43	✇✇✇	23,7	19,0	109	18900	44	29	25	15	42	500	1390	657	1,32
50-F63	✇✇✇	32,1	25,6	163	17700	44	29	37	22	42	500	1390	657	1,32
56-F43	✇✇✇	31,7	25,3	145	23700	53	34	33	15	42	560	1338	813	1,78
56-F63	✇✇✇	42,2	33,7	217	22500	53	34	50	22	42	560	1338	813	1,78

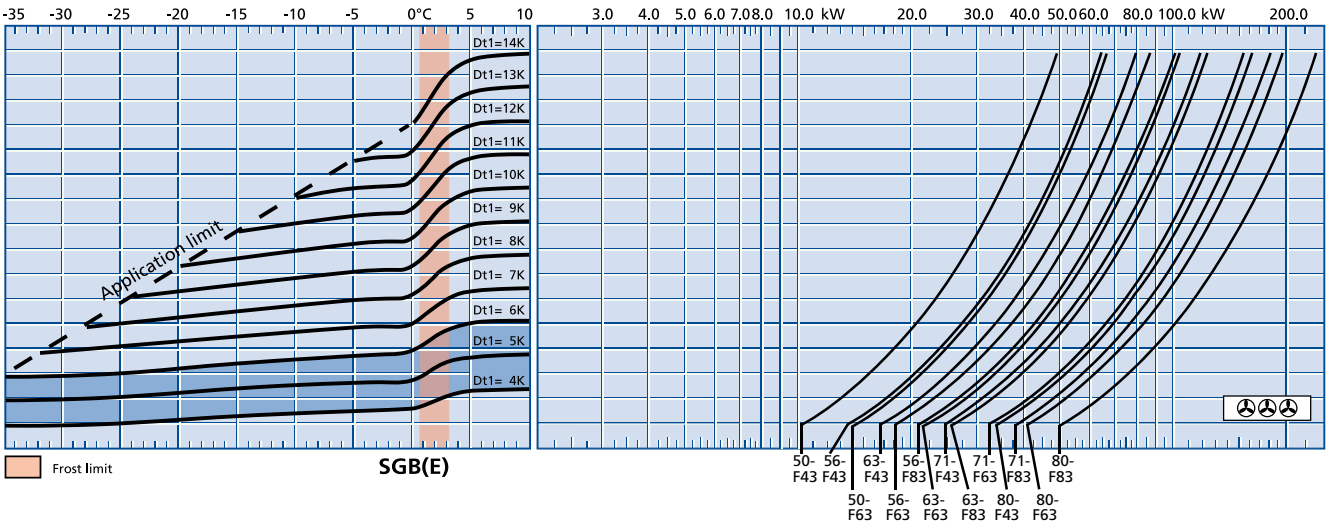
Q_v Chart (EN 328, R404A) SGB-F 7 mm

t_{L1} [°C] Air inlet temperature

Q_0 [kW] Cooling capacity



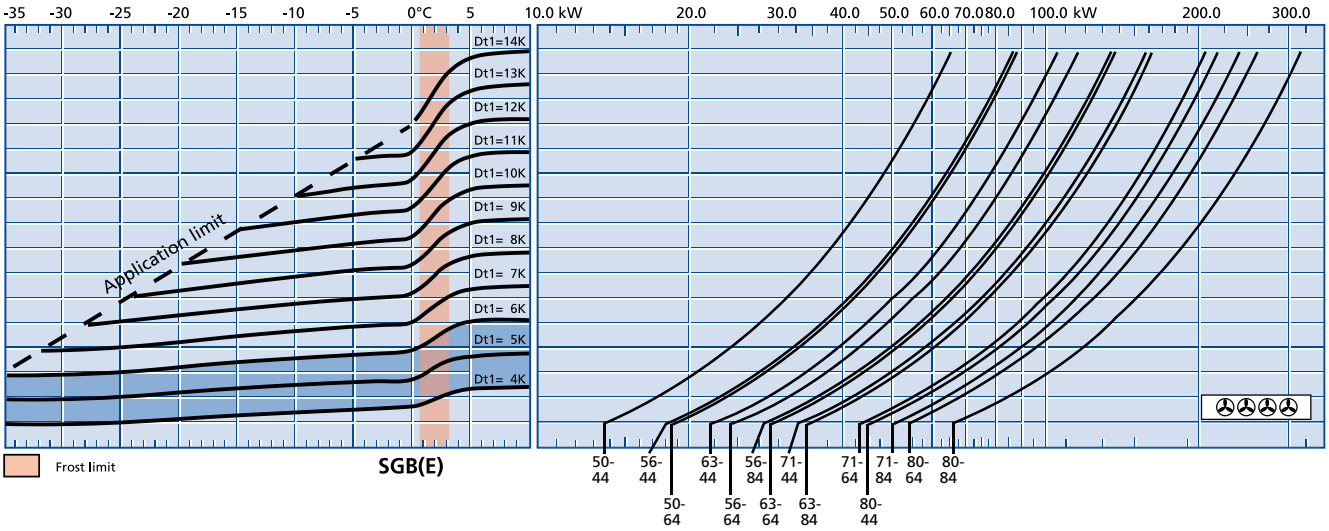


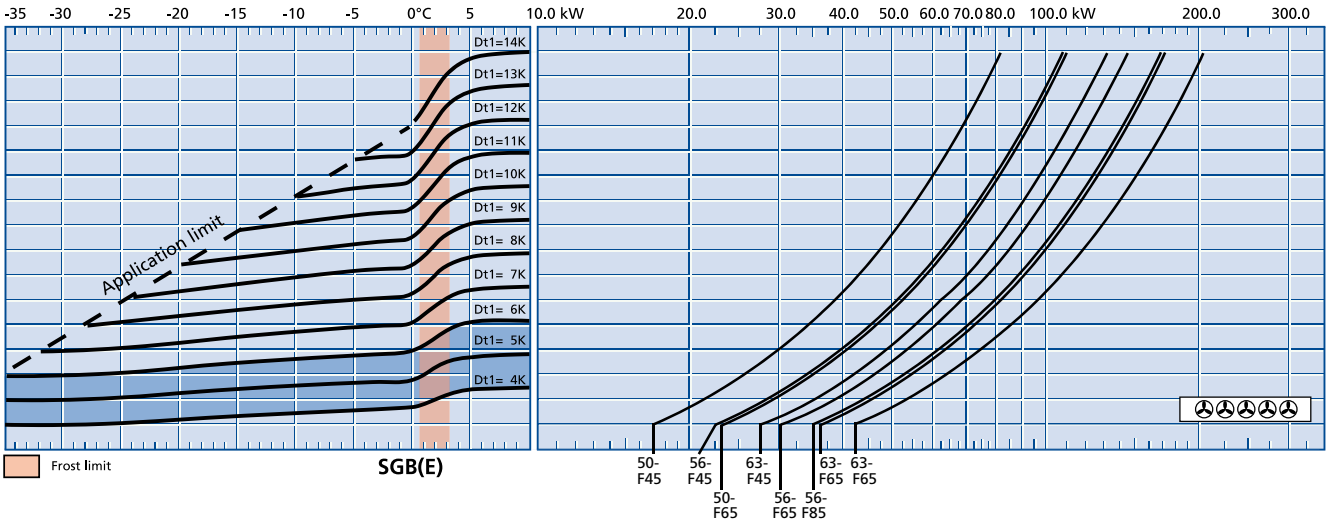


Q_V Chart (EN 328, R404A) SGB-F 7 mm

t_{L1} [°C] Air inlet temperature

Q_0 [kW] Cooling capacity



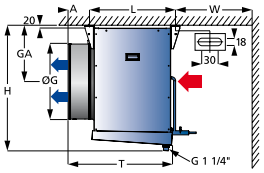


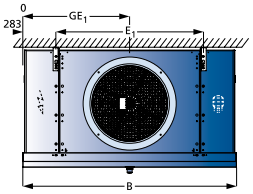
Q_0 = Cooling capacity
t_{L1} = Air inlet temperature
t_0 [°C] = Evaporating temperature (coil outlet)
DT1 [K] = Temperature difference = $t_{L1} - t_0$ (°C)

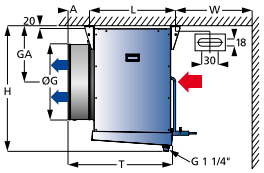
DT1 = 4 K bis 6 K
with electronic expansion valve

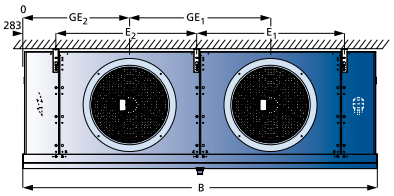
Example selection:
For examples and explanations, please see the information section on pg. 136.

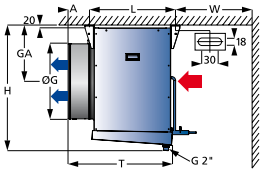
Dimensional Drawings

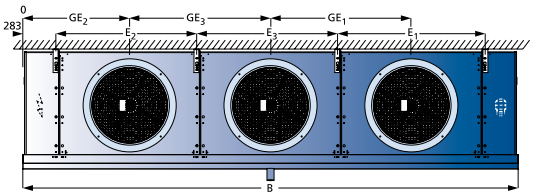


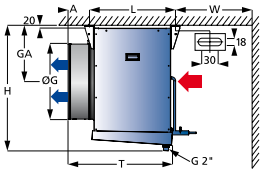


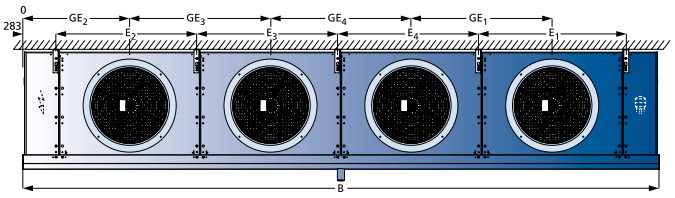


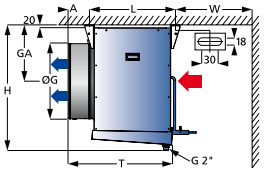


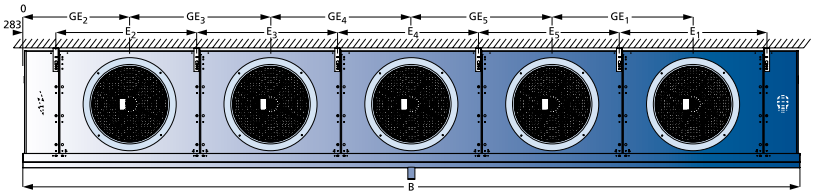












* Note the differences in dimension for accessories!
The dimensions are only valid for the standard model design! When installing fans other than those listed in the „Technical data“, dimensions T and A are larger.

Sound power level L_{WA} [dB(A)]

Model	✇	✇ ✇	✇ ✇ ✇	✇ ✇ ✇ ✇	✇ ✇ ✇ ✇ ✇
SG 50	78	81	83	84	85
SG 56	85	88	90	91	92
SG 63	75	78	80	81	82
SG 70	87	90	92	93	–
SG 80	85	88	90	91	–

Dimensional Drawings, Electric Defrost, Weights

	Dimensions [mm]																			Electrical defrost			Net weight			
Size	H	B	T	L	E_1	E_2	E_3	E_4	E_5	A	W	W_{min}	ØG	GA	GE_1	GE_2	GE_3	GE_4	GE_5	Coil	Tray	Total	SGA	SGB	SGK	SGL
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kW	kW	kW / *	kg	kg	kg	kg
50-41	720	1620	870	704	1054	-	-	-	-	190	500	860	518	329	783	-	-	-	-	4,78	2,29	7,07/1	130	122	119	117
50-61	720	1620	870	704	1054	-	-	-	-	190	500	860	518	329	783	-	-	-	-	5,97	2,29	8,26/1	146	139	130	127
56-41	920	1620	870	704	1054	-	-	-	-	190	550	860	576	429	783	-	-	-	-	6,69	2,29	8,98/1	163	152	149	146
56-61	920	1620	870	704	1054	-	-	-	-	190	550	860	576	429	783	-	-	-	-	7,96	2,29	10,25/2	185	164	165	163
56-81	920	1620	870	704	1054	-	-	-	-	190	550	860	576	429	783	-	-	-	-	10,51	2,29	12,8/2	214	192	184	180
63-41	1020	1820	895	729	1254	-	-	-	-	190	600	960	639	479	883	-	-	-	-	9,16	2,60	11,76/2	205	192	186	182
63-61	1020	1820	895	729	1254	-	-	-	-	190	600	960	639	479	883	-	-	-	-	10,31	2,60	12,91/2	236	215	208	203
63-81	1020	1820	895	729	1254	-	-	-	-	190	600	960	639	479	883	-	-	-	-	13,74	2,60	16,34/2	269	241	232	225
71-41	1325	2020	1040	757	1454	-	-	-	-	310	700	1340	734	629	983	-	-	-	-	14,30	2,87	17,17/2	286	264	257	251
71-61	1325	2020	1040	757	1454	-	-	-	-	310	700	1340	734	629	983	-	-	-	-	15,60	2,87	18,47/2	334	301	290	281
71-81	1325	2020	1040	757	1454	-	-	-	-	310	700	1340	734	629	983	-	-	-	-	22,10	2,87	24,97/2	387	343	328	317
80-41	1535	2020	1130	757	1454	-	-	-	-	400	800	1340	804	729	983	-	-	-	-	16,90	2,87	19,77/2	352	309	301	295
80-61	1535	2020	1130	757	1454	-	-	-	-	400	800	1340	804	729	983	-	-	-	-	18,20	2,87	21,07/2	401	353	341	331
80-81	1535	2020	1130	757	1454	-	-	-	-	400	800	1340	804	729	983	-	-	-	-	26,00	2,87	28,87/2	452	400	384	370
50-42	720	2620	870	704	2054	1000	-	-	-	190	500	860	518	329	1783	783	-	-	-	8,60	3,75	12,35/2	214	199	193	189
50-62	720	2620	870	704	2054	1000	-	-	-	190	500	860	518	329	1783	783	-	-	-	10,80	3,75	14,55/2	247	223	216	210
56-42	920	2620	870	704	2054	1000	-	-	-	190	550	860	576	429	1783	783	-	-	-	12,04	3,75	15,79/2	268	247	241	235
56-62	920	2620	870	704	2054	1000	-	-	-	190	550	860	576	429	1783	783	-	-	-	14,40	3,75	18,15/2	313	282	271	268
56-82	920	2620	870	704	2054	1000	-	-	-	190	550	860	576	429	1783	783	-	-	-	18,92	3,75	22,67/2	363	321	307	296
63-42	1020	3020	895	729	2454	1200	-	-	-	190	600	960	639	479	2083	883	-	-	-	16,00	4,33	20,33/2	347	319	310	302
63-62	1020	3020	895	729	2454	1200	-	-	-	190	600	960	639	479	2083	883	-	-	-	18,00	4,33	22,33/2	410	367	353	342
63-82	1020	3020	895	729	2454	1200	-	-	-	190	600	960	639	479	2083	883	-	-	-	24,00	4,33	28,33/2	473	416	398	384
71-42	1325	3420	1040	757	2854	1400	-	-	-	310	700	1340	734	629	2383	983	-	-	-	24,75	4,84	29,59/2	486	441	427	416
71-62	1325	3420	1040	757	2854	1400	-	-	-	310	700	1340	734	629	2383	983	-	-	-	27,00	4,84	31,84/2	584	516	494	478
71-82	1325	3420	1040	757	2854	1400	-	-	-	310	700	1340	734	629	2383	983	-	-	-	38,25	4,84	43,09/3	680	592	562	540
80-42	1535	3420	1130	757	2854	1400	-	-	-	400	800	1340	804	729	2383	983	-	-	-	29,25	4,84	34,09/2	610	523	508	495
80-62	1535	3420	1130	757	2854	1400	-	-	-	400	800	1340	804	729	2383	983	-	-	-	31,50	4,84	36,34/2	687	608	584	565
80-82	1535	3420	1130	757	2854	1400	-	-	-	400	800	1340	804	729	2383	983	-	-	-	45,00	4,84	49,84/3	802	696	664	638
50-43	720	3620	870	704	3054	1000	2000	-	-	190	500	860	518	329	2783	783	1783	-	-	13,00	5,20	18,2/2	302	278	270	264
50-63	720	3620	870	704	3054	1000	2000	-	-	190	500	860	518	329	2783	783	1783	-	-	15,60	5,20	20,8/2	353	317	306	297
56-43	920	3620	870	704	3054	1000	2000	-	-	190	550	860	576	429	2783	783	1783	-	-	18,20	5,20	23,4/2	377	345	335	327
56-63	920	3620	870	704	3054	1000	2000	-	-	190	550	860	576	429	2783	783	1783	-	-	20,80	5,20	26/2	446	399	383	379
56-83	920	3620	870	704	3054	1000	2000	-	-	190	550	860	576	429	2783	783	1783	-	-	28,60	5,20	33,8/3	519	454	433	417
63-43	1020	4220	895	729	3654	1200	2400	-	-	190	600	960	639	479	3283	883	2083	-	-	23,84	5,96	29,8/2	490	447	490	422
63-63	1020	4220	895	729	3654	1200	2400	-	-	190	600	960	639	479	3283	883	2083	-	-	26,82	5,96	32,78/2	583	517	583	481
63-83	1020	4220	895	729	3654	1200	2400	-	-	190	600	960	639	479	3283	883	2083	-	-	35,76	5,96	41,72/3	679	594	680	544
71-43	1325	4820	1040	757	4254	1400	2800	-	-	310	700	1340	734	629	3783	983	2383	-	-	37,84	6,88	44,27/3	704	637	701	599
71-63	1325	4820	1040	757	4254	1400	2800	-	-	310	700	1340	734	629	3783	983	2383	-	-	41,28	6,88	47,64/3	847	746	710	688
71-83	1325	4820	1040	757	4254	1400	2800	-	-	310	700	1340	734	629	3783	983	2383	-	-	58,48	6,88	64,49/4	999	866	997	790
80-43	1535	4820	1130	757	4254	1400	2800	-	-	400	800	1340	804	729	3783	983	2383	-	-	44,72	6,88	51,01/3	886	755	732	712
80-63	1535	4820	1130	757	4254	1400	2800	-	-	400	800	1340	804	729	3783	983	2383	-	-	48,16	6,88	54,38/3	999	880	844	815
80-83	1535	4820	1130	757	4254	1400	2800	-	-	400	800	1340	804	729	3783	983	2383	-	-	68,80	6,88	74,6/4	1179	1021	973	933
50-44	720	4620	870	704	4054	1000	2000	3000	-	190	500	860	518	329	3783	783	1783	2783	-	16,85	6,74	22,64/2	375	343	333	325
50-64	720	4620	870	704	4054	1000	2000	3000	-	190	500	860	518	329	3783	783	1783	2783	-	20,22	6,74	25,82/2	441	393	378	366
56-44	920	4620	870	704	4054	1000	2000	3000	-	190	550	860	576	429	3783	783	1783	2783	-	23,59	6,74	29/2	470	428	414	404
56-64	920	4620	870	704	4054	1000	2000	3000	-	190	550	860	576	429	3783	783	1783	2783	-	26,96	6,74	32,18/2	560	497	476	470
56-84	920	4620	870	704	4054	1000	2000	3000	-	190	550	860	576	429	3783	783	1783	2783	-	37,07	6,74	41,72/3	648	564	536	515
63-44	1020	5420	895	729	4854	1200	2400	3600	-	190	600	960	639	479	4483	883	2083	3283	-	31,20	7,80	39/3	633	576	558	543
63-64	1020	5420	895	729	4854	1200	2400	3600	-	190	600	960	639	479	4483	883	2083	3283	-	35,10	7,80	42,9/3	755	670	642	621
63-84	1020	5420	895	729	4854	1200	2400	3600	-	190	600	960	639	479	4483	883	2083	3283	-	46,80	7,80	54,6/4	883	768	731	703
71-44	1325	6220	1040	757	5654	1400	2800	4200	-	310	700	1340	734	629	5183	983	2383	3783	-	47,92	8,71	57,2/3	895	806	777	755
71-64	1325	6220	1040	757	5654	1400	2800	4200	-	310	700	1340	734	629	5183	983	2383	3783	-	52,27	8,71	61,6/4	1084	949	905	872
71-84	1325	6220	1040	757	5654	1400	2800	4200	-	310	700	1340	734	629	5183	983	2383	3783	-	74,05	8,71	83,6/4	1280	1101	1043	999
80-44	1535	6220	1130	757	5654	1400	2800	4200	-	400	800	1340	804	729	5183	983	2383	3783	-	56,63	8,71	66/4	1132	958	926	900
80-64	1535	6220	1130	757	5654	1400	2800	4200	-	400	800	1340	804	729	5183	983	2383	3783	-	60,98	8,71	70,4/4	1279	1201	1073	1034
80-84	1535	6220	1130	757	5654	1400	2800	4200	-	400	800	1340	804	729	5183	983	2383	3783	-	87,12	8,71	96,8/5	1512	1300	1235	1184
50-45	720	5620	870	704	5054	1000	2000	3000	4000	190	500	860	518	329	4783	783	1783	2783	3783	20,00	8,00	27,3/2	474	434	422	412
50-65	720	5620	870	704	5054	1000	2000	3000	4000	190	500	860	518	329	4783	783	1783	2783	3783	24,00	8,00	31,2/2	559	501	481	466
56-45	920	5620	870	704	5054	1000	2000	3000	4000	190	550	860	576	429	4783	783	1783	2783	3783	28,00	8,00	35,1/2	594	541	524	511
56-65	920	5620	870	704	5054	1000	2000	3000	4000	190	550	860	576	429	4783	783	1783	2783	3783	32,00	8,00	39/3	708	629	603	595
56-85	920	5620	870	704	5054	1000	2000	3000	4000	190	550	860	576	429	4783	783	1783	2783	3783	44,00	8,00	50,7/3	827	722	686	660
63-45	1020	6620	895	729	6054	1200	2400	3600	4800	190	600	960	639	479	5683	883	2083	3283	4483	36,80	9,20	46/3	774	703	679	662
63-65	1020	6620	895	729	6054	1200	2400	3600	4800	190	600	960	639	479	5683	883	2083	3283	4483	41,40	9,20	50,6/3	926	819	784	758
63-85	1020	6620	895	729	6054	1200	2400	3600	4800	190	600	960	639	479	5683	883	2083	3283	4483	55,20	9,20	64,4/4	1085	942	895	860

The dimensions are only valid for the standard model design!
Note the differences in dimension among versions and accessories.

* Electric defrost divided in /n circuits

Accessories

Air Hoses (on site procurement, not available from Küba)

Ventilation can be optimised with textile / PVC air hoses.

Applications
- Applications in work rooms and production areas
- Cooled goods that are sensitive to drafts (i.e. flowers, ripening cheeses)

Advantages
The air hoses make uniform air distribution possible at very low air speeds.
- Working in a draft-free environment yields low illness rates
- Maximum protection for sensitive cooled goods
- No condensation water: temperatures do not fall below the dew point because air can penetrate the woven material

Calculation hints
Please take the respective pressure drop for the cooler design into consideration.