



Küba SG industrial

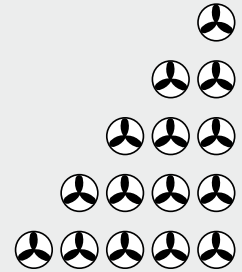




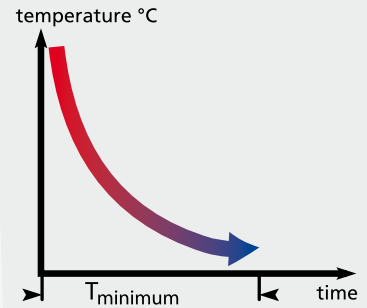
Küba SG industrial: Specific Advantages

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.

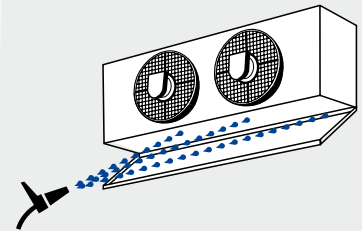
Q_0 5 — ■ ■ 170 kW



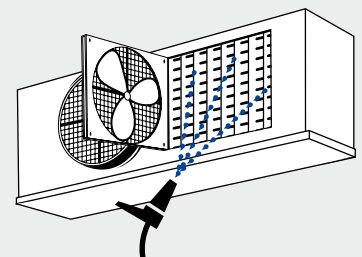
The Küba SG *industrial's* enormous air volume and directed air flow achieve maximum cooling and freezing speeds.



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.

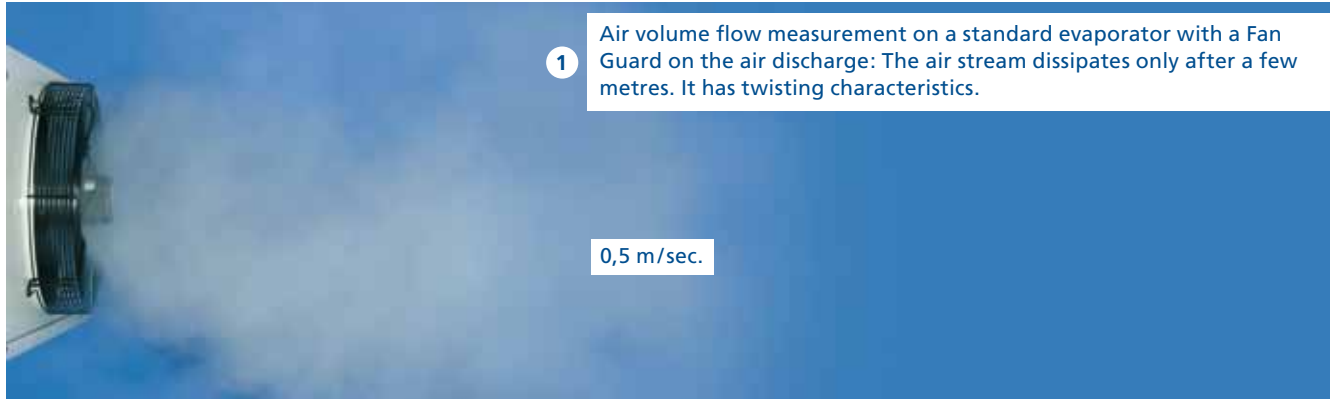




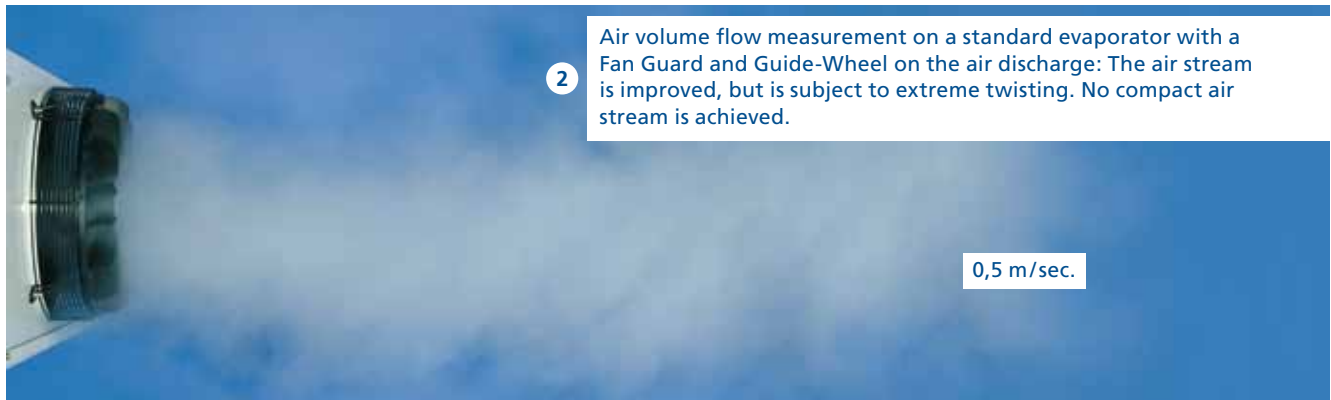
Küba SG industrial: Specific Advantages

What are the effects of a long air throw range?

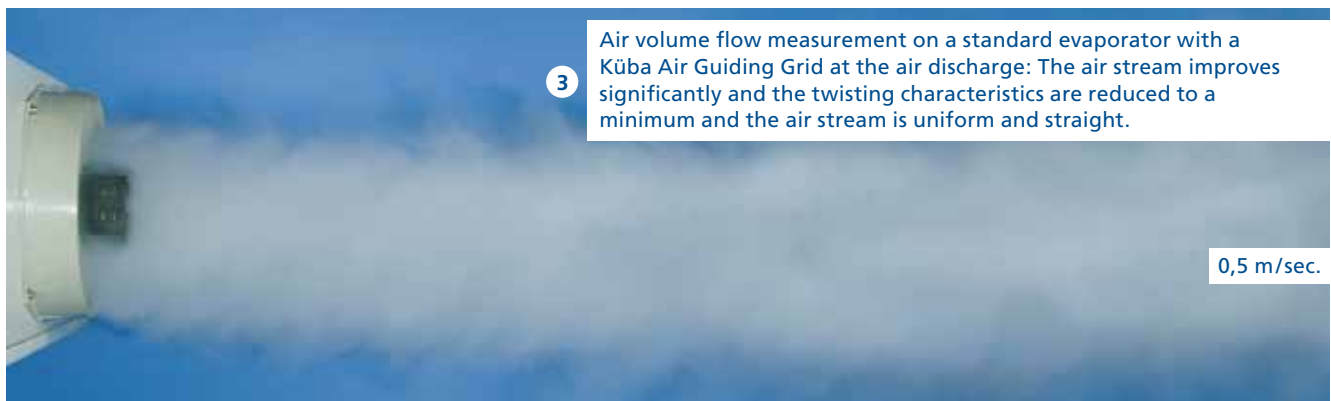
Fan Guard



Fan Guard and Guide-Wheel

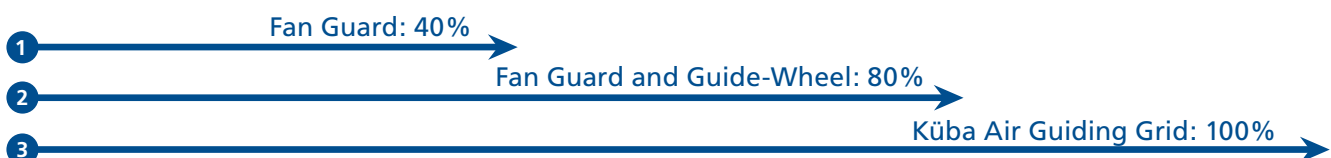


Küba Air Guiding Grid



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

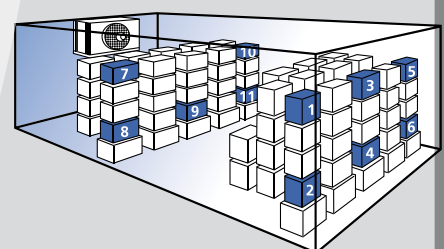
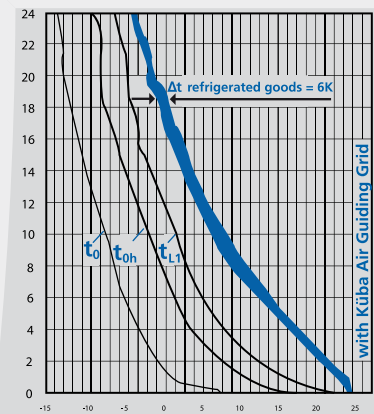
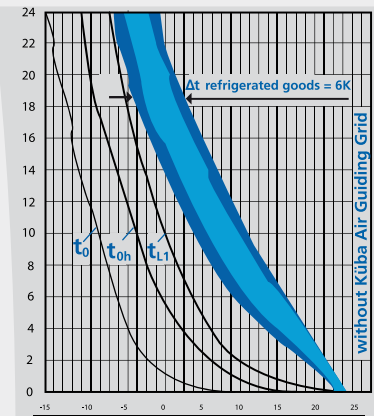
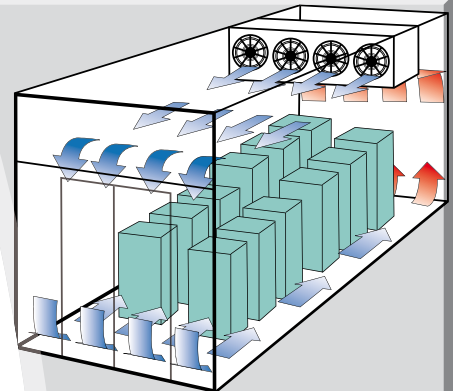
Uniform product temperatures:

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.

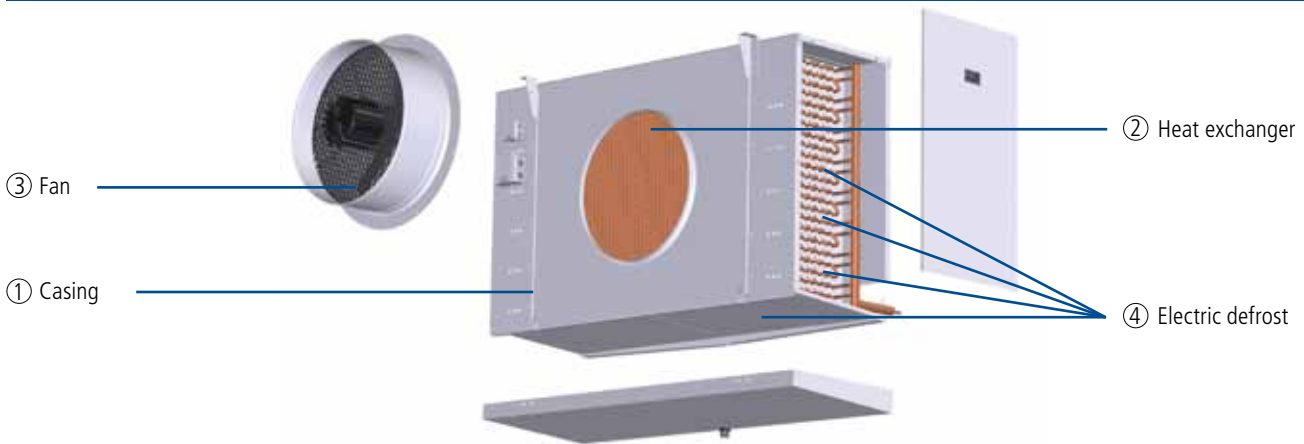
The starting conditions were identical in both trials – entry temperature 24 °C. For the cooler without an Air Guiding Grid, the temperature difference in the stack of goods after 21 hours cooling time was 6K.

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/CO₂**
Küba-CAL® refrigerant distributor from the entire HFC/CO₂ 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, NH₃**
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 mm² 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 

SGB(E)-F

Model	Rating Q ₀ at 50 Hz		Surface m ²	Air flow m ³ /h	Air throw m		Tube volume dm ³	Connections			Per Fan 400 ± 10% V-3 ~ 50Hz (operating values at 50 Hz)			
	t ₁ ± 0 °C DT1 = 8K	t ₁ -18 °C DT1 = 7K			Inlet Ø mm	Outlet Ø mm		Blade Ø mm	min ⁻¹	W	A			
SGB(E)	kW	kW												
56-F83	⊗⊗⊗	49,3	39,3	290	21900	53	34	66	22	54	560	1338	813	1,78
63-F43	⊗⊗⊗	38,1	30,5	195	25800	62	40	45	22	42	630	919	539	1,38
63-F63	⊗⊗⊗	50,1	40,0	293	25200	62	40	67	22	54	630	919	539	1,38
63-F83	⊗⊗⊗	59,5	47,5	390	24600	62	40	89	28	54	630	919	539	1,38
71-F43	⊗⊗⊗	57,5	46,0	303	36900	72	43	69	28	54	710	940	1140	2,39
71-F63	⊗⊗⊗	75,5	60,3	456	36000	72	43	104	2x22	2x42	710	940	1140	2,39
71-F83	⊗⊗⊗	87,8	70,1	609	34800	72	43	138	2x28	2x42	710	940	1140	2,39
80-F43	⊗⊗⊗	79,2	63,2	354	60750	76	-	81	28	54	800	940	1630	3,46
80-F63	⊗⊗⊗	95,0	75,8	531	58050	76	-	121	2x28	2x54	800	940	1630	3,46
80-F83	⊗⊗⊗	116,0	92,5	708	55350	76	-	161	2x28	2x54	800	940	1630	3,46
50-F44	⊗⊗⊗⊗	31,6	25,2	145	25200	46	30	33	15	42	500	1390	657	1,32
50-F64	⊗⊗⊗⊗	42,8	34,2	217	23600	46	30	50	22	54	500	1390	657	1,32
56-F44	⊗⊗⊗⊗	42,3	33,8	193	31600	55	36	44	22	54	560	1338	813	1,78
56-F64	⊗⊗⊗⊗	56,3	45,0	289	30000	55	36	66	28	54	560	1338	813	1,78
56-F84	⊗⊗⊗⊗	65,7	52,5	386	29200	55	36	88	2x22	2x42	560	1338	813	1,78
63-F44	⊗⊗⊗⊗	50,8	40,5	260	34400	64	42	59	22	54	630	919	539	1,38
63-F64	⊗⊗⊗⊗	66,7	53,3	391	33600	64	42	89	28	54	630	919	539	1,38
63-F84	⊗⊗⊗⊗	79,2	63,2	520	32800	64	42	118	2x22	2x42	630	919	539	1,38
71-F44	⊗⊗⊗⊗	76,7	61,3	404	49200	77	46	92	28	54	710	940	1140	2,39
71-F64	⊗⊗⊗⊗	100,6	80,5	608	48000	77	46	138	2x28	2x54	710	940	1140	2,39
71-F84	⊗⊗⊗⊗	117,1	93,5	812	46400	77	46	184	2x28	2x54	710	940	1140	2,39
80-F44	⊗⊗⊗⊗	105,6	84,5	472	81000	78	-	107	28	64	800	940	1630	3,46
80-F64	⊗⊗⊗⊗	126,6	101,1	708	77400	78	-	161	2x28	2x54	800	940	1630	3,46
80-F84	⊗⊗⊗⊗	154,5	123,5	944	73800	78	-	214	2x28	2x54	800	940	1630	3,46
50-F45	⊗⊗⊗⊗⊗	39,5	31,6	181	31500	51	33	41	22	54	500	1390	657	1,32
50-F65	⊗⊗⊗⊗⊗	53,5	42,7	272	29500	51	33	62	22	54	500	1390	657	1,32
56-F45	⊗⊗⊗⊗⊗	53,0	42,2	241	39500	60	39	55	22	54	560	1338	813	1,78
56-F65	⊗⊗⊗⊗⊗	70,3	56,2	362	37500	60	39	82	28	54	560	1338	813	1,78
56-F85	⊗⊗⊗⊗⊗	82,2	65,6	483	36500	60	39	109	2x22	2x42	560	1338	813	1,78
63-F45	⊗⊗⊗⊗⊗	63,5	50,7	326	43000	70	46	74	22	54	630	919	539	1,38
63-F65	⊗⊗⊗⊗⊗	83,5	66,6	489	42000	70	46	111	28	54	630	919	539	1,38
63-F85	⊗⊗⊗⊗⊗	99,1	79,1	650	41000	70	46	147	2x22	2x54	630	919	539	1,38



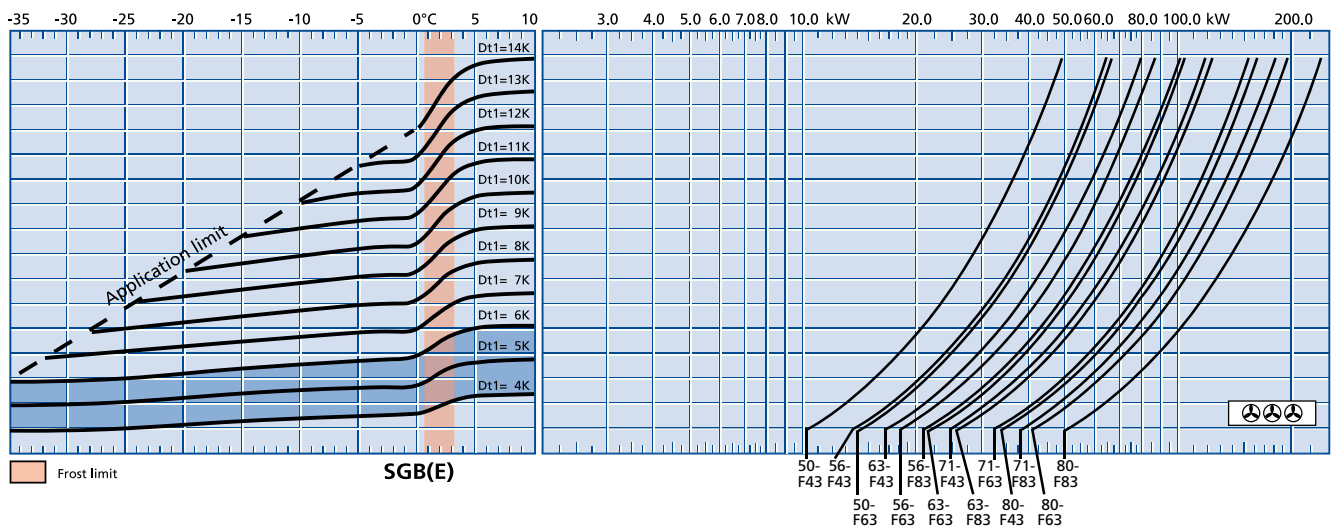
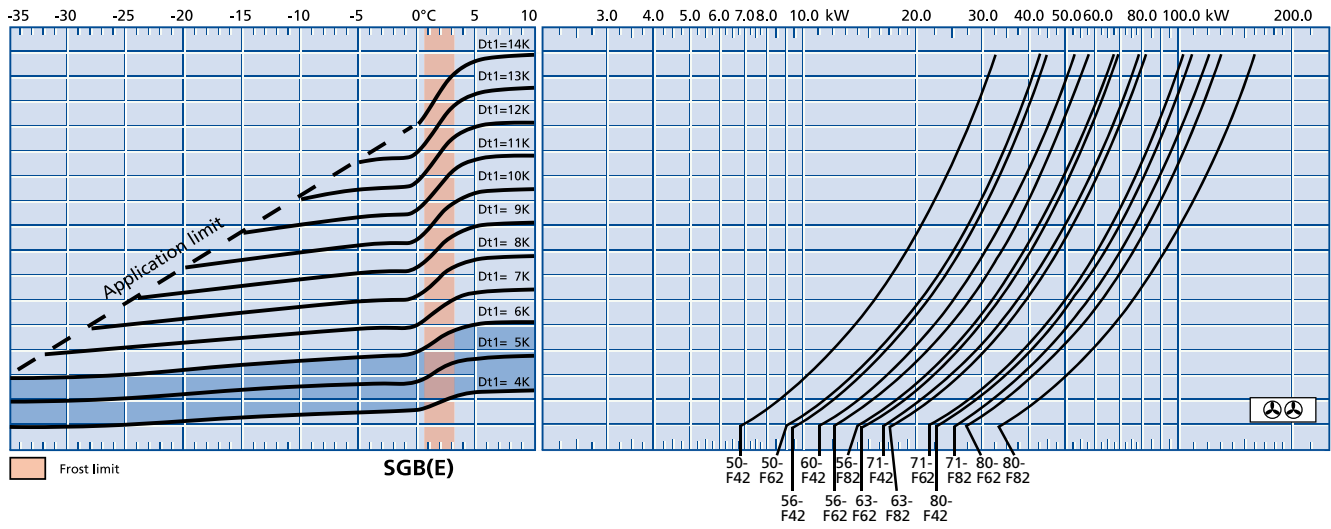
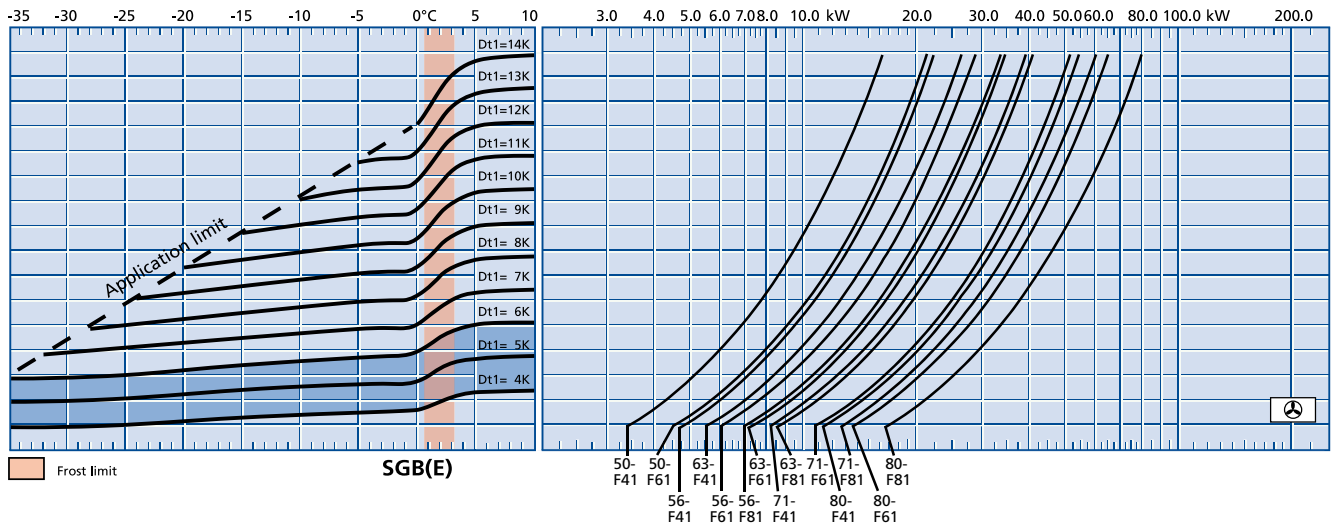
Q_v Chart (EN 328, R404A)

SGB-F



t_{l1} [°C] Air inlet temperature

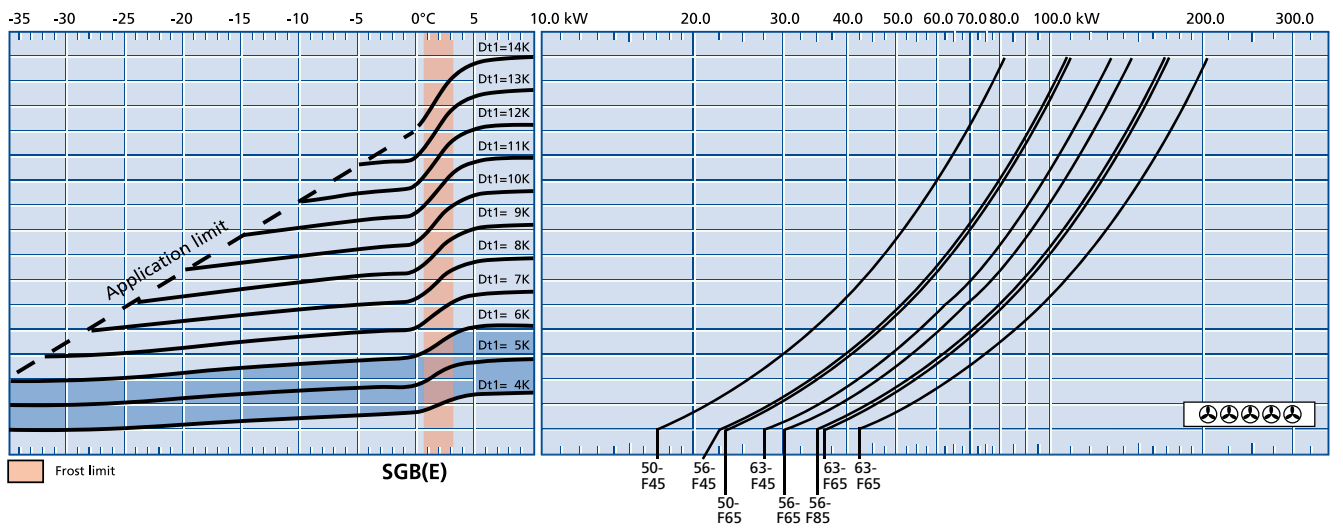
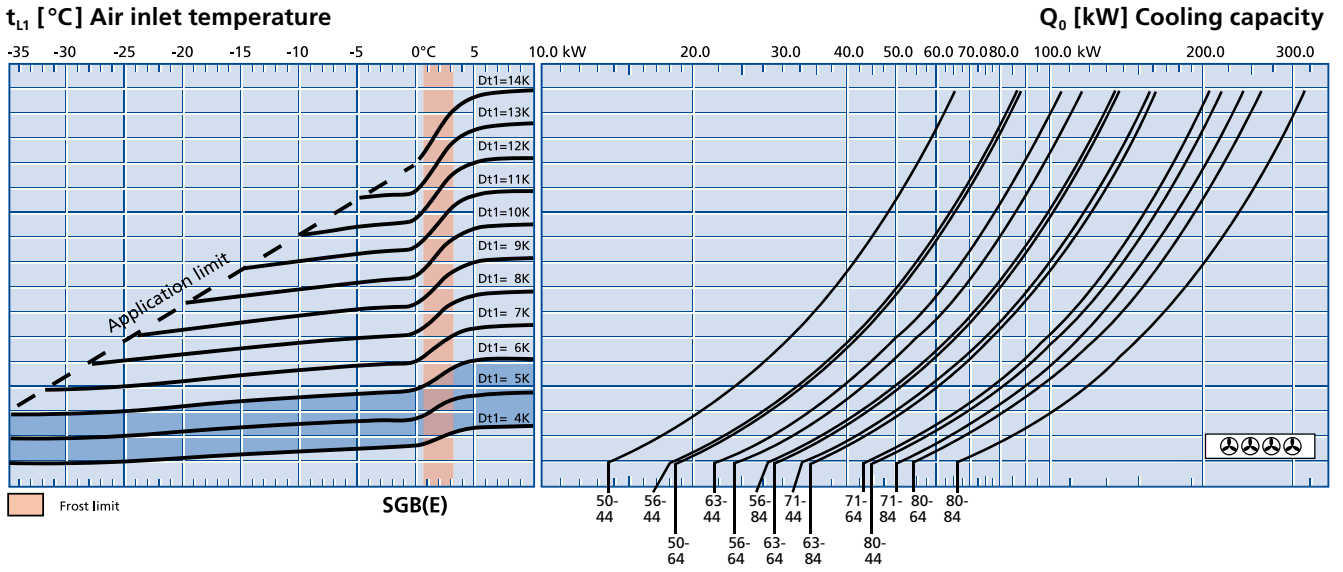
Q_o [kW] Cooling capacity



78



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



Q₀ = Cooling capacity
 t_{L1} = Air inlet temperature
 t₀ [°C] = Evaporating temperature (coil outlet)
 DT1 [K] = Temperature difference = t_{L1} - t₀ (°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.



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.

