



**Küba SG industrial**

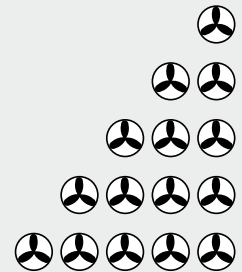




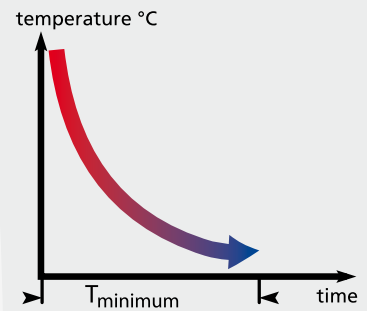
**Küba SG industrial: Specific Advantages**

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.

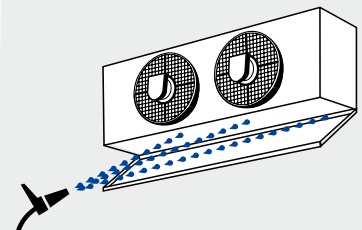
$Q_0$  5 — ■ ■ 170 kW



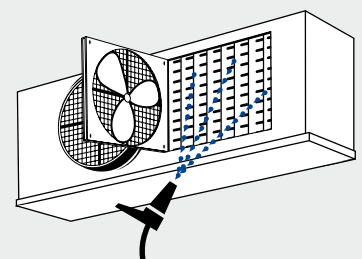
The Küba SG *industrial's* enormous air volume and directed air flow achieve maximum cooling and freezing speeds.



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.

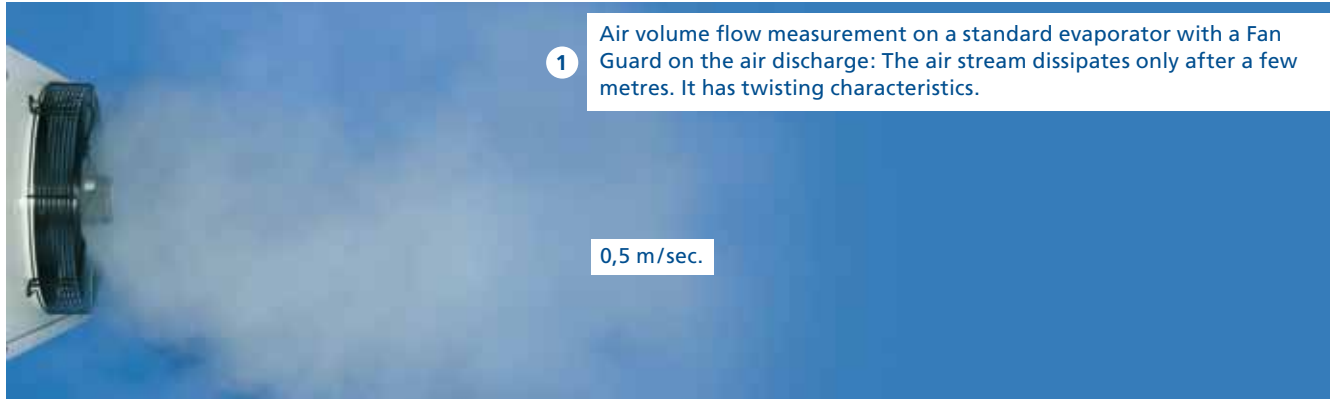




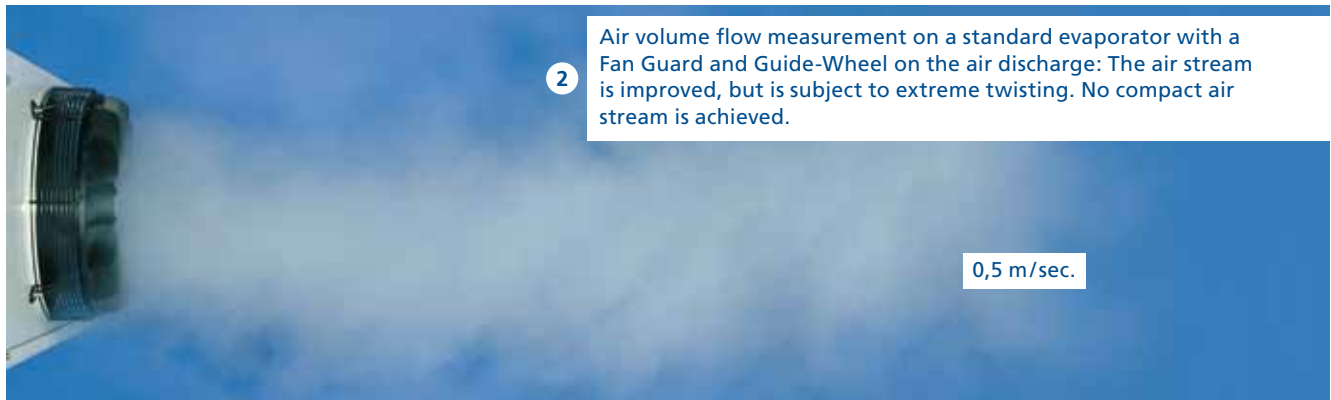
## Küba SG industrial: Specific Advantages

### What are the effects of a long air throw range?

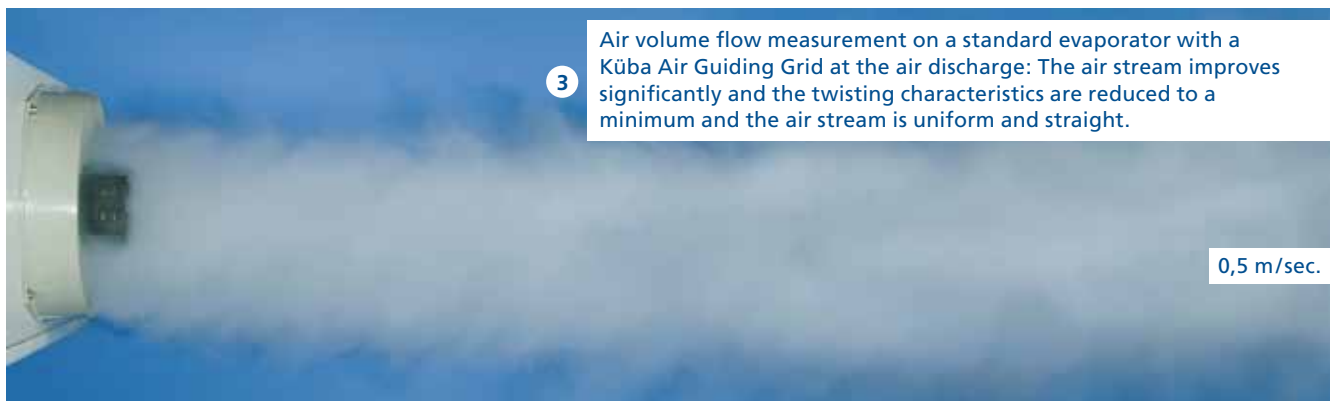
#### Fan Guard



#### Fan Guard and Guide-Wheel

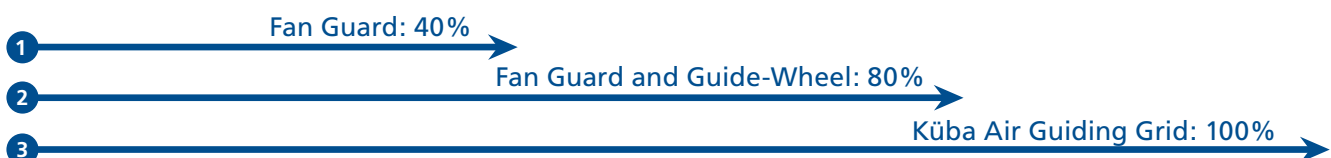


#### Küba Air Guiding Grid



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

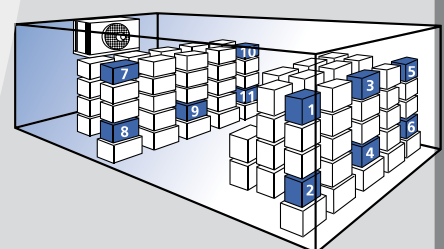
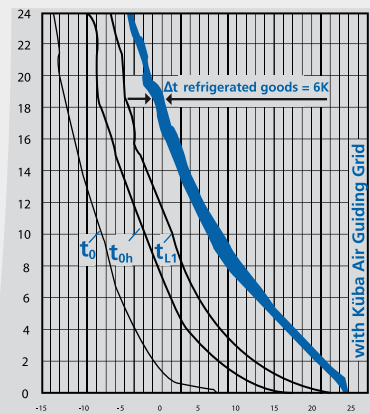
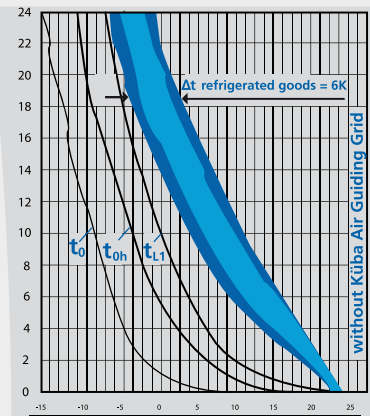
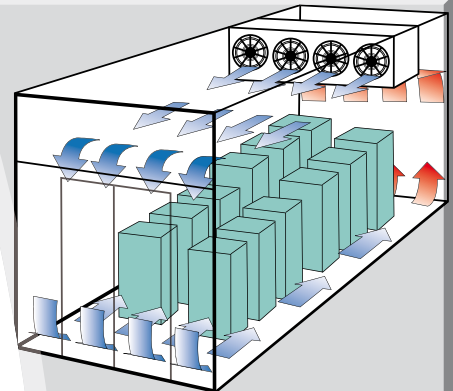
**Uniform product temperatures:**

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.

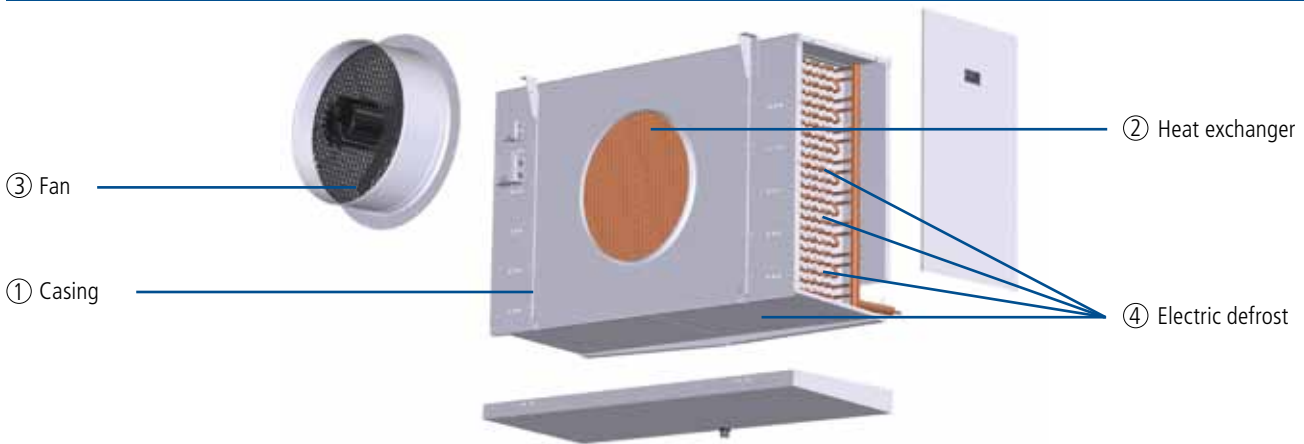
The starting conditions were identical in both trials – entry temperature 24 °C. For the cooler without an Air Guiding Grid, the temperature difference in the stack of goods after 21 hours cooling time was 6K.

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<sub>2</sub>**  
Küba-CAL® refrigerant distributor from the entire HFC/CO<sub>2</sub> 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<sub>3</sub>**  
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 <sup>-1</sup>	W	A
<b>SG. 50-F41-F85</b>	1400	800	1,40
<b>SG. 56-F41-F85</b>	1350	1400	2,50
<b>SG. 63-F41-F85</b>	880	680	1,60
<b>SG. 71-F41-F84</b>	900	1200	2,30
<b>SG. 80-F41-F84</b>	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<sup>2</sup> 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)

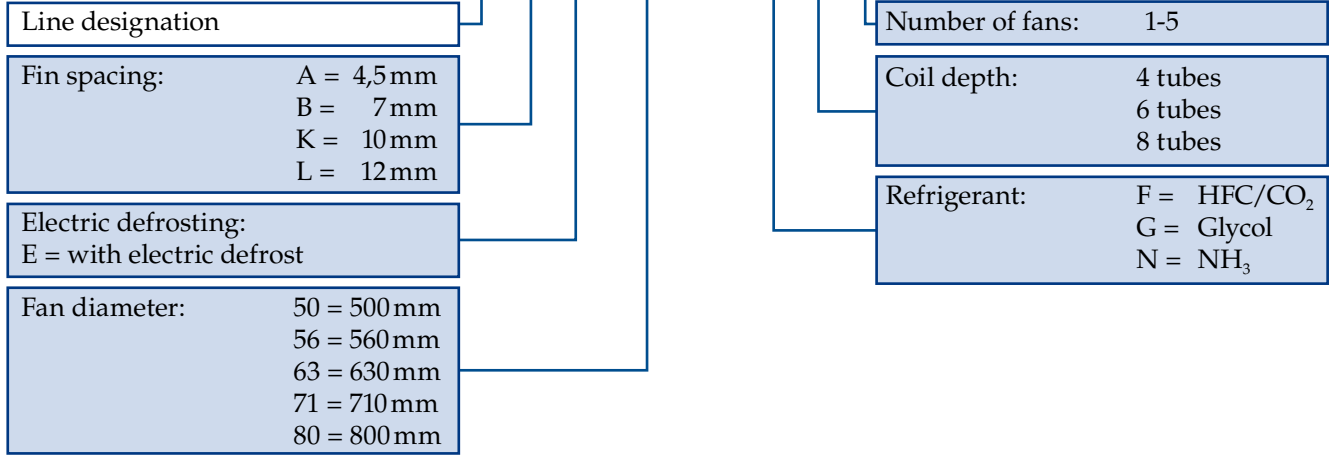
SGA-F



Nomenclature

Standard

**SG A E 71 - F 6 2**



SGA(E)-F

Model	Rating Q <sub>0</sub> at 50 Hz		Surface	Air flow		Air throw		Tube volume	Connections			Per Fan 400 ± 10% V-3~ 50Hz (operating values at 50 Hz)		
	t <sub>li</sub> ± 0 °C DT1 = 8K	t <sub>li</sub> -18 °C DT1 = 7K		m <sup>2</sup>	m <sup>3</sup> /h	m	m		Inlet	Outlet	Blade	min <sup>-1</sup>	W	A
50-F41	⊕	9,8	7,9	55	5900	23	15	9	10	28	500	1390	657	1,32
50-F61	⊕	12,2	9,8	82	5400	23	15	13	10	28	500	1390	657	1,32
56-F41	⊕	12,5	10,1	73	7200	28	18	12	10	28	560	1338	813	1,78
56-F61	⊕	15,7	12,5	110	6750	28	18	17	15	35	560	1338	813	1,78
56-F81	⊕	17,6	14,1	146	6300	28	18	23	15	35	560	1338	813	1,78
63-F41	⊕	15,5	12,3	99	8010	33	21	16	15	28	630	919	539	1,38
63-F61	⊕	19,2	15,3	148	7650	33	21	23	22	35	630	919	539	1,38
63-F81	⊕	21,1	16,7	198	7020	33	21	31	22	35	630	919	539	1,38
71-F41	⊕	23,1	18,5	154	11700	43	26	24	15	35	710	940	1140	2,39
71-F61	⊕	28,3	22,6	231	11000	43	26	36	22	35	710	940	1140	2,39
71-F81	⊕	31,6	25,2	308	10400	43	26	48	22	42	710	940	1140	2,39
80-F41	⊕	31,8	25,5	179	18450	48	-	28	15	42	800	940	1630	3,46
80-F61	⊕	39,5	31,5	269	17460	48	-	42	22	42	800	940	1630	3,46
80-F81	⊕	44,0	35,1	359	16200	48	-	56	22	42	800	940	1630	3,46
50-F42	⊕⊕	19,6	15,6	110	11800	33	21	17	15	35	500	1390	657	1,32
50-F62	⊕⊕	24,6	19,6	164	10800	33	21	25	15	35	500	1390	657	1,32
56-F42	⊕⊕	25,1	20,1	146	14400	39	25	22	15	35	560	1338	813	1,78
56-F62	⊕⊕	31,6	25,2	220	13500	39	25	34	22	42	560	1338	813	1,78
56-F82	⊕⊕	35,3	28,2	292	12600	39	25	45	22	42	560	1338	813	1,78
63-F42	⊕⊕	30,8	24,6	198	16020	45	29	30	22	42	630	919	539	1,38
63-F62	⊕⊕	38,6	30,8	296	15300	45	29	45	22	42	630	919	539	1,38
63-F82	⊕⊕	42,1	33,6	396	14040	45	29	60	22	42	630	919	539	1,38
71-F42	⊕⊕	46,3	37,1	308	23400	58	35	46	22	42	710	940	1140	2,39
71-F62	⊕⊕	56,8	45,3	462	22000	58	35	70	28	54	710	940	1140	2,39
71-F82	⊕⊕	63,2	50,5	616	20800	58	35	93	28	54	710	940	1140	2,39
80-F42	⊕⊕	63,7	51,0	358	36900	63	-	54	22	54	800	940	1630	3,46
80-F62	⊕⊕	79,0	63,1	538	34920	63	-	82	2x22	2x42	800	940	1630	3,46
80-F82	⊕⊕	88,0	70,2	718	32400	63	-	108	2x22	2x42	800	940	1630	3,46
50-F43	⊕⊕⊕	29,5	23,5	165	17700	40	26	25	15	42	500	1390	657	1,32
50-F63	⊕⊕⊕	37,0	29,5	246	16200	40	26	37	22	42	500	1390	657	1,32
56-F43	⊕⊕⊕	37,7	30,1	220	21600	49	32	33	15	42	560	1338	813	1,78
56-F63	⊕⊕⊕	47,5	37,8	330	20250	49	32	50	22	42	560	1338	813	1,78

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Technical Data (R404A)

SGB-F



SGB(E)-F

Model		Rating Q <sub>0</sub> at 50 Hz		Surface	Air flow	Air throw		Tube volume	Connections			Per Fan 400 ± 10% V-3~ 50Hz (operating values at 50 Hz)		
		t <sub>li</sub> ± 0 °C DT1 = 8K	t <sub>li</sub> -18 °C DT1 = 7K			Inlet	Outlet		Blade	min <sup>-1</sup>	W	A		
SGB(E)														
		kW	kW	m <sup>2</sup>	m <sup>3</sup> /h	m	m	dm <sup>3</sup>	Ø mm	Ø mm	Ø mm	min <sup>-1</sup>	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


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**Accessories**

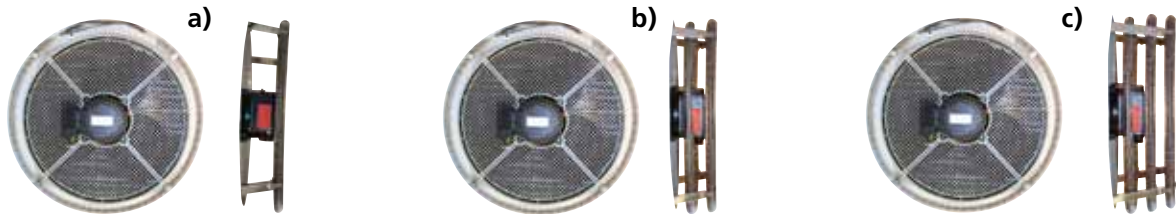
**Finned Tube Heaters SGHR**

For Air Coolers with draw through fans, self assembly is required. Air Coolers are suitable for air conditioning or heating in the winter.

 Use only with running Air Cooler fans. Failure to do so can cause the ceiling of the cold storage room to overheat. Please observe the respective safety guidelines.

Scope of delivery (unassembled):

- Electric finned tube heater in stainless steel with connection ends: 1,5 x 2000 mm
- Assembly kit including bracket for heater with clamp, connection box IP 54, mounting material



Model	for blade Ø mm	Nominal rating at 230V kW	Weight kg	Model	for blade Ø mm	Nominal rating at 230V kW	Weight kg
SGHR 50	500	3,19	1,13	SGHR 50 Z	500	3,19	1,13
SGHR 56	560	3,51	1,27	SGHR 56 Z	560	3,51	1,27
SGHR 63	630	8,08	2,68	SGHR 63 Z	630	4,04	1,34
SGHR 71	710	9,48	3,23	SGHR 71 Z	710	4,74	1,51
SGHR 80	800	10,5	3,40	SGHR 80 Z	800	5,24	1,70

**Selection table**

For Air Coolers	Normal heating capacity		Greater heating capacity	
	kW	Number to order	kW	Number to order
SG 50-1	3,19	a) 1 SGHR 50	6,38	b) 1 SGHR 50 + 1 SGHR 50Z
SG 56-1	3,51	a) 1 SGHR 56	7,02	b) 1 SGHR 56 + 1 SGHR 56Z
<b>SG 63-1</b>	<b>8,08</b>	b) 1 SGHR 63	<b>12,1</b>	c) 1 SGHR 63 + 1 SGHR 63Z
SG 71-1	9,48	b) 1 SGHR 71	14,2	c) 1 SGHR 71 + 1 SGHR 71Z
SG 80-1	10,5	b) 1 SGHR 80	15,8	c) 1 SGHR 80 + 1 SGHR 80Z
SG 50-2	6,38	a) 2 SGHR 50	12,8	b) 2 SGHR 50 + 2 SGHR 50Z
SG 56-2	7,02	a) 2 SGHR 56	14,0	b) 2 SGHR 56 + 2 SGHR 56Z
SG 63-2	16,2	b) 2 SGHR 63	24,2	c) 2 SGHR 63 + 2 SGHR 63Z
SG 71-2	19,0	b) 2 SGHR 71	28,4	c) 2 SGHR 71 + 2 SGHR 71Z
SG 80-2	21,0	b) 2 SGHR 80	31,6	c) 2 SGHR 80 + 2 SGHR 80Z
SG 50-3	9,57	a) 3 SGHR 50	19,1	b) 3 SGHR 50 + 3 SGHR 50Z
SG 56-3	10,5	a) 3 SGHR 56	21,1	b) 3 SGHR 56 + 3 SGHR 56Z
SG 63-3	24,3	b) 3 SGHR 63	36,3	c) 3 SGHR 63 + 3 SGHR 63Z
SG 71-3	28,5	b) 3 SGHR 71	42,6	c) 3 SGHR 71 + 3 SGHR 71Z
SG 80-3	31,5	b) 3 SGHR 80	47,4	c) 3 SGHR 80 + 3 SGHR 80Z
SG 50-4	12,8	a) 4 SGHR 50	25,5	b) 4 SGHR 50 + 4 SGHR 50Z
SG 56-4	14,1	a) 4 SGHR 56	28,1	b) 4 SGHR 56 + 4 SGHR 56Z
SG 63-4	32,2	b) 4 SGHR 63	48,4	c) 4 SGHR 63 + 4 SGHR 63Z
SG 71-4	38,0	b) 4 SGHR 71	56,8	c) 4 SGHR 71 + 4 SGHR 71Z
SG 80-4	42,0	b) 4 SGHR 80	63,2	c) 4 SGHR 80 + 4 SGHR 80Z
SG 50-5	15,9	a) 5 SGHR 50	31,9	b) 5 SGHR 50 + 5 SGHR 50Z
SG 56-5	17,6	a) 5 SGHR 56	35,1	b) 5 SGHR 56 + SGHR 56Z
SG 63-5	40,4	b) 5 SGHR 63	60,5	c) 5 SGHR 63 + SGHR 63Z





## 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.

