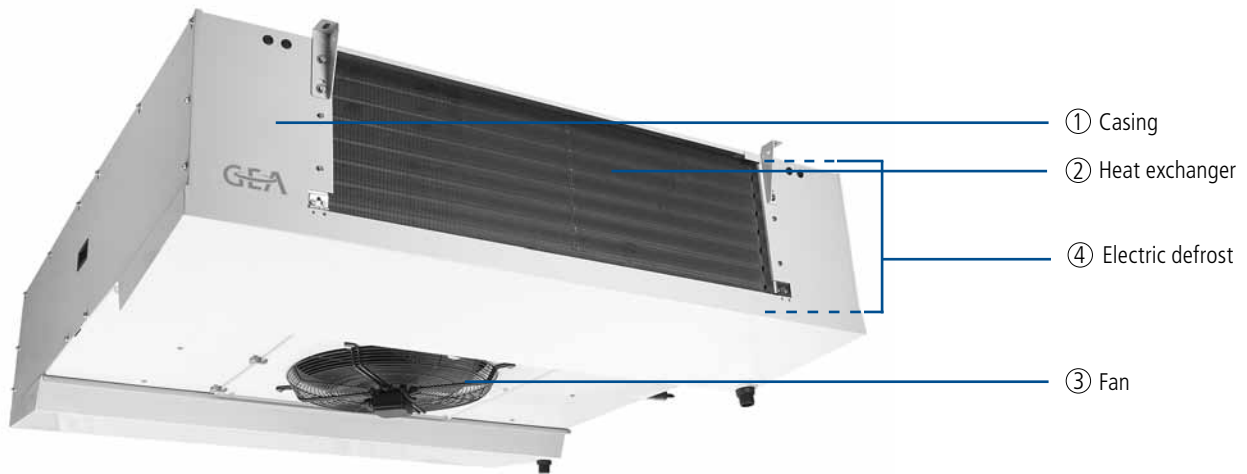




Construction



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
 - DZA: 4,5mm
 - DZB: 7mm
 - DZK: 12mm
- Aligned tube arrangement, spacing 50 x 50 mm
- HFE® tube / fin system
- **DZ production-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
- **DZ production-G: Glycol**
Distributor tubes for multiple injections
 - Tubing: Cu-special
 - Fins: Al
 - End plates: Al
- **DZ production-N: Pump operation, NH₃**
Distributor tubes for multiple injections
 - Tubing: VA
 - Fins: Al
 - End plates: Al

3. Fans

- Ø 400 / 450 / 500 / 560 mm
- With built-in protector to be connected on site
- Application range: - 40 °C to + 45 °C
- 400 ±10% V-3~, 50 Hz
- At maximum speed, (Δ operation) minimal moisture is discharged from the fins
- Protection class IP54
- Insulation class F
- Operating data can be found with Küba Select or in the technical data
- Controller:
 - Phase control
 - Transformer
 - Delta / star
 - Frequency converter

Please observe the manufacturer's information.

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

	Δ operation			Y operation		
	min ⁻¹	W	A	min ⁻¹	W	A
DZ 40 – F41-F64	1350	320	0,66	1050	230	0,38
DZ 45 – F41-F64	1330	640	1,10	970	430	0,70
DZ 50 – F41-F84	1320	820	1,50	1030	550	0,95
DZ 56 – F41-F84	1360	845	1,65	1090	640	1,05



Construction

4. Electric defrost

- 230 \pm 10% V-1~ or 400 \pm 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 vapour 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

The following designs are available upon request:

- Special voltage upon request
- Special design for frequency converter
- Hot air construction: up to +65 / +70 °C



Refrigerant / Coolant

- Can be used with all HFC refrigerants. Performance data can be found with Küba Select (Product Selection Software)
- For water / brine circulation, choose your Air Cooler with Küba Select
- For CO₂ operation and for NH₃ applications, immediate selection with Küba Select is possible – or ask our technical staff in sales



The performance data in the Q_v Charts refer to the combination of materials: tubes, Cu / fins, Al.

Küba **Blue Line**
Aircoolers

Fresh solutions.



Technical Data (R404A)

DZA-F



Nomenclature

Standard

DZ B E 50 - F 6 4

Line designation		Number of fans:	1-4
Fin spacing:	A = 4,5 mm B = 7 mm K = 10 mm	Coil depth:	4 tubes 6 tubes 8 tubes
Electric defrost:	E = with electrical defrost	Refrigerant:	F = HFC/CO ₂ G = Glycol N = NH ₃
Fan diameter:	40 = 400 mm 45 = 450 mm 50 = 500 mm 56 = 560 mm		

Model	Rating Q ₀ at 50 Hz		Surface	Airflow	Air throw	Tube volume	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	Outlet	Blade	min ⁻¹	W	A
DZA(E)	kW	kW	m ²	m ³ /h	m	dm ³	Ø mm	Ø mm	Ø mm	min ⁻¹	W	A
40-F41	5,0	4,0	33	2890	2 x 9	5	10	28	400	1350/1050	320/230	0,66/0,38
40-F61	6,3	5,0	49	2720	2 x 9	8	10	28	400	1350/1050	320/230	0,66/0,38
45-F41	7,6	6,1	44	4400	2 x 11	7	10	28	450	1330/970	640/430	1,10/0,70
45-F61	9,4	7,5	66	4050	2 x 11	11	10	28	450	1330/970	640/430	1,10/0,70
50-F61	13,4	10,7	110	5400	2 x 14	17	10	35	500	1330/1030	820/550	1,50/0,70
50-F81	15,0	11,9	146	5175	2 x 14	23	15	35	500	1330/1030	820/550	1,50/0,70
56-F61	17,3	13,8	132	7245	2 x 16	21	15	35	560	1360/1090	840/640	1,65/1,05
56-F81	19,4	15,5	176	6975	2 x 16	28	15	35	560	1360/1090	840/640	1,65/1,05
40-F42	10,1	8,0	66	5780	2 x 12	11	10	28	400	1350/1050	320/230	0,66/0,38
40-F62	12,6	10,0	99	5440	2 x 12	16	10	35	400	1350/1050	320/230	0,66/0,38
45-F42	15,2	12,1	88	8800	2 x 14	14	10	35	450	1330/970	640/430	1,10/0,70
45-F62	18,8	15,0	132	8100	2 x 14	21	15	35	450	1330/970	640/430	1,10/0,70
50-F62	26,8	21,4	220	10800	2 x 17	35	22	35	500	1330/1030	820/550	1,50/0,70
50-F82	29,9	23,9	293	10350	2 x 17	46	22	42	500	1330/1030	820/550	1,50/0,70
56-F62	34,5	27,6	264	14490	2 x 19	41	22	42	560	1360/1090	840/640	1,65/1,05
56-F82	38,9	31,1	352	13950	2 x 19	55	22	42	560	1360/1090	840/640	1,65/1,05
40-F43	15,1	12,0	99	8670	2 x 15	16	10	35	400	1350/1050	320/230	0,66/0,38
40-F63	18,8	15,0	148	8160	2 x 15	25	15	35	400	1350/1050	320/230	0,66/0,38
45-F43	22,8	18,2	132	13200	2 x 17	22	15	35	450	1330/970	640/430	1,10/0,70
45-F63	28,2	22,5	198	12150	2 x 17	32	22	42	450	1330/970	640/430	1,10/0,70
50-F63	40,2	32,1	329	16200	2 x 20	52	22	42	500	1330/1030	820/550	1,50/0,70
50-F83	44,9	35,8	439	15525	2 x 20	70	22	42	500	1330/1030	820/550	1,50/0,70
56-F63	51,8	41,3	395	21735	2 x 22	62	22	54	560	1360/1090	840/640	1,65/1,05
56-F83	58,3	46,6	528	20925	2 x 22	83	2x22	2x42	560	1360/1090	840/640	1,65/1,05
40-F44	20,1	16,1	132	11560	2 x 18	22	15	35	400	1350/1050	320/230	0,66/0,38
40-F64	25,1	20,1	198	10880	2 x 18	33	22	35	400	1350/1050	320/230	0,66/0,38
45-F44	30,4	24,3	176	17600	2 x 20	29	15	42	450	1330/970	640/430	1,10/0,70
45-F64	37,6	30,0	264	16200	2 x 20	42	22	42	450	1330/970	640/430	1,10/0,70
50-F64	53,5	42,8	439	21600	2 x 23	70	28	54	500	1330/1030	820/550	1,50/0,70
50-F84	59,8	47,8	586	20700	2 x 23	93	2x22	2x42	500	1330/1030	820/550	1,50/0,70
56-F64	69,0	55,1	527	28980	2 x 25	82	28	54	560	1360/1090	840/640	1,65/1,05
56-F84	77,7	62,1	704	27900	2 x 25	110	2x22	2x42	560	1360/1090	840/640	1,65/1,05



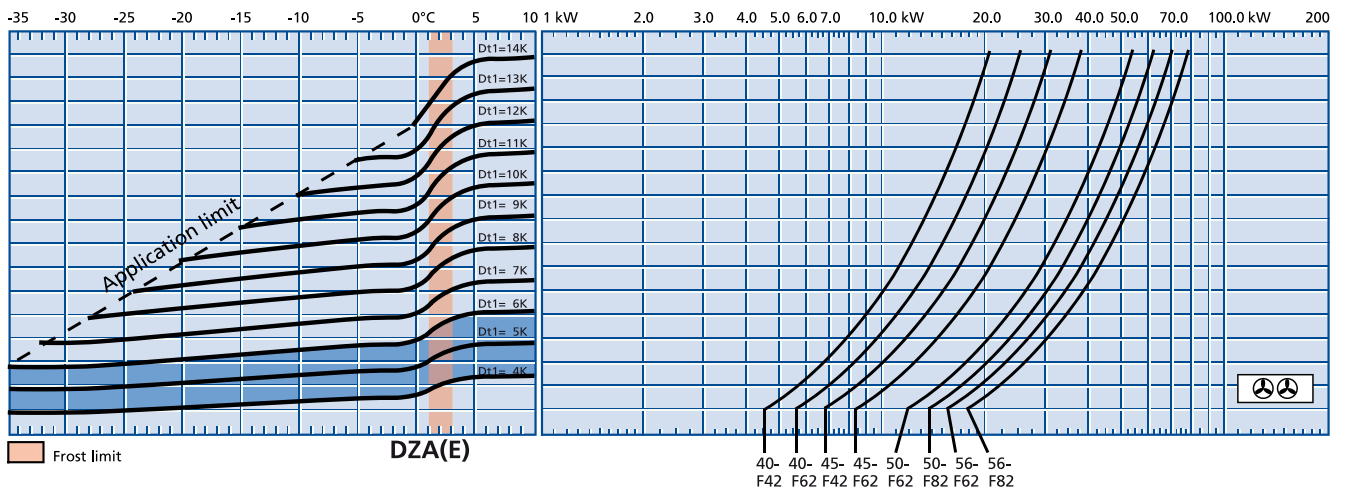
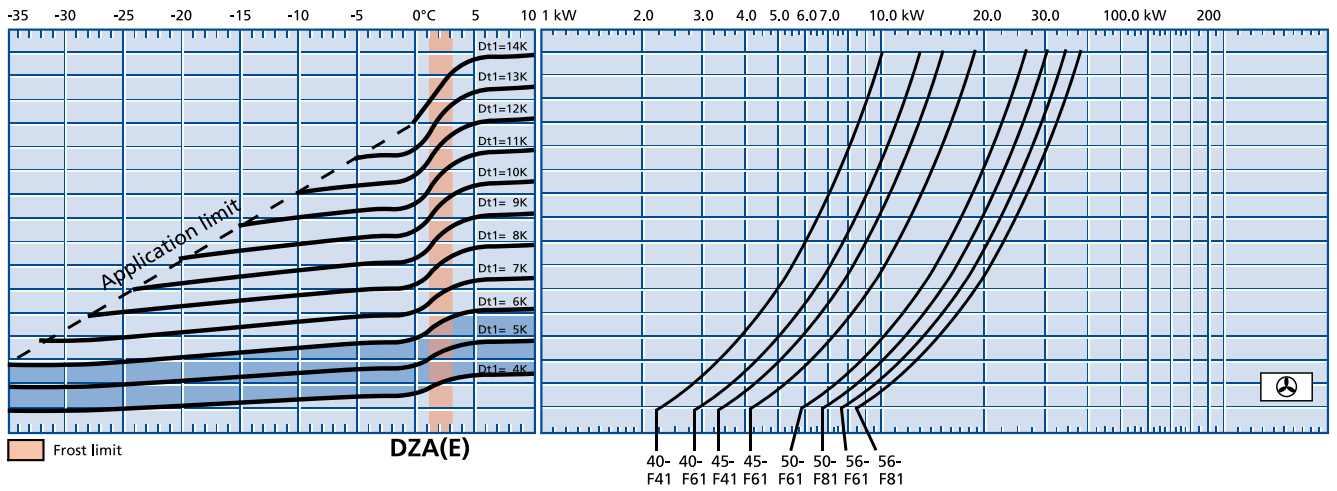
Q_v Chart (EN328, R404A)

DZA-F

 **4,5 mm**

t_{l1} [°C] Air inlet temperature

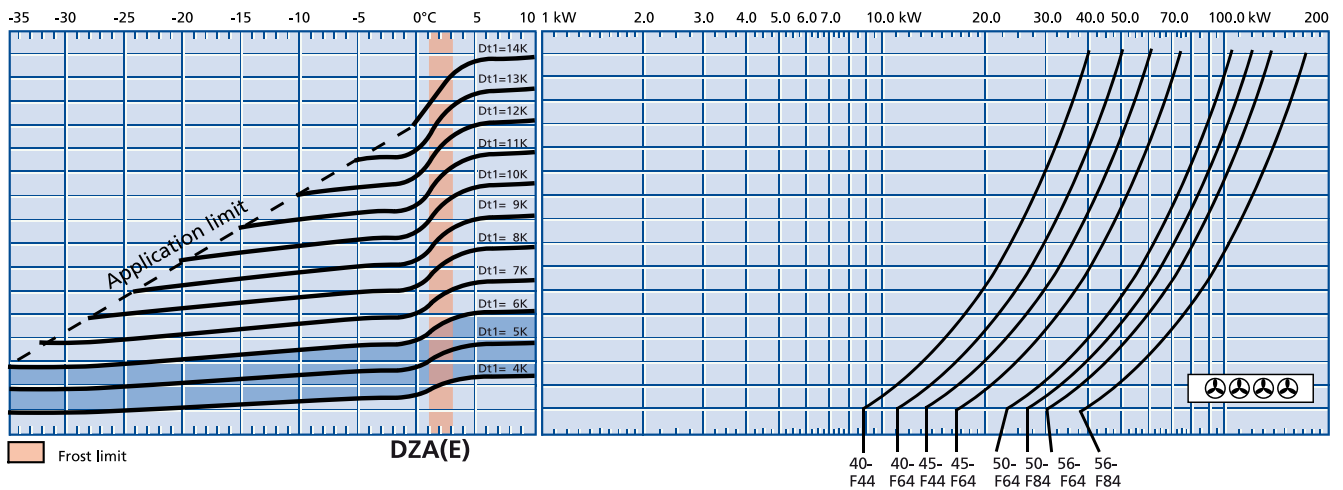
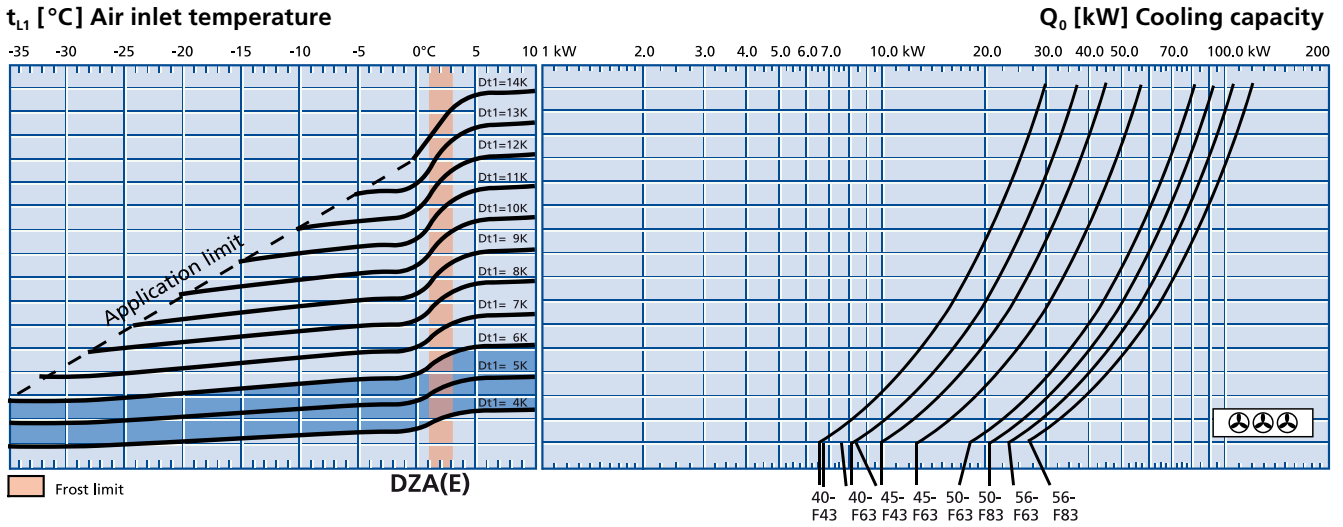
Q₀ [kW] Cooling capacity





Q_v Chart (EN328, R404A)

DZA-F



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 to 6 K
 with electronic expansion valve

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



Technical Data (R404A) DZB-F  **7 mm**

Model	Rating Q ₀ at 50 Hz	Surface		Airflow	Air throw	Tube volume	Connections			Per fan 400 ± 10% V-3- 50Hz (operating values at 50 Hz)			
		t _{ei} ± 0 °C DT1 = 8K	t _{ei} -18 °C DT1 = 7K	m ²	m ³ /h	m	dm ³	Inlet Ø mm	Outlet Ø mm	Blade Ø mm	min ⁻¹	W	A
DZB(E)		kW	kW	m ²	m ³ /h	m	dm ³	Ø mm	Ø mm	Ø mm	min ⁻¹	W	A
40-F41	⊕	4,2	3,3	22	3140	2 x 10	5	10	28	400	1350/1050	320/230	0,66/0,38
40-F61	⊕	5,5	4,4	33	2980	2 x 10	8	10	28	400	1350/1050	320/230	0,66/0,38
45-F41	⊕	6,0	4,8	29	4545	2 x 12	7	10	28	450	1330/970	640/430	1,10/0,70
45-F61	⊕	7,7	6,1	43	4275	2 x 12	11	10	28	450	1330/970	640/430	1,10/0,70
50-F61	⊕	11,4	9,1	72	5670	2 x 15	17	10	35	500	1330/1030	820/550	1,50/0,70
50-F81	⊕	13,7	10,9	96	5580	2 x 15	23	15	35	500	1330/1030	820/550	1,50/0,70
56-F61	⊕	15,0	12,0	87	7740	2 x 17	21	15	35	560	1360/1090	840/640	1,65/1,05
56-F81	⊕	17,7	14,1	116	7560	2 x 17	28	15	35	560	1360/1090	840/640	1,65/1,05
40-F42	⊕⊕	8,4	6,7	44	6280	2 x 13	11	10	28	400	1350/1050	320/230	0,66/0,38
40-F62	⊕⊕	11,0	8,8	65	5960	2 x 13	16	10	35	400	1350/1050	320/230	0,66/0,38
45-F42	⊕⊕	12,0	9,6	58	9090	2 x 15	14	10	35	450	1330/970	640/430	1,10/0,70
45-F62	⊕⊕	15,3	12,3	87	8550	2 x 15	21	15	35	450	1330/970	640/430	1,10/0,70
50-F62	⊕⊕	22,8	18,2	145	11340	2 x 18	35	22	35	500	1330/1030	820/550	1,50/0,70
50-F82	⊕⊕	27,3	21,8	193	11160	2 x 18	46	22	42	500	1330/1030	820/550	1,50/0,70
56-F62	⊕⊕	30,0	24,0	174	15480	2 x 20	41	22	42	560	1360/1090	840/640	1,65/1,05
56-F82	⊕⊕	35,4	28,3	232	15120	2 x 20	55	22	42	560	1360/1090	840/640	1,65/1,05
40-F43	⊕⊕⊕	12,6	10,0	65	9420	2 x 16	16	10	35	400	1350/1050	320/230	0,66/0,38
40-F63	⊕⊕⊕	16,5	13,2	98	8940	2 x 16	25	15	35	400	1350/1050	320/230	0,66/0,38
45-F43	⊕⊕⊕	18,0	14,4	87	13635	2 x 18	22	15	35	450	1330/970	640/430	1,10/0,70
45-F63	⊕⊕⊕	23,0	18,4	130	12825	2 x 18	32	22	42	450	1330/970	640/430	1,10/0,70
50-F63	⊕⊕⊕	34,2	27,3	217	17010	2 x 21	52	22	42	500	1330/1030	820/550	1,50/0,70
50-F83	⊕⊕⊕	41,0	32,8	289	16740	2 x 21	70	22	42	500	1330/1030	820/550	1,50/0,70
56-F63	⊕⊕⊕	45,0	36,0	260	23220	2 x 23	62	22	54	560	1360/1090	840/640	1,65/1,05
56-F83	⊕⊕⊕	53,1	42,4	347	22680	2 x 23	83	2x22	2x42	560	1360/1090	840/640	1,65/1,05
40-F44	⊕⊕⊕⊕	16,8	13,4	87	12560	2 x 19	22	15	35	400	1350/1050	320/230	0,66/0,38
40-F64	⊕⊕⊕⊕	22,0	17,6	130	11920	2 x 19	33	22	35	400	1350/1050	320/230	0,66/0,38
45-F44	⊕⊕⊕⊕	24,0	19,2	116	18180	2 x 21	29	15	42	450	1330/970	640/430	1,10/0,70
45-F64	⊕⊕⊕⊕	30,7	24,5	174	17100	2 x 21	42	22	42	450	1330/970	640/430	1,10/0,70
50-F64	⊕⊕⊕⊕	45,5	36,4	290	22680	2 x 24	70	28	54	500	1330/1030	820/550	1,50/0,70
50-F84	⊕⊕⊕⊕	54,7	43,7	386	22320	2 x 24	93	2x22	2x42	500	1330/1030	820/550	1,50/0,70
56-F64	⊕⊕⊕⊕	60,0	48,0	347	30960	2 x 26	82	28	54	560	1360/1090	840/640	1,65/1,05
56-F84	⊕⊕⊕⊕	70,8	56,6	463	30240	2 x 26	110	2x22	2x42	560	1360/1090	840/640	1,65/1,05



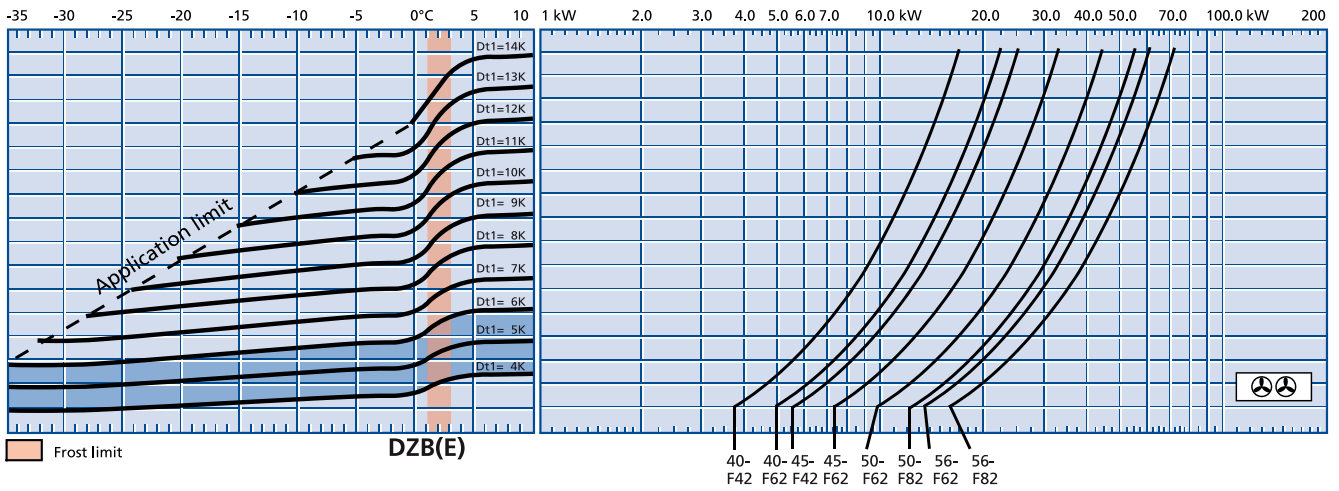
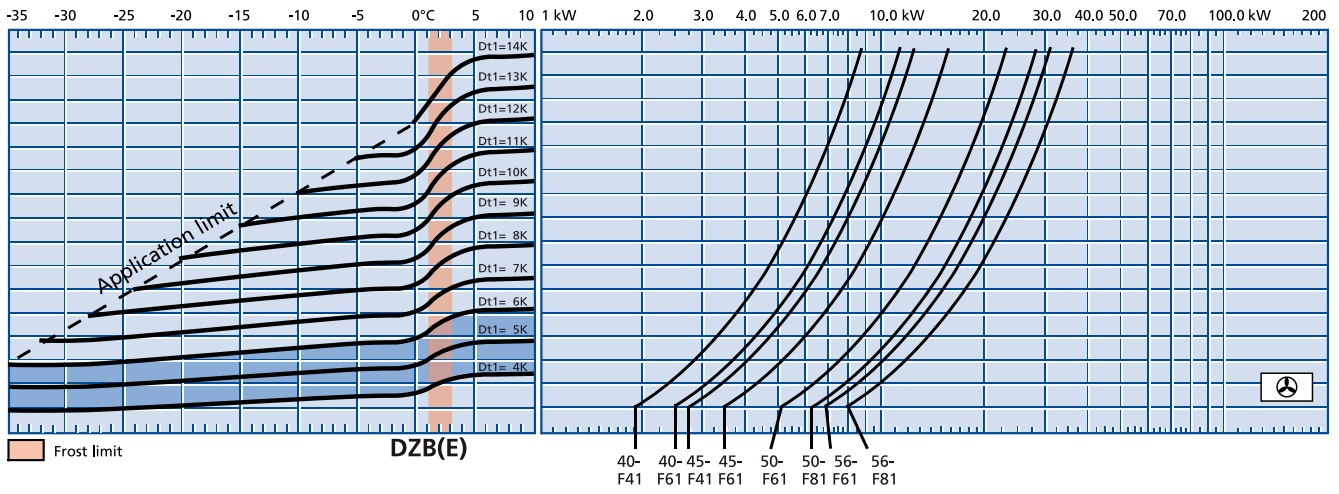
Q_v Chart (EN328, R404A)

DZB-F



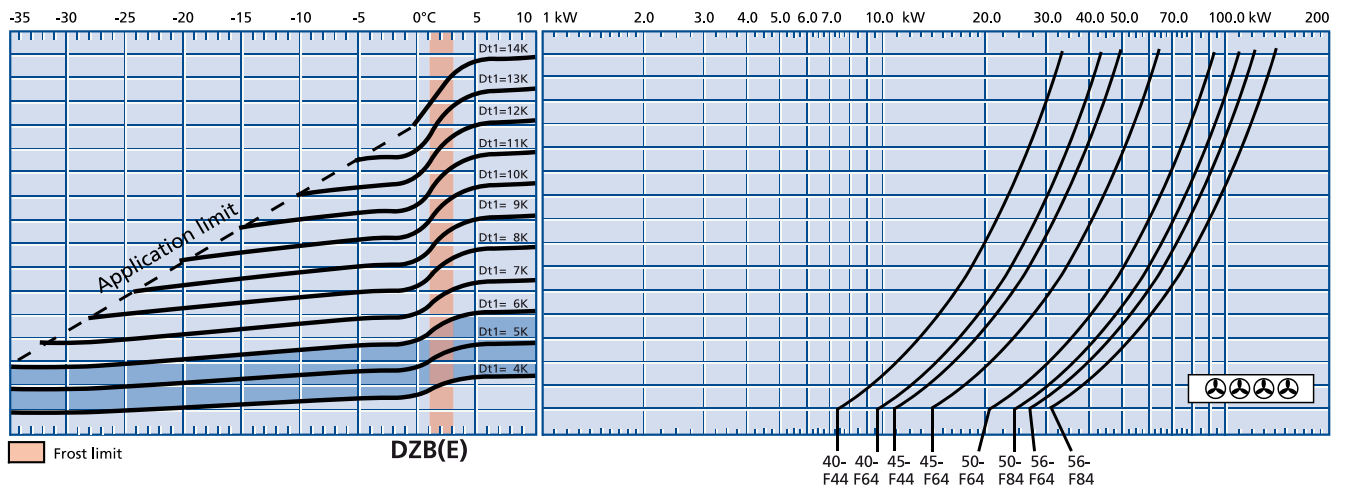
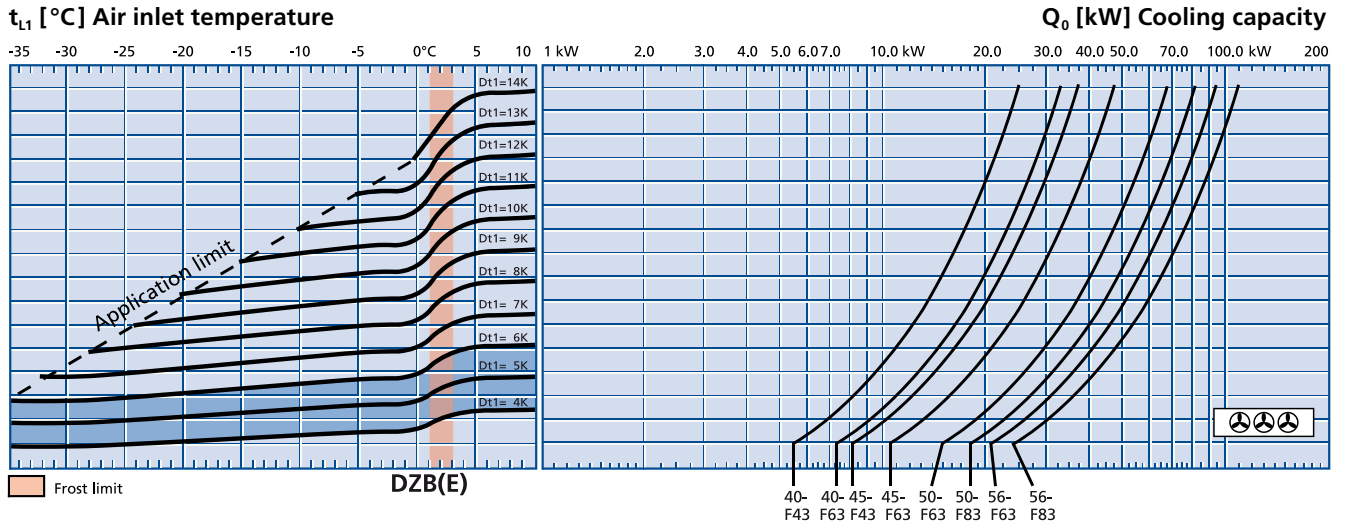
t_{l1} [°C] Air inlet temperature

Q₀ [kW] Cooling capacity





Q_v Chart (EN328, R404A) DZB-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 to 6 K
 with electronic expansion valve

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



Technical Data (R404A)

DZK-F



Model	Rating Q ₀ at 50 Hz		Surface m ²	Airflow m ³ /h	Air throw m	Tube volume dm ³	Connections			Per fan 400 ± 10% V-3- 50Hz (operating values at 50 Hz)			
	t ₁₁ ± 0 °C DT1 = 8K	t ₁₁ -18 °C DT1 = 7K					Inlet Ø mm	Outlet Ø mm	Blade Ø mm	min ⁻¹	W	A	
DZK-F(E)	kW	kW											
40-F41	⊕	3,6	2,9	16	3330	2 x 11	5	10	28	400	1350/1050	320/230	0,66/0,38
40-F61	⊕	4,9	3,9	23	3240	2 x 11	8	10	28	400	1350/1050	320/230	0,66/0,38
45-F41	⊕	5,2	4,1	21	5040	2 x 13	7	10	28	450	1330/970	640/430	1,10/0,70
45-F61	⊕	7,1	5,7	31	4905	2 x 13	11	10	28	450	1330/970	640/430	1,10/0,70
50-F61	⊕	9,6	7,7	52	5850	2 x 16	17	10	35	500	1330/1030	820/550	1,50/0,70
50-F81	⊕	12,0	9,6	69	5760	2 x 16	23	15	35	500	1330/1030	820/550	1,50/0,70
56-F61	⊕	12,8	10,2	62	7965	2 x 18	21	15	35	560	1360/1090	840/640	1,65/1,05
56-F81	⊕	15,4	12,3	83	7740	2 x 18	28	15	35	560	1360/1090	840/640	1,65/1,05
40-F42	⊕⊕	7,2	5,7	31	6660	2 x 14	11	10	28	400	1350/1050	320/230	0,66/0,38
40-F62	⊕⊕	9,8	7,8	47	6480	2 x 14	16	10	35	400	1350/1050	320/230	0,66/0,38
45-F42	⊕⊕	10,3	8,2	42	10080	2 x 16	14	10	35	450	1330/970	640/430	1,10/0,70
45-F62	⊕⊕	14,1	11,3	62	9810	2 x 16	21	15	35	450	1330/970	640/430	1,10/0,70
50-F62	⊕⊕	19,2	15,3	104	11700	2 x 19	35	22	35	500	1330/1030	820/550	1,50/0,70
50-F82	⊕⊕	23,9	19,1	139	11520	2 x 19	46	22	42	500	1330/1030	820/550	1,50/0,70
56-F62	⊕⊕	25,5	20,4	125	15930	2 x 21	41	22	42	560	1360/1090	840/640	1,65/1,05
56-F82	⊕⊕	30,8	24,6	167	15480	2 x 21	55	22	42	560	1360/1090	840/640	1,65/1,05
40-F43	⊕⊕⊕	10,8	8,6	47	9990	2 x 17	16	10	35	400	1350/1050	320/230	0,66/0,38
40-F63	⊕⊕⊕	14,7	11,7	70	9720	2 x 17	25	15	35	400	1350/1050	320/230	0,66/0,38
45-F43	⊕⊕⊕	15,5	12,3	62	15120	2 x 19	22	15	35	450	1330/970	640/430	1,10/0,70
45-F63	⊕⊕⊕	21,2	17,0	94	14715	2 x 19	32	22	42	450	1330/970	640/430	1,10/0,70
50-F63	⊕⊕⊕	28,8	23,0	156	17550	2 x 22	52	22	42	500	1330/1030	820/550	1,50/0,70
50-F83	⊕⊕⊕	35,9	28,7	208	17280	2 x 22	70	22	42	500	1330/1030	820/550	1,50/0,70
56-F63	⊕⊕⊕	38,3	30,6	187	23895	2 x 24	62	22	54	560	1360/1090	840/640	1,65/1,05
56-F83	⊕⊕⊕	46,2	36,9	250	23220	2 x 24	83	2x22	2x42	560	1360/1090	840/640	1,65/1,05
40-F44	⊕⊕⊕⊕	14,4	11,5	62	13320	2 x 20	22	15	35	400	1350/1050	320/230	0,66/0,38
40-F64	⊕⊕⊕⊕	19,6	15,7	94	12960	2 x 20	33	22	35	400	1350/1050	320/230	0,66/0,38
45-F44	⊕⊕⊕⊕	20,6	16,5	83	20160	2 x 22	29	15	42	450	1330/970	640/430	1,10/0,70
45-F64	⊕⊕⊕⊕	28,3	22,6	125	19620	2 x 22	42	22	42	450	1330/970	640/430	1,10/0,70
50-F64	⊕⊕⊕⊕	38,4	30,6	208	23400	2 x 25	70	28	54	500	1330/1030	820/550	1,50/0,70
50-F84	⊕⊕⊕⊕	47,8	38,2	278	23040	2 x 25	93	2x22	2x42	500	1330/1030	820/550	1,50/0,70
56-F64	⊕⊕⊕⊕	51,0	40,8	250	31860	2 x 27	82	28	54	560	1360/1090	840/640	1,65/1,05
56-F84	⊕⊕⊕⊕	61,6	49,2	334	30960	2 x 27	110	2x22	2x42	560	1360/1090	840/640	1,65/1,05



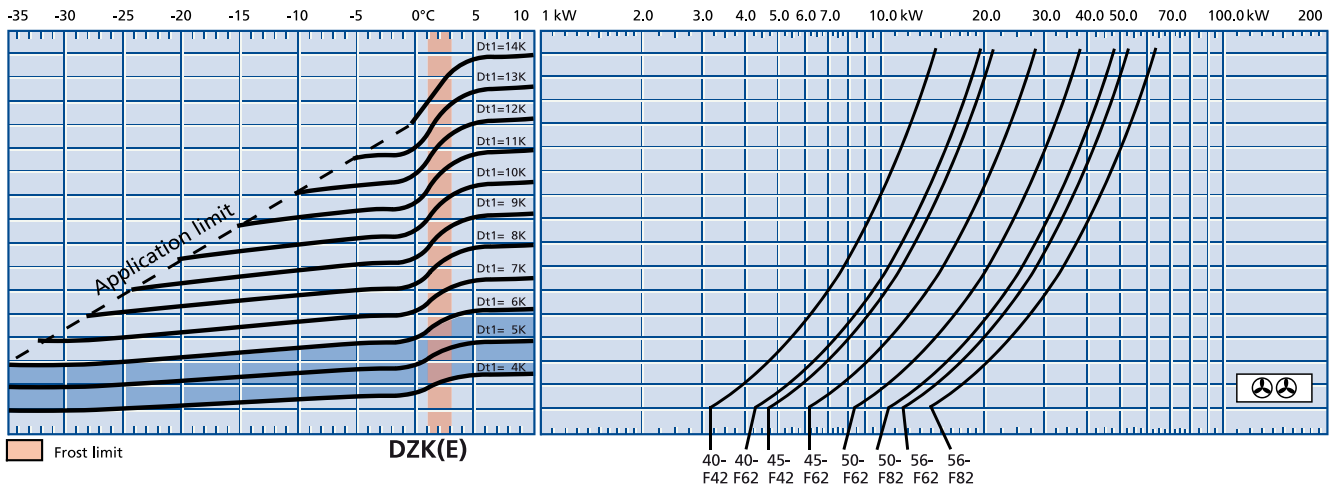
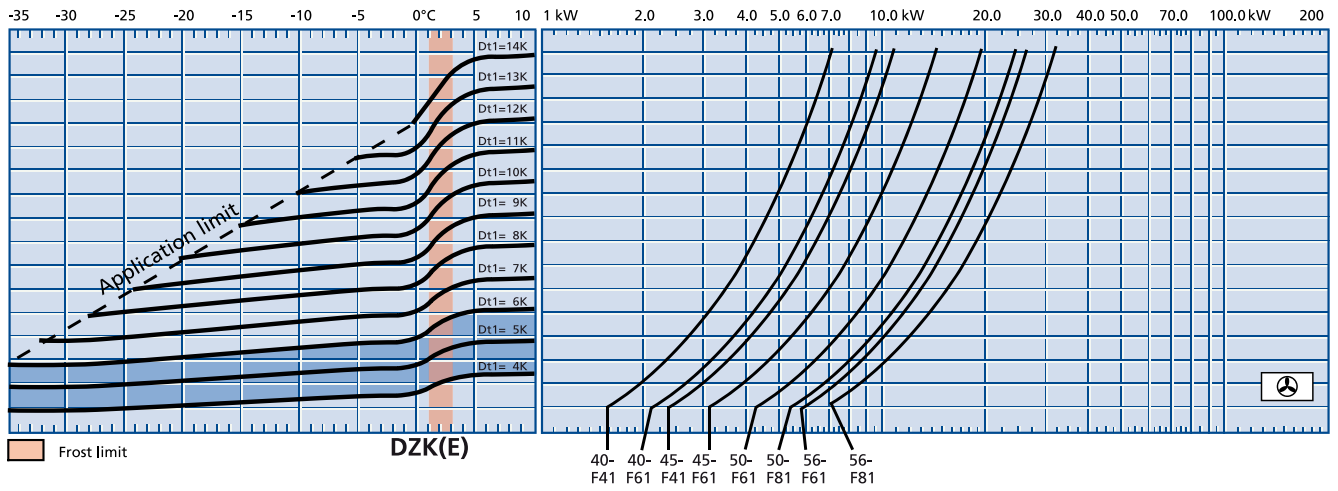
Q_v Chart (EN328, R404A)

DZK-F



t_{l1} [°C] Air inlet temperature

Q₀ [kW] Cooling capacity





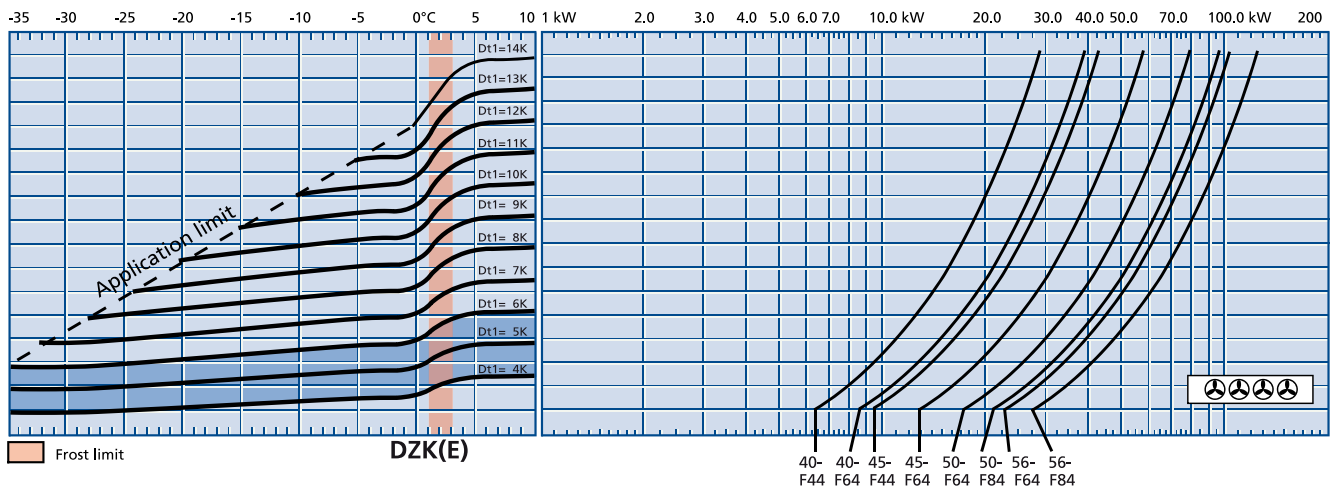
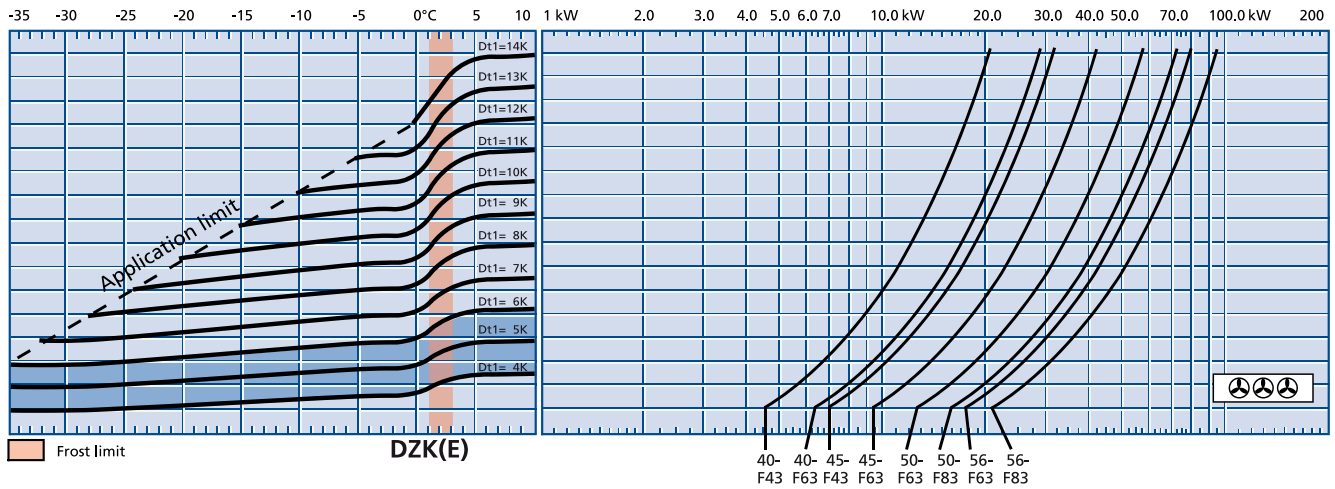
Q_v Chart (EN328, R404A)

DZK-F



t_{L1} [°C] Air inlet temperature

Q₀ [kW] Cooling capacity



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

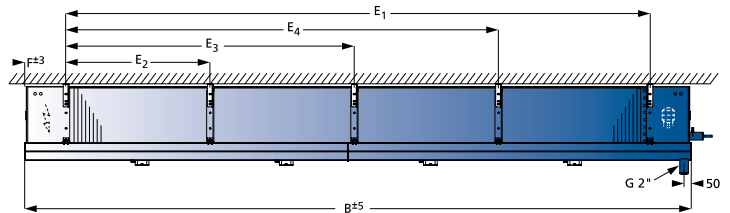
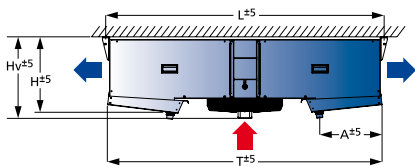
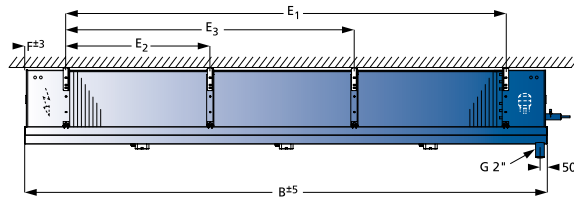
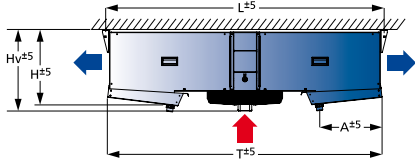
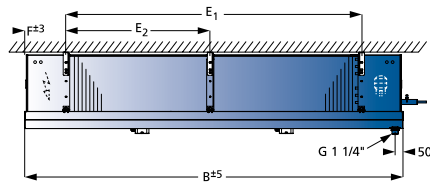
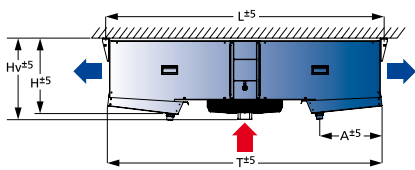
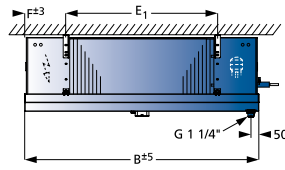
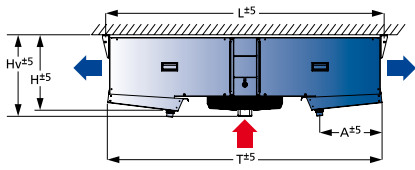
DT1 = 4 K to 6 K
 with electronic expansion valve

Example selection:

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



Dimensional Drawings



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



Model	⊕	⊕ ⊕	⊕ ⊕ ⊕	⊕ ⊕ ⊕ ⊕
DZ 40	75/69	78/72	80/74	81/75
DZ 45	79/74	82/77	84/79	85/80
DZ 50	80/73	83/76	85/78	86/79
DZ 56	81/76	84/79	86/81	87/82



Dimensional Drawings, Electric Defrost, Weights

Size	Dimensions [mm]											Electric defrost			DZ-F, DZ-G Net weight			DZ-N Net weight		
	H	Hv	B	T	L	E ₁	E ₂	E ₃	E ₄	F	A	Coil	Tray	Total	DZA	DZB	DZK	DZA	DZB	DZK
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kW	kW	kW/*	kg	kg	kg	kg	kg	kg
40-F41	419	433	1024	1513	1536	650	-	-	-	187	331	2,46	1,38	3,84/1	87	83	81	92	87	85
40-F61	419	433	1024	1513	1536	650	-	-	-	187	331	2,46	1,38	3,84/1	98	91	88	103	95	93
45-F41	419	439	1224	1513	1536	850	-	-	-	187	331	3,06	1,72	4,78/1	101	95	93	106	100	98
45-F61	419	439	1224	1513	1536	850	-	-	-	187	331	3,06	1,76	4,82/1	116	107	103	122	112	108
50-F61	522	564	1624	1902	1926	1050	-	-	-	287	431	5,73	2,29	8,02/2	190	174	169	200	183	177
50-F81	522	564	1624	1902	1926	1050	-	-	-	287	431	7,64	2,29	9,93/2	218	196	187	229	205	196
56-F61	522	541	1824	1902	1926	1250	-	-	-	287	431	6,87	2,60	9,47/2	215	196	189	226	205	198
56-F81	522	541	1824	1902	1926	1250	-	-	-	287	431	9,16	2,60	11,76/2	244	218	207	256	229	217
40-F42	419	433	1624	1513	1536	1250	600	-	-	187	331	4,28	2,29	6,57/1	133	123	116	140	130	122
40-F62	419	433	1624	1513	1536	1250	600	-	-	187	331	4,28	2,29	6,57/1	153	138	134	160	145	140
45-F42	419	439	2024	1513	1536	1650	800	-	-	187	331	5,44	2,87	8,31/1	162	150	146	170	157	153
45-F62	419	439	2024	1513	1536	1650	800	-	-	187	331	5,44	2,87	8,31/1	191	172	165	200	181	174
50-F62	522	564	2624	1902	1926	2050	1000	-	-	287	431	10,32	3,75	14,07/2	317	285	274	333	300	288
50-F82	522	564	2624	1902	1926	2050	1000	-	-	287	431	13,76	3,75	17,51/2	366	321	303	384	337	319
56-F62	522	541	3024	1902	1926	2450	1200	-	-	287	431	12,00	4,33	16,33/2	373	335	322	392	352	338
56-F82	522	541	3024	1902	1926	2450	1200	-	-	287	431	16,00	4,33	20,33/2	434	381	360	456	400	378
40-F43	419	433	2224	1513	1536	1850	600	1200	-	187	324	6,36	3,18	9,54/1	201	187	183	212	196	192
40-F63	419	433	2224	1513	1536	1850	600	1200	-	187	324	6,36	3,18	9,54/1	233	211	204	245	222	215
45-F43	419	439	2824	1513	1536	2450	800	1600	-	187	324	7,80	4,00	11,8/1	255	237	231	268	248	242
45-F63	419	439	2824	1513	1536	2450	800	1600	-	187	324	7,80	4,00	11,8/1	297	269	259	311	282	272
50-F63	522	564	3624	1902	1926	3050	1000	2000	-	287	424	14,52	5,20	19,72/2	440	394	377	462	413	396
50-F83	522	564	3624	1902	1926	3050	1000	2000	-	287	424	19,36	5,20	24,56/2	518	453	426	544	476	448
56-F63	522	541	4224	1902	1926	3650	1200	2400	-	287	424	17,22	6,36	23,58/2	523	466	446	550	489	468
56-F83	522	541	4224	1902	1926	3650	1200	2400	-	287	424	22,96	6,36	29,32/2	614	534	502	644	561	528
40-F44	419	433	2824	1513	1536	2450	600	1200	1800	187	324	7,80	4,00	11,8/1	268	249	243	281	261	255
40-F64	419	433	2824	1513	1536	2450	600	1200	1800	187	324	7,80	4,00	11,8/1	310	282	272	326	296	286
45-F44	419	439	3624	1513	1536	3250	800	1600	2400	187	324	10,40	5,20	15,6/1	325	300	292	341	315	307
45-F64	419	439	3624	1513	1536	3250	800	1600	2400	187	324	10,40	5,20	15,6/1	383	345	332	402	363	349
50-F64	522	564	4624	1902	1926	4050	1000	2000	3000	287	424	20,22	6,88	27,1/2	579	515	493	608	541	517
50-F84	522	564	4624	1902	1926	4050	1000	2000	3000	287	424	26,96	6,88	33,84/2	677	592	556	710	621	584
56-F64	522	541	5424	1902	1926	4850	1200	2400	3600	287	424	23,40	8,00	31,4/3	685	608	566	719	638	585
56-F84	522	541	5424	1902	1926	4850	1200	2400	3600	287	424	31,20	8,00	39,2/3	799	692	650	839	727	683

* Electric defrost divided in /n circuits



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



Versions

Motor versions

- V1.10 Work Room Cooler/V1.11 Work Room Cooler Silent version

Internal 3-phase fans

400 ± 10% V-3~, 50Hz Δ/Y

Special features:

- Inboard, hinge-down fan
- Fan completely wired to connection box
- Quiet design also available



The cooling capacity data, technical data and dimensions correspond with those for the standard Küba DZ.

Water/brine circulation

- V2...

Tube circuitry and connections for water and brine are available.

Alternative casing versions

Double insulated drip tray

- V3.09

The double insulated drip tray has 25 mm of insulation. The insulation prevents condensation water from building up on the bottom side of the tray and reduces the transfer of defrost heat into the Cold Room.

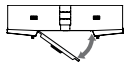
This changes the following dimensions:

Width B: +60 mm
 Height H: +30 mm
 Depth T: +60 mm



Hinged fans

- V3.10



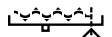
To make the devices easy to clean, the fans are mounted with stainless steel hinges.

Defrosting versions

All GEA Küba Air Coolers are available with electric defrost. See nomenclature, pg. 114

Hot gas defrost in the drip tray

- Hot gas connection on both sides
- V4.01 Copper
- V4.02 Stainless steel



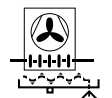
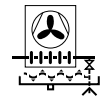
Hot gas in the heat exchanger

- V6.05 Hot gas connection in the heat exchanger



Hot gas in the heat exchanger and in the drip tray, copper design Copper with/without check valve

- Hot gas connection on both sides
- V6.07 with check valve
- V6.08 without check valve



Further information regarding corrosion protection can be found on pages 132 to 135

Protection against corrosion

Stainless steel casing

- V3.12

For protection in aggressive environments, i.e. smokehouses and curing areas. All casing components are composed of stainless steel.



- V6.01

Heat exchanger:

Tubing: Cu
 Fin: Al „goldlack“ coating
 End plates: Al protective coating

Casing: Sendzimir galvanised steel, protective coating on both sides





Versions

• V6.02



Heat exchanger:

Tubing: Stainless steel
 Fins: Al „goldlack“ coating
 End plates: Stainless steel

Casing: Sendzimir galvanised steel,
 protective coating on both sides

Refrigerant distributor: Standard Venturi

Stainless steel CAL® distributor upon request

• V6.03



Heat exchanger:

Tubing: Stainless steel
 Fins: Al
 End plates: Al

Casing: Sendzimir galvanised steel,
 protective coating on one side

Refrigerant distributor: Standard Venturi

Stainless steel CAL® distributor upon request

• V6.04



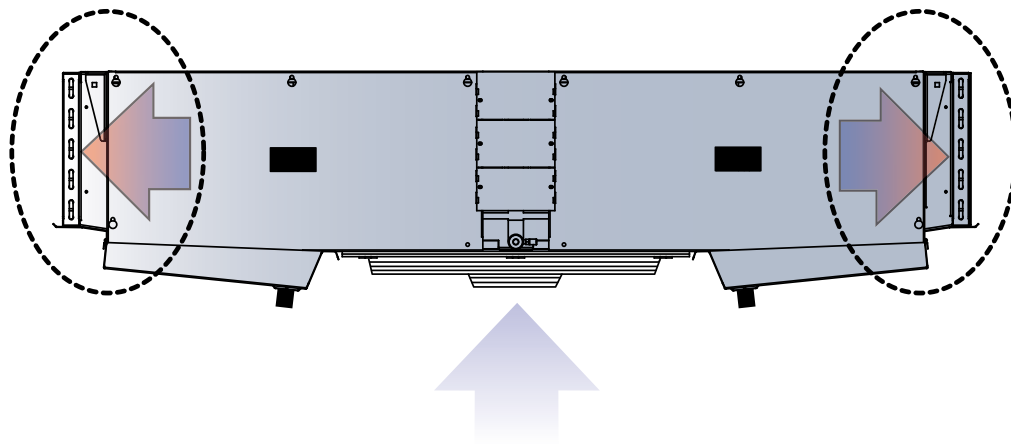
Heat exchanger:

Tubing: Cu
 Fins: Al „goldlack“ coating
 End plates: Al

Casing: Sendzimir galvanised steel,
 protective coating on one side



Accessories



Electric radiator DZHR

For Air Coolers with blow-through fans, for on site assembly.
Suitable for air conditioning or heating in winter. For optimum heat transfer the heaters are mounted in Cu tube sleeves.

- For Air Coolers with blow-through fans, on site assembly.



Only for use with running Air Cooler fans so that the ceiling of the cold storage areas does not overheat.

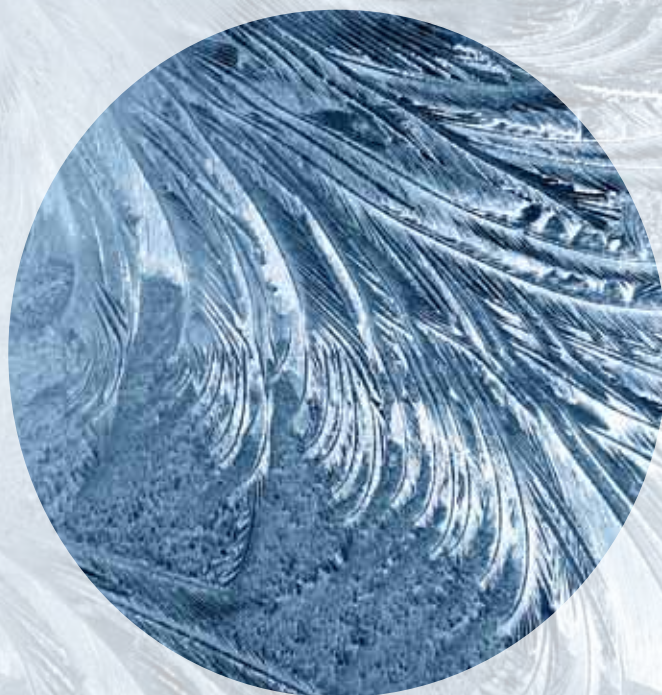
Construction:

- 230 ± 10% V-1~ oder 400 ± 10% V-3~ -Y
- Heaters with CrNi steel sleeve
- Vapour-tight connections
- Connector cable 1.5 mm² x 1000 mm
- Casing: Sendzimir galvanised steel
- Fins: Al
- Tube sleeves: Cu
- Completely powder-coated RAL 9018

Selection table

For aircoolers	Rating	Number to order
	kW	
DZ 40-1	2,88	2 DZHR 40-1
DZ 45-1	3,69	2 DZHR 45-1
DZ 50-1	7,65	2 DZHR 50-1
DZ 56-1	9,20	2 DZHR 56-1
DZ 40-2	5,52	2 DZHR 40-2
DZ 45-2	7,26	2 DZHR 45-2
DZ 50-2	15,90	2 DZHR 50-2
DZ 56-2	18,80	2 DZHR 56-2
DZ 40-3	8,15	2 DZHR 40-3
DZ 45-3	11,25	2 DZHR 45-3
DZ 50-3	22,50	2 DZHR 50-3
DZ 56-3	27,20	2 DZHR 56-3
DZ 40-4	11,25	2 DZHR 40-4
DZ 45-4	14,50	2 DZHR 45-4
DZ 50-4	31,80	2 DZHR 50-4
DZ 56-4	37,50	2 DZHR 56-4

Further Information





All GEA Küba Air Coolers have been developed and manufactured in accordance to the highest quality standards and have been optimised for their respective refrigeration task. To aid in the selection of the most appropriate GEA Küba high performance Air Cooler, as well as to ensure optimal operation, we present the following helpful information on the next pages, as requested by our valued customers.

GEA Küba Line Air Coolers are available in a wide variety of designs, each perfect for a particular refrigeration application. The **overview of the different design versions on page 130** shows the possibilities offered by the respective product lines.



Background knowledge for a practical **comparison of sound output specification for Air Coolers can be found on page 131.**



The Küba Blue Line offers the right products for complex refrigeration applications. For this reason, **we provide information regarding corrosion protection, starting on page 132.** The most significant cooling tasks along with their recommended corrosion protection are discussed there.



To quickly and easily determine the capacity of GEA Küba Air Coolers in a variety of application conditions, the product sections include Q_v Charts. **The Q_v Charts are explained on page 136.**



In addition to the Air Cooler, the expansion valve plays a particularly important role in achieving optimum operating conditions in the refrigeration plant. Information regarding **expansion valve settings** as well as **design selection can be found on page 137.**



For the best possible operation of the air cooler, we've included **assembly instructions** for suction lines, condensation lines, traps and clearances **on page 140.**



Explanations of concepts and abbreviations are included in the **glossary, on page 141.**



Version Overview

Product lines	DE.D	SG.C	SG.I	SF	DZ
Cooling media					
HFC	✓	✓	✓	✓	✓
NH ₃ pump	-	✓	✓	✓	✓
NH ₃ DX	-	✓	✓	✓	✓
Brine/water					
CO ₂ pump	-	✓	✓	✓	✓
CO ₂ DX	✓	✓	✓	✓	✓
Motor versions					
V1.02: Alternating current 230 V-1Ph, adjustable, IP66	•	•/✓	✓	-	✓
V1.03: 3-phase 400 V-3Ph 1 speed	-	✓	•	-	-
V1.04: Delta/star 400V-3Ph	-	✓	✓	•	•
V1...: Quiet design	✓	✓	✓	-	✓
V1.07: Fans with fan guards/without air ducts	•	✓	✓	•	•
V1.08: Protection class IP66	-	✓	✓	-	✓
V1.09: 60 Hz 400V-3Ph	-	✓	✓	-	✓
V1.11: Workroom design (internal motor)/quiet	-	-	-	-	✓
V1.13: Ex-design (ATEX) 400V-3Ph	-	-/✓	✓	-	-
V1.17/V1.21: Dahlander switching 60 Hz 400V-3Ph	-	-/✓	✓	-	-
V1.41: Special voltage and UL design	-	✓	✓	-	✓
V1.60: More powerful fans	-	-	✓	✓	-
Water/brine circulation					
V2.05: Connections for water and brine circulation Large number of circuits – small pressure drop	✓	✓	-	-	-
V2.06: Connections for water and brine circulation Small number of circuits – large pressure drop	✓	✓	-	-	-
V2...: Tube circuitry and connections for water and brine	-	-	✓	✓	✓
Casing versions					
V3.09: Double insulated drip tray	✓	✓	✓	-	✓
V3.10: Hinged fans	•	✓	✓	✓	✓
V3.11: Hinge-down drip tray	•	✓	•	•	•
V3.12: Stainless steel casing	✓	✓	✓	✓	✓
Defrost versions					
V4.01: Hot gas coil in the drip tray, Cu	-	✓	✓	✓	✓
V4.02: Hot gas coil in the drip tray, stainless steel	-	✓	✓	✓	✓
V4.06: Electrically heated drip tray	✓	✓	✓	✓	✓
V6.05: Hot gas circuitry for coolers without check valve	-	✓	✓	✓	✓
V6.07: Hot gas connection in coils, hot gas coil in drip tray, with check valve	-	✓	✓	-	✓
V6.08: Hot gas connection in coils, hot gas coil in drip tray, no check valve	-	✓	✓	✓	✓
Corrosion protection – Material combinations					
V3.12: Stainless steel casing	✓	✓	✓	✓	✓
V6.01: Tubes: Cu, Fins: aluminium "goldlack", End plates: aluminium protective coating: protective coating, Casing: aluminium/Sendzimir galvanised steel, protective coating on both sides.	✓ ✓	✓ ✓	✓ ✓	✓ ✓	✓ ✓
V6.02: Tubes: ED, Fins: aluminium "goldlack", End plates: ED, Casing: aluminium or Sendzimir galvanised steel, protective coating on both sides.	✓	✓	✓	✓	✓
V6.03: Tubes: ED, Fins: aluminium, End plates: A1, Casing: Aluminium/Sendzimir galvanised steel, protective coating on one side.	✓	✓	✓	✓	✓
V6.04: Tubes: Cu, Fins: aluminium "goldlack", Casing: aluminium/Sendzimir galvanised steel, protective coating on one side.					

✓ = available
 - = not available
 • = standard

-/✓ = partially available
 •/✓ = available as standard or as alternative version



Sound Specifications



Introduction

In the technical design of Air Coolers and condensers, capacity and sound output are defined parameters that must be realised. There are a variety of methods used in the international markets to calculate sound output specifications. Each of these specifications holds a different significance for refrigeration contractors, designers and planners. For heat exchangers and condensers, compliance with specific immission values (i.e. noise level, workplace safety legislation, etc.), is best calculated using sound power usage in the form of acoustic pressure $L_p(A)$. However, for Air Coolers, information regarding sound power $L_{W(A)}$ is most suitable.

Acoustic pressure L_p

Pressure = force / surface [N/m²]
 Alternating pressure generated by acoustic oscillation through the medium (i.e. air)

- **Advantage:**
 Measurement can be directly determined
 Thermal analogy: temperature measurement
- **Disadvantages:**
 Independent of environmental influences, of distance to the sound source and of the reference surface used.

Acoustic power L_w

is the sound energy radiated per time unit in [W] = [Nm/s]

- **Advantages:**
 Independent of environmental influences, of distance to the sound source or on the reference surface used
- **Disadvantage:**
 Cannot be measured directly

Sound intensity and A-evaluation

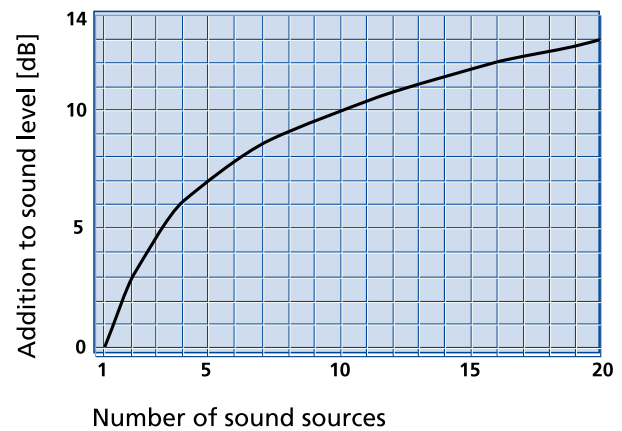
The human ear can perceive sound at frequencies between approx. 15 and 20,000 Hertz. Perception or sensitivity to sound depends strongly on the respective frequency. Very high and low tones are often perceived as less loud than those in the mid-frequency range from about 1000 to 5000 Hertz. For this reason, evaluation filters in accordance to EN 61 672-1 are used. In audio technology and in the environmental field, the A-evaluation is most significant because, for certain sound intensities, it has frequency behavior similar to that of the human ear.

Sound output specifications for Air Coolers

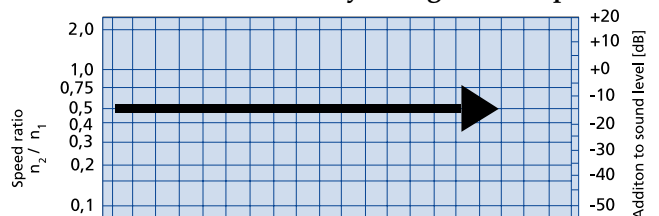
Due to the reflection in the cold storage area, the sound power $L_{W(A)}$ should always be used for a technical comparison between Air Coolers. In this case, only sound power offers information that can be compared because it does not depend on the distance to the sound source, the installation location or the surroundings.

Sound power

Addition of sound sources at the same level



Correction of sound level by change of fan speed





Protection against Corrosion



Corrosion:

According to DIN 50900, corrosion is the reaction of a metallic substance with its environment.

- It is almost always electrochemical
- An electrolyte is the cause for this type of material destruction

How an electrolyte forms:

If the air in the environment contains salts, acids or alkali, these substances combined with condensation water, form the electrolyte. A change of state occurs between the two substances, and one dissolves or is destroyed.

In bakeries as well as in sausage production, spice mixtures and preservatives are being ground finer and finer so that the mixture is as homogenous as possible. In salt curing, cutter processes and processes where intestines are used, salts also enter the surrounding air. These small, harmful particles are deposited on the surfaces of the coolers, damaging them.

The stricter hygiene regulations within the EU require the use of harsher cleaning and disinfectant agents in both the alkali and the acid range. If they are not properly neutralised, they also can cause damage.

For these applications we offer special corrosion protection designs that protect against such aggressive environments.

The degree of corrosion depends on the amount of moisture on the surface of the heat exchanger. The following specifications are recommendations. The planner and refrigeration contractor should evaluate based on their own experience as well.

When using cleaning and disinfecting agents, pay attention to their compatibility with epoxy-based coatings, aluminium and copper. A variety of agents are not suitable. The protective coating and the „goldlack“ coating on the fins, for example, react poorly to sodium hydroxide.



Maintenance and service

In general, GEA Küba Air Coolers do not require maintenance. However, in accordance with hygiene regulations, the forced convection Air Cooler must be cleaned regularly.

The degree of related contamination affects the effectiveness of the fan-Air Cooler. As a result, regular cleaning with cleaners compatible with materials used in the Air Cooler, is required. Only the cleaners compatible with the materials in the cooler may be used, and any manufacturer's instructions must be taken into account (i.e. mixture ratio, duration of exposure, finishing treatments).

When using steam or high-pressure cleaning, do not spray the electrical connection areas directly.

Before undertaking any maintenance or cleaning work, ensure that the electrical connections for the cooler are all disconnected from the mains and cannot be switched back on.



Protection against Corrosion



When using cleaning and disinfection agents, please pay attention to their compatibility with the materials used in the product and observe the safety specifications given by the manufacturer regarding their cleaning and disinfection agents.

Short overview

Slightly aggressive air in the environment:	Cold storage areas for fruits and tropical fruits Cold storage areas for pharmaceutical products
Very aggressive air in the environment:	Cold storage areas for smoked meats and fish, Salt curing rooms Malt houses Industrial facilities: steel mills, foundries Swimming pools Cold storage areas for fresh salads and marinades Cheese ripening rooms

Application	Air in the environment	Protection class	Construction			Casing	Note
			Heat exchanger				
			Tube	Fin	End plate		
Regular cleaning and disinfection							Important: rinse well and neutralise
➤ Type of cleaning or disinfection	i.e. foam or manual process, etc.						
➤ The concentration must be known	cleaning agents that contain chlorine, acids or alkali	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides) / galvanised steel, coated (both sides)	Sometimes VA casing required
Baked goods							
➤ Deep-freeze storage area	no exposure	none	Cu	Al	Al	Al / galvanised steel	Fin spacing at least 7 mm
➤ Blast freezing rooms	no exposure	none	Cu	Al	Al	Al / Steel	Fin spacing at least 7 mm
➤ Fermentation interrupter / machines	organic compositions dust, vapours including baking ingredients	V6.03	VA	Al	Al	Al / galvanised steel, coated (one side)	Fans with speed controllers
Beverages							
➤ Fermenting cellar / wine	low CO ₂ content	V6.03	VA	Al	Al	Al / galvanised steel, coated (one side)	
	higher CO ₂ content or sulphur or chlorine	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides) / galvanised steel, coated (both sides)	
➤ Fruit juice filling systems	acids, i.e. lemon, wine or sulphuric acids	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides) / galvanised steel, coated (both sides)	Air speed Observe if people are present
➤ Mineral water filling systems	Aerosols	V6.01	Cu	Al „goldlack“	Al-sl	Al, protective coating (both sides) / galvanised steel, coated (both sides)	Observe air speed if people are present
➤ Malt houses	Organic acids, aggressive dusts, high protein levels	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides) / galvanised steel, coated (both sides)	



Protection against Corrosion



Application	Air in the environment	Protection class	Construction				Note
			Heat exchanger			Casing	
			Tube	Fin	End plate		
Cheese							
> Storage	Low NH ₃ content, low relative humidity	V6.01	Cu	Al „goldlack“	Al-sl	Al, protective coating (both sides)/galvanised steel, coated (both sides)	For very low exposure, standard design is available
	Low NH ₃ content, high relative humidity	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides)/galvanised steel, coated (both sides)	
> Ripening rooms	High NH ₃ content, high relative humidity	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides)/galvanised steel, coated (both sides)	Little air movement
Fruits/vegetables							
> Citrus fruits	High fruit acid content	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides)/galvanised steel, coated (both sides)	Low dehumidification at low DT1 / low airspeed during long-term storage
> Other tropical fruits		V6.01	Cu	Al „goldlack“	VA	Al, protective coating (both sides)/galvanised steel, coated (both sides)	
> Bananas	Corrosive vapours from banana peels	V6.03	VA	Al	Al	Al/galvanised steel, coated (one side)	Note high external pressure
> Vegetables		Standard	Cu	Al	Al	Al/galvanised steel	For optimum ventilation note stacking plans
Meat/sausage							
> Deep-freeze storage area (packaged/unsealed goods)	No exposure	Standard	Cu	Al	Al	Al/galvanised steel	Recommended accessories: Shut-Up® and Defrosting hood
> Cold storage area for raw/fresh meats	No exposure	Standard	Cu	Al	Al	Al/galvanised steel	
> Rapid cooling for carcasses	Organic compositions, cleaning agents	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides)/galvanised steel, coated (both sides)	High air flow rate required
> Smoked meat/sausage	Organic acids, amines	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides)/galvanised steel, coated (both sides)	
> Salt curing rooms	Salts, organic acids	V6.02+ V3.12	VA	Al „goldlack“	VA	VA	
> Offal	Organic acids, cleaning agents	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides)/galvanised steel, coated (both sides)	
Central storage area							
> Picking/distribution	Dust, debris, etc.	Standard	Cu	Al	Al	Al/galvanised steel	
		V6.04	Cu	Al „goldlack“	Al	Al/galvanised steel	
> Frozen storage areas	No exposure	Standard	Cu	Al	Al	Al/galvanised steel	Recommended accessories: Shut-Up® and Defrost hood
Marinades/ready-to-eat salads							
> Occasional open storage	Salts, acids, vinegar, preservatives	V6.01	Cu	Al „goldlack“	Al-sl	Al, protective coating (both sides)/galvanised steel, coated (both sides)	
> Frequent open storage		V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides)/galvanised steel, coated (both sides)	
Dairy facilities							
> Low percentage	Vapours from lactic and butyric acids	V6.01	VA	Al „goldlack“	Al-sl	Al, protective coating (both sides)/galvanised steel, coated (both sides)	



Protection against Corrosion

Application	Air in the environment	Protection class	Construction			Note	
			Heat exchanger		Casing		
			Tube	Fin	End plate		
➤ High percentage	Vapours from lactic and butyric acids	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides) / galvanised steel, coated (both sides)	
Fish/seafood							
➤ Preparation rooms	Amines, salts	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides) / galvanised steel, coated (both sides)	Observe air speed if people are present
➤ Storage rooms, including deep-freeze		V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides) / galvanised steel, coated (both sides)	Recommended accessories: Shut-Up® and defrost hood
Coffee							
➤ Roasters	Organic acids	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides) / galvanised steel, coated (both sides)	
Pastry shops							
➤ Candy manufacturers		V6.01	Cu	Al „goldlack“	Al-sl	Al, protective coating (both sides) / galvanised steel, coated (both sides)	Little air movement
➤ Preparation of icing / frosting		V6.01	Cu	Al „goldlack“	Al-sl	Al, protective coating (both sides) / galvanised steel, coated (both sides)	
Swimming pools							
➤ Dehumidification	Chlorine gas, muriatic acid, (cleaning agents)	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides) / galvanised steel, coated (both sides)	
Kiln drying							
➤ Hardwoods (e.g. oak, tropical woods)	Organic acids (folic acid), cresylic acid, ammonium	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides) / galvanised steel, coated (both sides)	
➤ Softwoods (e.g. spruce, fir, pine)	Low amounts: organic acids; resins	V6.03	VA	Al	Al	Al / galvanised steel, coated (one side)	
Industrial facilities							
➤ Crane cabs in steel mills / foundries	Aggressive gases (chlorine), sulphur dioxide, metallic dusts	V6.03	VA	Al	Al	Al / galvanised steel, coated (one side)	
Grains, animal feeds							
➤ Storage rooms	Dust, often moist	Standard	Cu	Al	Al	Al / galvanised steel, coated (one side)	
Sea air (no direct seawater)							
➤ Cold rooms near the sea	Air with slight salt content	V6.01	Cu	Al „goldlack“	Al-sl	Al, protective coating (both sides) / galvanised steel, coated (both sides)	
➤ Cold rooms near the sea	Air with high salt content	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides) / galvanised steel, coated (both sides)	
Cattle sheds / intensive animal husbandry							
➤ Heat recovery	NH ₃ atmosphere, sulphur compositions, dusts	V6.02	VA	Al „goldlack“	VA	Al, protective coating (both sides) / galvanised steel, coated (both sides)	

Key

- Al = Aluminium
- Al „goldlack“ = Aluminium epoxy resin coating, „goldlack“ coating
- Cu = Copper
- VA = Stainless steel, depending on application V2A= 1.4301 or V4A= 1.4404