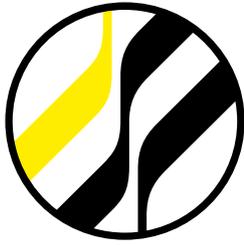


Kelvion

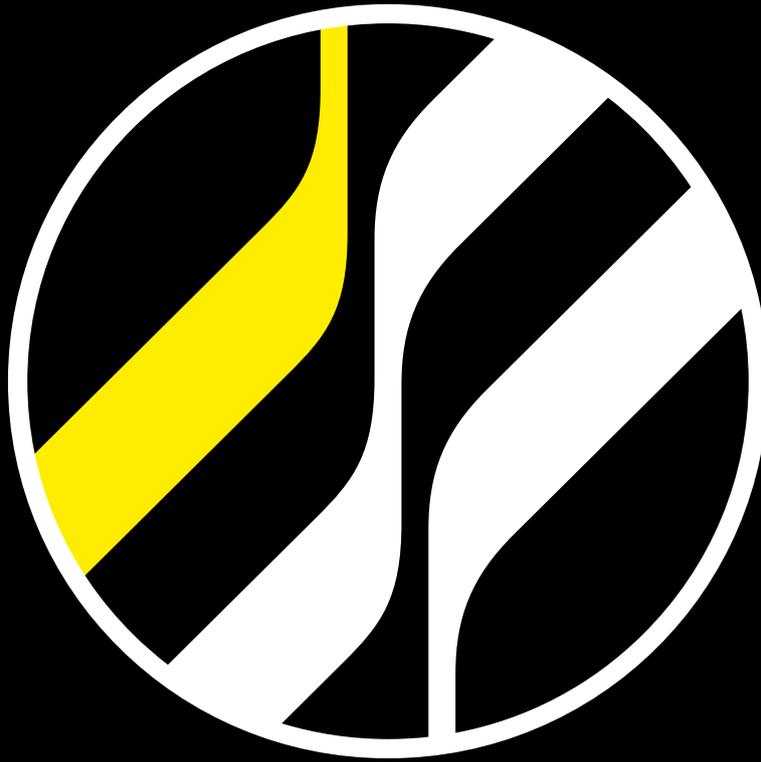


Commercial Air Coolers

Kelvion MCC

CEILING MOUNTED COOLER FOR CATERING & RETAIL





EXPERTS IN HEAT EXCHANGE – SINCE 1920

Welcome to Kelvion! Where Heat Exchange is our Business. We are one of the leading global manufacturers of heat exchangers and have been providing solutions for almost every industrial application imaginable since the 1920s, specializing in customized solutions suitable for extreme environmental conditions - as of 2015 under the name of Kelvion.

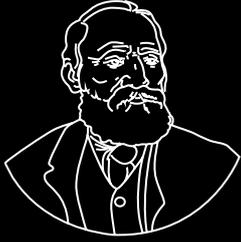
With one of the most extensive selections of heat exchangers in the world, we are a well-known partner in many industries, including transportation, energy, oil and gas, the heavy industry, chemical and marine as well as sugar, food and beverage and the HVAC and refrigeration technology sector. Our products include Compact Fin Heat Exchangers, Plate Heat Exchangers, Single Tube Heat Exchangers, Transformer Cooling Systems, Cooling Towers and Shell & Tube Heat Exchangers.

Our many years of experience and in-depth expertise have made us specialists in this field. Our heat exchangers are designed specifically to meet the needs of the respective machine or equipment system, ensuring outstanding energy efficiency and reliability in any market segment. This gives our customers a cutting-edge over their competitors while also reducing operating costs over the long term.

As your heat exchange partner, we understand that outstanding and reliable after-sales services are critical for you, our customer, and we work alongside with you in close partnership supporting you throughout the full life cycle of your plant and equipment to ensure lasting business success.

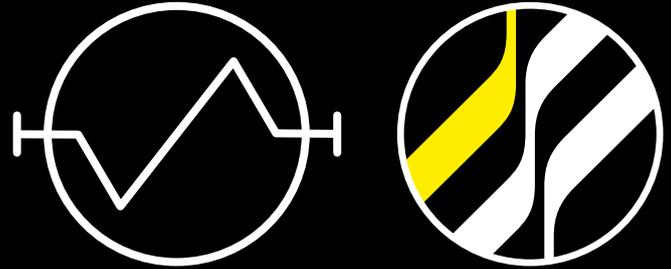
Kelvion – Experts in Heat Exchange.

KELVION – A TRIBUTE TO LORD KELVIN (1824 - 1907)



Lord Kelvin formulated the laws of thermodynamics and absolute units of temperature are stated in kelvin, in his honor.

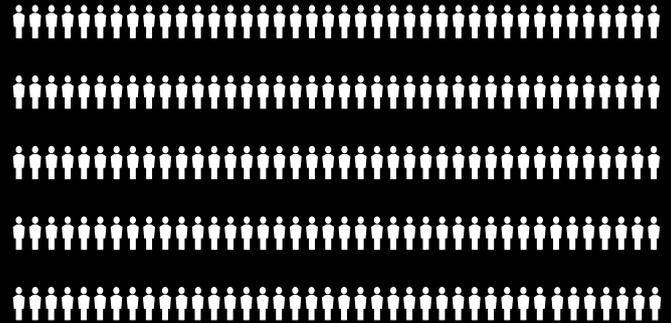
OUR LOGO – INSPIRED FROM THE SCHEMATIC FOR HEAT EXCHANGER



67 BRANCHES AND SALES PARTNERS WORLDWIDE



5,000 EMPLOYEES WORLDWIDE



YOUR MARKETS ARE OUR MARKETS

 Chemicals	 Data Center	 Food & Beverage	 HVAC
 Refrigeration	 Marine	 Oil & Gas	 Power
 Transportation	 ... and more		

KELVION HAS A LONG HISTORY

- 2015** With the new name, the former GEA Heat Exchangers is writing its own history as Kelvion.
- 2014** GEA sells the Heat Exchangers Segment to Triton.
- 2010** Reorganization of GEA's 9 Divisions into technologically distinct Segments. The largest segment is the Heat Exchangers Segment.
- 1999** In April 1999, GEA was acquired by mg technologies AG
- 1920** Foundation of GEA in Bochum by Otto Happel sen. (Born 1882)

THE SPACE-**SAVING** HELPER IN **COLD** **ROOMS, FOOD** **STORAGE, FOOD** **PREPARATION COOL** **CABINETS.**



CAPACITY RANGE (for SC2)

1.5 kW    10 kW

TEMPERATURE RANGE (t_L)

-25°C     +20°C

TYPE DESIGNATION CODE

Please note the comparison to our old type designation code (DF compact) on page 15

1 2 3 4 5 6 7 8 9

M **C** **C** - **30** **1** - **6** **B** **E** -

- | | | | |
|---|-----------------------|---|------------------------|
| 1 | Size of product | 6 | Number of rows deep |
| 2 | Case style of product | 7 | Fin spacing |
| 3 | Coil block system | 8 | Defrost system |
| 4 | Fan diameter | 9 | Additional information |
| 5 | Number of fans | | |

Refrigerant & max. operating pressure (Box 9)

HX32	HFC 32 bar
GL16	Glycol 16 bar
CX45	CO ₂ 45 bar
CX90	CO ₂ 90 bar





Kelvion MCC

APPLICATION BENEFITS FOR CONTRACTORS AND OPERATORS

Applications

- ▶ Supermarkets
- ▶ Canteen kitchens
- ▶ Working / server areas

FOR HIGH TURNOVER OF GOODS

Apart from fruit, vegetables and dairy products, packaged deep frozen products are part of the standard range of products of food retailers. It is essential that the required cold chain temperatures are maintained constantly during storage.

To determine which unit cooler fits to a cold storage, size and the chilled goods stored have to be considered. Food retailers are characterised by a frequent movement of goods and storage times as short as 1 - 3 days.

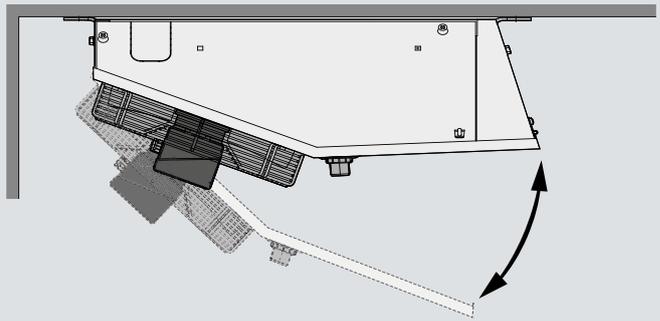
The evaporator's cooling capacity has to be dimensioned accordingly to ensure that the indoor temperature remains constant.

The Kelvion MCC (especially for small rooms) is the first choice for these applications. The compact evaporator has the appropriate cooling capacity to ensure the uniform distribution of air even in the corners.

HYGIENE IN THE COLD ROOM

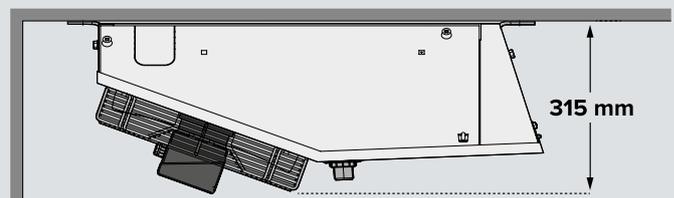
The Kelvin MCC air cooler pursues a major objective: Keeping goods hygienically fresh in a cold room.

The food service specialist MCC ensures best conditions right from the start – Hygiene and protection of chilled goods are priority: All component parts are easy to access and simple to clean.



LOW-SILHOUETTE DESIGN

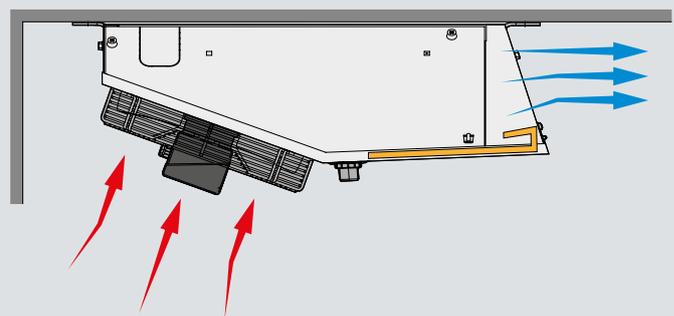
The Kelvin MCC fully lives up to its name and is a power pack in small spaces. The MCC provides reliable cooling power in temperature ranges both below and above zero, due to our Kelvin temperature security.



BEST AIR GUIDANCE THROUGH BUILT-IN BAFFLE PLATE

The integrated baffle-plates guide the cold air across the ceiling and thereby far into the room.

Even distribution of cold air guarantees chilled goods natural appearance and their taste. Retention of their full value is therefore ensured.



Kelvion MCC

BASIC VERSION

CASING

- ▶ Aluminum, Sendzimir zinc-plated steel
- ▶ Best quality powder coated edges thanks to high-grade powder coating, RAL 9010 pure white
- ▶ Food-safe
- ▶ Smooth surfaces: Easy to clean
- ▶ Hinged drip tray, removable
- ▶ Removable side panels
- ▶ Drip tray: additional integrated splash pan

ELECTRIC DEFROST

- ▶ Tubular heater: Stainless steel
- ▶ Connections: steam-proof
- ▶ Mains voltage: 1/N/PE 230V 50/60Hz
- ▶ Readily wired for connection box
- ▶ Optimized tubular heater configurations ensure fast and even defrosting
- ▶ Aluminum tube sleeves: Ensure excellent heat transfer to the fins and thus effective defrosting cycles with optimized service life

HEAT EXCHANGER

- ▶ Tube: Copper, inner finned, \varnothing 12 mm
- ▶ Fins: Aluminum HFE® fins
- ▶ End plates: Aluminum
- ▶ Staggered tube system
- ▶ Fin spacing:
A = 4,5 mm
B = 7 mm
- ▶ Fins flared to form-fit the core tube
- ▶ Internal cleanliness according to DIN 14276
- ▶ Connection Inlet:
MCC 301-S,4,6 & MCC 302-S: Single injection via copper pipe for solder connection, sealed
MCC A: Venturi distributor with multiple injection
MCC B: Küba-CAL® distributor with multiple injection
- ▶ Connection Outlet:
Copper pipe for solder connection with schrader valve UNF 7/16", sealed



FAN UNIT

- ▶ AC technology
- ▶ Blow-through axial fan
- ▶ Fan diameter: 300 mm
- ▶ Permissible motor ambient temperatures: -30° C up to +60° C
- ▶ Supply voltage: 1/N/PE 230V 50/60Hz
- ▶ Motor protection: Built-in thermal contact (inaccessible)
- ▶ Protection class: IP44
- ▶ Insulation class: B
- ▶ Fans are wired to one internal distribution box
- ▶ Motor Control:
 - Phase control
 - Transformer
 - Delta/Star
 - Frequency converter

* Note: An all-pole sine filter (phase-phase and phase-earth) has to be used

Please observe the manufacturer's information!

MOTOR LABEL DATA

Type	50 Hz				60 Hz		
	Ø mm	rpm	W	A	rpm	W	A
MCC	300	1,350	70	0.32	1,500	90	0.40

Motor data per fan

Data provided by the manufacturer

TECHNICAL DATA MCC A (E)

Kelvion MCC | Fin spacing 4.5 mm

Type	Rating Q _o at 50 Hz, DT1, R404A		Cooling surface	Air flow	Air throw ***	Tube volume	Connections		Sound	Fans (Operational values at 50 Hz)					
	SC1	SC2					Inlet	Outlet		L _{WA}	Blade	Current	Per fan		
	kW	kW											Ømm	Ømm	dB(A)
MCC-301-SA	2.6	1.8	6.9	950	9	1.4	10 x1.0*	12 x1.0	68	300	230 V -1	1,350	75	0.35	
MCC-301-4A	3.1	2.0	8.3	1,100	11	1.7	10 x1.0*	12 x1.0	68	300	230 V -1	1,350	75	0.35	
MCC-301-6A	3.7	2.4	12.3	1,035	11	2.5	10 x1.0*	18 x1.0	68	300	230 V -1	1,350	75	0.35	
MCC-302-SA	5.1	3.4	13.8	1,900	11	2.7	10 x1.0*	18 x1.0	71	300	230 V -1	1,350	75	0.35	
MCC-302-4A	6.3	4.1	16.6	2,200	13	3.2	12 x1.0**	22 x1.0	71	300	230 V -1	1,350	75	0.35	
MCC-302-6A	7.4	4.7	24.7	2,070	13	4.8	12 x1.0**	22 x1.0	71	300	230 V -1	1,350	75	0.35	
MCC-303-4A	9.4	5.9	24.9	3,300	15	4.8	12 x1.0**	22 x1.0	73	300	230 V -1	1,350	75	0.35	
MCC-303-6A	11.1	7.1	37.0	3,105	15	7.1	12 x1.0**	28 x1.5	73	300	230 V -1	1,350	75	0.35	
MCC-304-4A	12.6	8.0	33.2	4,400	18	6.3	12 x1.0**	28 x1.5	74	300	230 V -1	1,350	75	0.35	
MCC-304-6A	14.9	9.8	49.4	4,140	18	9.4	15 x1.0**	28 x1.5	74	300	230 V -1	1,350	75	0.35	

Standard condition t_{l1} t_o DT1
 NB1/SC1 +10°C 0°C 10K
 NB2/SC2 0°C -8°C 8K

* Single injection
 ** Multiple injection via flow distributor
 *** Throw limit at 0.5 m/s

Subject to modification.

TECHNICAL DATA MCC B (E)

Kelvion MCC | Fin spacing 7 mm

Type	Rating Q _o at 50 Hz, DT1, R404A		Cooling surface	Air flow	Air throw ***	Tube volume	Connections		Sound	Fans (Operational values at 50 Hz)					
	SC1	SC2					Inlet	Outlet		L _{WA}	Blade	Current	Per fan		
	kW	kW											Ømm	Ømm	dB(A)
MCC-301-SB	1.5	1.1	4.6	1,070	9	1.4	10 x1.0*	12 x1.0	68	300	230 V -1	1,350	75	0.35	
MCC-301-4B	1.8	1.5	5.5	1,300	11	1.7	10 x1.0*	12 x1.0	68	300	230 V -1	1,350	75	0.35	
MCC-301-6B	2.1	1.8	8.2	1,130	11	2.5	10 x1.0*	18 x1.0	68	300	230 V -1	1,350	75	0.35	
MCC-302-SB	2.9	2.2	9.2	2,140	11	2.7	10 x1.0*	18 x1.0	71	300	230 V -1	1,350	75	0.35	
MCC-302-4B	3.5	2.9	11.1	2,600	13	3.2	12 x1.0**	22 x1.0	71	300	230 V -1	1,350	75	0.35	
MCC-302-6B	4.1	3.5	16.5	2,260	13	4.8	12 x1.0**	22 x1.0	71	300	230 V -1	1,350	75	0.35	
MCC-303-4B	5.1	4.3	16.6	3,900	15	4.8	12 x1.0**	22 x1.0	73	300	230 V -1	1,350	75	0.35	
MCC-303-6B	6.2	5.3	24.7	3,390	15	7.1	12 x1.0**	28 x1.5	73	300	230 V -1	1,350	75	0.35	
MCC-304-4B	6.9	5.8	22.1	5,200	18	6.3	12 x1.0**	28 x1.5	74	300	230 V -1	1,350	75	0.35	
MCC-304-6B	8.5	7.0	33.0	4,520	18	9.4	15 x1.0**	28 x1.5	74	300	230 V -1	1,350	75	0.35	

Standard condition t_{l1} t_o DT1
 NB2/SC2 0°C -8°C 8K
 NB3/SC3 -18°C -25°C 7K

* Single injection
 ** Multiple injection via flow distributor
 *** Throw limit at 0.5 m/s

Subject to modification.

DIMENSIONS, WEIGHTS, ELECTRIC DEFROST

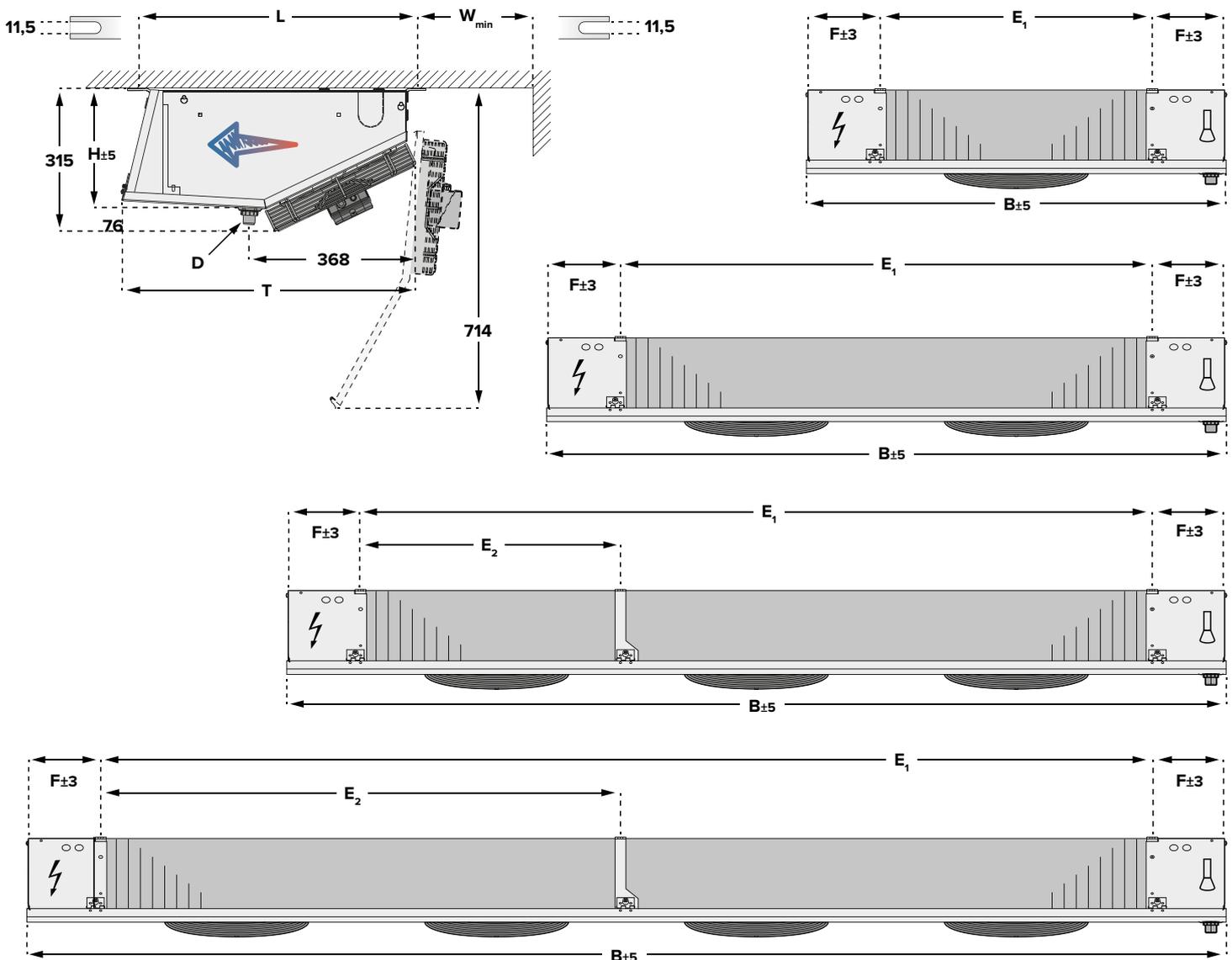
Kelvion MCC

Type	Dimensions								Electric Defrost 230 V-1 / 400 V-3-Y	Weight (net) Unpacked		Weight (gross) Packed		Drain
	H	B	T	L	E ₁	E ₂	F	W _{min}	Coil	MCC	MCC E	MCC	MCC E	D
	mm	mm	mm	mm	mm	mm	mm	mm	kW	kg	kg	kg	kg	inch
MCC-301-S	268	872	626	612	530	-	171	100	1.1	20	21	23	24	G ¾
MCC-301-4	268	972	626	612	630	-	171	100	1.2	23	24	26	27	G ¾
MCC-301-6	268	972	626	612	630	-	171	100	1.2	25	26	28	29	G ¾
MCC-302-S	268	1,372	626	612	1,030	-	171	100	1.8	32	34	54	56	G ¾
MCC-302-4	268	1,572	626	612	1,230	-	171	100	2.1	37	39	60	62	G ¾
MCC-302-6	268	1,572	626	612	1,230	-	171	100	2.1	40	42	63	65	G ¾
MCC-303-4	268	2,172	626	612	1,830	629	171	100	3.0	52	54	88	90	G ¾
MCC-303-6	268	2,172	626	612	1,830	629	171	100	3.0	56	58	92	94	G ¾
MCC-304-4	268	2,772	626	612	2,430	1,229	171	100	3.9	68	71	108	111	G ¾
MCC-304-6	268	2,772	626	612	2,430	1,229	171	100	3.9	75	78	115	118	G ¾

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

DIMENSIONAL DRAWINGS

Kelvion MCC



Kelvion MCC

VARIANTS

MOTOR - VARIANTS

070.3 EC FAN WITH 2 FIXED SPEEDS

Plastic fan blades and Plastic safety grille

070.5 EC FAN WITH CONTROLLABLE SPEED

Fans adjustable

PROTECTION AGAINST CORROSION

014.1 CORROSION PROTECTION 1

Tubing: Copper
Fins: Aluminum, epoxy-resin-coated
End plates: Aluminum protective coating
Casing: Aluminum/zinc coated steel, protective coating on both sides

011.2 CORROSION PROTECTION 4

Tubing: Copper
Fins: Aluminum, epoxy-resin-coated
End plates: Aluminum
Casing: Aluminum/zinc coated steel, protective coating on on one side



WATER / BRINE

SMALL AND LARGE NUMBER OF DISTRIBUTIONS

up to 16 bar operating pressure

CO₂ - VARIANTS

010.15 CO₂ - DIRECT EXPANSION

up to 45 bar operating pressure

010.20 CO₂ - DIRECT EXPANSION

up to 90 bar operating pressure

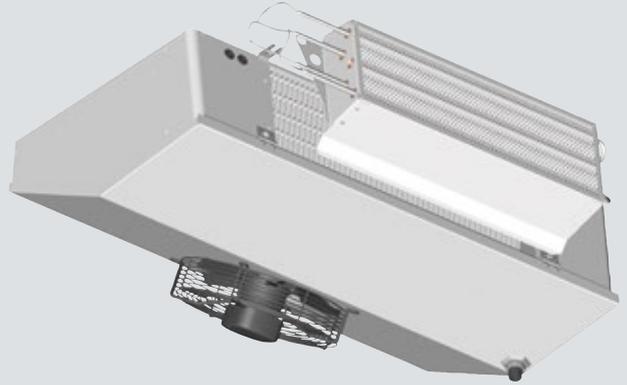
ACCESSORIES

ELECTRIC HEATER HR

For air coolers with forced-draft fans, for assembly on site.
 Suitable for air conditioning, or heating, in the winter.
 For optimal heat transfer, the heater rods are fitted in Cu tube sleeves.

Construction:

- ▶ Fully powder-coated (RAL 9010)
- ▶ 230 ± 10% V-1~ or 400 ± 10% V-3~ -Y
- ▶ Heater elements with CrNi steel sleeve
- ▶ Connections: steam-proof
- ▶ Connecting cable 1.0 mm² x 1000 mm
- ▶ Casing: steel, continuous hot-dip zinc coated
- ▶ Fins: Aluminum
- ▶ Tube sleeves: Copper



Selection table & Technical data:

For Type	Description	Dimensions		Weight	Current	Capacity
		H	L	kg	A	kW
MCC-301-S	HR 500	210	500	1.4	3.7	0.8
MCC-301-4	HR 600	210	600	1.7	4.2	1.0
MCC-301-6	HR 600	210	600	1.7	4.2	1.0
MCC-302-S	HR 1000	210	1,000	2.4	7.5	1.7
MCC-302-4	HR 1200	210	1,200	2.9	8.3	1.9
MCC-302-6	HR 1200	210	1,200	2.9	8.3	1.9
MCC-303-4	HR 1800	210	1,800	4.2	12.5	2.9
MCC-303-6	HR 1800	210	1,800	4.2	12.5	2.9
MCC-304-4	HR 2400	210	2,400	5.6	16.3	3.8
MCC-304-6	HR 2400	210	2,400	5.6	16.3	3.8

NOTE:

Operate only when the air cooler fans are running, to prevent the cold storage ceiling from overheating.
 Please observe the corresponding safety guidelines.

CHANGES TO THE PREVIOUS MODEL KÜBA COMPACT DF.D

TYPE DESIGNATION CODE MCC



1	2	3	4	5	6	7	8	9
M	C	C	-30	1	-6	B	E	

- | | | | |
|---|-----------------------|---|------------------------|
| 1 | Size of product | 6 | Number of rows deep |
| 2 | Case style of product | 7 | Fin spacing |
| 3 | Coil block system | 8 | Defrost system |
| 4 | Fan diameter | 9 | Additional information |
| 5 | Number of fans | | |

Refrigerant & max. operating pressure (Box 9)

- | | |
|-------------|--------------------------|
| HX32 | HFC 32 bar |
| GL16 | Glycol 16 bar |
| CX45 | CO ₂ 45 bar |
| CX90 | CO ₂ 90 bar |

TYPE DESIGNATION CODE KÜBA COMPACT DF.D

1	2	3	4	5	6
DF	B	E	07	1	E

- | | | | |
|---|-------------------------|---|-----------------|
| 1 | Model range designation | 4 | Size |
| 2 | Fin spacing | 5 | Number of fans |
| 3 | Electric defrost | 6 | Generation Code |

	NO CHANGE	CHANGE
Product name		<input checked="" type="checkbox"/>
Type Designation		<input checked="" type="checkbox"/>
Type Designation Code		<input checked="" type="checkbox"/>
Number of Types	<input checked="" type="checkbox"/>	
Cooling Capacity	<input checked="" type="checkbox"/>	
Electric Defrost	<input checked="" type="checkbox"/>	
Dimensions incl Fixing Points	<input checked="" type="checkbox"/>	
Connections	<input checked="" type="checkbox"/>	

	NO CHANGE	CHANGE
Accessories	<input checked="" type="checkbox"/>	
Fan	<input checked="" type="checkbox"/>	
Fan Mounting	<input checked="" type="checkbox"/>	
Spare Parts: Casing	<input checked="" type="checkbox"/>	
Spare Part: Fan	<input checked="" type="checkbox"/>	
Packaging: Type and Size	<input checked="" type="checkbox"/>	
Packaging: Printing		<input checked="" type="checkbox"/>

www.kelvion.com

