



COMMERCIAL COOLERS

air cooled TKE

ECO™ heat transfer
coolers



A16



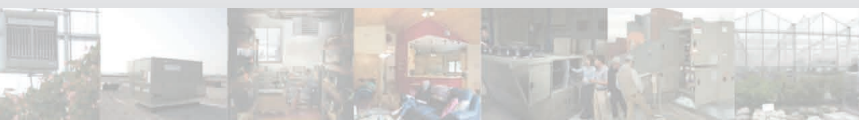
Cover photo:

CO₂ gas cooler

This system allows to keep the ice floor of the Århus Skating Arena (Denmark) in perfect condition

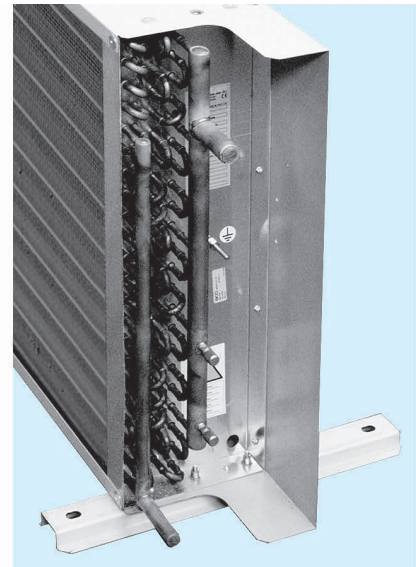
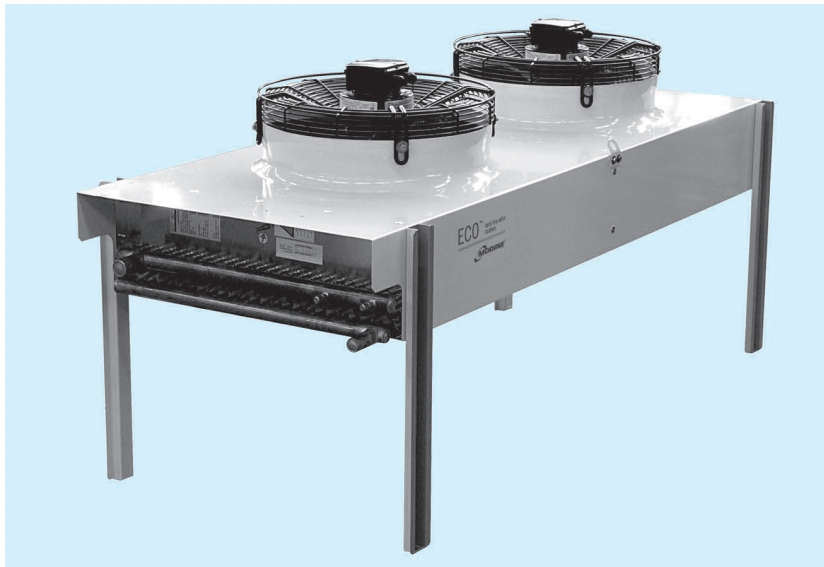
Courtesy of:

ADVANSOR





Air cooled condensers



The **TKE** range has been specifically developed to suit a variety range of refrigeration and air conditioning applications.

The entire range is equipped with highly efficient coils made from special profile aluminium fins and inner grooved copper tube, suitable for new generation refrigerants. They are supplied charged with dry air at 2 bars and the fin spacing is 2,1 mm for the entire range.

Model identification - Kennzeichnung der Modelle - Структура обозначения модели

	TKE	35	1	A	3	R	H	EC	
Product identification Kennzeichnung des Produkts Обозначение продукта	TKE	35	1	A	3	R	H	EC	Version with electronically commutated EC fan motors Version mit Motoren mit elektronischer Umschaltung, EC Версия с двигателем с электронным переключением скорости EC
Ø Fan • Ø Motorventilatoren • Ø Вентилятор 35 = 350 mm • 45 = 450									
Number of fans Anzahl der Motorventilatoren Количество вентиляторов									
Fan motors poles A/J = 4 • B/M = 6 • N = 8									
Heat exchanger reference Hinweis Wärmeaustauscher Индекс теплообменника									
Reduced version Kürzere Ausführung Сокращенная версия									
H = Horizontal air flow V = Vertical air flow									

The TKE models can be used either in the horizontal air flow version (H – with standard support brackets) or in the vertical air flow version (V – a kit with required legs is supplied upon request).

The fan motors employed have the following features:

- **Ø 350 mm**
 - external rotor single-phase
 - 230V/1/50-60Hz with built-in electric capacitor and epoxy coated steel fan guard;
- **Ø 450 mm**
 - external rotor single-phase
 - 230V/1/50-60Hz with built-in electric capacitor and epoxy coated steel fan guard;
 - available with 4, 6 and 8 poles;
 - IP44 protection grade;
 - class insulation 155 (4 and 8 poles), 130 (6 poles);
 - inner thermal contact protection.

The optional highly efficient EC fan motors have the following features:

- IP 54 protection grade;
- class B insulation;
- built-in electronic protection;
- speed regulator with 0-10V signal;
- Min / max operating temperature –25/60 °C.

The fan motors and the casework are predisposed for grounding. On request the models can be equipped with non-standard coils and fan motors.

Select units with non-published conditions with the “**Scelte**” selection software.

For special applications and further information contact our Technical Dept.



Sound levels

The L_WA sound power levels in dB (A) and the detailed frequency figures for the different TKE models are stated in Tab. 1.

Tab. 1 | Sound power levels dB (A) for models with one fan motor

Model	L _W A	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
TKE 350 A	75	60	65	70	71	67	61	49
TKE 350 B	62	55	56	57	55	51	42	34
TKE 450 J	79	63	69	69	72	74	73	63
TKE 450 M	64	50	57	58	60	56	48	37
TKE 450 N	62	63	63	60	57	53	45	35

The sound power level of models with multiple fan motors can be calculated with the following formula or by adding the figures of Tab. 3.

$$L_W = L_{W1} + 10 \log(n)$$

L_W = Sound power level for models with n fan motors.

L_{W1} = Sound power level for models with 1 fan motor.

n = Number of fan motors.

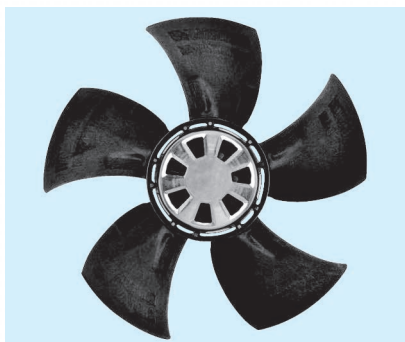
Tab. 2 | Correction factor for models with multiple fan motors

dB (A)	0	+3	+5	+6	+8
n	1	2	3	4	6

Tab. 3 | Sound pressure correction factors based on distance

Distance	d (m)	1	2	3	4	5	10	15	20	40	60	80	120	200
TKE 350		18	13	10	7	6	0	-3	-6	-12	-15	-18	-21	-26
TKE 450		17	12	9	7	6	0	-3	-6	-12	-15	-18	-21	-25

Options and special versions

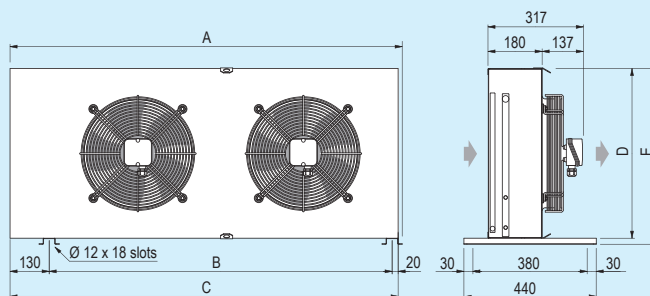


- EC motor (electronically commutated)

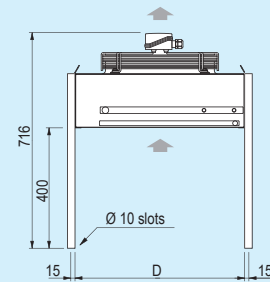
Dimensional features

Ø 350 mm; From 1 to 3 fan motors

Ø H version



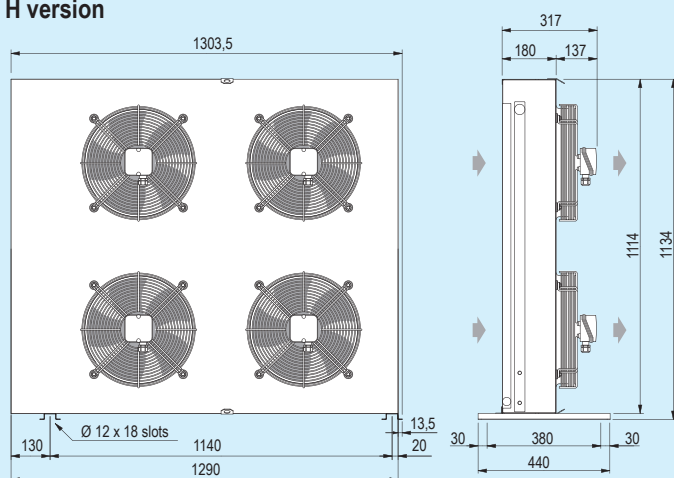
V version



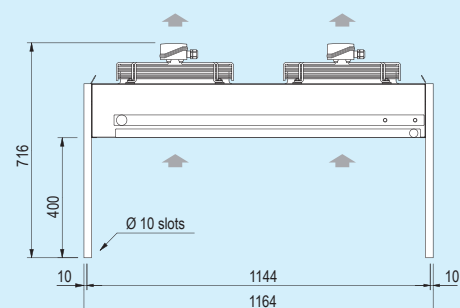
Model	351A2R 351B2R	351A3R 351B3R	351A2 351B2	351A3 351B3	351A4 -	352A2 352B2	352A3 352B3	352A4 -	353A2 353B2	353A3 353B3	353A4 -
Fan motors											
Dimensions	A	603		753		1303			1853		
mm	B	440		590		1140			1690		
	C	590		740		1290			1840		
	D	414		564		564			564		
	E	434		584		584			584		

Ø 350 mm; 4 fan motors

H version



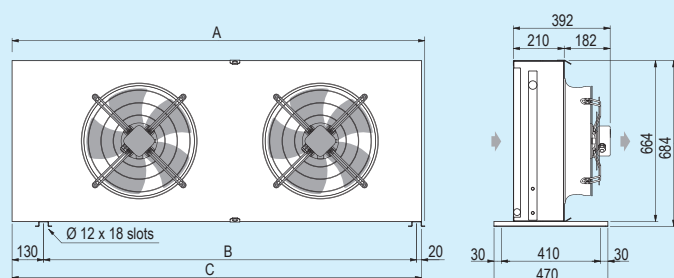
V version



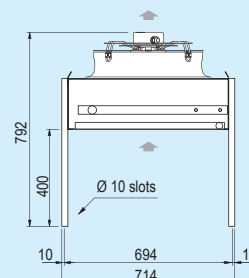
Dimensional features

Ø 450 mm; From 1 to 3 fan motors

Ø H version



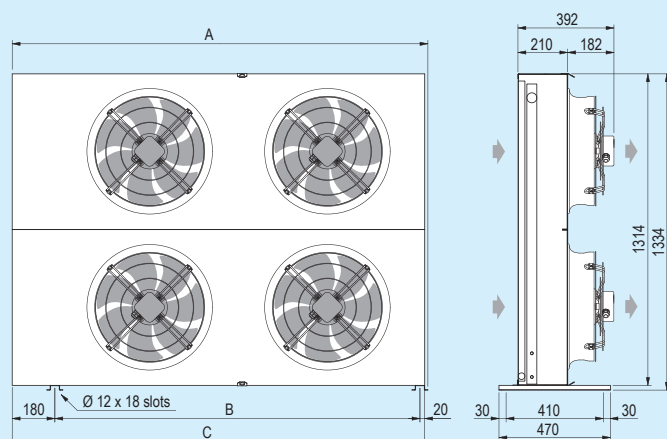
V version



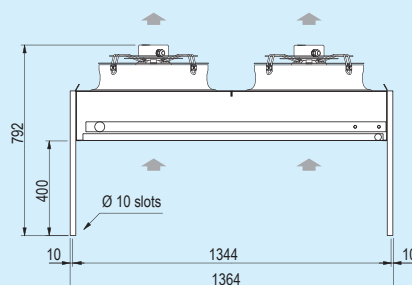
Model	451J2 451M2 451N2	451J3 451M3 451N3	451J4 451M4 451N4	452J2 452M2 452N2	452J3 452M3 452N3	452J4 452M4 452N4	453J2 453M2 453N2	453J3 453M3 453N3	453J4 453M4 453N4
Fan motors									
Dimensions	A	953			1703			2453	
mm	B	790			1540			2290	
	C	940			1690			2440	

Ø 450 mm; From 4 to 6 fan motors

Ø H version



V version



Model	454J2 454M2 454N2	454J3 454M3 454N3	454J4 454M4 454N4	456J2 456M2 456N2	456J3 456M3 456N3	456J4 456M4 456N4
Fan motors						
Dimensions	A	1754			2504	
mm	B	1540			2290	
	C	1740			2490	

Technical features

Ø 350 mm

						
Model		351A2R	351A3R	351A2	351A3	351A4
R404A Capacity	ΔT = 15K (kW)	4,5	5,8	6,7	8,8	10
R448A Capacity	ΔT = 15K (kW)	4,6	6	6,9	9	10,3
Air flow	m³/h	2390	2160	2500	2310	2160
RPM		1420	1420	1420	1420	1420
Actual power	W	180	180	180	180	180
Nominal power	W	180	180	180	180	180
Total absorption	A	0,8	0,8	0,8	0,8	0,8
1) Nominal power EC	W	113	113	113	113	113
1) Total absorption EC	A	0,96	0,96	0,96	0,96	0,96
LpA 10m	dB(A)	43	43	43	43	43
Connections	In/Out (mm)	16 12	16 12	22 16	22 16	22 16
Efficiency class		E	D	D	C	C

Model		351B2R	351B3R	351B2	351B3	-
R404A Capacity	ΔT = 15K (kW)	3,5	4,3	5,5	6,5	-
R448A Capacity	ΔT = 15K (kW)	3,6	4,4	5,7	6,7	-
Air flow	m³/h	1450	1300	1540	1420	-
RPM		945	945	945	945	-
Actual power	W	75	75	75	75	-
Nominal power	W	75	75	75	75	-
Total absorption	A	0,37	0,37	0,37	0,37	-
1) Nominal power EC	W	40	40	40	40	-
1) Total absorption EC	A	0,3	0,3	0,3	0,3	-
LpA 10m	dB(A)	30	30	30	30	-
Connections	In/Out (mm)	16 12	16 12	22 16	22 16	-
Efficiency class		C	C	B	B	-

Common data		n° x Ø mm	1 x 350	1 x 350	1 x 350	1 x 350	1 x 350
Fan motors							
Internal surface	m²		0,5	0,7	0,9	1,3	1,7
External surface	m²		6,3	9,5	11,9	17,9	23,9
Inner volume	dm³		0,5	0,8	1	1,5	2
Net weight	kg		14	15	18	20	22

Ø 450 mm

						
Model		451J2	451J3	451J4	452J2	452J3
R404A Capacity	ΔT = 15K (kW)	12,3	16,1	19,9	24,9	33,2
R448A Capacity	ΔT = 15K (kW)	12,6	16,5	20,5	25,6	34,1
Air flow	m³/h	5490	5080	5410	10980	10160
RPM		1350	1350	1350	1350	1350
Actual power	W	480	480	480	960	960
Nominal power	W	480	480	480	960	960
Total absorption	A	2,1	2,1	2,1	4,2	4,2
1) Nominal power EC	W	340	340	340	680	680
1) Total absorption EC	A	2,1	2,1	2,1	4,2	4,2
LpA 10m	dB(A)	48	48	48	51	51
Connections	In/Out (mm)	22 16	22 16	22 16	28 22	35 28
Efficiency class		E	D	D	E	D

Model		451M2	451M3	451M4	452M2	452M3
R404A Capacity	ΔT = 15K (kW)	9,8	12,3	13,4	19,6	24,6
R448A Capacity	ΔT = 15K (kW)	10,1	12,6	13,8	20,1	25,3
Air flow	m³/h	3420	3120	3420	6840	6240
RPM		890	890	890	890	890
Actual power	W	120	120	120	240	240
Nominal power	W	120	120	120	240	240
Total absorption	A	0,58	0,58	0,58	1,16	1,16
1) Nominal power EC	W	135	135	135	270	270
1) Total absorption EC	A	0,8	0,8	0,8	1,6	1,6
LpA 10m	dB(A)	33	33	33	36	36
Connections	In/Out (mm)	22 16	22 16	22 16	28 22	28 22
Efficiency class		C	C	B	C	C

Model		451N2	451N3	451N4	452N2	452N3
R404A Capacity	ΔT = 15K (kW)	9,2	11	12,1	18,4	22
R448A Capacity	ΔT = 15K (kW)	9,5	11,3	12,4	18,9	22,6
Air flow	m³/h	3010	2630	2960	6020	5260
RPM		840	840	840	840	840
Actual power	W	115	115	115	230	230
Nominal power	W	115	115	115	230	230
Total absorption	A	0,51	0,51	0,51	1,02	1,02
1) Nominal power EC	W	110	110	110	220	220
1) Total absorption EC	A	0,7	0,7	0,7	1,4	1,4
LpA 10m	dB(A)	30	30	30	33	33
Connections	In/Out (mm)	22 16	22 16	22 16	28 22	28 22
Efficiency class		B	B	A	B	B

Common data		n° x Ø mm	1 x 450	1 x 450	1 x 450	2 x 450	2 x 450
Fan motors							
Internal surface	m²		1,4	2,1	2,8	2,8	4,2
External surface	m²		19,3	28,9	38,5	38,6	57,8
Inner volume	dm³		1,5	2,3	3,1	3	4,6
Net weight	kg		31,5	33,5	36,5	57,5	63

1) Option.

								
352A2	352A3	352A4	353A2	353A3	353A4	354A2	354A3	354A4
13.4	17.6	20	20.1	26.4	30	26.8	35.2	40
13.8	18.1	20.6	20.7	27.1	30.8	27.5	36.2	41.1
5000	4620	4320	7500	6930	6480	10000	9240	8640
1420	1420	1420	1420	1420	1420	1420	1420	1420
360	360	360	540	540	540	720	720	720
360	360	360	540	540	540	720	720	720
1.6	1.6	1.6	2.4	2.4	2.4	3.2	3.2	3.2
226	226	226	339	339	339	452	452	452
1.92	1.92	1.92	2.88	2.88	2.88	3.84	3.84	3.84
46	46	46	48	48	48	49	49	49
22 16	22 16	22 16	28 22	28 22	28 22	35 28	35 28	35 28
D	C	C	D	C	C	D	C	C

352B2	352B3	-	353B2	353B3	-	354B2	354B3	-
11	13	-	16.5	19.5	-	22	26	-
11.3	13.4	-	17	20	-	22.6	26.7	-
3080	2840	-	4620	4260	-	6160	5680	-
945	945	-	945	945	-	945	945	-
150	150	-	225	225	-	300	300	-
150	150	-	225	225	-	300	300	-
0.74	0.74	-	1.11	1.11	-	1.48	1.48	-
80	80	-	120	120	-	160	160	-
0.6	0.6	-	0.9	0.9	-	1.2	1.2	-
33	33	-	35	35	-	36	36	-
22 16	22 16	-	28 22	28 22	-	35 28	35 28	-
B	B	-	B	B	-	B	B	-

2 x 350	2 x 350	2 x 350	3 x 350	3 x 350	3 x 350	4 x 350	4 x 350	4 x 350
1.7	2.6	3.4	2.6	3.9	5.1	3.4	5.2	6.8
23.8	35.8	47.8	35.7	53.7	71.7	47.6	71.6	95.6
2	3	4	3	4.5	6	4	6	8
32.5	36	39.5	46	51.5	57	60	68	75

									
452J4	453J2	453J3	453J4	454J2	454J3	454J4	456J2	456J3	456J4
37	37.6	50	56.1	50.3	66.4	75.1	75.2	99.8	112.3
38	38.6	51.4	57.7	51.7	68.2	77.2	77.3	103	115
10820	16470	15240	16230	21960	20320	21640	32940	30480	32460
1350	1350	1350	1350	1350	1350	1350	1350	1350	1350
960	1440	1440	1440	1920	1920	1920	2880	2880	2880
960	1440	1440	1440	1920	1920	1920	2880	2880	2880
4.2	6.3	6.3	6.3	8.4	8.4	8.4	12.6	12.6	12.6
680	1020	1020	1020	1360	1360	1360	2040	2040	2040
4.2	6.3	6.3	6.3	8.4	8.4	8.4	12.6	12.6	12.6
51	53	53	53	54	54	54	56	56	56
35 28	35 28	42 28	42 28	42 28	42 28	42 35	42 35	54 42	54 42
D	E	D	D	E	D	D	E	D	D

452M4	453M2	453M3	453M4	454M2	454M3	454M4	456M2	456M3	456M4
26.8	29.4	36.9	40.2	39.2	49.2	53.6	58.8	73.8	80.4
27.5	30.2	37.9	41.3	40.3	50.6	55.1	60.4	75.9	82.6
6840	10260	9360	10260	13680	12480	13680	20520	18720	20520
890	890	890	890	890	890	890	890	890	890
240	360	360	360	480	480	480	720	720	720
240	360	360	360	480	480	480	720	720	720
1.16	1.74	1.74	1.74	2.32	2.32	2.32	3.48	3.48	3.48
270	405	405	405	540	540	540	810	810	810
1.6	2.4	2.4	2.4	3.2	3.2	3.2	4.8	4.8	4.8
36	38	38	38	39	39	39	41	41	41
28 22	35 28	42 28	42 28	42 28	42 28	42 35	42 35	54 42	54 42
B	C	C	B	C	C	B	C	C	B

452N4	453N2	453N3	453N4	454N2	454N3	454N4	456N2	456N3	456N4
24.1	27.6	33	36.2	36.8	43.9	48.3	55.1	65.9	72.4
24.8	28.4	33.9	37.2	37.8	45.1	49.6	56.6	67.7	74.4
5920	9030	7890	8880	12040	10520	11840	18060	15780	17760
840	840	840	840	840	840	840	840	840	840
230	345	345	345	460	460	460	690	690	690
230	345	345	345	460	460	460	690	690	690
1.02	1.53	1.53	1.53	2.04	2.04	2.04	3.06	3.06	3.06
220	330	330	330	440	440	440	660	660	660
1.4	2.1	2.1	2.1	2.8	2.8	2.8	4.2	4.2	4.2
33	35	35	35	36	36	36	38	38	38
28 22	35 28	42 28	42 28	42 28	42 28	42 35	42 35	54 42	54 42
A	B	B	A	B	B	A	B	B	A

2 x 450	3 x 450	3 x 450	3 x 450	4 x 450	4 x 450	4 x 450	6 x 450	6 x 450	6 x 450
5.5	4.1	6.2	8.3	5.5	8.3	11.1	8.3	12.5	16.6
77	57.9	86.7	116	77.2	116	154	116	173	231
6.2	4.5	6.9	9.3	6	9.2	12.4	9	13.8	18.6
68.5	84	92.5	101	113	123	133	163	181	198



XVI - edition, March 2022

CGUC2203A16PUDR

Project

Modine CIS Italy Communication dpt.

Photographs

Modine CIS Italy Archives

Warranty

All technical information in this edition is based on tests carried out, which we deem exhaustive and reliable but which cannot be referred to all records of possible applications. Therefore, the purchaser must ascertain product suitability with regard to its intended use, undertaking all responsibility arising from its said use. Upon request by the purchaser, the seller shall be available to supply all useful information in order to better use its products. All our models have a two-year warranty with effect from the date of invoice. Please refer to the Modine CIS Italy S.r.l Legal Office for detailed information. However, occasional failures such as those due to transport, tampering by unauthorised personnel, incorrect use and incorrect installation, which the products are subjected to, are all excluded from any form of warranty.

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Modine specializes in thermal management systems and components, bringing highly engineered heating and cooling components, original equipment products, and systems to diversified global markets through its four complementary segments: BHVAC, CIS, HDE, and Automotive. Modine is a global company headquartered in Racine, Wisconsin (USA), with operations in North America, South America, Europe and Asia.

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