


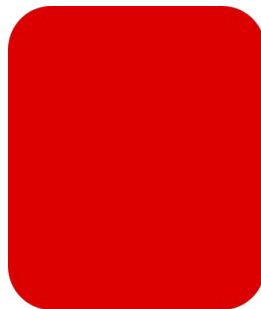


HEAT TRANSFER COOLERS

 Unit Coolers

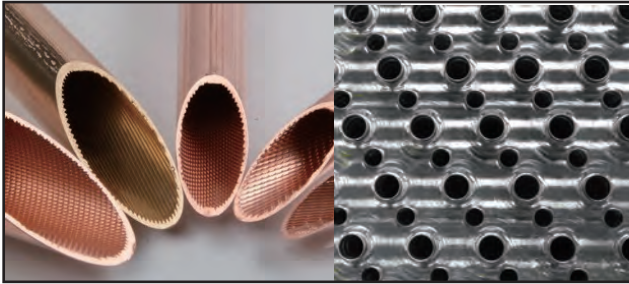
 Air Cooled Condensers

 Brine / CO₂ Products



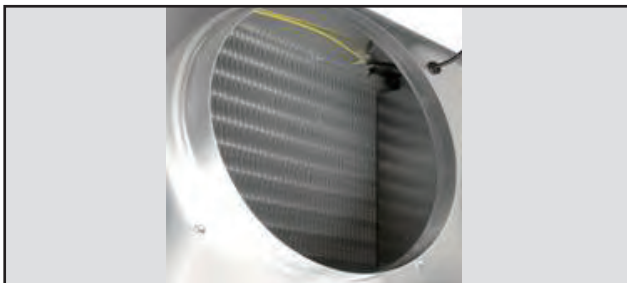
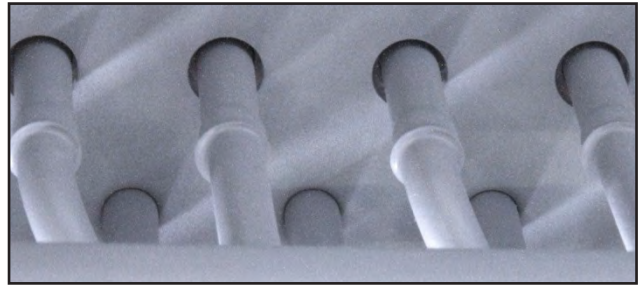
The Products

All the fin coils of ZKGY refrigeration unit coolers, condensers and dry coolers are manufactured by the global leader of fin coil manufacturer: Modine manufacturing Inc. Together with other world class suppliers, ZKGY is becoming the top level brand of refrigeration heat exchanger OEM in China, providing our premium customers with the most professional energy saving, environmental friendly refrigeration heat exchanger solutions.



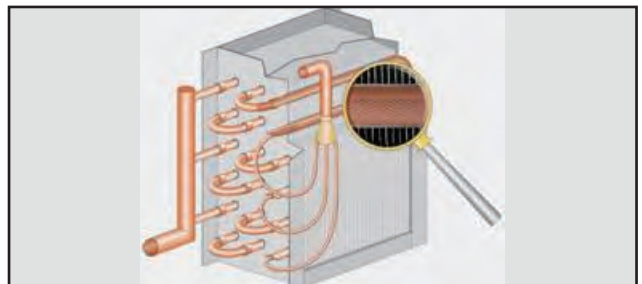
TL series of unit cooler adopts coils with 9.52mm inner grooved copper tube, staggered and sine wave Al fins. TM series of unit cooler adopts coils with 12.7mm inner grooved copper tube, staggered and corrugated Al fins.

All the supporting and end plate are made by Al Alloy, Unique floating tube design makes the coil leakage free and suitable for hot-gas defrost.



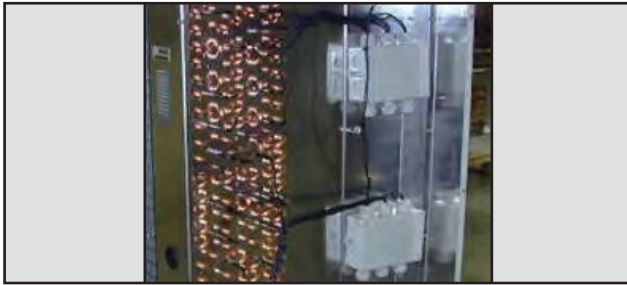
Middle panel to separate the fan motors are equipped as standard to avoid the possibility of "air leakage" and failure when one of the fan motors can not work.

High grade evaporative oil is utilized in fin punching process which can ensure an oil-free coil. Perfect tube expanding and fin collar process ensure the same heat transfer efficiency during the whole life cycle.



Specially designed drain system ensures a fast and rust free drainage of defrost.

The Products



High grade electrical panel for fan motors and heaters, indicating clearly the electrical connections.

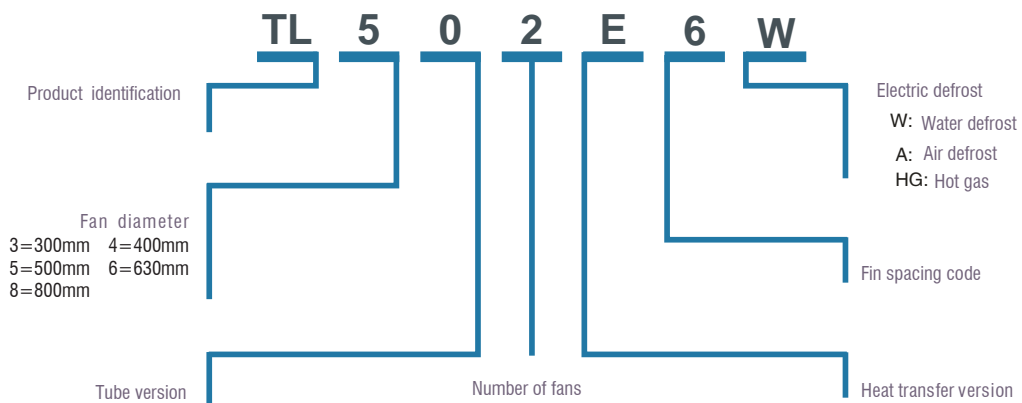
Specially designed water defrost module, ensure an easy access to all the water parts and an accurate and even distribution of water.



All the fan motors used are according to ZKGY newest testing and specifications. Only 5 diameters:

300mm、400mm、500mm、630mm、800mm external rotor axial fans are adopted.

Model identification



- TL** Light Commercial Unit Cooler
- TM** Heavy Duty Commercial Unit Cooler
- TD** Dual Discharge Unit Cooler
- TA** Angled Unit Cooler
- TMB** Brine Unit Cooler
- TLC** CO₂ Unit Cooler
- TMF/TFD/TML** Forced Air Chiller And Freezer
- TVF** Agricultural Special Unit Cooler

Heavy Duty Commercial Unit Cooler



Fin Space 4mm	Models	TM512A4	TM512B4	TM513F4	TM513A4	TM513B4	TM514A4	TM514B4
SC1: Ta 10 °C Te 0 °C	kw	38.7	42.1	53.3	59.3	66.4	74.7	84.7
SC2: Ta 0 °C Te -8 °C	kw	26.7	29.4	37.2	41.4	46.4	52.1	59.1
Surface	m ²	103	137	133	159	212	206	275
Air Flow	m ³ /h	12590	11880	20250	19580	17820	25920	23760

Fin Space 6mm	Models	TM512A6	TM512B6	TM513F6	TM513A6	TM513B6	TM514A6	TM514B6
SC2: Ta 0 °C Te -8 °C	kw	24.3	27.9	32.7	37.1	43.8	47.2	56.2
SC3: Ta -18 °C Te -25 °C	kw	18.8	20.7	25.2	28.6	33.8	34.9	41.9
Surface	m ²	71	95	92	110	146	142	190
Air Flow	m ³ /h	13870	13320	21330	20970	19980	27720	26640

Fin Space 8mm	Models	TM512A8	TM512B8	TM513F8	TM513A8	TM513B8	TM514A8	TM514B8
SC3: Ta -18 °C Te -25 °C	kw	17.0	19.4	22.6	25.9	31.3	32.1	39.2
SC4: Ta -25 °C Te -31 °C	kw	13.7	15.4	18.2	20.9	25.5	25.5	31.2
SC5: Ta -34 °C Te -40 °C	kw	12.4	13.2	16.3	18.9	23.3	21.7	26.9
Surface	m ²	55	74	71	85	114	110	147
Air Flow	m ³ /h	14210	13860	21870	21500	20790	28440	27720

Fin Space 8/16mm	Models	TM512A0	TM512B0	TM513F0	TM513A0	TM513B0	TM514A0	TM514B0
SC3: Ta -18 °C Te -25 °C	kw	15.5	18.5	20.0	23.7	29.6	29.7	37.3
SC4: Ta -25 °C Te -31 °C	kw	12.6	14.8	16.3	19.2	24.2	23.7	29.8
SC5: Ta -34 °C Te -40 °C	kw	11.6	12.8	14.8	17.6	22.2	20.5	26.0
Surface	m ²	47	66	59	73	102	94	132
Air Flow	m ³ /h	14440	14040	22140	21840	21060	28980	28080

Fan Mot. No.		2×500	2×500	3×500	3×500	3×500	4×500	4×500
Air Throw	m	17	16	18	18	17	19	18
Electric System	V/PH/Hz	380/3/50	380/3/50	380/3/50	380/3/50	380/3/50	380/3/50	380/3/50
Fan Mot. Power	W	2×800	2×800	3×800	3×800	3×800	4×800	4×800
Electric Defrost	W	9100	9100	15600	15600	15600	18900	18900
Circuit Vol.	dm ³	24.4	32.5	31.4	37.7	50.3	48.8	65.0
Net Weight	kg	112	126	145	165	184	210	240
In Tube	mm	28	28	28	35	35	35	35
Out Tube	mm	35	42	42	42	54	54	54
Drain Connector	Ø(GAS)	1	1	2	2	2	2	2
Drawing No.		12	12	13	13	13	14	14

Heavy Duty Commercial Unit Cooler



Fin Space 4mm	Models	TM612F4	TM612A4	TM612B4	TM613A4	TM613B4	TM812B4	TM813B4
SC1: Ta 10 °C Te 0 °C	kw	72.0	81.8	95.0	122.9	143.9	105.0	157.5
SC2: Ta 0 °C Te -8 °C	kw	50.2	56.9	66.3	85.8	100.1	73.2	110.3
Surface	m ²	165	198	265	298	397	305	458
Air Flow	m ³ /h	27160	26550	25310	39820	37960	26920	40380

Fin Space 6mm	Models	TM612F6	TM612A6	TM612B6	TM613A6	TM613B6	TM812B6	TM813B6
SC2: Ta 0 °C Te -8 °C	kw	44.9	51.5	61.5	77.4	92.8	70.6	106.1
SC3: Ta -18 °C Te -25 °C	kw	31.1	35.9	43.1	54.3	65.5	49.7	74.9
Surface	m ²	114	137	182	205	274	211	316
Air Flow	m ³ /h	28710	28090	27160	42140	40750	30820	46230

Fin Space 8mm	Models	TM612F8	TM612A8	TM612B8	TM613A8	TM613B8	TM812B8	TM813B8
SC3: Ta -18 °C Te -25 °C	kw	28.6	33.3	40.3	50.2	61.2	47.1	71.0
SC4: Ta -25 °C Te -31 °C	kw	22.5	26.4	31.9	39.7	48.6	37.4	56.4
SC5: Ta -34 °C Te -40 °C	kw	18.7	22.2	27.2	33.6	41.7	31.9	48.2
Surface	m ²	89	106	142	159	212	163	245
Air Flow	m ³ /h	29330	29020	28090	43530	42140	32770	49160

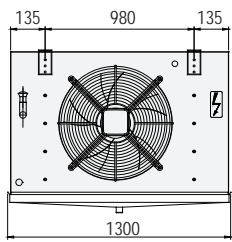
Fin Space 8/16mm	Models	TM612F0	TM612A0	TM612B0	TM613A0	TM613B0	TM812B0	TM813B0
SC3: Ta -18 °C Te -25 °C	kw	25.9	31.5	38.4	46.3	58.2	45.4	68.4
SC4: Ta -25 °C Te -31 °C	kw	20.6	25.0	30.7	36.9	46.5	36.1	54.5
SC5: Ta -34 °C Te -40 °C	kw	17.4	21.4	26.5	31.8	40.5	31.1	47.0
Surface	m ²	73	95	127	136	190	146	219
Air Flow	m ³ /h	29790	29330	28400	44000	42600	33750	50620

Fan Mot. No.		2×630	2×630	2×630	3×630	3×630	2×800	3×800
Air Throw	m	33	32	30	33	31	33	34
Electric System	V/PH/Hz	380/3/50	380/3/50	380/3/50	380/3/50	380/3/50	380/3/50	380/3/50
Fan Mot. Power	W	2×2000	2×2000	2×2000	3×2000	3×2000	2×2000	3×2000
Electric Defrost	W	18000	18000	21600	29000	34800	27000	43500
Circuit Vol.	dm ³	39.1	47.0	62.6	70.5	93.9	72.3	108.4
Net Weight	kg	215	230	280	345	420	320	470
In Tube	mm	35	35	35	35	42	35	2×35
Out Tube	mm	54	54	54	54	64	54	2×54
Drain Connector	Ø(GAS)	2	2	2	2	2	2	2
Drawing No.		17	17	17	18	18	17	18

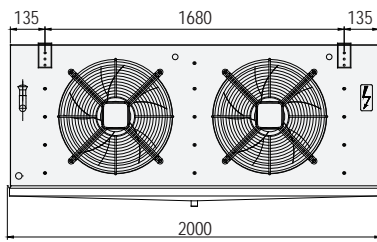
Drawings



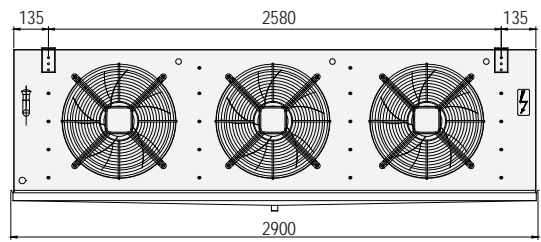
500mm Fan



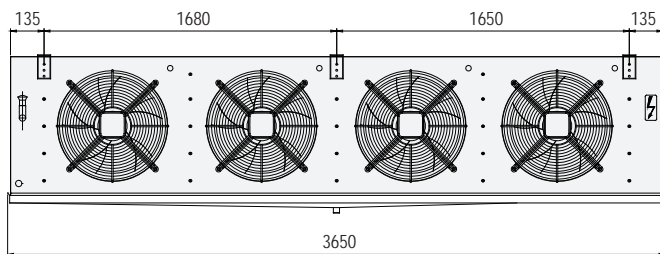
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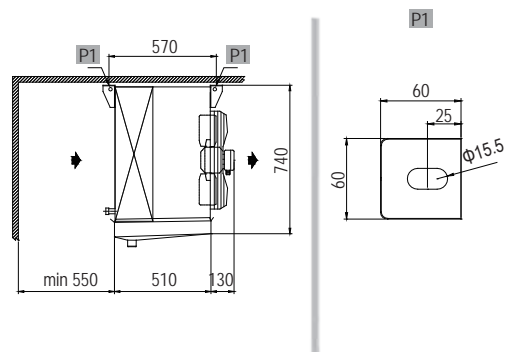
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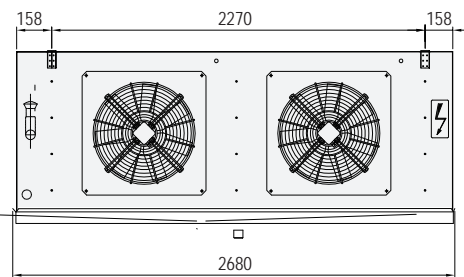
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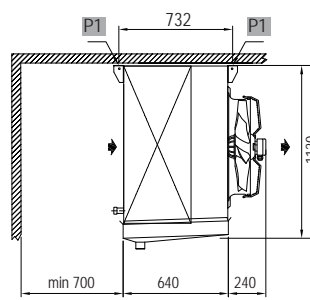
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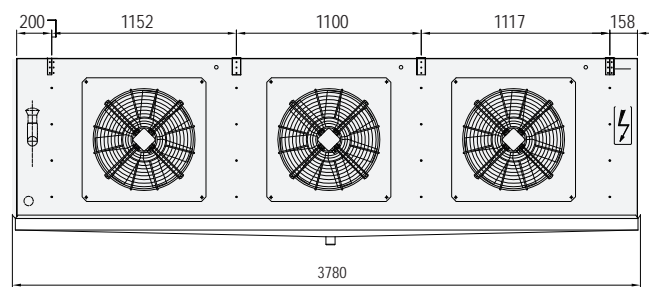
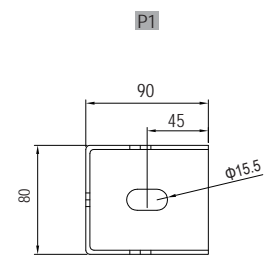
630/800mm Fan



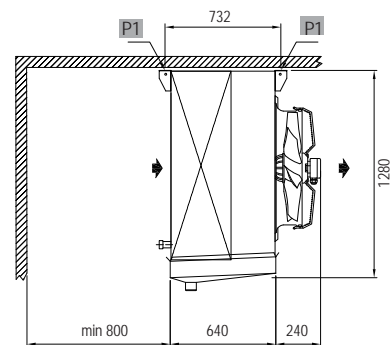
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630mm Fan



18



800mm Fan

Unit Cooler Capacity Correction Factor

Refrigerant Type Factor

Refrigerant types	R134a	R22	R507A	R404A
Refrigerant factor	0.93	0.97	1	1

Correction factor SC1

Evaporation temperature °C	-8	-6	-4	-2	0	2	4	6	8	12
TL0 Correction factor	0.86	0.89	0.93	0.96	1.00	1.04	1.08	1.12	1.16	1.20
TM1 Correction factor	0.88	0.91	0.94	0.97	1.00	1.03	1.07	1.11	1.15	1.19
Max. KTD	10	10	10	10	10	10	10	10	10	10
Min. KTD	4	4	4	4	5	5	5	5	6	6

Correction factor SC2

Evaporation temperature °C	-14	-12	-10	-8	-6	-4	-2	0	2	4	6	8	12
TL0 Correction factor	0.88	0.92	0.96	1.00	1.04	1.08	1.12	1.17	1.22	1.26	1.31	1.36	1.40
TM1 Correction factor	0.93	0.95	0.97	1.00	1.03	1.07	1.10	1.14	1.17	1.21	1.25	1.28	1.35
Max. KTD	8	8	9	10	10	10	10	10	10	10	10	10	10
Min. KTD	4	4	4	4	4	4	4	5	5	5	5	6	6

Correction factor SC3

Evaporation temperature °C	-40	-36	-30	-25	-20	-15	-12
TL0 Correction factor	0.78	0.85	0.92	1.00	1.08	1.16	1.21
TM1 Correction factor	0.86	0.90	0.96	1.00	1.05	1.11	1.15
Max. KTD	8	8	10	10	10	10	11
Min. KTD	4	4	4	4	4	4	4

Correction factor SC4

Evaporation temperature °C	-47	-44	-40	-36	-31	-25	-20
TL0 Correction factor	0.70	0.76	0.84	0.91	1.00	1.08	1.15
TM1 Correction factor	0.82	0.86	0.91	0.95	1.00	1.05	1.11
Max. KTD	6	8	8	8	10	10	10
Min. KTD	4	4	4	4	4	4	4

Correction factor SC5

Evaporation temperature °C	-52	-50	-47	-44	-40	-36	-31	-25
TL0 Correction factor	0.75	0.81	0.87	0.93	1.00	1.09	1.18	1.28
TM1 Correction factor	0.83	0.85	0.90	0.94	1.00	1.05	1.10	1.16
Max. KTD	6	6	6	7	8	8	10	10
Min. KTD	4	4	4	4	4	4	4	4

STD conditions in compliance to EN328 standard

Operating mode	SC1	SC2	SC3	SC4	SC5
Evap. temperature	0°C	-8°C	-25°C	-31°C	-40°C
Temperature difference	10K	8K	7K	6K	6K
Air inlet temperature	10°C	0°C	-18°C	-25°C	-34°C
Superheat	6.5 K	5.2 K	4.6 K	3.9 K	3.9 K
Relative humidity	85 %	85 %	95 %	95 %	95 %
Wet conditions factor	1.35	1.15	1.05	1.01	1

Air Cooled Condensers Capacity Correction Factor



F1 - Temperature Difference factor

Heat transfer temperature difference	K	6	7	8	9	10	11	12	13	14	15
Normal refrigerant	$F1 = \Delta t / 15$	0.4	0.47	0.53	0.6	0.67	0.73	0.8	0.87	0.93	1
R407C and other refrigerants with high glide		0.32	0.39	0.46	0.54	0.62	0.69	0.77	0.85	0.93	1

F2 - Refrigerant type factor

Refrigerant types	R407A	R407C	R134a	R22	R507A	R404A
Refrigerant factor	0.83	0.87	0.93	0.96	1	1

F3 - Ambient temperature factor

Ambient temperature	°C	15	20	25	30	35	40	45
Ambient temperature factor		1.03	1.02	1	0.99	0.975	0.96	0.95

F4 - Altitude factor

Altitude	m	0	500	1000	1500	2000	2500
Altitude factor		1	0.96	0.93	0.89	0.85	0.8

F5 - Fin Material factor

Fin Material	Aluminum	Hydrophilic aluminum	Polyester coated aluminium	copper
Fin Material factor	1.03	1.02	1	1.06

Selection Formula:

$$\text{Required capacity} = \text{Compressor Heat Rejection} \div F1 \div F2 \div F3 \div F4 \div F5$$

Examples

Compressor heat rejection * (4HE-18) 27 kW

* Based on $T_e - 25\text{ }^\circ\text{C}$, $T_c 45\text{ }^\circ\text{C}$, Suction gas superheat 10K, Liq. subc. Liquid subc. 2K

F1 – Temperature difference factor	(8K)	0.53
F2 – Refrigerant factor (R22)		0.96
F3 – Ambient temperature Factor	(35°C)	0.975
F4 – Altitude factor	(0m)	1
F5 – Fin material factor	(Coated aluminium)	1

Result

$$\text{Required capacity} = 27 \div 0.53 \div 0.96 \div 0.975 \div 1 \div 1 = 54.4 \text{ KW}$$

Model selected : MH502D (56.2kW) or MH504A (60.1kW)



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