


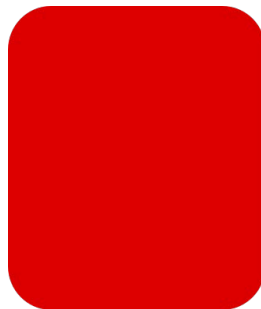


HEAT TRANSFER COOLERS

 Unit Coolers

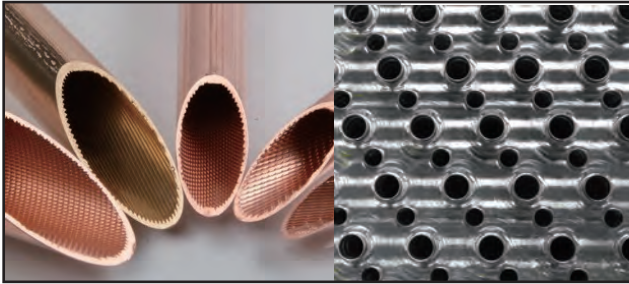
 Air Cooled Condensers

 Brine / CO₂ Products



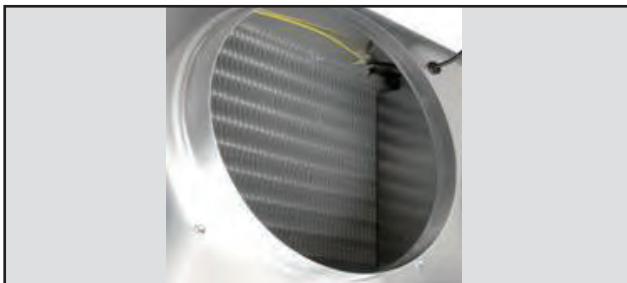
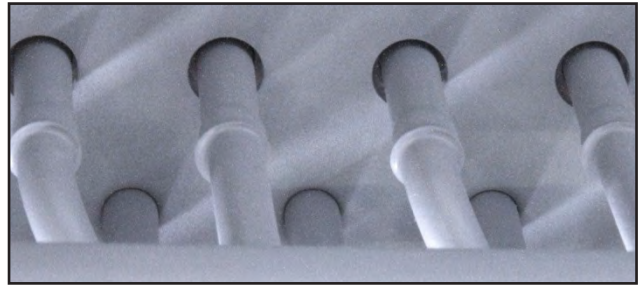
The Products

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.



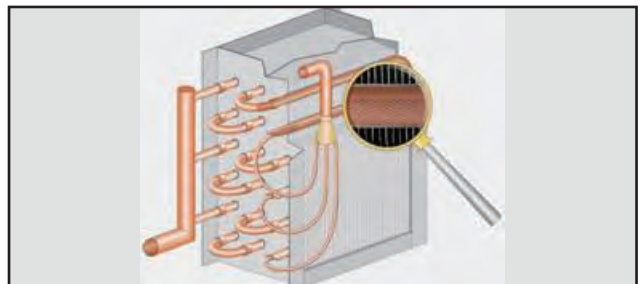
TL series of unit cooler adopts coils with 9.52mm inner grooved copper tube, staggered and sine wave Al fins. TM series of unit cooler adopts coils with 12.7mm inner grooved copper tube, staggered and corrugated Al fins.

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.

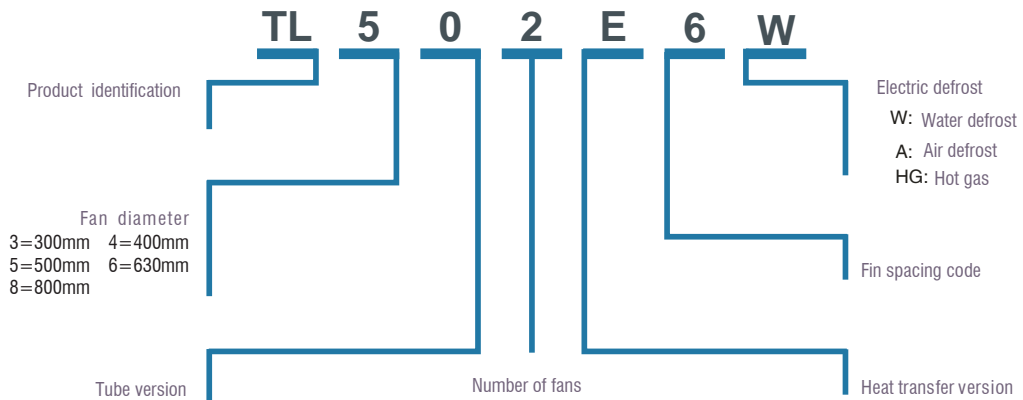
Specially designed water defrost module, ensure an easy access to all the water parts and an accurate and even distribution of water.



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



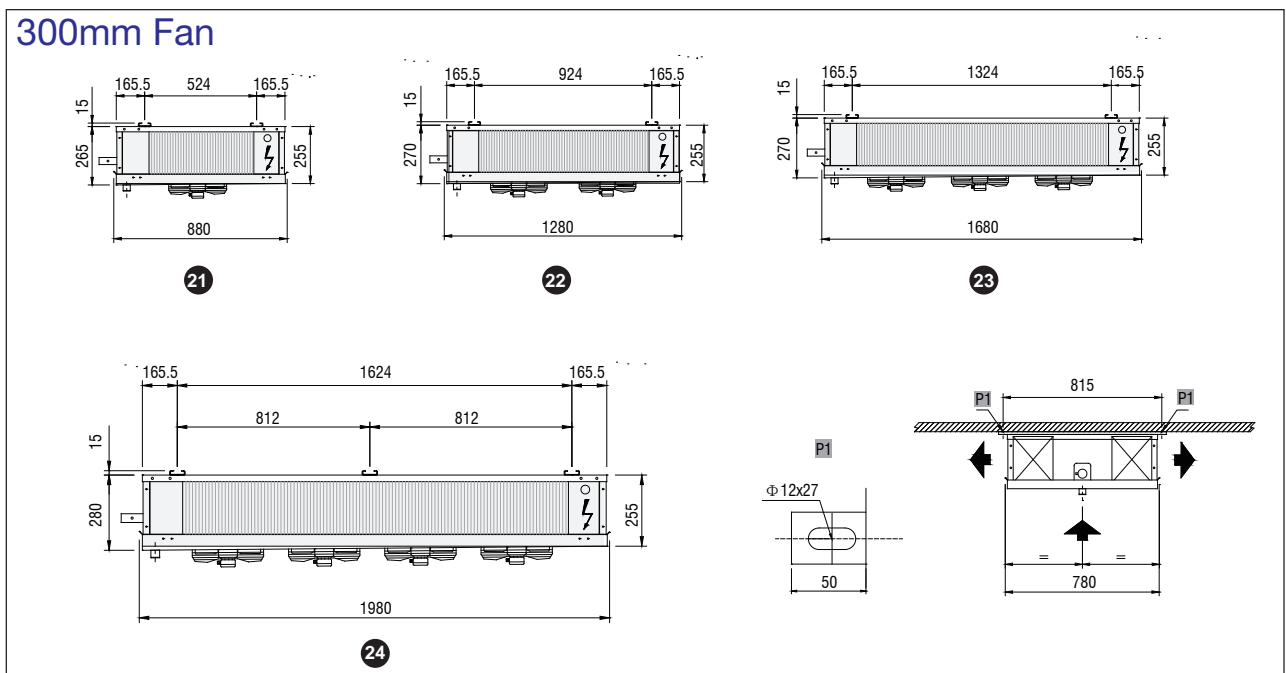
- TL** Light Commercial Unit Cooler
- TM** Heavy Duty Commercial Unit Cooler
- TD** Dual Discharge Unit Cooler
- TA** Angled Unit Cooler
- TMB** Brine Unit Cooler
- TLC** CO₂ Unit Cooler
- TMF/TFD/TML** Forced Air Chiller And Freezer
- TVF** Agricultural Special Unit Cooler

Dual Discharge Unit Cooler

Fin Space 3.5mm	Models	TD311E4	TD312E4	TD313E4	TD314E4
SC1: Ta 10 °C Te 0 °C	kw	4.8	9.0	13.1	16.1
SC2: Ta 0 °C Te -8 °C	kw	3.3	6.3	9.1	11.0
Surface	m ²	17.5	30.2	42.9	52.5
Air Flow	m ³ /h	1510	2870	4190	5280

Fin Space 6.0mm	Models	TD311E6	TD312E6	TD313E6	TD314E6
SC2: Ta 0 °C Te -8 °C	kw	2.9	5.6	8.1	10.2
SC3: Ta -18 °C Te -25 °C	kw	2.1	4.0	5.9	7.1
Surface	m ²	10.8	18.7	26.5	32.4
Air Flow	m ³ /h	1600	3120	4630	6030

Fan Mot. No.		1×300	2×300	3×300	4×300
Air Throw	m	2×3	2×4	2×4	2×5
Electric System	V/PH/Hz	220/1/50	220/1/50	220/1/50	220/1/50
Fan Mot. Power	W	1x85	2x85	3x85	4x85
Electric Defrost	W	1000	1800	2400	2800
Circuit Vol.	dm ³	3.6	6.2	8.9	10.8
Net Weight	kg	28	42	56	66
In Tube	mm	12	12	12	12
Out Tube	mm	16	22	28	28
Drain Connector	Ø(GAS)	1	1	1	1
Drawing No.		21	22	23	24



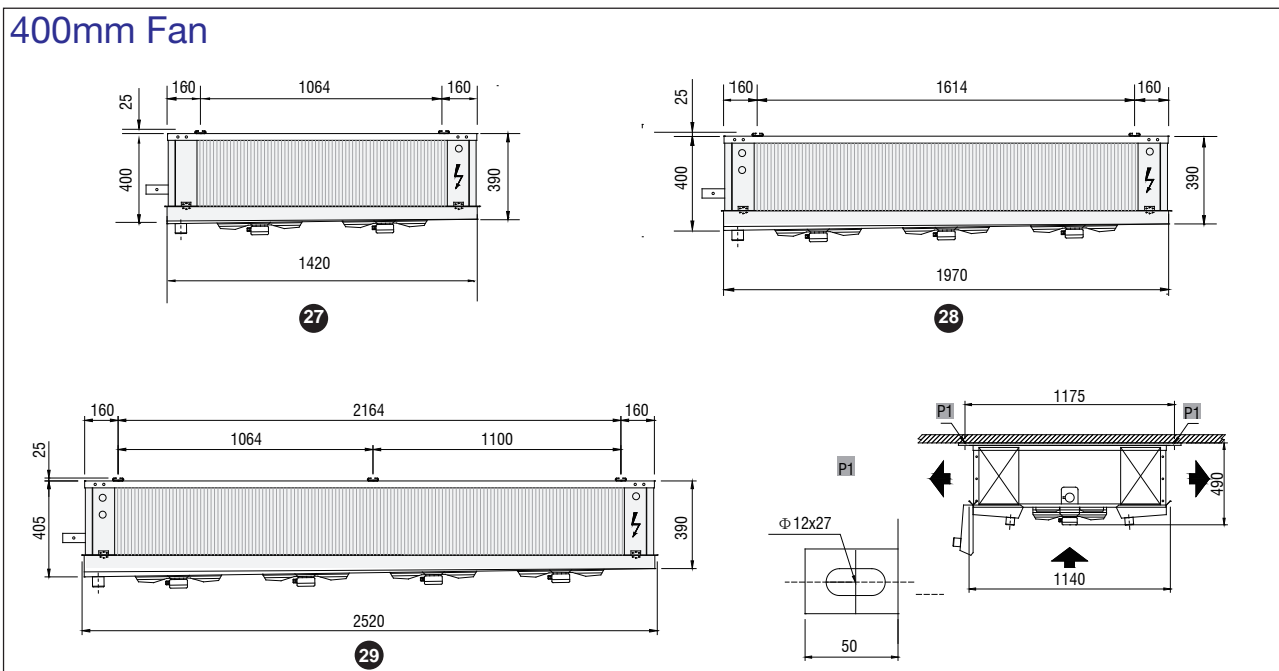
Dual Discharge Unit Cooler

Fin Space 3.5mm	Models	TD412E4	TD412A4	TD413E4	TD413A4	TD414E4	TD414A4
SC1: Ta 10°C Te 0°C	kw	17.7	21.0	25.3	31.6	35.6	42.3
SC2: Ta 0°C Te -8°C	kw	12.3	14.6	17.4	22.1	24.7	29.5
Surface	m ²	47.1	70.5	70.5	106	94.1	141
Air Flow	m ³ /h	6420	5920	9630	8880	12840	11840

Fin Space 6.0mm	Models	TD412E6	TD412A6	TD413E6	TD413A6	TD414E6	TD414A6
SC2: Ta 0°C Te -8°C	kw	10.2	12.9	14.7	19.4	20.4	25.9
SC3: Ta -18°C Te -25°C	kw	7.6	9.1	10.3	13.7	15.2	18.3
Surface	m ²	28.8	43.2	43.2	64.8	57.6	86.5
Air flow	m ³ /h	6930	6550	10390	9825	13860	13100

Fan Mot. No.		2×400	2×400	3×400	3×400	4×400	4×400
Air Throw	m	2×7	2×6	2×7	2×6	2×8	2×7
Electric System	V/PH/Hz	380/3/50	380/3/50	380/3/50	380/3/50	380/3/50	380/3/50
Fan Mot. Power	W	2x180	2x180	3x180	3x180	4x180	4x180
Electric Defrost	W	4500	4500	7000	7000	9000	9000
Circuit Vol.	dm ³	9.6	14.5	14.5	21.7	19.3	28.9
Net Weight	kg	102	112	135	150	168	188
In Tube	mm	16	16	22	22	28	28
Out Tube	mm	35	35	42	42	42	42
Drain Connector	Ø(GAS)	2 x 1	2 x 1	2 x 1	2 x 1	2 x 1	2 x 1
Drawing No.		27	27	28	28	29	29

400mm 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 $T_e - 25^\circ\text{C}$, $T_c 45^\circ\text{C}$, 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

计算 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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