

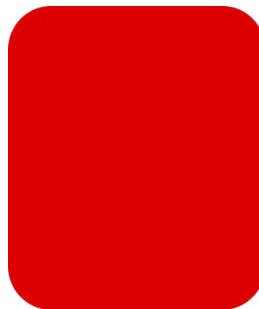


HEAT TRANSFER COOLERS

 Unit Coolers

 Air Cooled Condensers

 Brine / CO₂ Products

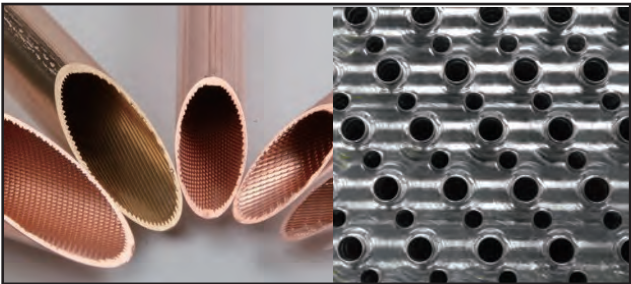


中科高易冷链系统（江苏）有限公司
CAS GYW COLD CHAIN SYSTEM (JIANGSU) CO., LTD.

The Products

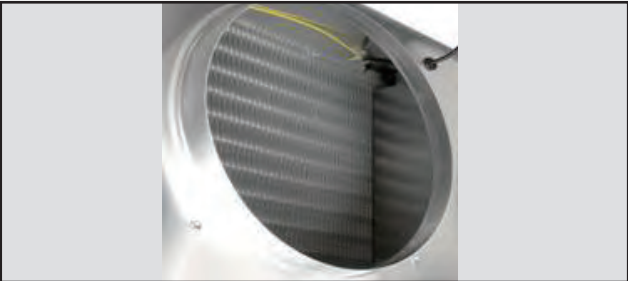
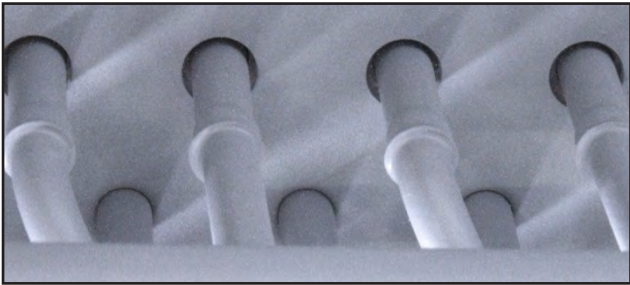


All the fin coils of ZKGY refrigeration unit coolers,condensers and dry coolers are manufactured by the global leader of fin coil manufacturer: Modine manufacturing Inc. Together with other world class suppliers,ZKGY is becoming the top level brand of refrigeration heat exchanger OEM in China,providing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



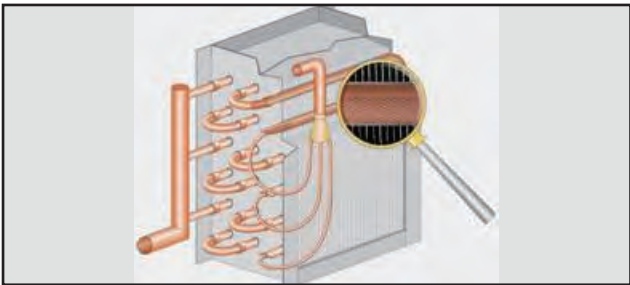
TL series of unit cooler adopts coils with 9.52mm inner grooved copper tube, staggered and sine wave Al fins. TM series of unit cooler adopts coils with 12.7mm inner grooved copper tube, staggered and corrugated Al fins.

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.



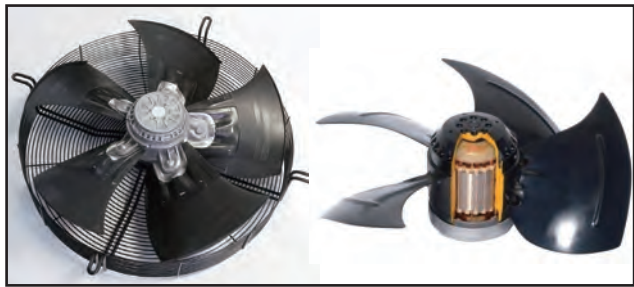
Specially designed drain system ensures a fast and rust free drainage of defrost.

The Products



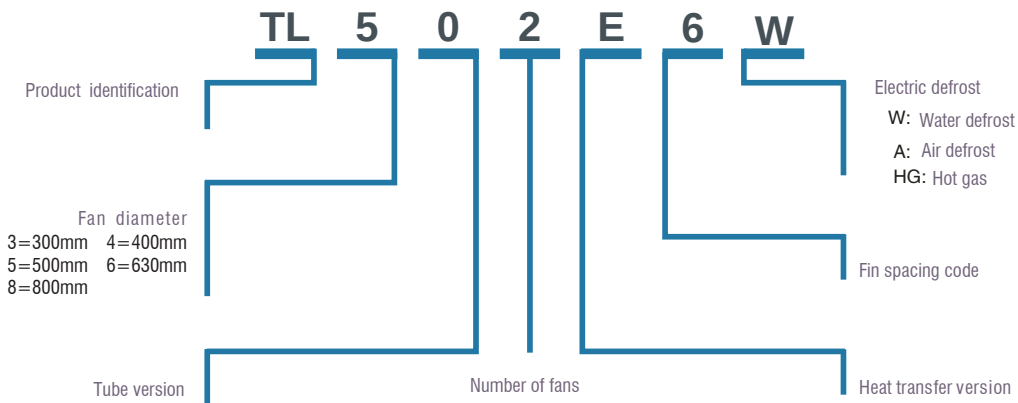
High grade electrical panel for fan motors and heaters, indicating clearly the electrical connections.

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	CO ₂ Unit Cooler
TMF/TFD/TML	Forced Air Chiller And Freezer
TVF	Agricultural Special Unit Cooler

Light Commercial Unit Cooler

Fin Space 4mm	Models	TL301E4	TL302E4	TL302A4	TL303E4	TL303A4	TL304A4
SC1: Ta 10℃ Te 0℃	kw	3.8	6.8	8.4	9.6	12.4	15.2
SC2: Ta 0℃ Te -8℃	kw	2.6	4.7	5.7	6.6	8.5	10.2
Surface	m ²	13.3	23.0	34.5	32.7	49.0	59.9
Air Flow	m ³ /h	1330	2440	2230	3610	3240	4030

Fin Space 6mm	Models	TL301E6	TL302E6	TL302A6	TL303E6	TL303A6	TL304A6
SC2: Ta 0℃ Te -8℃	kw	2.2	3.9	5.1	5.6	7.5	9.2
SC3: Ta -18℃ Te -25℃	kw	1.6	2.8	3.5	3.9	5.2	6.3
SC4: Ta -25℃ Te -31℃	kw	1.3	2.2	2.8	3.1	4.2	4.9
Surface	m ²	9.0	15.5	23.3	22.1	33.1	40.5
Air Flow	m ³ /h	1400	2590	2370	3825	3450	4460

Fin Space 8mm	Models	TL301E8	TL302E8	TL302A8	TL303E8	TL303A8	TL304A8
SC3: Ta -18℃ Te -25℃	kw	1.4	2.5	3.3	3.6	4.9	5.9
SC4: Ta -25℃ Te -31℃	kw	1.1	2.0	2.6	2.9	3.9	4.7
SC5: Ta -34℃ Te -40℃	kw	1.0	1.8	2.2	2.5	3.5	4.0
Surface	m ²	7.0	12.0	18.0	17.1	25.6	31.3
Air Flow	m ³ /h	1435	2660	2440	3880	3560	4315

Fan Mot. No.		1×300	2×300	2×300	3×300	3×300	4×300
Air Throw	m	6	7	6	8	7	7
Electric System	V/PH/Hz	220/1/50	220/1/50	220/1/50	220/1/50	220/1/50	220/1/50
Fan Mot. Power	W	1x85	2x85	2x85	3x85	3x85	4x85
Electric Defrost	W	1750	3150	4050	4200	5400	6300
Circuit Vol.	dm ³	1.7	3.0	4.5	4.3	6.4	7.8
Net Weight	kg	21	31	35	38	44	54
In Tube	mm	12	12	12	12	16	16
Out Tube	mm	22	22	28	28	28	28
Drain Connector	Ø(GAS)	1	1	1	1	1	1
Drawing No.		1	2	2	3	3	4

Light Commercial Unit Cooler



Fin Space 4mm	Models	TL401E4	TL401F4	TL401A4	TL402E4	TL402F4	TL402A4
SC1: Ta 10℃ Te 0℃	kw	6.1	7.2	8.1	12.2	14.4	16.0
SC2: Ta 0℃ Te -8℃	kw	4.2	5.0	5.5	8.4	9.9	10.9
Surface	m ²	18.6	23.3	28.0	37.3	46.6	55.9
Air Flow	m ³ /h	2610	2500	2385	5220	5000	4770

Fin Space 6mm	Models	TL401E6	TL401F6	TL401A6	TL402E6	TL402F6	TL402A6
SC2: Ta 0℃ Te -8℃	kw	3.6	4.3	4.9	7.2	8.6	9.6
SC3: Ta -18℃ Te -25℃	kw	2.5	3.0	3.4	5.0	6.0	6.6
SC4: Ta -25℃ Te -31℃	kw	2.0	2.4	2.7	3.9	4.7	5.2
Surface	m ²	12.6	15.7	18.9	25.2	31.5	37.8
Air Flow	m ³ /h	2750	2610	2550	5500	5220	5100

Fin Space 8mm	Models	TL401E8	TL401F8	TL401A8	TL402E8	TL402F8	TL402A8
SC3: Ta -18℃ Te -25℃	kw	2.3	2.8	3.2	4.6	5.5	6.2
SC4: Ta -25℃ Te -31℃	kw	1.8	2.2	2.5	3.6	4.4	4.9
SC5: Ta -34℃ Te -40℃	kw	1.6	1.9	2.2	3.1	3.8	4.2
Surface	m ²	9.7	12.2	14.6	19.5	24.3	29.2
Air Flow	m ³ /h	2835	2730	2610	5670	5460	5220

Fan Mot. No.		1×400	1×400	1×400	2×400	2×400	2×400
Air Throw	m	8	7	7	9	8	8
Electric System	V/PH/Hz	220/1/50	220/1/50	220/1/50	380/3/50	380/3/50	380/3/50
Fan Mot. Power	W	1x180	1x180	1x180	2x180	2x180	2x180
Electric Defrost	W	1750	2250	2750	3150	4050	4950
Circuit Vol.	dm ³	2.4	3.0	3.6	4.9	6.1	7.3
Net Weight	kg	24	26	28	42	46	50
In Tube	mm	12	12	12	16	16	16
Out Tube	mm	22	22	22	28	28	28
Drain Connector	Ø(GAS)	1	1	1	1	1	1
Drawing No.		6	6	6	7	7	7

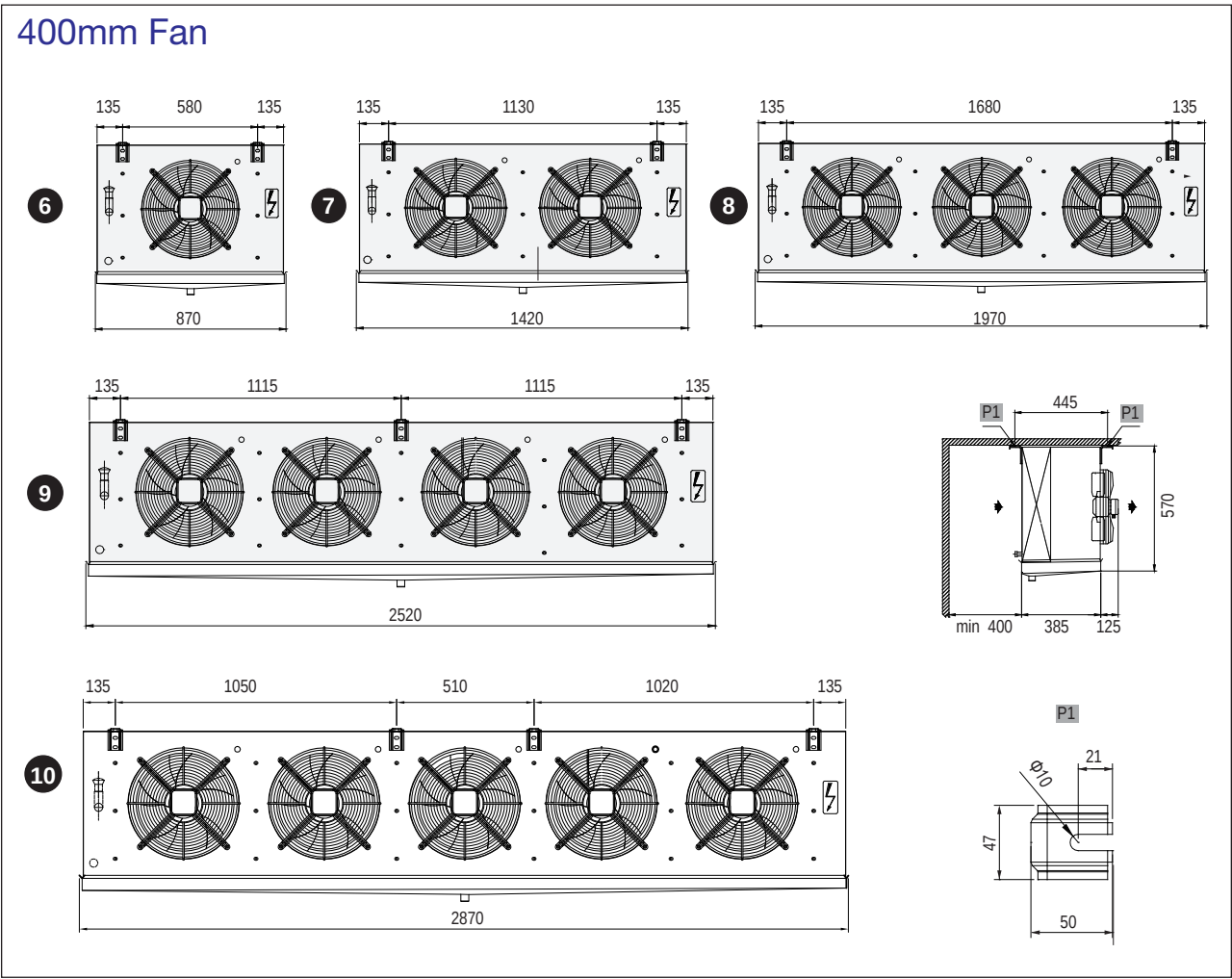
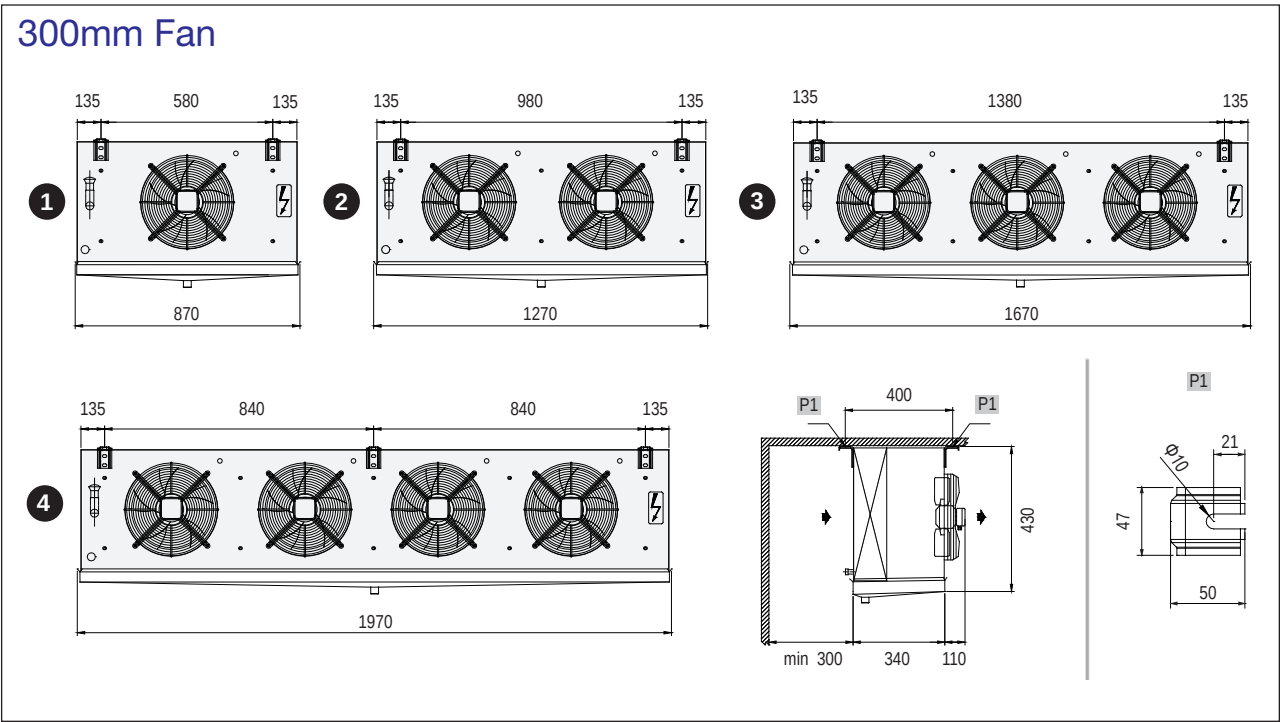
Light Commercial Unit Cooler

Fin Space 4mm	Models	TL403E4	TL403F4	TL403A4	TL404F4	TL404A4	TL405A4
SC1: Ta 10 °C Te 0 °C	kw	17.7	21.1	23.7	27.3	32.5	37.0
SC2: Ta 0 °C Te -8 °C	kw	12.1	14.5	16.2	18.6	22.1	25.2
Surface	m ²	55.9	69.9	83.9	93.2	111.8	129.6
Air Flow	m ³ /h	7830	7500	7155	10000	9540	11360

Fin Space 6mm	Models	TL403E6	TL403F6	TL403A6	TL404F6	TL404A6	TL405A6
SC2: Ta 0 °C Te -8 °C	kw	10.5	12.7	14.4	17.1	19.6	22.6
SC3: Ta -18 °C Te -25 °C	kw	7.1	8.7	9.7	11.9	13.5	15.2
SC4: Ta -25 °C Te -31 °C	kw	5.5	6.8	7.7	9.4	10.8	11.8
Surface	m ²	37.8	47.2	56.7	63.0	75.6	87.6
Air Flow	m ³ /h	8250	7830	7650	10440	10200	12200

Fin Space 8mm	Models	TL403E8	TL403F8	TL403A8	TL404F8	TL404A8	TL405A8
SC3: Ta -18 °C Te -25 °C	kw	5.9	8.0	9.2	10.9	12.8	14.4
SC4: Ta -25 °C Te -31 °C	kw	5.2	6.4	7.2	8.7	10.1	11.3
SC5: Ta -34 °C Te -40 °C	kw	4.3	5.4	6.1	7.5	8.8	9.4
Surface	m ²	29.2	36.5	43.8	48.7	58.4	67.7
Air Flow	m ³ /h	8505	8190	7830	10920	10440	12500

Fan Mot. No.		3×400	3×400	3×400	4×400	4×400	5×400
Air Throw	m	10	9	9	10	10	11
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	3x180	3x180	3x180	4x180	4x180	5×180
Electric Defrost	W	4900	6300	7700	8100	9900	13200
Circuit Vol.	dm ³	7.3	9.1	10.9	12.1	14.6	16.9
Net Weight	kg	54	60	66	80	88	102
In Tube	mm	16	22	22	22	28	28
Out Tube	mm	28	28	35	35	42	42
Drain Connector	Ø(GAS)	1	1	1	1	1	1
Drawing No.		8	8	8	9	9	10



轻型商用冷风机 Light Commercial Unit Cooler

片距	Fin Space	4mm	Models	TL501A4	TL502F4	TL502A4	TL502B4	TL503F4	TL503A4	TL503B4		
SC1:	Ta	10℃	Te	0℃	kw	18.7	28.4	32.3	38.2	43.3	49.2	58.9
SC2:	Ta	0℃	Te	-8℃	kw	12.9	19.5	22.3	26.1	29.8	33.9	39.7
面积	Surface		m²	61	89	107	142	137	165	220		
风量	Air Flow		m³/h	6300	12240	11880	10800	18900	17820	16200		

片距	Fin Space	6mm	Models	TL501A6	TL502F6	TL502A6	TL502B6	TL503F6	TL503A6	TL503B6	
SC2:	Ta	0℃	Te -8℃	kw	11.1	17.1	19.5	23.9	25.9	30.1	36.3
SC3:	Ta	-18℃	Te -25℃	kw	7.9	11.7	13.3	16.3	17.5	20.5	24.7
面积	Surface		m²	42	61	73	97	94	113	150	
风量	Air Flow		m³/h	6660	12960	12260	11520	19480	18900	17380	

片距	Fin Space	8mm	Models	TL501A8	TL502F8	TL502A8	TL502B8	TL503F8	TL503A8	TL503B8
SC3:	Ta -18 ℃	Te -25 ℃	kw	7.4	10.8	12.5	15.3	16.4	19.0	23.5
SC4:	Ta -25 ℃	Te -31 ℃	kw	5.8	8.4	9.8	12.0	12.7	14.8	18.4
SC5:	Ta -34 ℃	Te -40 ℃	kw	5.1	6.9	8.1	10.1	10.5	12.3	15.4
面积	Surface		m²	32	47	56	75	72	87	116
风量	Air Flow		m³/h	6750	13320	12600	11880	19980	19440	17820

风扇	Fan Mot. No.		1x500	2x500	2x500	2x500	3x500	3x500	3x500
射程	Air Throw	m	15	16	16	15	17	17	16
电制	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
风机功率	Fan Mot. Power	W	1x800	2x800	2x800	2x800	3x800	3x800	3x800
电加热功率	Electric Defrost	W	5850	9100	9100	9100	15600	15600	15600
管容	Circuit Vol.	dm³	8.1	11.7	14.0	18.7	18.1	21.7	28.9
净重	Net Weight	kg	58	88	96	108	126	138	156
进液管径	In Tube	mm	22	22	28	22	28	35	35
出气管径	Out Tube	mm	28	35	35	35	42	42	54
水盘接口	Drain Connector	Ø(GAS)	1	1	1	1	2	2	2
图号	Drawing No.		11	12	12	12	13	13	13

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 aluminum)	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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Add: Dailuo Rd. Wujin District, Changzhou, Jiangsu, China

Tel : (+86) 51981169986

Mob: (+86) 13806118729

Web: www.coldroomsuppliers.com

