MAC series air coolers

1. Product description

- ◆ Inner-grooved copper tube (Φ12.7) in-line triangular pitch. Tube spacing 37.5 X 37.5.
- ◆ Fin space: 4mm 6mm 8.5mm & 10mm
- ◆ Perfect antirust magnalium body
- ◆ Equipped with the top-quality electric heater
- ◆ Double layer drain plate makes sure the condensed water was not frozen

2. Nomenclature：

MAC 98 / 3 45 M E

- E — Electric defrosting
- Fin space H:4.0 M:6.0 L:8.5 J:10.0
- M — Fan dia.÷10 mm
- 45 — Quantity of Fan motor
- 3 — Heat transfer area m^2
- 98 — Series code

4. Specifications

4. 1 Fin space 4.0 mm for temperature over 0℃

	Model	Capacity DT=8K	Area	Airflow	Range	Tube cubage	Fan motor				Defrosting heater		
							Voltage	Dia	Qty	Input	Voltage	Input(KW)	
		kw	m^2	m^3/h	m	L	V	mm	n	w	V	For coil	For drain plate
Fan dia. Φ350	MAC17/135HE	3.67	16.8	2500	12	4.0	380	350	1	150	220	1.2	0.6
	MAC25/135HE	5.15	25.2	2300	11	6.0	380	350	1	150	220	1.2	0.6
	MAC34/235HE	7.34	33.6	5000	13	7.7	380	350	2	300	220	2.4	1.2
	MAC51/235HE	10.36	50.5	4600	12	11.5	380	350	2	300	220	3.6	1.2
	MAC51/335HE	11.12	50.5	7500	14	11.3	380	350	3	450	220	3.0	1.5
	MAC76/335HE	15.49	75.7	6900	13	17	380	350	3	450	220	4.5	1.5
Fan dia. Φ450	MAC48/145HE	9.98	47.7	5000	14	11.1	380	450	1	480	220	3.3	1.3
	MAC64/145HE	12.07	63.5	4800	12	14.7	380	450	1	480	220	4.4	1.3
	MAC95/245HE	19.95	95.3	10000	16	21.4	380	450	2	960	220	6.0	2.4
	MAC127/245HE	24.13	127	9600	14	28.5	380	450	2	960	220	8.0	2.4
	MAC143/345HE	29.93	143	15000	18	31.8	380	450	3	1440	220	9.0	3.3
	MAC191/345HE	36.29	191	14400	16	42.4	380	450	3	1440	220	12.0	3.3
	MAC191/445HE	39.9	191	20000	18	42.1	380	450	4	1920	220	12.0	3.8
	MAC254/445HE	48.26	254	19200	16	55	380	450	4	1920	220	16.0	3.8
Fan dia. Φ560	MAC206/256HE	39.14	205.6	15600	20	45.8	380	560	2	1860	220	12	4
	MAC257/256HE	46.48	257	15200	18	57.3	380	560	2	1860	220	16	4
	MAC310/356HE	58.19	308.4	23400	22	68.2	380	560	3	2790	220	20	4
	MAC385/356HE	69.71	385.4	22800	20	85.2	380	560	3	2790	220	24	4
	MAC410/456HE	78.29	411	31200	23	90.6	380	560	4	3720	220	26	6
	MAC514/456HE	93.05	514	30400	21	113.2	380	560	4	3720	220	30	6
Fan dia. Φ630	MAC290/263HE	54.86	287.8	23600	30	64.2	380	630	2	4500	220	18	4.0
	MAC360/263HE	65.05	359.7	21600	28	80.3	380	630	2	4500	220	24	4
	MAC432/363HE	82.19	431.7	35400	30	95.5	380	630	3	6750	220	28	6
	MAC540/363HE	97.62	539.6	32400	28	119	380	630	3	6750	220	35	6
	MAC576/463HE	109.52	575.6	47200	30	127	380	630	4	9000	220	40	8
	MAC720/463HE	130.2	719.5	43200	28	159	380	630	4	9000	220	50	8

Capacity test condition: cold room temperature: 0℃, evaporation temperature: -8℃, DT: 8K, Refrigerant: R22.

4. 2 Fin space 6.0mm for temperature over -18℃

	Model	Capacity DT=8K	Area	Airflow	Range	Tube cubage	Fan motor				Defrosting heater		
							Voltage	Dia.	Qty	Input	Voltage	Input(KW)	
		kw	m^2	m^3/h	m	L	V	mm	n	w	V	For coil	For drain plate
Fan dia. Φ350	MAC12/135ME	2.95	11.5	2800	13	4.0	380	350	1	150	220	1.2	0.6
	MAC17/135ME	4..11	17.3	2500	12	6.0	380	350	1	150	220	1.2	0.6
	MAC23/235ME	5.9	23.0	5600	14	7.7	380	350	2	300	220	2.4	1.2
	MAC35/235ME	8.22	34.6	5000	13	11.5	380	350	2	300	220	3.6	1.2
	MAC35/335ME	8.87	34.6	8400	15	11.3	380	350	3	450	220	3.0	1.5
	MAC52/335ME	12.35	51.9	7500	14	17	380	350	3	450	220	4.5	1.5
Fan dia. Φ450	MAC33/145ME	7.26	32.6	5200	15	11.1	380	450	1	480	220	3.3	1.3
	MAC44/145ME	8.68	43.5	5000	14	14.7	380	450	1	480	220	4.4	1.3
	MAC65/245ME	14.54	65.2	10400	16	21.4	380	450	2	960	220	6.0	2.4
	MAC87/245ME	17.39	87	10000	15	28.5	380	450	2	960	220	8.0	2.4
	MAC98/345ME	21.95	98	15600	18	31.8	380	450	3	1440	220	9.0	3.3
	MAC131/345ME	26.03	130.6	15000	16	42.4	380	450	3	1440	220	12.0	3.3
	MAC131/445ME	29.17	130.6	20800	20	42.1	380	450	4	1920	220	12.0	3.8
	MAC174/445ME	34.68	174	20000	18	55	380	450	4	1920	220	16.0	3.8
Fan dia. Φ560	MAC141/256ME	30.1	140.8	16600	24	45.8	380	560	2	1860	220	12	4.0
	MAC176/256ME	35.24	176	15600	22	57.3	380	560	2	1860	220	16	4.0
	MAC210/356ME	43. 24	211.2	24900	26	68.2	380	560	3	2790	220	20	4.0
	MAC264/356ME	52.76	264	23400	24	85.2	380	560	3	2790	220	24	4.0
	MAC282/456ME	56.29	281.6	33200	28	90.6	380	560	4	3720	220	26	6.0
	MAC352/456ME	70.38	352	31200	26	113.2	380	560	4	3720	220	30	6.0
Fan dia. Φ630	MAC197/263ME	41.3	197.1	23600	28	64.2	380	630	2	4500	220	18	4.0
	MAC246/263ME	49.24	246.4	21600	24	80.3	380	630	2	4500	220	24	4.0
	MAC296/363ME	62	295.7	35400	30	95.5	380	630	3	6750	220	28	6.0
	MAC370/363ME	73.9	369.6	32400	26	119	380	630	3	6750	220	35	6.0
	MAC394/463ME	82.57	394.2	47200	30	127	380	630	4	9000	220	40	8.0
	MAC493/463ME	98.57	492.8	43200	28	159	380	630	4	9000	220	50	8.0

Capacity test condition: cold room temperature: 0℃, evaporation temperature: -8℃, DT: 8K, Refrigerant: R22.

4. 3 Fin space 8.5 mm for temperature over -25℃

	Model	Capacity DT=8K	Area	Airflow	Range	Tube cubage	Fan motor				Defrosting heater		
							Voltage	Dia.	Qty	Input	Voltage	Input(KW)	
		kw	m^2	m^3/h	m	L	V	mm	n	w	V	For coil	For drain plate
Fan dia. Φ350	MAC9/135LE	2.47	8.6	3000	13	4.0	380	350	1	150	220	1.2	0.6
	MAC13/135LE	3.33	13.0	2600	11	6.0	380	350	1	150	220	1.2	0.6
	MAC17/235LE	4.94	17.3	6000	13	7.7	380	350	2	300	220	2.4	1.2
	MAC26/235LE	6.65	25.9	5200	12	11.5	380	350	2	300	220	3.6	1.2
	MAC26/335LE	7.32	25.9	9000	14	11.3	380	350	3	450	220	3.0	1.5
	MAC39/335LE	9.98	38.9	7800	13	17	380	350	3	450	220	4.5	1.5
Fan dia. Φ450	MAC25/145LE	6.27	24.5	5000	14	11.1	380	450	1	480	220	3.3	1.3
	MAC33/145LE	7.79	32.6	4800	14	14.7	380	450	1	480	220	4.4	1.3
	MAC50/245LE	12.54	49.5	10000	18	21.4	380	450	2	960	220	6.0	2.4
	MAC65/245LE	15.49	65.2	9600	16	28.5	380	450	2	960	220	8.0	2.4
	MAC74/345LE	18.81	73.5	15000	20	31.8	380	450	3	1440	220	9.0	3.3
	MAC98/345LE	23.28	98.0	14400	18	42.4	380	450	3	1440	220	12.0	3.3
	MAC98/445LE	25.18	98.0	20000	22	42.1	380	450	4	1920	220	12.0	3.8
	MAC131/445LE	31.07	130.6	19200	20	55	380	450	4	1920	220	16.0	3.8
Fan dia. Φ560	MAC106/256LE	25.14	105.6	16600	24	45.8	380	560	2	1860	220	12	4.0
	MAC132/256LE	28.95	132.0	15600	22	57.3	380	560	2	1860	220	16	4.0
	MAC160/356LE	37.7	158.4	24900	26	68.2	380	560	3	2790	220	20	4.0
	MAC198/356LE	43.43	198.0	23400	24	85.2	380	560	3	2790	220	24	4.0
	MAC210/456LE	50.29	211.2	33200	28	90.6	380	560	4	3720	220	26	6.0
	MAC264/456LE	57.8	264.0	31200	26	113.2	380	560	4	3720	220	30	6.0
Fan dia. Φ630	MAC150/263LE	35.24	147.8	23600	28	64.2	380	630	2	4500	220	18	4.0
	MAC185/263LE	40.57	185.0	21600	24	80.3	380	630	2	4500	220	24	4.0
	MAC222/363LE	52.86	221.8	35400	30	95.5	380	630	3	6750	220	28	6.0
	MAC277/363LE	60.76	277.2	32400	26	119	380	630	3	6750	220	35	6.0
	MAC296/463LE	70.38	295.7	47200	30	127	380	630	4	9000	220	40	8.0
	MAC370/463LE	80.95	369.6	43200	28	159	380	630	4	9000	220	50	8.0

Capacity test condition: cold room temperature: 0℃, evaporation temperature: -8℃, DT: 8K,

4. 4 Fin space 10.0 mm for temperature over -35℃

	Model	Capacity DT=8K	Area	Airflow	Range	Tube cubage	Fan motor				Defrosting heater		
							Voltage	Dia.	Qty	Input	Voltage	Input(KW)	
		kw	m^2	m^3/h	m	L	V	mm	n	w	V	For coil	For drain plate
Fan dia. Φ450	MAC21/145JE	5.8	21.2	5000	14	11.1	380	450	1	480	220	3.3	1.3
	MAC28/145JE	7.22	28.3	4800	14	14.7	380	450	1	480	220	4.4	1.3
	MAC43/245JE	11.69	42.4	10000	18	21.4	380	450	2	960	220	6.0	2.4
	MAC57/245JE	14.54	56.6	9600	16	28.5	380	450	2	960	220	8.0	2.4
	MAC64/345JE	17.48	63.6	15000	20	31.8	380	450	3	1440	220	9.0	3.3
	MAC85/345JE	21.85	85.0	14400	18	42.4	380	450	3	1440	220	12.0	3.3
	MAC85/445JE	23.47	85.0	20000	22	42.1	380	450	4	1920	220	12.0	3.8
	MAC113/445JE	29.07	113.2	19200	20	55	380	450	4	1920	220	16.0	3.8
Fan dia. Φ560	MAC92/256JE	25.24	91.5	16600	24	45.8	380	560	2	1860	220	12	4.0
	MAC115/256JE	29.43	114.4	15600	22	57.3	380	560	2	1860	220	16	4.0
	MAC140/356JE	37.9	137.3	24900	26	68.2	380	560	3	2790	220	20	4.0
	MAC172/356JE	44.19	172	23400	24	85.2	380	560	3	2790	220	24	4.0
	MAC183/456JE	50.57	183	33200	28	90.6	380	560	4	3720	220	26	6.0
	MAC230/456JE	58.86	228.8	31200	26	113.2	380	560	4	3720	220	30	6.0
Fan dia. Φ630	MAC130/263JE	35.3	128.1	23600	28	64.2	380	630	2	4500	220	18	4.0
	MAC160/263JE	41.24	160.2	21600	24	80.3	380	630	2	4500	220	24	4.0
	MAC192/363JE	53.05	192.2	35400	30	95.5	380	630	3	6750	220	28	6.0
	MAC240/363JE	61.8	240.2	32400	26	119	380	630	3	6750	220	35	6.0
	MAC256/463JE	70.76	256.3	47200	30	127	380	630	4	9000	220	40	8.0
	MAC320/463JE	82.38	320.3	43200	28	159	380	630	4	9000	220	50	8.0

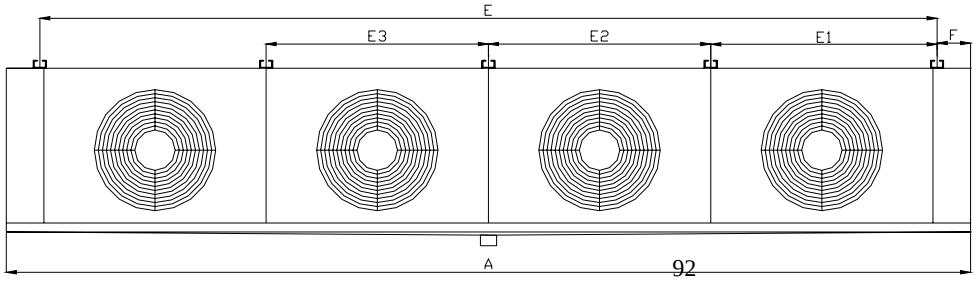
Capacity test condition: cold room temperature: 0℃, evaporation temperature: -8℃, DT: 8K, Refrigerant: R22.

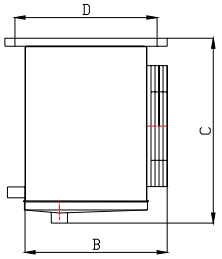
5. Overall diagrams and install sizes.

Model	Overall size(mm)			Install size (mm)						Connect pipe(mm)		Drainpipe
	A	B	C	D	E	E1	E2	E3	F	inlet	outlet	
MAC17/135HE MAC12/135ME MAC9/135LE	885	460	575	430	635	—	—	—	122.5	Φ12.7	Φ22	1”
MAC25/135HE MAC17/135ME MAC13/135LE	885	460	575	430	635	—	—	—	122.5	Φ12.7	Φ22	1”
MAC34/235HE MAC23/235ME MAC17/235LE	1485	460	575	430	1235	—	—	—	122.5	Φ12.7	Φ28	1”
MAC51/235HE MAC35/235ME MAC26/235LE	1485	460	575	430	1235	—	—	—	122.5	Φ12.7	Φ28	1”
MAC51/335HE MAC35/335ME MAC26/335LE	2085	460	575	430	1835	—	—	—	122.5	Φ12.7	Φ28	2”
MAC76/335HE MAC52/335ME MAC39/335LE	2085	460	575	430	1835	—	—	—	122.5	Φ16	Φ35	2”
MAC48/145HE MAC33/145ME MAC25/145LE MAC21/145JE	1205	600	730	575	890	—	—	—	155	Φ22	Φ35	1”
MAC64/145HE MAC44/145ME MAC33/145LE MAC28/145JE	1205	600	730	575	890	—	—	—	155	Φ22	Φ35	1”
MAC95/245HE MAC65/245ME MAC50/245LE MAC43/245JE	2055	600	730	575	1740	870	—	—	155	Φ22	Φ42	2”
MAC127/245HE MAC87/245ME MAC65/245LE MAC57/245JE	2055	600	730	575	1740	870	—	—	155	Φ22	Φ42	2”
MAC143/345HE MAC98/345ME MAC74/345LE MAC64/345JE	2905	600	730	575	2590	870	850	—	155	Φ28	Φ42	2-1”
MAC191/345HE MAC131/345ME MAC98/345LE MAC85/345JE	2905	600	730	575	2590	870	850	—	155	Φ28	Φ42	2-1”
MAC191/445HE MAC131/445ME MAC98/445LE MAC85/445JE	3755	600	730	575	3440	870	850	850	155	Φ28	Φ42	2”
MAC254/445HE MAC174/445ME MAC131/445LE MAC113/445JE	3755	600	730	575	3440	870	850	850	155	Φ28	Φ54	2”

MAC206/256HE MAC141/256ME MAC106/256LE MAC92/256JE	2577	715	890	615	2240	1120	1120	—	166	φ28	φ54	2-1”
MAC257/256HE MAC176/256ME MAC132/256LE MAC115/256JE	2577	715	890	615	2240	1120	1120	—	166	φ28	φ54	2-1”
MAC310/356HE MAC210/356ME MAC160/356LE MAC140/356JE	3677	715	890	615	3340	1120	1100	—	166	φ35	φ54	2-1”
MAC385/356HE MAC264/356ME MAC198/356LE MAC172/356JE	3677	715	890	615	3340	1120	1100	—	166	φ35	φ54	2-1”
MAC410/456HE MAC282/456ME MAC210/456LE MAC183/456JE	4777	715	890	615	4440	1120	1100	1100	166	2× φ28	2× φ54	2-2”
MAC514/456HE MAC352/456ME MAC264/456LE MAC230/455JE	4777	715	890	615	4440	1120	1100	1100	166	2× φ28	2× φ54	2-2”
MAC290/263HE MAC197/263ME MAC150/263LE MAC130/263JE	2577	775	1186	685	2240	1120	1120	—	166	φ28	φ54	2-1”
MAC360/263HE MAC240/263ME MAC185/263LE MAC160/263JE	2577	775	1186	685	2240	1120	1120	—	166	φ28	φ54	2-1”
MAC430/363HE MAC296/363ME MAC222/363LE MAC190/363JE	3677	775	1186	685	3340	1120	1100	—	166	φ35	φ54	2-1”
MAC540/363HE MAC370/363ME MAC277/363LE MAC240/363JE	3677	775	1186	685	3340	1120	1100	—	166	φ35	φ54	2-1”
MAC576/463HE MAC394/463ME MAC296/463LE MAC286/463JE	4777	775	1186	685	4440	1120	1100	1100	166	2× φ28	2× φ54	2-2”
MAC720/463HE MAC493/463ME MAC370/463LE MAC320/463JE	4777	775	1186	685	4440	1120	1100	1100	166	2× φ28	2× φ54	2-2”

Overall Size





6、 Selection explanation ：

The capacity of air cooler is nominal cooling capacity. User should select the suitable type items according to refrigerant, cold room temperature and heat transfer temperature difference. The practical cooling capacity of air cooler can be figured out according to below expressions:

$Q_R = Q_N \times A_1 \times A_2$

Q_R —— the practical cooling capacity (KW)

Q_N —— nominal cooling capacity (KW)

A1 —— temperature influences coefficient (table 1)

A2 —— refrigerant influences coefficient (table2)

Temperature influences coefficient A_1（table 1）

Heat transfer temp. difference DT（℃）	Cold room temp. （℃）													
	8	5	4	3	2	1	0	-5	-10	-15	-20	-25	-30	-35
5	0.73	0.73	0.71	0.69	0.67	0.65	0.63	0.61	0.60	0.58	0.56	0.55	0.54	0.54
6	0.88	0.88	0.85	0.83	0.80	0.78	0.75	0.73	0.71	0.70	0.68	0.66	0.65	0.65
7	1.03	1.03	1.0	0.97	0.94	0.91	0.88	0.85	0.83	0.81	0.79	0.77	0.76	0.76
8	1.17	1.17	1.14	1.10	1.07	1.04	1.0	0.98	0.95	0.93	0.90	0.88	0.87	0.87
9	1.32	1.32	1.28	1.24	1.20	1.16	1.13	1.10	1.07	1.04	1.02	0.99	0.98	0.98
10	1.47	1.46	1.42	1.38	1.34	1.29	1.25	1.22	1.19	1.16	1.13	1.10	1.09	1.09

heat transfer temperature difference（DT） = cold room temperature — evaporate temperature.

Refrigerant influences coefficient A2（table 2）

refrigerant	Cold room temperature （℃）													
	8	5	4	3	2	1	0	-5	-10	-15	-20	-25	-30	-35
R22	1	1	1	1	1	1	1	1	1	1	1	1	1	1
R134a	0.98	0.97	0.97	0.97	0.96	0.96	0.96	0.94	0.93	0.91	-	-	-	-
R404A	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05

Sample of selection:

Ask for the capacity of air cooler is 20 kw, cold room temp. is -25℃, evaporate temp. -32℃, the refrigerant R22

The step of selection:

1）figure out heat transfer temperature difference：DT＝ -25-(-32) = 7℃

2) according to heat transfer temperature difference 7℃ and cold room temperature -25℃，figure out temperature influences coefficient A1，from table 1，A1＝0.77

3) according to refrigerant, confirm refrigerant influences coefficient, from table 2, A2＝1

4) figure out nominal capacity of air cooler

QN＝QR÷（A1×A2）＝20÷（0.77×1）= 25.97 (KW)

5) the model of air cooler

According to cold room -25℃, select air cooler with fin space 8.5.

Basis on nominal capacity 25.97KW, select the model of air cooler：MAC98/445LE。