

# MKM

COMMERCIAL REFRIGERATION  
AIR CONDITIONING AND HEATING SYSTEMS



ROOF TOP - MKM  
VPU - Variable Package Unit

ISO  
9001  
2000

# Contents

---

FEATURES	4
GENERAL DATA	6
ELECTRICAL DATA	7

## MODELS

---

V-8	8
V-11	10
V-14	12
V-16	14
V-18	16
V-21	18
V-25	20
V-28	22
V-30	24
V-32	26



## M.K.M.ac Package Air Conditioning Units

MKM Air Conditioning has developed a new line of package unit VPU - Variable Package Unit – born out of a desire for innovation excellence and as a manufacturing breakthrough in the Israeli production market of air conditioning units.

VPU has been developed by the engineering team of MKM after many years of experienced designing and specializing in package air conditioning units. The VPU design redefines the concept of innovation precision efficiency and engineering simplicity, with a short financial ROI for the customer, all based on superior energy efficiency.

VPU engineering design also emphasis on “Low Foot Print”, design for the customers and architects desires and needs.

In addition, the simplicity of the installation work for the installers was taken into consideration, reducing the need to carry out piping connections and field test (as is customary in split units).

This reduces installation costs and leaves only the simple duct and electrical connection as easy as “plug and play”.

The new MKM VPU- new variable speed compressor design enables a unique level of comfort to the system user, thanks to precise temperature and humidity control across a wide range of conditions. It delivers excellent low speed performance and reduces sound during cycle transitions in reversible systems and defrosts. In addition, an expanded operating envelope provides the greatest flexibility in design and desired condition with a high turndown ratio of 120-16 RPS, for less cycling.

Higher precision, better dehumidification, and best seasonal efficiency, along with longer life span.

VPU covers most of the package line in the market according to the requirements of the market needs, ranges from 2 to 36 TR.

### ***Among the important features of the units are the following:***

- VSC-Variable Speed Compressor
- ECM motor (optional)
- EEV- Electronic Expansion Valve
- PIDC-Proportional Integral Differential Controllers

This new innovative VPU characteristics create a winning combination of high performance unit with an outstanding ROI as well.

We hope that there will be widespread use of this catalogue and MKM-VPU units.

### ***Compressors***

- Scroll high E.E.R
- Low noise operation
- Complete motor protection
- Vibration absorption system
- Full electronic control
- Oil level indicator

### ***Axial Fans***

External rotor type axial fans, equipped with three phase direct drive motors VSD or direct drive, low noise, provided with a protective outlet grille.

### **Condenser / Evaporator**

Constructed of seamless 3/8" (5/8" option) copper tubes, corrugated edge aluminum fins, and galvanized steel or stainless steel frames by demand. Tubes are mechanically expanded into die-formed fin collars, providing a uniform mechanical bond that assures maximum heat transfer efficiency.

### **Refrigerant System**

High-quality, carefully selected components ensure reliable and efficient system operation.

The system includes:

- Electronic expansion valve or thermostatic expansion-valves for heating and cooling by demand.
- Refrigerant charge indicator
- All the necessary pressure protections
- All the necessary electrical protections
- All the necessary flow protections

### **Electrical Panel**

- Electric panel consist of:
- Compressor contactor,
- Fan motor contactor or vsd, compressor protection breaker,
- Fan protection breaker,
- Phase sequence relay
- Reliable microprocessor temperature control unit with full function display which dramatically reducing maintenance cost thanks to its microprocessor intelligent system

***For special applications, please contact our Engineering Department, or sales manager.***



## ► General Data

Series		INVERTER									
Model		V8	V11	V14	V16	V18	V21	V25	V28	V30	V32
Nominal Capacities <sup>(1)</sup>	TR	8	11	14	16	18	21	25	28	30	32
Max Compressor Capacities <sup>(2)</sup>	TR	12.2	19.9	19.9	19.9	21.2	21.2	27.1	29.1	33	33
Cooling	kW	27.3	37.5	47.8	54.6	61.4	71.7	85.3	95.6	102.4	109.2
	kBTU/Hr	96	132	168	192	216	252	300	336	360	384
Stage System	%	0-100									
Heating <sup>(2)</sup>	kW	18	25	32	36	41	48	57	63	68	72
<b>Evaporator</b>											
<b>Coil</b>											
Copper Tubes		3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
Rows Deep		4	4	4	4	4	4	4	4	4	4
Fins	FPI	10	10	10	10	10	10	10	10	10	10
Total Face-Area	SQ.M.	0.48	0.67	0.85	0.97	1.09	1.27	1.51	1.69	1.81	1.93
	SQ.FT.	5.2	7.2	9.1	10.4	11.7	13.7	16.3	18.2	19.5	20.8
<b>Fans Evaporator</b>											
Normal Air Flow	m <sup>3</sup> /h	4400	6100	7700	8800	9900	11600	13800	15500	16600	17700
	CFM	2600	3575	4550	5200	5850	6825	8125	9100	9750	10400
Pressure <sup>(4)</sup>	Pa	350	350	350	350	350	350	350	350	350	350
Power	kW	1.3	1.3	1.4	1.4	2.1	2.7	2	2.7	3	3.5
<b>Filters<sup>(5)</sup></b>											
Total Face-Area	SQ.FT.	8	11	13	15	17	20	24	26	28	30
<b>Compressor</b>											
Refrigerant		R 410A	R 410A	R 410A	R 410A	R 410A	R 410A	R 410A	R 410A	R 410A	R 410A
Quantity		1	2	2	2	2	2	3	3	2	2
Power consumption	kW	6.7	9.8	13	15.1	17.3	21.3	23.7	26.6	31.4	33.3
Cooling Circuits	No	1	1	1	1	1	1	1	1	1	1
<b>Condenser</b>											
Copper Tubes		3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
Rows Deep		4	4	4	4	4	4	4	4	4	4
Fins	FPI	12	12	12	12	12	12	12	12	10	11
Total Face-Area	SQ.M.	0.97	1.34	1.69	1.93	2.17	2.55	3.03	3.38	3.62	3.86
	SQ.FT.	10.4	14.4	18.2	20.8	23.4	27.4	32.6	36.4	39	41.6
Quantity		1	1	1	1	1	1	1	1	1	1
<b>Fans Condenser</b>											
Diameter	mm	630	710	710	710	710	800	710	710	800	800
Quantity		2	2	2	2	2	2	3	3	3	3
Normal Air Flow	m <sup>3</sup> /hr	9300	10000	10000	12000	14000	16000	12000	14000	16000	16000
	CFM	5500	6100	6100	7300	8300	9800	7300	8300	9700	9700
Power	kW	0.95	0.93	0.93	0.81	0.7	0.62	0.81	0.7	0.62	0.62
Velocity	RPM	1440	900	900	900	900	735	900	900	735	735
<b>Dimensions</b>											
Length	cm	170	180	190	190	200	210	200	200	210	210
Width	cm	170	190	190	190	190	210	260	260	290	290
Height	cm	190	200	230	240	260	260	250	270	260	270
Weight	kg	820	950	1090	1120	1230	1350	1470	1550	1680	1720

## Electrical Data

Model		V8	V11	V14	V16	V18	V21	V25	V28	V30	V32
Power Input	kW	9.9	13	16.3	18.1	20.8	25.2	28.1	31.4	36.3	38.7

## Efficiency

Model		V8	V11	V14	V16	V18	V21	V25	V28	V30	V32
COP <sup>(6)</sup>		2.8	2.9	2.9	3	3	2.8	3	3	2.8	2.8
EER		9.7	10.2	10.3	10.6	10.4	10	10.7	10.7	9.9	9.9
IPLV		5.6	5.9	6	6.1	6	5.8	6.2	6.2	5.7	5.7

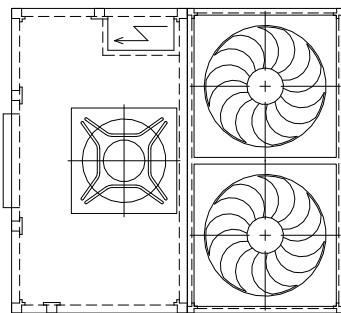
### Notes:

- Capacities are according to :  
Cooling at Outdoor Air DB=35°C WB=26°C and Indoor Air DB=27°C RH=50%  
mix air -50% fresh air 50% return air
- In max rpm for pulldown condition
- Electrical Heater is Optional
- Optional 1000 Pa
- Filter FARR30/30 is Optional
- Calculated
- All the data is preliminary, could be changes without notice

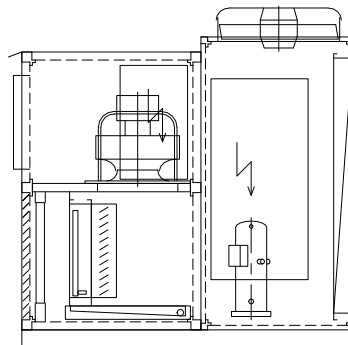
## General View

### Top View

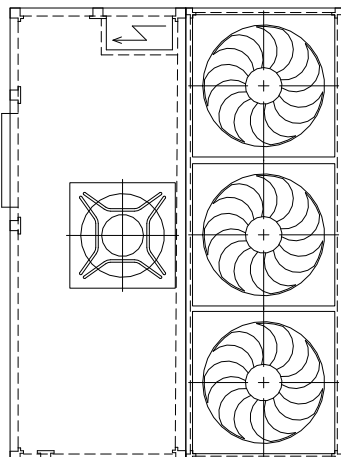
► Models: V-8, V-11, V-14, V-16, V-18, V-21



### Side View



► Models: V-25, V-28, V-30, V-32



Performance		
Refrigerant		R-410A
Cooling capacity <sup>(1)</sup>	kWatt	27.3
	kBTU/Hr	96
Heating capacity <sup>(2)</sup>	kWatt	34
	kBTU/Hr	119.5
Power consumption <sup>(3)</sup>	kWatt	9.9
Operating current	A	11.5
C.O.P		2.8
EER		9.7

◀ Notes:

1. Nominal cooling capacity based on indoor air DB=27°C RH=50% and outdoor air temp. DB=35°C WB=26°C.
2. Nominal heating capacity based on indoor air DB=21°C and outdoor air DB=6°C.
3. Power supply 400v, 3ph, 50hz
4. MIN-2.5TR, MAX-12.2TR
5. One cooling circuit
6. Net static pressure available at fan discharge at nominal capacity.
7. Optional regular centrifugal fan
8. Optional regular motor
9. Optional

Technical Data			
Compressor	Type	Unit	V-Data
	Quantity		1
		Comp. A	0-100%
	Power	kw	6.7
Evaporator side <sup>(5)</sup>			
Air flow		m <sup>3</sup> /hr	4400
		cfm	2600
EC Centrifugal fan <sup>(7)</sup>	Size	cm	63*63*51
	Static Pressure <sup>(6)</sup>	Pa	350
	Motor	kW	1.3
Evaporator coil	Face area	m <sup>2</sup>	0.48
		ft <sup>2</sup>	5.2
	Rows deep		4
Filter	12% deep 2"	Qty.-dim.	2-24"x24"
	30% deep 2" <sup>(9)</sup>		2-24"x24"
Heating elemnts <sup>(9)</sup>		kw	18/24
Condenser side <sup>(5)</sup>			
Condenser coil	Quantity		1
	Face area	m <sup>2</sup>	0.87
		ft <sup>2</sup>	9.4
EC Axial fan	Diameter	mm	630
	Quantity		2
	Air flow	m <sup>3</sup> /hr	9350
		cfm	5500
	Motor	kW	0.95
		RPM	1440

Dimensions		
Length (A)	cm	170
Width (B)	cm	170
Height (C)	cm	180
Weight	kg	790

**Cooling Capacity - (Capacities are According to A.R.I. Standard)**

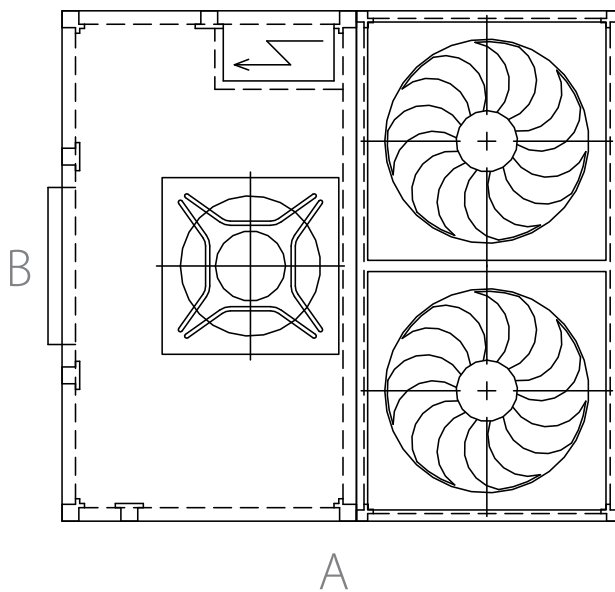
Refrigerant R-410A		return air		mixed	fresh air
Entering Air Temperature	DB/WB, °C	20/15.2	24/17	27/20.5	35/27
	DB/WB, °F	68/59.3	75.2/62.6	80.6/69	95/80.6
Outside Air Temp °C (°F)					
35 (95)	TC	96	96	96	106
	HC	70	77	60	49
	KW	8	8	8	8
40 (104)	TC	92	92	96	102
	HC	68	75	60	52
	KW	8	8	8	8
45 (113)	TC	85	85	89	96
	HC	65	72	56	49
	KW	8	8	8	8

◀ Notes:

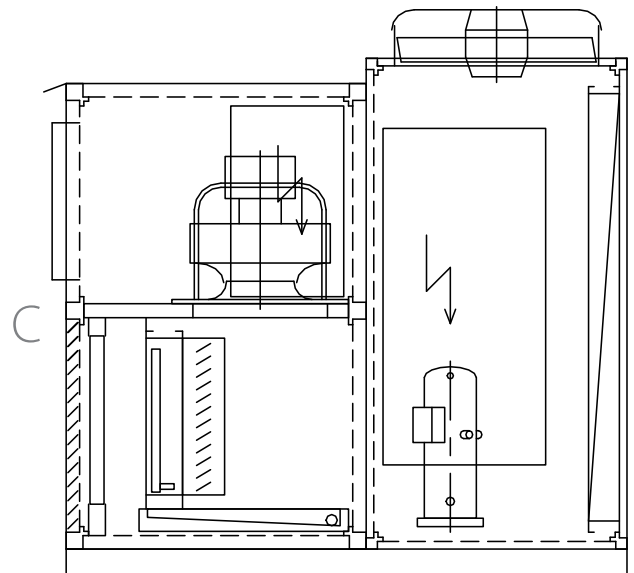
TC-Total Cooling Capacity, kBTU/Hr  
 HC-Heat Capacity, kBTU/Hr  
 KW-Compressor Power Input, kW

► Model Plan: V-8

Top View



Side View





Performance		
Refrigerant		R-410A
Cooling capacity <sup>(1)</sup>	kWatt	37.5
	kBTU/Hr	132
Heating capacity <sup>(2)</sup>	kWatt	47.3
	kBTU/Hr	166.3
Power consumption <sup>(3)</sup>	kWatt	13
Operating current	A	20.3
C.O.P		2.9
EER		10.2

◀ Notes:

1. Nominal cooling capacity based on indoor air DB=27°C RH=50% and outdoor air temp. DB=35°C WB=26°C.
2. Nominal heating capacity based on indoor air DB=21°C and outdoor air DB=6°C.
3. Power supply 400v, 3ph, 50hz
4. MIN-2.5TR, MAX-19.9TR
5. One cooling circuit
6. Net static pressure available at fan discharge at nominal capacity.
7. Optional regular centrifugal fan
8. Optional regular motor
9. Optional

Technical Data				
Compressor	Type	Unit	V-Data	
	Quantity		2	
			Comp. A	0-27%
			Comp. B	73%
			Comp. A+B	100%
	Power	kw	9.8	

Dimensions		
Length (A)	cm	180
Width (B)	cm	190
Height (C)	cm	200
Weight	kg	950

Evaporator side <sup>(5)</sup>			
Air flow		m <sup>3</sup> /hr	6100
		cfm	3575
EC Centrifugal fan <sup>(7)</sup>	Size	cm	63*63*51
	Static Pressure <sup>(6)</sup>	Pa	350
	Motor	kW	1.3
Evaporator coil	Face area	m <sup>2</sup>	0.67
		ft <sup>2</sup>	7.2
Filter	12% deep 2"	Qty.-dim.	4
			3-24"x24"
		30% deep 2" <sup>(9)</sup>	3-24"x24"
Heating elemnts <sup>(9)</sup>		kw	25/33

Condenser side <sup>(5)</sup>				
Condenser coil	Quantity		1	
		Face area	m <sup>2</sup>	1.21
			ft <sup>2</sup>	13
EC Axial fan	Diameter	mm	710	
		Quantity	2	
	Air flow	m <sup>3</sup> /hr	10000	
		cfm	6100	
	Motor	kW	0.93	
		RPM	900	

**Cooling Capacity - (Capacities are According to A.R.I. Standard)**

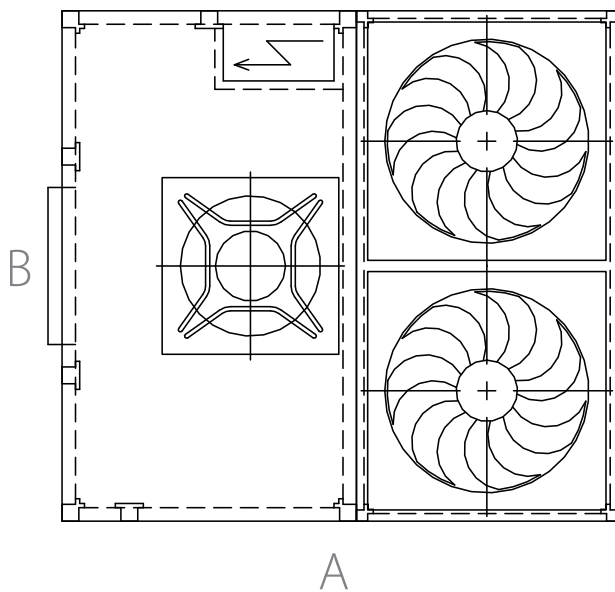
Refrigerant R-410A		return air	mixed	fresh air	
Entering Air Temperature	DB/WB, °C	20/15.2	24/17	27/20.5	35/27
	DB/WB, °F	68/59.3	75.2/62.6	80.6/69	95/80.6
Outside Air Temp °C (°F)					
35 (95)	TC	127	127	131	140
	HC	94	102	83	73
	KW	10.3	10.3	10.3	10.3
40 (104)	TC	124	124	127	138
	HC	92	101	81	72
	KW	10.6	10.6	10.6	10.6
45 (113)	TC	120	120	120	133
	HC	90	98	78	70
	KW	11	11	11	11

◀ Notes:

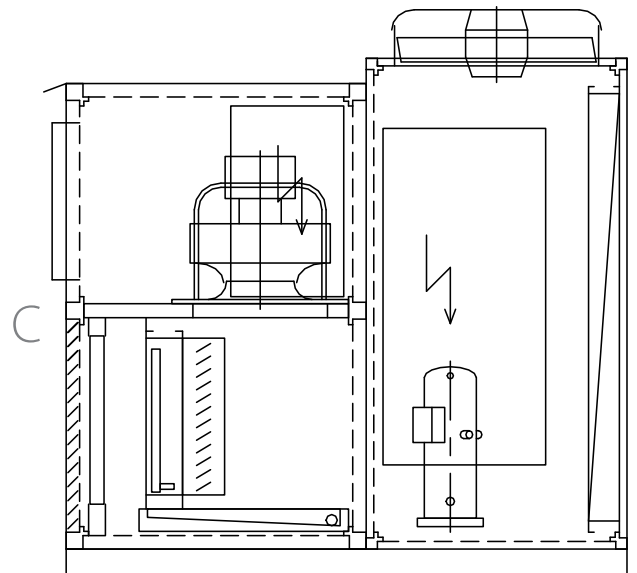
TC-Total Cooling Capacity, kBTU/Hr  
 HC-Heat Capacity, kBTU/Hr  
 KW-Compressor Power Input, kW

► Model Plan: **V-11**

Top View



Side View



Performance		
Refrigerant		R-410A
Cooling capacity <sup>(1)</sup>	kWatt	47.8
	kBTU/Hr	168
Heating capacity <sup>(2)</sup>	kWatt	60.8
	kBTU/Hr	213.8
Power consumption <sup>(3)</sup>	kWatt	16.3
Operating current	A	23.9
C.O.P		2.9
EER		10.3

◀ Notes:

1. Nominal cooling capacity based on indoor air DB=27°C RH=50% and outdoor air temp. DB=35°C WB=26°C.
2. Nominal heating capacity based on indoor air DB=21°C and outdoor air DB=6°C.
3. Power supply 400v, 3ph, 50hz
4. MIN-2.5TR, MAX-19.9TR
5. One cooling circuit
6. Net static pressure available at fan discharge at nominal capacity.
7. Optional regular centrifugal fan
8. Optional regular motor
9. Optional

Technical Data				
Compressor	Type	Unit	V-Data	
	Quantity		2	
			Comp. A	0-45%
			Comp. B	55%
			Comp. A+B	100%
	Power	kw	13	

Dimensions		
Length (A)	cm	190
Width (B)	cm	190
Height (C)	cm	220
Weight	kg	1050

Evaporator side <sup>(5)</sup>			
Air flow		m <sup>3</sup> /hr	7700
		cfm	4550
EC Centrifugal fan <sup>(7)</sup>	Size	cm	63*63*51
	Static Pressure <sup>(6)</sup>	Pa	350
	Motor	kW	1.4
Evaporator coil	Face area	m <sup>2</sup>	0.85
		ft <sup>2</sup>	9.1
Filter	12% deep 2"	Qty.-dim.	2-24"x24"
			2-20"x24"
		30% deep 2" <sup>(9)</sup>	2-24"x24"
			2-20"x24"
Heating elemnts <sup>(9)</sup>		kw	32/42

Condenser side <sup>(5)</sup>			
Condenser coil	Quantity		1
	Face area	m <sup>2</sup>	1.52
		ft <sup>2</sup>	16.4
EC Axial fan	Diameter	mm	710
	Quantity		2
	Air flow	m <sup>3</sup> /hr	10000
		cfm	6100
	Motor	kW	0.93
		RPM	900

**Cooling Capacity - (Capacities are According to A.R.I. Standard)**

Refrigerant R-410A		return air		mixed	fresh air
Entering Air Temperature	DB/WB, °C	20/15.2	24/17	27/20.5	35/27
	DB/WB, °F	68/59.3	75.2/62.6	80.6/69	95/80.6
Outside Air Temp °C (°F)					
35 (95)	TC	163.2	163.2	168.7	182.4
	HC	117	114	108	104
	KW	13	13	13	13
40 (104)	TC	157.1	157.1	168.4	178.9
	HC	114	111	108	102
	KW	13.5	13.5	13.5	13.5
45 (113)	TC	156	156	168	178
	HC	113	110	107	102
	KW	14.6	14.6	14.6	14.6

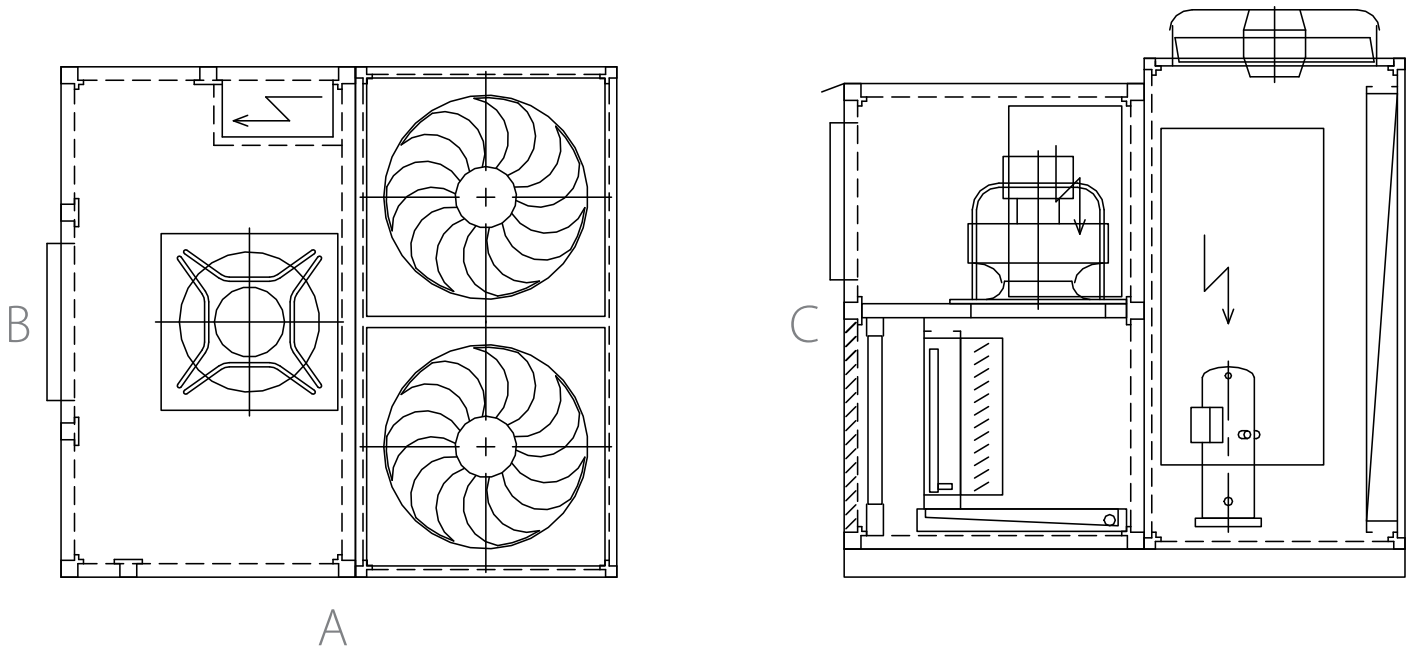
◀ Notes:

TC-Total Cooling Capacity, kBTU/Hr  
 HC-Heat Capacity, kBTU/Hr  
 KW-Compressor Power Input, kW

► Model Plan: **V-14**

Top View

Side View



Performance		
Refrigerant		R-410A
Cooling capacity <sup>(1)</sup>	kWatt	54.6
	kBTU/Hr	192
Heating capacity <sup>(2)</sup>	kWatt	69.7
	kBTU/Hr	245.1
Power consumption <sup>(3)</sup>	kWatt	18.1
Operating current	A	27.1
C.O.P		3
EER		10.6

◀ Notes:

1. Nominal cooling capacity based on indoor air DB=27°C RH=50% and outdoor air temp. DB=35°C WB=26°C.
2. Nominal heating capacity based on indoor air DB=21°C and outdoor air DB=6°C.
3. Power supply 400v, 3ph, 50hz
4. MIN-2.5TR, MAX-19.9TR
5. One cooling circuit
6. Net static pressure available at fan discharge at nominal capacity.
7. Optional regular centrifugal fan
8. Optional regular motor
9. Optional

Technical Data				
Compressor	Type	Unit	V-Data	
	Quantity		2	
			Comp. A	0-52%
			Comp. B	48%
			Comp. A+B	100%
	Power	kw	15.1	

Dimensions		
Length (A)	cm	190
Width (B)	cm	190
Height (C)	cm	230
Weight	kg	1090

Evaporator side <sup>(5)</sup>			
Air flow		m <sup>3</sup> /hr	8800
		cfm	5200
EC Centrifugal fan <sup>(7)</sup>	Size	cm	63*63*51
	Static Pressure <sup>(6)</sup>	Pa	350
	Motor	kW	1.4
Evaporator coil	Face area	m <sup>2</sup>	0.97
		ft <sup>2</sup>	10.4
Filter	Rows deep		4
	12% deep 2"	Qty.-dim.	4-24"x24"
	30% deep 2" <sup>(9)</sup>		4-24"x24"
Heating elemnts <sup>(9)</sup>		kw	36/48

Condenser side <sup>(5)</sup>			
Condenser coil	Quantity		1
	Face area	m <sup>2</sup>	1.74
		ft <sup>2</sup>	18.7
EC Axial fan	Diameter	mm	710
	Quantity		2
	Air flow	m <sup>3</sup> /hr	12000
		cfm	7300
	Motor	kW	0.81
		RPM	900

**Cooling Capacity - (Capacities are According to A.R.I. Standard)**

Refrigerant R-410A		return air		mixed	fresh air
Entering Air Temperature	DB/WB, °C	20/15.2	24/17	27/20.5	35/27
	DB/WB, °F	68/59.3	75.2/62.6	80.6/69	95/80.6
Outside Air Temp °C (°F)					
35 (95)	TC	187.1	187.1	192.3	207.6
	HC	137	160	124	108
	KW	15.1	15.1	15.1	15.1
40 (104)	TC	186.1	186.1	192.3	206.3
	HC	137	160	124	108
	KW	15.8	15.8	15.8	15.8
45 (113)	TC	185.4	185.4	191.6	178.9
	HC	136	158	123	93
	KW	17	17	17	17

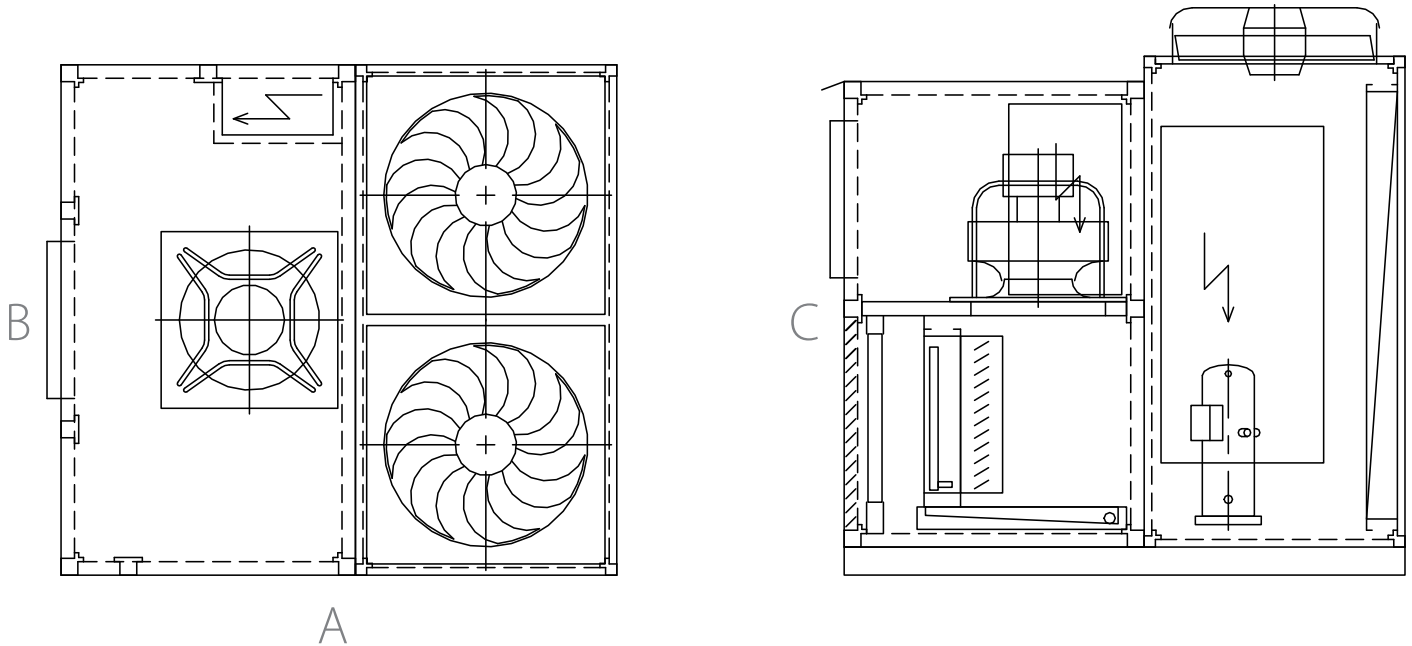
◀ Notes:

TC-Total Cooling Capacity, kBTU/Hr  
 HC-Heat Capacity, kBTU/Hr  
 KW-Compressor Power Input, kW

► Model Plan: **V-16**

Top View

Side View



Performance		
Refrigerant		R-410A
Cooling capacity <sup>(1)</sup>	kWatt	61.4
	kBTU/Hr	216
Heating capacity <sup>(2)</sup>	kWatt	78.7
	kBTU/Hr	276.7
Power consumption <sup>(3)</sup>	kWatt	20.8
Operating current	A	30.9
C.O.P		3
EER		10.4

◀ Notes:

1. Nominal cooling capacity based on indoor air DB=27°C RH=50% and outdoor air temp. DB=35°C WB=26°C.
2. Nominal heating capacity based on indoor air DB=21°C and outdoor air DB=6°C.
3. Power supply 400v, 3ph, 50hz
4. MIN-2.5TR, MAX-21.1TR
5. One cooling circuit
6. Net static pressure available at fan discharge at nominal capacity.
7. Optional regular centrifugal fan
8. Optional regular motor
9. Optional

Technical Data				
Compressor	Type	Unit	V-Data	
	Quantity		2	
			Comp. A	0-51%
			Comp. B	49%
			Comp. A+B	100%
	Power	kw	17.3	

Dimensions		
Length (A)	cm	200
Width (B)	cm	190
Height (C)	cm	240
Weight	kg	1160

Evaporator side <sup>(5)</sup>			
Air flow		m <sup>3</sup> /hr	9900
		cfm	5850
EC Centrifugal fan <sup>(7)</sup>	Size	cm	63*63*51
	Static Pressure <sup>(6)</sup>	Pa	350
	Motor	kW	2.1
Evaporator coil	Face area	m <sup>2</sup>	1.09
		ft <sup>2</sup>	11.7
Filter	12% deep 2"	Qty.-dim.	4
			6-20"x20"
		30% deep 2" <sup>(9)</sup>	6-20"x20"
Heating elemnts <sup>(9)</sup>		kw	41/54

Condenser side <sup>(5)</sup>				
Condenser coil	Quantity		1	
		Face area	m <sup>2</sup>	1.96
			ft <sup>2</sup>	21.1
EC Axial fan	Diameter	mm	710	
		Quantity	2	
	Air flow	m <sup>3</sup> /hr	14000	
		cfm	8300	
	Motor	kW	0.7	
		RPM	900	

**Cooling Capacity - (Capacities are According to A.R.I. Standard)**

Refrigerant R-410A		return air		mixed	fresh air
Entering Air Temperature	DB/WB, °C	20/15.2	24/17	27/20.5	35/27
	DB/WB, °F	68/59.3	75.2/62.6	80.6/69	95/80.6
Outside Air Temp °C (°F)					
35 (95)	TC	210	210	217.2	232.6
	HC	184	180	140	119
	KW	17.2	17.2	17.2	17.2
40 (104)	TC	208.7	208.7	216.2	231.2
	HC	182	178	138	119
	KW	17.9	17.9	17.9	17.9
45 (113)	TC	208	208	116	231
	HC	180	177	137	119
	KW	19.5	19.5	19.5	19.5

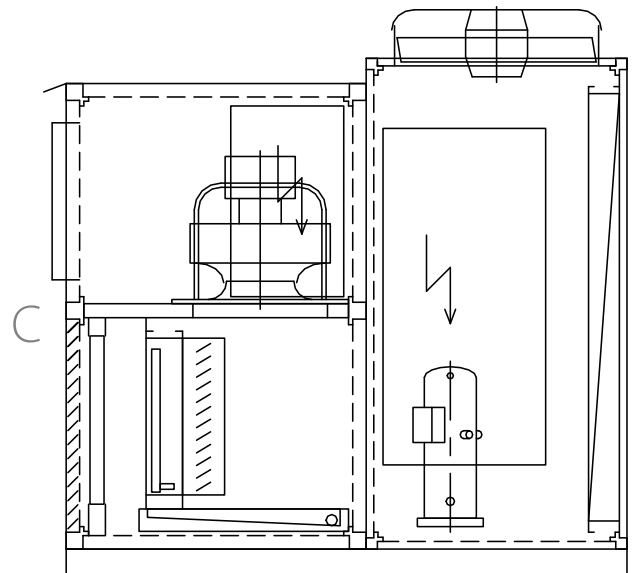
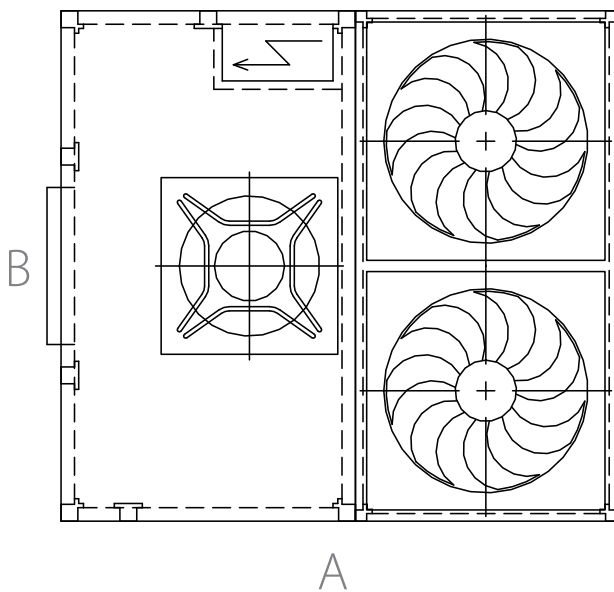
◀ Notes:

TC-Total Cooling Capacity, kBTU/Hr  
 HC-Heat Capacity, kBTU/Hr  
 KW-Compressor Power Input, kW

► Model Plan: **V-18**

Top View

Side View





Performance		
Refrigerant		R-410A
Cooling capacity <sup>(1)</sup>	kWatt	71.7
	kBTU/Hr	252
Heating capacity <sup>(2)</sup>	kWatt	93
	kBTU/Hr	327
Power consumption <sup>(3)</sup>	kWatt	25.2
Operating current	A	37.1
C.O.P		2.8
EER		10

◀ Notes:

1. Nominal cooling capacity based on indoor air DB=27°C RH=50% and outdoor air temp. DB=35°C WB=26°C.
2. Nominal heating capacity based on indoor air DB=21°C and outdoor air DB=6°C.
3. Power supply 400v, 3ph, 50hz
4. MIN-2.5TR, MAX-21.1TR
5. One cooling circuit
6. Net static pressure available at fan discharge at nominal capacity.
7. Optional regular centrifugal fan
8. Optional regular motor
9. Optional

Technical Data				
Compressor	Type	Unit	V-Data	
	Quantity		2	
			Comp. A	0-58%
			Comp. B	42%
			Comp. A+B	100%
	Power	kw	21.3	

Dimensions		
Length (A)	cm	210
Width (B)	cm	210
Height (C)	cm	250
Weight	kg	1310

Evaporator side <sup>(5)</sup>			
Air flow		m <sup>3</sup> /hr	11600
		cfm	6825
EC Centrifugal fan <sup>(7)</sup>	Size	cm	63*63*51
	Static Pressure <sup>(6)</sup>	Pa	350
	Motor	kW	2.7
Evaporator coil	Face area	m <sup>2</sup>	1.27
		ft <sup>2</sup>	13.7
Filter	12% deep 2"	Qty.-dim.	4
			3-24"x24"
		30% deep 2" <sup>(9)</sup>	3-20"x20"
			3-24"x24"
Heating elemnts <sup>(9)</sup>		kw	47/63

Condenser side <sup>(5)</sup>				
Condenser coil	Quantity		1	
		Face area	m <sup>2</sup>	2.29
			ft <sup>2</sup>	24.7
EC Axial fan	Diameter	mm	800	
		Quantity	2	
	Air flow	m <sup>3</sup> /hr	16000	
		cfm	9800	
	Motor	kW	0.62	
		RPM	735	

**Cooling Capacity - (Capacities are According to A.R.I. Standard)**

Refrigerant R-410A		return air		mixed	fresh air
Entering Air Temperature	DB/WB, °C	20/15.2	24/17	27/20.5	35/27
	DB/WB, °F	68/59.3	75.2/62.6	80.6/69	95/80.6
Outside Air Temp °C (°F)					
35 (95)	TC	244.9	244.9	253.4	271.2
	HC	164	196	165	143
	KW	21.3	21.3	21.3	21.3
40 (104)	TC	240.8	240.8	249	266.7
	HC	162	193	163	141
	KW	21.8	21.8	21.8	21.8
45 (113)	TC	233.6	233.6	243.2	259.2
	HC	159	190	160	138
	KW	22.7	22.7	22.7	22.7

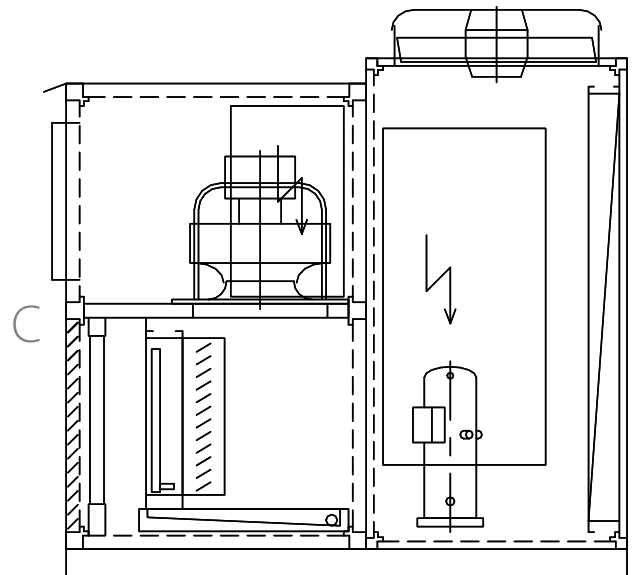
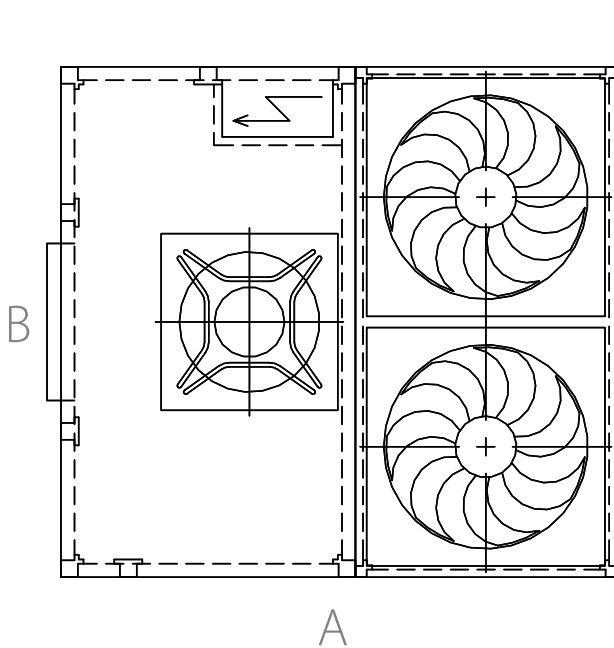
◀ Notes:

TC-Total Cooling Capacity, kBTU/Hr  
 HC-Heat Capacity, kBTU/Hr  
 KW-Compressor Power Input, kW

► Model Plan: **V-21**

Top View

Side View



Performance		
Refrigerant		R-410A
Cooling capacity <sup>(1)</sup>	kWatt	85.3
	kBTU/Hr	300
Heating capacity <sup>(2)</sup>	kWatt	109
	kBTU/Hr	383.2
Power consumption <sup>(3)</sup>	kWatt	28.1
Operating current	A	43.1
C.O.P		3
EER		10.7

◀ Notes:

1. Nominal cooling capacity based on indoor air DB=27°C RH=50% and outdoor air temp. DB=35°C WB=26°C.
2. Nominal heating capacity based on indoor air DB=21°C and outdoor air DB=6°C.
3. Power supply 400v, 3ph, 50hz
4. MIN-2.5TR, MAX-27.1TR
5. One cooling circuit
6. Net static pressure available at fan discharge at nominal capacity.
7. Optional regular centrifugal fan
8. Optional regular motor
9. Optional

Technical Data				
Compressor	Type	Unit	V-Data	
	Quantity		3	
			Comp. A	0-40%
			Comp. B	30%
			Comp. C	30%
			Comp. A+B+C	100%
	Power	kw	23.7	

Dimensions		
Length (A)	cm	200
Width (B)	cm	260
Height (C)	cm	240
Weight	kg	1430

Evaporator side <sup>(5)</sup>			
Air flow		m <sup>3</sup> /hr	13800
		cfm	8125
EC Centrifugal fan <sup>(7)</sup>	Size	cm	76*76*53
	Static Pressure <sup>(6)</sup>	Pa	350
	Motor	kW	2
Evaporator coil	Face area	m <sup>2</sup>	1.51
		ft <sup>2</sup>	16.3
	Rows deep		4
Filter	12% deep 2"	Qty.-dim.	6-24"x24"
	30% deep 2" <sup>(9)</sup>		6-24"x24"
Heating elemnts <sup>(9)</sup>		kw	56/75

Condenser side <sup>(5)</sup>			
Condenser coil	Quantity		1
	Face area	m <sup>2</sup>	2.72
		ft <sup>2</sup>	29.3
EC Axial fan	Diameter	mm	710
	Quantity		3
	Air flow	m <sup>3</sup> /hr	12000
		cfm	7300
	Motor	kW	0.81
		RPM	

Cooling Capacity - (Capacities are According to A.R.I. Standard)

Refrigerant R-410A		return air		mixed	fresh air
Entering Air Temperature	DB/WB, °C	20/15.2	24/17	27/20.5	35/27
	DB/WB, °F	68/59.3	75.2/62.6	80.6/69	95/80.6
Outside Air Temp °C (°F)					
35 (95)	TC	290.6	290.6	300.5	322
	HC	220	228	190	160
	KW	23.7	23.7	23.7	23.7
40 (104)	TC	289.6	289.6	300.5	322.7
	HC	214	235	190	173
	KW	25	25	25	25
45 (113)	TC	289	289	300	321.7
	HC	214	213	190	173
	KW	27.3	27.3	27.3	27.3

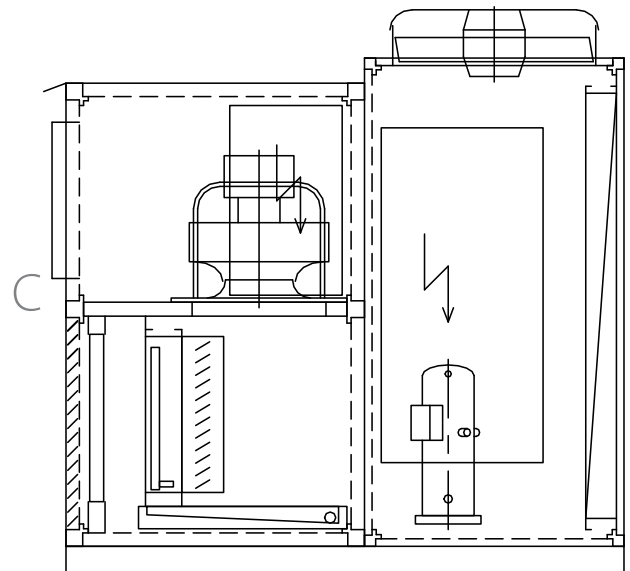
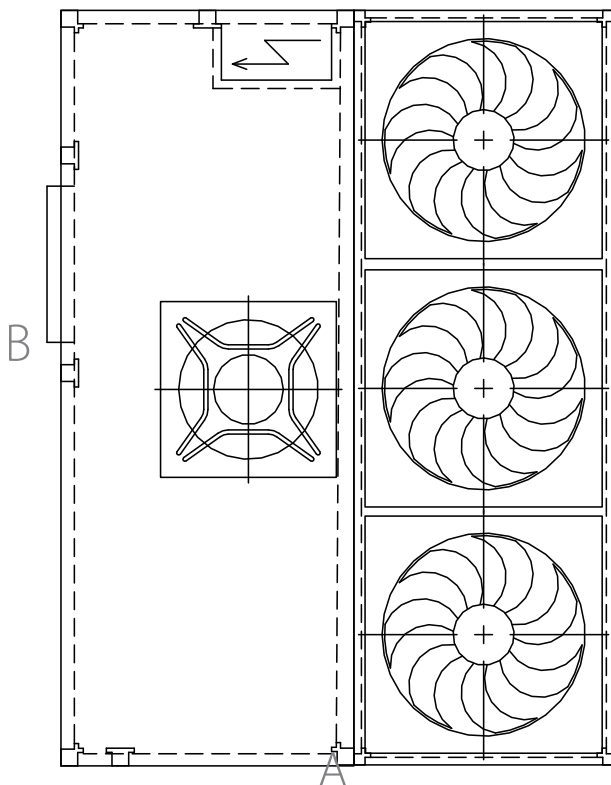
Notes:

TC-Total Cooling Capacity, kBTU/Hr  
 HC-Heat Capacity, kBTU/Hr  
 KW-Compressor Power Input, kW

► Model Plan: V-25

Top View

Side View



Performance		
Refrigerant		R-410A
Cooling capacity <sup>(1)</sup>	kWatt	95.6
	kBTU/Hr	336
Heating capacity <sup>(2)</sup>	kWatt	122.2
	kBTU/Hr	429.7
Power consumption <sup>(3)</sup>	kWatt	31.4
Operating current	A	48.4
C.O.P		3
EER		10.7

◀ Notes:

1. Nominal cooling capacity based on indoor air DB=27°C RH=50% and outdoor air temp. DB=35°C WB=26°C.
2. Nominal heating capacity based on indoor air DB=21°C and outdoor air DB=6°C.
3. Power supply 400v, 3ph, 50hz
4. MIN-2.5TR, MAX-29.1TR
5. One cooling circuit
6. Net static pressure available at fan discharge at nominal capacity.
7. Optional regular centrifugal fan
8. Optional regular motor
9. Optional

Technical Data				
Compressor	Type	Unit	V-Data	
	Quantity		3	
	Comp. A		0-40%	
		Comp. B	30%	
		Comp. C	30%	
		Comp. A+B+C	100%	
	Power	kw	26.6	

Dimensions		
Length (A)	cm	200
Width (B)	cm	260
Height (C)	cm	250
Weight	kg	1470

Evaporator side <sup>(5)</sup>			
Air flow		m <sup>3</sup> /hr	15500
		cfm	9100
EC Centrifugal fan <sup>(7)</sup>	Size	cm	76*76*53
	Static Pressure <sup>(6)</sup>	Pa	350
	Motor	kW	2.7
Evaporator coil	Face area	m <sup>2</sup>	1.69
		ft <sup>2</sup>	18.2
Filter	Rows deep		4
	12% deep 2"	Qty.-dim.	8-20"x24"
	30% deep 2" <sup>(9)</sup>		8-20"x24"
Heating elemnts <sup>(9)</sup>		kw	63/84

Condenser side <sup>(5)</sup>			
Condenser coil	Quantity		1
	Face area	m <sup>2</sup>	3.05
		ft <sup>2</sup>	32.8
EC Axial fan	Diameter	mm	710
	Quantity		3
	Air flow	m <sup>3</sup> /hr	14000
		cfm	8300
	Motor	kW	0.7
		RPM	900

Cooling Capacity - (Capacities are According to A.R.I. Standard)

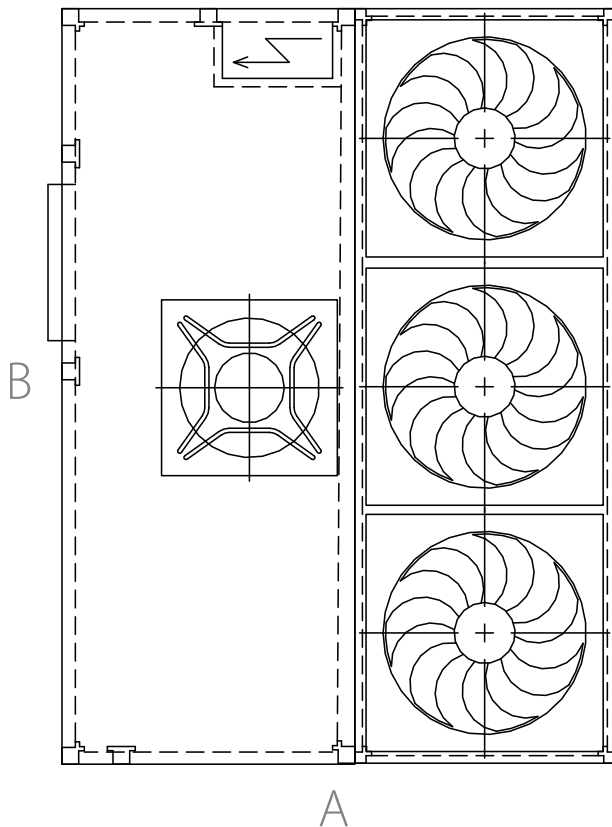
Refrigerant R-410A		return air		mixed	fresh air
Entering Air Temperature	DB/WB, °C	20/15.2	24/17	27/20.5	35/27
	DB/WB, °F	68/59.3	75.2/62.6	80.6/69	95/80.6
Outside Air Temp °C (°F)					
35 (95)	TC	323.4	323.4	335.4	359.3
	HC	235	261	219	190
	KW	18.5	18.5	18.5	18.5
40 (104)	TC	319	319	334.7	353.1
	HC	233	259	219	188
	KW	19	19	19	19
45 (113)	TC	313.2	313.2	334.7	347
	HC	230	256	219	185
	KW	20.2	20.2	20.2	20.2

◀ Notes:

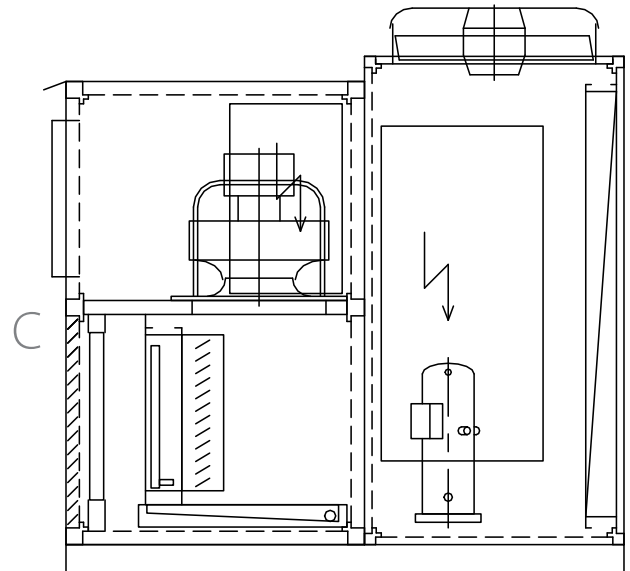
TC-Total Cooling Capacity, kBTU/Hr  
 HC-Heat Capacity, kBTU/Hr  
 KW-Compressor Power Input, kW

► Model Plan: V-28

Top View



Side View



Performance		
Refrigerant		R-410A
Cooling capacity <sup>(1)</sup>	kWatt	102.4
	kBTU/Hr	360
Heating capacity <sup>(2)</sup>	kWatt	133.8
	kBTU/Hr	470.4
Power consumption <sup>(3)</sup>	kWatt	36.3
Operating current	A	52.2
C.O.P		2.8
EER		9.9

◀ Notes:

1. Nominal cooling capacity based on indoor air DB=27°C RH=50% and outdoor air temp. DB=35°C WB=26°C.
2. Nominal heating capacity based on indoor air DB=21°C and outdoor air DB=6°C.
3. Power supply 400v, 3ph, 50hz
4. MIN-4.3TR, MAX-33TR
5. One cooling circuit
6. Net static pressure available at fan discharge at nominal capacity.
7. Optional regular centrifugal fan
8. Optional regular motor
9. Optional

Technical Data				
Compressor	Type	Unit	V-Data	
	Quantity		2	
			Comp. A	0-57%
			Comp. B	43%
			Comp. A+B	100%
	Power	kw	31.4	

Dimensions		
Length (A)	cm	210
Width (B)	cm	290
Height (C)	cm	240
Weight	kg	1590

Evaporator side <sup>(5)</sup>			
Air flow		m <sup>3</sup> /hr	16600
		cfm	9750
EC Centrifugal fan <sup>(7)</sup>	Size	cm	76*76*53
	Static Pressure <sup>(6)</sup>	Pa	350
	Motor	kW	3
Evaporator coil	Face area	m <sup>2</sup>	1.81
		ft <sup>2</sup>	19.5
	Rows deep		4
Filter	12% deep 2"	Qty.-dim.	4-24"x24"
			4-20"x24"
	30% deep 2" <sup>(9)</sup>		4-24"x24"
			4-20"x24"
Heating elemnts <sup>(9)</sup>		kw	68/90

Condenser side <sup>(5)</sup>			
Condenser coil	Quantity		1
	Face area	m <sup>2</sup>	3.26
		ft <sup>2</sup>	35.1
EC Axial fan	Diameter	mm	800
	Quantity		3
	Air flow	m <sup>3</sup> /hr	16000
		cfm	9700
	Motor	kW	0.62
		RPM	735

Cooling Capacity - (Capacities are According to A.R.I. Standard)

Refrigerant R-410A		return air		mixed	fresh air
Entering Air Temperature	DB/WB, °C	20/15.2	24/17	27/20.5	35/27
	DB/WB, °F	68/59.3	75.2/62.6	80.6/69	95/80.6
Outside Air Temp °C (°F)					
35 (95)	TC	348	348	360.3	385.2
	HC	256	285	247	216
	KW	31.4	31.4	31.4	31.4

Notes:

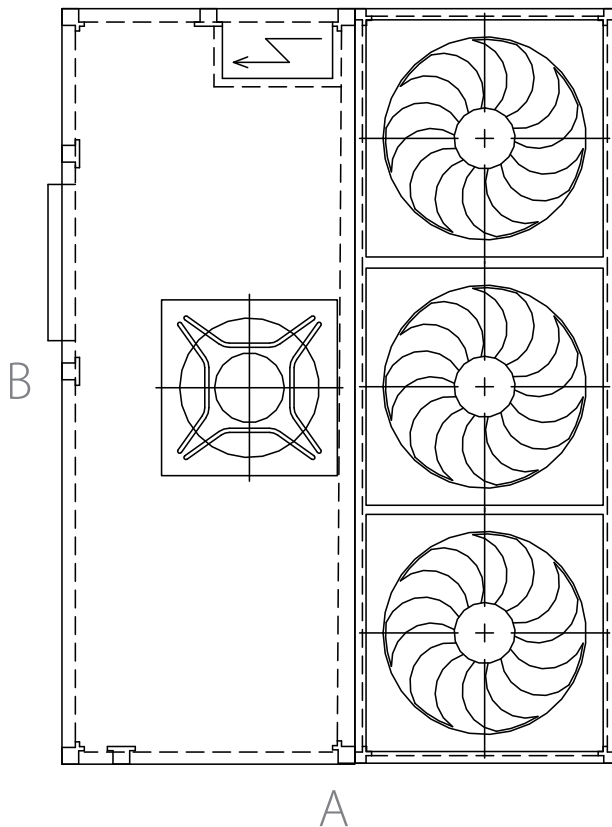
TC-Total Cooling Capacity, kBTU/Hr

HC-Heat Capacity, kBTU/Hr

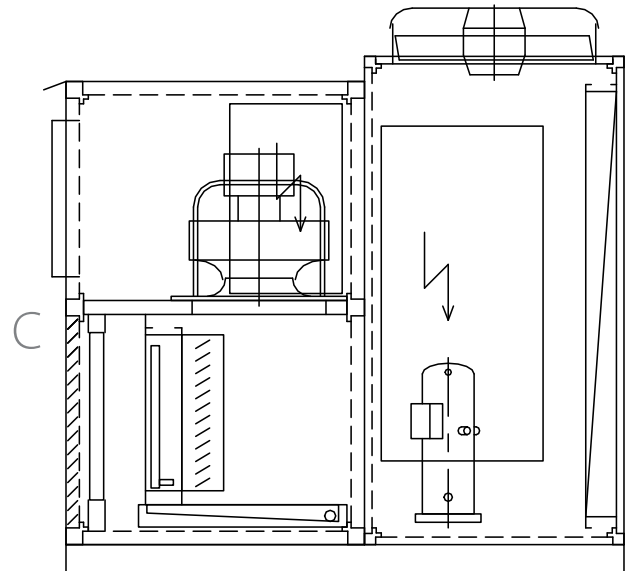
KW-Compressor Power Input, kW

Model Plan: V-30

Top View



Side View





Performance		
Refrigerant		R-410A
Cooling capacity <sup>(1)</sup>	kWatt	109.2
	kBTU/Hr	384
Heating capacity <sup>(2)</sup>	kWatt	142.5
	kBTU/Hr	501
Power consumption <sup>(3)</sup>	kWatt	38.7
Operating current	A	55.1
C.O.P		2.8
EER		9.9

◀ Notes:

1. Nominal cooling capacity based on indoor air DB=27°C RH=50% and outdoor air temp. DB=35°C WB=26°C.
2. Nominal heating capacity based on indoor air DB=21°C and outdoor air DB=6°C.
3. Power supply 400v, 3ph, 50hz
4. MIN-4.3TR, MAX-33TR
5. One cooling circuit
6. Net static pressure available at fan discharge at nominal capacity.
7. Optional regular centrifugal fan
8. Optional regular motor
9. Optional

Technical Data				
Compressor	Type	Unit	V-Data	
	Quantity		2	
			Comp. A	0-57%
			Comp. B	43%
			Comp. A+B	100%
	Power	kw	33.3	

Dimensions		
Length (A)	cm	210
Width (B)	cm	290
Height (C)	cm	250
Weight	kg	1640

Evaporator side <sup>(5)</sup>			
Air flow		m <sup>3</sup> /hr	17700
		cfm	10400
EC Centrifugal fan <sup>(7)</sup>	Size	cm	76*76*53
	Static Pressure <sup>(6)</sup>	Pa	350
	Motor	kW	3.5
Evaporator coil	Face area	m <sup>2</sup>	1.93
		ft <sup>2</sup>	20.8
Filter	12% deep 2"	Qty.-dim.	4
			8-24"x24"
		30% deep 2" <sup>(9)</sup>	8-24"x24"
Heating elemnts <sup>(9)</sup>		kw	72/96

Condenser side <sup>(5)</sup>				
Condenser coil	Quantity		1	
		Face area	m <sup>2</sup>	3.47
			ft <sup>2</sup>	37.4
EC Axial fan	Diameter	mm	800	
		Quantity	3	
	Air flow	m <sup>3</sup> /hr	16000	
		cfm	9700	
	Motor	kW	0.62	
		RPM	735	

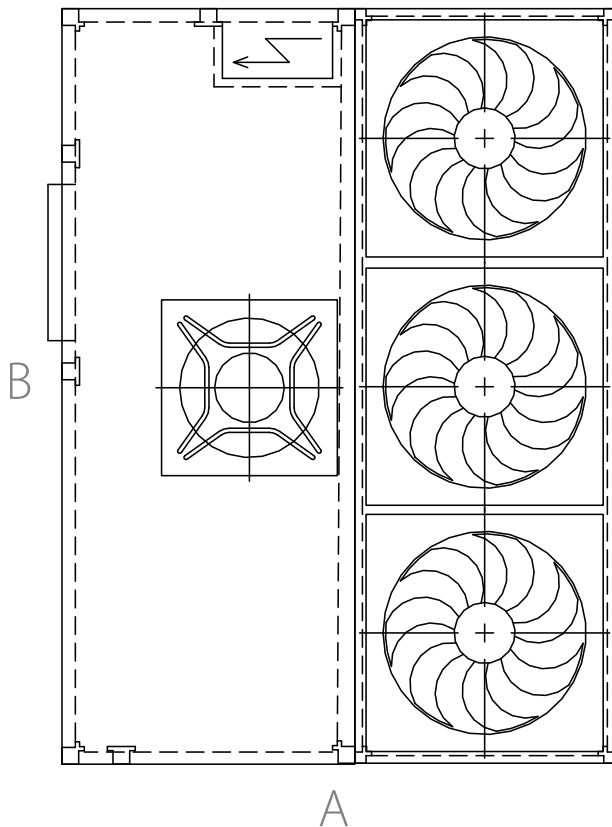
Cooling Capacity - (Capacities are According to A.R.I. Standard)

Refrigerant R-410A		return air		mixed	fresh air
Entering Air Temperature	DB/WB, °C	20/15.2	24/17	27/20.5	35/27
	DB/WB, °F	68/59.3	75.2/62.6	80.6/69	95/80.6
Outside Air Temp °C (°F)					
35 (95)	TC	367.5	367.5	380.4	406.7
	HC	272	307	262	227
	KW	33.3	33.3	33.3	33.3

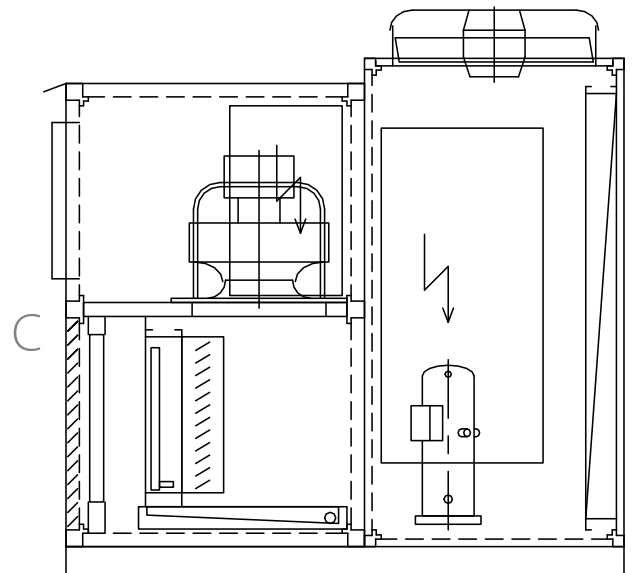
◀ Notes:  
 TC-Total Cooling Capacity, kBTU/Hr  
 HC-Heat Capacity, kBTU/Hr  
 KW-Compressor Power Input, kW

► Model Plan: V-32

Top View



Side View





**MKM**

Tel: 972-8-6271512 Fax: 972-8-6278292  
13 Tzoar St. (Emek-Sara),  
P.O.Box 2019, Beer-Sheva 8400721, Israel  
s-kmakam@zahav.net.il  
www.kmakam.co.il