COMMERCIAL REFRIGERATION
AIR CONDITIONING AND HEATING SYSTEMS

ISO 9001 2000

M.K.M.ac Heat Pump Units

Contents

M.K.M.ac HP-45 Hot & Cold Water System

The New HP series was designed by Mkm to meet the needs of global intelligent Energy usage and to Maximizing cost saving.
The new HP is capable of supplying hot water, cold water, or both at the same time with a high C.O.P of 6.2.
The HP unit is suitable to be used in hotels, hospitals and all commercial and domestic appliances.
The design of the HP series emphasizes the need to work under a broad spectrum of temperatures and air quality conditions as dictated by desert climates.
All the units are supplied with electronic expansion valves and VSD driven motors which are suitable to deal with Rough environmental conditions by optimizing unit work in all stages.
Outdoor coils have a special coating and an arranged in 10 to 12 fins per inch by dimand.
All units are environmental friendly by using R-134a as a refrigerant and implementing high C.O.P in all conditions of work.
By using modular design it is easy to place a number of units in small spaces.
The combination of all those qualities is exclusive to MKM HP products.
Heat recovery units is optional.

Compressors

Scroll high E.E.R
Low noise operation
Complete motor protection
Internal and external vibration absorbers
Full electronic control
Oil level indicator

Axial Fans

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

Condenser / Evaporator coils

Constructed of seamless 3/8" (5/8" option) cooper 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
- Refrigerant charge indicator
- All the necessary pressure protections
- All the necessary electrical protections
- All the necessary flow protections

Electrical Panel

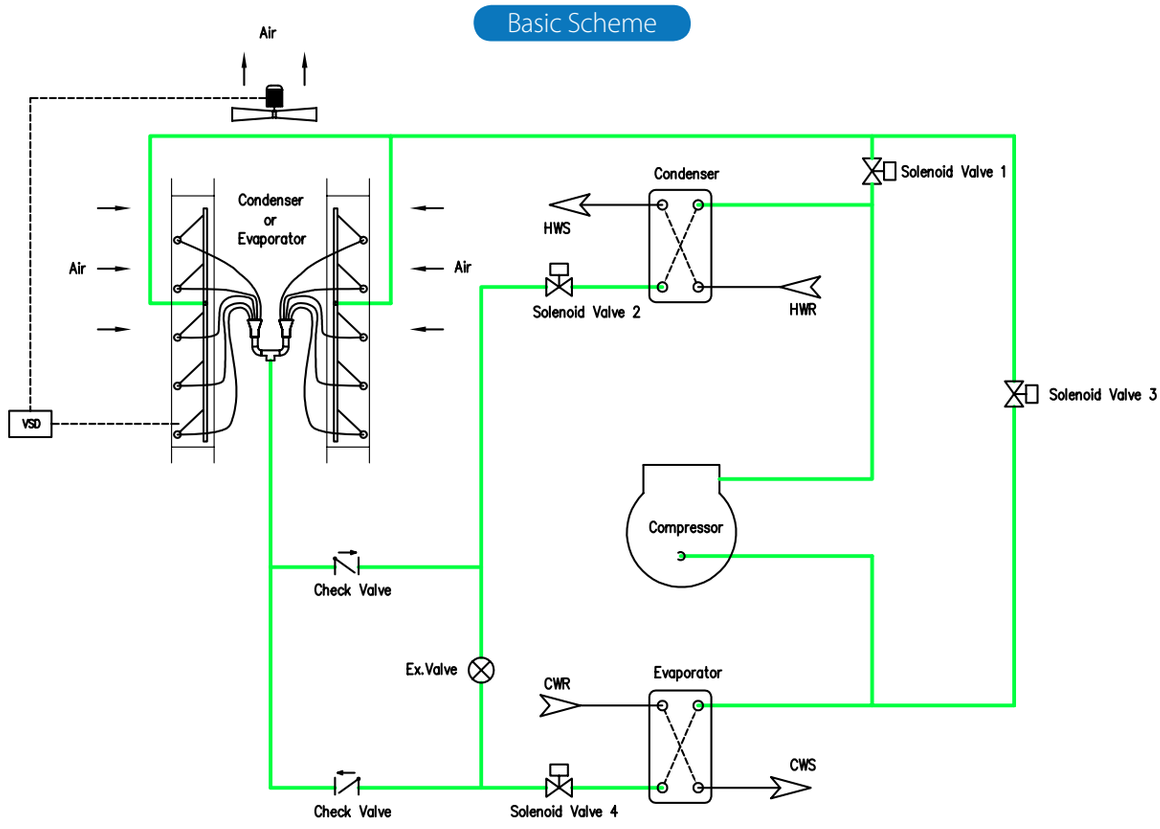
Electric panel consist of:
- Compressor contactor,
- Compressor protection breaker,
- Fan motor contactor or vsd,
- Fan protection breaker,
- Phase sequence relay
- Reliable microprocessor temperature control unit with full function display which dramatically reducing maintenance cost thanks to its microprocessor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

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

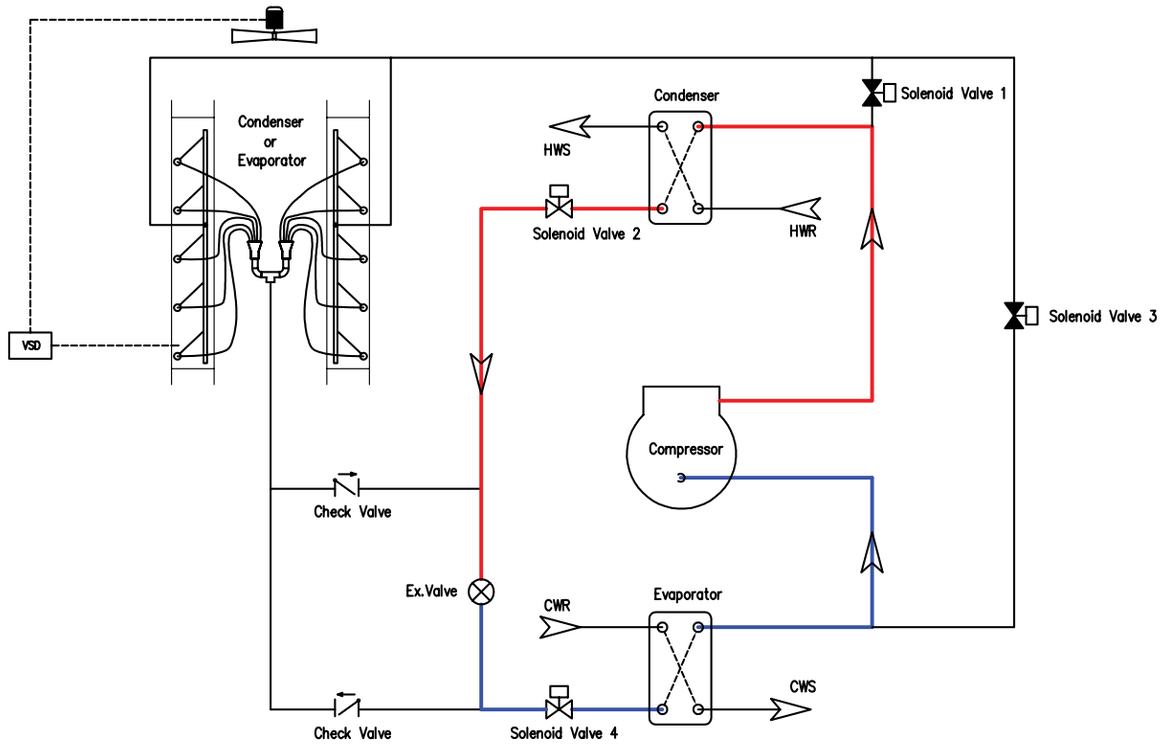
General View

▶ Model HP-45

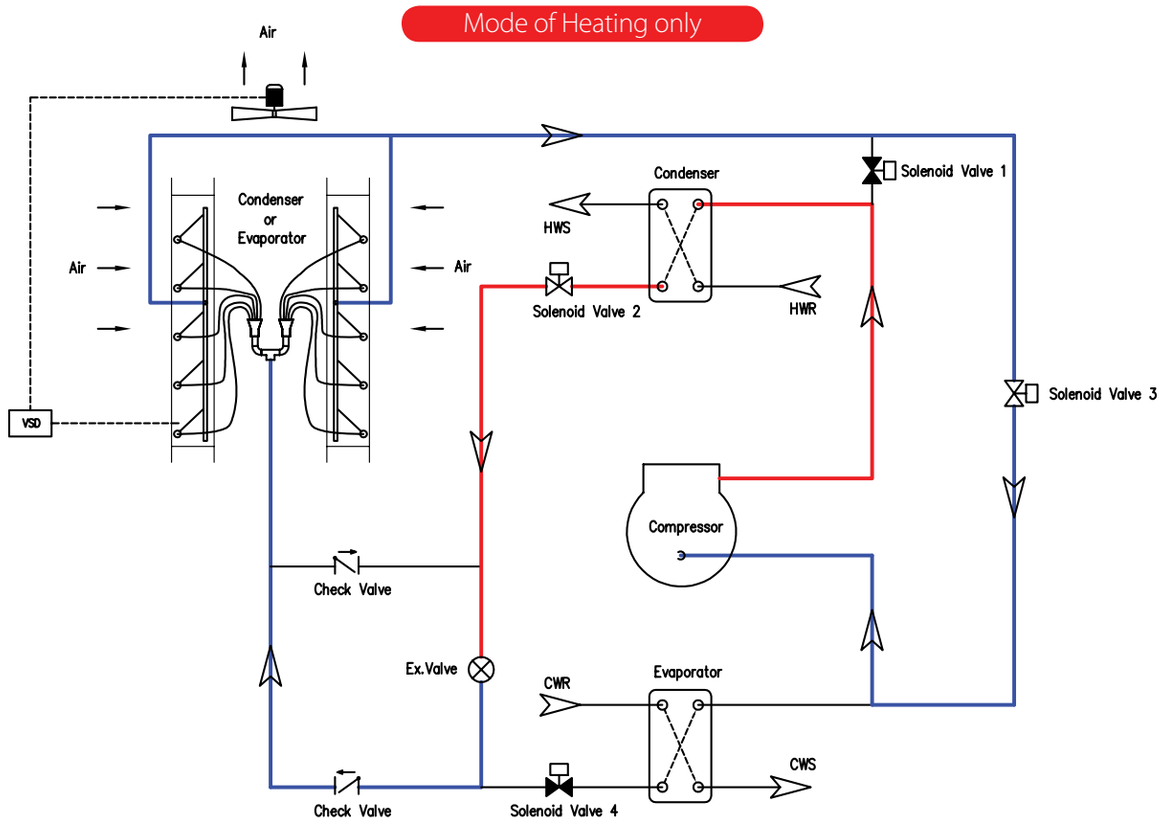
Basic Scheme



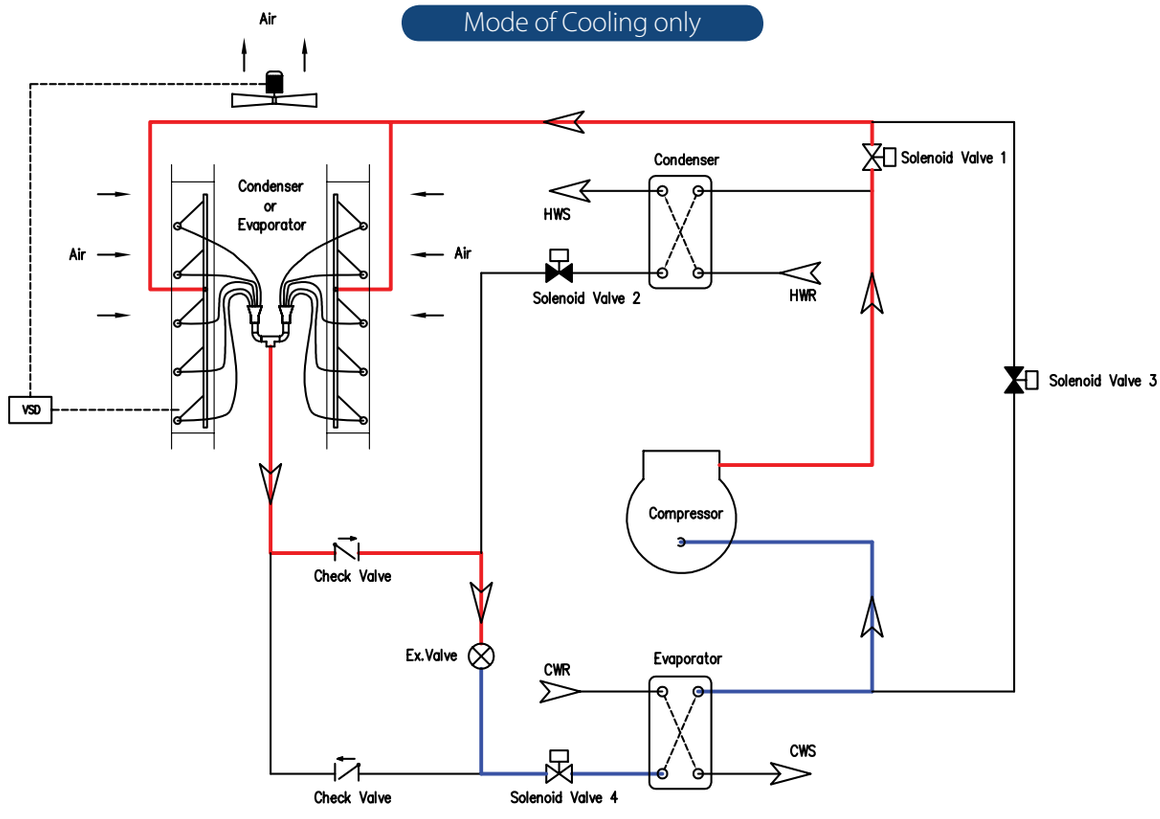
Mode of Heating and Cooling



Mode of Heating only



Mode of Cooling only



Model HP-45

Nominal Heating Capacity[1]: **45 KWatt**, Cooling capacity[1]: **29 KWatt**

Performance		nom[1]	max[2]	
Heating capacity	kW	45.3	57.6	
Cooling capacity	kW	29	41	
Power consuption	kW	16.3	16.6	
Total C.O.P		4.6	6	

◀ Notes:
1. Nominal capacity based on temp. HWS = 60° & CWS = 10°.
2. Maximum capacity based on temp. HWS = 60° & CWS = 18°
4. Power supply 400v, 3ph, 50hz

Technical Data			
Refrigerant			R134A
Compressor	Type		Scroll
	Quantity		1
No. Cooling Circuits			1
Evaporator	Type	Plate Heat Exchanger	
	Quantity		1
Condenser	Type	Plate Heat Exchanger	
	Quantity		1
Condenser or Evaporator Coil	Quantity		2
	Copper Tubes		3/8"
	Rows Deep		4
	Fins	FPI	10
	Each Face area	m^2	1.1
		ft^2	12.3
Axial Fan	Diameter	mm	800
	Qty.		1
	Air flow	m^3/hr	21080
		cfm	12400
	Motor	kW	1.9
		RPM	900

Dimensions		
Length	cm	115
Width	cm	135
Height	cm	230
Weight	kg	450
Water Conection	inch	1 1/4

Mode of Heating & Cooling						
HWS	50	55	58	**60**	60	60
CWS [2]	-3	1.5	6	**10**	14	18
HC	26	36.6	40.6	**45.3**	50.5	57.6
CC	13	22	25	**29**	34	41
GH [1]	1.24	1.75	1.94	**2.16**	2.41	2.75
GC [1]	0.62	1.05	1.19	**1.39**	1.62	1.96
KW	13	14.6	15.6	**16.3**	16.5	16.6

HWS - Hot Water Supply Temperature, °C
CWS - Cold Water Supply Temperature, °C
HC - Heating Capacity, kW
CC - Cooling Capacity, kW
GH - Nominal Hot Water Flow, l/s
GC - Nominal Cold Water Flow, l/s
KW - Compressor Power Input, kW

▲ Notes: 1. Nominal Water Flow Based on Water Temperature Rise is 5°C.
2. At Below Zero Temperatures or at Temperatures Close to "0" is Necessary to use Glycol.

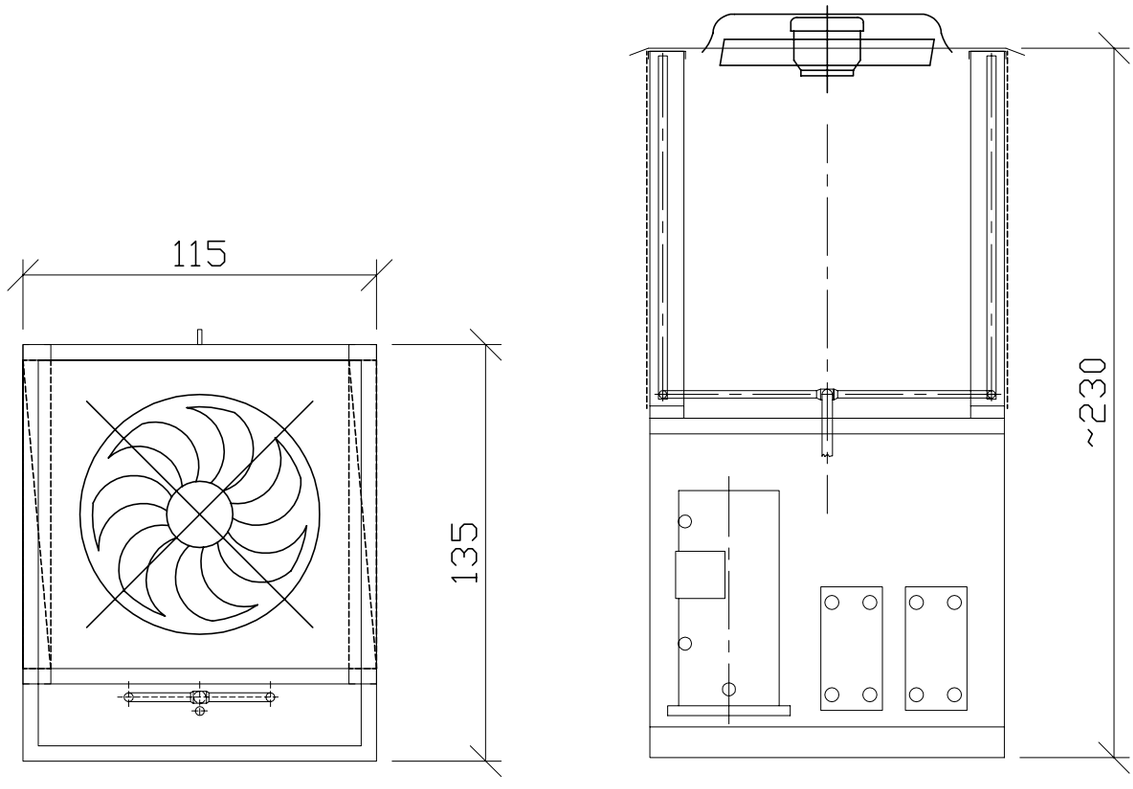
Mode of Heating Only								
Outside Air Temperature, °C	0	5	10	15	20	25	30	35
HWS	50	55	58	60	60	60	60	60
HC	26	36.6	40.6	45.3	50.5	57.6	57.6	57.6
GH (1)	1.24	1.75	1.94	2.16	2.41	2.75	2.75	2.75
KW	13	14.6	15.6	16.3	16.5	16.6	16.6	16.6

Mode of Cooling Only						
Outside Air Temperature, °C	15	20	25	30	35	40
CWS	7	7	7	7	7	7
CC	40.5	38.4	36.3	34.3	32.2	30.1
GC (1)	1.93	1.83	1.73	1.64	1.54	1.44
KW	7.9	8.7	9.6	10.5	11.5	12.7

HWS - Hot Water Supply Temperature, °C
CWS - Cold Water Supply Temperature, °C
HC - Heating Capacity, kW
CC - Cooling Capacity, kW
GH - Nominal Hot Water Flow, l/s
GC - Nominal Cold Water Flow, l/s
KW - Compressor Power Input, kW

▲ Notes: 1. Nominal Water Flow Based on Water Temperature Rise is 5°C.

▸ Model : HP-45



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