

AI HAFEZ ENGINEERING INDUSTRIES

HAFCO SELF-CONTAINED (Package) AIR CONDITIONERS



Nominal Cooling Capacity

13,000 kcal/h to 78,000 kcal/h at 50 Hz
15,200 W to 90,900 W at 50 Hz
52,000 Btu/h to 311,700 Btu/h at 50 Hz

Technical Catalog 1

-Design Information-

Series Models: HPU -5, 8, 10, 12, 15, 20, 25, 30



These HAFCO self-contained air conditioners are composed of compressors, air-cooled condensers, and an evaporator fan, condenser fans and control equipment, completely packaged in a weather proof cabinet, and are completely assembled, wired and tested at the factory.

These HPU units are provided with excellent performances that can be operated up to 55°C (130°F) of maximum ambient temperature, and the light weight, compact, weather proof design techniques make these air conditioners ideal for either on-the ground or rooftop installation.

EFFICIENT, RELIABLE AND DURABLE NEW SERIES...

• Baked Paint Galvanized Steel Panels

Corrosion Resistant Cabinet - The weather proof characteristics of the panels have been significantly reinforced by the adoption of galvanized steel panel which have been coated with Electro static paint through our unique baking process. The resistant panels ensure long-lasting fine appearance, and maintenance work has been minimized.

• Reliable Protection System

Compressor Protection - Each compressor is protected with a high pressure switch, an over current relay, a crankcase heater, an internal thermostat, a discharge gas thermostat, a reverse phase protection relay, and a cycling protection timer relay. This wide variety of protection devices provides perfect compressor guarding functions, assuring fewer service calls from customers.



Fan Motor - The evaporator fan motors are protected with thermal overcurrent relay and the condenser fan motors are protected with an internal thermostat.

• Energy-Saving Design

Highly-Efficient Compressor - Low power input is achieved by specially developed compressors and heat exchanger and their suitable combinations.

Condenser - The adoption of a highly efficient super-slit fin heat exchanger provides low operation cost.

Evaporator - Highly efficient super-slit fin coils and inner grooved tube have been applied, to provide a large cooling capacity with low noise.

Insulated Indoor Compartment - This insulation compartment effectively eliminates heat loss.

Capacity control (Dual circuit units) - Each unit is equipped one or with two compressors and two independent refrigeration cycles so that one compressor operation can reduce the operation cost against a half load of one large compressor



EFFECTIVELY MATCHED SELECTION FOR INDIVIDUAL APPLICATIONS...

• Optimum Matched Choice

High Temperature Operation - Designed for high outdoor temperatures, these units guarantee reliable operation even under condition up to an ambient temperature of 55 °C (130 °F)

Attractive Fan Performance - Adequate external static pressure by the evaporator fan can be obtained for individual ducting applications.

• Minimum Installation Arrangement

Easy Installation - This easy-to-install and ready-to-operate unit ensure rapid and low cost installation work.

Pre-Drilled Duct Flange - Flanges are prepared at the supply and return duct connections so that they can reduce duct connection work at the site.

Factory-Completed - Only system connection work is required, excluding the installation work for auxiliary equipment.

• Quiet Operation

Compressor - Noise and vibration have been effectively reduced by the adoption of new hermetic compressor.

Condenser Fan - This direct drive propeller fan is dynamically balanced to ensure smooth airflow.

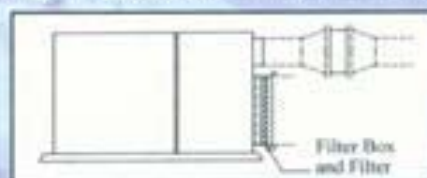
Evaporator Fan - The centrifugal fan and fan casing are optimum shaped for efficient and low noise operation.

• Reduced Maintenance Work

Easy Maintenance - Large service spaces and rapidly removable service panels have been provided for easy maintenance work.

OPTIONAL ACCESSORIES ...

Filter Box and Filter in the all models



Unit General Data

Model			HPU.5	HPU.8	HPU.10	HPU.12	HPU.15	HPU.20	HPU.25	HPU.30
Nominal cooling capacity at 35°C** out door temperature	Kcal/h		13500	19740	25270	30830	39000	50200	61200	78000
	Btu/h		54000	78400	100390	122490	155840	200800	245000	311700
	W		15700	22960	29400	35870	45195	58800	71500	90900
Nominal cooling capacity at 46°C*** out door temperature	Kcal/h		12000	23400	30200	36200	40700	45100	55100	70200
	Btu/h		48000	93500	120700	144800	163000	180300	220500	280800
	W		14000	27300	35200	42200	47500	52600	64300	81900
Capacity control	%		100.0*	100.0*	100.0*	100.0	100.0*	100.50.0	100.50.0	100.50.0
Outer Dimentions	Height	mm	750	850	1050	1300	1200	1400	1300	1500
	Width	mm	1120	1120	1120	1400	1400	1700	1700	2000
	Depth	mm	1700	1750	1800	2000	2100	2200	2420	2420
Net Weight	Kg		210	260	280	310	320	480	760	830
Compressor	HP		H	H	H	H	S	H	H	S
	Quantity		1	1	1	1	1	2	2	2
Condenser	Total face aria	M ²	0.96	1.16	1.62	2.4	2.2	2.7	2.64	4.06
	Fan		Propeller Fan							
	Air flow	M ³ /h	9400	10500	11000	11400	20000	21000	32000	34000
	Quantity		1	2	2	2	2	2	2	2
Evaporator	Total face aria	M ²	0.42	0.57	0.71	0.99	1.02	1.65	1.5	1.79
	Fan		Multi-Blade Centrifugal fan							
	Air flow	M ³ /h	3400	4500	6300	8000	9000	11500	14000	18000
	Motor	Hp	1x3/4	1x1.5	1x2	2x1	2x1	2x1.5	2x2	2x3
	Quantity		1	1	1	1	1	1	1	1
Wiring Hole	Main	mm	∅ 52	∅ 52	∅ 52	∅ 52	∅ 52	∅ 52	∅ 52	∅ 52
	Control	mm	∅ 22	∅ 22	∅ 22	∅ 22	∅ 22	∅ 22	∅ 22	∅ 22

Notes :

1. The capacities are gross capacities which do not include a deduction for evaporator fan motor heat.
2. Semi-hermetic compressor may be used upon request
3. Higher capacity are produced upon request
4. *Also available in two compressors (two steps).
5. The nominal cooling capacity is based on
Evaporator Air Inlet Temperature
27-°C DB (80-°F DB)
19.5-°C WB (67-°F WB)

H:Hermetic
S:Scroll

Condenser Air Inlet Temperature:

**35°C DB (95°F DB)

***46°C DB (115°F DB)

Working Range

Models	Condenser Air Inlet Temperature		Evaporator Air Inlet Temperature	
	Maximum	Minimum	Maximum	Minimum
PU -5 → PU -30	55°C	14°C	35°C DB/21.5°C WB	19.5°C DB/14°C WB

Motor Pulley Adjustment

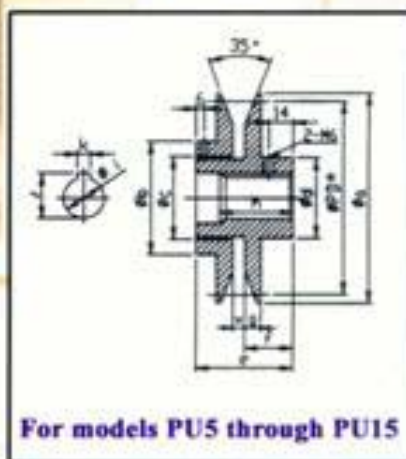
Models		Regulation space x of more pulley (mm)								Factory set point			RPM/turn**
		0	1	2	3	4	5	6	7	X	RPM	PD*	
HPU.5	RPM	1.120	1.090	1.060	1.025	995	960	930	900	7	900	90	45
	PD*	112	109	106	103	99	96	93	90				
HPU.8	RPM	1.120	1.090	1.060	1.025	995	960	930	900	6	930	93	45
	PD*	112	109	106	103	99	96	93	90				
HPU.10	RPM	1.120	1.090	1.060	1.025	995	960	930	900	6	930	93	45
	PD*	112	109	106	103	99	96	93	90				
HPU.12	RPM	1.120	1.090	1.060	1.025	995	960	930	900	4	995	99	45
	PD*	112	109	106	103	99	96	93	90				
HPU.15	RPM	1.120	1.090	1.060	1.025	995	960	930	900	4	900	90	45
	PD*	112	109	106	103	99	96	93	90				
HPU.20	RPM	1000	980	960	935	910	890	870	850	6	950	130	43
	PD*	150	147	144	140.5	137	134	131	128				
HPU.25	RPM	1000	980	960	935	910	890	870	850	8	830	125	43
	PD*	150	147	144	140.5	137	134	131	128				
HPU.30	RPM	1000	980	960	935	910	890	870	850	8	910	137	43
	PD*	150	147	144	140.5	137	134	131	128				

RPM: Fan speed

PD*(pitch diameter of motor pulley(mm)) **: Fan speed change per one turn of motor pulley(rpm per turn)

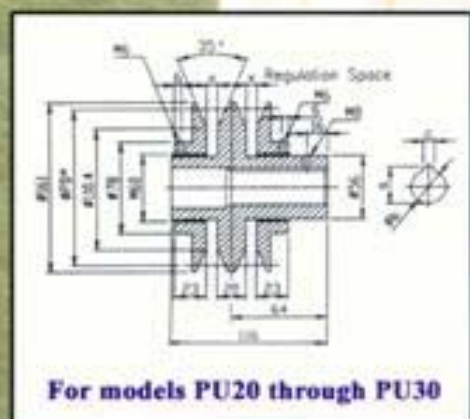
Motor Pulley Dimensions

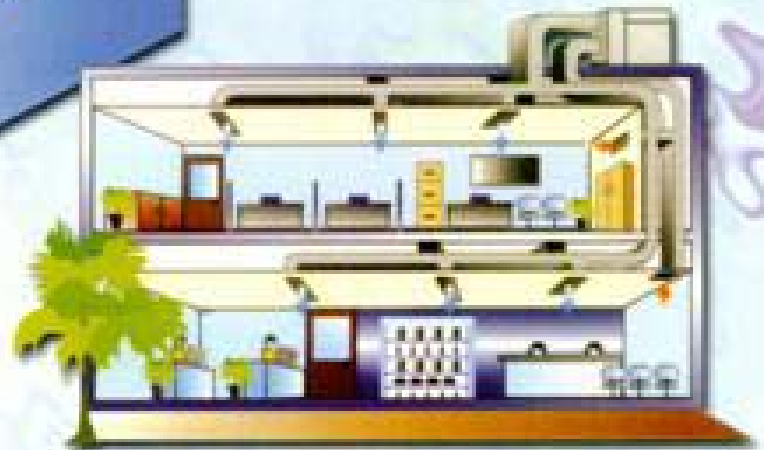
Models	Motor pulley dimensions(mm)										
	a	b	c	d	e	f	g	h	i	j	k
HPU.5	121.5	65	M48	48	55	28	8.5	43	19	21.5	6
HPU.8	121.5	65	M48	48	55	28	8.5	43	24	27	8
HPU.10	121.5	65	M48	48	55	28	8.5	43	24	27	8
HPU.12	121.5	65	M48	48	55	28	8.5	43	24	27	8
HPU.15	121.5	65	M48	48	55	28	8.5	43	24	27	8
HPU.20	31	28	8								
HPU.25	36	34	10								
HPU.30	41	38	10								



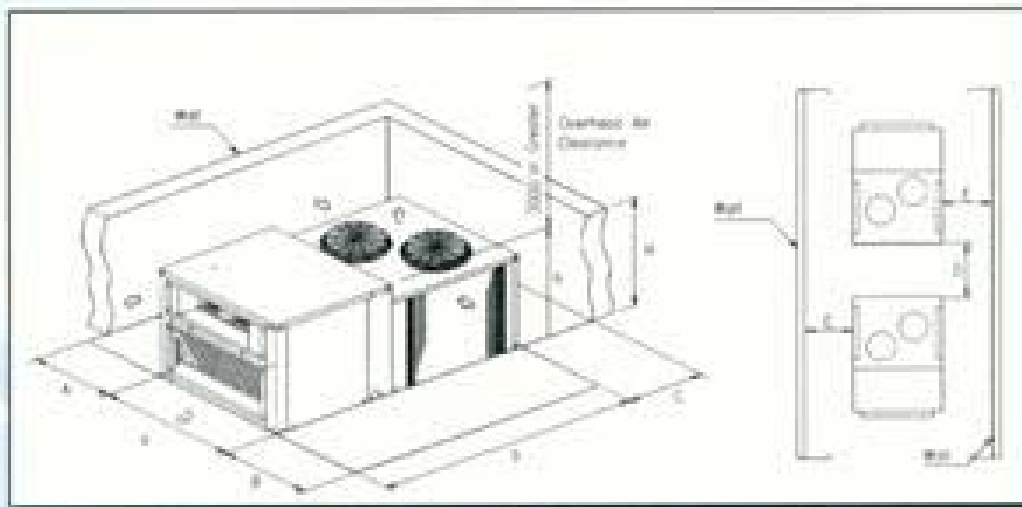
Fan Pulley Dimensions

Models	a	b	c	d	e
HPU.5	153	144	41	47	24
HPU.8	153	144	41	47	24
HPU.10	153	144	41	47	24
HPU.12	153	144	41	47	24
HPU.15	153	153	41	47	24
HPU.20	35	38.5			
HPU.25	40	40.5			
HPU.30	40	43.5			



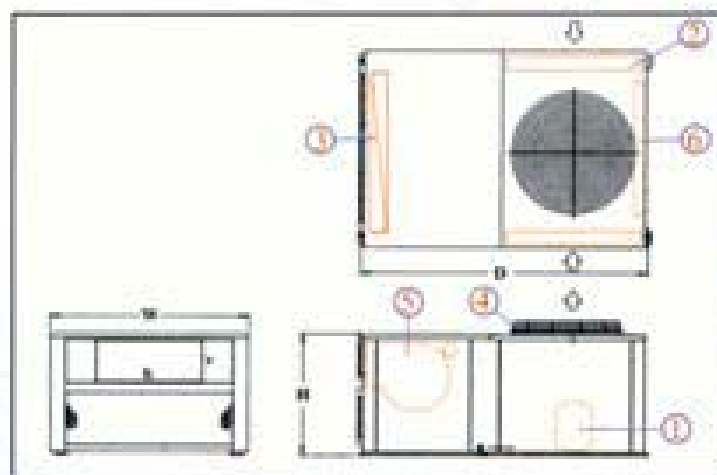


OPERATION SPACE



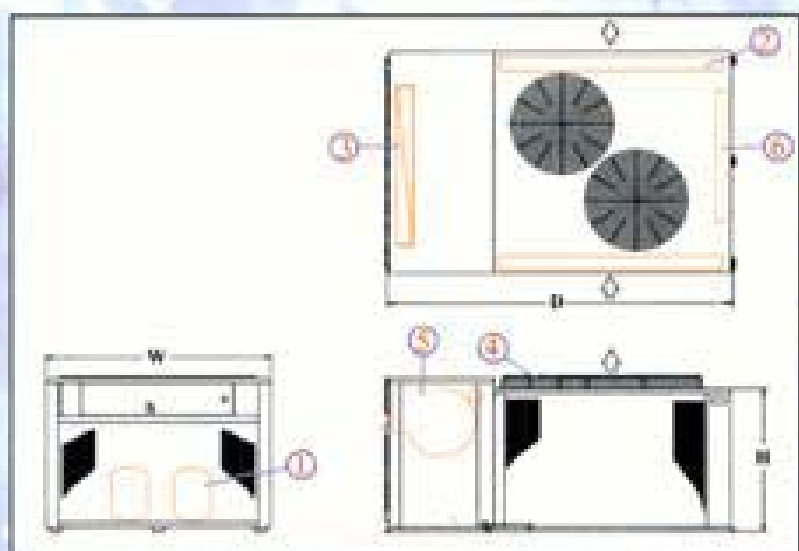
Models	Unit Dimensions (mm)			Minimum Maintenance Space (mm)			Minimum Air Intake Space (mm)		Maximum Height of Wall (mm)
	a	b	h	A	B	C	D	E	
PU-5	1120	1700	750	1,000	1,000	1,000	1200	1,000	630
PU-8	1120	1750	850	1,000	1,000	1,000	1200	1,000	630
PU-10	1120	1800	1050	1,000	1,000	1,000	1,425	1,000	730
PU-12	1400	2000	1300	1,000	1,000	1,000	1,425	1,000	730
PU-15	1400	2100	1200	1,000	1,000	1,000	1,425	1,000	900
PU-20	1700	2200	1400	1,000	1,000	1,000	1,000	1200	980
PU-25	1700	2420	1300	1,000	1,000	1,000	1,000	1200	980
PU-30	2000	2420	1500	1,000	1,000	1,000	1,000	1200	1,500

*Design and specification are subject to change without prior notice



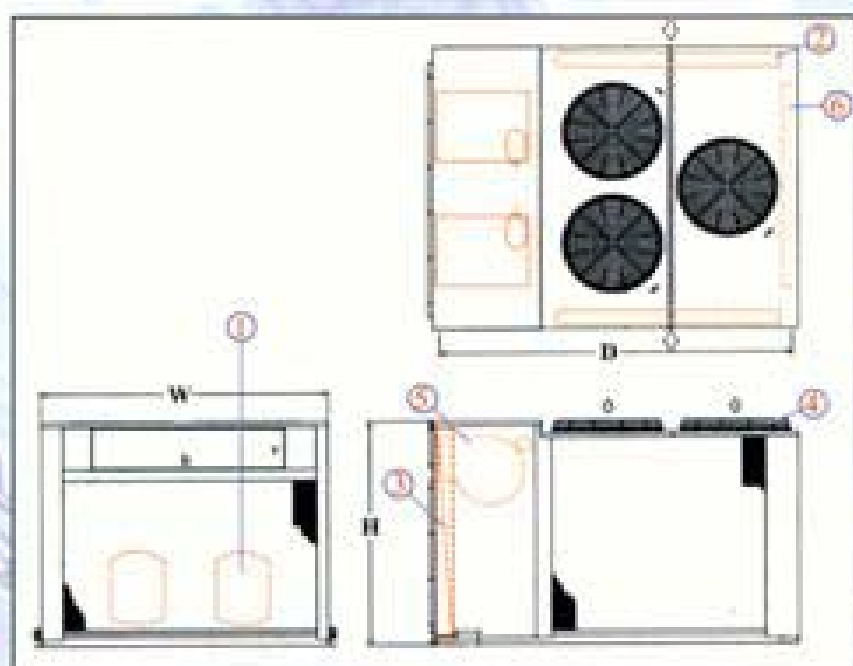
Model	H mm	W mm	D mm	Air supply box mm
HPU-5	750	1120	1700	870x300
HPU-8	850	1120	1750	870x350
HPU-10	1050	1120	1800	870x350
HPU-12	1300	1400	2000	1150x350

- 1- Reciprocating fully hermetic comperssor.
- 2- Condensing coils.
- 3- Evaporating coils.
- 4- Direct drive axial fans.
- 5- Double inlet radial fans.
- 6- Electrical control box.



Model	H mm	W mm	D mm	Air supply box mm
HPU-15	1200	1400	2100	1150x350
HPU-20	1400	1700	2200	1400x350

- 1- Reciprocating fully hermetic (PU-20) and scroll (PU-15) compressors.
- 2- Condensing coils.
- 3- Evaporating coils.
- 4- Direct drive axial fans.
- 5- Double inlet radial fans.
- 6- Electrical control box.



Model	H mm	W mm	D mm	Air supply box mm
HPU-25	1300	1700	2420	1400x350
HPU-30	1500	2000	2420	1500x450

- 1- Reciprocating fully hermetic (PU-25) and scroll (PU-30) compressors.
- 2- Condensing coils.
- 3- Evaporating coils.
- 4- Direct drive axial fans.
- 5- Double inlet radial fans.
- 6- Electrical control box.