

Air Handling & Packaged Units

Approach Towards a Better Performances



Modular and Compact Design
Standard Range 1 ton - 100 tons



Air Handling & Packaged Units

Company Introduction

SASA Metal Industries, (Originally known as Air Control Engineering), was founded in the year 1988. The main factory is located in Korangi Industrial Area the biggest industrial hub of Karachi. Today **SASA** is producing more than ten HVAC related product.

Air Handling Units & Packaged Units

SASA has developed a range of air handling units with several options for a wide variety of applications. From a simple air handling unit to a fully automatically-controlled air handling unit suitable for both Industrial and Commercial use. The **SASA** Air handling units can be used indoor and outdoor. **SASA** air handling units are made from Aluminum Section as standard or seawater resistance. This means lower weight and a longer lifespan. The SASA air handling unit is a highly developed, premium quality product that can be adjusted to the customer's requirements.

SASA Metal Industries growth can be attributed to the fact that from the very inception, it has been operating under a policy of constant development by always utilizing some of the most advanced technological system available in Pakistan. Our products are designed through internationally recognized design software from reputed European Firms. A work force of highly qualified engineers and technicians make **SASA Metal Industries** one of the best **AHUs** manufacturers in Pakistan.

Key Feature of Our Products

- Energy Efficient
- Highly Efficient Supply and Return Plug Fan
- PU loaded Aluminum profile section
- Available in single and double skinned body
- Available in Single and double decker construction.
- Available in DC and AC Compressor
- All Filters Provision (G3, G4, F6 to F9, H-13, H-14 and Carbon Filter)
- Temperature and Humidity Control system
- Easy to Installed
- Rain Protection Color Coating
- Easy Maintenance
- Modular Construction
- Low weight and easy to transport



Construction

The modular casing is made from aluminum extruded profile with PVC Plastic corner pieces. The PVC Plastic corner pieces are inserted into the extruded profile and riveted to form a rigid structure prior to installation of the panels. The panels are fixed with inter locking without bolts or screw into inner flanges of the extruded profile. Specially strengthened corner pieces ensure from deformation. The casing member is easy to remove and re- assembled on site as desired. All aluminum section are filled by Polyurethane as a thermal barrier from inner to outer surface.

Modular Double Skinned Construction

The standard construction is double skinned with Polyurethane insulation of 25mm / 50mm thickness and density 24Kg/m³ / 40Kg/m³ Respectively. The insulation is sandwiched and applied with a on water-based adhesive in between the inner and outer wall of the double skinned panels.

Access Door Panel

Access panel are provided as standard on one side of the AHU section where periodic maintenance and inspection of the components is required. Access panels are provided with hinges, handles, quick latches and Vision Glass.

Sound And Thermal Insulation

Noise reduction is an important point for consideration in the design of an air handling unit. For this reason, we have opted to use a double-walled seawater-resistant aluminum panel with 25- or 50-mm mineral wool insulation. This also results in excellent thermal insulation.

Water SS Drain Tray

The condensate drain pan catches all that humidity and excess water that is removed from your air. It also makes sure the water is safely disposed of outside of the air condition system

Supply/Return Air Fans

Backward inclined wheels are of mild steel construction, wide structure member to provide maximum rigidity and are tested in accordance with ARI standard 430, and suitable for external static pressure up to 8" w.g. Backward inclined wheels are of non-overloading characteristics.

A Unique feature of this range of fan is the interchangeability of the impellers within the same Cabinet. This feature allows upgrading or modifying the AHU as per requirement of the site. The impellers are statically and dynamically balanced.

Fan bearing are the self-aligning type with grease-able ball bearing selected for minimum 200,000 operating hours. Bearings are provided with extended lubricating nipples for ease of periodic greasing. Generally, two types of ball bearing are installed on the fan shaft.

1. Sealed-bearing
2. Pillow-block

Filter section

To guarantee the right air quality of air we offer a wide selection of filters .All necessary care is taken in the sealing of the filter frames and filters .Filters should be changed from the inside on the dirty side.

The filter options are: HEPA FILTERS - Panel filter - cartridge filter - Bag filter -Flat Filters

Voluma Control Dampers

V.C.D are designed to control flow of Air, Dampers are made in single or opposed Aluminum aero-foil blades with heavy gauge frame of Galvanized Iron sheet. Damper Actuator can be provided on demand (optional Item).

Vibration Isolation

Rubber (Neoprene) isolators are standard for SASA SAH unit with internally mounted motor and fan assembly provided excellent vibration. Fan motor is mounted on the same rigid, rugged steel frame as standard.

Coil Section and Assemblies

SAH units Coil section is provided for humidification and dehumidification. The coil Section is included with

Chilled/ Hot water

- The chilled water-cooling coils are constructed from 3/8" or 5/8" diameter copper or tinned fins. The chilled water coils are available in 4 to 10 rows depth with aluminum blue hydro dip coated fins.

Direct expansion

- Direct expansion Coil is provided with 3/8" copper tube. These coils are dehydrated, vacuumed and sealed under nitrogen pressure with aluminum blue hydro dip coated fins.

Steam coil

- Steam Coil is designed for all general-purpose air heating. Steam coil are furnished with 5/8" outside diameter copper tube with various fin spacing and 2 to 10 Rows with aluminum blue hydro dip coated fins.

All coils are easily removable from the coil section of the unit.



Air Handling & Packaged Units

SASA Air Handling Units Coils are design and tested for maximum efficiency of heat transfer between circulating medium i.e., air and water (or refrigerant). The basic heat transfer at the coil surface has been perfected by fin contour and staggered tube configuration.

The Coils are circuited to optimize performance and pressure drop limitations. Headers are made of heavy seamless copper tubing with inlet and outlet and headers at the same end. Standard coil are constructed of 0.006" thick aluminum fins and 3/8" or 5/8" O.D. copper tubes. Casing is made from heavy gauge galvanized steel. Standard water coils are suitable for 250-psig-air pressure. Direct expansion coil is tested at 350 to 450 psig air pressure for leakage test under water.

Optional Item

- Water Drop Eliminator with Section
- UV Light with Section
- VFD with box
- Emergency ON OFF Switch
- Pressure Gauge
- Temperature Meter
- Electrical Heater with section
- Humidifier with section

Compressor

Compressors used in the Packaged or DX-AHU Units are hermetically sealed scroll type. Scroll compressors have become renowned for their high levels of efficiency, low noise and low vibration. The scroll compressors incorporate a number of unique features. These include compressor motors cooled by the discharge gases and the placement of the oil reservoir on the high-pressure side, for improved efficiency and oil supply. Rotary type compressors also used for lower capacities (upto 4Ton).

Condenser

Condenser coils are manufactured from seamless copper tubes mechanically bonded to aluminum blue hydro dip coated fins to ensure optimum heat transfer. All coils are tested against leakage by Nitrogen Pressure of 350 psig under water. All standard coils are 3 or 4 rows/12 FPI, 3/8" O.D. tubes.

Condenser Fans

The condenser fans are propeller type, directly driven by electric motors. Motors are Totally Enclosed Air Over with class 'F' insulation The condenser fans are individually statically and dynamically balanced at the factory. Complete fan assembly is provided with suitable acrylic coated fan guard.

Packaged Type Air Handling Unit (Double Skinned) Standard Selection Data

Package Units Descriptions			Cooling 3/8" Dia Coil Design Details at Fins (10FPI), Air Entering DBT/WBT 80F°/67F°, Water In/Out 45F°/55F°				Electric Heaters Air Entering DBT 55F° (Optional)		Condenser Details		
Model #	Air Flow		Coil Area Sq.ft	No of Row Nos	Cooling Capacity		Refrigerant GAS	No of Stages Nos	H. Capacity KW	No of Circuit Nos	C. Capacity Ton
	CFM	CMH			MBH	Ton					
SPU-4	1,600	2,716	3.2		58	4.8		3 or 4	12	1	5
SPU-6	2,400	4,075	4.8		68	5.7		3 or 4	18	1	6
SPU-8	3,200	5,433	6.4		96	8.0		4 or 6	23	1 or 2	8
SPU-10	4,000	6,791	8		120	10.0		4 or 6	30	1 or 2	10
SPU-12	4,800	8,149	9.6	3 to 4	144	12.0	R-22 / R-407C	4 or 6	35	1 or 2	12
SPU-16	6,400	10,866	12.8		192	16.0		6 or 8	46	1 or 2	16
SPU-20	8,000	13,582	16		240	20.0		6 or 8	58	1 or 2	20
SPU-24	9,600	16,299	19.2		288	24.0		6 or 8	70	2 or 3	24
SPU-30	12,000	20,374	24		360	30.0		8 or 10	90	2 or 3	30

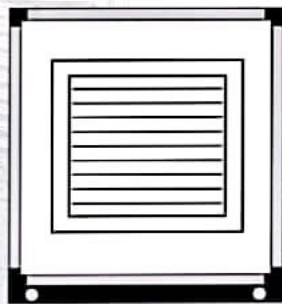
Air Handling Unit (Double Skinned) Standard Selection Data



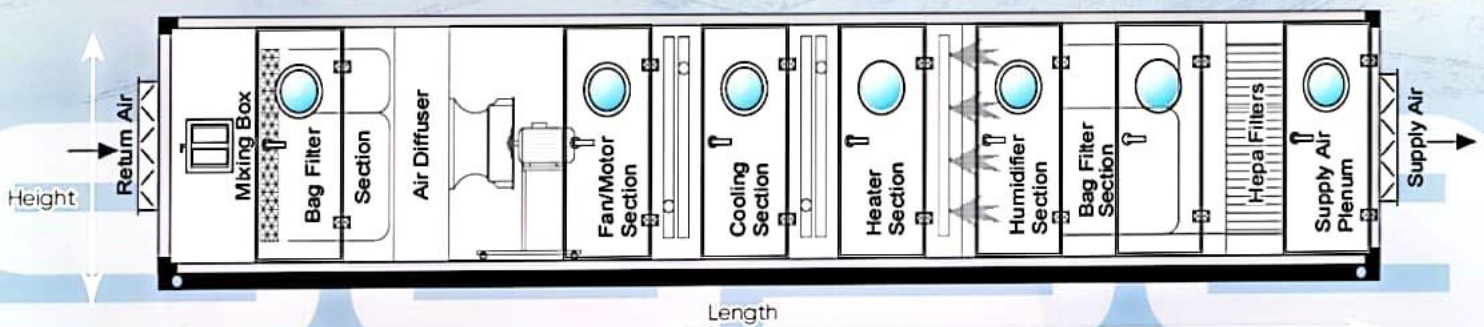
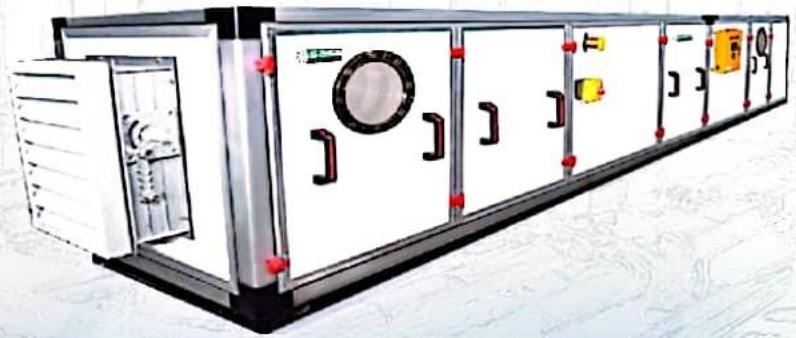
Air Handling Units Descriptions			Cooling 3/8" Dia Coil Design Details at Fins (10FPI), Air Entering DBT/WBT 80°/67°, Water In/Out 45°/55°				Cooling 5/8" Dia Coil Design Details at Fins (8FPI), Air Entering DBT/WBT 55°/54°, Water In/Out 140°/120° (Optional)				
Model #	Air Flow		Coil Area Sq.ft	No of Row Nos	Cooling Capacity		Water Flow GPM	No of Row Nos	Heating Capacity		Water Flow GPM
	CFM	CMH			MBH	Ton			MBH	Ton	
SAHU-10	1,000	1,698	2	4	31.8	2.7	6.3	1	18.8	1.6	1.9
				6	41.8	3.5	8.3	2	35.8	3.0	3.6
SAHU-20	2,000	3,396	4	4	64.9	5.4	12.9	1	40.1	3.3	4.1
				6	85.7	7.1	17.1	2	73.9	6.2	7.5
SAHU-30	3,000	5,093	6	4	102.7	8.6	20.5	1	58.8	4.9	6
				6	125.5	10.5	25.0	2	105.2	8.8	10.7
SAHU-40	4,000	6,791	8	4	137.3	11.4	27.4	1	80.1	6.7	8.1
				6	171.4	14.3	34.2	2	145.5	12.1	14.7
SAHU-50	5,000	8,489	10	4	169.7	14.1	33.8	1	101.5	8.5	10.3
				6	214.3	17.9	42.7	2	181.2	15.1	18.4
SAHU-75	7,500	12,733	15	4	254.5	21.2	50.7	1	152.2	12.7	15.4
				6	321.4	26.8	64.1	2	274.3	22.9	27.8
SAHU-100	10,000	16,978	20	4	339.4	28.3	67.6	1	203.0	16.9	20.6
				6	440.7	36.7	87.8	2	362.5	30.2	36.7
SAHU-125	12,500	21,222	25	4	424.2	35.4	84.5	1	253.7	21.1	25.7
				6	538.9	44.9	107.4	2	453.1	37.8	45.9
SAHU-150	15,000	25,467	30	4	501.6	41.8	100.0	1	294.0	24.5	29.8
				6	642.8	53.6	128.1	2	548.6	45.7	55.6
SAHU-175	17,500	29,711	35	4	578.6	48.2	115.3	1	342.3	28.5	34.7
				6	747.0	62.3	148.9	2	639.1	53.3	64.8
SAHU-200	20,000	33,956	40	4	678.7	56.6	135.3	1	405.9	33.8	41.1
				6	833.4	69.5	166.1	2	725.0	60.4	73.5
SAHU-225	22,500	38,200	45	4	779.1	64.9	155.3	1	459.6	38.3	46.6
				6	955.7	79.6	190.5	2	820.2	68.4	83.1
SAHU-250	25,000	42,445	50	4	818.3	68.2	163.1	1	502.0	41.8	50.9
				6	1077.9	89.8	214.8	2	897.1	74.8	90.9
SAHU-300	30,000	50,934	60	4	1018.1	84.8	202.9	1	608.9	50.7	61.7
				6	1250.1	104.2	249.1	2	1087.5	90.6	110.2

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Dimensional Data



Width



AHU Model	Width	Height	Mixing Box	Pre Filter	Bag Filter Primary	Air Driftuset	Fan Section	Cooling Section			Heating Section	Humidifier Section	Bag Filter Secondary	Hepa Filter	Supply Air Plenum
								4R	6R	8R					
								Dim	Dim	Dim					
SAH-10	915	560	500	100	762	300	550	400	450	550	400	915	762	310	400
SAH-15	1120	560	500	100	762	300	750	400	450	550	400	915	762	310	400
SAH-25	1475	660	500	100	762	300	1025	400	450	550	400	915	762	310	400
SAH-35	1475	812	500	100	762	300	1130	400	450	550	400	1000	762	310	400
SAH-45	1524	1066	550	100	762	300	1430	400	450	550	400	1000	762	310	500
SAH-60	1675	1066	550	100	762	300	1550	400	450	550	400	1000	762	310	500
SAH-80	1675	1200	550	100	762	300	1660	400	450	550	400	1000	762	310	500
SAH-105	1981	1372	550	100	762	300	2050	400	450	550	400	1200	762	310	500
SAH-135	1981	1372	550	100	762	300	2175	400	450	550	400	1200	762	310	500
SAH-165	2440	1625	650	100	762	300	2550	400	450	550	400	1200	762	310	500
SAH-195	2745	1828	650	100	762	300	2850	400	450	550	400	1200	762	310	500
SAH-225	2745	1828	650	100	762	300	3375	400	450	550	400	1200	762	310	500
SAH-255	3080	2133	650	100	762	300	3375	400	450	550	400	1200	762	310	500
SAH-285	3080	2133	650	100	762	300	3500	400	450	550	400	1200	762	310	500

Note: SASA Could be Change any Size or Dimension without any intimation but Changes will not be effected on unit Performance.

Self Contained / Roof Top Packaged Unit (Single skinned)



Self Contained / Rooftop Packaged Unit

Is a type of HVAC system that contains all the components needed to provide conditioned air in one compact unit. You typically use packaged rooftop units in light and large commercial applications. A packaged rooftop unit is usually a large metal box containing the following components:

1) Expansion device. 2) Evaporator. 3) Compressor. 4) Air-cooled condenser.

Packaged rooftop units typically connect directly to a ductwork system that distributes the conditioned air through a space and returns it to the packaged rooftop unit. An Packaged rooftop unit controlled by a thermostat blows and receives conditioned air directly through ductwork

How a Packaged Rooftop Unit Works

First, air returns back to the packaged rooftop unit from the space the unit is ventilating. Some units also mix outdoor air with the returning air to produce fresher air for the space. The air then moves through a rack of filters. Then it continues to the cooling coil which chills air by running it over refrigerant. The refrigerant is cooled with a standard refrigerant cycle. The air then flows through a blower, leaving it conditioned and ready for the space. There is usually a clear, insulated divide between the evaporator coils that cool the return air, and the condenser coils and compressor that eject heat to the atmosphere. A basic thermostat typically controls packaged rooftop units. However, depending on the application they can be a part of a more complex control system. There are also some specialized applications for packaged rooftop units. For example, some units condition 100 percent outdoor air. So all the air running through the unit comes from outside, and the unit uses no return air. These units are known as 100 percent dedicated outdoor air units, or makeup air units. They require increased insulation, additional parts, and potentially more energy to run. Their obvious advantage is that they circulate fresher air than normal packaged rooftop units.

Self Contained / Roof Top Packaged Unit (Single skinned) Standard Selection Data

General Selection Table For Self Contained Units/ Roof Top Packaged Units										
Package Units Descriptions			Cooling 3/8" Dia Coil Design Details at Fins (10FPI), Air Entering DBT/WBT 80F/67F Water In/Out 45F/55F				Condenser Details		Unit Size	
Model #	Air Flow CFM	CMH	Coil Area Sq.ft	No of Row Nos	Cooling Capacity MBH	Ton	Refrigerant GAS	No of Circuit Nos	C. Capacity Ton	Wx Lx H (Inchies)
SSC-4	1,600	2,716	3.2		58	4.8		1	5	W39"x L50"x H36"
SPU-6	2,400	4,075	4.8		68	5.7		1	6	W42"x L54"x H38"
SPU-8	3,200	5,433	6.4		96	8.0		1 or 2	8	W46"x L58"x H40"
SPU-10	4,000	6,791	8		120	10.0		1 or 2	10	W60"x L72"x H42"
SPU-12	4,800	8,149	9.6	3 to 4	144	12.0	R-22 / R-407C	1 or 2	12	W70"x L76"x H44"
SPU-16	6,400	10,866	12.8		192	16.0		1 or 2	16	W72"x L84"x H48"
SPU-20	8,000	13,582	16		240	20.0		1 or 2	20	W77"x L98"x H60"
SPU-24	9,600	16,299	19.2		288	24.0		2 or 3	24	W77"x L118"x H64"
SPU-30	12,000	20,374	24		360	30.0		2 or 3	30	W84"x L130"x H72"

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