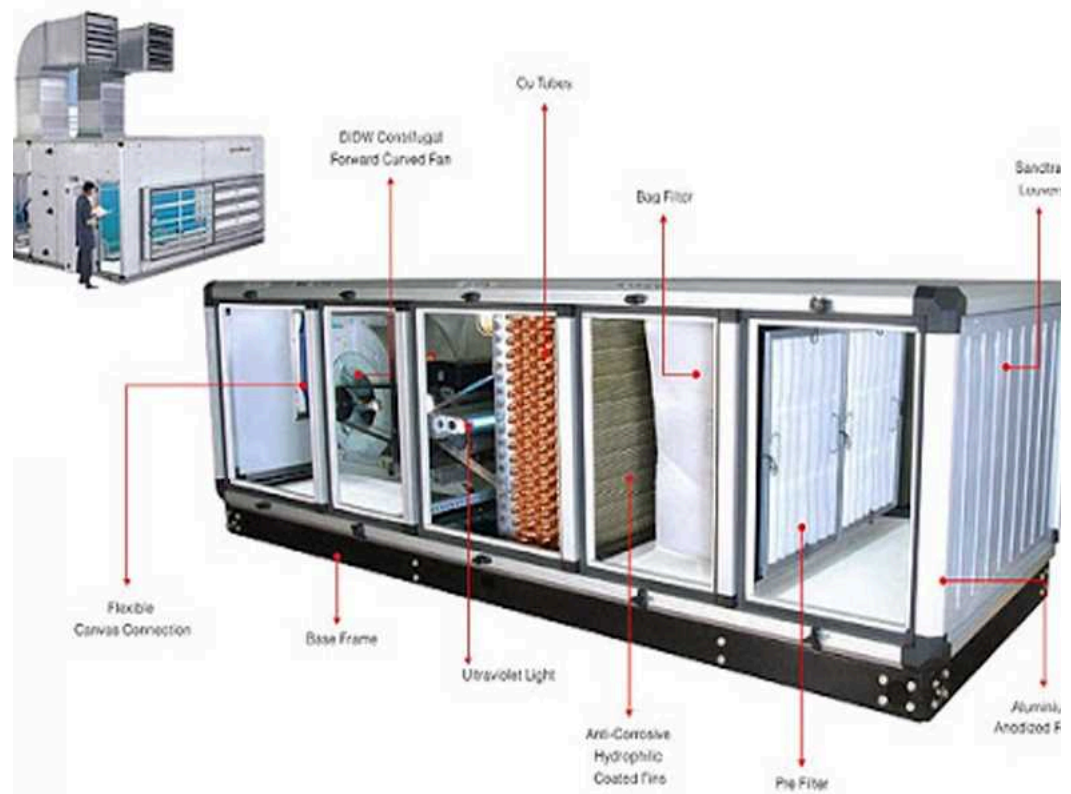


## A Guide To Understanding Air Handling Unit Schematic Diagrams



An air handling unit (AHU) is an essential component of an HVAC system that plays a crucial role in maintaining indoor air quality and ensuring the comfort of occupants. It is responsible for conditioning, filtering, and circulating the air throughout a building or space.

The schematic diagram of an air handling unit provides a visual representation of its components and the way they work together to perform their functions. These diagrams are essential for understanding the design, installation, operation, and maintenance of AHUs.

A typical air handling unit schematic diagram includes various components such as fans, filters, heating and cooling coils, dampers, sensors, and control devices. The fans are responsible for drawing in outside air or recirculating the indoor air. The filters help remove dust, pollen, and other contaminants from the air. The heating and cooling coils are used to adjust the temperature of the air, while the dampers control the flow of air within the unit.

In addition to these components, the schematic diagram may also include sensors for measuring temperature,

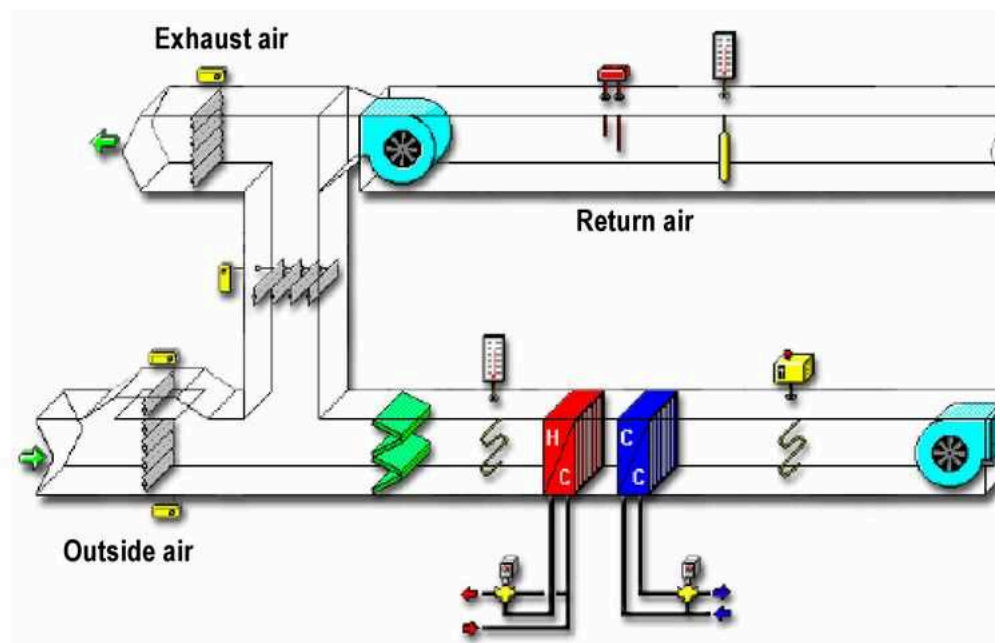
humidity, and air quality, as well as control devices such as thermostats and pressure switches. These sensors and control devices help regulate the operation of the AHU and ensure that it operates efficiently and effectively.

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## Air Handling Unit Schematic Diagram: Understand The Basics

# AHU – Air Handling Unit

Where does air come from and go to?



The air handling unit (AHU) schematic diagram is a technical representation of the components and connections involved in the operation of an AHU. It provides a visual overview of how the AHU functions, helping engineers, technicians, and operators understand and troubleshoot the system.

At the heart of the AHU schematic diagram is the blower or fan, which is responsible for moving air through the system. The blower is typically powered by an electric motor, indicated as one of the key components in the diagram. The schematic also includes other important components such as filters, dampers, heating and cooling coils, and sensors.

**Filters** – Located at the inlet of the AHU, filters are essential for removing dust, dirt, and other airborne particles from the incoming air. The schematic diagram illustrates the placement and type of filters used in the AHU system.

**Dampers** – Dampers are used to regulate the airflow within the AHU. They can be manually adjusted or controlled by an automated system, as shown in the schematic diagram.

**Heating and Cooling Coils** – These coils are responsible for conditioning the air by either heating or cooling it. The schematic diagram indicates the location and type of coils used in the AHU system.

**Sensors** – Sensors play a crucial role in the AHU system, as they provide data on temperature, humidity, pressure, and other parameters. The schematic diagram shows the placement and type of sensors used to monitor and control the AHU operation.

The AHU schematic diagram also includes arrows and labels that indicate the flow direction of the air, as well as the connections between the different components. This helps users understand how the air circulates within the unit and how the various components work together to achieve the desired air conditioning or ventilation outcome.

Overall, understanding the basics of an AHU schematic diagram is essential for anyone involved in the design, installation, or maintenance of air handling units. It provides a clear visual representation of the system and enables efficient troubleshooting and optimization of the AHU performance.

## What Is An Air Handling Unit?

An air handling unit (AHU) is a crucial component of heating, ventilation, and air conditioning (HVAC) systems. It plays a vital role in circulating and conditioning the air within a building or a space. AHUs are commonly found in commercial and industrial buildings, hospitals, schools, and other large facilities.

The main function of an AHU is to take in the outside air, filter and condition it, and then distribute it throughout the building. It is responsible for maintaining the desired air quality, temperature, and humidity levels within the space. AHUs are designed to handle both the supply of fresh air and the extraction of stale or contaminated air from the building.

The basic components of an AHU include a fan, filters, heating and cooling coils, dampers, and control systems. The fan is responsible for drawing in the air and pushing it through the system. Filters remove dust, pollen, and other particles from the incoming air. Heating and cooling coils regulate the temperature of the air by either heating or cooling it. Dampers control the flow of air within the system, allowing for the proper distribution and balancing. The control systems monitor and regulate the operation of the AHU, ensuring optimal performance.

An AHU schematic diagram provides a visual representation of the various components and their connections within the unit. This diagram is useful for

understanding how an AHU works and for troubleshooting any issues that may arise. It also serves as a reference guide for technicians and engineers involved in the design, installation, and maintenance of HVAC systems.

## Key Components Of An AHU:

- **Fan:** Draws in and pushes air through the system
- **Filters:** Removes particles from the incoming air
- **Heating and cooling coils:** Regulate the temperature of the air
- **Dampers:** Control the flow of air within the system
- **Control systems:** Monitor and regulate the operation of the AHU

## Components Of An Air Handling Unit

The air handling unit (AHU) is a crucial component of an HVAC system responsible for regulating and distributing air throughout a building. It is made up of various components that work together to ensure the efficient and effective operation of the system. Some of the key components of an AHU include:

- **Filters:** AHUs are equipped with filters that are designed to remove impurities and contaminants from the air. These filters can include pre-filters, which capture larger particles, and HEPA filters, which are capable of trapping smaller particles like dust and pollen.
- **Blower:** The blower, or fan, is responsible for moving air through the AHU. It draws in air from the environment, passes it through the filters, and then circulates it back into the building. The blower can be driven by an electric motor or a belt drive system.
- **Heating and Cooling Coils:** The AHU contains heating and cooling coils that are used to adjust the temperature of the air passing through the unit. Heating coils, typically powered by natural gas or electricity, increase the temperature of the air, while cooling coils, usually filled with refrigerant, decrease the temperature.
- **Dampers:** Dampers are adjustable plates or louvers located in the AHU that control the flow of air. They can be used to regulate the amount of air entering the unit, adjust the airflow to different zones within the building, or restrict the airflow when necessary.
- **Mixing Chamber:** The mixing chamber is a section of the AHU where outside air and return air are combined. This allows for the introduction of fresh air into the system while also maintaining a desired temperature and humidity level.
- **Humidifier and Dehumidifier:** In some AHUs, humidifiers and dehumidifiers are installed to control the humidity levels of the air. A humidifier adds moisture to the air when it is too dry, while a dehumidifier removes excess moisture when the air is too humid.

These are just a few of the components that make up an air handling unit. Each component plays a crucial role in the overall performance and functionality of the AHU and, ultimately, the HVAC system as a whole.

## How Does An Air Handling Unit Work?

An air handling unit (AHU) plays a crucial role in maintaining a comfortable and healthy indoor

environment. It is responsible for circulating and conditioning air in buildings, ensuring proper ventilation, temperature control, and air filtration. The AHU is typically located in a central mechanical room, and its schematic diagram depicts the various components and their connections.

The main components of an AHU include a fan, filters, heating and cooling coils, humidifier, and controls. The fan is responsible for circulating air through the system, while filters remove dust, allergens, and other contaminants from the incoming air. The heating and cooling coils regulate the air temperature, either by passing hot or cold water through them. The humidifier adds moisture to the air if necessary.

When the AHU is operating, outside air is drawn in through dampers, which can be adjusted to control the amount of fresh air intake. The air then passes through the filters, where particles and pollutants are trapped, before entering the fan. The fan blows the filtered air through the heating or cooling coils, where it is heated or cooled to the desired temperature. The conditioned air is then distributed through a network of ducts to different areas of the building.

The AHU's controls monitor and regulate the system's operation, ensuring that the desired temperature and humidity levels are maintained. They can also adjust the fan speed, control the amount of fresh air intake, and activate or deactivate specific components based on the building's requirements. The controls can be manual, automatic, or programmable, depending on the level of sophistication and customization desired.

In conclusion, an air handling unit is an essential part of a building's HVAC system, responsible for circulating, conditioning, and filtering the air. By properly maintaining and operating the AHU, occupants can enjoy a comfortable and healthy indoor environment.

## Types Of Air Handling Units

Air handling units (AHUs) are an essential component of HVAC systems, responsible for conditioning and distributing air in commercial and residential buildings. There are several types of AHUs, each designed for specific applications and requirements. Here are some of the most common types of air handling units:

### 1. Single Zone AHU

A single zone AHU is designed to serve a specific area or zone within a building. It typically includes a cooling coil, heating coil, and a fan to circulate and condition the air in that particular zone. Single zone AHUs are commonly used in small offices, hotel rooms, and individual apartments.

### 2. Variable Air Volume (VAV) AHU

A VAV AHU is equipped with multiple supply air fans and dampers to control the airflow and temperature in different zones. It uses sensors to monitor the temperature and occupancy levels in each zone and adjusts the airflow accordingly. VAV AHUs are commonly used in larger buildings with multiple rooms or areas that require different cooling or heating levels.

### 3. Dual Duct AHU

A dual duct AHU uses two separate ducts, one for cold air and one for hot air. It can supply both hot and cold air simultaneously and mix them to achieve the desired temperature. Dual duct AHUs are used in buildings with varying cooling and heating requirements in different zones, such as office buildings with different temperature needs for open spaces and enclosed offices.

### 4. Packaged AHU

A packaged AHU is a compact unit that includes all the necessary components, such as the air filter, heating and cooling coils, humidifier, and fans, in a single enclosure. It is commonly used in smaller spaces, such as small offices, retail stores, and cabins, where space is limited.

### 5. Energy Recovery AHU

Energy recovery AHUs are designed to recover and reuse the energy from the exhaust air to heat or cool the incoming air. They use heat exchangers to transfer energy between the outgoing and incoming air streams, resulting in significant energy savings. Energy recovery AHUs are commonly used in buildings where energy efficiency is a priority, such as green buildings and high-performance facilities.

These are just a few examples of the different types of air handling units available in the market. Each type has its unique features and advantages, allowing for customization and optimization of HVAC systems based on the specific needs of the building and its occupants.

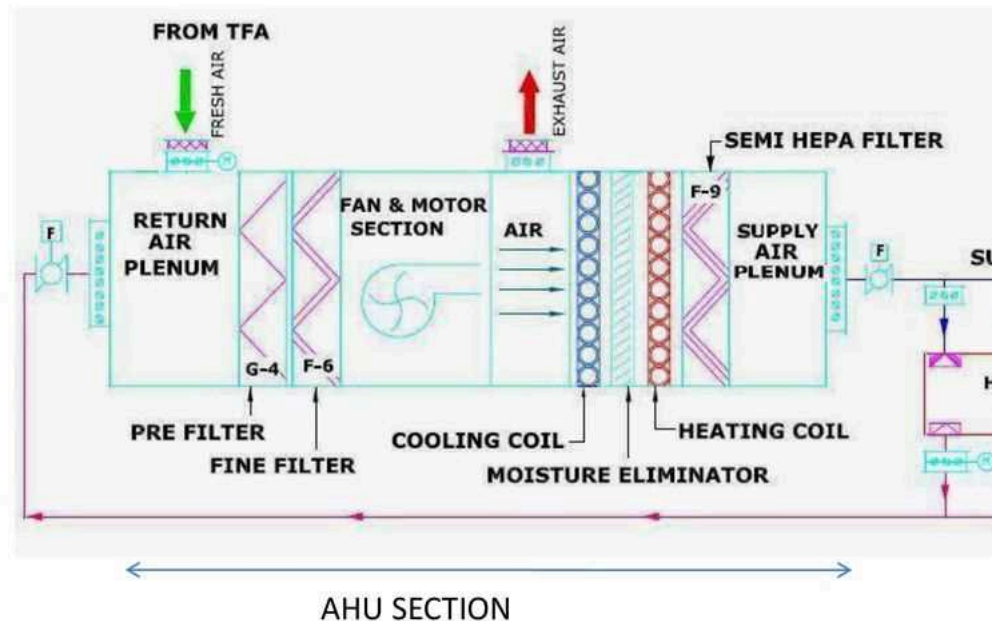
## Benefits Of Proper Air Handling Unit Schematic Diagrams



# AIR HANDLING SYSTEM II

## PHARMACEUTICAL MANUFACT

### SCHEMATIC OF AIR HANDLING UNIT (AHU)



16-Nov-18

Proper air handling unit (AHU) schematic diagrams play a crucial role in maintaining the functionality and efficiency of HVAC systems. These diagrams provide a visual representation of the AHU and its components, allowing technicians and engineers to understand how the unit operates and identify any potential issues or areas for improvement.

**Improved troubleshooting:** Having an accurate and detailed AHU schematic diagram can greatly simplify the troubleshooting process. Technicians can refer to the diagram to quickly locate specific components, understand their functions, and identify any potential faulty connections or electrical issues. This saves time and effort, resulting in quicker diagnostics and repairs.

**Enhanced system efficiency:** By having a clear understanding of the AHU's schematic diagram, engineers can identify areas where energy efficiency can be improved. They can analyze the diagram to determine if the air flow and temperature control systems are properly calibrated, if there are any unnecessary pressure drops, or if there are opportunities to optimize the arrangement of components for better performance. This can result in significant energy savings and improved overall system efficiency.

**Streamlined maintenance:** Proper AHU schematic diagrams not only aid in troubleshooting and repairs but also in regular maintenance tasks. Technicians can use the

diagrams as a reference to create detailed maintenance plans, ensuring that all necessary components are inspected, cleaned, and replaced at the appropriate intervals. This proactive approach to maintenance helps prevent unexpected breakdowns, extends the lifespan of the AHU, and ensures optimal functioning throughout its operational life.

**Effective communication:** AHU schematic diagrams serve as a common language that can be understood by technicians, engineers, and other professionals involved in the design, installation, and maintenance of HVAC systems. These diagrams provide a clear and visual representation of the AHU's components, making it easier for different teams to collaborate, communicate ideas, and ensure that everyone is on the same page when it comes to system design, troubleshooting, and maintenance.

In conclusion, proper AHU schematic diagrams offer numerous benefits, including improved troubleshooting, enhanced system efficiency, streamlined maintenance, and effective communication. Investing time and effort in creating and regularly updating these diagrams can significantly contribute to the smooth operation and longevity of HVAC systems.

## The Importance Of Regular Maintenance For Air Handling Units

The proper maintenance of air handling units (AHUs) is crucial for ensuring optimal performance and efficiency. Regular maintenance helps to extend the lifespan of AHUs, improve indoor air quality, and reduce energy consumption. Neglecting maintenance can lead to costly repairs, decreased efficiency, and potential health risks.

**Here are some key reasons why regular maintenance is important for AHUs:**

- **Preventing breakdowns:** Regular maintenance helps to identify and address potential issues before they become major problems. This can prevent unexpected breakdowns and the resulting downtime and inconvenience.
- **Enhancing performance:** Proper maintenance ensures that AHUs are operating at peak performance. Regular cleaning and inspection of filters, coils, fans, and other components can help to improve the overall efficiency and effectiveness of the system.
- **Optimizing energy efficiency:** AHUs that are not properly maintained can consume more energy than necessary, leading to higher operating costs. Regular maintenance helps to optimize energy efficiency by ensuring that all components are clean, lubricated, and operating correctly.
- **Improving indoor air quality:** AHUs play a critical role in maintaining indoor air quality. Regular maintenance helps to remove dirt, dust, and other contaminants from filters, coils, and ductwork, which can improve the overall air quality and reduce the risk of respiratory issues.
- **Prolonging lifespan:** Regular maintenance can significantly extend the lifespan of AHUs. Proper care and servicing of components can prevent premature wear and tear, allowing the unit to operate effectively for a longer period of time.



- **Ensuring compliance:** Regular maintenance helps to ensure that AHUs meet regulatory and safety standards. It is crucial for maintaining a healthy and comfortable environment for occupants while meeting necessary guidelines.

**In conclusion,** regular maintenance plays a vital role in the performance, efficiency, and longevity of air handling units. It helps to prevent breakdowns, enhance performance, optimize energy efficiency, improve indoor air quality, prolong the lifespan of units, and ensure compliance with standards. By investing in regular maintenance, building owners and operators can ensure that their AHUs operate at their best, providing a comfortable and healthy environment for occupants while minimizing operating costs and potential risks.

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