INSTALLATION, OPERATIONS,
& MAINTENANCE MANUAL

APOLLO

Central Air Handling AHU

AVAILABLE CAPACITIES

3.5 TON | **6** TON

CONTACT INFORMATION

1-888-301-0737

info@mbtek.com

BUSINESS HOURS

Mon – Fri: 9AM – 7PM EST

Sat: 9AM – 5PM EST

Intertek 60444

Conforms to UL Std 1995

Certified to CAN/CSA Std C22.2 No. 236

Proud HARDI Contractor Member

AHRI MEMBER

ENERGY STAR PARTNER

GEO www.geoexchange.org MEMBER

International Ground Source Heat Pump Association

NATE

HRAI MEMBER COMPANY

BUILT FOR COMFORT.
ENGINEERED TO PERFORM.

2026 EDITION
VERSION 1.0

CONTENT

1. INTRODUCTION

The Air Handing unit is designed for integration into central duct systems to provide high-efficiency heating and cooling functions. Optimal performance depends on proper application and correct installation in accordance with these technical guidelines.

2. UNIT PROTECTION AND CARE

To ensure the longevity of the equipment and maintain its high-efficiency standards, the following protections must be observed:

- **Contamination Shielding:** Protect units from damage and contamination due to plastering (spraying), painting, and all other foreign materials at the job site.
- **Packaging:** Keep all units covered on the job site with either the original packaging or equivalent protective covering.
- **Connection Integrity:** Cap or recap all unit connections and all piping until the unit is finally installed.
- **Storage:** Units must be stored in an upright position at all times and should not be stacked unless specifically noted on the packaging.
- **Physical Safety:** Take all necessary precautions to avoid physical damage which may prevent proper start-up or result in costly equipment repairs.

3. TECHNICAL SPECIFICATIONS

FEATURE	SPECIFICATION	
	AP-AHU-3.5T	AP-AHU-6T
Ventilation System	Central Duct System	Central Duct System
Heating/Cooling Functions	Heat, Cool	Heat/Cool/Humidify/Dehumidify /Backup Heater /Evaporative Cooling
Return Discharge Orientation	Left Return/Top Discharge (Include Condensation Pan with P-trap	Left Return/Top Discharge (Include Condensation Pan with P-trap
Hydronic Coil	Size: 22” x 22” x 5” (Width x Height x Depth) Coil Capacity: Up to 193,600 BTU	Size: 20" x 32" x 6" (Width x Height x Depth) Coil Capacity: Up to 460,000 BTU
Flow rate	Recommended minimum flow rate of 17.6 GPM	Recommended minimum flow Rate of 21.2 GPM
Furnace Air Filters	Dimension: 24” x 24” x 1”, 2-pk	Dimension: 20” x 24” x 2”, 2-pk MERV 8 Pleated
Connections Type	1” FPT (Female Pipe Thread)	1” FPT (Female Pipe Thread)
Weight	Unit Weight: 145 lbs. Total Weight: 172 lbs.	Unit Weight: 165 lbs. Total Weight: 190 lbs.

3.1. Electrical Data

FEATURE	SPECIFICATION	
	AP-AHU-3.5T	AP-AHU-6T
Power Supply	220V 60 Hz	220V 60 Hz
Control	24VAC, 3 Speed 24VAC	24VAC, 3 Speed 24VAC
Breaker requirement	15A	60A
Wire gauge	#12 AWG	#8 AWG

4. SERIES OVERVIEW

4.1. APOLLO AHU 3.5T

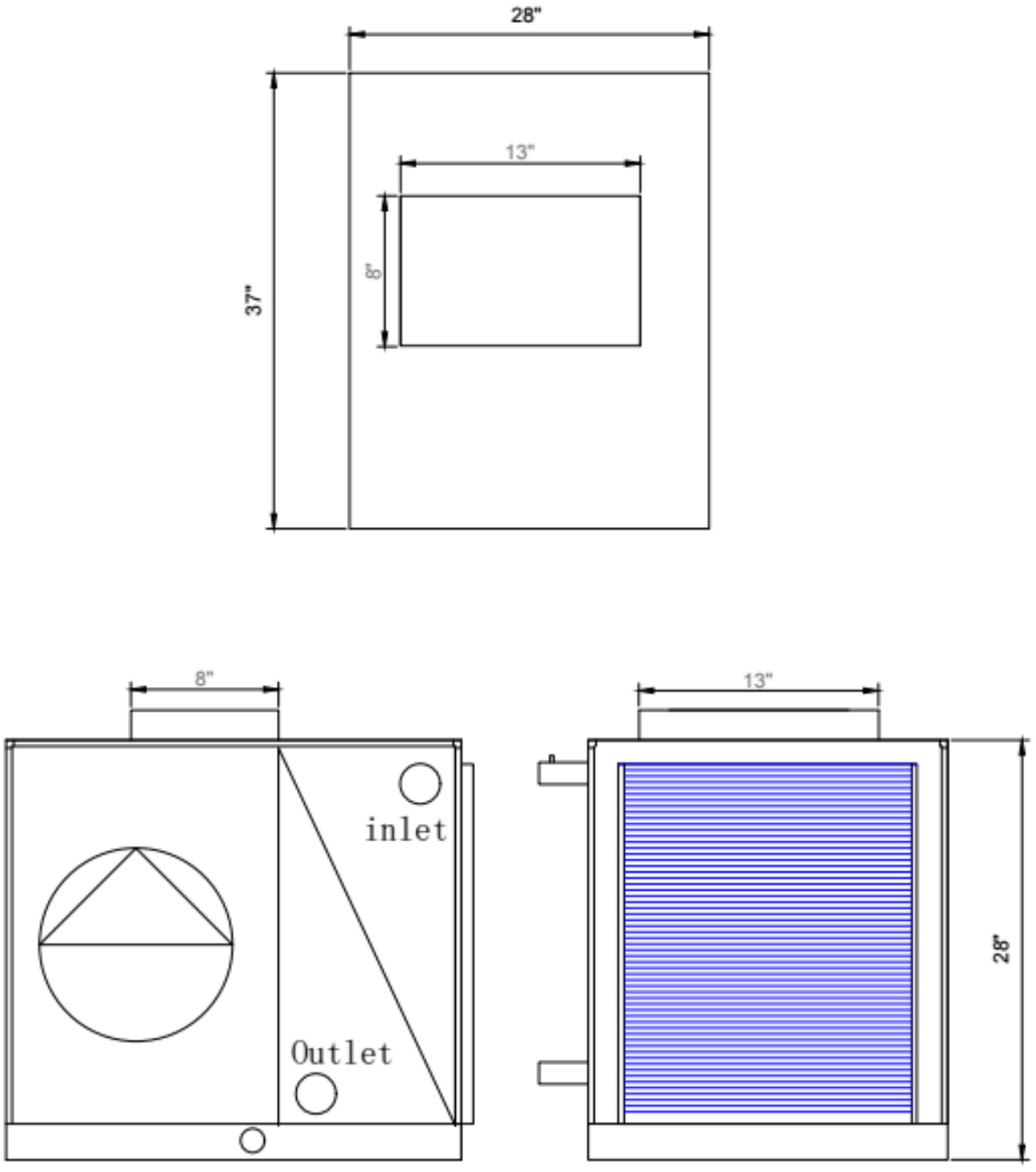
- Rapid, high-efficiency heat exchange up to 193,600 BTU utilizing a compact fluid coil assembly.
- Powered by an 800W EC motor with variable speed drive, delivering 3 factory-preset CFM stages for precise duct balancing.
- Direct 1" FPT heavy-brass connections paired with a factory-integrated left return and top discharge condensate management tray.
- Runs natively on a 220V single-phase loop matching standard #12 AWG wiring and localized 15A overcurrent protection.

4.1. APOLLO AHU 6T

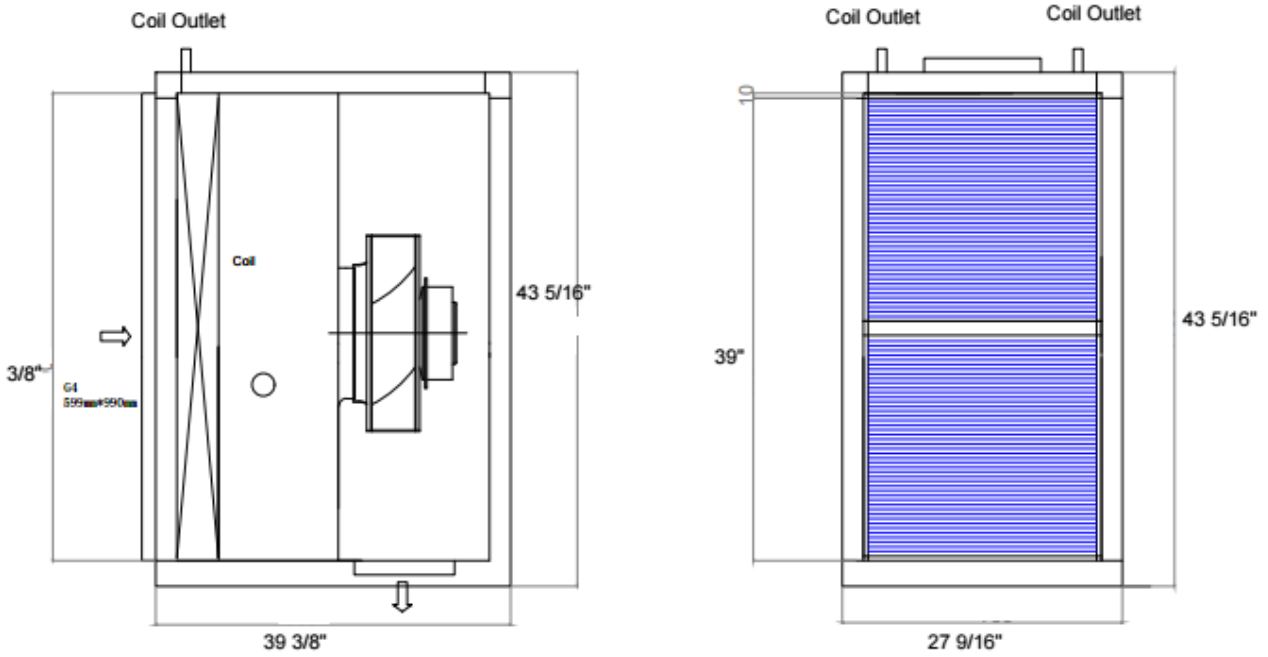
- Fully coordinates space conditioning by integrating automated multi-stage heating, cooling, humidification, dehumidification.
- Delivers a heavy-duty peak capacity of up to 460,000 BTU via an expanded 6-inch deep multi-row coil matrix.
- Houses an internal 10 kW electric resistance array divided into dual 5 kW banks with a built-in 10-minute automated staging interlock delay circuit.
- Includes a factory-fitted wet-film humidifier assembly that automatically modulates its water feed valve open for 5 seconds every 5 minutes at a nominal 5W current draw.
- Managed through an intensive 10,800W integrated power terminal requiring a 60A breaker and distance-calibrated #8 AWG or #6 AWG branch copper conductors.

5. APPEARANCE AND DIMENSION

AP – AHU – 3.5T



AP – AHU – 6T


Coil Outlet
Coil
43 5/16"
3/8"
39 3/8"
Coil Outlet
Coil Outlet
39"
43 5/16"
27 9/16"

6. INSTALLATION

6.1 Pre-Installation Inspection

- Before unpacking the unit, a detailed inspection of the installation site must be carried out.
- The installation area shall be clean, dry and well-ventilated, free from dust, oil or construction debris that could affect equipment performance
- The floor or foundation must be structurally sound, capable of supporting the unit weight under operating conditions
- The foundation surface must be perfectly level, with a tolerance typically not exceeding ±2 mm per meter
- The foundation must be complete and finished, with no cracks, voids or uneven sections
- Adequate space must be available for:
  - Equipment transportation and handling
  - Lifting and positioning
  - Future maintenance and servicing
- Proper drainage provisions must be considered to allow removal of condensate water and defrost water
- Environmental conditions must be suitable, avoiding:
  - Areas with corrosive gases
  - High dust concentration
  - Flood-prone locations
- Only after confirming that all conditions are compliant should the unit be unpacked.

6.2. Appearance and Internal Inspection

A detailed inspection must be conducted before installation:

- Check the outer casing and panels for dents, scratches or deformation
- Inspect all inspection doors and access panels to ensure proper sealing and alignment
- Verify that gaskets and sealing surfaces are intact and undamaged
- Open accessible panels (if permitted) and confirm:
  - Internal components are properly installed
  - No loose bolts, nuts or fittings
  - Electrical wiring is secure
  - No foreign objects are present inside the unit

6.3 Unit Orientation

The unit must be properly oriented prior to installation. Position the unit in its intended configuration before making any electrical, hydronic or drainage connections. Do not connect piping or wiring until the final orientation has been confirmed.

☞ ***Note: Install in a vertical upright orientation only. Do NOT attempt horizontal conversion or down-flow modifications.***

6.4. Unit Placement

When installing the Apollo Hydronic Air Handling Unit, proper placement is essential to ensure safe operation, serviceability, and long-term performance.

6.5. Mounting and Base Requirements

The Air Handling Unit must be installed on a stable, level and vibration-resistant base to ensure proper operation and minimize noise transmission.

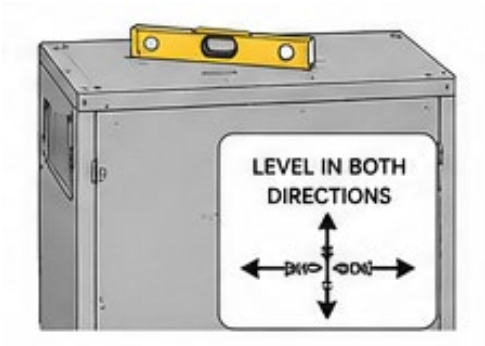
It is recommended to place the unit on a solid equipment pad, such as a high-density polymer pad, concrete base or equivalent structural support suitable for the unit weight and operating conditions. The mounting surface must provide full support across the unit base.

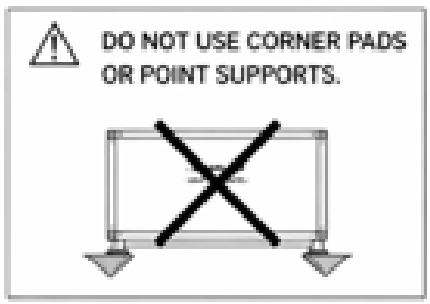
To minimize vibration and noise:

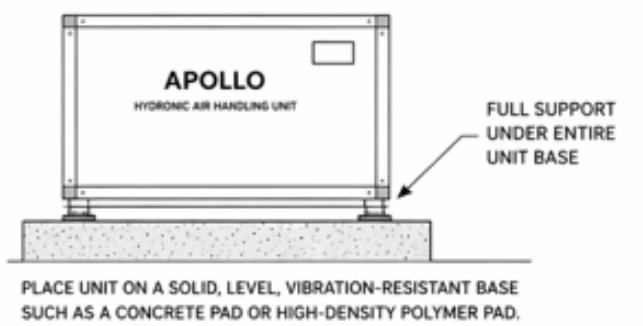
- Use anti-vibration pads or isolation supports where necessary
- Avoid point-loading methods such as corner-only supports, as they may lead to cabinet distortion, noise or operational issues.

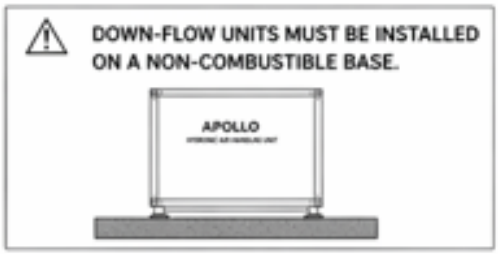
The installation surface and support structure should be designed to:

- Prevent transmission of vibration to the building structure
- Maintain unit stability during operation
- Allow proper alignment with connected ductwork and piping









Note: Use a precision level across both the longitudinal and lateral top rails. The cabinet must be perfectly level to prevent moisture pooling in the condensation pan.

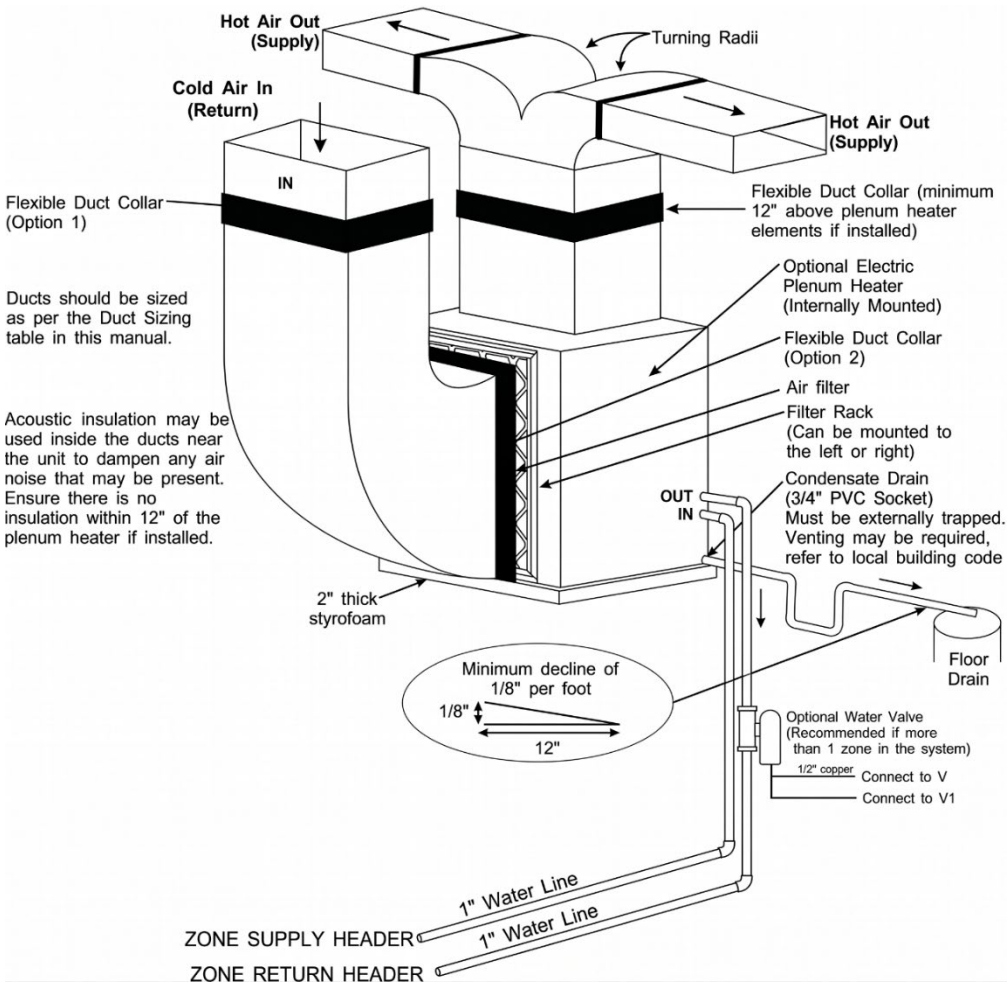
6.6. Ductwork

Proper design, sizing and installation of the supply and return air ductwork are critical to achieving the nominal performance of the Air Handling Unit (AHU). The duct system must be engineered to match the unit's available external static pressure to prevent air starvation, excessive operational noise, and thermal inefficiency.

6.6.1. Technical Specifications and Discharge Parameters

The table below outlines the performance baselines and discharge configurations for the 3.5-Ton and 6-Ton AHU models. All downstream ducting must be designed using these parameters as the point of origin.

PERFORMANCE PARAMETER	AP-AHU-3.5T	AP-AHU-6T
Nominal Airflow	1400 CFM	2400 CFM
Airflow-to-Tonnage Ratio	400 CFM/Ton	400 CFM/Ton
Standard Outlet Duct Size (W x H)	12 in x 10 in	16 in x 14 in
Nominal Outlet Cross-Sectional Area	0.875 ft^2	1.50 ft^2
Rated External Static Pressure	1.0 in w.g.	2.0 in w.g.



6.6.2. Flexible Connections

- **Material Specification:** Use a heavy-duty, flame-retardant, fabric-reinforced flexible connector (compliant with NFPA 90A and 90B). The fabric must be rated to withstand the maximum static pressure of the system (up to 2.0 in w.g. for the 6-Ton unit and 1.0 in w.g. for the 3.5-Ton unit) without tearing.
- **Alignment:** Ensure the flexible connection is installed perfectly straight and taut. Lax or saggy flexible connections introduce severe turbulence, increasing dynamic pressure loss and causing high-frequency whistling.
- **Length Constraints:** The fabric gap between the AHU discharge collar and the rigid metal ductwork must be maintained between 2 inches and 4 inches to guarantee optimal vibration isolation without collapsing under pressure.

If the unit is being installed with existing ductwork, the ductwork must be designed to handle the air volume required by the unit being installed. When running a cooling or heating load on a building; size ductwork accordingly to the building design load and air handling CFM.

Note: All metal ductwork should be insulated on the inside to prevent heat loss/gain, condensation, and to absorb air noise.

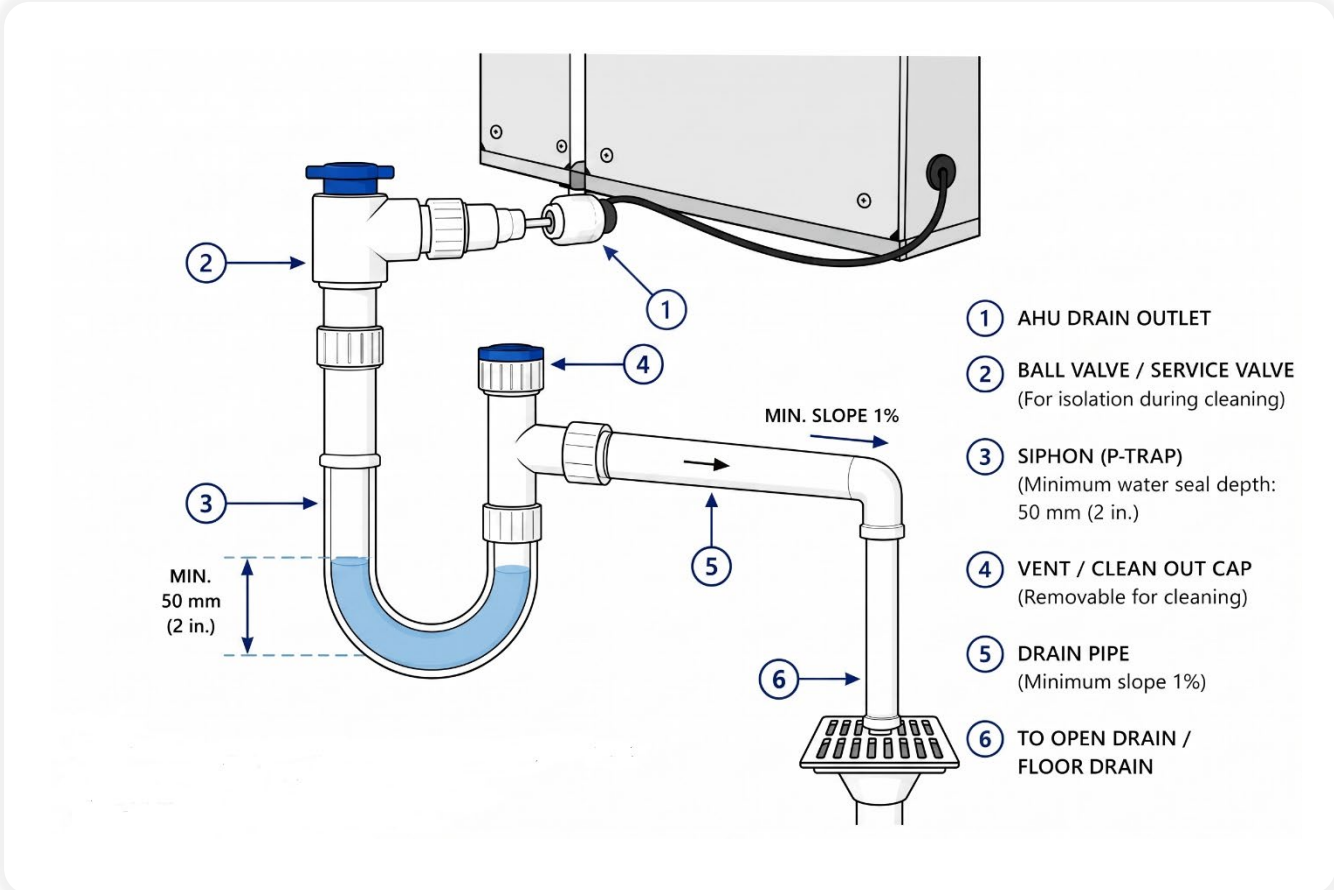
6.7. Drainage System

Proper condensate drainage is essential for reliable AHU operation and to prevent water leakage, overflow, corrosion, and microbial growth inside the unit. Both AHU systems must be connected to a properly designed condensate drain line incorporating a siphon (P-trap) arrangement to ensure continuous drainage and allow periodic cleaning and maintenance.

The negative pressure generated inside the AHU during operation can prevent condensate from draining correctly if a siphon is not installed. A properly sized siphon creates a water seal that prevents air from being drawn back into the unit while allowing condensate to flow freely to the drainage system.

6.7.1. Drain Connection Requirements

- All condensate drain connections shall include a siphon (P-trap).
- The siphon must remain accessible for inspection and cleaning.
- Provide a removable clean-out cap or service opening where possible.
- The condensate drain line shall be installed with a continuous downward slope of minimum 1%.
- Drain piping shall be routed to an open drain or approved condensate disposal point.
- Use corrosion-resistant piping materials such as uPVC, CPVC, or polypropylene.
- Avoid sharp bends or restrictions in the drain line that may obstruct condensate flow.
- The drain pan and piping must be fully leak tested during commissioning.



7. CONSTRUCTION

7.1. High-Performance EC Centrifugal Fan

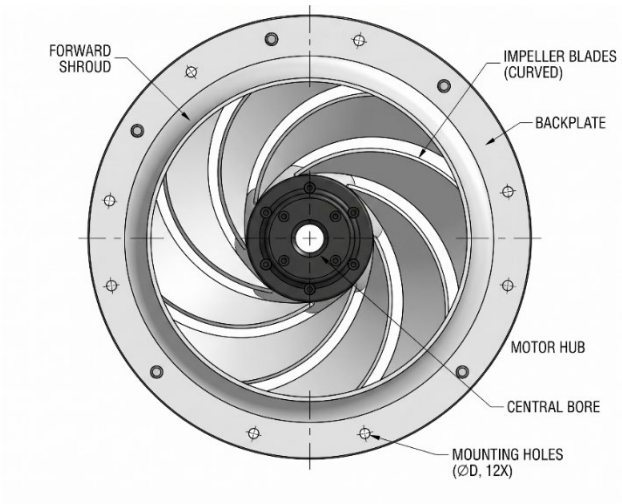
The AHU utilizes a high-efficiency EC backward curved centrifugal fan specifically designed for hydronic air handling applications requiring stable airflow, low noise operation and high external static pressure capability. The direct-drive EC motor technology provides precise airflow control while significantly reducing power consumption compared to conventional PSC blower systems.

The aerodynamic backward-curved aluminum impeller design delivers an average airflow capacity of 2,400 CFM at external static pressures up to 2.0 in.w.g., making it suitable for high-performance ducted HVAC systems. The integrated EC motor features variable speed operation through 0–10VDC or PWM control signals, allowing optimized airflow performance under varying load conditions.

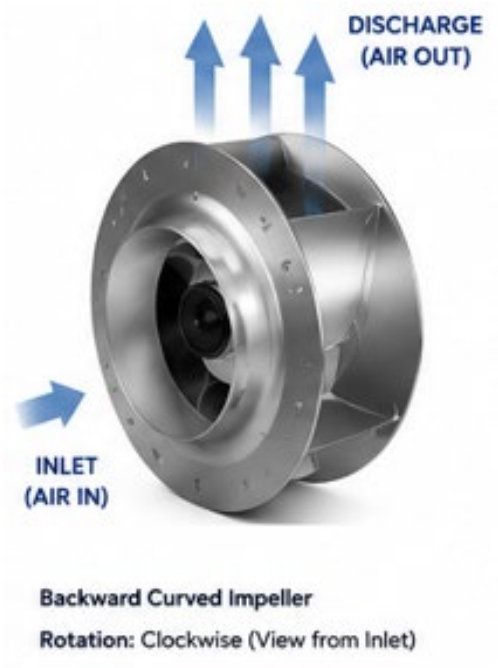
7.1.1. Technical Design and Features

This high-efficiency blower utilizes a backward curved centrifugal design, optimized for the high-pressure requirements of central duct systems.

- **Aerodynamic Impeller:** Constructed from high-grade metal aluminum sheet, the impeller's 3-dimensional blade geometry minimizes turbulence and noise while maximizing airflow.
- **Integrated EC Motor:** Features an EC brushless external rotor motor with an IE5 efficiency rating, providing superior performance compared to standard AC motors.
- **Intelligent Speed Control:** The motor is equipped with an integrated controller supporting 0–10VDC/PWM input signals, allowing for precise variable speed modulation through a WiFi Fan Coil Thermostat.
- **Safety & Protection:** The unit is UL Certified and includes built-in locked rotor protection, current limiting, and soft start capabilities to prevent electrical surges.



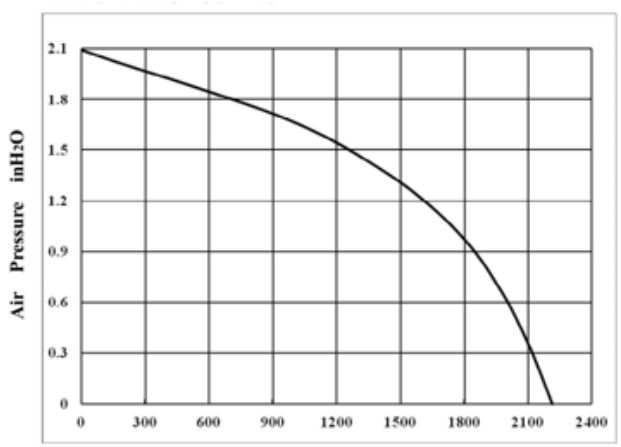
2D Drawing – Front View



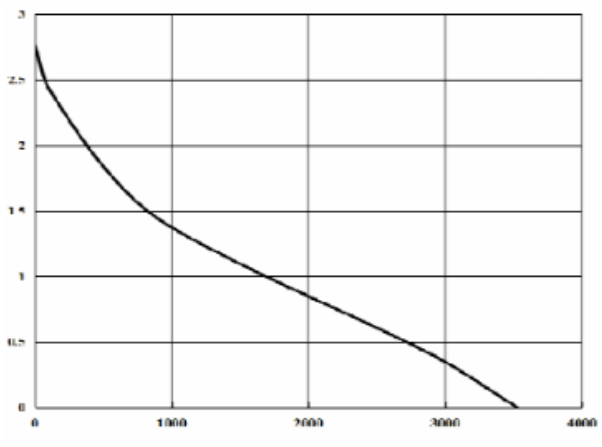
7.1.2. Specifications

FEATURE	SPECIFICATION	
Model	**AP – AHU – 3T**	**AP – AHU –6 T**
Operating Voltage	208 – 240 VAC	208 – 240 VAC
Rated Power	390 W	460 W
Rated Current	2.5 A	3.2 A
Rated Speed	1,400 RPM	2,700 RPM
Average Airflow Capacity	2214 CFM	3000 CFM
Static Pressure	2.0 in.w.g	5.3 in.w.g
Operating Temperature	-4 °F to 140 °F	-4 °F to 140 °F
Sound Level	72 dBA	78 dBA

Performance Curve 2214 CFM



Performance Curve 3000 CFM

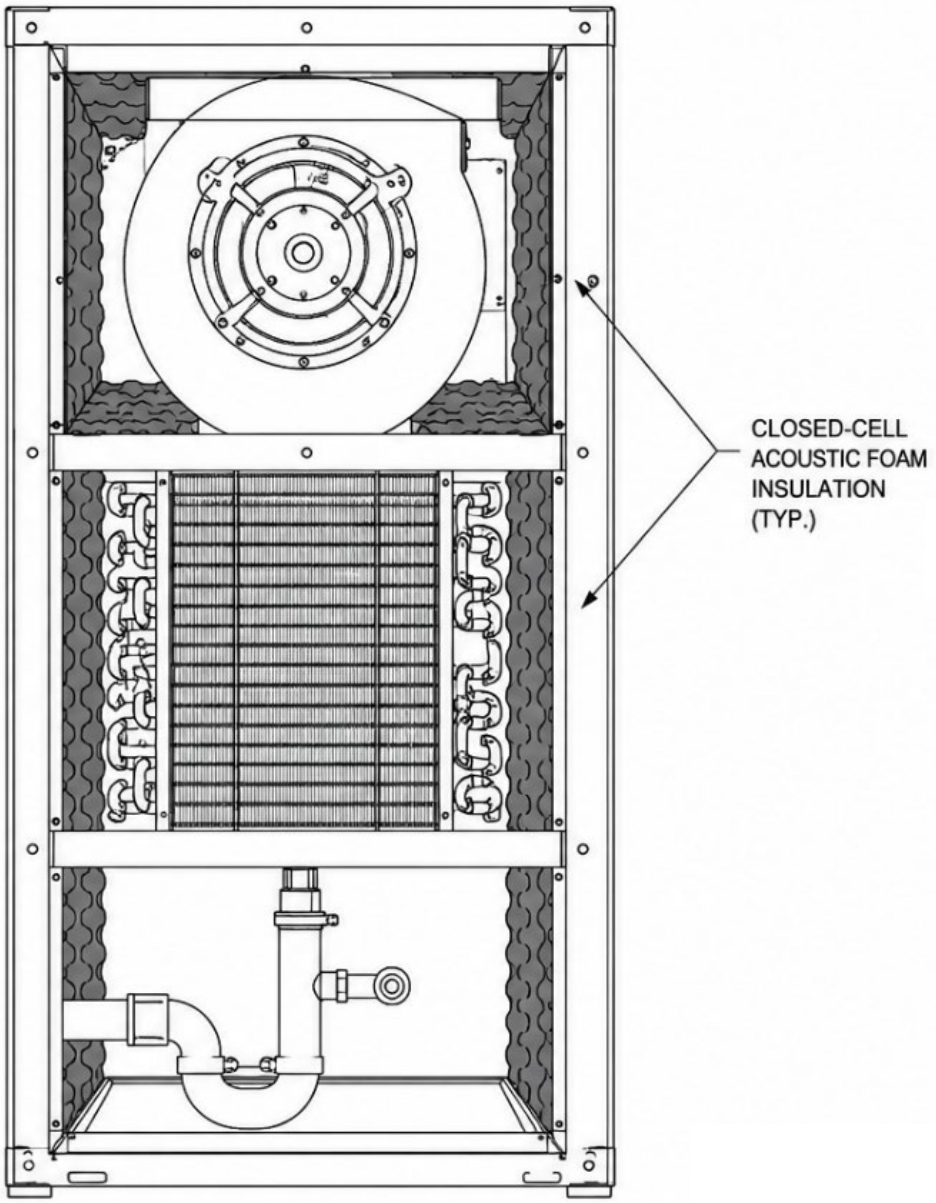


7.2. Closed-Cell Acoustic Foam Insulation

Both the APOLLO AHU 3.5T and APOLLO AHU 6T are internally lined with high-density closed-cell acoustic foam insulation designed to improve thermal efficiency and reduce operational noise transmission. The insulation minimizes cabinet heat gain/loss while effectively dampening blower and airflow sound within the air handling chamber.

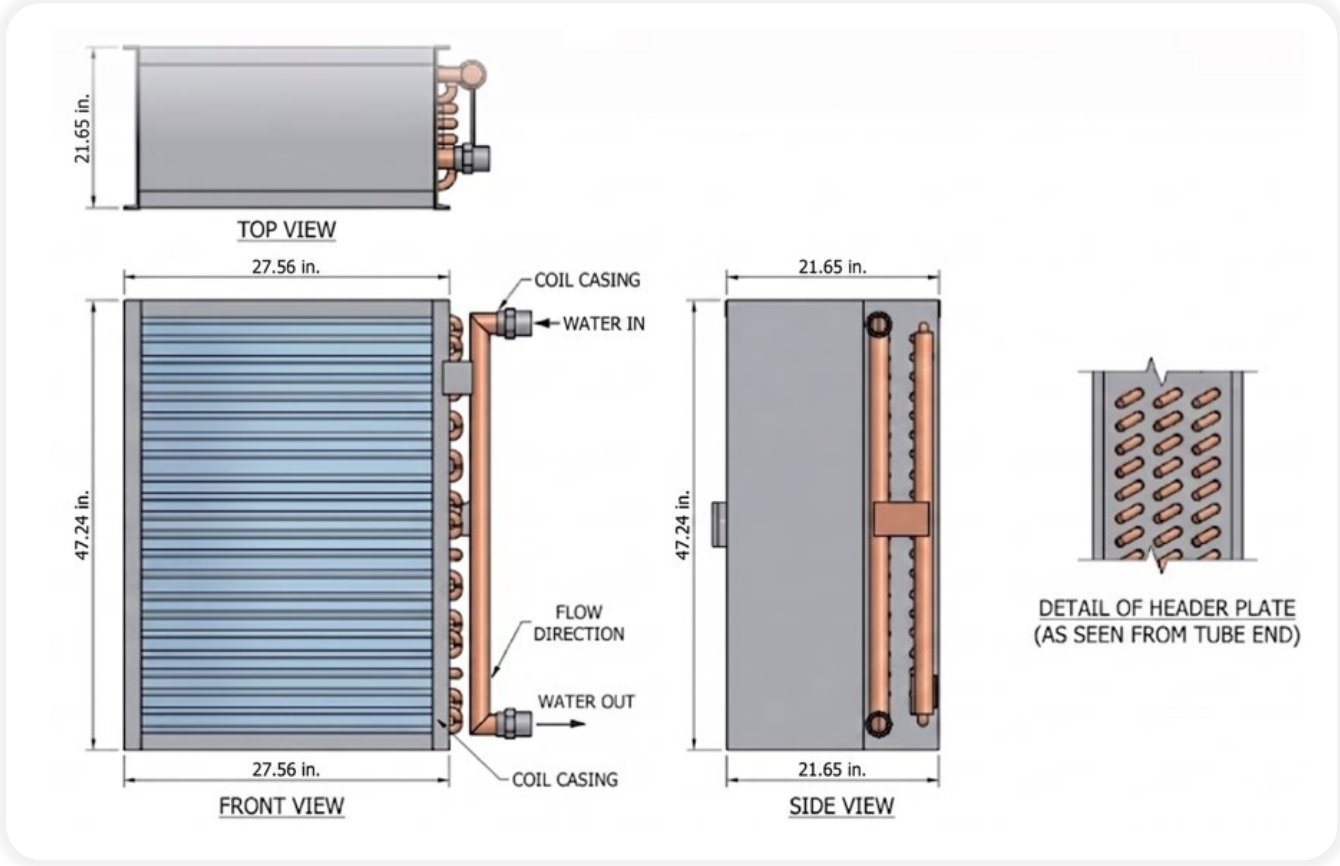
The moisture-resistant closed-cell structure helps prevent condensation formation inside the cabinet during low-temperature cooling operation, while also protecting the galvanized steel cabinet from corrosion and microbial growth. The insulation is securely bonded to the internal cabinet surfaces to ensure long-term durability under continuous HVAC operating conditions.

Insulation is applied to all internal surfaces of the Air Handling Section



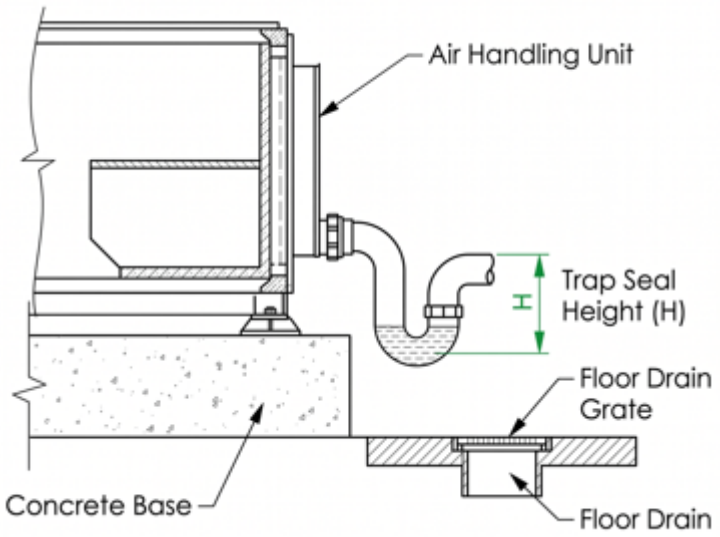
7.3. High-Efficiency Coil

The APOLLO AHU series is equipped with a high-performance chilled/hot water hydronic coil engineered for efficient heat transfer, stable airflow performance, and long-term operational reliability. The coil utilizes internally grooved copper tubes mechanically expanded into high-density aluminum fins to maximize thermal conductivity and optimize heating and cooling capacity.



8. Operation and Maintenance

- The water for AHU must be clean. And there is filter in the inlet to avoid to block the pipe. If there is belt for the unit, it must inspect it at fixed period. If there is any fault, it must adjust and exchange.
- It must check running current and voltage of the fan motor during the unit running, then record it. If the current and air volume are low, the filter should be washed or exchanged. On the contrary, it should close a little for the air volume adjustable damper to make the current common.
- It must add lubricant to the bearing of fan and motor at fixed period to enhance the efficiency and life. And often check the fan soft connection, maintenance and exchange should be performed if it is broken.
- The filter must be washed at fixed period. Do not allow to operate the unit without filter.
- In winter, the water must be exhausted from the unit to avoid the pipe broken. After two years running, integral maintenance should be performed and clean the dirty on the fin and pipe.
- If the motor current or bearing temperature is over high, the cause maybe as following:
- Air Volume higher than rated or air leakage for the air duct.
- The air density for the fan is larger to make pressure higher.
- The blade of fan is out of shape and cause to vibrate.
- If the unit is suction type, the hot water temperature must be lower 149° F. If it is more than this temperature, must contact with our Client Technical Support. Avoid the motor temperature become higher to broke the bearing or burn the wire coil.



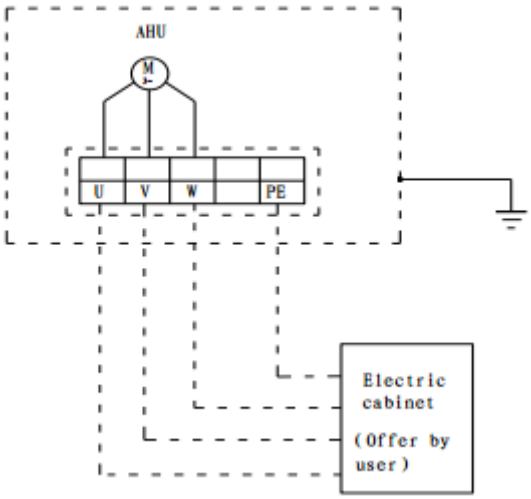
Note:

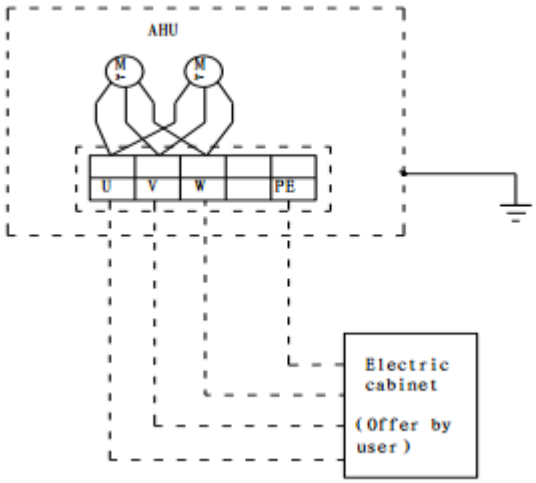
- ***When heat exchanger is under negative pressure, A=B≥P/10+20mm***
- ***When heat exchanger is under positive pressure, A≥ 30mm, B ≥ P/10+20mm***
- ***P- internal pressure absolute value Pa of heat exchanger***

9. TROUBLESHOOTING GUIDE

FAILURE	REASON	SOLUTION
Small air volume	Dirty on filter	Wash or change the filter
	Block at inlet	Clean inlet
Higher noise	Fan axial	Repair or change
Not enough heating or cooling	Less flow	Increase flow
	Air in the coil	Release the air in coil
Leakage	Block water drain pan	Clean drain pipe
	Insulation not good	Change insulation
	Installation platform is not on horizontal level	Install on the flat surface
	Heat exchanger frost crack	Repair or change

10. WIRING CONNECTION DIAGRAM





APOLLO

APOLLO Heat Pump
info@mbtek.com
888-301-0737

25 Continental Dr Unit C
Wayne NJ 07470
USA