

VERTICAL MOUNT AIR HANDLERS INSTALLATION INSTRUCTIONS

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Important Safety Instructions

As a professional installer, you have an obligation to know the product better than the customer. This includes all safety precautions and related items. Prior to actual installation, thoroughly familiarize yourself with this Instruction Manual. Pay special attention to all safety warnings. Remember, it is **your** responsibility to install the product safely and to know it well enough to be able to instruct a customer in its safe use.

Safety is a matter of common sense...a matter of thinking before acting. Most dealers have a list of specific, good safety practices...follow them.


The precautions listed in this Installation Manual are intended as supplemental to existing practices. However, if there is a direct conflict between existing practices and the content of this manual, the precautions listed here take precedence.


WARNING

HIGH VOLTAGE!

Disconnect ALL power before servicing or installing this unit. Multiple power sources may be present. Failure to do so may cause property damage, personal injury or death.



**DANGER**
PELIGRO


CARBON MONOXIDE POISONING HAZARD

Special Warning for Installation of Furnace or Air Handling Units in Enclosed Areas such as Garages, Utility Rooms or Parking Areas

Carbon monoxide producing devices (such as an automobile, space heater, gas water heater, etc.) should not be operated in enclosed areas such as unventilated garages, utility rooms or parking areas because of the danger of carbon monoxide (CO) poisoning resulting from the exhaust emissions. If a furnace or air handler is installed in an enclosed area such as a garage, utility room or parking area and a carbon monoxide producing device is operated therein, there must be adequate, direct outside ventilation.

This ventilation is necessary to avoid the danger of CO poisoning which can occur if a carbon monoxide producing device continues to operate in the enclosed area. Carbon monoxide emissions can be (re)circulated throughout the structure if the furnace or air handler is operating in any mode.

CO can cause serious illness including permanent brain damage or death.

B10259-216

WARNING

Installations and repair of this unit should be performed **ONLY** by individuals meeting the requirements of an "Entry Level Technician" as specified by the Air Conditioning, Heating, and Refrigeration Institute (AHRI). Attempting to install or repair this unit without such background may result in product damage, personal injury, or death.

WARNING

This unit should not be connected to, or used in conjunction with, any devices that are not design certified for use with this unit or have not been tested and approved by Goodman. Serious property damage or personal injury, reduced unit performance and/or hazardous conditions may result from the use of devices that have not been approved or certified by Goodman.

WARNING

To prevent the risk of property damage, personal injury, or death, do not store combustible materials or use gasoline or other flammable liquids or vapors in the vicinity of this appliance.

CAUTION

Have your contractor identify all the various cutoff switches and devices that service this unit. Know where the switch is that will cut off energy to the heating system in the event of overheating.

Shipping Inspection

Upon receiving the product, inspect it for damage from shipment. Shipping damage, and subsequent investigation is the responsibility of the carrier. Verify the model number, specifications, electrical characteristics, and accessories are correct prior to installation. The distributor or manufacturer will not accept claims from dealers for transportation damage or installation of incorrectly shipped units.

Codes & Regulations

This product is designed and manufactured to comply with national codes. Installation in accordance with such codes and/or prevailing local codes/regulations is the responsibility of the installer. The manufacturer assumes no responsibility for equipment installed in violation of any codes or regulations.



The United States Environmental Protection Agency (EPA) has issued various regulations regarding the introduction and disposal of refrigerants. Failure to follow these regulations may harm the environment and can lead to the imposition of substantial fines. These regulations may vary by jurisdiction. A certified technician must perform the installation and service of this product. Should you have any questions please contact the local office of the EPA.

Replacement Parts

When reporting shortages or damages, or ordering repair parts, give the complete product model and serial numbers as stamped on the product. Replacement parts for this product are available through your contractor or local distributor. For the location of your nearest distributor, consult the white business pages, the yellow page section of the local telephone book or contact:

CONSUMER AFFAIRS
GOODMAN MANUFACTURING COMPANY, L.P.
7401 SECURITY WAY
HOUSTON, TEXAS 77040
(877) 254-4729

The installation and servicing of this equipment must be performed by qualified, experienced technicians only.

Installer's Note:

Replacement air filters can be ordered directly from the supplier:

United Air Filter
Charlotte, NC
Phone: 704-334-5311

AWUF18-24 - Part #BT1369604, 14" x 18" x 1"
AWUF30-37 - Part #BT1369608, 18" x 20" x 1"

Pre-Installation Instructions

Carefully read all instructions for the installation prior to installing product. Make sure each step or procedure is understood and any special considerations are taken into account before starting installation. Assemble all tools, hardware and supplies needed to complete the installation. Some items may need to be purchased locally. Make sure everything needed to install the product is on hand before starting.

Before attempting any installation, the following points should be considered:

- Structural strength of supporting members
- Clearances and provision for servicing
- Power supply and wiring
- Air duct connections
- Drain facilities and connections

Application Information

The unit is designed to be installed in conditioned space, either recessed into a wall or hanging in a vertical "upflow" position. If units are recessed in a wall, use the holes along the inside of the front flange to attach units to the framing studs. The vertical air handler comes equipped with an offset hanging bracket attached to the rear of the cabinet for hanging applications.

The air handler also has a bottom and front return. **Large chassis installations should be installed as front return only.** If the small chassis air handler is to be installed in a bottom return application, discard the drain access panel in the bottom of the unit. If the air handler is to be installed in a front return application, remove and discard the front access panel with insulation. The unit is shipped with a filter rack and filter. Remember to inspect, clean and/or replace the filter monthly.

Units are equipped with both a bottom primary and secondary drain. **Both drains must be trapped.** Failure to install a trap could result in condensation overflowing the drain pan resulting in substantial water damage to the nearby area.

The connectors required are 3/4" NPT male, either PVC or metal pipe, CPVC piping is not approved, and should be hand tightened to a torque of no more than 37 in-lbs. to prevent damage to the drain pan connection.

To prevent potential sweating and dripping on to finished space, it may be necessary to insulate the condensate drain line located inside the building. Use Armaflex® or similar material.

NOTE: If you intend to install this unit with a "WAD" door it must be mounted 1/4" behind front edge of stud.

Electrical Supply Wire and MOP



WARNING

HIGH VOLTAGE

To avoid the risk of fire or equipment damage, use only copper conductors. Disconnect ALL power before servicing or installing this unit. Multiple power sources may be present. The electrical power to this unit MUST be in the OFF position and all power supplies disconnected. Failure to do so may cause property damage, personal injury or death.





WARNING

The unit **MUST** have an uninterrupted, unbroken electrical ground to minimize the possibility of personal injury if an electrical fault should occur. The electrical ground circuit may consist of an appropriately sized electrical wire connecting the ground lug in the unit and control box wire to the building's electrical service panel. Other methods of grounding are permitted if performed in accordance with the "National Electric Code" (NEC)/"American National Standards Institute" (ANSI)/"National Fire Protection Association" (NFPA) 70 and local/state codes. In Canada, electrical grounding is to be in accordance with the Canadian Electric Code CSA C22.1. Failure to observe this warning can result in electrical shock that can cause personal injury or death.

Inspection of the Building Electrical Service

This unit is designed for single-phase electrical supply. **DO NOT OPERATE ON A THREE-PHASE POWER SUPPLY.** Measure the power supply to the unit. The supply voltage **must** be in agreement with the unit nameplate power requirements and within the range shown in **Table 1**.

Nominal Input	Minimum Voltage	Maximum Voltage
208/230	187	253

Table 1

Wire Sizing

Wire size is important to the operation of your equipment. Use the following check list when selecting the appropriate wire size for your unit.

- Wire size must carry the Minimum Circuit Ampacity (MCA).
- Wire size allows for no more than a 2% voltage drop from the building breaker/fuse panel to the unit.

Refer to the latest edition of the National Electric Code or in Canada the Canadian Electric Code when determining the correct wire size. The following table shows the current carrying capabilities for copper conductors rated at 75°C with a 2% voltage drop. Use **Table 2** to determine the voltage drop per foot of various conductors.

Maximum Allowable Length in Feet to Limit Voltage Drop to 2%*								
Wire Size (AWG)	Minimum Circuit Ampacity (MCA)							
	10	15	20	25	30	35	40	45
14	75	50	37	NR	NR	NR	NR	NR
12	118	79	59	47	NR	NR	NR	NR
10	188	125	95	75	63	54	NR	NR
8	301	201	150	120	100	86	75	68
6	471	314	235	188	157	134	118	110

*Based on NEC 1996

Table 2

Maximum Overcurrent Protection (MOP)

Every installation must include an NEC (USA) or CEC (Canada) approved overcurrent protection device. Also, check with local or state codes for any special regional requirements.

Protection can be in the form of fusing or HACR style circuit breakers. The Series and Rating Plate can be used as a guide for selecting the MAXIMUM overcurrent device.

NOTE: Fuses or circuit breakers are to be sized larger than the equipment MCA but not to exceed the MOP.

IMPORTANT NOTE: Torch heat required to braze tubes of various sizes is proportional to the size of the tube. Tubes of smaller size require less heat to bring the tube to brazing temperature before adding brazing alloy. Applying too much heat to any tube can melt the tube. Service personnel must use the appropriate heat level for the size of the tube being brazed.

NOTE: The use of a heat shield when brazing is recommended to avoid burning the serial plate or the finish on the unit. Heat trap or wet rags should be used to protect heat sensitive components such as service valves and TXV valves.

Electrical Connections – Supply Voltage

USE COPPER CONDUCTORS ONLY.

A knockout is provided on the air handler top panel or side to allow for the entry of the supply voltage conductors. If the knockouts on the cabinet sides are used for electrical conduit, an adapter ring must be used in order to meet UL1995 safety requirements. An NEC or CEC approved strain relief is to be used at this entry point. The wire is to be sized in accordance with the "Electrical Wire and MOP" section of this manual. Some areas require the supply wire to be enclosed in conduit. Consult your local codes.

Special Instructions

This air handler comes equipped with an evaporator coil with a check style flowrator assembly, an indoor blower and all necessary internal electrical wiring. For most installations with matching applications, no change to the flowrator orifice is required. However, in mix-matched applications, a flowrator change may be required. See the Goodman piston kit chart or consult your local distributor for details regarding mix-matched orifice sizing. If the mix-match application requires a different piston size, change the piston in the distributor on the indoor coil before installing the coil and follow the procedure in this section.



WARNING

The evaporator coil is shipped from the factory with approximately 90 PSI tracer gas charge. Use caution when relieving pressure.



CAUTION

To prevent feeder tube damage, hold the distributor body with a 3/4" open end wrench when removing or replacing the 13/16" flare nut.

1. Remove the valve core to allow high pressure tracer gas to escape. No gas indicates a possible leak.
2. Remove the 13/16" flare nut and tailpiece.
3. Unsweat the access fitting on the tailpiece
4. Remove the check piston to verify it is correct and then replace the piston. See piston kit chart in instructions.
5. Unsweat the cap on the suction line.
6. Slide the 13/16" flare nut over the tailpiece.
7. Braze tailpiece to the lineset liquid tube.
8. Insert the suction line into the connection, slide the insulation at least 18" away from the braze joint. Braze suction line.
9. **AFTER THE TAILPIECE HAS COOLED**, confirm position of the white Teflon® seal and hand tighten the 13/16" flare nut.
10. Torque the 13/16" flare nut to 10-25 ft-lbs or tighten 1/6th turn.



CAUTION

Excessive torque can cause orifices to stick. Use the proper torque settings when tightening orifices.

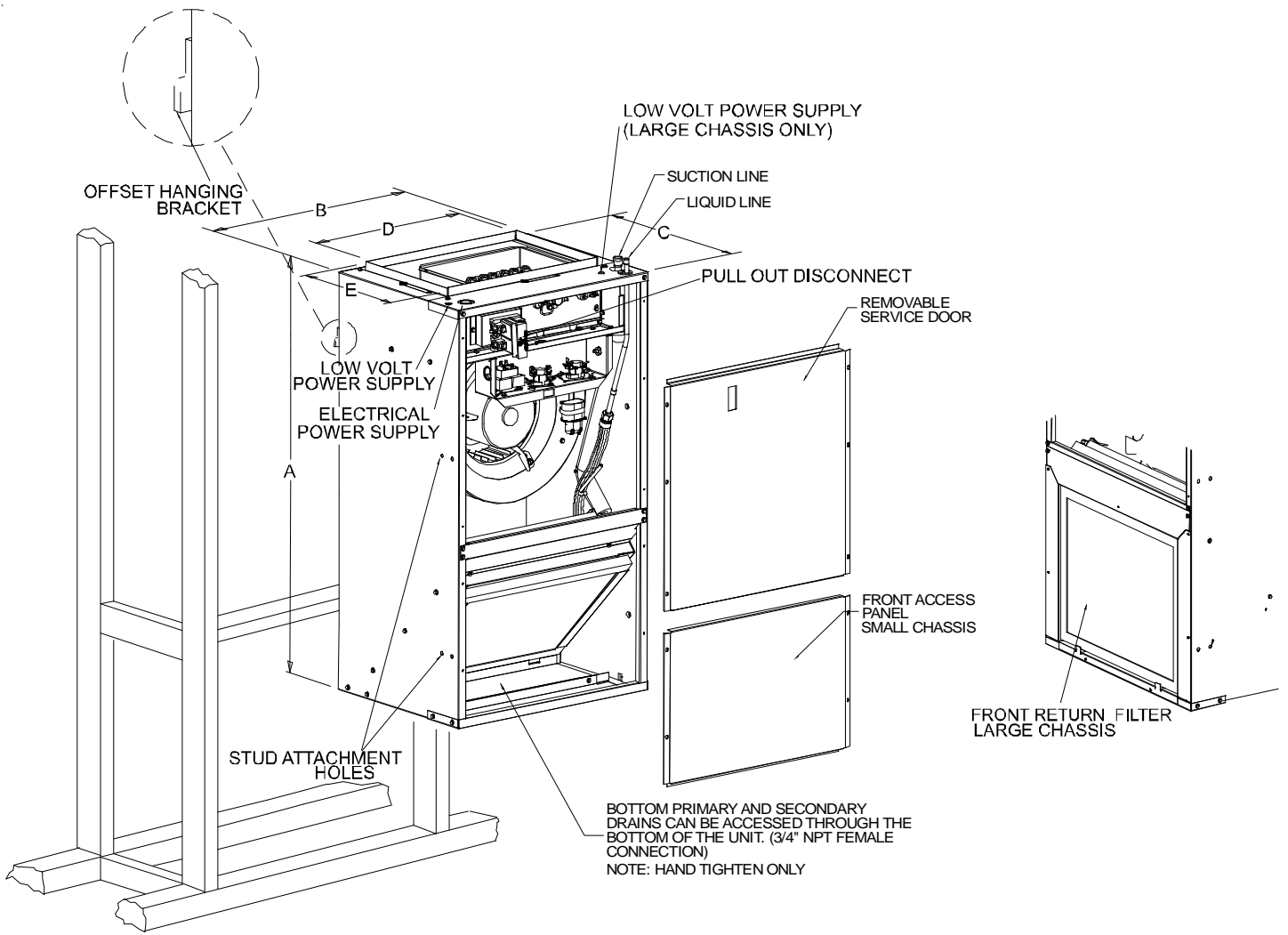
11. Replace suction line insulation.
12. After installation, evacuation and charging of the low side is complete, check fittings for leaks.

NOTE: With the piston in the distributor, the seal end should point inside the distributor body and should not be seen when looking into the end of distributor. Make sure the piston is free to rotate, and move up and down in the distributor body.

MAINTENANCE

Periodic Checkup and Service

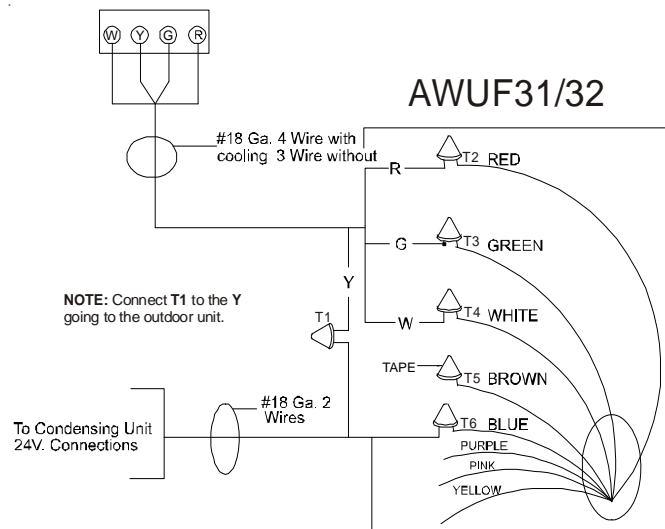
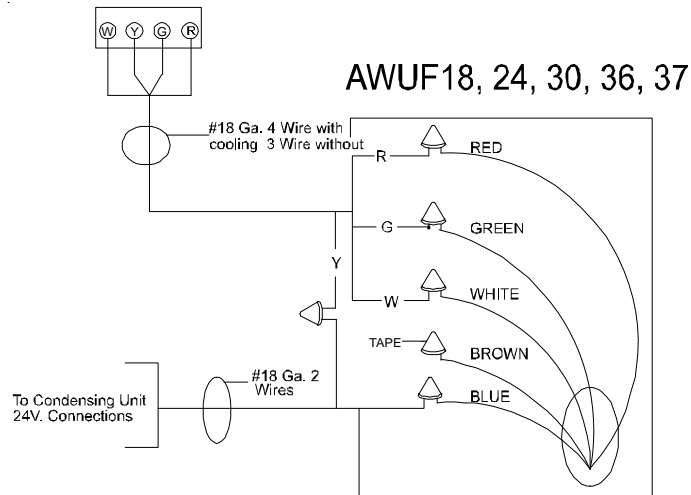
This unit is designed to provide many years of dependable, trouble-free comfort when properly maintained. Proper maintenance will consist of annual checkups and cleaning of the internal electrical and heat transfer components by a qualified service technician. Failure to provide periodic checkup and cleaning can result in excessive operating cost and/or equipment malfunction.



CABINET DIMENSIONS		
	LARGE CHASSIS 2.5 & 3.0 TON	SMALL CHASSIS 1.5 & 2.0 TON
A	36	36
B	24	20 3/16
C	21	16 1/8
D	19 7/8	16
E	15 7/8	11

NOTE: SPECIFICATIONS & PERFORMANCE DATA LISTED HEREIN ARE SUBJECT TO CHANGE WITHOUT NOTICE

NOTE: Thermostat heat anticipator setting is 0.2.



NOTE: Connect appropriate speed tap (Pink/Purple/Yellow) to T1.
Refer to table below for speed tap selection

WIRE COLOR	BTUH	NOMINAL CFM
PURPLE	18,000	600
PINK	24,000	800
YELLOW	30,000	950

BLOWER CHART FOR VERTICAL MOUNT AIR HANDLERS

Model	Speed	CFM delivered against External Static Pressure				
		0.1"	0.2"	0.3"	0.4"	0.5"
AWUF18XX1/16A*	High	750	730	690	650	595
	Low	710	700	690	635	585
AWUF18XX16B*	High	755	715	670	615	545
	Low	740	700	655	595	535
AWUF24XX1/16A*	High	880	845	810	770	735
	Low	845	815	780	745	705
AWUF24XX16B*	High	900	870	835	795	760
	Low	865	835	800	765	725
AWUF30XX1/16A*	High	1250	1195	1135	1085	1010
	Low	1110	1055	1020	955	905
AWUF30XX16B*	High	1255	1120	1100	1020	950
	Low	1115	1010	990	900	820
AWUF310516XX	T5	875	865	830	805	765
	T4	1005	975	945	920	890
	T3	840	795	785	745	700
	T2	645	615	550	500	445
	T1	645	615	550	500	445
AWUF310816XX/ AWUF321016XX	T5	1090	1065	1040	1015	985
	T4	1005	975	945	920	890
	T3	840	795	785	745	700
	T2	645	615	550	500	445
	T1	645	615	550	500	445
AWUF36XX1/16A*	High	1280	1190	1110	1010	930
	Low	1170	1100	1030	950	890
AWUF36XX16B*	High	1215	1145	1070	985	890
	Low	1120	1065	1000	915	820
AWUF37XX16A*	High	1326	1284	1232	1181	1115
	Low	1086	1061	1028	996	950
AWUF37XX16B*	T5	1385	1205	1130	1045	950
	T4	1235	1180	1115	1040	955
	T3	1165	1120	1075	1025	945
	T2	1050	1010	970	930	860
	T1	1050	1010	970	930	860

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