

VERTICAL MOUNT AIR HANDLERS

INSTALLATION INSTRUCTIONS

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.



WARNING

Only personnel that have been trained to install, adjust, service or repair (hereinafter, "service") the equipment specified in this manual should service the equipment. The manufacturer will not be responsible for any injury or property damage arising from improper service or service procedures. If you service this unit, you assume responsibility for any injury or property damage which may result. In addition, in jurisdictions that require one or more licenses to service the equipment specified in this manual, only licensed personnel should service the equipment. Improper installation, adjustment, servicing or repair of the equipment specified in this manual, or attempting to install, adjust, service or repair the equipment specified in this manual without proper training may result in product damage, property damage, personal injury or death.

PROP 65 WARNING FOR CALIFORNIA CONSUMERS



WARNING

Cancer and Reproductive Harm -
www.P65Warnings.ca.gov

0140M00517-A



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.



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.

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RIESGO DE INTOXICACIÓN POR MONÓXIDO DE CARBONO

Advertencia especial para la instalación de calentadores ó manejadoras de aire en áreas cerradas como estacionamientos ó cuartos de servicio.

Los equipos ó aparatos que producen monóxido de carbono (tal como automóvil, calentador de gas, calentador de agua por medio de gas, etc) no deben ser operados en áreas cerradas debido al riesgo de envenenamiento por monóxido de carbono (CO) que resulta de las emisiones de gases de combustión. Si el equipo ó aparato se opera en dichas áreas, debe existir una adecuada ventilación directa al exterior.

Esta ventilación es necesaria para evitar el peligro de envenenamiento por CO, que puede ocurrir si un dispositivo que produce monóxido de carbono sigue operando en el lugar cerrado.

Las emisiones de monóxido de carbono pueden circular a través del aparato cuando se opera en cualquier modo.

El monóxido de carbono puede causar enfermedades severas como daño cerebral permanente ó muerte.

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RISQUE D'EMPOISONNEMENT AU MONOXYDE DE CARBONE

Avertissement special au sujet de l'installation d'appareils de chauffage ou de traitement d'air dans des endroits clos, tels les garages, les locaux d'entretien et les stationnements.

Evitez de mettre en marche les appareils produisant du monoxyde de carbone (tels que les automobile, les appareils de chauffage autonome, etc.) dans des endroits non ventilés tels que les d'empoisonnement au monoxyde de carbone. Si vous devez faire fonctionner ces appareils dans un endroit clos, assurez-vous qu'il y ait une ventilation directe provenant de l'exterieur.

Cette ventilation est nécessaire pour éviter le danger d'intoxication au CO pouvant survenir si un appareil produisant du monoxyde de carbone continue de fonctionner au sein de la zone confinée.

Les émissions de monoxyde de carbone peuvent être recirculées dans les endroits clos, si l'appareil de chauffage ou de traitement d'air sont en marche.

Le monoxyde de carbone peut causer des maladies graves telles que des dommages permanents au cerveau et même la mort.

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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.



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 the manufacturer. 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 the manufacturer.

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:

HOMEOWNER SUPPORT

GOODMAN MANUFACTURING COMPANY, L.P.

19001 KERMIER ROAD

WALLER, TEXAS 77484

(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

AWUF18-25 - Part #BT1369604, 14" x 18" x 1"

AWUF31-37 - Part #BT1369608, 18" x 20" x 1"

AWUT24 - Part #BT1369604, 14" x 18" x 1"

For large chassis AWUF/AWUT31-37, fresh air filters must be provided by contractor.

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. See figure below for proper hanging installation.

IMPORTANT: Unit must be installed level or slightly tilted back to ensure proper drainage of condensate (Figure 1).

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, unless emergency condensate switch is install in the secondary drain.** 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

	<p>WARNING</p>	
<p>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.</p>		

	<p>WARNING</p>
<p>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.</p>	

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. Table 2 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.

Achieving Less Air Leakage:

Ensure all the gaskets remain intact on surfaces as shipped with the unit. When these requirements are satisfied, the unit achieves the following airflow leakage when tested in accordance with ASHRAE Standard 193:

- Cabinet air leakage less than 2% at 1.0 inch H₂O
- Cabinet air leakage less than 1.4% at 0.5 inch H₂O

Fresh Air Openings

All AWUF and AWUT models include 4" fresh air knockouts on both sides of the cabinet. To utilize, simply remove the appropriate knockout and connect fresh air inlet venting directly to cabinet. Ensure the unit mounting system does not block the fresh air inlet holes. On the AWUF18, AWUF24, and AWUT24 models, the fresh air will be filtered within the unit. On all other AWUF models, external filtering for the fresh air must be provided by the installer. AWUT31, 32 and 37 models are equipped with fresh air filter brackets. These brackets are located on both sides of the cabinet at each fresh air intake location.

NOTE: The installing contractor must take into account any lost capacity due to the the fresh air openings when sizing the equipment.

Special Instructions

AWUF - FLOWRATOR (PISTON) MODELS

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 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 from the suction line.
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 tailpiece.
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.

NOTE: For the AWUF190816B* model, it is not recommended to use the 1.0T application.

AWUT - FACTORY INSTALLED TXV MODELS

AWUT air handlers come equipped with a factory installed, fully adjustable TXV for air handler installation follow the below installation procedure.

NOTE: The TXV must be adjusted to meet the outdoor unit's target superheat value. During the superheat adjustment on the TXV, the torque applied on the nut cannot exceed 25 in-lbs. Refer to the EXPANSION VALVE TROUBLESHOOTING section of this manual for assistance with the adjustable TXV.

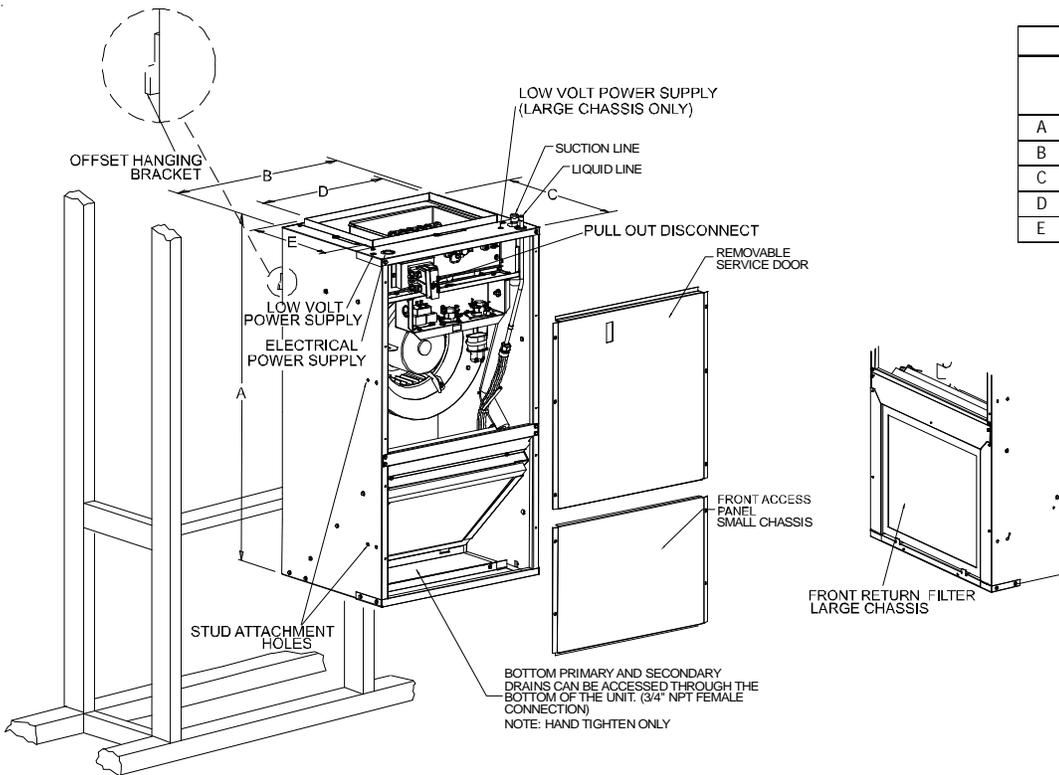
For air handler installation, follow the installation procedure below.

1. Remove front access panel.
2. Remove access valve fitting cap and depress the valve stem to release pressure. No pressure indicates possible leak.
3. Replace fitting cap.
4. Unsweat the copper caps from the refrigerant tubes. DO NOT USE ANYFORM OF CUTTING METHOD. CUTTING THE CAPS MAY RESULT IN THE GENERATION OF COPPER SHAVINGS OR COPPER DUST.
5. Insert liquid line into liquid tube expansion and slide grommet about 18" away from braze joint.
6. Insert suction line into suction tube expansion and slide insulation and grommet about 18" away from braze joint.
7. Braze suction and liquid line joints.

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.

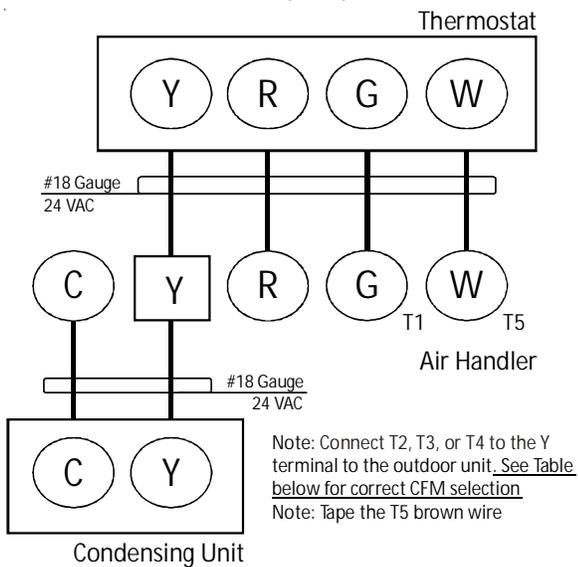


CABINET DIMENSIONS		
	LARGE CHASSIS 2.5 & 3.0 TON	SMALL CHASSIS 1.0, 1.5, & 2.0 TON
A	36	36
B	24	20 3/16
C	21	16 1/8
D	19 7/8	16
E	15 7/8	11

NOTE: SPECIFICATIONS & PERFORMANCE DATA LISTED HEREIN ARE SUBJECT TO CHANGE WITHOUT NOTICE
NOTE: Thermostat heat anticipator setting is 0.2.

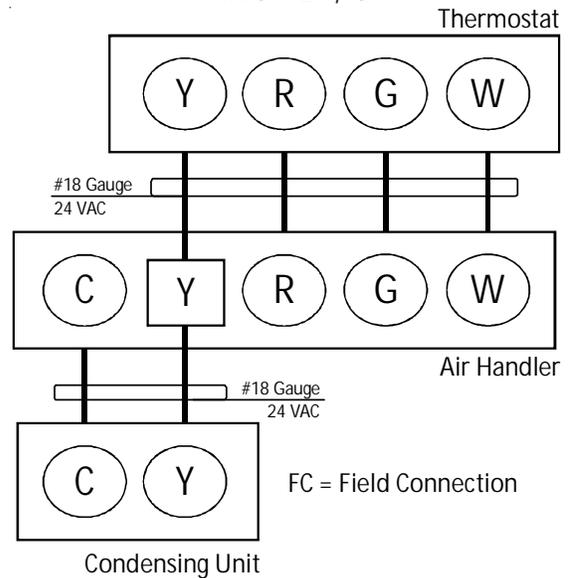
AWUF 19, 25, 31, 32, 37

AWUT 31, 32, 37



AWUF 18, 24, 30, 36, 37

AWUT 24, 37



NOTE: Connect appropriate speed tap (Pink/Purple/Yellow) to Y. Refer to table below for speed tap selection. It is not recommended to use the 1 Ton application for AWUF19 8kW heater models.

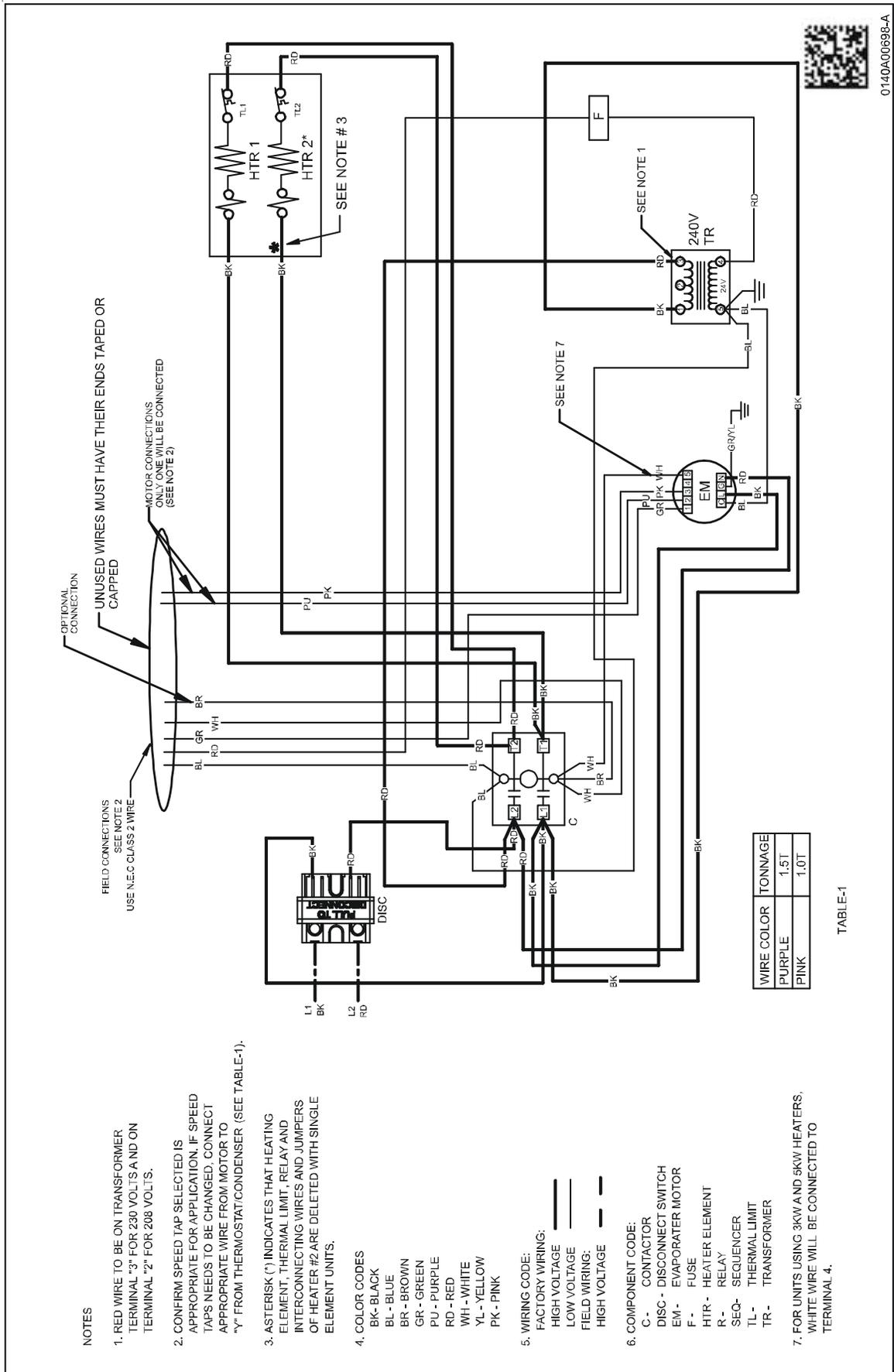
WIRE COLOR	BTUH	NOMINAL CFM
PURPLE	18,000	600
PINK	12,000	480
(ONLY AVAILABLE FOR AWUF19 MODELS)		
PINK	24,000	800
YELLOW	30,000	950

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
AWUF19XX16B*	T5	899	870	853	824	800
	T4	635	604	580	546	520
	T3	502	490	467	430	399
	T2	635	604	580	546	520
	T1	635	604	580	546	520
AWUF25XX16A*	T5	899	870	853	824	800
	T4	635	604	580	546	520
	T3	799	775	747	727	702
	T2	635	604	580	546	520
	T1	635	604	580	546	520
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 AWUT310516XX	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 AWUT310816XX AWUT321016XX	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* AWUT37**16XX	T5	1315	1290	1260	1230	1200
	T4	1240	1205	1175	1145	1115
	T3	1175	1140	1105	1075	1045
	T2	1060	1020	990	955	925
	T1	1060	1025	995	960	925
AWUT24XX14A*	High	709	701	705	658	603
	Low	687	688	683	636	576

WARNING

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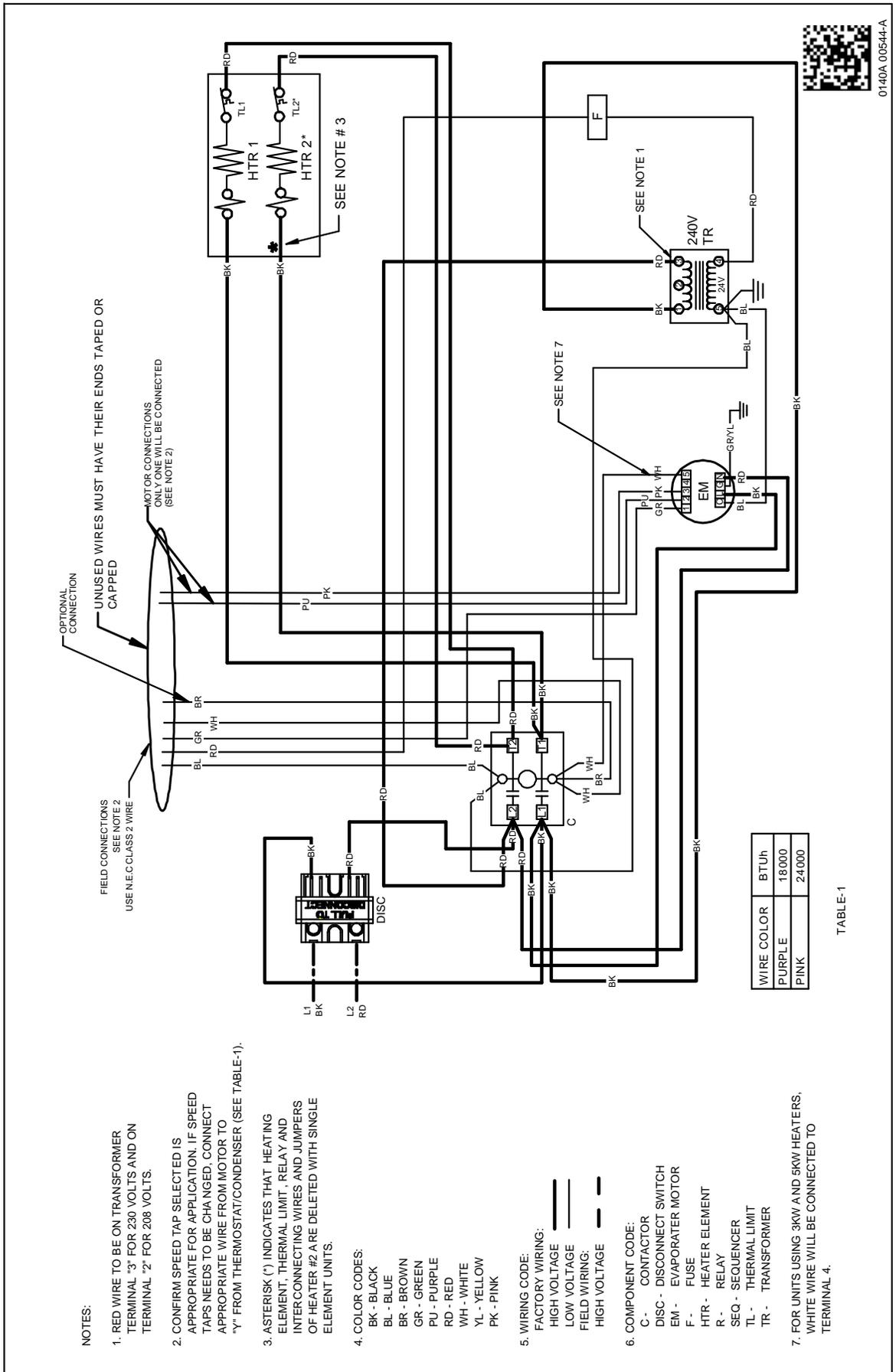


- NOTES
- RED WIRE TO BE ON TRANSFORMER TERMINAL "3" FOR 230 VOLTS AND ON TERMINAL "2" FOR 208 VOLTS.
 - CONFIRM SPEED TAP SELECTED IS APPROPRIATE FOR APPLICATION. IF SPEED TAPS NEEDS TO BE CHANGED, CONNECT APPROPRIATE WIRE FROM MOTOR TO "Y" FROM THERMOSTAT/CONDENSER (SEE TABLE-1).
 - ASTERISK (*) INDICATES THAT HEATING ELEMENT, THERMAL LIMIT, RELAY AND INTERCONNECTING WIRES AND JUMPERS OF HEATER #2 ARE DELETED WITH SINGLE ELEMENT UNITS.
 - COLOR CODES
BK - BLACK
BL - BLUE
BR - BROWN
GR - GREEN
PU - PURPLE
RD - RED
WH - WHITE
YL - YELLOW
PK - PINK
 - WIRING CODE:
FACTORY WIRING: ———
HIGH VOLTAGE: ———
LOW VOLTAGE: ———
FIELD WIRING: - - -
HIGH VOLTAGE: - - -
 - COMPONENT CODE:
C - CONTACTOR
DISC - DISCONNECT SWITCH
EM - EVAPORATOR MOTOR
F - FUSE
HTR - HEATER ELEMENT
R - RELAY
SEQ - SEQUENCER
TL - THERMAL LIMIT
TR - TRANSFORMER
 - FOR UNITS USING 3KW AND 5KW HEATERS, WHITE WIRE WILL BE CONNECTED TO TERMINAL 4.

Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

WARNING

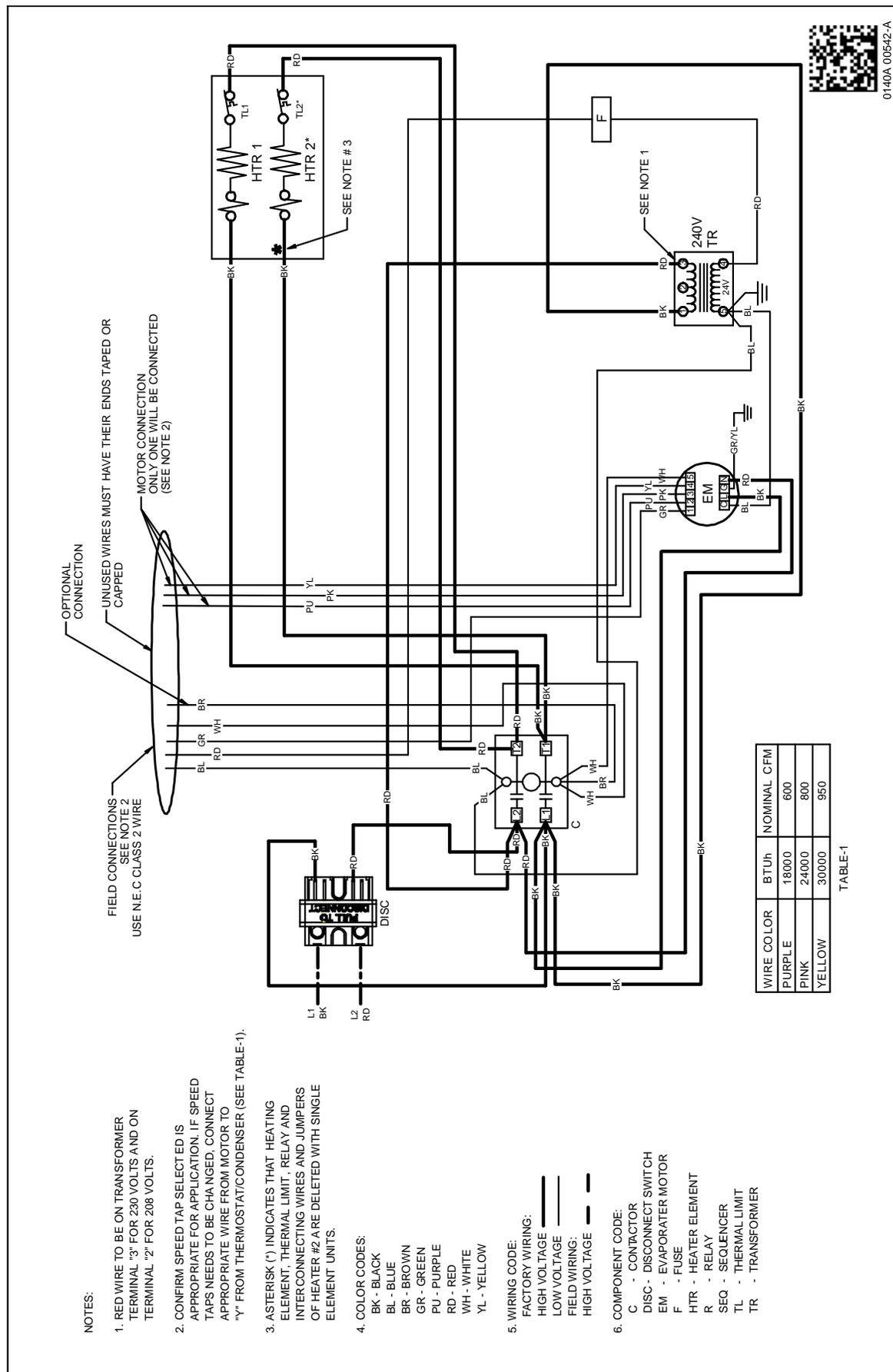
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 4. COLOR CODES:
BK - BLACK
BL - BLUE
BR - BROWN
GR - GREEN
PU - PURPLE
RD - RED
WH - WHITE
YL - YELLOW
 5. WIRING CODE:
FACTORY WIRING: _____
HIGH VOLTAGE _____
LOW VOLTAGE _____
FIELD WIRING: _____
HIGH VOLTAGE - - - - -
 6. COMPONENT CODE:
C - CONTACTOR
DISC - DISCONNECT SWITCH
EM - EVAPORATOR MOTOR
F - FUSE
HTR - HEATER ELEMENT
R - RELAY
SEQ - SEQUENCER
TL - THERMAL LIMIT
TR - TRANSFORMER

FIELD CONNECTIONS - SEE NOTE 2
USE N.E.C CLASS 2 WIRE

OPTIONAL CONNECTION
UNUSED WIRES MUST HAVE THEIR ENDS TAPED OR CAPPED

MOTOR CONNECTION ONLY ONE WILL BE CONNECTED (SEE NOTE 2)

WIRE COLOR	BTUh	NOMINAL CFM
PURPLE	18000	600
PINK	24000	800
YELLOW	30000	950

TABLE-1

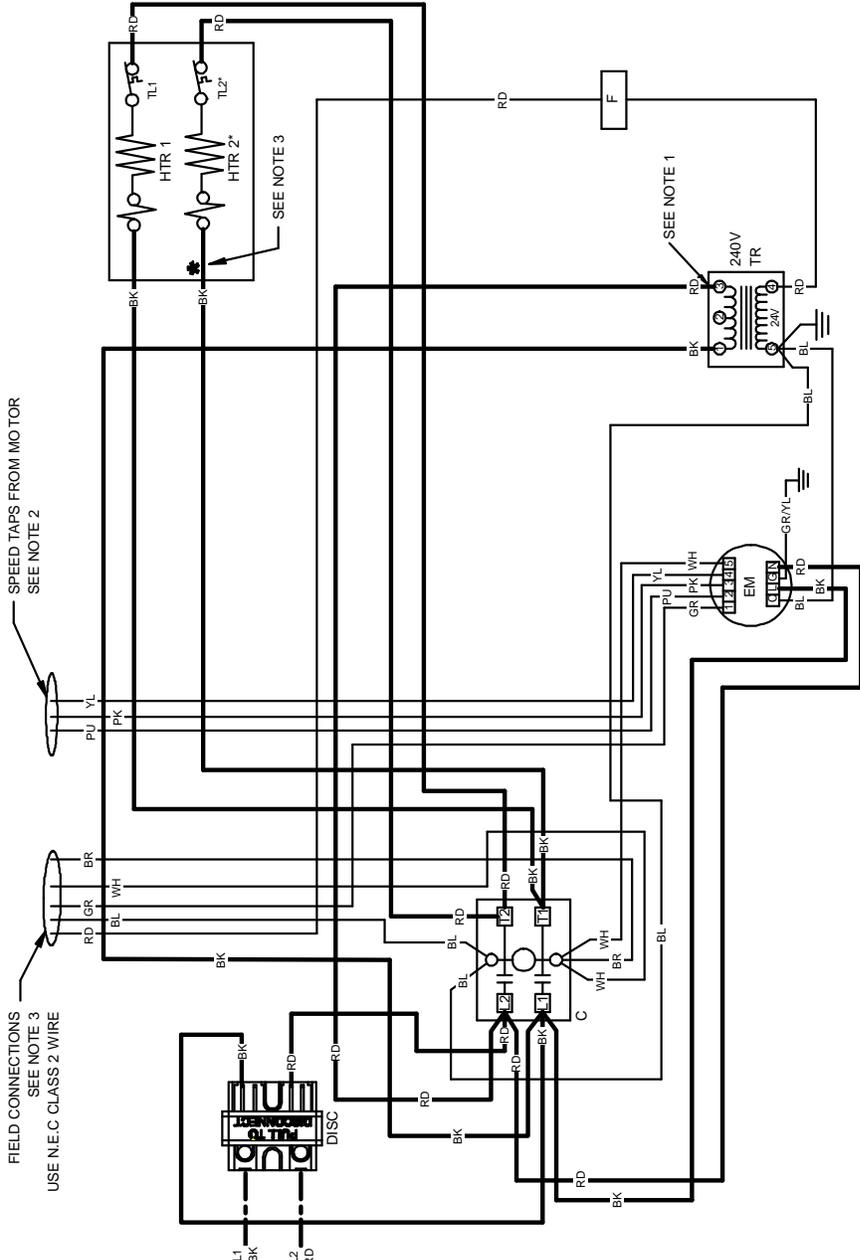


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 - SEE COMPOSITE WIRING DIAGRAMS IN INSTALLATION INSTRUCTIONS FOR PROPER LOW VOLTAGE WIRING CONNECTIONS.
 - ASTERISK (*) INDICATES THAT HEATING ELEMENT, THERMAL LIMIT, RELAY AND INTERCONNECTING WIRES AND JUMPERS OF HEATER #2 ARE DELETED WITH SINGLE ELEMENT UNITS.
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LOW VOLTAGE
FIELD WIRING
HIGH VOLTAGE
LOW VOLTAGE
SEE NOTE 2
 - COMPONENT CODE:
C - CONTACTOR
DISC - DISCONNECT SWITCH
EM - EVAPORATOR MOTOR
F - FUSE
HTR - HEATER ELEMENT
R - RELAY
SEQ - SEQUENCER
TL - THERMAL LIMIT
TR - TRANSFORMER



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Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

Expansion Valve Troubleshooting:

Before replacing an expansion valve, check the following items:

1. **Bulb location:** Must be tightly secured to the suction line upstream of the equalizer connection.
2. **Insulation:** Bulb must be properly insulated.
3. **Equalizer:** Must be connected to the 1/4" SAE connection on the suction line.
4. **Charge:** Ensure the system is properly charged. There MUST be a minimum of 10°F Sub-Cooled liquid at the valve inlet.

If the system appears to be "starving" (low suction pressure but insufficient cooling):

1. Check the Superheat (SH) at the evaporator outlet. If SH is between 5°F - 12°F, the TXV is controlling properly.
 - Verify that there is proper airflow to the evaporator (fan is operating and filter is unrestricted).
2. If SH is above 12°F, the setting of the TXV may be too high.
 - Adjust the SH by turning counter-clockwise to decrease SH.
 - Wait 20 minutes for the system to balance and adjust again, as required.
 - If adjusting the valve has no effect on the SH, the valve may be stuck because of dirt or debris or it may have lost the Power Element charge.
 - i. After properly reclaiming the refrigerant, remove the TXV and check for dirt and debris. Clean, if possible, or replace the TXV and filter/drier.

If the system appears to be "flooding" (compressor frosting or moisture is condensing at the suction connection):

1. Check the SH at the evaporator outlet. If SH is between 5°F - 12°F, the TXV is controlling properly.
2. If SH is less than 5°F, the SH adjustment may be too low.
 - a. Adjust the SH by turning the adjustment stem clock- wise to increase the SH.
 - b. Wait 20 minutes for the system to balance and ad- just again as required.
 - c. If adjusting the valve has no effect on the SH, the valve may be stuck open because of dirt or debris or moisture in the refrigerant.
 - i. After properly reclaiming the refrigerant, remove the TXV and check for dirt and debris. Clean, if possible, or replace the TXV and filter/drier. Add a moisture indicator to allow checking of moisture if this is believed to be a probable cause.

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SPLIT SYSTEMS

AIR CONDITIONING AND HEAT PUMP HOMEOWNER'S ROUTINE MAINTENANCE RECOMMENDATIONS

We strongly recommend a bi-annual maintenance checkup be performed before the heating and cooling seasons begin by a qualified servicer.

Replace or Clean Filter

IMPORTANT NOTE: Never operate unit without a filter installed as dust and lint will build up on internal parts resulting in loss of efficiency, equipment damage and possible fire.

An indoor air filter must be used with your comfort system. A properly maintained filter will keep the indoor coil of your comfort system clean. A dirty coil could cause poor operation and/or severe equipment damage.

Your air filter or filters could be located in your furnace, in a blower unit, or in "filter grilles" in your ceiling or walls. The installer of your air conditioner or heat pump can tell you where your filter(s) are, and how to clean or replace them.

Check your filter(s) at least once a month. When they are dirty, replace or clean as required. Disposable type filters should be replaced. Reusable type filters may be cleaned.

You may want to ask your dealer about high efficiency filters. High efficiency filters are available in both electronic and non-electronic types. These filters can do a better job of catching small airborne particles.

Compressor

The compressor motor is hermetically sealed and does not require additional oiling.

Motors

Indoor and outdoor fan motors are permanently lubricated and do not require additional oiling.

Aluminum Indoor Coil Cleaning (Qualified Servicer Only)

This unit is equipped with an aluminum tube evaporator coil. The safest way to clean the evaporator coil is to simply flush the coil with water. This cleaning practice remains as the recommended cleaning method for both copper tube and aluminum tube residential cooling coils.

An alternate cleaning method is to use one of the products listed in the technical publication TP-109 (shipped in the literature bag with the unit) to clean the coils. The cleaners listed are the only agents deemed safe and approved for use to clean round tube aluminum coils. TP-109 is available on the web site in Partner Link > Service Toolkit.

NOTE: Ensure coils are rinsed well after use of any chemical cleaners.

Clean Outside Coil (Qualified Servicer Only)

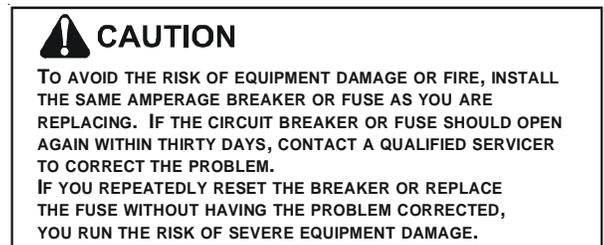
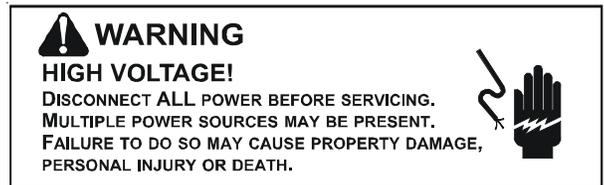
Air must be able to flow through the outdoor unit of your comfort system. Do not construct a fence near the unit or build a deck or patio over the unit without first discussing your plans with your dealer or other qualified servicer. Restricted airflow could lead to poor operation and/or severe equipment damage.

Likewise, it is important to keep the outdoor coil clean. Dirt, leaves, or debris could also restrict the airflow. If cleaning of the outdoor coil becomes necessary, hire a qualified servicer. Inexperienced people could easily puncture the tubing in the coil. Even a small hole in the tubing could eventually cause a large loss of refrigerant. Loss of refrigerant can cause poor operation and/or severe equipment damage.

Do not use a condensing unit cover to "protect" the outdoor unit during the winter, unless you first discuss it with your dealer. Any cover used must include "breathable" fabric to avoid moisture buildup.

BEFORE CALLING YOUR SERVICER

- Check the thermostat to confirm that it is properly set.
- Wait 15 minutes. Some devices in the outdoor unit or in programmable thermostats will prevent compressor operation for awhile, and then reset automatically. Also, some power companies will install devices which shut off air conditioners for several minutes on hot days. If you wait several minutes, the unit may begin operation on its own.
- Check the electrical panel for tripped circuit breakers or failed fuses. Reset the circuit breakers or replace fuses as necessary.
- Check the disconnect switch near the indoor furnace or blower to confirm that it is closed.
- Check for obstructions on the outdoor unit. Confirm that it has not been covered on the sides or the top. Remove any obstruction that can be safely removed. If the unit is covered with dirt or debris, call a qualified servicer to clean it.
- Check for blockage of the indoor air inlets and outlets. Confirm that they are open and have not been blocked by objects (rugs, curtains or furniture).
- Check the filter. If it is dirty, clean or replace it.
- Listen for any unusual noise(s), other than normal operating noise, that might be coming from the outdoor unit. If you hear unusual noise(s) coming from the unit, call a qualified servicer.



CUSTOMER FEEDBACK

We are very interested in all product comments.

Please fill out the feedback form on one of the following links:

Daikin Products: (<https://daikincomfort.com/contact-us>)

Goodman® Brand Products: (<http://www.goodmanmfg.com/about/contact-us>).

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You can also scan the QR code on the right for the product brand you purchased to be directed to the feedback page.



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PRODUCT REGISTRATION

Thank you for your recent purchase. Though not required to get the protection of the standard warranty, registering your product is a relatively short process, and entitles you to additional warranty protection, except that failure by California and Quebec residents to register their product does not diminish their warranty rights.

For Product Registration, please register as follows:

Daikin Products: (<https://daikincomfort.com/owner-support/product-registration>).

Goodman® Brand products: (<https://www.goodmanmfg.com/product-registration>).

Amana® Brand products: (<http://www.amana-hac.com/product-registration>).

You can also scan the QR code on the right for the product brand you purchased to be directed to the Product Registration page.



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NOTE: SPECIFICATIONS AND PERFORMANCE DATE LISTED HEREIN ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Visit our website at www.daikincomfort.com, www.goodmanmfg.com or www.amana-hac.com for information on:

- Products
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- Contractor Programs and Training
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