

50 HZ AIR HANDLER

INSTALLATION & OPERATING INSTRUCTIONS

© 2004 - 2012, 2014-2016 Goodman Manufacturing Company, L.P.
5151 San Felipe, Suite 500, Houston, TX 77056
www.goodmanmfg.com
P/N: IO-214G Date: January 2016

INDEX

PRODUCT IDENTIFICATION	3
UNIT INSPECTION	3
CODES & REGULATIONS	3
REPLACEMENT PARTS	3
PRE-INSTALLATION INSTRUCTIONS	3
LOCATION	3
AIRFLOW ORIENTATION	4
HORIZONTAL LEFT INSTRUCTIONS	5
DOWNFLOW INSTRUCTIONS	5
REFRIGERANT TUBING	6
CONDENSATE REMOVAL	7
ELECTRICAL CONNECTIONS	7
WIRING DIAGRAM	8
THERMOSTATS	10
ORIFICE CHANGE	10
CIRCULATING AIR DUCT	10
BLOWER PERFORMANCE	11
START UP	11
REGULAR MAINTENANCE	11
ELECTRIC HEAT	12
HKR INSTALLATION	12
ELECTRICAL SUPPLY WIRE AND MOP	12



*This appliance is not approved
for outdoor installation.*

ATTENTION INSTALLING PERSONNEL

As a professional servicer, 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 these instructions. Pay special attention to all safety warnings. Often during installation or repair, it is possible to place yourself in a position which is more hazardous than when the unit is in operation. 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 these instructions should not supersede existing practices, but should be considered as supplemental information.



RECOGNIZE THIS SYMBOL AS A SAFETY PRECAUTION.



IMPORTANT SAFETY INSTRUCTIONS

The following symbols and labels are used throughout this manual to indicate immediate or potential safety hazards. It is the owner's and installer's responsibility to read and comply with all safety information and instructions accompanying these symbols. Failure to heed safety information increases the risk of personal injury, property damage, and/or product damage.



WARNING

HIGH VOLTAGE!

Disconnect ALL power before servicing.
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. 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.



WARNING

This airhandler is designed for Upflow or Horizontal-Left applications. DO NOT INSTALL IN THE DOWNFLOW OR HORIZONTAL-RIGHT ORIENTATION.



WARNING

Appliance is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction. Children should be supervised to ensure that they do not play with the appliance. Appliance is not accessible to the general public.



WARNING

To avoid property damage, personal injury or death due to electrical shock, this unit MUST have an uninterrupted, unbroken electrical ground. The electrical ground circuit may consist of an appropriately sized electrical wire connecting the ground lug in the unit control box to the building 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.



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 unit.



DANGER



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



DANGER PELIGRO



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.

B10259-216



DANGER



RISQUE D'EMPOISONNEMENT AU MONOXYDE DE CARBONE

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

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. B10259-216



WARNING

Do not connect to or use any device that is not design-certified by Goodman for use with this unit. Serious property damage, personal injury, reduced unit performance and/or hazardous conditions may result from the use of such non-approved devices.



CAUTION

When installing or servicing this equipment, safety clothing, including hand and eye protection, is strongly recommended. If installing in an area that has special safety requirements (hard hats, etc.), observe these requirements.

PRODUCT IDENTIFICATION

ALL AIR HANDLERS USE DIRECT DRIVE MOTORS. POWER SUPPLY IS 220-240 V, 50 HZ, 1 PHASE.

UNIT INSPECTION

Upon delivery, the unit is to be inspected for damage. Any damage must be reported immediately to the carrier. Do not install this equipment if it is determined that the integrity or safety has been compromised by freight damage.

Using the table "Model Identification" section check the equipment model number to ensure the unit is appropriately sized for the condenser unit(s).

If an incorrect unit is supplied it must not be installed and it is to be returned to the supplier. The manufacturer assumes no responsibility for the installation of incorrect delivered units.

CODES & REGULATIONS

To assure that your unit operates safely and efficiently, it must be installed, operated and maintained in accordance with these installation and operating instructions, all local building codes and ordinances.

Electrical disconnection must be incorporated in the fixed wiring in accordance with the wiring rules if equipment is not fitted with a supply cord, a plug or with other means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under over voltage category III conditions. (IEC 60336-1, 2010-5.)

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 DEPARTMENT
GOODMAN MANUFACTURING COMPANY, L.P.
7401 SECURITY WAY • HOUSTON, TEXAS 77040
877-254-4729

If replacing an air handler, the system must be manufacturer approved and Air-Conditioning, Heating, and Refrigeration Institute (AHRI) matched. **NOTE:** Installation of unmatched systems is strongly discouraged.

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.

LOCATION

Before installing this appliance insure that it is properly sized and adequate power is available.

This appliance can be installed in the vertical or right horizontal position without modification. The horizontal left and downflow positions require product modification.

This product is designed for zero centimeter (0 cm) clearance; however, adequate access for service or replacement must be considered without removing permanent structure. This unit can be installed on a platform when deemed necessary.

When installing this air handler in an enclosed area, such as a garage/parking area, as with any carbon monoxide producing device (i.e. and automobile, space heater, water heater, etc.), insure that the area is properly ventilated.

A	36	00	2	R	
					SECOND GENERATION
					50 HZ MODEL
					W/OPTION FOR HEATER KIT *
					24 - 24,000 BTUH (7.0 KW)
					36 - 36,000 BTUH (10.5 KW)
					48 - 48,000 BTUH (14.0 KW)
					50 - 50,000 BTUH (14.6 KW))
					60 - 60,000 BTUH (17.6 KW)
					Air Handler w/Coil

The “A” Series air handler is suitable for installation in multiple locations including:

- * Overhead (attic/mezzanine, etc.)
- * Closet/mechanical room

When installing this air handler, consideration is to be given to minimize the length of refrigerant tubing. Also, do not install the air handler in a location either above or below the condenser that violates the instructions provided with the condenser.

The clearance from a combustible surface to the unit may be 0". However, service clearance is to take precedence. In addition allow a minimum of 36" in front of the unit for service clearance. Allow sufficient clearance to remove the heater elements for service or replacement in heat kits when utilized in application.

When installing in an area directly over a finished ceiling (such as an attic), an emergency drain pan is required directly under the unit with a separate drain line properly sloped and terminated in an area visible to the owner. This secondary drain pan is required in the event that there is a leak or main drain blockage. Closed cell insulation should be applied to the drain lines in unconditioned spaces where sweating may occur.. See local and state codes for additional requirements.

When installing this unit in an area that may become wet, elevate the unit with a sturdy, non-porous material.

In installations that may lead to physical damage (warehouse, industrial sites, etc.), it is advised to install a protective barrier to prevent such damage.

Heating and cooling equipment located in garages, which may generate a glow, spark or flame capable of igniting flammable vapors, must be installed with the ignition source at least 18" [46cm] above the floor level.

When more than one appliance is installed in a building it shall be permanently identified as to the area or space serviced by the equipment.

When this product is installed in the vertical position in an unconditioned space, remove the horizontal drain pan and install the following insulation kit.

This kit is used to prevent sweating on the vertical drain pan.

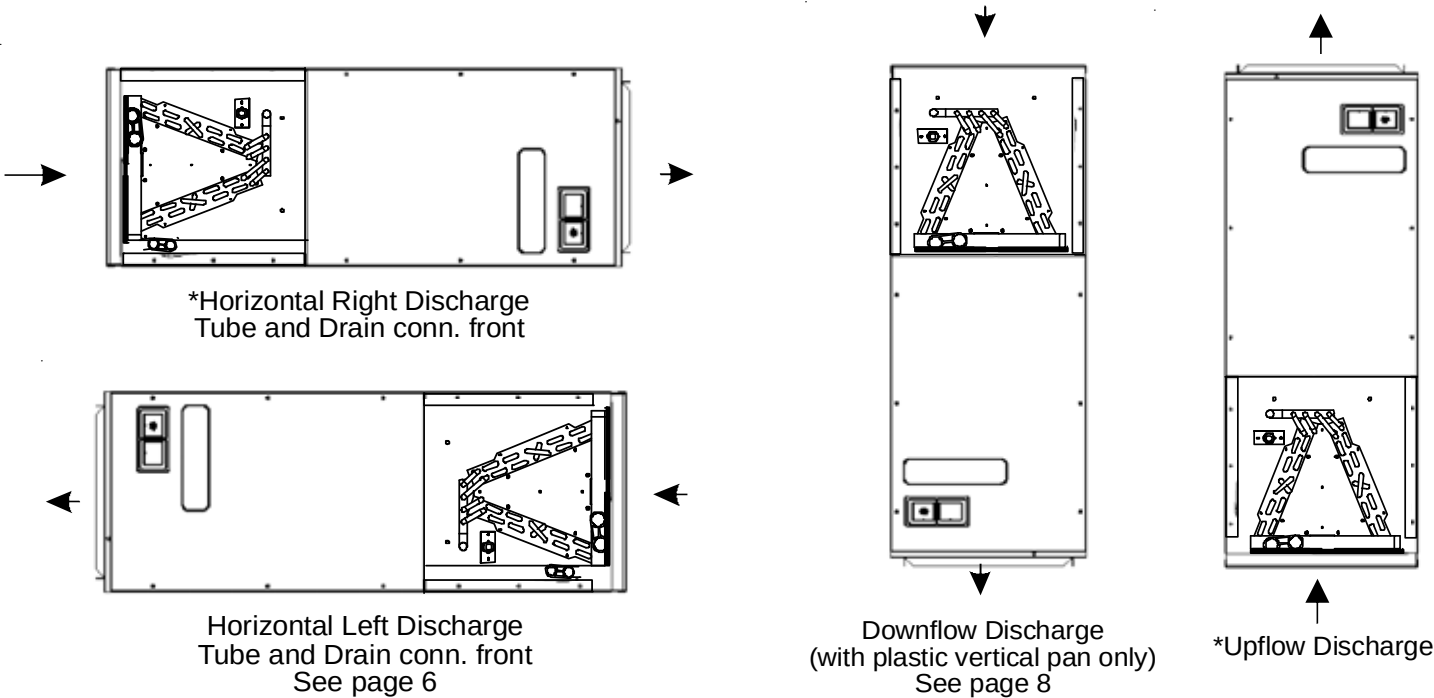
Unit	Kit No.
A24-00-2R	DPI18-30/20
A36-00-2R	DPI36-42/20
A48-00-2R A50-00-2R A61-00-2R	DPI48-61/20

AIRFLOW ORIENTATION

IMPORTANT: Remove the horizontal pan when unit is installed in an unconditioned application (i.e. garage, attic, etc.), or downflow applications, and install kit on vertical (donut shape) drain pan.

**Air handler is factory ready for Upflow & Horizontal Right Discharge Application as shown above.*

**Air handler is factory ready for Upflow & Horizontal Right Discharge Application, when facing the front of the unit, as shown.*



HORIZONTAL LEFT INSTRUCTIONS

1. With air handler in the vertical position, remove all three access panels .
2. Remove J-shape metal bracket. Slide out from the air handler cavity the “A” coil pan assembly with horizontal drain pan on the right side. Remove oval gasket from horizontal pan drain and also remove the plastic drain cover from the lower left access panel. Figure 1.
3. Relocate horizontal pan on the left-hand side of the “A” coil assembly.
4. Knockouts are located within the drain assemblies. Carefully remove only the correct knockouts using a hammer and screw driver for each application, making sure the primary and secondary drains are open and clear of burrs and debris. Remove secondary drain knockout only if this drain is required in this particular installation. *If incorrect knockouts are removed, flooding will occur.*
5. Reinstall in the air handler, the “A” coil pan assembly with the horizontal drain pan on the left-hand side. **Note:** Push the assembly completely to the rear of the cavity and assure it slips into channel bracket at the rear of the cavity.
6. Replace the J-shape metal bracket or brackets on the vertical drain pan and place the plastic oval gasket on horizontal drain pan. Reinstall access panels and flowrator making sure not to over torque screws. Snap in the drain cover on the right lower service panel.
7. The air handler can now be placed in its left horizontal position as shown in Figure 2. The air handler must be leveled and then pitched $\frac{1}{4}$ " toward drain side.

Important: Drain pan must be tested for proper drainage by pouring water into the pan. Traps must be installed on the primary drain and on the secondary drain if used.

8. In all cooling applications, a secondary drain pan must be provided by the installer and placed under the entire unit with a separate drain line properly sloped and terminated in an area visible to the user.
9. Failure to follow this installation requirements will cancel product warranty.

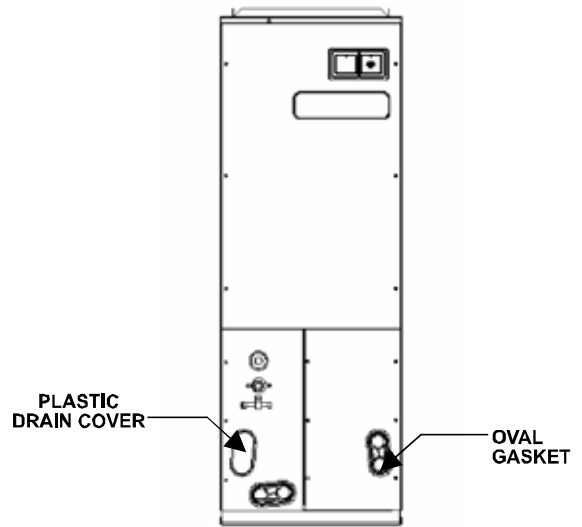


Figure 1

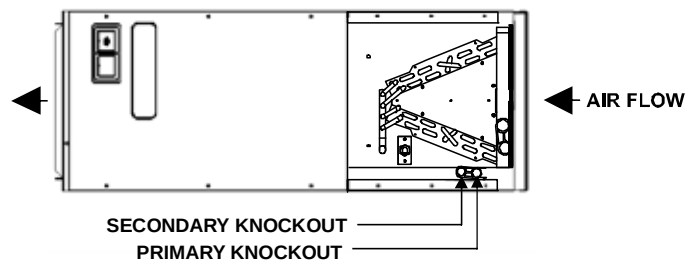


Figure 2

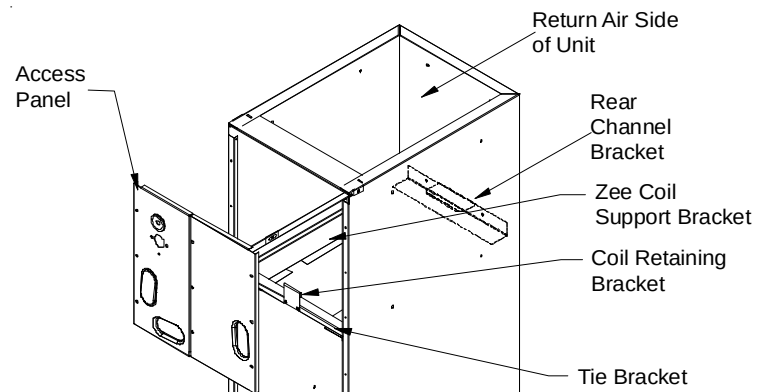


WARNING

THIS COIL IS SHIPPED UNDER PRESSURE. The “A” coil contains 150 p.s.i.g (103432K pa) of air pressure. Before setting up flowrator assembly for field brazing, read the WARNING label on the lower access panel.

DOWNFLOW INSTRUCTIONS

1. Before putting the air handler in the downflow position, remove the three access panels and remove the metal coil retaining bracket and filter close off. Then remove the horizontal and vertical drain pans. The horizontal pan is not required for downflow application
2. After removing the coil, turn the air handler to the downflow position and relocate the (8) brackets which include (1) tie bracket (1) rear channel bracket, (2) zee coil supports, (2) stiffener brackets, and (2) 3" [7.6cm] flat insulation retaining brackets. In effect, brackets, coil, and 2 lower access panels will be assembled 180 degrees from their former position and shifted down with return in up position as shown in Figures 3 and 4.



NOTE: The filter provision is not applicable in THIS downflow application.

Figure 3

3. Assemble (DPI) drain pan insulation kit to the bottom of the drain pan to prevent drain pan from sweating during operation. The following DPI kits are available from your distributor DPI 18-30/20 (A24-00-2R), DPI 36-42/20 (A36-00-2R) and DPI 48-61/20 (A48/50/60-00-2R)
4. Place 3" [7.6 cm] flat insulation retainer on the bottom of each coil slab against the aluminum fins as shown in Figure 5. This will reduce the potential for water blow-off into the air stream.
5. Slide the coil assembly into air handler and reattach the metal coil retainer bracket to tie bracket. See Fig. 2. Then reattach the upper access panel followed by the two lower access panels to match the tubing and drains.
6. A 4" to 3" [10cm to 8cm] removable panel is recommended at the point where the duct meets with the return part of the air handler unit to allow easier removal of coils that are too tall.
7. The "AR" coils are shipped with a check flowrator for use with either cooling or heat pump outdoor section which is accessible from the outside of the unit.

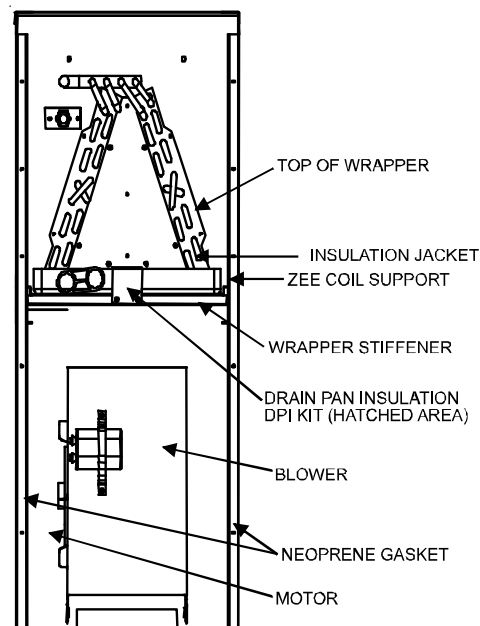
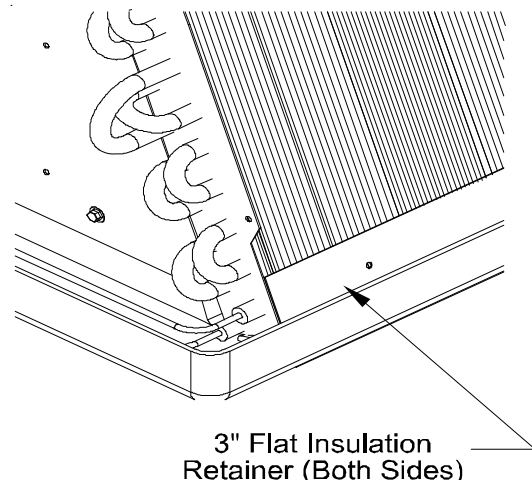


Figure 4



WARNING

THIS COIL IS SHIPPED UNDER PRESSURE. The "A" coil contains 150 p.s.i.g (103432K pa) of air pressure. Before setting up flowrator assembly for field brazing, read the WARNING label on the lower access panel.



3" Flat Insulation Retainer (Both Sides)

Figure 5

REFRIGERANT TUBING

Refrigerant tubing should be installed as to avoid undue stress. They must be supported or routed to avoid strain or vibration. To avoid damage that can be caused by condensate, insulate the suction tube with a closed cell insulation with the seams sealed. The insulation should terminate at the tubing entrance to the air handler. Do not reduce the recommended tubing size.



WARNING

A quenching cloth is strongly recommended to prevent scorching or marring of the equipment finish when brazing close to the painted surfaces. Use brazing alloy of 5% minimum silver content.



CAUTION

Applying too much heat to any tube can melt the tube. Torch heat required to braise tubes of various sizes must be proportional to the size of the tube. Service personnel must use the appropriate heat level for the size of the tube being brazed.

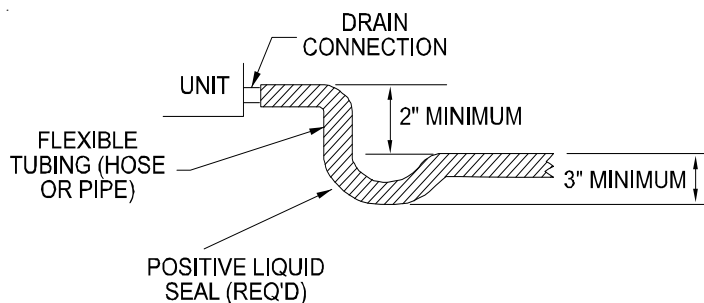


Figure 6

CONDENSATE REMOVAL

THIS APPLIANCE EMPLOYS A DRAW-THROUGH COIL, THEREFORE A TRAP MUST BE INSTALLED IN THE DRAIN LINE(S) TO ALLOW FOR PROPER CONDENSATE DISPOSAL.

The condensate trap must not be the “running” type, or “R” type. A “P” trap is required. The total workable height of this trap, in inches, must exceed the total negative pressure, in inches of water, as measured in the return duct.

The condensate drain line must be at least ¾ NPT, for each unit. Precautions must be used not to over tighten the adapter at the drain pan connection, this precaution will prevent damage to the plastic drain pan. A joint compound should be used to prevent leakage and act as a lubricant.

When using copper tubing as a condensate line adequate caution must be taken to prevent damage to the plastic drain pan during the soldering process. All condensate drain lines and drain traps should be adequately insulated.

The unit and the auxiliary drain pan must be adequately elevated to insure proper drainage.

Use of a condensate removal pump is permitted when necessary. This condensate pump should have provisions for shutting off the control voltage should a blocked drain occur. A trap must be installed between the unit and the condensate pump. **Important:** The evaporator coil is coated with oils that will dissolve Styrofoam and certain types of plastics. Therefore a removal pump or float switch must not contain any of these materials.

NOTE: AFTER INSTALLATION AND POSITIONING THE UNIT, THE DRAIN PAN BEING USED SHOULD BE TESTED BY FILLING IT WITH WATER TO ENSURE PROPER DRAINAGE AND CHECK FOR LEAKS.

ELECTRICAL CONNECTIONS

The required electrical power supply information is located on the series and rating plate on the exterior of the unit. Wiring selection must be in accordance with local codes. A disconnect means should be installed within sight of the unit, when required by code.

Copper wire is recommended for all electrical connections.

When an optional heat kit is installed refer to the electrical requirements in that kit.

The wiring diagram included in the heat kit must be placed over the wiring diagram on the air handler.

The use of copper connections are recommended inside the control box (see UL 1995, section 37.9).



WARNING

To avoid the risk of fire or equipment damage, use copper conductors.



WARNING

A means of strain release MUST be installed to this appliance at the service entrance.

This air handler is compatible with the “HKR” series field-installed electric heat kits. See the air handler Specification Sheet to see which heat kits can be applied with each air handler. Do not install a heat kit in this air handler if it is not listed in the air handler Specification Sheet.

To install an “HKR” electric heat kit, follow all directions in the Installation and Operating Instructions shipped with the heat kit.

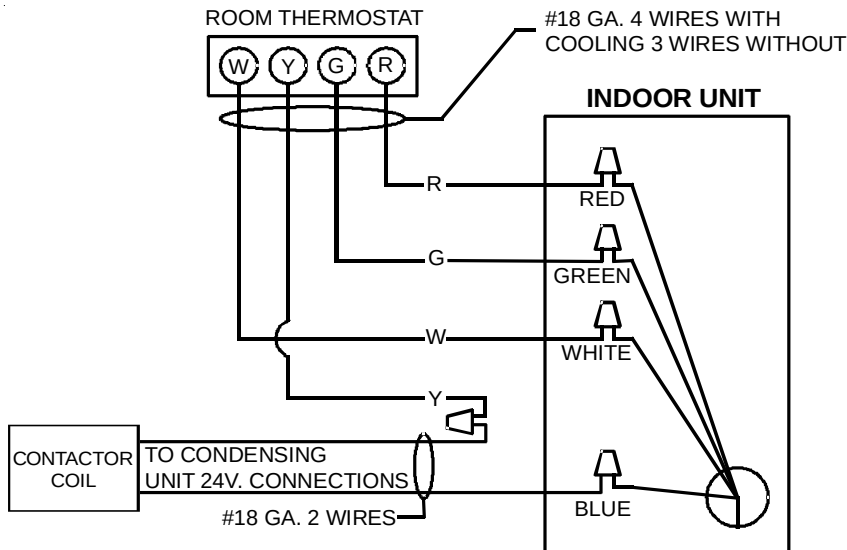
CONDENSERS

WIRING DIAGRAM



WARNING

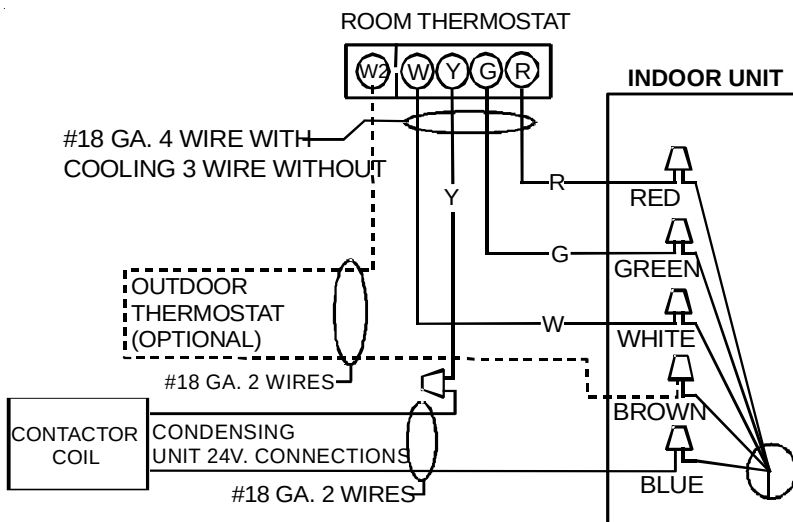
HIGH VOLTAGE!
DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT.
MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE
PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



AIR HANDLER MODEL	THERMOSTAT HEAT ANTICIPATOR SETTING
A24,36,48,50, 60-00-2R	0.2

Thermostat Anticipator setting for optional heat kits - 10kW & below.

Low Voltage Wiring Diagram for Cooling Unit with Optional Heat Kit - 10 kW and below.



AIR HANDLER MODEL	THERMOSTAT HEAT ANTICIPATOR SETTING			KW STAGES WHEN STAGING	
	1 STAGE T'STAT	2 STAGE T'STAT			
		STAGE 1	STAGE 2	STAGE 1	STAGE 2
A24-00-2R	0.4	0.2	0.2	7.3 KW	4.8 KW
A36-00-2R	0.4	0.2	0.2	9.8 KW	5.0 KW
A48, 50, 60-00-2R	0.4	0.2	0.2	9.8 KW	9.8 KW

Low Voltage Wiring Diagram for Cooling Unit with Optional Heat Kit - 15 kW and above.

Notes:

1. Blue wire on low voltage wiring is the common connection (C) for all low voltage connections.
2. White wire (W2) on outdoor units is for defrost operation and should be connected to the white wire that goes to the thermostat on the indoor unit to activate electric heat while in defrost mode.

Thermostat Anticipator setting for optional heat kits - 15kW & above.

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

HEAT PUMPS

WIRING DIAGRAM

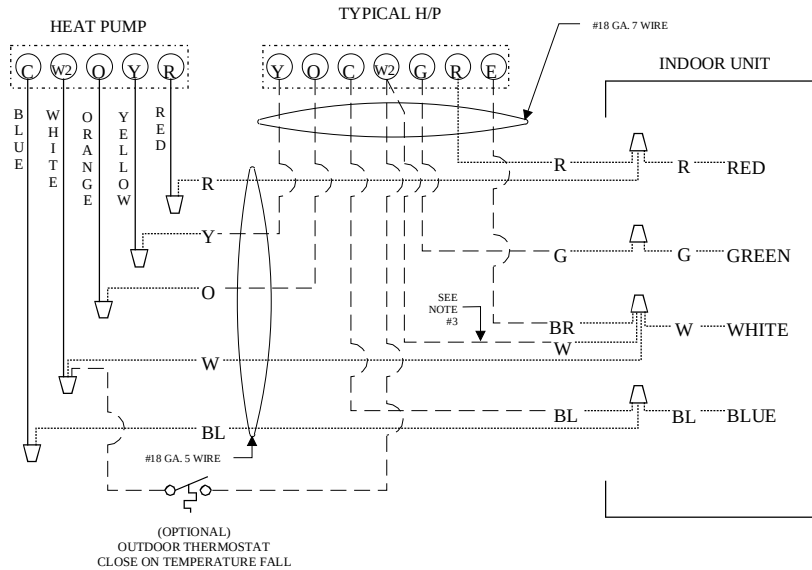


WARNING

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.

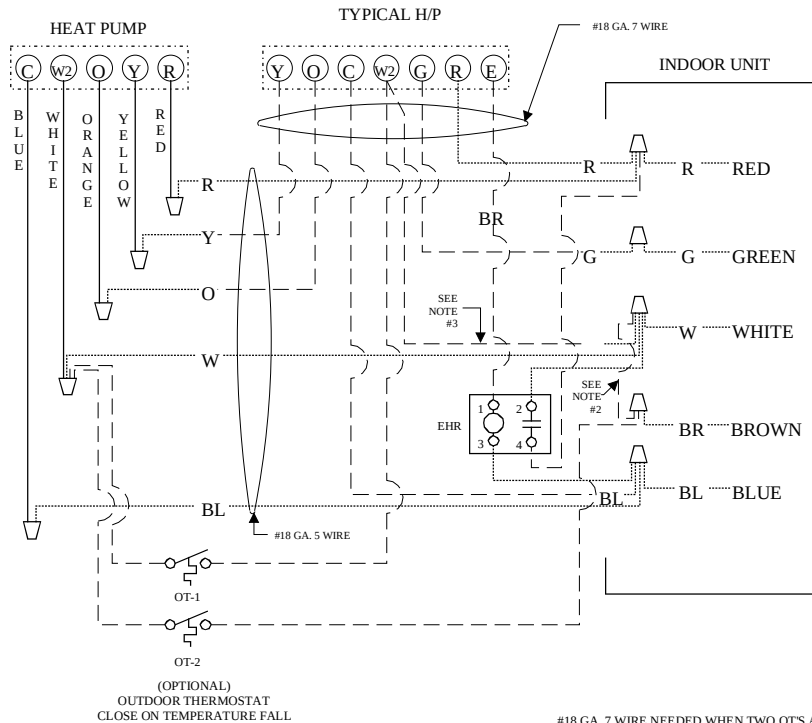


SYSTEM COMPOSITE DIAGRAM
A24-A60
10 KW & BELOW



#18 GA. 6 WIRE NEEDED WHEN OT IS USED

SYSTEM COMPOSITE DIAGRAM
A24-A60
ABOVE 10 KW



#18 GA. 7 WIRE NEEDED WHEN TWO OT'S ARE USED

NOTES:

- 1) OUTDOOR THERMOSTAT (OT-1) SHOULD BE THE FIRST TO CLOSE AND THE LAST TO OPEN.
- 2) CONNECT WHITE AND BROWN WIRES FROM AIR-HANDLER TOGETHER IF OT-2 IS NOT USED.
- 3) REMOVE WIRE WHEN USING OUTDOOR THERMOSTAT

NOMENCLATURE:

OT ---OUTDOOR THERMOSTAT (OPTIONAL)
EHR -EMERGENCY HEAT RELAY (OPTIONAL)

COLOR CODES:

R --RED
Y --YELLOW
BL--BLUE
BR--BROWN
O --ORANGE
W -WHITE

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

THERMOSTATS

Note: Second Stage heat can be accomplished by multi-stage heating thermostat or the addition of an outdoor thermostat as shown Goodman Cooling and Heating thermostat part number is CHT18-60. This thermostat is single stage cool and single stage heat. Goodman Heat Pump thermostat part number is HPT18-60. This thermostat is single stage cool, two stage heat, first stage is heat pump heating and second stage is optional electric heat.

If additional features are desired, such as digital or programmable thermostat other thermostats are commercially available that are compatible to this product line. Follow the thermostat manufacturer's instruction for installation.

ORIFICE CHANGE

The restrictor (orifice) included in this unit match the comparable capacity of the outdoor unit. If the indoor unit is greater in capacity than the outdoor condenser, the orifice must be changed to match the outdoor unit capacity. The restrictor should be replaced before any tubing connections are made.

THE CAPACITY OF THE OUTDOOR UNIT SHOULD NEVER EXCEED THE CAPACITY OF THE INDOOR UNIT.

To replace the restrictor, follow the steps below:

Follow these instructions to avoid prevent injury.

1. Loosen the 13/16" nut **1 TURN ONLY**. No pressure loss indicates possible leak.
2. Remove the nut and discard the brass cap and black seal.
3. Remove the check piston to **verify it is correct**. See piston kit chart in instructions.
4. Use a tube cutter to remove the spin closure on the suction line.
5. Remove the tailpiece clamped to the exterior.
6. **Slide the 13/16 nut into position**. Braze tailpiece to the liquid tube.
7. Insert the suction line into the connection, slide the insulation and the rubber grommet at least 18" [45cm] away from the braze joint.
8. **AFTER THE TAILPIECE HAS COOLED**, position the white Teflon seal and hand tighten the nut.
9. Torque the 13/16" nut to 7-25 ft-lbs. [0.967-3.456 m-kG] or tighten 1/6 turn.
10. Replace suction line grommet and insulation.

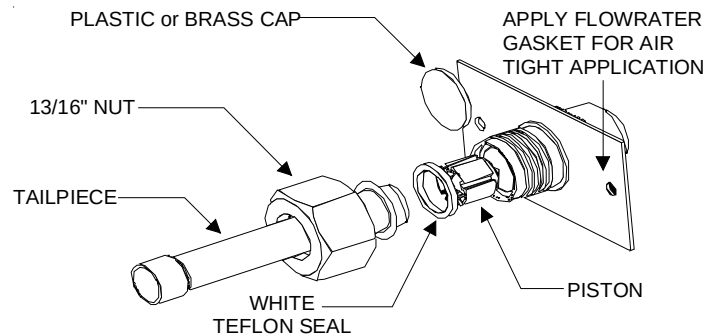


Figure 7

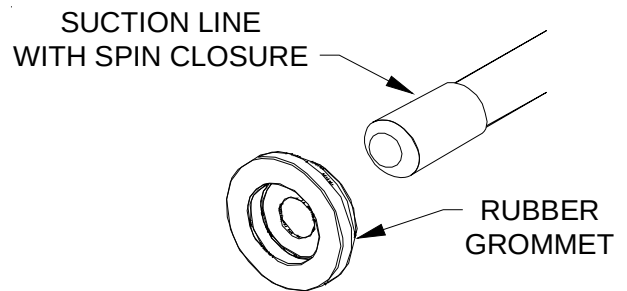


Figure 8

CIRCULATING AIR DUCT

The use of flexible duct connectors is recommended to minimize the possibility of noise transmission. These connectors must conform to local standards.

Supply air ducts must be insulated and return ducts must be insulated when passing through an unconditioned space. When passing through an unconditioned space it may be necessary to install a vapor barrier to the exterior of the ducts to prevent condensation. Seams of all supply ducts must be sealed to prevent leakage and return ducts sealed airtight to prevent infiltration.

The supply plenum should be the dimensions specified by the factory.

BLOWER PERFORMANCE

Airflow versus Static Pressure 4% reduction for wet coil.

The air delivery can be varied by changing the blower speeds. This can allow for differences encountered in installations.

The airflow can be checked by the following method;

(The optional Heat Kit must be installed to continue with this procedure.)

1. All access panels must be in place.
2. Start the unit in the heat mode.
3. Measure the return air temperature.
4. Measure the supply temperature. This measurement should be done in various locations to obtain an average.
5. Subtract the return temperature from the supply temperature. This is referred to as the temperature rise.
6. Measure the actual supply voltage and actual amperage at the terminal block/circuit breaker.
7. The BTUH output = (Voltage x Amps x 3.41)

The KW output = (Voltage X Amps)

CFM = output (BTUH) 1.08 X temperature rise(°F)

L/s = 828.3x output (KW) temperature rise (°C)

Should the airflow need to be increased or decreased it may be done by adjusting the blower speed tap as shown on the wiring diagram.

START UP

- Prior to initial start-up insure that all electrical connections are properly sized and tightened.
- All panels must be in place and secured.
- Tubing should be leak free.
- Unit should be elevated, trapped and pitched to allow for drainage.
- Low voltage wiring is connected.
- Auxiliary drain is installed, when necessary, and pitched to allow for drainage.
- Drain pans and drain tubing were leak checked with water.
- Return and supply ducts are sealed.
- Unit is elevated when installed in a garage or where flammable vapors may be present.
- Unit is protected from vehicular or other physical damage.
- Return air is not to be obtained from any areas where there may be objectionable odors, flammable vapors or products of combustion.

REGULAR MAINTENANCE

The only item to be maintained on a regular basis by the user is to insure that the circulating air filter(s) is cleaned or replaced. It is recommended that a return air filter grille be installed.

A certified service technician should perform other services.

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.



WARNING

HIGH VOLTAGE!

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



ELECTRIC HEAT

Refer to this manual in combination with the instructions provided with the heat kit for the correct installation procedure.

The air handlers listed in this manual do not have factory installed electric heat. Electric heat is available as an accessory. If installing this option, the **ONLY** heat kits that can be used are the HKR series.

NOTE: The Amana® brand EHK, ECB, EDB, and EDK kits are **NOT** approved for use with these air handlers.

The heating mode temperature rise is dependent upon the system air flow, the supply voltage, and the heat kit size (kW) selected. Use **Table 1** to determine the temperature rise (°F).

CFM	HEAT KIT NOMINAL kW							
	3	5	6	8	10	15	20	21
600	17	27	34	39				
800	13	20	25	30	40			
1000	10	16	20	24	32	48		
1200	8	13	17	20	27	40	53	59
1400	7	11	14	17	23	34	46	51
1600	6	10	13	15	20	30	40	44
1800	6	9	11	13	18	27	36	39
2000	5	8	10	12	16	24	32	35

Table 1
220/1/50 Supply Voltage - Temperature Rise Table °F

NOTE: For installations not indicated above the following formula is to be used:

$$TR = (kW \times 3412) \times (\text{Voltage Correction}) \times 1.08 / CFM$$

Where: TR = Temperature Rise
 kW = Heater Kit Actual kW
 3412 = Btu per kW
 Voltage Correction = .96 (230 Supply Volts)
 =.92 (220 Supply Volts)
 =.87 (208 Supply Volts)
 1.08 = Constant
 CFM = Measured Airflow

NOTE: The Temperature Rise Table can also be used to determine the air handler airflow delivery. When using the table for this purpose set the room thermostat to maximum heat and allow the system to reach steady state conditions. Insert two thermometers, one in the return air and one in the supply air. The temperature rise is the supply air temperature minus the room air temperature.

Use HKR specification sheets to determine the HKR available for a given air handler.

HKR INSTALLATION

Follow instructions listed in Installation and Operating Instructions shipped with the heat kit.

ELECTRICAL SUPPLY WIRE AND MOP



CAUTION

FIRE HAZARD!

To avoid the risk of property damage, personal injury or fire, use only copper conductors.



WARNING

HIGH VOLTAGE!

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

