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March 2024

Advanced Distributor Products®

Installation Instructions

S-series

Wall Mount Air Handlers

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AIR HANDLER SAFETY

SAFETY CONSIDERATIONS

Your safety and the safety of others are very important.

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages.

This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and signal word. These signals words mean the following:

DANGER: You can be **killed or seriously injured** if you don't immediately follow instructions.

WARNING: Indicate a potentially hazardous situation which, if not avoided, could result in **death or serious injury**.

CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in **minor or moderate injury**. Caution may also be used to alert against unsafe practices.

NOTICE: Indicates a statement of company policy as the message relates directly or indirectly to the safety of personnel or protection of property.

IMPORTANT: More detailed information concerning the statement of company policy as the message relates directly or indirectly to the safety of personnel or protection of property.

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

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Intertek

Product improvement is a continuous process at Advanced Distributor Products. Therefore, product specifications are subject to change without notice and without obligation on our part. Please contact your ADP representative or distributor to verify details.

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GENERAL

These instructions are intended as a general guide only and do not supersede any national or local codes in any way. Compliance with all local, state, or national codes pertaining to this type of equipment should be determined prior to installation.

Read this entire instruction manual, as well as the instructions supplied in separate equipment, before starting the installation.

All models are designed for indoor installation only.

The installation of the air handler, field wiring, warm air ducts, etc. must conform to the requirements of the National Electrical Code, ANSI/NFPA No. 70 (latest edition) in the United States, and any state laws, and local ordinances (including plumbing or wastewater codes). Local authorities having jurisdiction should be consulted before installation is made. Such applicable regulations or requirements take precedence over the general instructions in this manual.

Install the conditioned air plenum, ducts and air filters (not provided) in accordance with NFPA 90B Standard for the Installation of Warm Air Heating and Air-Conditioning Systems (latest edition).

Some models are configured for upflow air discharge only, and some models are configured for upflow or horizontal left-hand air discharge.

Do not remove the cabinet knockouts until it has been determined which knockouts need to be removed for the installation.

Select the final installation position that best suits the site conditions. Consider required clearances, space, routing requirements for refrigerant line, condensate disposal, filters, ductwork, wiring, and accessibility for service. Refer to the air handler rating plate on the air handler for specific information.

WARNING

Electrical Shock

Disconnect power before servicing.

Replace all parts and panels before operating.

Electrically ground air handler.

Connect ground wire to ground terminal marked .

Failure to do so can result in death or electrical shock.

Explosion Hazard

Keep flammable materials and vapors, such as gasoline, away from this unit.

Place this unit so that the heating elements are at least 18in (46cm) above the floor for a garage insulation.

Failure to follow these instructions can result in death, explosion or fire.

RECIVING

Check equipment for shipping damage. If you find any damage, immediately contact the last carrier.
Check the unit rating plate for unit size, electric heat, coil, voltage, phase etc. to be sure unit matches requirements.

REQUIREMENTS

The installation of the air handler, field wiring, warm air ducts, etc. must conform to the requirements of the National Electrical Code, ANSI/NFPA No. 70 (latest edition) in the United States, and any state laws, and local ordinances (including plumbing or wastewater codes). Local authorities having jurisdiction should be consulted before installation is made. Such applicable regulations or requirements take precedence over the general instructions in this manual.
Install the conditioned air plenum, ducts and air filters (not provided) in accordance with NFPA 90B Standard for the Installation of Warm Air Heating and Air-Conditioning Systems (latest edition).
This unit is certified for installation clearances to combustible material as listed on the unit rating plate. Accessibility and service clearances must take precedence over combustible material clearances.

INSTALLATION

S Series air handlers are suitable for free-air return when enclosed in a closet with a louvered door or flush mounted in a wall. *Units must always be installed with a casing.

Closet or “On the Wall” Applications (Figure 2)

Note: If mounted in a closet a louver or grill with at least 1 square foot of face area per cooling ton is required on the door.

A wall hanging bracket is Included for this type of mounting. Attach bracket to wall so the “open” end faces up, make sure bracket is level and attached to the studs (2” x 8” blocking installed between studs at bracket height is recommended). 2″ screws are required. Lift unit and slide the back edge of the top cap onto bracket.

Flush Mount or “In the Wall” Applications (Figure 3)

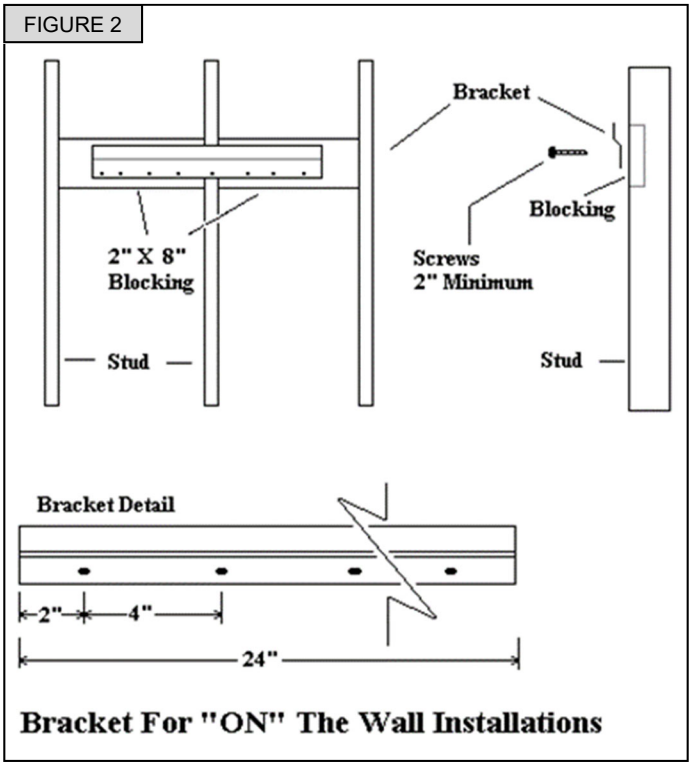
Recess air handler 2″ to provide adequate space for drain line connections. If a flush application is desired, a notch will need to be cut in the stud to allow for primary drain access.

Do not allow the air handler to protrude beyond the front of the stud, this will interfere with the louvered wall grille application. Use the 2 holes on each side to attach between studs. Make sure air handler is level and square before proceeding

DUCTWORK

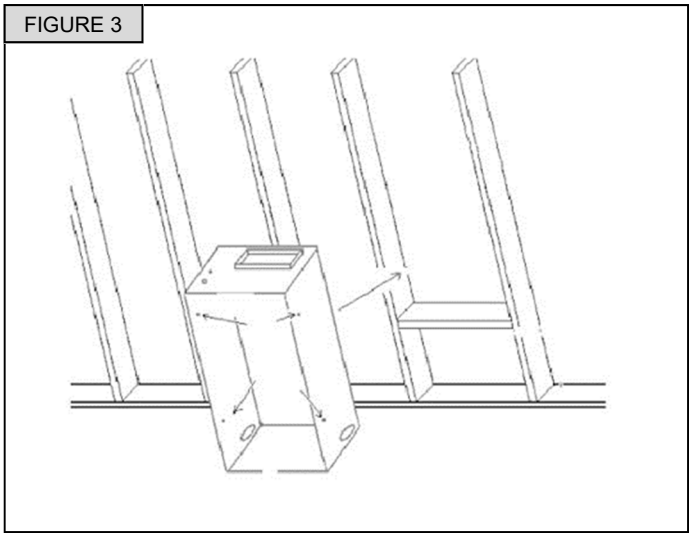
Ductwork should be fabricated and installed in accordance with local and/or national codes. This includes the standards of the National Fire Protection Association for installation of Air -Conditioning and Ventilating Systems, NFPA No. 90B.

FIGURE 2



Bracket For "ON" The Wall Installations

FIGURE 3



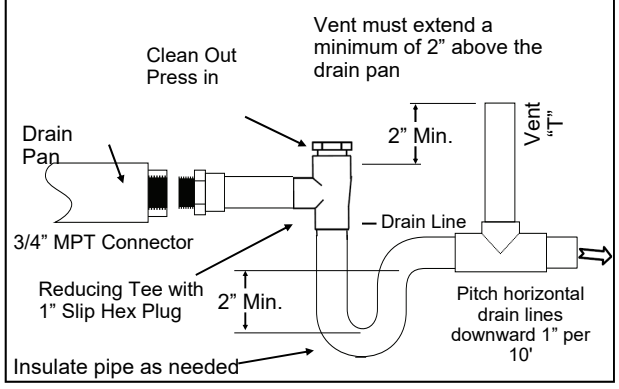
INSTALL CONDENSATE DRAIN

Determine the drain connections to be used and note the difference between the primary and secondary openings. Remove plugs from selected drain openings. It is recommended that ¾″ male pipe thread PVC fittings be used at the condensate pan. **Hand tighten only!** ADP recommends thread sealant to be used on the PVC connector at the drain pan connection.

Tubing for all condensate drains should be a minimum of 7/8″ OD. The drain should be pitched downward 1″ per 10′. Install a trap as close to the coil as possible (2” minimum). Refer to figure 4.

FIGURE 4

Drain Trap and Vent Tee



Route drain line so that it does not interfere with accessibility to the coil, air handling system or filter and will not be exposed to freezing temperatures.

If line makes a second trap, or has an extended run before termination, a vent tee should be installed after the trap closest to the pan. Connect the primary drain and route to an open drain, sump, or sewer line.

CAUTION

If the coil is located in or above a living space where damage may result from condensate overflow, a separate ¾″ drain must be provided from the secondary drain connection (**or a Float Switch can be used - refer to kit instructions for installation procedures**). Run this drain to a place in compliance with local installation codes where it will be noticed when unit is operational. Condensate flowing from the secondary drain indicates a plugged primary drain.

Prime the trap with water. Test line for leaks. Verify water flow with unit in operation.

Do not allow the drain pan coupling to support the weight of the drain line. Secure the drain line with a strap or other equivalent method to ensure the line is perpendicular to the face of the drain pan.

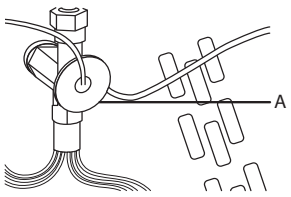
METERING DEVICE

Thermal Expansion Valve (TXV)

Factory Installed Expansion Valves: Sensing bulbs are factory installed and clamped to the suction line. For optimum performance, reattach and insulate the bulb at a 10 or 2 o’clock position outside of the cabinet to the main suction line no more than one foot from the suction line connection. If necessary, the bulb can be installed on a vertical suction line. In this instance, the bulb must be placed before any trap, with the bulb’s capillary tube facing upward.

FIGURE 5

Thermal Expansion Valve *(Letter A)*



NOTE: Some models are equipped with thermo expansion valve and do not require any orifice change.

Pistons

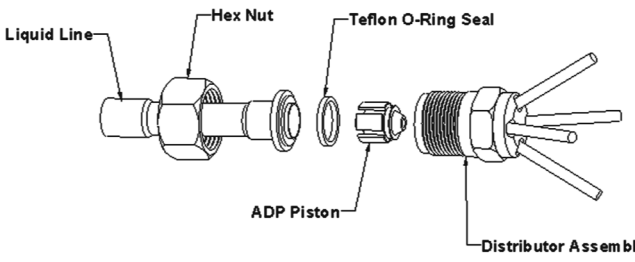
IMPORTANT: For optimum performance, the piston should be sized to match the recommendation from the outdoor unit manufacturer. Consult the outdoor unit information to determine whether the indoor unit has the correct orifice size.

When changing pistons, use the following procedure:

1. Loosen the hex nut located on liquid line and separate from distributor assembly.
2. Remove the existing piston from inside the distributor assembly.
3. Insert the desired piston into the distributor assembly.
4. Inspect Teflon O-Ring and replace if damaged. Ensure Teflon O-Ring is in place.
5. Re-install hex nut to body and torque to 10 ft-lbs.

FIGURE 6

Side View of Piston Orifice



REFRIGERANT PIPING

Refrigerant connections are 3/8″ ODF Liquid and 3/4″ ODF Suction. Refer to outdoor unit manufacturer's recommendation on line sizing. During brazing of refrigerant lines place a wet rag around suction line to protect cabinet or ceiling from overheating. Maintain a minimum of 1.5″ from refrigerant brazing connections and cabinet or ceiling. Refer to nomenclature to determine type of flow control installed and needed for your application. Evaporator coils are shipped from the factory with florator pistons or TXV assemblies. Florator pistons and TXV kits are available for field conversion.

REFRIGERANT LINE INSTALLATION

Refrigerant lines must be connected by a licensed, EPA certified refrigerant technician in accordance with established procedures.

IMPORTANT:

- Connecting refrigerant lines must be clean, dehydrated, refrigerant-grade copper lines. Air handler coils should be installed only with specified line sizes for approved system combinations.
- Use care with the refrigerant lines during the installation process. Sharp bends or possible kinking in the lines will cause a restriction.
- Do not remove the caps from the lines or system connection points unit connections are ready to be completed.

1. Route the suction and liquid lines from the fittings on the indoor coil to the fittings on the outdoor unit. Run the lines in a direct path, avoiding unnecessary turns and bends.
2. Ensure that the suction line is insulated over the entire exposed length and that both suction and liquid lines are not in direct contact with floors, walls, ductwork, floor joists, or other piping.
3. Connect the suction and liquid line to the evaporator coil.
4. To avoid damaging the rubber grommets in the cabinet while brazing, slide the rubber grommets over the refrigerant lines until they are away from the heat source.
5. Braze with an alloy of silver or cooper and phosphorus with a melting point above 1,100°F. **NOTE:** Do not use soft solder.
6. Reinstall the rubber grommets after brazing is finished.
7. Make sure the outdoor air conditioning unit has been put in place according to the Installation Instructions and is connected to the refrigerant lines.

ADP recommends installing a filter drier and sight glass in the liquid line. While brazing, purge the system with Nitrogen to prevent contamination. ADP recommends reattaching and insulating the TXV sensing bulb at a 10 to 2 o'clock position on the suction line, outside the coil housing, no more than one foot from the connection. Evacuate the system to 500 microns to ensure proper air and moisture removal *(***Note:** *Deep evacuation or triple evacuation method recommended).* Open the suction service valve slowly and allow the refrigerant to bleed into the system before opening the liquid service valve.

REFRIGERANT CHARGING INSTRUCTIONS

When charging in cooling mode, the outdoor temperature should be 60°F or higher. To allow the pressures to stabilize, operate the system a minimum of 15 minutes between adjustments. When adjusting charge to systems with micro-channel outdoor coils, make small (1 ounce or less) adjustments as these systems are very sensitive to refrigerant charge.

TXV Charging[2, 3, 4] – Use the charging method recommended by the outdoor unit instructions. Alternatively, ADP recommends charging to 12°F sub-cooling for AC units and 10°F sub -cooling for heat pump units. In addition, if equipped with an adjustable valve, adjust to 10°F superheat.

Fixed Orifice Charging[2, 3, 4] – For A1 (R-410A & R-22) refrigerant installation use the superheat recommended by the outdoor unit instructions. Alternatively, ADP recommends charging to the superheat table below.

Outdoor Air Temp. (°F)	**60**	**65**	**70**	**75**	**80**	**85**	**90**	**95**	**100**	**105**	**110**	**115**
Superheat (°F)	31	28	25	22	20	16	13	10	8	6	5	5

For heat pump units initially charged in the cooling mode, final adjustments to charge in the heating mode are acceptable if necessary. Some heat pump units require charging in the heating mode. In this case, refer to the outdoor instructions for recommended charging procedures.

If the system is undercharged after the initial charge, add refrigerant until the sight glass is clear and recommended pressures, temperatures, sub-cooling and superheat can be obtained. If the system is overcharged after the initial charge, recover refrigerant until recommended pressures, temperatures, sub-cooling and superheat can be obtained.

Notes:

1. If any problems or questions regarding charge occur, contact customer service.
2. OEM charging methods vary depending on design and application. Verify all recommended pressures, temperatures, sub-cooling and superheat settings result in the proper charge.
3. ADP coils may require charge compensation due to size variation versus the OEM coil.
4. Temperatures are ±2°F unless otherwise recommended.

FILTERS

Filters are not provided with unit, and must be supplied and installed in the return air system by the installer. A field installed filter grille is recommended for easy and convenient access to the filters for periodic inspection and cleaning. Filters must have adequate face area for the rated air quantity of the unit.

ELECTRICAL REQUIREMENTS

WARNING

Electrical Shock Hazard

Electrically ground electric heater.

Connect ground wire to ground terminal marked ⏚.

Use copper wire rated for supply connection.

Correct wire gauge is shown in the chart below.

Failure to follow these instructions can result in death or electrical shock.

Rating Plate Ampacity	AWG
21-30	10
31-40	8
41-60	6

NOTE: Use copper conductors only.

- All field wiring must be done in accordance with National Electrical Code, applicable requirements of UL and local codes, where applicable.
- Electrical wiring, disconnect means and over-current protection are to be supplied by the installer. Refer to the air handler rating plate for maximum over-current protection, minimum circuit Ampacity, as well as operating voltage.
- The power supply must be sized and protected according to the specifications supplied on the product.
- This air handler is factory configured for 240 Volt, single phase, 60 cycles. For 208 Volt applications, see “208 Volt Conversion” in the “Make Electrical Connections” section.
- For optional electric heater applications refer to the instructions provided with the accessory for proper installation.

Caution

In order to avoid a hazard due to inadvertent resetting of the THERMAL CUT-OUT, this appliance must not be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly switched on and off by the utility.

ELECTRICAL CONNECTIONS

1. Models with electric heat: Determine the number of circuits needed to supply the heater with electrical power. See the air handler Accessory Kit label for number of circuits and ratings.
2. Disconnect all power supplies.
3. Remove the control panel.
4. Using the pre-punched wiring holes, install UL listed wires and fittings.
5. Connect appropriate size wire to the pull disconnect terminals.
6. Connect green ground wire(s) (1 or 2) to the ground terminal(s) (1 or 2) marked ⏚

1. Install conduit-opening plugs in any unused openings.
8. Reinstall the air handler control panel.
9. Reconnect power.
10. Dispose of all remaining parts.

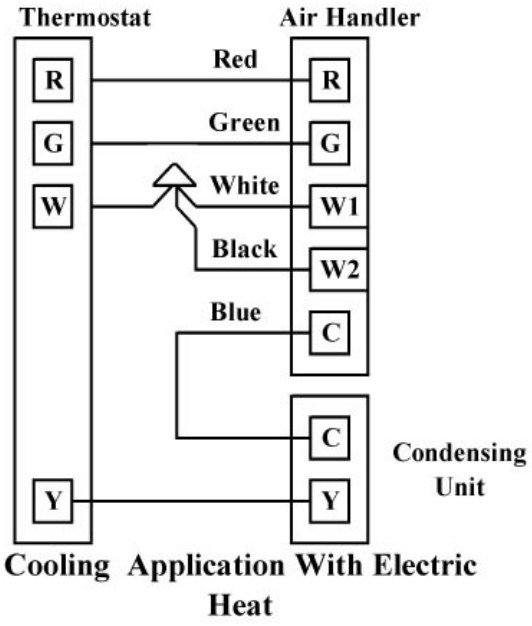
WARNING

Electrical Shock Hazard

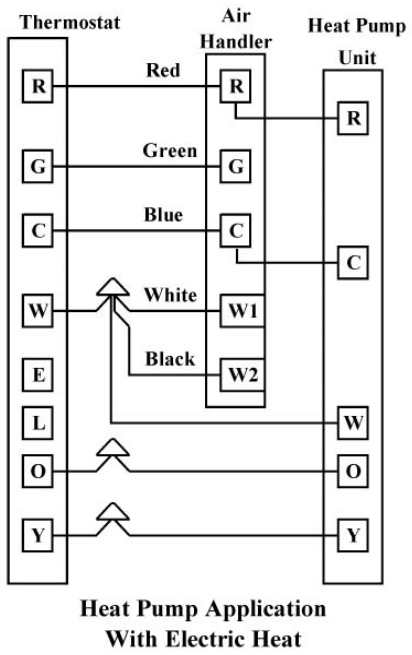
Disconnect all power supplies before servicing.
Replace all parts and panels before operating.
Failure to do so can result in death or electrical shock.

LOW VOLTAGE THERMOSTAT CONNECTIONS

Thermostat Connections: 3-speed Motor



Cooling Application With Electric Heat



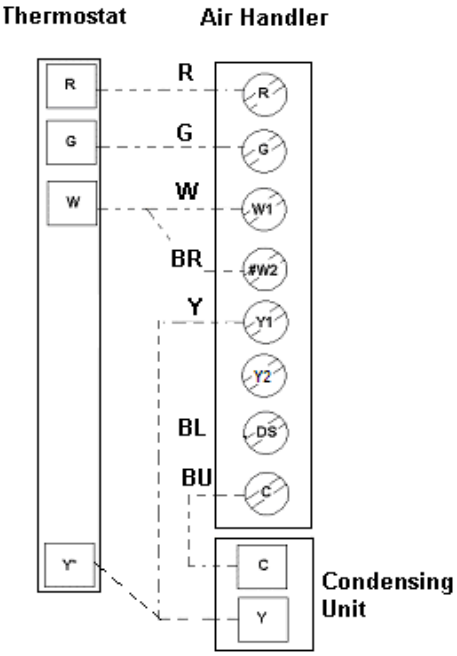
Heat Pump Application With Electric Heat

NOTE: When the room thermostat calls for second stage heat, the first stage (heat pump) operation must be locked out.

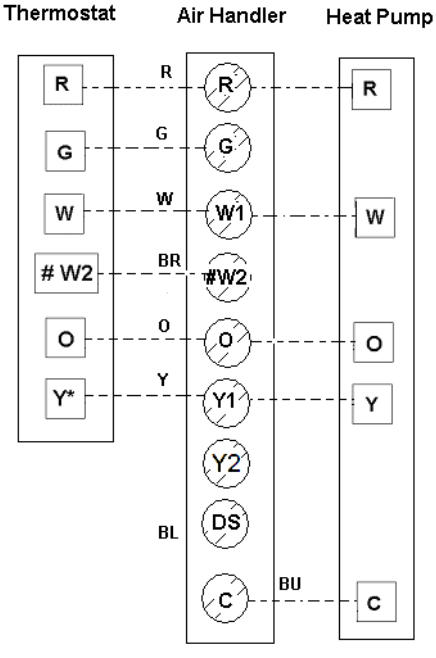
Low Voltage Thermostat Connections – 5-speed ECM Constant Torque Motor

For 2 stage outdoor units:

- Use the airflow chart to identify the desired CFM for 1st and 2nd stage operation.
- For 1st stage, connect Y1 from the thermostat to the desired Tap on the terminal board.
- For 2nd stage, connect Y2 from the thermostat to the desired Tap on the terminal board.



Cooling Application with Electric Heat



Heat Pump Application with Electric Heat

ELECTRICAL DATA

3-Speed PSC Motor

Unit Size (All have electric heat)	Heating Capacity		Blower Amps		Minimum Circuit Ampacity		Circuit Breaker Amps Per Stage	
	kW	BTUH						
	240 V [1]	240 V [1]	208 V	240 V	208 V	240 V	208 V	240 V
18	0	0	1.8	1.7	2.3	2.1	15.0	15.0
	5.0	17,065	1.8	1.7	24.8	28.2	30	30
	7.5	25,598	1.8	1.7	36.1	41.2	40	45
	10.0	34,130	1.8	1.7	47.4	54.2	50	60
24	0	0	1.8	1.7	2.3	2.1	15.0	15.0
	5.0	17,065	1.8	1.7	24.8	28.2	30	30
	7.5	25,598	1.8	1.7	36.1	41.2	40	45
	10.0	34,130	1.8	1.7	47.4	54.2	50	60
30	0	0	2.1	2.0	2.6	2.5	15.0	15.0
	5.0	17,065	2.1	2.0	25.2	28.5	30	30
	7.5	25,598	2.1	2.0	36.5	41.6	40	45
	10.0	34,130	2.1	2.0	47.8	54.6	50	60
36	0	0	2.1	2.0	2.6	2.5	15.0	15.0
	5.0	17,065	2.1	2.0	25.2	28.5	30	30
	7.5	25,598	2.1	2.0	36.5	41.6	40	45
	10.0	34,130	2.1	2.0	47.8	54.6	50	60

[1] For 208 Volts use .751 correction factor for kW & MBTUH.

5-Speed High Efficiency ECM Motor

Unit Size (All have electric heat)	Heating Capacity		Blower Amps		Minimum Circuit Ampacity		Circuit Breaker Amps Per Stage	
	kW	BTUH						
	240 V [1]	240 V [1]	208 V	240 V	208 V	240 V	208 V	240 V
19	0	0	0.9	0.8	1.1	1.0	15	15
	5.0	17,065	0.9	0.8	23.7	27.0	30	30
	7.5	25,598	0.9	0.8	35.0	40.1	40	45
	10.0	34,130	0.9	0.8	46.3	53.1	50	60
25	0	0	1.8	1.7	2.3	2.1	15	15
	5.0	17,065	1.8	1.7	24.8	28.2	30	30
	7.5	25,598	1.8	1.7	36.1	41.2	40	45
	10.0	34,130	1.8	1.7	47.4	54.2	50	60
31	0	0	2.4	2.2	3.0	2.8	15	15
	5.0	17,065	2.4	2.2	25.6	28.8	30	30
	7.5	25,598	2.4	2.2	36.8	41.8	40	45
	10.0	34,130	2.4	2.2	48.1	54.8	50	60
37	0	0	3.1	2.9	3.9	3.6	15	15
	5.0	17,065	3.1	2.9	26.4	29.7	30	30
	7.5	25,598	3.1	2.9	37.7	42.7	40	45
	10.0	34,130	3.1	2.9	49.0	55.7	50	60
39	0	0	3.1	2.9	3.9	3.6	15	15
	5.0	17,065	3.1	2.9	26.4	29.7	30	30
	7.5	25,598	3.1	2.9	37.7	42.7	40	45
	10.0	34,130	3.1	2.9	49.0	55.7	50	60

[1] For 208 Volts use .751 correction factor for kW & MBTUH.

BLOWER PERFORMANCE DATA

3-Speed PSC Motor

Unit Size	Cooling Speed Setting	Airflow (CFM) vs. External Static Pressure (inches W.C.) ***				
		0.1	0.2	0.3	0.4	0.5
18	* ^ Low - Red	559	529	606	591	576
	Med - Blue	802	784	751	722	693
	High -Black	1046	1013	987	943	885
24	Low - Red	606	591	576	559	529
	* ^ Med - Blue	802	784	751	722	693
	High -Black	1046	1013	987	943	885
30	Low - Red	816	809	802	775	752
	* ^ Med - Blue	1000	985	970	935	889
	High -Black	1218	1175	1122	1070	1008
36	Low - Red	816	809	802	775	752
	Med - Blue	1000	985	970	935	889
	* ^ High -Black	1218	1175	1122	1070	1008

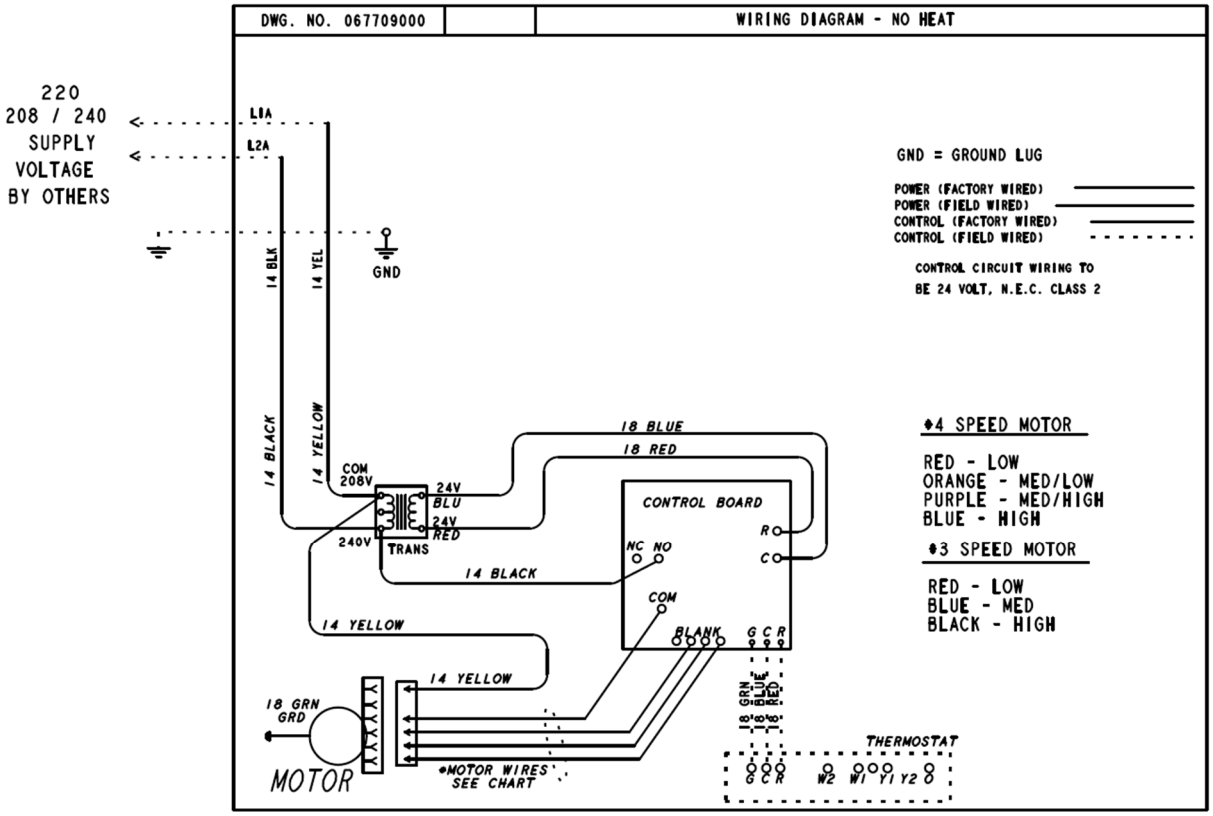
* Factory setting for cooling.
^ Factory setting for heating.
*** All airflow data is with a dry coil, filter, & electric heat.

5-Speed High Efficiency ECM Motor

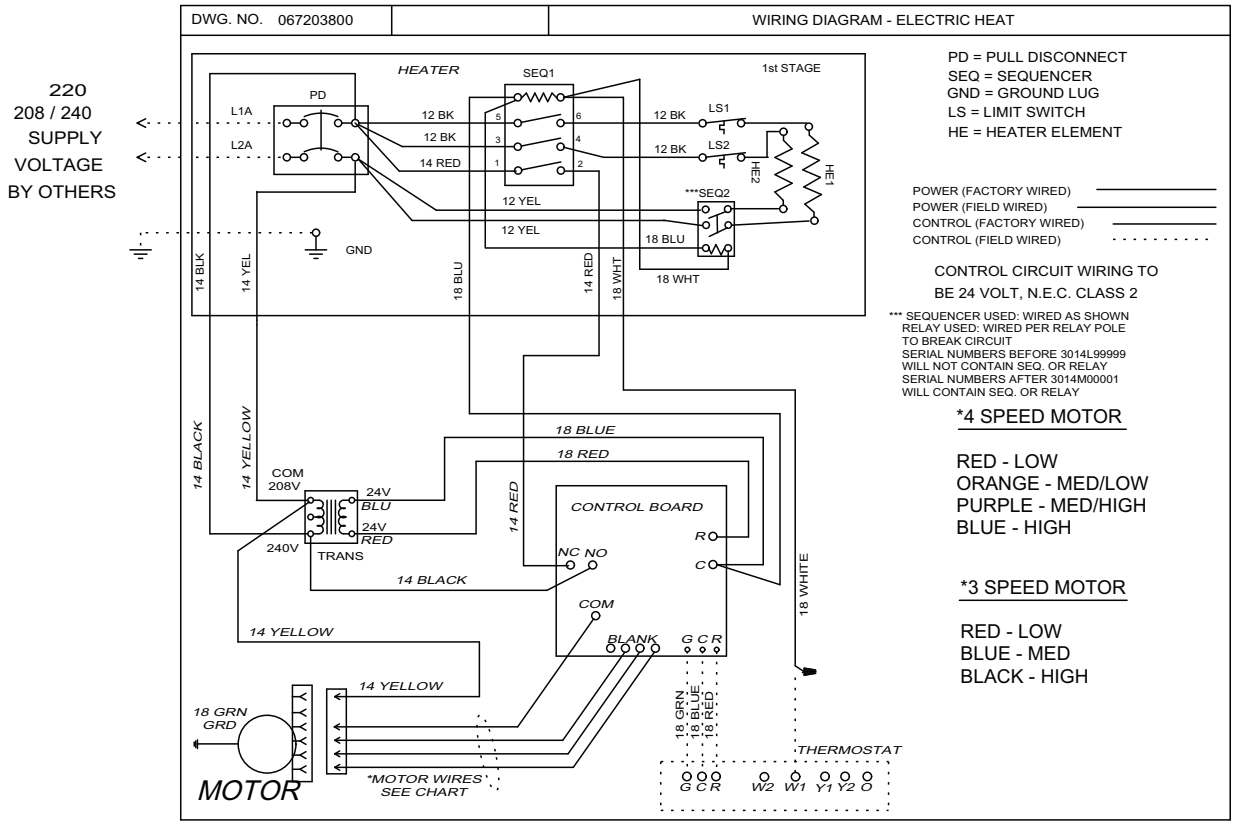
Unit Size	Cooling Speed Setting	Airflow (CFM) vs. External Static Pressure (inches W.C.) ***				
		0.1	0.2	0.3	0.4	0.5
19	Tap 1	547	484	366	309	268
	* Tap 2	651	600	566	516	466
	Tap 3	695	646	617	566	544
	^ Tap 4	742	700	669	627	600
	Tap 5	758	712	682	641	625
25	Tap 1	569	453	347	264	264
	Tap 2	659	600	569	518	475
	* Tap 3	847	800	787	744	722
	^ Tap 4	928	901	883	846	802
	Tap 5	970	944	927	891	864
31	Tap 1	656	600	567	522	473
	Tap 2	842	800	782	739	716
	* Tap 3	1059	1028	1004	972	946
	^ Tap 4	1106	1084	1053	1030	1000
	Tap 5	1137	1108	1085	1055	1031
37	Tap 1	848	800	769	726	692
	Tap 2	1051	1028	1000	956	930
	* Tap 3	1247	1215	1188	1161	1126
	^ Tap 4	1310	1279	1254	1228	1200
	Tap 5	1364	1334	1304	1279	1250
39	Tap 1	800	783	747	725	689
	Tap 2	1034	1003	987	959	937
	* Tap 3	1281	1253	1228	1207	1186
	^ Tap 4	1343	1314	1290	1261	1226
	Tap 5	1367	1342	1312	1277	1239

* Factory setting for cooling.
^ Factory setting for heating.
*** All airflow data is with a dry coil, filter, & electric heat.

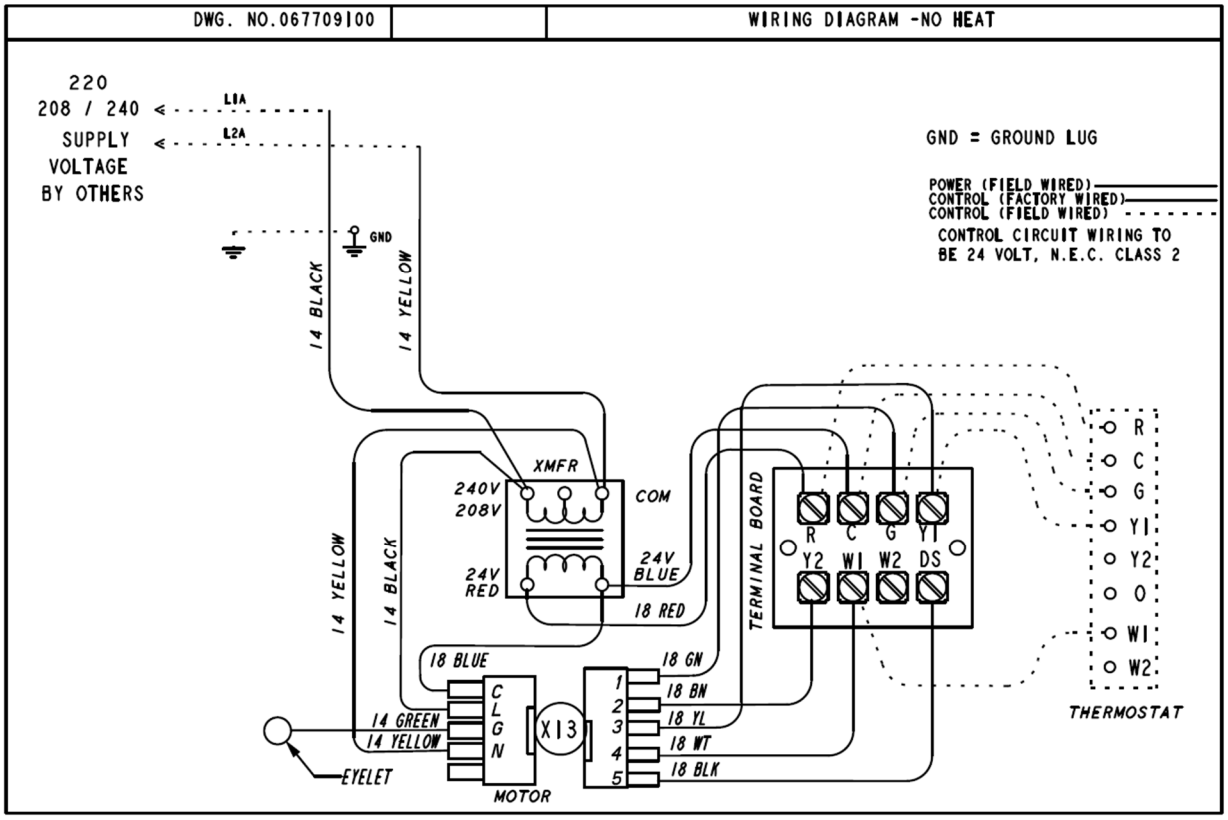
WIRING DIAGRAM – 3-SPEED MOTOR (NO HEAT)



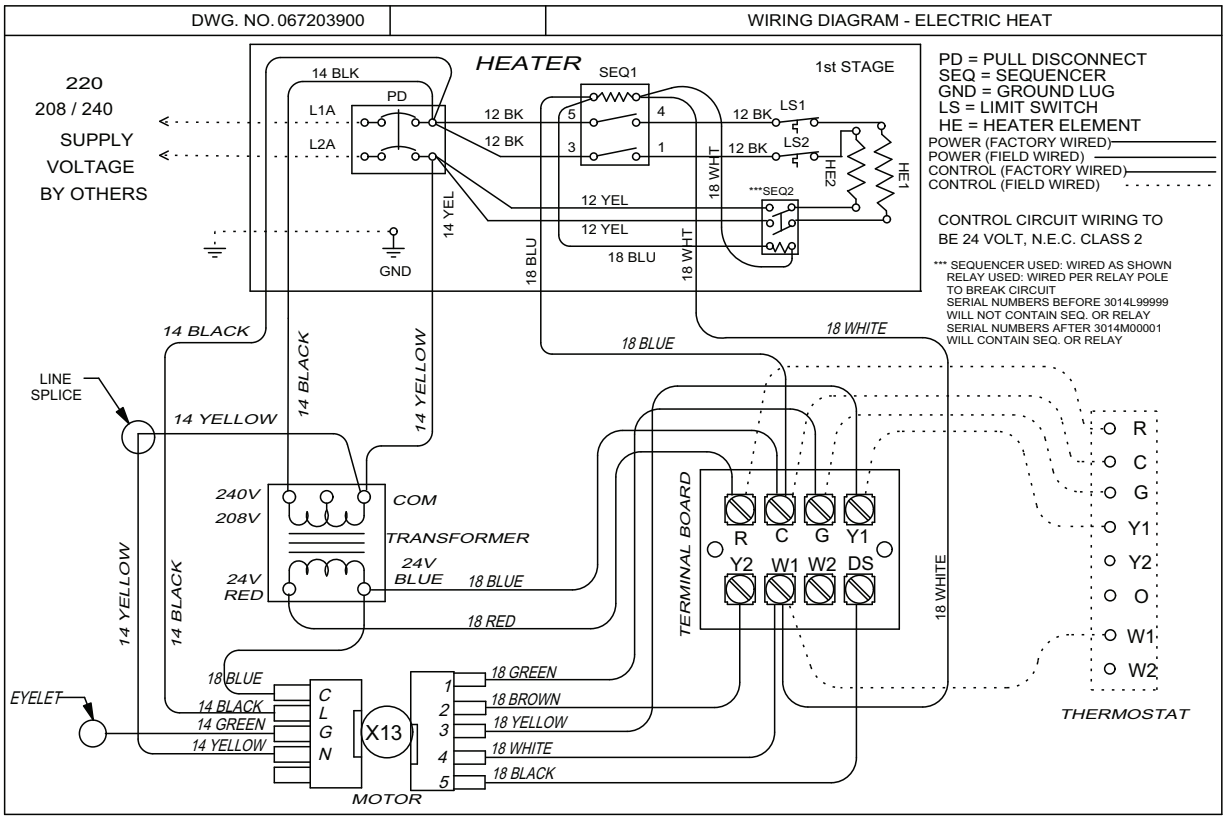
WIRING DIAGRAM – 3-SPEED MOTOR



WIRING DIAGRAM – 5-SPEED MOTOR HIGH EFFICIENCY ECM MOTORC(NO HEAT)



WIRING DIAGRAM – 5-SPEED MOTOR HIGH EFFICIENCY ECM MOTOR



AIR HANDLER CHECKS

Check Blower Operation

1. Set thermostat to FAN ON.
2. The indoor blower should come on.

Check Electric Heater (if used)

1. Set thermostat to call for auxiliary heat (approximately 5°F above ambient temperature). The indoor blower and auxiliary heat should come on together. Allow a minimum of three minutes for all sequencers to cycle on.
2. Set the thermostat so it does not call for heat. Allow up to five minutes for all sequencers to cycle off.

Check Airflow

Cooling Blower Speed:

- For proper cooling operation, the airflow through the indoor coil should be between 350 and 450 CFM per ton of cooling capacity (350 - 450 CFM per 12,000 BTU/HR) based on the rating of the outdoor unit.
- The cooling blower speed is factory configured to provide correct airflow for an outdoor unit that matches the maximum cooling capacity rating of the air handler.
- If the outdoor unit is smaller than the maximum cooling capacity rating for the air handler, the cooling blower speed may need to be changed. Refer to “Blower Performance Data.”

IMPORTANT: The cooling blower speed must be set to provide a minimum of 350 CFM airflow per ton (12,000 BTU/HR) of outdoor cooling capacity.

WARNING

Electrical Shock Hazard

Disconnect all power supplies before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

AIR HANDLER MAINTENANCE

At the beginning of each heating season the unit should be serviced by a qualified installer or servicing agency.

ASSISTANCE OR SERVICE

If you need further assistance, you may contact us at the address below with any questions or concerns. Please include a daytime phone number in your correspondence.

Advanced Distributor Products
1995 Air Industrial Park Road
Grenada, MS 38901
www.adpnow.com

ADP AIR HANDLER LIMITED WARRANTY

Term of Warranty

Advanced Distributor Products (ADP) warrants that products sold shall be of merchantable quality, free of defects in material and workmanship, under normal use and service, for a period of five (5) years from the date of installation, ***not*** to exceed six (6) years from the date of manufacture subject to the terms of ADP's limited warranty.

For information on this product's warranty, including accessing complete warranty terms, registering for an extended warranty* or instructions on filing a warranty claim, please go to www.ADPwarranty.com.

* *In such states or provinces where registration requirements are prohibited, failure to complete registration by the consumer does not diminish his or her warranty rights.*

Equipment Information

Please *complete information below and retain this warranty for records and future reference.*

Unit Model Number:_____

Serial Number:_____

Installing Contractor:_____

Installation Date: _____

Phone:_____

2175 West Park Place Boulevard
Stone Mountain, GA 30087
www.adpnow.com