

### Installation Instructions

## **B** Series

### Multi-Position & Hydronic Air Handlers

Electric or Hot Water Heat, with available Variable-Speed High Efficiency ECM Motor

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### AIR HANDLER SAFETY

#### SAFETY CONSIDERATIONS

Your safety and the safety of others are very important.

This is the safety alert symbol.

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



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 <u>killed or seriously injured</u> if you don't immediately follow instructions.

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

- **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in <u>minor or moderate injury</u>. 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.

**HealthySolutions**<sup>®</sup>









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

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### WARNING

This product may contain fiberglass wool insulation. Glass wool fibers are known to the State of California to cause cancer. Disturbing insulation during installation, maintenance, or repair may expose you to glass wool fibers and may cause respiratory, skin or eye irritation. For further information on risks associated with fiberglass wool, consult Material Safety Data Sheet available from OEM.

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

### TOOLS AND PARTS NEEDED

Assemble the required tools and parts before starting installation. Read and follow the instructions provided with any tools listed here:

1/4" Nut DriverTape MeasureLevelHammerScrew DriveSealantAdjustable WrenchUL listed wire nutsReplacement orifice (if needed; see "Verify Orifice Size")

### **OUTDOOR SYSTEM REQUIREMENTS**

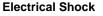
The air handler is designed to match, and must be used with, outdoor units as rated in AHRI. The indoor sections are manufactured with an interchangeable refrigerant metering device to provide optimum refrigerant control and system

### LOCATION REQUIREMENTS

**NOTE:** When the unit is installed in a very humid space and used in cooling applications, excessive sweating may occur on outside of unit. To prevent excessive sweating wrap unit with 1" fiberglass insulation. All openings should be sealed to prevent air leakage that could cause condensate to form inside the cabinet.

• If installed in an unconditioned space, sealant should be applied around the electrical wires, refrigerant tubing, and condensate lines where they enter the cabinet.

### WARNING



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Replace all parts and panels before operating. Electrically ground air handler.

Disconnect power before servicing.

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Connect ground wire to ground terminal marked "GRD".

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.

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 would 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.

Check local codes, check existing electrical supply, and read "Ductwork Requirements," and "Electrical Requirements," before purchasing parts.

The correct orifice size may be contained in the replacement orifice package located inside the control box of the outdoor unit. If this package does not contain the correct orifice for your air handler, you must purchase the correct orifice size.

performance with a variety of different capacities of outdoor units. In some cases, the AHRI rating may require that the air handler refrigerant metering device be changed to obtain rated performance.

- Electrical wires should be sealed on the inside where they exit the conduit opening. Sealant is required to prevent air leakage into and condensate from forming inside the air handler, control box, and on electrical controls.
- The air handler must be installed in such a way as to allow free access to the coil/filter compartment and blower/control compartment.

### **INSTALLATION CLEARANCES**

Clearance to combustible material to be 0 inches to unit casing, and 0 inches to plenum and duct for first 36 inches.

The air handler can be installed in a closet with a false bottom to form a return air plenum or be installed with a return air plenum under the air handler.

Louvers or return air grilles are field supplied. Local codes may limit application of systems without a ducted return to singlestory buildings.

 Install louvers in a closet. Use the "Minimum Filter Requirements Chart" to determine the opening size that will provide the amount of free air you will require. If using louvers or grilles, match the free area rating of the louver or grille to the Minimum Return Air Free Area you deter-

#### **CONFIGURATION OPTIONS**

For ease of installation, it is best to make any necessary coil configuration changes before setting air handler in place.

- Vertical upflow Air Handlers only contain 1 drain pan.
- Multi-position Air Handlers contain 2 drain pans.

#### Vertical Installations (Upflow)

The air handler must be supported on the bottom only and set on solid floor or field supplied supporting frame. Securely attach the air handler to the floor or supporting frame. For best efficiency and airflow, horizontal drain pan (if installed) should be removed from units in upflow configurations.

#### **Horizontal Installations**

Horizontal installations can be left-hand or right-hand air supply.

Adequate support must be provided to ensure cabinet integrity. Units mounted horizontal should be mounted with a slight angle toward the drain connections (see Figure 5) so that the drain pan will empty completely without water standing in the pan.. Ensure that there is adequate room to remove service and access panels if installing in the horizontal position.

#### **IMPORTANT:**

- This coil is provided with a secondary drain that should be trapped and piped to a location that will give the occupant a visual warning that the primary drain is clogged. See "Install Condensate Drain."
- When an evaporator coil is installed in an attic or above a finished ceiling, an auxiliary drain pan should be provided under the air handler as specified by most local building codes., and must have a larger footprint than the air handler.
- Extend suction line insulation into the coil cabinet by 2" to prevent moisture from dripping onto the insulation (the rubber grommet may need to be removed).

mined to be necessary by consulting the "Minimum Filter Requirements Chart."

- If the free area is not known, assume a 25% free area for wood or a 75% free area for metal louvers or grilles.
- If the return air plenum is used, the return air grille should be immediately in front of the opening in the plenum to allow for the free flow of return air.
- When not installed in front of the opening, there must be adequate clearance around the air handler to allow for the free flow of return air.

#### **Conversion from Vertical to Horizontal**

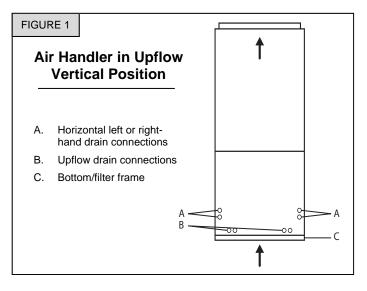
A vertical only air handler may be converted to horizontal air discharge by installing a horizontal drain pan kit (see accessories).

A multi-position air handler may be converted from horizontal left-hand discharge to horizontal right-hand discharge without additional parts.

#### **Suspended Cabinet Installation**

**NOTE:** Air handler must be positioned with one side parallel to the floor when in the horizontal position, with a 1/2" pitch towards drain.

The suspending means must be field fabricated, and should consist of a minimum of two "cradles" made by attaching two 3/8" all thread rods to a length 1-5/8" x 7/8" unistrut. Cradles should not interfere with panel removal, drain connections, or refrigerant connections.



### DRAIN PAN CONNECTIONS

Horizontal installations can be either "Right" or "Left."

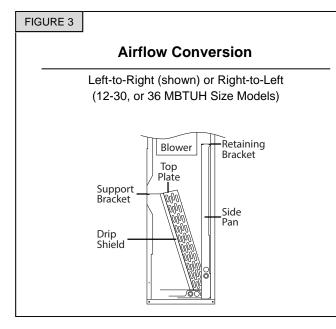
For horizontal right installations, a drain pan location change may be required. Use drain connections "A" below. For horizontal left installations, use drain connections marked "B" below.

#### FIGURE 2

# Air Handler in the Horizontal Position Horizontal Right Factory Ready (on multi-position models) Horizontal Left **Requires Drain Pan Location Change**

Models listed in Figure 3 are shipped in the horizontal right airflow configuration. To convert to horizontal left airflow, follow these steps:

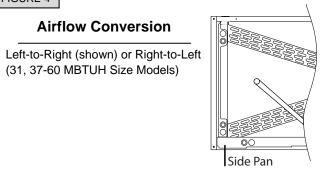
- 1. Remove and set aside all front panels.
- 2. Locate slant coil support bracket and remove the 2 screws from the side of the cabinet.
- 3. Remove the horizontal drain pan retaining bracket.
- 4. Carefully remove coil assembly and drain pan(s) as one assembly from the unit.
- 5. If the air handler is to be used for upflow, the horizontal



pan and bracket can be discarded.

- 6. Remove the screws holding the coil bracket to the left side of top plate. Reposition coil support bracket to right side of top plate.
- 7. Remove drip shield from front left-hand side of coil assembly and attach to front right-hand side.
- 8. Repeat for the rear drip shields Failure to move drip shields will allow air by-pass around coil.
- 9. If needed for horizontal installation, slide the horizontal drain pan over the bottom pan. If vertical application, only install bottom pan. Install the pan(s) into bottom left hand side of the air handler. If installed properly the drains should match knockouts on the connection panel (Refer to drawing).
- 10. Install coil assembly back into unit.
- 11. Re-install slant coil support bracket retaining screws.
- 12. Knockout required panels for drain line connections.

#### FIGURE 4



Models listed in figure 4 are shipped in the horizontal right airflow configuration. To convert to horizontal left airflow, follow these steps:

- 1. Remove and set aside front panels.
- 2. Carefully remove coil assembly and bottom drain pan as one assembly from the unit.
- 3. Move side drain pan from left hand side of coil to right.
- 4. Move coil support bracket under top plate from left hand side of coil to right.
- 5. Install modified coil assembly back into unit.
- 6. Knockout required panels for drain line connections.

CAUTION: Take care when removing coil assembly from unit. Installation in this configuration may cause the coil to tip into unit once clear of the cabinet. Support the coil when removing.

### **ELECTRICAL REQUIREMENTS**

### 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 "GRD".

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.

NOTE: Use copper conductors only.

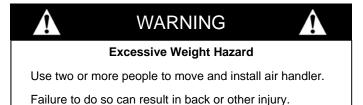
- All field wiring must be done in accordance with National Electrical Code, applicable requirements of UL and local codes, where applicable.
- Electrical wiring, disconnect means and over-current protection are to be supplied by the installer. Refer to the air handler rating plate for maximum over-current 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.

### **DUCTWORK REQUIREMENTS**

- 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).
- The air handler is provided with flanges for the connection of the plenum and ducts.
- Replacement air filters must be listed as Class 2 furnace air filters.
- Supply and return ductwork must be adequately sized to meet the system's air requirements and static pressure capabilities. Ductwork should be insulated with a minimum of 1" thick insulation with a vapor barrier in conditioned areas and 2" minimum in unconditioned areas.
- Supply plenum should be the same size as the flanged opening provided around the blower outlet and should extend ideally at least 3 ft. from the air handler before turning or branching off plenum into duct runs. The plenum forms an extension of the blower housing and minimizes air expansion losses from the blower.

### **INSPECT SHIPMENT**

cal wiring entrance.



All air handlers are performance tested. Each unit consists of a blower assembly, refrigerant coil and controls, in an insulated, factory-finished enclosure. Knockouts are provided for electri-

- 1. Check the unit rating plate to confirm specifications are as ordered.
- Upon receipt of equipment, carefully inspect it for possible shipping damage. Take special care to examine the unit if the carton is damaged.

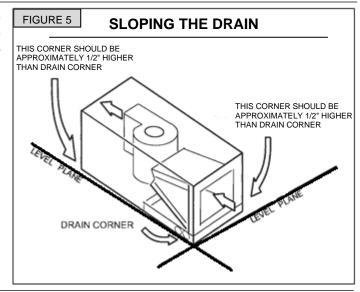
If damage is found, it should be noted on the carrier's freight bill. Damage claims should be filed with the carrier immediately. Claims of shortages should be filed with the seller within 5 days.

**NOTE:** If any damages are discovered and reported to the carrier, do not install the unit because your claim may be denied.

Filter Size Chart						
Unit Size (MBTUH)	Filter Size					
12-24	12" x 20"					
25-30 & 36	16" x 20"					
31 & 37-48	16" x 24"					
60	18" x 24"					

### **SLOPING THE DRAIN**

Make sure the unit is sloped approximately 1/2" (similar to the slope shown in Figure 5) to ensure proper condensate drainage. **NOTE:** Sloping over 5/8" may cause blow off into the auxiliary drain hole in high static situations.



### INSTALL CONDENSATE DRAIN

The air handler is provided with  $\frac{3}{4}$ " NPT condensate drain connections.

A field fabricated secondary drain pan, with a drain pipe to the outside of the building, is required in all installations over a finished living space or in any area that may be damaged by overflow from the main drain pan. In some localities, local codes require a secondary drain pan for any horizontal installation. The secondary drain pan must have a larger footprint than the air handler.

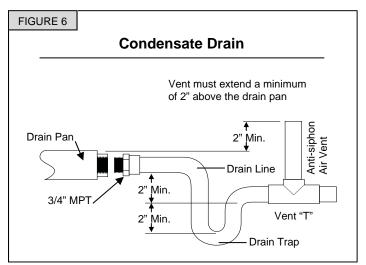
- 1. Remove the appropriate panel knockouts for drains. See "Drain Pan Connections" section. You may need to remove the indoor coil assembly from the cabinet.
- 2. Determine the drain connections to be used and note the difference between the primary (green) and secondary (red) openings. Drain plugs are provided for all openings; remove and discard the appropriate plugs with ½" drive ratchet and verify that remaining plugs are tight (2.5 ft-lbs). Attach drain line to pan with ¾" male pipe thread PVC fittings. Hand tight is adequate do not over tighten & do not reduce drain line size.
- 3. Secondary drain connections should be connected to a separate drainage system. 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.
- 4. Install a 2" trap in the primary drain line as close to the unit as practical. Make sure the top of the trap is below the connection to the drain pan to allow complete drainage of the pan. NOTE: Horizontal runs must also have an anti-siphon air vent (standpipe) installed ahead of the horizontal run. See Figure 6. An extremely long horizontal run may require an oversized drain line to eliminate air trapping. NOTE: Do not operate air handler

without a drain trap. The condensate drain is on the negative pressure side of the blower; therefore, air being pulled through the condensate line will prevent positive drainage without a proper trap.

- 5. Route the drain line to the outside or to an appropriate drain. Drain lines must be installed so they do not block service access to the front of the air handler. A 24" clearance is required for filter, coil, or blower removal and service access. **NOTE:** Check local codes before connecting the drain line to an existing drainage system.
- 6. Insulate the drain lines where sweating could cause water damage

Upon completion of installation, it is the responsibility of the installer to ensure the drain pan(s) is capturing all condensate, and all condensate is draining properly and not dripping into duct/system.

- 1. Pour several quarts of water into drain pan, enough to fill drain trap and line.
- 2. Check to make sure the drain pan is draining completely, no leaks are found in drain line fittings, and water is draining from the end of the primary drain pan.
- 3. Correct any leaks found.



### **INSTALL DUCTWORK**

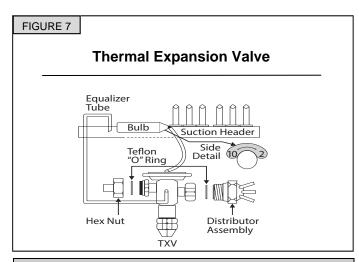
#### **IMPORTANT:**

- Install ductwork in accordance with NFPA 90B and any local codes.
- Connect supply air duct to the flange on top of the air handler. If an isolation connector is used, it must be nonflammable.
- A return air duct system is recommended. If the unit is installed in a confined space or closet, a return connection must be run to a location outside the cabinet.

### **METERING DEVICE**

#### **Thermal Expansion Valve (TXV)**

Some models are equipped with a factory installed thermal expansion valve. The sensing bulb of the valve needs to be removed during installation and reattached to the header (Fig 7). For optimum performance, attach 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 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.



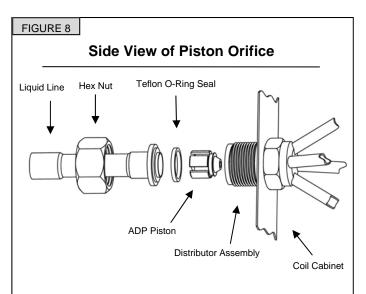
Piston Size									
-		R-22		R-410A					
Ton	Piston Size	Part #	Piston Size	Part #					
1	41	10000035	41	10000035					
1.5	53	10000036	49	10000049					
2	59	10000037	53	10000036					
2.5	67	10000039	59	10000037					
3	73	10000041	67	10000039					
3.5	80	10000044	73	10000041					
4	84	10000045	76	10000042					
5	93	10000047	93	10000047					

#### Pistons

As shipped from the factory, the piston installed in each coil is chosen for the nominal BTUH capacity of the coil. A label on the liquid line identifies the piston size. For optimum performance the piston should be sized to match the nominal BTUH of the condensing unit.

When changing pistons use the following procedure:

- 1. Loosen 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 "O" ring and replace if damaged. Ensure gasket is in place.
- 5. Re-install hex nut to body and torque to 10 ft-lbs.



#### **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 copper 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 or 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**<sup>2, 3, 4</sup> – 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**<sup>2, 3, 4</sup> – Use the superheat recommended by the outdoor unit instructions. Alternatively, ADP recommends charging to the superheat table below.

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:

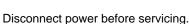
- 1. If any problems or questions regarding charge occur, contact customer service.
- OEM charging methods vary depending on design and application. Verify all recommended pressures, temperatures, sub-cooling and superheat settings result in the proper charge.
- 3. ADP coils may require charge compensation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

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

### SUPPLY VOLTAGE CONNECTIONS

### WARNING

#### **Electrical Shock**



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Replace all parts and panels before operating.

Electrically ground air handler.

Connect ground wire to ground terminal marked "GRD".

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

#### **Explosion Hazard**

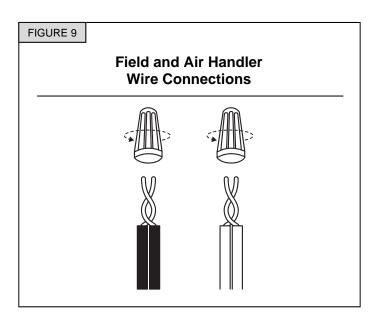


Keep flammable materials and vapors, such as gasoline, away from this unit.

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

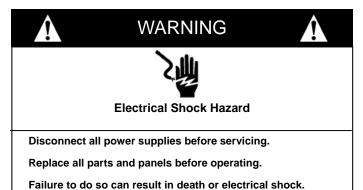
Failure to follow these instructions can result in death, explosion or fire.

- 1. Disconnect all power supplies.
- 2. Remove the air handler access panel.
- 3. Route the field supply wires to the air handler electrical connection box.
- 4. Using UL listed wire nuts, connect the field supply wires to the air handler; black-to-black, and yellow-to-yellow (240V) or white-to-white (120V), as shown in Figure 8.
- 5. Connect ground wire to ground terminal marked "GND."
- 6. Replace the air handler access panel.



Unit Size (MBTUH)	Electric Heat Kit (kW)
12	5
18	10
24	12.5
25	15
30	17.5
31	17.5
36	20
37	20
42	20
48	25
60	25

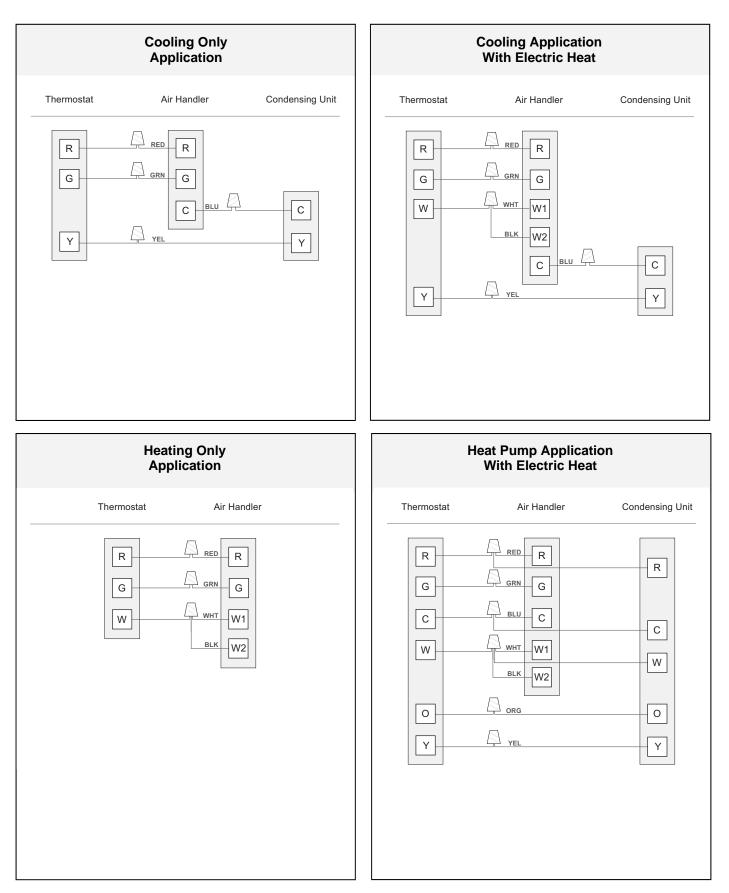
Table: Maximum allowable kW Electric Heat Kits that can be field installed for their respective Air Handler Size.



### THERMOSTAT CONNECTIONS

#### **3-Speed Motor (Electric Heat)**

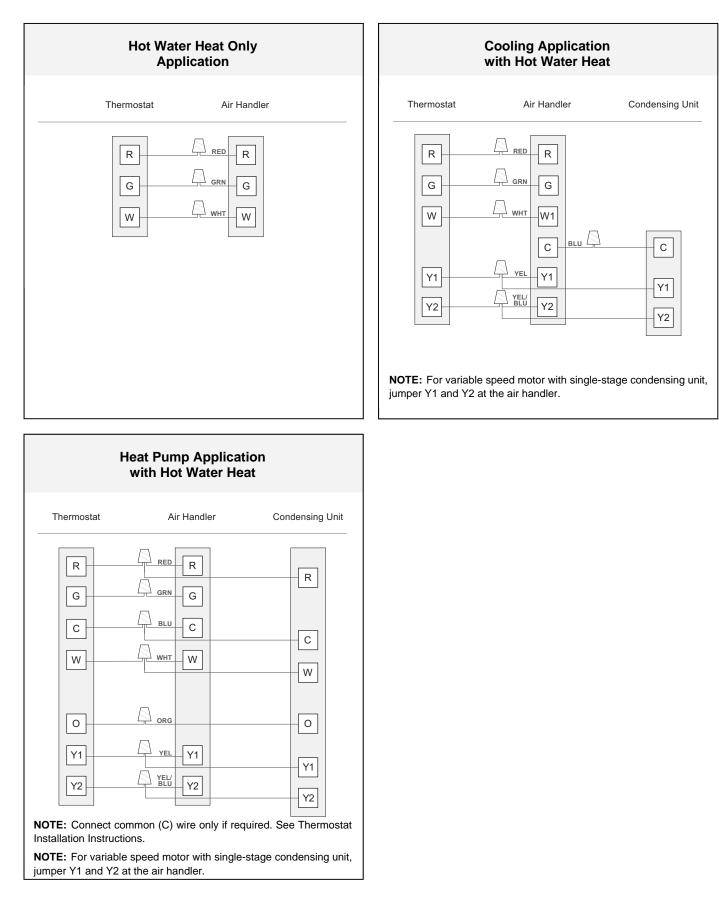
Maximum allowable current draw from power-stealing thermostats or other accessories is 18 mA. Exceeding this value may cause the Air Handler control board to operate abnormally.



### THERMOSTAT CONNECTIONS

#### 3-Speed Motor & Variable-Speed High Efficiency ECM Motor (Hot Water Heat)

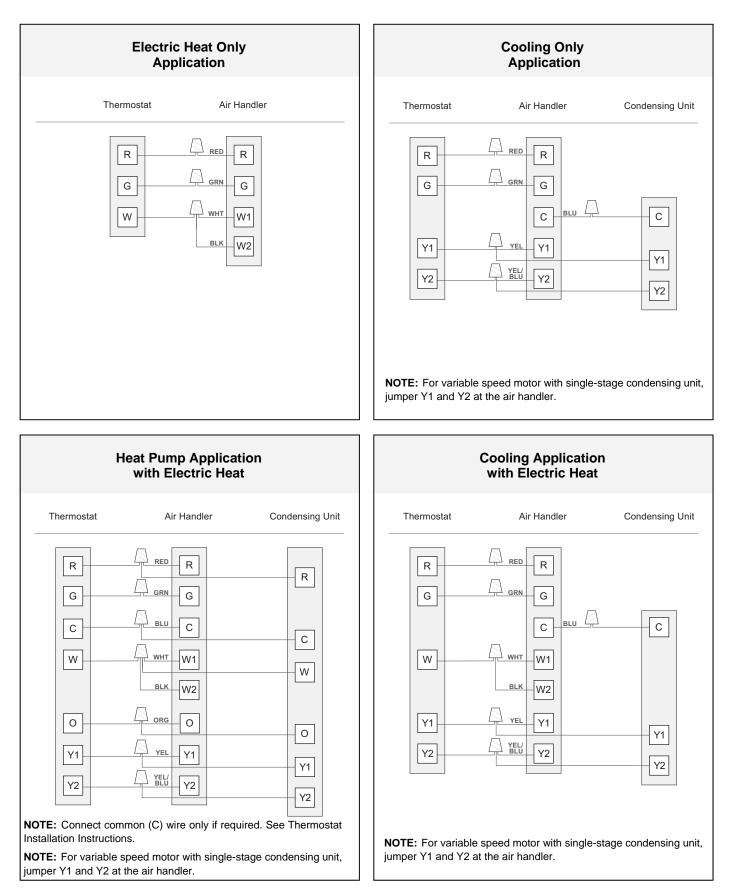
Maximum allowable current draw from power-stealing thermostats or other accessories is 18 mA. Exceeding this value may cause the Air Handler control board to operate abnormally.



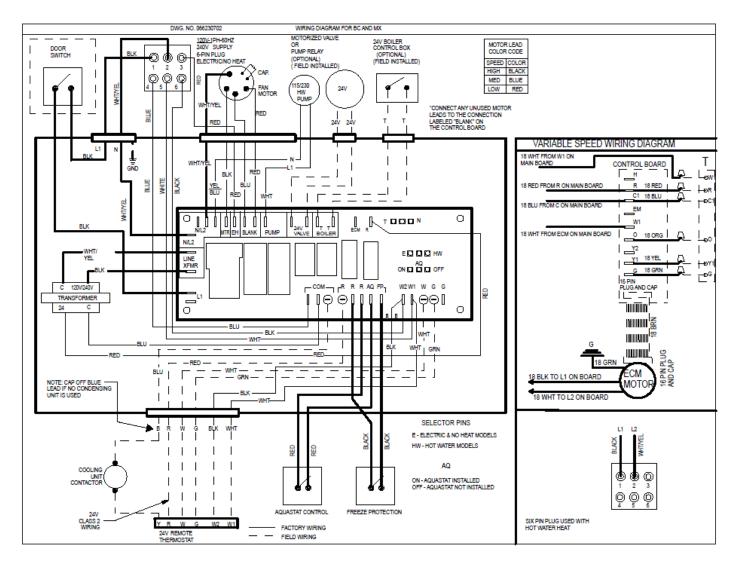
### THERMOSTAT CONNECTIONS

#### Variable-Speed High Efficiency ECM Motor (Electric Heat)

Maximum allowable current draw from power-stealing thermostats or other accessories is 18 mA. Exceeding this value may cause the Air Handler control board to operate abnormally.



### WIRING DIAGRAM



**NOTE:** 6-Pin Plug serves as connection for electric heat kits to control board.

If your unit is equipped with a multi-function control board, then for electric heat installations insure that heat selector pin is set to "E".

### **BLOWER PERFORMANCE DATA**

#### **3-Speed Motor**

All data is given while air handler is operating with a dry DX coil and air filter installed.

Speeds marked in **bold with asterisk**\* are the factory speed settings for both heating and cooling. Heating speeds should not be reduced below factory setting.

Unit Sign (NBUTH)         Fan Specing Law         Die U. 20.0         0.30         0.40         0.50         0.10         0.20         0.30         0.40         0.50         0.10         0.20         0.30         0.40         0.50         0.10         0.20         0.30         0.40         0.50         0.10         0.20         0.30         0.40         0.50         0.10         0.20         0.30         0.40         0.50         0.10         0.20         0.30         0.40         0.50         0.10         0.50         0.10         0.50         0.10         0.50         0.40         0.50         0.40         0.50         0.10         0.50         0.10         0.50         0.10         0.50         0.10         0.50         0.10         0.50         0.11         0.77         0.60         0.50         0.11         7.77         0.60         0.10         0.50         0.11         7.77         0.60         0.10         0.50         0.11         7.77         0.60         0.10         0.50         0.11         7.77         0.60         0.10         0.20         7.60         6.70         0.50         0.11         7.77         6.80         0.10         0.20         7.70         6.70         0.50	208/24	0V Motor	Airflow (CFM) vs. External Static Pressure (inches W.C.)												
Log         Con         Gel0         EEB         OFF         954         913         OUD         OUD         950         640         650         647           12         High         OFF         614         854         785         913         OUD         055         811         787         666         626         635         647         783         913         066         013         646         811         747         666           18         Low         081		-				1	1					Γ			
12         Med         997         980         986         763         980         982         983         783         983         783         983         783         983         783         983         783         983         783         983         783         983         783         983         783 <th>(MBUTH)</th> <th>-</th> <th></th>	(MBUTH)	-													
Hom         8ft         9ft         8ft         768         770         973         862         811         777         868         643         553           16         Med         877         868         868         763         859         868         813         763         869         868         813         763         868         447           24         Low         807         818         608         813         818         608         611         777         668           25         Med         856         662         778	10														
18         T.o.e         640         1630         1913         1913         1918         1913         1918         1913         1918         1913         1918         1913         1918         1913         1918         1913         1	12														
18.         Med         997         861         860         743         665         852         913         878         871         770         760         762           24         Low         690         655         619         554         513         656         653         653         655         457           24         Mod         697         681         888         773         770         770         773         776         776         775         775         776         776         776         776         777         775         776         776         777         775         776         777         775         776         775         775         776         775         775         776         775         775         776         775         777         775         7777         775		Ţ.													
High         981         974         884         776         773         973         886         881         777         685           24         Mad         907         881         870         881         870         883         882         873         863         882         873         883         882         873         883         882         873         883         882         873         883         882         873         883         882         873         883         882         873         883         882         873         883         882         873         883         882         873         883         882         873         883         882         873         873         883	18														
24         Med Heigh         997         881         880         743         699         882         818         818         811         774         683           25         Low         757         725         673         602         519         719         669         672         623           100         High         1111         1005         1005         664         664         119         722         706         673           30         Low         777         725         673         602         766         705         1005	-	High	961				703					668			
Heigh         981         914         884         766         703         913         884         811         777         765           25         Med         893         892         633         776         660         648         991         893         672         972         673           30         Low         777         725         673         660         644         964         963         672         673           30         Low         777         725         673         660         644         964         963         672         673           31         Med         1329         1377         1280         1140         1073         1281         1147         1099         1080         1133         1140         1073         1283         1044         1028         987           36         Med         1328         1317         1280         1146         1073         1283         1044         1028         1044         1028         1013           36         Med         1328         1317         1280         1148         1033         1144         1013         1014         1013         1016		Low	640	635	619	584	513	608	603	588	555	487			
Low         777         788         673         662         549         713         663         690         690         772         552           25         Wed         680         680         682         673         662         640         564         816         816         770         775         775         673         662         549         710         680         650         555         972         552           30         Med         680         680         680         680         680         572         552           31         Med         680         682         881         881         881         881         881         883           460         111         1027         1128         1130         1130         1134         1130         1138         1130         1131         1130         1131         1130         1131         1130         1131         1130         1131         1130         1131         1130         1131         1130         1131         1130         1131         1131         1130         1131         1130         1131         1131         1131         1133         1131         1131         1131	24								818			626			
19         19         97.0         97.3         76.0         66.0         144.0         197.0         77.2         70.0         66.7           30         Low         77.7         77.5         67.3         60.2         54.0         171.0         68.0         59.0         50.0         50.0         50.0         50.0         50.0         50.0         50.0         50.0         50.0         50.0         50.0         50.0         50.0         50.0         50.0         50.0         50.0         50.0         60.0         50.0         50.0         60.0         50.0         50.0         60.0         50.0         50.0         50.0         60.0         50.0 </td <td></td> <td>÷</td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		÷	-												
High         1111         1009         1005         984         904         1055         1000         985         916         859           30         Mici         983         982         883         746         660         949         911         782         709         627           31         Mici         128         1111         1009         1008         044         004         1005         1100         172         709         627           31         Mici         1228         1187         1009         1008         1018         1100         1123         1044         1036         600         600           36         Tow         1228         1187         1009         1008         1018         1103         1134         1137         1109         1009         1103         1009         1009         1009         1009 <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>															
Low         777         786         673         662         544         713         663         595         727         552           30         Med         983         882         883         746         680         546         513         776         687         778         687         1005         1005         1005         1005         1005         1005         1005         1005         1005         1005         1005         1005         1005         1005         1123         1014         1005         697           31         Med         1328         1137         1208         1138         1013         1134         1013         1134         1034         1134         1038         1317         1138         1033         1137         1133	25														
30         Med         999         982         983         746         960         945         915         772         779         627           31         1111         1059         1008         1018         1100         1128         1044         1008         991           31         Med         1238         1237         1200         1148         1107         1203         1144         1008         1018         1101         1128         1044         1008         0019           36         Med         1338         1317         1200         1188         1013         1123         1044         1008         0019           36         Med         1338         1317         1200         1188         1133         1234         1118         1108         1208         1108         1108         1108         1108         1108         1108         1108         1108         100         1008		-													
High Low         1111         1050         904         904         1005         1108         1109         1128         1008         1009         1018         1109         1128         1008         1009         1018         1009         1129         1008         1009         1018         1009         1018         1009         1018         1009         1018         1009         1018         1009         1018         1009         1018         1009         1018         1009         1018         1009         1018         1009         1018         1018         1009         1018         1019         1018         1019         1018         1018	30														
31         U.ow         1221         1187         1000         1000         1000         1000         1100         1120         1024         1144         1006         000           36         Med         1328         1317         1220         1148         1103         1314         1221         1197         1129         1008           36         Med         1323         1207         1208         1144         1018         1100         1114         1117         1129         1008           37         Med         1326         1203         1214         1133         1118         1134         1237         1302         1244         1143         1310         1070         1503         1307         1304         1305         1307         1513         1308         1307         1513         1300         1244         1153         1143         1300         1413         1310         1413         1310         1413         1300         1244         1154         1300         1244         1155         1432         1301         1413         1310         1413         1310         1420         1300         1244         1156         1313         1412         1301         <	50														
High         198         197         1220         1187         1000         1134         1127         1197         1128         1197         1128         1197         1128         1197         1128         1197         1128         1197         1128         1197         1128         1197         1128         1108         1103         1134         1231         1148         1008         1009         1009         1009         1009         1009         1009         1009         1009         1009         1009         1009         1009         1009         1009         1009         1009         1109         1133         1108         1100         1133         1109         1133         1109         1133         1109         1133         1109         1133         1109         1133         1109         1133         1109         1133         1109         1133         1109         1133         1109         1133         1109         1133         1109         1133         1109         1133         1109         1133         1109         1133         1133         1109         1133         1109         1133         1109         1133         1109         1120         1001         1133         1		÷				1080	1018								
16w         122         1197         1090         1090         1190         1190         1192         1192         1194         1006         997           36         "Med         1393         1317         1280         1148         1103         1314         11291         11140         1006         10190         1135         1017           37         Med         1283         1224         1133         1138         1200         1190         1135         1076           42         Med         1396         1397         1371         1398         1215         1326         1190         1153         1076           42         Med         1397         1371         1398         1215         1322         1322         1324         1153         1076           43         Low         1627         1892         1513         1432         1388         1437         1300         1225         1437         1308         1437         1308         1437         1308         1437         1308         1237         1313         1388         1437         1308         1437         1308         1437         1308         1437         1308         1427         1378<	31	Med	1329	1267	1208	1146	1073	1263	1204	1148	1089	1019			
36         Med         139         1397         1208         1144         1173         1263         1204         1144         1103         1214         1224         1149         1109         1109         11197         1129         1019           37         Med         1396         1397         1371         1300         1215         1326         1327         1302         1244         1154           Hgh         1731         1688         1487         1379         1644         1585         1509         1113         1115         1070           42         Med         1386         1397         1371         1309         1371         1326         1227         1302         1244         1154           43         Med         1801         1773         1688         1487         1328         1543         1533         1437         1320           48         Med         1801         1733         1685         1487         1439         1563         1594         1474         1376         1376           60         Med         1981         1889         1881         1883         1583         1594         1474         1376         1376		High	1383	1317	1260	1188	1103	1314	1251	1197	1129	1048			
High         1383         1371         1280         1188         1133         1344         1251         1190         1120         1008           37         Mod         1396         1397         1371         1309         1215         1326         1227         1302         1244         1113         11190         1153         1170           42         Mod         1396         1397         1371         1309         1216         1326         1237         1302         1244         1133         1190         1153         1070           42         Mod         1396         1397         1371         1309         1216         1320         1322         1244         1134           43         Mod         1997         1371         1308         1711         1421         1590         1437         1320         1220         1448         1704         1474         1320         1220         1438         1592         1448         1701         1621         1593         1474         1474         1320           60         Mod         1981         1982         1981         1643         1981         1991         1225         120         1441         1422 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1044</td> <td></td> <td></td>										1044					
1.cov         1281         1283         1214         1133         1186         1200         1180         1153         1076           37         Med         1396         1397         1371         1399         1371         1392         126         1327         1302         1244         1153           42         Med         1398         1397         1371         1399         1275         1326         1277         1302         1244         1153         1153         1150	36														
37         Med         1390         1371         1390         1216         1322         1322         1244         1131           High         1731         1668         1538         1447         1379         1644         1585         1509         1143         1310           42         Wed         1397         1397         1398         1447         1373         1644         1586         1509         1141         1313         1314           48         Wed         1997         1518         1432         1338         1544         1503         1437         1329           48         Wed         1901         1765         1532         1338         1711         1627         1339         1474         1330           60         1522         1488         1631         1789         1641         1744         1566         1552         1448         1661         1333         1777         1733         1619         1532           60         Wed         1901         1785         1604         1784         1643         1989         1614         1744         1616         1533         1777         1755         1700         1561		-													
High         1731         1968         1487         1379         1644         1585         1509         1413         0310           42         Low         1251         1288         1327         1328         1215         1226         1226         1236         1237         1302<	•=														
Low         1251         1223         1214         1133         1193         1190         1133         1190           42         Wed         1396         1397         1300         1215         1320 </td <td>37</td> <td></td>	37														
42         'Mod         1390         1371         1309         1215         1326         1427         1302         1244         1154           48         Low         1687         1588         1447         1379         1644         1595         1433         1300         1227         1302         1244         1151           48         'Mod         1807         1706         1620         1513         1388         1711         11621         1539         1437         1390         1237         1390         1237         1392         1393         1393           60         Mod         1891         1788         1552         1448         1771         11621         1530         1437         1439         1598         1504         1474         1432         1397           60         Mod         1891         1892         1789         1643         1963         1911         1795         1561         1561           120V         Motor         Airtow Kar         Adv         Adv         Adv         456         451         454         451         452         453         451         452         458         454         453         454         453		-													
High         H731         1968         1988         1447         1379         1644         1585         1163         1143         1313           48         Low         16801         1706         1820         183         1388         1711         1621         1133         1388         1711         1621         1133         1388         1711         1621         1133         1388           60         Low         1840         1788         1655         1148         1711         1621         1532         1437         1302         1337           60         Low         1840         1788         1655         1143         1432         1337         1561           120V         Motor         External Static Pressure (inches W.c.)         Visat         1561         1563         1561           120V         Motor         0.00 <td>42</td> <td></td>	42														
Low         1627         1582         1513         1382         1546         1503         1387         1390         1202           48         'Mod         1894         1706         1620         1531         1388         1711         14621         1533         1388         1711         14621         1533         1338         1371         1474         1372         1474         1370           60         Low         1640         1583         1552         14497         1438         1554         1574         1474         1474         1472         1613           100         reg         2072         2001         1880         1779         1743         1616         1663         1797         1733         1613         1532           120V Motor         Korte         KartHaet Models         Vest Heat Models	42														
48         'Med         1001         1006         1120         1131         1398         1711         1621         1533         1437         1338           60         Low         1640         1583         1552         1447         1438         1558         1504         1474         1472         1439           60         TMed         1861         1882         1644         1704         1616         1683         1797         1723         1619         1535           100         Tool         1889         1798         1643         1966         1901         1775         1700         1561           110         Votor         Airflow (CFM) vs. External Static Pressure (inches W.C.)         Votor         1600         0.00		-													
High         1854         1748         1852         1942         1448         1761         1861         1573         1474         1376           60         100         1861         1882         1814         1704         1863         1797         1723         1619         1556           1100         1100         2072         2001         1889         1789         1663         1797         1723         1619         1555           120V         Motor         Xiriflow (CFM) vs. External Static Pressure (incless W.C.)         Virol         1561         1561           1101         Setting         0.10         0.20         0.30         0.40         0.50         0.10         0.20         0.30         0.40         0.50         0.10         0.20         0.30         0.40         2.50           12         Med         671         636         611         557         490         631         611         543         485           18         Med         671         636         611         557         490         631         611         543         485           18         Med         671         636         611         557         490	48														
60         Low         1640         1583         1552         1497         1439         1558         1504         1474         1422         1367           60         ''Med         1881         1884         1704         1615         1683         1707         1723         1619         1555           120V         Motor         Airflow (CFM) vs. External Static Pressure (inches W.C.)           Unit Size (MBUTH)         Fan Speed Setting         No Heat Models         Water Heat Models           0.10         0.20         0.30         0.40         0.50         0.10         0.20         0.30         0.40         0.50           12         Med         471         836         611         557         490         631         611         581         543         485           12         Med         671         636         611         557         490         631         611         581         543         485           148         Med         671         636         611         557         631         540         725         691         650         602         544           149         727         715         675         631         540	40														
60         'Wed High         1981         1982         1814         1704         1616         1983         1797         1723         1619         1535           Low Lot of High         Airflow (CFM) vs. External Static Pressure (incl-sw W.C.)           Unit Size         Fan Speed (MBUTH)         Wet Heat Models           Unit Size         Otheat Models         Weter Heat Models           'Low         409         403         470         437         401         456         445         431         402         286           1         Med         671         636         611         557         480         631         611         581         543         485           High         727         715         675         631         540         725         691         600         602         544           High         727         715         675         631         540         725         691         650         600         602         544           Low         887         584         579         549         467         780         687         681         680		-													
High         2072         2001         1889         1789         1643         1963         1901         1785         1700         1581           120V         Motor         Aifflow (CFM) vs. External Static Pressure (incress W.C.)         Water Heat Models         Water Heat Models           Unit Size (MBUTH)         Fan Speed Setting         0.10         0.20         0.30         0.40         0.50         0.10         0.20         0.30         0.40         0.50           12         Med         671         636         0.11         587         490         631         611         581         543         485           18         Med         671         636         611         587         490         631         611         581         543         485           18         Med         671         636         611         587         490         631         641         580         663         664         537         471           24         Med         889         847         795         731         666         771         747         710         671         631           25         Wed         1015         1004         986         981	60														
Unit Size (MBUTH)         Fan Speed Setting         No Heat Models         Water Heat Models           12         1.0         0.10         0.20         0.30         0.40         0.50         0.10         0.20         0.30         0.40         0.50           12         Med         671         636         611         557         490         631         611         591         543         485           12         Med         671         636         611         557         490         631         611         591         543         485           18         Med         671         636         611         557         490         631         611         581         543         485           18         Med         671         636         611         557         490         631         611         581         543         485           24         Low         687         584         579         549         487         588         580         564         537         471           24         Low         889         947         795         731         666         771         777         773         760         741 <td></td> <td>High</td> <td></td>		High													
Unit Size (MBUTH)         Fan Speed Setting         No Heat Models         Water Heat Models           12         1.0         0.10         0.20         0.30         0.40         0.50         0.10         0.20         0.30         0.40         0.50           12         Med         671         636         611         557         490         631         611         591         543         485           12         Med         671         636         611         557         490         631         611         591         543         485           18         Med         671         636         611         557         490         631         611         581         543         485           18         Med         671         636         611         557         490         631         611         581         543         485           24         Low         687         584         579         549         487         588         580         564         537         471           24         Low         889         947         795         731         666         771         777         773         760         741 <td></td>															
(MBUTH)         Setting         0.10         0.20         0.30         0.40         0.50         0.10         0.20         0.30         0.40         0.50           12         Med         671         638         611         557         490         631         611         651         651         651         561         651         543         486           160         667         564         579         549         487         588         560         564         537         471           24         Med         889         847         795         731         666         771         747         710         671         600           25         Low         819         812         805         782         735         781         777         773         760         741 <t< th=""><th>400)</th><th>Matan</th><th></th><th></th><th>Aluflaur (</th><th></th><th>Essterned C</th><th>tatia Duan</th><th>ouro (in ol</th><th></th><th></th><th></th></t<>	400)	Matan			Aluflaur (		Essterned C	tatia Duan	ouro (in ol						
12         "tow         499         483         470         437         401         458         445         431         402         368           12         Med         671         636         611         557         490         631         611         581         543         485           High         727         715         675         631         540         725         661         650         602         5544           Med         671         636         611         557         490         631         611         581         543         485           High         727         715         675         631         540         725         691         650         602         544           Low         687         584         579         731         666         771         747         710         671         630           1004         889         847         780         697         893         848         801         714         639           1109         1005         1004         986         961         930         989         983         967         942           11030					•	-	External S	tatic Pres	•	-					
12         Med         671         636         611         557         490         631         611         581         543         485           High         727         715         675         631         540         725         691         650         602         544           Med         671         636         611         557         490         631         611         581         543         485           High         727         715         675         631         540         725         691         650         602         544           Low         687         584         579         549         487         588         580         564         537         471           Med         889         847         795         731         666         771         747         710         671         633           Med         1015         1004         986         961         930         989         989         983         967         942           25         Med         1015         1004         986         961         930         989         983         967         942 <t< th=""><th>Unit Size</th><th>Fan Speed</th><th>0.40</th><th></th><th>o Heat Mode</th><th>els</th><th></th><th></th><th>Wa</th><th>ter Heat Mod</th><th>1</th><th>0.50</th></t<>	Unit Size	Fan Speed	0.40		o Heat Mode	els			Wa	ter Heat Mod	1	0.50			
High         727         715         675         631         540         725         691         660         602         544           18         Med         671         636         611         557         400         631         611         581         445         431         402         368           High         727         715         675         631         540         725         691         650         602         544           Low         687         584         579         549         487         588         590         564         537         471           Med         689         847         735         731         666         771         747         710         671         630           1         Med         1015         1004         986         961         930         989         983         967         942           400         1015         1004         986         961         930         989         983         967         942           160         Med         1015         1004         966         961         930         989         983         967         942 <td>Unit Size</td> <td>Fan Speed Setting</td> <td></td> <td>0.20</td> <td>o Heat Mode 0.30</td> <td>els 0.40</td> <td>0.50</td> <td>0.10</td> <td>Wa 0.20</td> <td>ter Heat Mod 0.30</td> <td>0.40</td> <td></td>	Unit Size	Fan Speed Setting		0.20	o Heat Mode 0.30	els 0.40	0.50	0.10	Wa 0.20	ter Heat Mod 0.30	0.40				
"Low         499         493         470         437         401         458         445         431         402         368           18         Med         671         636         611         557         490         631         611         581         543         485           24         Low         687         584         579         549         487         588         580         564         537         471           24         Med         889         847         795         731         666         771         747         710         671         600           "High         952         896         847         780         672         735         781         777         773         760         741           25         Low         819         812         805         782         735         781         777         773         760         741           26         Low         819         812         805         782         735         781         777         773         760         741           30         Med         1015         1004         986         961         930         9	Unit Size (MBUTH)	Fan Speed Setting *Low	499	<b>0.20</b> 493	o Heat Mode 0.30 470	els 0.40 437	<b>0.50</b> 401	<b>0.10</b> 458	Wa 0.20 445	ter Heat Moc 0.30 431	<b>0.40</b> 402	368			
18         Med         671         636         611         557         490         631         611         581         543         485           Low         687         584         579         549         487         588         550         664         537         471           Med         889         847         795         731         666         771         747         710         671         600           High         952         896         847         780         697         883         848         801         714         639           Low         819         812         805         782         781         777         773         760         741           Med         1015         1004         986         961         930         989         983         967         942           High         1155         1149         1122         1090         1039         1095         1089         1072         1049         1020           Low         819         812         805         782         733         781         777         773         760         741           30         1021	Unit Size (MBUTH)	Fan Speed Setting *Low Med	499 671	0.20 493 636	o Heat Mode 0.30 470 611	els 0.40 437 557	<b>0.50</b> 401 490	0.10 458 631	Wa 0.20 445 611	ter Heat Moc 0.30 431 581	0.40 402 543	368 485			
Low         687         584         579         549         487         588         580         564         537         471           Med         889         847         795         731         666         771         747         710         671         600           ''High         952         896         847         780         697         893         848         801         714         639           Low         819         812         805         782         735         781         777         773         760         741           Med         1015         1149         1122         1090         1039         1095         1089         1072         1049         1020           Low         819         812         805         782         735         781         777         773         760         741           30         Med         1015         1149         1122         1090         1039         1085         1089         1072         1049         1020           31         Med         1022         124         110         1099         1065         1023         1118         1111         1097	Unit Size (MBUTH)	Fan Speed Setting *Low Med High	499 671 727	0.20 493 636 715	o Heat Mode 0.30 470 611 675	<b>0.40</b> 437 557 631	0.50 401 490 540	0.10 458 631 725	Wa 0.20 445 611 691	ter Heat Moo 0.30 431 581 650	0.40 402 543 602	368 485 544			
24         Med         889         847         795         731         666         771         747         710         671         600           "High         952         896         847         780         697         893         848         801         714         639           25         "Med         1015         1004         986         961         930         989         989         983         967         942           26         "Med         1155         1149         1122         1090         1039         1095         1089         1072         1049         1020           30         Med         819         812         805         782         735         781         777         773         760         741           30         Med         1015         1049         980         989         983         967         942           410h         1155         1149         1122         1090         1039         1095         1089         1072         1049         1020           31         Med         1302         1278         1233         1117         1144         1275         1281         1222	Unit Size (MBUTH) 12	Fan Speed Setting *Low Med High *Low	499 671 727 499	0.20 493 636 715 493	o Heat Mode 0.30 470 611 675 470	0.40           437           557           631           437	0.50 401 490 540 401	0.10 458 631 725 458	Wa 0.20 445 611 691 445	ter Heat Moo 0.30 431 581 650 431	0.40 402 543 602 402	368 485 544 368			
'High         952         896         847         780         697         893         848         801         714         639           25         Low         819         812         805         782         735         781         777         773         760         741           25         'Med         1015         1004         986         961         930         989         983         967         942           High         1155         1149         1122         1090         1039         1085         1089         1072         1049         1020           30         High         1155         1149         1122         1090         1039         1085         1089         1072         1049         1020           30         Hed         1015         1004         986         961         930         989         983         967         942           4         High         1121         1110         1099         1065         1023         1118         1111         1097         1060         1013           31         Med         1302         1278         1233         1197         1144         1275         126	Unit Size (MBUTH) 12	Fan Speed Setting *Low Med High *Low Med	499 671 727 499 671	0.20 493 636 715 493 636	o Heat Mode 0.30 470 611 675 470 611	0.40           437           557           631           437           557	0.50 401 490 540 401 490	0.10 458 631 725 458 631	Wa 0.20 445 611 691 445 611	ter Heat Moo 0.30 431 581 650 431 581	0.40 402 543 602 402 543	368 485 544 368 485			
Low         819         812         805         782         735         781         777         773         760         741           25         'Med         1015         1004         986         991         930         989         989         983         967         942           High         1155         1149         1122         1000         1039         1095         1089         1072         1049         1020           30         Med         1015         1004         986         961         930         989         983         967         942           30         Med         1015         1004         986         961         930         989         983         967         942           'High         1155         1149         1122         1090         1039         1095         1089         1072         1049         1020           31         Med         1302         1278         1233         1197         1144         1275         1261         1222         1168         1112           36         ''Med         1302         1278         1233         1197         1144         1275         1261 <t< td=""><td>Unit Size (MBUTH) 12</td><td>Fan Speed Setting *Low Med High *Low Med High</td><td>499 671 727 499 671 727</td><td>0.20 493 636 715 493 636 715</td><td>o Heat Mode 0.30 470 611 675 470 611 675</td><td>0.40           437           557           631           437           557           631</td><td>0.50 401 490 540 401 490 540</td><td>0.10 458 631 725 458 631 725</td><td>Wa 0.20 445 611 691 445 611 691</td><td>ter Heat Moo 0.30 431 581 650 431 581 650</td><td>0.40 402 543 602 402 543 602</td><td>368 485 544 368 485 544</td></t<>	Unit Size (MBUTH) 12	Fan Speed Setting *Low Med High *Low Med High	499 671 727 499 671 727	0.20 493 636 715 493 636 715	o Heat Mode 0.30 470 611 675 470 611 675	0.40           437           557           631           437           557           631	0.50 401 490 540 401 490 540	0.10 458 631 725 458 631 725	Wa 0.20 445 611 691 445 611 691	ter Heat Moo 0.30 431 581 650 431 581 650	0.40 402 543 602 402 543 602	368 485 544 368 485 544			
25         *Med         1015         1004         986         961         930         989         983         967         942           High         1155         1149         1122         1090         1039         1095         1089         1072         1049         1020           30         Low         819         812         805         782         735         781         777         773         760         741           30         Med         1015         1004         986         961         330         989         983         967         942           *High         1155         1149         1122         1090         1039         1095         1089         1072         1049         1020           31         Med         1302         1278         1233         1197         1144         1275         1261         1222         1168         1112           High         1448         1391         1359         1298         1223         1355         1330         1317         1267         1196           Low         1121         1110         1099         1065         1023         1118         1111         1097	Unit Size (MBUTH) 12 18	Fan Speed Setting *Low Med High *Low Med High Low	499 671 727 499 671 727 687	0.20 493 636 715 493 636 715 584	o Heat Mode 0.30 470 611 675 470 611 675 579	0.40           437           557           631           437           557           631           437           557           631           549	0.50 401 490 540 401 490 540 487	0.10 458 631 725 458 631 725 588	Wa 0.20 445 611 691 445 611 691 580	ter Heat Moo 0.30 431 581 650 431 581 650 564	0.40 402 543 602 402 543 602 537	368 485 544 368 485 544 471			
High         1155         1149         1122         1090         1039         1095         1089         1072         1049         1020           30         Low         819         812         805         782         735         781         777         773         760         741           30         Med         1015         1004         986         961         930         989         989         983         967         942           "High         1155         1149         1122         1090         1003         1095         1089         1072         1049         1020           31         Med         1302         1278         1233         1197         1144         1275         1261         1222         1168         1112           High         1448         1391         1359         1298         1223         1355         1330         1317         1267         1196           Jow         1121         1110         1099         1065         10023         1118         1111         1097         1060         1013           36         ''Med         1302         1278         1233         1197         1144         122	Unit Size (MBUTH) 12 18	Fan Speed Setting *Low Med High *Low Med High Low Med	499 671 727 499 671 727 687 889	0.20 493 636 715 493 636 715 584 847	o Heat Mode 0.30 470 611 675 470 611 675 579 795	0.40           437           557           631           437           557           631           557           631           549           731	0.50 401 490 540 401 490 540 487 666 697	0.10 458 631 725 458 631 725 588 771	Waa 0.20 445 611 691 445 611 691 580 747	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801	0.40 402 543 602 402 543 602 537 671	368 485 544 368 485 544 471 600			
Low         819         812         805         782         735         781         777         773         760         741           30         Med         1015         1004         986         961         930         989         989         983         967         942           'High         1155         1149         1122         1090         1039         1095         1089         1072         1049         1020           31         Med         1302         1278         1233         1197         1144         1275         1261         1222         1168         1112           High         1448         1391         1359         1298         1223         1355         1330         1317         1267         1196           Jow         1121         1110         1099         1065         1023         1118         1111         1097         1060         1013           36         ''Low         1121         1110         1099         1065         1023         1118         1111         1097         1060         1013           37         Med         1302         1278         1233         1355         1330         1317<	Unit Size (MBUTH) 12 18 24	Fan Speed Setting *Low Med High Low Med *High Low	499 671 727 499 671 727 687 889 952 819	0.20 493 636 715 493 636 715 584 847 896 812	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805	0.40           437           557           631           437           557           631           557           631           549           731           780           782	0.50           401           490           540           401           490           540           487           666           697           735	0.10 458 631 725 458 631 725 588 771 893 781	Wa 0.20 445 611 691 445 611 691 580 747 848 777	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773	0.40 402 543 602 402 543 602 537 671 714 760	368 485 544 368 485 544 471 600 639 741			
30         Med         1015         1004         986         961         930         989         989         983         967         942           "High         1155         1149         1122         1090         1039         1095         1089         1072         1049         1020           31         "Low         1121         1110         1099         1065         1023         1118         1111         1097         1060         1013           Med         1302         1278         1233         1197         1144         1275         1261         1222         1168         1119           High         1448         1391         1359         1298         1223         1355         1330         1317         1267         1196           Cow         1121         1110         1099         1065         1023         1118         1111         1097         1060         1013           36         "Med         1302         1278         1233         1197         1144         1275         1261         1222         1168         1112           36         "Med         1302         1278         1233         1377         1267	Unit Size (MBUTH) 12 18 24	Fan Speed Setting *Low Med High Low Med *High Low Med *High Low	499 671 727 499 671 727 687 889 952 819 1015	0.20 493 636 715 493 636 715 584 847 896 812 1004	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986	0.40           437           557           631           437           557           631           549           731           780           782           961	0.50           401           490           540           401           490           540           666           697           735           930	0.10 458 631 725 458 631 725 588 771 893 781 989	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983	0.40 402 543 602 402 543 602 537 671 714 760 967	368 485 544 368 485 544 471 600 639 741 942			
'High         1155         1149         1122         1090         1039         1095         1089         1072         1049         1020           31         'Low         1121         1110         1099         1065         1023         1118         1111         1097         1060         1013           34         Med         1302         1278         1233         1197         1144         1275         1261         1222         1168         1112           High         1448         1391         1359         1298         1223         1355         1330         1317         1267         1196           Jow         1121         1110         1099         1065         1023         1118         1111         1097         1060         1013           Med         1302         1278         1233         1197         1144         1275         1261         1222         1168         1112           High         1448         1391         1359         1298         1223         1355         1330         1317         1267         1196           36         ''Low         1190         1122         1052         1028         1003         1072<	Unit Size (MBUTH) 12 18 24	Fan Speed Setting *Low Med High *Low Med High Low *High Low *Med High	499 671 727 499 671 727 687 889 952 819 1015 1155	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122	0.40           437           557           631           437           557           631           557           631           549           731           780           782           961           1090	0.50           401           490           540           401           490           540           666           697           735           930           1039	0.10 458 631 725 458 631 725 588 771 893 781 989 1095	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072	0.40 402 543 602 402 543 602 537 671 714 760 967 1049	368 485 544 368 485 544 471 600 639 741 942 1020			
*Low         1121         1110         1099         1065         1023         1118         1111         1097         1060         1013           31         Med         1302         1278         1233         1197         1144         1275         1261         1222         1168         1112           High         1448         1391         1359         1298         1223         1355         1330         1317         1267         1196           Jow         1121         1110         1099         1065         1023         1118         1111         1097         1060         1013           Jow         1121         1110         1099         1065         1023         1118         1111         1097         1060         1013           Jow         1121         1110         1099         1065         1023         1118         1111         1097         1060         1013           Jow         1121         1110         1099         1065         1023         1118         1111         1097         1060         1013           Jow         1302         1278         1233         1303         1317         1267         1196	Unit Size (MBUTH) 12 18 24 25	Fan Speed Setting *Low Med High *Low Med High Low *High Low *Med High Low	499           671           727           499           671           727           687           889           952           819           1015           1155           819	0.20 493 636 715 493 636 715 584 847 896 812 1004 1149 812	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805	0.40           437           557           631           437           557           631           557           631           549           731           780           782           961           1090           782	0.50           401           490           540           401           490           547           666           697           735           930           1039           735	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781	Wa 0.20 445 611 691 445 611 691 580 747 848 777 989 1089 777	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773	0.40           402           543           602           402           543           602           537           671           714           760           967           1049           760	368 485 544 368 485 544 471 600 639 741 942 1020 741			
31         Med         1302         1278         1233         1197         1144         1275         1261         1222         1168         1112           High         1448         1391         1359         1298         1223         1355         1330         1317         1267         1196           36         Low         1121         1110         1099         1065         1023         1118         1111         1097         1060         1013           36         *Med         1302         1278         1233         1197         1144         1275         1261         1222         1168         1112           High         1448         1391         1359         1298         1223         1355         1330         1317         1267         1196           Med         1448         1391         1359         1298         1223         1355         1330         1317         1267         1196           Med         1437         1355         1270         1241         1212         1351         1330         1317         1267         1196           Med         1437         1355         1270         1241         1212         1351	Unit Size (MBUTH) 12 18 24 25	Fan Speed Setting *Low Med High Low Med *High Low *High Low High Low Med	499 671 727 499 671 727 687 889 952 819 1015 1155 819 1015	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           812           1004	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986	0.40           437           557           631           437           557           631           437           557           631           549           731           780           782           961           1090           782           961	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781           989	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           777           989	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983	0.40           402           543           602           402           543           602           537           671           714           760           967           1049           760           967	368 485 544 368 485 544 471 600 639 741 942 1020 741 942			
High         1448         1391         1359         1298         1223         1355         1330         1317         1267         1196           36         Low         1121         1110         1099         1065         1023         1118         1111         1097         1060         1013           36         *Med         1302         1278         1233         1197         1144         1275         1261         1222         1168         1112           High         1448         1391         1359         1298         1223         1355         1330         1317         1267         1196           37         *Low         1190         1122         1052         1028         1003         1072         1011         947         926         903           37         Med         1437         1355         1270         1241         1212         1351         1274         1194         1167         1139           42         Med         1681         1615         1587         1521         1487         1494         1445         1431         1395         1342           42         *Med         1681         1615         1587	Unit Size (MBUTH) 12 18 24 25	Fan Speed Setting *Low Med High Low Med *High Low *Med High Low Med *High	499           671           727           499           671           727           687           889           952           819           1015           1155           819           1015           1155	0.20 493 636 715 493 636 715 584 847 896 812 1004 1149 812 1004 1149	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122	0.40           437           557           631           437           557           631           437           557           631           549           731           780           782           961           1090           782           961           1090	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1039	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781           989           1095	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           777           989           1089	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072	0.40 402 543 602 402 543 602 537 671 714 760 967 1049 760 967 1049	368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020			
Low         1121         1110         1099         1065         1023         1118         1111         1097         1060         1013           36         *Med         1302         1278         1233         1197         1144         1275         1261         1222         1168         1112           High         1448         1391         1359         1298         1223         1355         1330         1317         1267         1196           *Low         1190         1122         1052         1028         1003         1072         1011         947         926         903           37         Med         1437         1355         1270         1241         1212         1351         1274         1194         1167         1139           41         Med         1437         1355         1270         1241         1212         1351         1274         1194         1167         1139           42         Med         1449         1429         1389         1344         1298         1361         1342         1305         1263         1219           42         Med         1681         1615         1587         1521	Unit Size (MBUTH) 12 18 24 25 30	Fan Speed Setting *Low Med High Low Med *High Low *High Low High Low High Low High Low Med *High	499           671           727           499           671           727           687           889           952           819           1015           1155           819           1015           1155           1155           1121	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           812           1004           1149           1110	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 1099	0.40           437           557           631           437           557           631           549           731           780           782           961           1090           782           961           1090           782	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1039           1023	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781           989           1095           1118	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           777           989           1089           1111	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 1097	0.40           402           543           602           402           543           602           537           671           714           760           967           760           967           1049           1060	368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020 1013			
36         *Med         1302         1278         1233         1197         1144         1275         1261         1222         1168         1112           High         1448         1391         1359         1298         1223         1355         1330         1317         1267         1196           37         *Low         1190         1122         1052         1028         1003         1072         1011         947         926         903           37         Med         1437         1355         1270         1241         1212         1351         1274         1194         1167         1139           High         1449         1429         1389         1344         1298         1361         1342         1305         1263         1219           42         Low         1345         1331         1302         1282         1257         1153         1144         1144         1135         1135           42         *Med         1681         1615         1587         1521         1487         1494         1445         1431         1395         1342           43         *Med         1681         1527         1502	Unit Size (MBUTH) 12 18 24 25 30	Fan Speed Setting *Low Med High Low Med *High Low *High Low Med High Low Med *High	499           671           727           499           671           727           687           889           952           819           1015           1155           1155           1155           1155           1121           1302	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           812           1004           1149           1110           1278	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 1099 1233	0.40           437           557           631           437           557           631           549           731           780           782           961           1090           782           961           1090           1065           1197	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1039           1023           1144	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781           989           1095           1118           1275	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           777           989           1089           7111           1261	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 1097 1222	0.40           402           543           602           402           543           602           537           671           714           760           967           1049           760           967           1049           1060           1168	368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020 741 942 1020 1013 1112			
High         1448         1391         1359         1298         1223         1355         1330         1317         1267         1196           37 <sup>*</sup> Low         1190         1122         1052         1028         1003         1072         1011         947         926         903           37         Med         1437         1355         1270         1241         1212         1351         1274         1194         1167         1139           High         1449         1429         1389         1344         1298         1361         1342         1305         1263         1219           42         Low         1345         1331         1302         1282         1257         1153         1144         1144         1135         1135           42         *Med         1681         1615         1587         1521         1487         1494         1445         1431         1395         1342           43         *Med         1681         1615         1587         1521         1487         1494         1445         1431         1395         1342           448         Low         1568         1527         1672	Unit Size (MBUTH) 12 18 24 25 30	Fan Speed Setting *Low Med High Low Med *High Low *Med High Low Med *High *Low Med *High	499           671           727           499           671           727           687           889           952           819           1015           1155           1155           1155           1155           1121           1302           1448	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           1110           1278           1391	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 1099 1233 1359	0.40           437           557           631           437           557           631           549           731           780           782           961           1090           782           961           1090           782           961           1090           1065           1197           1298	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1039           1023           1144           1223	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781           989           1095           1118           1275           1355	Wa           0.20           445           611           691           445           611           580           747           848           777           989           1089           777           989           1089           1111           1261           1330	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 1097 1222 1317	0.40           402           543           602           402           543           602           537           671           714           760           967           1049           760           967           1049           1060           1168           1267	368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020 741 942 1020 1013 1112			
37         Med         1437         1355         1270         1241         1212         1351         1274         1194         1167         1139           High         1449         1429         1389         1344         1298         1361         1342         1305         1263         1219           Low         1345         1331         1302         1282         1257         1153         1144         1144         1135         1135           42         *Med         1681         1615         1587         1521         1487         1494         1445         1431         1395         1342           High         1788         1727         1674         1603         1529         1666         1590         1571         1511         1469           Low         1568         1527         1602         1433         1397         1518         1440         1409         1383         1338           48         *Med         1775         1724         1672         1563         1505         1662         1575         1541         1506         1433           48         *Med         1775         1724         1672         1563         1597	Unit Size (MBUTH) 12 18 24 25 30 31	Fan Speed Setting *Low Med High Low Med *High Low *Med High Low Med *High Low Med *High Low Med High Low	499           671           727           499           671           727           687           889           952           819           1015           1155           1155           1155           1121           1302           1448           1121	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           812           1004           1149           1110           1278           1391           1110	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 1099 1233 1359 1099	0.40           437           557           631           437           557           631           549           731           780           782           961           1090           782           961           1090           782           961           1090           1065           1197           1298           1065	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1039           1023           1144           1223           1023	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781           989           1095           1118           1275           1355           1118	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           777           989           1089           1111           1261           1330           1111	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 1097 1222 1317 1097	0.40           402           543           602           402           543           602           537           671           714           760           967           1049           760           967           1049           1060           1168           1267           1060	368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020 741 942 1020 1013 1112 1196 1013			
High         1449         1429         1389         1344         1298         1361         1342         1305         1263         1219           Low         1345         1331         1302         1282         1257         1153         1144         1144         1135         1135           42         *Med         1681         1615         1587         1521         1487         1494         1445         1431         1395         1342           High         1788         1727         1674         1603         1529         1666         1590         1571         1511         1469           Low         1568         1527         1502         1433         1397         1518         1440         1409         1383         1338           48         *Med         1775         1724         1672         1563         1505         1652         1575         1541         1506         1433           High         1881         1834         1765         1693         1597         1736         1668         1614         1564         1524           Low         1662         1650         1643         1614         1568         1646         1642<	Unit Size (MBUTH) 12 18 24 25 30 31	Fan Speed Setting *Low Med High Low Med *High Low *Med High Low Med *High Low Med *High Low Med *High	499           671           727           499           671           727           687           889           952           819           1015           1155           1155           1121           1302           1448           1121           1302	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           812           1004           1149           812           1004           1149           1110           1278           1391           1110           1278	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 1099 1233 1359 1099 1233	0.40           437           557           631           437           557           631           549           731           780           782           961           1090           782           961           1090           782           961           1090           1065           1197           1298           1065           1197	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1039           1023           1144           1223           1144	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781           989           1095           1118           1275           1355           1118           1275	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           1111           1261           1330	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 1097 1222 1317 1097 1222	0.40           402           543           602           402           543           602           537           671           714           760           967           1049           760           967           1049           1060           1168           1267           1060           1168	368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020 741 942 1020 741 942 1020 1013 1112			
Low         1345         1331         1302         1282         1257         1153         1144         1144         1135         1135           42         *Med         1681         1615         1587         1521         1487         1494         1445         1431         1395         1342           High         1788         1727         1674         1603         1529         1666         1590         1571         1511         1469           Low         1568         1527         1502         1433         1397         1518         1440         1409         1383         1338           48         *Med         1775         1724         1672         1563         1505         1652         1575         1541         1506         1459           High         1881         1834         1765         1693         1597         1736         1668         1614         1564         1524           Low         1662         1650         1643         1614         1568         1646         1642         1639         1630         1606           Med         1853         1840         1813         1746         1675         1833         1826 </td <td>Unit Size (MBUTH) 12 18 24 25 30 31</td> <td>Fan Speed Setting *Low Med High *Low Med High Low *Med High Low Med *High Low Med *High Low Med *High Low Med *High Low</td> <td>499           671           727           499           671           727           687           889           952           819           1015           1155           1155           1155           1121           1302           1448           1121           1302           1448</td> <td>0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           812           1004           1149           812           1004           1149           1101           1278           1391</td> <td>o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 1099 1233 1359 1099 1233 1359</td> <td>0.40           437           557           631           437           557           631           557           631           549           731           780           782           961           1090           782           961           1090           1065           1197           1298</td> <td>0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1039           1023           1144           1223           1144           1223</td> <td>0.10           458           631           725           458           631           725           588           771           893           781           989           1095           7118           1275           1355           1118           1275           1355</td> <td>Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           1111           1261           1330           1111           1261           1330</td> <td>ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 1097 1222 1317 1097</td> <td>0.40           402           543           602           402           543           602           537           671           714           760           967           1049           760           967           1049           1060           1168           1267           1060           1168           1267</td> <td>368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020 741 942 1020 1013 1112 1196</td>	Unit Size (MBUTH) 12 18 24 25 30 31	Fan Speed Setting *Low Med High *Low Med High Low *Med High Low Med *High Low Med *High Low Med *High Low Med *High Low	499           671           727           499           671           727           687           889           952           819           1015           1155           1155           1155           1121           1302           1448           1121           1302           1448	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           812           1004           1149           812           1004           1149           1101           1278           1391	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 1099 1233 1359 1099 1233 1359	0.40           437           557           631           437           557           631           557           631           549           731           780           782           961           1090           782           961           1090           1065           1197           1298	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1039           1023           1144           1223           1144           1223	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           7118           1275           1355           1118           1275           1355	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           1111           1261           1330           1111           1261           1330	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 1097 1222 1317 1097	0.40           402           543           602           402           543           602           537           671           714           760           967           1049           760           967           1049           1060           1168           1267           1060           1168           1267	368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020 741 942 1020 1013 1112 1196			
42         *Med         1681         1615         1587         1521         1487         1494         1445         1431         1395         1342           High         1788         1727         1674         1603         1529         1666         1590         1571         1511         1469           Low         1568         1527         1502         1433         1397         1518         1440         1409         1383         1338           48         *Med         1775         1724         1672         1563         1505         1652         1575         1541         1506         1459           High         1881         1834         1765         1693         1597         1736         1668         1614         1564         1524           Low         1662         1650         1643         1614         1568         1646         1642         1639         1630         1606           60         *Med         1853         1840         1813         1746         1675         1833         1826         1820         1766         1702	Unit Size (MBUTH) 12 18 24 25 30 31 31 36	Fan Speed Setting *Low Med High Low Med High Low *High Low *Med High Low Med *High Low Med *High Low Med High High High High High High Kow	499           671           727           499           671           727           687           889           952           819           1015           1155           1155           1155           1121           1302           1448           1121           1302           1448           1120           1448           1190	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           812           1004           1149           1110           1278           1391           1110           1278           1391           1122           1355	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 1099 1233 1359 1099 1233 1359 1052 1270	0.40           437           557           631           437           557           631           549           731           780           782           961           1090           782           961           1090           1065           1197           1298           1028           1028           1241	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1023           1144           1223           10123           1144           1223           1003           1212	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781           989           1095           1118           1275           1355           1072           1351	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           7111           1261           1330           1011           1274	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 1097 1222 1317 1097 1222 1317 947	0.40           402           543           602           543           602           537           671           714           760           967           1049           760           967           1049           1060           1168           1267           1060           1168           1267           926	368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020 1013 1112 1196 1013 1112 1196 903 1139			
High         1788         1727         1674         1603         1529         1666         1590         1571         1511         1469           Low         1568         1527         1502         1433         1397         1518         1440         1409         1383         1338           48         *Med         1775         1724         1672         1563         1505         1652         1575         1541         1506         1459           High         1881         1834         1765         1693         1597         1736         1668         1614         1564         1524           Low         1662         1650         1643         1614         1568         1646         1642         1639         1630         1606           60         *Med         1853         1840         1813         1746         1675         1833         1826         1820         1766         1702	Unit Size (MBUTH) 12 18 24 25 30 31 31 36	Fan Speed Setting *Low Med High Low Med *High Low *High Low Med *High *Low Med High Low Med High Low Med High Low	499           671           727           499           671           727           687           889           952           819           1015           1155           1155           1121           1302           1448           1121           1302           1448           1190           1437           1449	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           812           1004           1149           1110           1278           1391           1110           1278           1391           1122           1355           1429	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 1099 1233 1359 1099 1233 1359 1052 1270 1389	0.40           437           557           631           437           557           631           549           731           780           782           961           1090           782           961           1090           1065           1197           1298           1028           1228           1228           1228           1228           1241	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1039           1023           1144           1223           1003           1144           1223           1003           1212           1298	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781           989           1095           1118           1275           1355           1118           1275           1355           1072           1351           1361	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           777           989           1089           1111           1261           1330           1011           1274           1342	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 773 983 1072 1097 1222 1317 1097 1222 1317 947 1194 1305	0.40           402           543           602           402           543           602           537           671           714           760           967           1049           760           967           1049           1060           1168           1267           926           1167           1263	368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020 1013 1112 1196 1013 1112 1196 903 1139 1219			
Low         1568         1527         1502         1433         1397         1518         1440         1409         1383         1338           48         *Med         1775         1724         1672         1563         1505         1652         1575         1541         1506         1459           High         1881         1834         1765         1693         1597         1736         1668         1614         1564         1524           Low         1662         1650         1643         1614         1568         1646         1642         1639         1630         1606           *Med         1853         1840         1813         1746         1675         1833         1826         1820         1766         1702	Unit Size (MBUTH) 12 18 24 25 30 31 31 36 37	Fan Speed Setting *Low Med High Low Med *High Low *Med High Low Med *High *Low Med High Low *High *Low Med High Low Med High Low Med High Low	499           671           727           499           671           727           687           889           952           819           1015           1155           1155           1121           1302           1448           1121           1302           1448           1190           1437           1345	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           812           1004           1149           1110           1278           1391           1110           1278           1391           1122           1355           1429           1331	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 1099 1233 1359 1099 1233 1359 1052 1270 1389 1302	0.40           437           557           631           437           557           631           549           731           780           782           961           1090           782           961           1090           1065           1197           1298           1065           1197           1298           1028           1028           1241           1344	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1039           1023           1144           1223           1003           1144           1223           1003           1212           1298           1257	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781           989           1095           1118           1275           1355           1118           1275           1355           1118           1275           1355           1072           1351           1361           1153	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           7111           1261           1330           1111           1261           1330           1011           1274           1342           1144	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 1097 1222 1317 1097 1222 1317 9947 1194 1305 1144	0.40           402           543           602           402           543           602           537           671           714           760           967           1049           760           967           1049           1060           1168           1267           926           1167           1263           1135	368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020 1013 1112 1196 1013 1112 1196 1013 1112 1196 1013 1139 1219			
48         *Med         1775         1724         1672         1563         1505         1652         1575         1541         1506         1459           High         1881         1834         1765         1693         1597         1736         1668         1614         1564         1524           Low         1662         1650         1643         1614         1568         1646         1642         1639         1600           60         *Med         1853         1840         1813         1746         1675         1833         1826         1820         1766         1702	Unit Size (MBUTH) 12 18 24 25 30 31 31 36 37	Fan Speed Setting *Low Med High Low Med *High Low *Med High Low Med *High Low Med High Low Med High Low Med High Low Med High Low *Med	499           671           727           499           671           727           687           889           952           819           1015           1155           1155           1121           1302           1448           1121           1302           1448           1121           1302           1448           1121           1302           1448           1130           1437           1449           1345           1681	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           812           1004           1149           1110           1278           1391           1110           1278           1391           1122           1355           1429           1331           1615	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 805 986 1122 1099 1233 1359 1099 1233 1359 1052 1270 1389 1302 1587	0.40           437           557           631           437           557           631           549           731           780           782           961           1090           782           961           1090           1065           1197           1298           1065           1197           1298           1028           1281           1241           1344           1282           1521	0.50           401           490           540           401           490           540           401           490           540           487           666           697           735           930           1039           1023           1144           1223           1003           1212           1298           1257           1487	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781           989           1095           1118           1275           1355           1118           1275           1355           1072           1351           1361           1153           1494	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           1111           1261           1330           1111           1261           1330           1011           1274           1342           1144	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 1097 1222 1317 1097 1222 1317 947 1194 1305 1144 1431	0.40           402           543           602           402           543           602           537           671           714           760           967           1049           760           967           1049           1060           1168           1267           926           1167           1263           1135           1395	368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020 741 942 1020 741 1020 1013 1112 1196 1013 1112 1196 1013 1112 1196 1013 1139 1219 1135 1342			
High         1881         1834         1765         1693         1597         1736         1668         1614         1564         1524           Low         1662         1650         1643         1614         1568         1646         1642         1639         1630         1606           60         *Med         1853         1840         1813         1746         1675         1833         1826         1820         1766         1702	Unit Size (MBUTH) 12 18 24 25 30 31 31 36 37	Fan Speed Setting *Low Med High Low Med *High Low *Med High Low Med *High Low Med High Low *High Low *High Low *High Low *Med High Low *Med High Low *Med High Low	499           671           727           499           671           727           687           889           952           819           1015           1155           1155           1121           1302           1448           1121           1302           1448           1190           1437           1449           1345           1681           1788	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           1101           1278           1391           1110           1278           1391           1112           1355           1429           1331           1615           1727	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 805 986 1122 1099 1233 1359 1099 1233 1359 1099 1233 1359 1052 1270 1389 1302 1587 1674	0.40           437           557           631           437           557           631           549           731           780           782           961           1090           782           961           1090           782           961           1090           1065           1197           1298           1065           1197           1298           1028           1228           1228           1228           1228           1228           1228           1228           1228           1228           1228           1221           1603	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1039           1023           1144           1223           1003           1212           1228           1257           1487           1529	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781           989           1095           1118           1275           1355           1072           1351           1361           1153           1494	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           1111           1261           1330           1111           1261           1330           1011           1274           1342           1144           1445	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 1097 1222 1317 1097 1222 1317 947 1194 1305 1144 1431 1571	0.40           402           543           602           402           543           602           537           671           714           760           967           1049           760           967           1049           1060           1168           1267           926           1167           1263           1135           1395	368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020 741 942 1020 741 1013 1112 1196 1013 1112 1196 1013 1112 1196 1013 1112 1196 1013 1139 1219 1135 1342 1469			
Low         1662         1650         1643         1614         1568         1646         1642         1639         1630         1606           *Med         1853         1840         1813         1746         1675         1833         1826         1820         1766         1702	Unit Size (MBUTH)           12           18           24           25           30           31           36           37           42	Fan Speed Setting *Low Med High Low Med *High Low *Med High Low Med *High Low Med High Low Med High Low *Med High Low *Med High Low Med High Low	499           671           727           499           671           727           687           889           952           819           1015           1155           1155           1121           1302           1448           1121           1302           1448           1190           1437           1449           1345           1681           1788           1568	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           812           1004           1149           1110           1278           1391           1110           1278           1391           1112           1355           1429           1331           1615           1727           1527	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 805 986 1122 1099 1233 1359 1099 1233 1359 1052 1270 1389 1390 1587 1674 1502	0.40           437           557           631           437           557           631           549           731           780           782           961           1090           782           961           1090           1065           1197           1298           1065           1197           1298           1028           1241           1344           1282           1521           1603           1433	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1023           1144           1223           1003           1212           1298           1257           1487           1529           1397	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781           989           1095           7118           1275           1355           1118           1275           1355           1072           1351           1361           1153           1494           1666           1518	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           1111           1261           1330           1011           1274           1342           1144           1440	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 773 983 1072 1097 1222 1317 1097 1222 1317 947 1194 1305 1144 1431 1571 1409	0.40           402           543           602           402           543           602           537           671           714           760           967           1049           760           967           1049           1060           1168           1267           926           1167           1263           1395           1511           1383	368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020 741 942 1020 741 1020 741 1020 1013 1112 1196 1013 1112 1196 903 1139 1219 1135 1342 1469 1338			
60 *Med 1853 1840 1813 1746 1675 1833 1826 1820 1766 1702	Unit Size (MBUTH)           12           18           24           25           30           31           36           37           42	Fan Speed Setting *Low Med High Low Med High Low *Med High Low Med *High Low Med High Low Med High Low *Med High Low *Med High Low *Med High Low *Med High Low	499           671           727           499           671           727           687           889           952           819           1015           1155           1121           1302           1448           1121           1302           1448           1190           1437           1449           1345           1681           1788           1568           1775	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           1110           1278           1391           1110           1278           1391           1112           1355           1429           1331           1615           1727           1527           1724	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 1099 1233 1359 1099 1233 1359 1099 1233 1359 1052 1270 1389 1052 1270 1389 1052 1674 1674	0.40           437           557           631           437           557           631           549           731           782           961           1090           782           961           1090           1065           1197           1298           1065           1197           1298           1028           1241           1344           1282           1521           1603           1433           1563	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1039           1023           1144           1223           1003           1212           1298           1257           1487           1529           1397           1505	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781           989           1095           1118           1275           1355           1118           1275           1355           1072           1351           1361           1153           1494           1666           1518           1652	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           1111           1261           1330           1011           1274           1342           1144           1445           1590           1440	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 1097 1222 1317 1097 1222 1317 1097 1222 1317 947 1194 1305 1144 1431 1571 1409 1541	0.40           402           543           602           543           602           537           671           714           760           967           1049           760           967           1049           1060           1168           1267           1060           1168           1267           1263           1135           1395           1511           1383           1506	368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020 741 942 1020 741 942 1020 1013 1112 1196 1013 1112 1196 903 1139 1219 1135 1342 1469 1338 1459			
	Unit Size (MBUTH)           12           18           24           25           30           31           36           37           42	Fan Speed Setting *Low Med High Low Med *High Low *Med High Low Med *High Low Med High Low Med High Low Med High Low *Med High Low Med High Low Med High Low	499           671           727           499           671           727           687           889           952           819           1015           1155           1155           1121           1302           1448           1121           1302           1448           1190           1437           1448           1190           1435           1681           1788           1568           1775           1881	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           812           1004           1149           1110           1278           1391           1110           1278           1391           1112           1355           1429           1331           1615           1727           1527           1724           1834	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 1099 1233 1359 1099 1233 1359 1099 1233 1359 1052 1270 1389 1302 1587 1674 1502 1672 1765	0.40           437           557           631           437           557           631           549           731           780           782           961           1090           782           961           1090           1065           1197           1298           1065           1197           1298           1028           1221           1521           1603           1433           1563           1693	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1023           1144           1223           1023           1144           1223           1003           1212           1298           1257           1487           1529           1397           1505           1597	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           1118           1275           1355           1118           1275           1355           1072           1351           1361           1153           1494           1666           1518           1652           1736	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           7111           1261           1330           1011           1274           1342           1144           1445           1590           1440           1575           1668	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 1097 1222 1317 1097 1222 1317 947 1194 1305 1144 1431 1571 1409 1541 1614	0.40           402           543           602           402           543           602           537           671           714           760           967           1049           760           967           1060           1168           1267           926           1167           1263           1135           1395           1511           1383           1506	368 485 544 368 485 544 471 600 639 741 942 1020 1013 1112 1020 1013 1112 1196 1013 1112 1196 903 1139 1219 1135 1342 1469 1338 1459 1524			
High 2085 2038 1990 1916 1839 2065 2029 1981 1918 1847	Unit Size (MBUTH)           12           18           24           25           30           31           36           37           42           48	Fan Speed Setting *Low Med High Low Med *High Low *Med High Low Med *High Low Med High Low Med High Low *Med High Low *Med High Low *Med High Low *Med High Low	499           671           727           499           671           727           687           889           952           819           1015           1155           1155           1121           1302           1448           1121           1302           1448           1190           1437           1449           1345           1681           1775           1881           1662	0.20           493           636           715           493           636           715           584           847           896           812           1004           1149           812           1004           1149           1110           1278           1391           1110           1278           1391           1112           1355           1429           1331           1615           1727           1724           1834	o Heat Mode 0.30 470 611 675 470 611 675 579 795 847 805 986 1122 805 986 1122 1099 1233 1359 1099 1233 1359 1099 1233 1359 1099 1233 1359 1052 1270 1389 1389 1302 1587 1674 1502 1674 1502 1675 1643	0.40           437           557           631           437           557           631           549           731           780           782           961           1090           782           961           1090           1065           1197           1298           1065           1197           1298           1028           1228           1228           1228           1265           1197           1298           1028           1228           1521           1603           1433           1563           1693           1614	0.50           401           490           540           401           490           540           487           666           697           735           930           1039           735           930           1023           1144           1223           1003           1212           1298           1257           1487           1505           1597           1568	0.10           458           631           725           458           631           725           588           771           893           781           989           1095           781           989           1095           1118           1275           1355           1118           1275           1355           1072           1351           1494           1666           1518           1646	Wa           0.20           445           611           691           445           611           691           580           747           848           777           989           1089           7111           1261           1330           1111           1261           1330           1011           1274           1342           1144           1445           1590           1440           1575           1668           1642	ter Heat Moo 0.30 431 581 650 431 581 650 564 710 801 773 983 1072 773 983 1072 1097 1222 1317 1097 1222 1317 947 1194 1305 1144 1431 1571 1409 1541 1614 1639	0.40           402           543           602           402           543           602           537           671           714           760           967           1049           1060           1168           1267           926           1167           1263           1135           1395           1511           1383           1506           1564           1630	368 485 544 368 485 544 471 600 639 741 942 1020 741 942 1020 741 942 1020 1013 1112 1196 1013 1112 1196 1013 1112 1196 103 1139 1219 1135 1342 1469 1338 1459 1524 1606			

### **BLOWER PERFORMANCE DATA**

#### Variable-Speed High Efficiency ECM Motor

	Thermostat Terminals				t Tern	ninals		Control Board Taps								
Unit Size	Operating	X = Energized Terminal							Co	ool			He	eat		
(MBUTH)	Mode	ним	ЕМ	W1	Y1	Y2	G	Α	В	С	D	Α	В	С	D	
		1101				12	Ŭ	CFM	CFM	CFM	CFM	CFM	CFM	CFM	CFM	
	Continuous Blower						Х	500	400	350	350					
	Hi Cooling / HP Heating	**			Х	Х		1000	800	700	600					
25	Low Cooling/ HP Heating				Х			700	560	490	420					
	Aux. Heat			Х	Х	Х		***	***	***	***	1000	800	700*	600*	
	Emer. Heat		Х	Х				***	***	***	***	1000	800	700*	600*	
	Continuous Blower						Х	600	500	400	350					
	Hi Cooling / HP Heating	**			Х	Х		1200	1000	800	600					
30, 31	Low Cooling/ HP Heating				Х			840	700	560	420					
	Aux. Heat			х	х	х		***	***	***	***	1200	1100	1100	1100	
	Emer. Heat		Х	Х				***	***	***	***	1200	1100	1100	1100	
	Continuous Blower						х	600	500	400	350					
	Hi Cooling / HP Heating	**			х	х		1200	1000	800	600					
37	Low Cooling / HP Heating				х			840	700	560	420					
	Aux. Heat			х	х	х		***	***	***	***	1200	1100*	1100*	1100*	
	Emer. Heat		Х	Х				***	***	***	***	1200	1100*	1100*	1100*	
	Continuous Blower						х	800	700	600	500					
	Hi Cooling / HP Heating	**			х	х		1600	1400	1200	1000					
42	Low Cooling / HP Heating				х			1120	980	840	700					
	Aux. Heat			х	х	х		***	***	***	***	1600	1400	1200*	1100*	
	Emer. Heat		х	х				***	***	***	***	1600	1400	1200*	1100*	
	Continuous Blower						х	800	700	600	500					
	Hi Cooling / HP Heating	**			х	х		1600	1400	1200	1000					
48	Low Cooling / HP Heating				х			1120	980	840	700					
	Aux. Heat			х	х	х		***	***	***	***	1600	1400*	1200*	1100*	
	Emer. Heat		х	х				***	***	***	***	1600	1400*	1200*	1100*	
	Continuous Blower						Х	900	800	700	600					
	Hi Cooling / HP Heating	**			Х	Х		1850	1600	1400	1200					
60	Low Cooling / HP Heating				х			1295	1120	980	840					
	Aux. Heat			Х	х	х		***	***	***	***	1850	1600	1400*	1200*	
	Emer. Heat		Х	х				***	***	***	***	1850	1600	1400*	1200*	

\* This CFM is not approved for use with the highest kW heater size.

\*\* Humidistat will reduce cooling airflow by 10% in high humidity.

\*\*\*Airflow is the greater of the COOL and HEAT values when both electric heat and heat pump are operating.

Adjust tap (+) will increase airflow by 10%, while tap (-) will decrease airflow by 12%.

Adjust tap TEST will cause the motor to run at 70% of full airflow. Use this for troubleshooting only.

### VARIABLE SPEED CONTROL BOARD

The motor control board that provides selection also features LED indicators that display operating mode, humidity control and airflow CFM. In addition, thermostat signals for emergency heat (EM), aux, heat (W1), reversing valve (O), compressor stage 1 (Y1), compressor stage 2 (Y2) and blower (G) are all indicated by lit LED's on this board. If a humidistat is used, the dehumidify LED will light when the humidistat opens and the motor runs at reduced airflow. The control board also has a CFM LED that displays the operating CFM. This red LED flashes once for each 100 CFM. For example, if the operating CFM is 1200, the CFM LED will flash 12 times, then pause before repeating the 12-flash pattern.



### **AIR HANDLER CHECKS**

#### **Check Blower Operation**

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

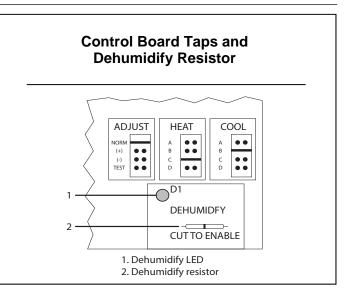
#### Check Hot Water Heat (if used)

- 1. Set thermostat to call for auxiliary heat (approximately 5°F above ambient temperature). The indoor blower and auxiliary heat should come on together.
- 2. Set the thermostat so it does not call for heat.

#### **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 Chart."



**Special Note for Units Equipped with Humidistat:** If using a humidistat, the Dehumidify resistor located on the bottom right of the control board must be removed. The HUM terminal on the board must be connected to the Normally Closed contact of the humidistat so that the board senses an open circuit on high humidity.

**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.

**To change blower speed for 3-Speed Motor:** (Refer to "Wiring Diagram – 3-Speed Motor.")

As shipped from the factory, the cooling and heating speeds are the same. In some cases it may be necessary to change speed for cooling or heating. To do so, use the following procedure:

- 1. Disconnect all power supplies.
- 2. Remove the air handler access panel.
- 3. Locate the motor wire running from the blower motor to the control board motor tap.
- Remove the motor wire from the control board and replace with desired motor speed wire from P9 or P10 in the Blank area of board.
- 5. Replace all panels.
- 6. Reconnect power.

### HOT WATER COIL INSTALLATION

ADP hydronic air handlers (certified to NSF 372) can be used with potable water systems and are shipped with or without circulating pumps. Kits are also available. Refer to pipe and pump sizing in the Air Handler's Engineering & Specification Guide for units with external pumps.

Proper water heating sizing should consider both the gallon capacity AND the BTU input of the water heater.

#### To determine water heater gallon capacity:

A minimum 40 gallon high recovery and/or high efficiency gas or oil fired water heater is recommended. The following volume -sizing guide is satisfactory in most areas.



### NOTICE

If connecting to tankless water heater, the circulating pump may need to be changed to get proper flow. Refer to water heater instructions for details.

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NOTICE



Use copper pipe and fittings. Other compatible piping and fitting materials may be used <u>only if</u> approved by local code authority <u>and only if</u> installed following the manufacturer's application and installation instructions.



### NOTICE



Solder joints on domestic water lines are to be made with NO-LEAD SOLDER.

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NOTICE



The State of Mass requires the use of a pump timer on domestic water applications to periodically circulate water during the off cycle. This pump timer requirement is a standard factory installed feature on all B Series Air Handlers. A 50' maximum distance between water heater and air handler is also required.



### NOTICE



The factory installed freeze protection on all air handlers with hot water coils is designed to protect the coil from freezing. Installer must protect water piping from freezing when in unconditioned spaces such as attics, crawl spaces, or within structures that may be unoccupied during freezing conditions. Insulating piping or using a water-glycol solution may help prevent pipe freezing.

#### 1. Determine Volume

	Water Heater
<u>CFM</u>	<u>Requirements</u>
600-800	40 gallons
1000-1200	40 gallons
1400-1600	Either 2 - 40 gallons piped together, 1 high input 50 gallon (63,000 to 75,000 Btu/hr input), or 1 - 72 (or higher) gallon tank.
2000	Any combination of water heaters piped together with a total output of 105,000 Btu/hr.

#### 2. Determine water heater BTU/HR input requirements

Assume water heater recovery efficiency of 76%

BTU/HR input=

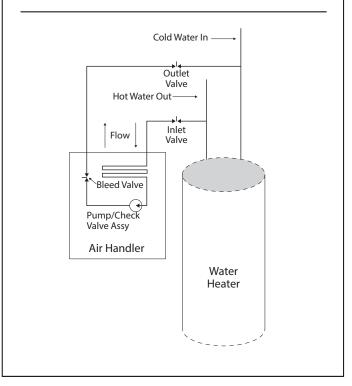
Mild climates: structure heat loss X 1.51

Cold climates: structure heat loss X 1.58

FIGURE 10

#### Typical installation with domestic hot water heater

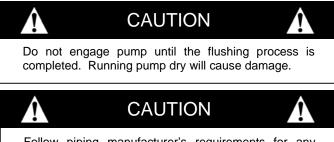
many variations on external valves are possible.



### HOT WATER COIL WATER FLUSHING

Flushing the hot water coil prior to start up is required to remove any residual material from the installation or manufacturing processes as well as remove any air from the system.

A bleed valve comes standard on all air handlers with factory installed circulating pumps. If using an external circulating pump, please use an external purge valve or other mechanism to flush hot water coil after installation. Take precautions while



Follow piping manufacturer's requirements for any additional required flushing or cleaning of coil and piping if using non-copper piping.

### **SEQUENCE OF OPERATIONS**

flushing the air handler to keep the multi-function control board and other electrical components from getting wet. Hot water is preferred for flushing.

Flushing is a 3-step process. Use a bucket or hose to dispose of water from the bleed valve during flushing (refer to Figure 9).

First, flush the return line by closing the inlet valve (supply) and opening the outlet valve (return). Open the bleed valve. Close the bleed valve when flushing is complete.

Second, flush the supply line and coil by closing the outlet valve (return) and opening the inlet valve (supply). Open the bleed valve. Close the bleed valve when flushing complete.

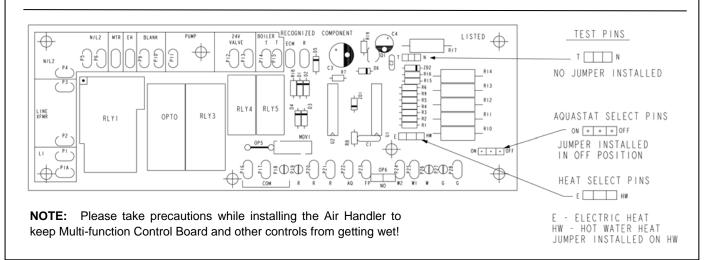
Third, apply power to the air handler. Open inlet and outlet valves. Engage pump and open bleed valve. Verify proper flow direction—inlet should become warm before outlet. Close the bleed valve when flushing is complete.

Operate pump for 5 minutes immediately after flushing system to purge remaining air from the pump bearing chamber.

The Blower Door Safety Switch circuit must be complete for all Sequence of Operations to take place.

FIGURE 11

#### Drawing of Multi-function Control Board, installed in all B Series Air Handlers



#### Cooling

When the thermostat calls for cooling, the circuit between R and G is completed, and the blower **relay** is energized. The Normally Open contacts close, causing the indoor blower motor to operate. The circuit between R and Y is also completed; this circuit closes the contactor in the outdoor fan motor. Circuit R and O or R and B energizes the reversing valve, switching it to the cooling position (depends on outdoor unit). Air Handler blower turns off 45 seconds after the thermostat stops calling for cooling.

#### Heating (electric heat only)

When the thermostat calls for heat, the circuit between R and W is completed, and the heater sequencer is energized. A time delay follows before the heating elements and the indoor

blower motor comes on. Units with a second heat sequencer can be connected with the first sequencer to W on the thermostat sub base or connected to a second stage on the sub base. Air Handler blower turns off 30 seconds after the thermostat stops calling for heating.

#### Heating (heat pump with electric heat)

When the thermostat calls for heat, the circuits between R and Y and R and G are completed. Circuit R-Y energizes the contactor starting the outdoor fan motor and the compressor. Circuit R and G energizes the blower relay starting the indoor blower motor. Circuit R and O or R and B energizes the reversing valve, switching it to the heating position (depends on outdoor unit). If the room temperature should continue to fall, the circuit between R and W1 is completed by the second stage heat room thermostat. Circuit R-W1 energizes a heat

#### **SEQUENCE OF OPERATIONS**

sequencer. The completed circuit will energize supplemental electric heat (if applicable). Units with a second heater sequencer can be connected with the first sequencer to W1 on the thermostat or connected to a second heating stage W2 on the thermostat sub base. Air Handler blower turns off 30 seconds after the thermostat stops calling for heating.

#### Emergency Heat (heat pump with electric heat)

If selector switch on thermostat is set to the emergency heat position, the heat pump will be locked out of the heating circuit, and all heating will be electric heat (if applicable). A jumper should be placed between W2 and E on the thermostat subbase so that the electric heat control will transfer to the first stage heat on the thermostat. This will allow the indoor blower to cycle on and off with the electric heat when the fan switch is in the AUTO position.

#### Heating (hot water heat only)

When the thermostat calls for heat, the circuit between R and W is completed, activating the hot water circulating pump. If a field installed circulating pump is being used the control board can still be wired to the pump directly or to an isolation valve supplying hot water to the Air Handler using the control board's 24V relay switch. A similar 24 V dry switching relay labeled TT can be used to activate a boiler or water heater valve. After the circuit between R & W are completed

Units with Factory Installed Aquastats- The water temperature inside the hot water coil must reach 130 deg. F before the circuit between R and G are complete activating the indoor blower motor. To deactivate a factory installed aquastat simply move the selector pin on the multi-function control board (See drawing above) from the on position to the off position.

Units without Factory Installed Aquastats or Deactivated Aquastats- A time delay of 60 seconds follows before the circuit between R and G are complete activating the indoor blower motor.

The Air Handler fan will turn off 30 seconds after the Thermostat stops calling for heating.

#### Heating (heat pump with hot water heat)

When the thermostat calls for heat, the circuits between R and Y and R and G are completed. Circuit R-Y energizes the contactor starting the outdoor fan motor and the compressor. Circuit R and G energizes the blower relay starting the indoor blower motor. Circuit R and O or R and B energizes the reversing valve,

#### **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 this address with any questions or concerns. Please include a daytime phone number in your correspondence. switching it to the cooling position (depends on outdoor unit). If the room temperature should continue to fall, the second stage heat room thermostat completes the circuit between R and W. If a field installed circulating pump is being used the control board can still be wired to the pump directly or to an isolation valve supplying hot water to the Air Handler using the control board's 24V relay switch. A similar 24 V dry switching relay labeled TT can be used to activate a boiler or water heater valve. After the circuit between R & W are completed

Units with Factory Installed Aquastats- The water temperature inside the hot water coil must reach 130 deg. F before the circuit between R and G are complete activating the indoor blower motor. To deactivate a factory installed aquastat simply move the selector pin on the multi-function control board (See drawing above) from the on position to the off position.

Units without Factory Installed Aquastats or Deactivated Aquastats— a time delay of 60 seconds follows before the circuit between R and G are complete activating the indoor blower motor.

The Air Handler fan will turn off 45 seconds after the Thermostat stops calling for heating.

#### Freeze Protection (hot water heat)

If the temperature of the water within the hot water coil were to drop below 40°F the circuit between R and W is completed, activating the hot water circulating pump, external circulating pump or isolation valve. Once the water temperature rises above  $70^{\circ}$ F the circuit between R and W is opened and hot water will stop circulating within the hot water coil.

To prevent the freeze protection from activating the water circulating pump when in cooling mode, move freeze stat to far left or far right of water coil, and insulate with foam tape insulation.

#### Pump Timer (hot water heat)

The State of Massachusetts requires the use of a pump timer on domestic water applications to periodically circulate water during the off cycle. This pump timer requirement is a standard factory installed feature on all B Series Air Handlers. The Pump timer activates the circulating pump or isolation valve for one minute every six hours by completing the circuit between R and W. The Pump timer is skipped while the outdoor compressor is operating.

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



### Air Handler Limited Warranty – Standard 5 Year

(Applies only to product installed within the United States or Canada)

**Term of Standard 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, <u>not</u> to exceed six (6) years from the date of manufacture. Use of this product other than in a residential application will limit the warranted term to a period of (1) year from the date of installation, not to exceed two (2) years from the date of manufacture.

<u>*Warranty Procedure:*</u> Warranty parts should be replaced by a qualified local contractor or dealer and will require the following information: model number, serial number, date of installation and an accurate description of the problem. Contractor or dealer will contact a local ADP distributor for replacement parts.

**<u>Replacement Parts:</u>** If, during the term of this warranty, a warranted part fails, ADP will either provide a replacement part free of charge, or may at its option, grant a credit for the original purchase price of the defective article to a distributor of ADP products. ADP may require the return of a defective article for factory inspection to verify and/or determine the root cause of the failure. Covered components include all parts of this unit except for the following **excluded components**, which are not covered by this warranty: cabinet, cabinet pieces, wiring and wiring harnesses.

<u>Care of Equipment</u>: For this warranty to apply, ADP product must be properly installed, operated, and maintained in accordance with the installation, operation and maintenance instructions provided with each unit. Unauthorized alteration of ADP product may void this warranty.

**Conditions of Warranty:** Replacement parts furnished under this warranty will be warranted for the balance of the original warranty term of the unit and will not serve to extend the original term. This warranty is void if the ADP product is removed from the original installation site. This warranty does not apply to damage caused by shipping, misuse, mishandling or damage caused by floods, winds, fires, lightning, or exposure to corrosive elements/environments (such as salt, chlorine, fluorine or other damaging chemicals).

<u>Limitations of Warranty</u>: The costs of refrigerant, refrigerant reclamation, miscellaneous material and labor charges for diagnostics, servicing or replacing parts are not covered. ADP shall have no liability for expenses incurred for repairs without prior, written authorization from ADP. No purchaser, distributor, dealer, representative, agent, person, firm or corporation has authority to alter, add to or modify this warranty, either orally or in writing.

**No Other Warranties:** ADP makes no warranty, express or implied, of fitness for any particular purpose, or of any other nature whatsoever, with respect to products manufactured or sold by ADP hereunder, except as specifically set forth above and on the face hereof. Any implied warranty of merchantability or fitness for a particular purpose on this product is limited in duration to the duration of this warranty. Some states and provinces do not allow limitations on how an implied warranty lasts, so the above limitation may not apply to you. It is expressly understood and agreed that ADP shall not be liable to buyer, or any customer of buyer, for direct or indirect, special, incidental, consequential or penal damages, or for any expenses incurred by reason of the use or misuse by buyer or third parties of said products. To the extent said products may be considered "consumer products", as defined in Sec. 101 of the Magnuson-Moss Warranty-Federal Trade Commission Improvement Act, ADP makes no warranty of any kind, express or implied, to "consumers," except as specifically set forth above on the face hereof. The foregoing is in lieu of all other warranties, express or implied, not withstanding the provisions of the Uniform Commercial Code, the Magnuson-Moss Warranty-Federal Trade Commission Improvement Act, or any other statutory or common law, federal or state.

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