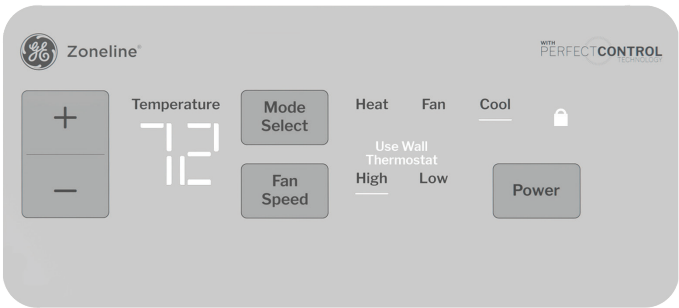
GE ZONELINE®

Packaged Terminal Air Conditioners

ARCHITECTS & ENGINEERS DATA MANUAL
AZE & AZH FIXED SPEED
AZV VARIABLE SPEED
(SERIES A)

GE APPLIANCES

Quick Reference



AZV Variable Speed Series A control panel

AZV SERIES-230/208V VARIABLE SPEED COOLING w/HEAT PUMP

MODEL NUMBER	VOLTAGE	COOLING (BTUH)	SEER2	COOLING WATTS*	HEAT PUMP (BTUH)	HSPF2	HEAT PUMP WATTS
AZVS15DCX-WA (Corr)	208	14200	16.3	1300	13500	8.0	1160
	230	14300		1295	13500		1160
AZVS15DMX-WA (MUA)	208	14200	16.3	1300	13500	8.0	1155
	230	14300		1295	13500		1155
AZVS15D-MQWA (MUA & UVC)	208	14200	16.3	1300	13500	8.0	1155
	230	14300		1295	13500		1155

AZV SERIES-265V VARIABLE SPEED COOLING w/HEAT PUMP

MODEL NUMBER	VOLTAGE	COOLING (BTUH)	SEER2	COOLING WATTS*	HEAT PUMP (BTUH)	HSPF2*	HEAT PUMP WATTS
AZVS15ECX-WA (Corr)	265	14300	16.3	1295	13500	8.0	1160
AZVS15ERX-WA (ICR)	265	14300	16.3	1295	13800	NA	1150
AZVS15EMX-WA (MUA)	265	14300	16.3	1295	13500	8.0	1160

Makeup Air is designed to provide continuous outdoor air through the vent door. Makeup Air units will automatically make adjustments to dehumidify the room when the relative humidity is above 50%

230/208 Volt units operate w/SEER2 of 16.3 and HSPF2 of 8.0. Tested in accordance with AHRI 210/240-2024

Full Specs on pages 59-60

All units require power connection kit

Power connection kit determines resistance heat output

Specifications subject to change

*Units not tested per Appendix I-Controls Verification Procedure-Normative or Appendix J-Determination of Cut-in and Cut-out Temperatures-Normative

AHRI CERTIFIED® www.ahridirectory.org Packaged Terminal HP AHRI Standard 310/380

AHRI CERTIFIED® www.ahridirectory.org Packaged Terminal AC AHRI Standard 310/380

c UL us LISTED

Heating and Cooling Equipment UL File No. SA7256

AZE SERIES-FIXED SPEED COOLING w/ELECTRIC HEAT

MODEL NUMBER	VOLTAGE	COOLING (BTUH)	EER	COOLING WATTS*
AZES079D-CXXA	208	7200	13.4	535
	230	7200	13.2	545
AZES09D-CXXA	208	9500	12.5	755
	230	9500	12.3	770
AZES12D-CXXA	208	12000	11.7	1020
	230	12100	11.6	1035
AZES15D-CXXA	208	14500	10.6	1365
	230	14800	10.5	1400

AZH SERIES-FIXED SPEED COOLING w/HEAT PUMP

MODEL NUMBER	VOLTAGE	COOLING (BTUH)	EER	COOLING WATTS*	HEAT PUMP (BTUH)	COP	HEAT PUMP WATTS
AZHS079D-CXXA	208	7100	13.2	535	6200	4.1	440
	230	7200	13.0	550	6200	3.9	455
AZHS09D-CXXA	208	9600	12.4	770	7900	3.8	600
	230	9700	12.4	780	8000	3.7	625
AZHS12D-CXXA	208	11900	11.6	1020	10600	3.7	825
	230	12100	11.6	1035	10600	3.6	855
AZHS15D-CXXA	208	14700	10.4	1410	13300	3.4	1125
	230	15100	10.4	1450	13500	3.3	1180

AZH SERIES-FIXED SPEED COOLING w/HEAT PUMP & ICR

MODEL NUMBER	VOLTAGE	COOLING (BTUH)	EER	COOLING WATTS*	HEAT PUMP (BTUH)	COP	HEAT PUMP WATTS
AZHS079D-CXXA	208	7100	13.1	540	6400	4.2	440
	230	7200	13.0	550	6500	4.1	460
AZHS09D-CXXA	208	9600	12.4	770	7900	3.9	595
	230	9700	12.4	780	8100	3.8	620
AZHS12D-CXXA	208	11900	11.6	1020	10900	3.8	830
	230	12100	11.6	1035	11000	3.7	855
AZHS15D-CXXA	208	14700	10.4	1410	13800	3.5	1135
	230	15100	10.4	1450	14000	3.4	1185

AZH SERIES-265 V FIXED SPEED COOLING w/HEAT PUMP

MODEL NUMBER	VOLTAGE	COOLING (BTUH)	EER	COOLING WATTS*	HEAT PUMP (BTUH)	COP	HEAT PUMP WATTS
AZHS079E-CXXA	265	7100	12.7	555	6100	4.0	440
AZHS09E-CXXA	265	9400	12.1	775	8000	3.5	660
AZHS12E-CXXA	265	12000	11.4	1045	10500	3.6	850
AZHS15E-CXXA	265	14600	10.4	1395	13500	3.4	1145

*See pages 4, 48-49, 58 for electric/resistance heat information

Heater Wattage and Power Connection Kits

Power connection kits are required on all Zoneline chassis. (See chart)

The appropriate power connection kit is selected based on the circuit's voltage and amperage, as well as the method of integration with the building's electrical system. For receptacle-based installations, employ a line cord kit; for permanent connections, utilize a direct connector or permanent connection kit.

NOTE: 265-volt cord set units must be installed in compliance with the National Electrical Code (440.60).

	230/208-Volt	LINE-CORD-CONNECTED (P) AND DIRECT-CONNECTED UNITS (D)				
BTUh size	**7,000/9,000**			**12,000/15,000**		
Power connection kit	RAK315P & RAK315D	RAK320P & RAK320D	RAK330P & RAK330D	RAK315P & RAK315D	RAK320P & RAK320D	RAK330P & RAK330D
Total watts	2,410/1,990	3,420/2,830	4,830/3,990*	2,430/2,020	3,450/2,860	4,860/4,020*
Heater watts	2,400/1,960	3,400/2,780	4,800/3,930*	2,400/1,960	3,400/2,780	4,800/3,930*
Heater BTUh	8,100/6,600	11,600/9,400	16,300/13,400*	8,100/6,600	11,600/9,400	16,300/13,400*
Total Amps	10.5/9.6	14.9/13.6	21.0/19.2	10.6/9.7	15.1/13.8	21.2/19.3
MCA	15	20	25	15	20	25
Recommended protective device (MOCP)	15 amp time-delay fuse or breaker	20 amp time-delay fuse or breaker	30 amp time-delay fuse or breaker	15 amp time-delay fuse or breaker	20 amp time-delay fuse or breaker	30 amp time-delay fuse or breaker

	265-Volt	PERMANENT (P, CORD SET) AND DIRECT-CONNECTED UNITS (D)				
BTUh size	**7,000/9,000**			**12,000/15,000**		
Power connection kit	RAK515P & RAK515D	RAK520P & RAK520D	RAK530P & RAK530D	RAK515P & RAK515D	RAK520P & RAK520D	RAK530P & RAK530D
Total watts	2,440	3,450	4,850*	2,460	3,470	4,870*
Heater watts	2,400	3,400	4,800*	2,400	3,400	4,800*
Heater BTUh	8,100	11,600	16,300*	8,100	11,600	16,300*
Total amps	9.1	12.9	18.1	9.3	13.1	18.4
MCA	15	20	25	15	20	25
Recommended protective device (MOCP)	15 amp time-delay fuse or breaker	20 amp time-delay fuse or breaker	25 amp time-delay fuse or breaker	15 amp time-delay fuse or breaker	20 amp time-delay fuse or breaker	25 amp time-delay fuse or breaker

Each line cord kit has an integral Leakage Current Detection and Interruption (LCDI) device as required by National Electrical Code (NEC) and Underwriters Laboratories (UL) for units manufactured after August 1, 2004. RAK515P, RAK520P and RAK530P are only to be used with a sub-base.

*Wattage reduced with low-speed fan
**230/208V Direct connect kits require the purchase of the RAK4002D junction box

230/208-VOLT, SUB-BASE-CONNECTED UNITS (LOADS MAY VARY BY MODEL)				
Sub-Base	**Electric Heat BTUH**	**Electric Heater Watts**	**Electric Heat Amps**	**Recommended Circuit Protection (Amps)**
RAK204D15C	8,100/6,600	2,400/1,960	10.6/9.7	15
RAK204D20C	11,600/9,400	3,400/2,780	15.1/13.8	20
RAK204D30C	16,300/13,400	4,800/3,930*	21.2/19.3	30

265-VOLT, PERMANENTLY CONNECTED UNITS–AZE & AZH SERIES (LOADS VARY BY MODEL)				
Sub-Base	**Electric Heat BTUH**	**Electric Heater Watts**	**Electric Heat Amps**	**Recommended Circuit Protection (Amps)**
RAK204E15C	8,100	2,400	9.6	15
RAK204E20C	11,600	3,400	13.1	20
RAK204E30C	16,300	4,800*	18.4	25

265-volt units are to be permanently connected in compliance with National Electrical Code and local codes and have a factory-installed junction box on the chassis.

Each 265-volt sub-base kit consists of sub-base with appropriate receptacle for minimum circuit amperage, power connection kit, chaseway to route power connector from sub-base to chassis and wiring to connect sub-base to building wiring.

Units connected through sub-base do not require an LCDI or AFCI device since they are not considered to be line-cord-connected.

Each 230/208 volt sub-base kit consists of sub-base with appropriate receptacle for minimum circuit amperage, chaseway to route power connector from sub-base to chassis, wiring to connect sub-base to building wiring and a short line cord with 4-pin connector to connect to chassis and plug into receptacle in sub-base. Short sub-base line cord may not be used without sub-base.

Junction box for 230/208-volt chassis is ordered separately.
RAK4002D for AZE-AZH-AZV Series A units.

Power Connection Kit

Required on all models. See specification sheet for heater KW and branch circuit ampacity.

Receptacles/Sub-bases

Tandem
230/208V 15 Amp
NEMA6-15R

Perpendicular
230/208V 20 Amp
NEMA6-20R

Large tandem
230/208V 30 Amp
NEMA6-30R

265V 15 amp
NEMA7-15R;
receptacle used on
265V sub-base

265V 20 amp
NEMA7-20R;
receptacle used on
265V sub-base

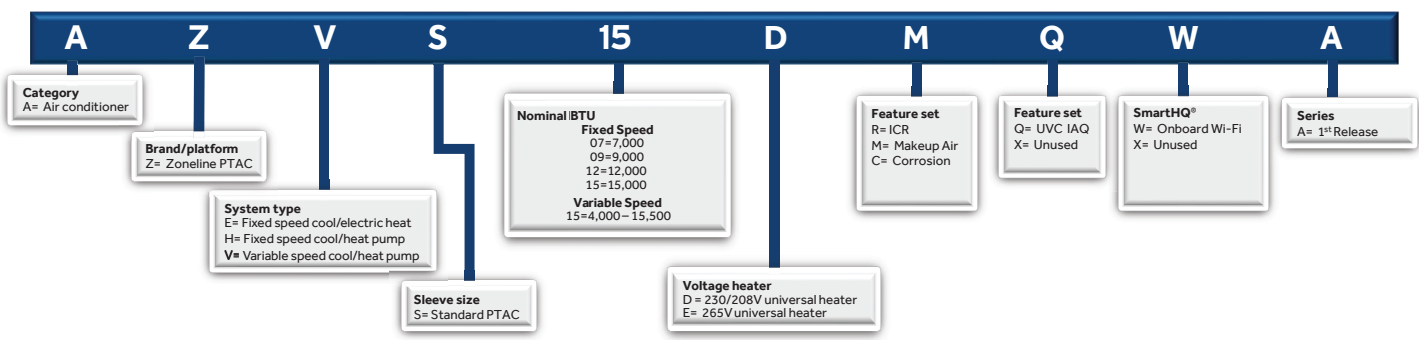
265V 30 amp
NEMA7-30R;
receptacle used on
265V sub-base

Essential Elements Ordering Overview

230/208-volt line-cord connected units — order line cord kit.

230/208-volt sub-base connected units — order sub-base (includes short power cord connection kit) and junction box for chassis.

265-volt units — order sub-base.



Specifications subject to change.

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IMPORTANT NOTICE

Equipment used as a primary source for heating or cooling is an integral part of the building in which it is installed. Proper application is essential for satisfactory performance over a wide range of operating conditions. It is strongly recommended that a professional engineer determine proper application. If the unit is a replacement unit, its specifications and performance may differ from those of the unit it is replacing. For that reason, we again strongly recommend that a professional engineer determine proper application.

This manual provides a comprehensive resource for the design and selection of zoned comfort control systems employing GE Appliances Zoneline® Packaged Terminal Air Conditioners (PTAC) and Packaged Terminal Heat Pumps (PTHP). It offers in-depth product performance and application data to assist architects, engineers, and other stakeholders.

Zoneline units are self-contained, high-efficiency systems designed for through-the-wall installations, enabling precise individual room or zone climate control.

Special Features:

Zoneline with Perfect Control Technology

- Variable speed inverter technology (4,000-15,500 BTU)
- Ultra-quiet twin rotor compressor
- Heat pump down to 0° F (variable speed models only)
- Humidity Sentinel
- Dual EEV refrigerant control
- Two-way communicating thermostat capable
- Works with Y1/Y2 staged low voltage control (class 2) thermostats
- On-board (integrated) Wi-Fi SmartHQ™ management ready

Standard Features:

- Designed and assembled in America
- The new grey-white color complements today's room decor
- R454B – the most environmentally responsible refrigerant on the market
- Wi-Fi SmartHQ™ management capable
- Electronic touch control with Auto Dimming LED display
- Energy efficiency
- Heat and freeze sentinels
- "Smart fan" Fan Cycle/Continuous Control
- Reverse Cycle defrost (heat pump models)
- Multi-stage heating design
- Heat pump with supplemental and resistance heat backup
- Automatic emergency heat
- Heat pump operation down to 25° F (fixed speed models)
- Two-position discharge grille
- Universal Heaters
- Baked on mastic barrier for quieter operation
- SMC (composite) base pan and bulkhead
- Fresh air vent (not available on Makeup Air)
- Auto power recovery
- Electronic temperature limiting
- Boost heat option
- Automatic indoor frost control
- Two EC fan motors
- Remote thermostat capability
- Central desk control capability
- Quick Connect Remote Thermostat Interface

Optional Features:

- Corrosion Protection
- Makeup Air Module
- Internal Condensate Removal (AZH and AZV series only)
- Ultraviolet C (UVC) for disinfection and Indoor Air Quality

Advantages of the Zoneline System
Flexible Application

- May be installed from flush to finished floor, to 3" from the ceiling
- 7,000 to 15,000 nominal BTUH in same physical size
- AZE and AZH series may be ducted to condition more than one room
- Class 2 remote thermostat control option
- Compatible with 2-wire CDC or many Energy Management Thermostat Systems

Economical Installation (vs Central Systems)

- Replacement units fit existing 42" wide by 16" high wall sleeves
- No duct work necessary
- No mechanical equipment rooms or pipes required for heating/cooling units

Quiet Operation

- Large indoor twisted cross-flow blower
- Sound deadening mastic on SMC bulkhead
- DC fan motors for soft start operation
- Isolation grommets for less vibration/transmission Energy-Saving Operation
- Variable speed compressor operation w/Heat Pump operation down to 0°F
- Automatic Reverse Cycle defrost

Ease of Maintenance

- Access with common 5/16" nut driver
- Unit designed for ease of maintenance
- Upfront lift-out interchangeable filters
- Slide-out chassis design, facilitating convenient access for routine cleaning and maintenance or when service is required

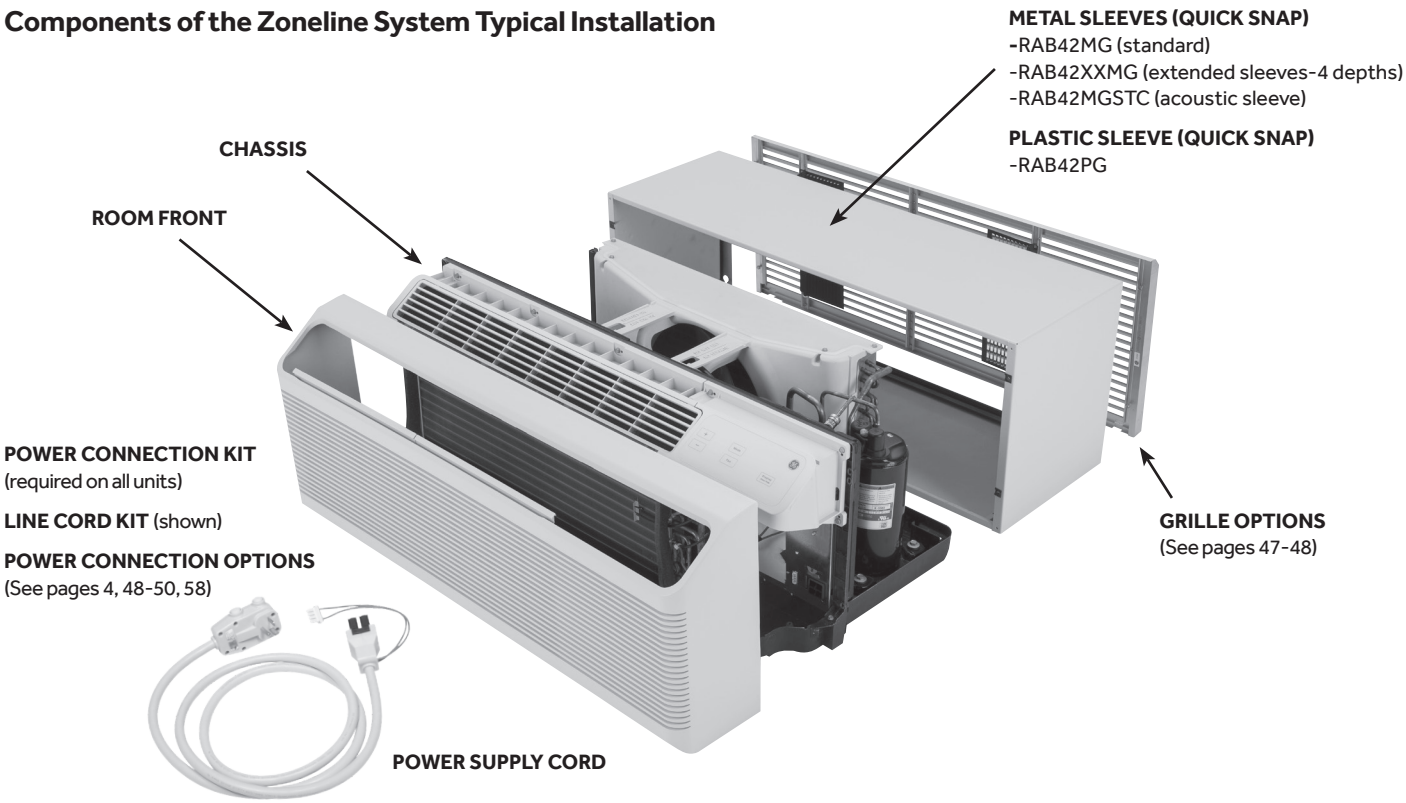
The AZH and AZV series heat pumps incorporate proprietary GE Appliances heat pump logic and operations to maintain optimal room comfort. This logic mirrors that employed in central systems, thereby enhancing energy savings.

The ZONELINE® System

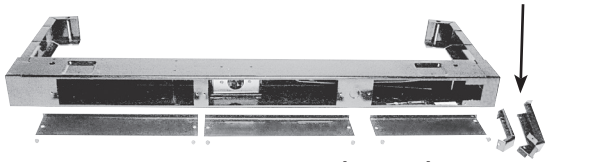
A standard Zoneline® installation comprises the wall sleeve, chassis, power cord, and exterior grille. Certain applications may incorporate a sub-base to provide structural support or facilitate electrical connections. All components must be standard GE Appliances products or approved equivalents.

Custom exterior grills should be approved by GE Appliances Applications Engineering. Use of components not specifically designed or approved for use with the Zoneline unit can result in unsatisfactory operation and can be the cause of failure not covered by the warranty.

Components of the Zoneline System Typical Installation

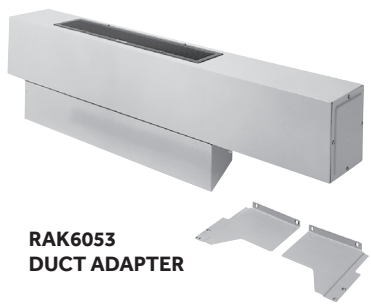


Optional Accessories of the Zoneline System



RAK204D20C SUB-BASE (SHOWN)
See pages 30-32 and 49 for information on electrical sub-bases and chaseway.

SHORT POWER SUPPLY CORD INCLUDED WITH SUB-BASES



RAK6053
DUCT ADAPTER

RAK601B/602B
DUCT EXTENSION, REGISTER AND TRIM FLANGE
See pages 44-47, 56-57 for information on ducted installations.

ZONELINE® Features

	RESISTANCE HEAT	HEAT PUMP	
	AZE	AZH	AZV
Cooling EER or SEER2 range	10.5/13.4	10.4/13.2	16.3
Heating COP or HSPF2 range	--	3.3/4.2	8.0
Refrigerant type	R454B	R454B	R454B
Cross-flow (tangential) blower	Standard	Standard	Standard
Enhanced dehumidification	--	--	Standard
Sound deadening mastic	Standard	Standard	Standard
Composite (non rustable) basepan	Standard	Standard	Standard
Heat pump with resistance heat back-up	--	Standard	Standard
Heat pump with supplemental resistance heat (Boost heat)	--	Standard	Standard
Staged heating	--	3-Stage***	3-Stage***
Universal heaters—UPC**	Standard	Standard	Standard
Touch-pad controls with white LEDs	Standard	Standard	Standard
Auto dimming display	Standard	Standard	Standard
Auxiliary control features	Standard	Standard	Standard
Automatic emergency heat	Standard	Standard	Standard
Heat pump defrost system	--	Reverse cycle	Reverse cycle
Separate ID & OD Variable Speed DC motors	Standard	Standard	Standard
Indoor fan speed settings	Hi/Low	Hi/Low	Hi/Low
"SmartFan" fan cycle control	Standard	Standard	Standard
Auto power recovery	Standard	Standard	Standard
Automatic compressor restart delay	Standard	Standard	Standard
Freeze Sentinel (41°F)	Standard	Standard	Standard
Heat Sentinel (85°F)	Standard	Standard	Standard
Heat Pump Operation down to	--	25°F	0°F
Automatic indoor frost control	Standard	Standard	Standard
Temperature limiting (Max Heat-Max Cool)	Electronic 8-step	Electronic 8-step	Electronic 8-step
Remote thermostat compatibility	Standard	Standard	Standard
Central Desk Control compatibility	Standard	Standard	Standard
2-position discharge grille 45°/65°	Standard	Standard	Standard
Upfront filter (interchangeable)	Standard	Standard	Standard
Manual air vent control	Standard	Standard	Standard
Transfer fan compatibility	Optional	Optional	Optional
Ducted installation (non MUA)	Optional	Optional	--
Corrosion-treated chassis†	Standard	Standard	Standard
Internal condensate removal (ICR)*	--	Optional	Optional
Makeup Air model*	--	--	Optional

*Not for use in corrosive environments

**UPC – Universal Power Cord Connection (see pages 4, 48, 58)

***Two-stage heating if using remote thermostat.

†Corrosion treatment is standard on all 265V models

Units rated at 265 volts must be installed in compliance with the National Electrical Code and all applicable local regulations.

Specifications subject to change

GE ZONELINE® with Makeup Air

The GE Zoneline Perfect Control unit with Makeup Air system provides an alternative to standard building ventilation designs.

With a dedicated fan, the Makeup Air system can provide positive pressure Makeup Air for those projects looking for alternatives to having a rooftop system ducted to each individual room.

The GE Zoneline provides the standard individual room zone control in both cooling and heating applications. The Makeup Air system is a duct to the outside with dedicated fans that offers 5 pre-set fan speeds (30-50 CFM) of continuous dehumidified Makeup Air.

With the Zoneline Perfect Control PTAC and its variable speed system, the unit adjusts for the cooling AND dehumidification as needed.

Factory-installed and tested, Makeup Air is an independent system that can provide outdoor air continuously.

Features

- Dedicated fans in the Makeup Air system that are adjustable to five pre-set fan speeds from 30 to 50 CFM.
- System automatically adjusts for outdoor air anytime the unit is plugged into the power source (even if the unit is turned off).
- Provides extra dehumidification when the room is above 50% relative humidity.
- Pairs with an approved occupancy sensing system to shut off Makeup Air and close the duct door when the room is unoccupied (if desired).
- Simple design for improved serviceability.
- Factory installed and tested.
- Approved by leading hotel brands.
- Optional MERV 13 Makeup Air Filter available (RAA13Z)
- Makeup Air models come standard with Humidity Sentinel set to "Standard." See Humidity Sentinel info on page 12 and 21.

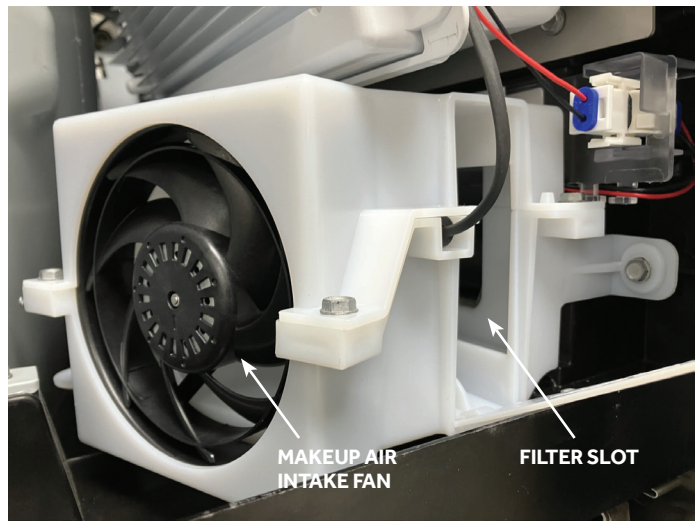
Door Vent & Occupancy Sensing

Zoneline Makeup Air features a motorized vent door. When paired with an approved occupancy system and the room is unoccupied, the vent door will close, and the Makeup Air system will shut down. This design saves energy and money by running the makeup system only when needed, while allowing the PTAC system to operate independently.

Agency Listing

The Zoneline Perfect Control and Makeup Air are approved by UL, CEC, NRCAN & AHRI and comply with ASHRAE 90.1-2013 minimum efficiency requirements for PTACs.

The Makeup Air Module Comes Installed In Select ZONELINE PTAC Units.



Design Considerations

- Makeup Air systems are not recommended for installation within 1-2 miles of coastal areas.
  - — Units are not corrosion protected.
  - — Avoids bringing corrosive air into the living space.
- The Makeup Air Module will increase room load requirements for both heating and cooling.
  - — Consult with your architect or engineer to ensure proper sizing of the PTHP unit to accommodate this additional load.
  - — Due to the additional heating and cooling load, the energy costs of the room will increase with the use of Makeup Air.
  - — Because Makeup Air increases room BTU load requirements and requires additional PTAC cooling or heating, the building's electrical needs may be impacted.
- Remote thermostats should be used with Makeup Air models.
- More condensate will be generated with the additional dehumidification of outside air. Therefore, an internal or external piped drain line is recommended.
- When using occupancy sensing thermostats with Makeup Air units, total building air design should be considered since the units can turn off the Makeup Air and close the vent door when the room is unoccupied.
- With the additional pathway/opening for outside air, additional consideration should be used for areas with high exterior noise (traffic, highways, airports, etc.) to not unintentionally bring noise into the room and disturb the guest.
- It is the responsibility of the architects, engineers, contractors, and customers to verify all state and local codes to ensure product meets local code requirements.

NOTE: Makeup Air models should not be used with ducted installations.

ZONELINE Perfect Control

Variable Speed Inverter Technology

The Zoneline Perfect Control units provide cooling from 4,000-15,500 BTU. The variable speed technology allows the compressor to adjust its speed as needed, offering several key advantages:

- **Precise Comfort Control:** Inverter systems continuously adjust output to match the exact heating or cooling needs of a space, maintaining consistent temperatures without the swings caused by fixed speed systems' on-off cycling.
- **Superior Energy Efficiency:** By running at lower speeds when full power isn't needed, variable speed systems use less energy, reducing utility bills compared to fixed speed systems that always run at maximum capacity.
- **Enhanced Performance in Extreme Conditions:** Variable speed systems excel at both high and low outdoor temperatures, operating efficiently down to very low temperatures (e.g., 0°F for heating) or in high heat, while fixed speed systems struggle or require backup heating/cooling.
- **Quieter Operation:** Variable speed systems run at lower speeds most of the time, resulting in quieter performance compared to the frequent, noisy startups of fixed speed units.

Variable speed inverter technology acts like a dimmer switch, finely tuning heating and cooling to optimize comfort, efficiency, and durability; while fixed speed systems are like a light switch – either fully on or off, leading to less precise control and higher energy use.

Heat Pump Down to 0° F

The Zoneline Perfect Control systems' ability to modulate compressor speed, optimize refrigerant flow, and manage defrost cycles enables them to operate the Heat Pump efficiently at much lower outdoor temperatures. This leads to much greater energy savings over standard fixed speed systems running on electric backup heat.

Two-Way Communication

Unlike traditional wall thermostats that use one-way communication to send basic on/off or temperature set-point commands to the unit, the Zoneline Perfect Control Variable Speed unit is capable of two-way communication between the unit and the thermostat. This bidirectional communication enables the thermostat to both send commands and receive real-time data from the unit. By exchanging operational status, room conditions, and diagnostic information, this system provides enhanced control and monitoring capabilities. The continuous data exchange allows for dynamic adjustments to the unit's performance, including compressor speed, fan speed and humidity levels, ensuring optimal operation.

Advanced Control Capabilities

- **Variable-Speed Compressor Control:** The two-way communication enables precise modulation of compressor speed, fan speed and refrigerant flow optimizing performance based on real-time room conditions.
- **Precise Humidity Management:** The system actively monitors and adjusts humidity levels for enhanced comfort and efficiency.
- **Smart Platform Integration:** With the optional SmartHQ Connect module, the unit supports Wi-Fi-based remote control, real-time monitoring, and alerts via the SmartHQ platform, simplifying system management.
- **Proactive Maintenance:** Bidirectional communication provides detailed system status and diagnostic reports, enabling early detection and resolution of potential issues.

Energy Management

- **Occupancy-Based Optimization:** Integrated occupancy sensing allows the unit to adjust settings, such as temperature offsets, to save energy when rooms are unoccupied.
- **Adaptive Control:** Real-time feedback enables the system to fine-tune operations, such as adjusting compressor speeds, to minimize energy consumption while maintaining comfort.
- **Efficient Operation:** By leveraging data-driven adjustments, the unit optimizes energy usage based on room conditions and occupancy patterns.

Improved Comfort

- **Dynamic Environmental Control:** The two-way communication ensures precise regulation of temperature, humidity, and airflow, delivering consistent comfort, particularly in hospitality or senior living environments.
- **Quiet Operation:** Supported by variable-speed technology, the Zoneline Perfect Control unit operates at lower "maintenance" speeds when possible, reducing noise compared to traditional on/off cycling systems.

Works with Y1/Y2 Staged Thermostats

As smart as the Perfect Control Zoneline is, it can still work with a Y1/Y2 standard thermostat. The system leverages its smarts, so it is compatible with standard Y1/Y2 terminals and still provides some of the benefits of the variable speed system by working in "ranges" for Y1 and Y2.

On-Board (Integrated) Wi-Fi SmartHQ™

SmartHQ™ Management is a modern subscription platform designed to transform operations for better property asset management. It offers a range of features that help hospitality operators, property managers, and facility managers to remotely monitor, control, and update products across multiple properties or units.

With the built-in SmartHQ Connect module on both our Fixed Speed and Variable Speed Zoneline products (along with a Wi-Fi connection); property managers and technicians can use SmartHQ Management (and SmartHQ Service) to provide advanced diagnostics and management tools to optimize product performance and reduce downtime.

Here are some key aspects of SmartHQ Management:

- **Remote Monitoring and Control:** Users can remotely monitor and control products, ensuring they are functioning optimally and addressing any issues promptly.
- **Energy Consumption Insights:** SmartHQ Management offers insights into energy consumption, helping users drive sustainability and cost control.
- **Task Management:** The platform streamlines task management for maintenance and service teams, ensuring efficient operations.
- **Batch Command:** Users can remotely batch command units' temperature settings, power on or off, and manage units by building, floor, or individual units.
- **Advanced Diagnostics:** The platform includes advanced diagnostics to eliminate service guesswork with precision diagnostics and even order parts directly at the point of service.
- **API Integration:** SmartHQ Management seamlessly interacts with preferred management systems and creates custom workflows to meet team needs.

Wi-Fi Network Requirements for GE SmartHQ

All Wi-Fi enabled Zoneline products work seamlessly with the SmartHQ™ Management platform to connect and control your products.

To connect GE Appliances to SmartHQ, the hotel's Wi-Fi must adhere to these specifications:

- **Frequency Band:** 2.4 GHz only (5 GHz is not supported).
- **Security Protocol:** WPA or WPA2-PSK (pre-shared key, i.e., a simple passphrase). WPA3, WPA2-Enterprise (common in business networks for user authentication), and open networks are not supported.
- **Authentication:** No captive portals allowed-the network must permit direct connection without redirecting to a login page.
- **Signal Strength:** At least -50 dB at the unit's location for reliable connectivity.
- **Firewall and Ports:** The network must allow outbound traffic on these ports without blocking or proxying.
- **Other:** IPv4 only (no IPv6), no proxy servers, no HTTP redirects, and the ability to maintain a persistent TCP connection 24/7.

These requirements ensure secure, reliable communication between the unit and GE's cloud servers for SmartHQ features. GE Appliances achieve a high IoT security rating (UL Gold level), but the network setup is critical to avoid disruptions.

Smart HQ Service

All GE Appliances Zoneline products are compatible with the SmartHQ Service module. SmartHQ Service is a subscription application which enables smart diagnostics, software updates, service documentation, service training, and more.

- **Diagnostics & Service Mode –** Servicers can plug in and connect to their mobile device to view various diagnostic, including fault codes and various service readings like fan speeds and temperatures, and perform service mode procedures to evaluate and diagnose issues, directly with the product.
- **Model & Serial information –** Connecting with the product gives model and serial information, run time and manufacture date.
- **Service & Product Documentation –** SmartHQ Service app provides service manuals and other documentation helpful to repair.
- **Parts Look up –** Get schematic views with part numbers to quickly identify and select the right parts to keep your units running smoothly.
- **Training resources –** Additional helpful content is available to help.

For more information on these connected options please visit **www.smarthqpro.com**.

Humidity Sentinel

In addition to efficiently maintaining room temperature, the AZV Perfect Control series intelligently monitors room temperature AND humidity. It offers three selectable levels of advanced dehumidification to target a comfortable room humidity of 50% or less relative humidity (RH).

The desired level of dehumidification is selected in the unit's auxiliary control settings. The chart below describes each level of dehumidification and when it will be active.

Energy Efficiency

GE Appliances recognizes the importance of energy efficiency and dehumidification in an air conditioning system. For our single speed compressor models EER (Energy Efficiency Rating) is the required means of reporting the cooling efficiency of the unit.

For variable speed compressor models, SEER2 (Seasonal Energy Efficiency Ratio 2) is used to report the cooling efficiency. SEER2 is an updated standard that provides a more accurate reflection of real-world operating conditions through stricter testing procedures.

The measurement of the efficiency of the heat pump output, when compared to electric resistance heat for a single speed compressor is called the Coefficient of Performance (COP).

This number compares the heat pump output to electric resistance heat (typically the back up heating method) at a single outdoor temperature.

Once again, for variable speed models, we have a different metric: HSPF2 (Heating Seasonal Performance Factor 2) to measure the heating efficiency of air-source heat pumps over an entire heating season's temperatures. It is defined as the ratio of total heat output (in BTUs) to the total electrical energy consumed (in watt-hours), expressed as BTU/Wh.

SETTING AUX B4	DEHUMIDIFICATION CYCLE
Off	Dehumidification happens as part of the normal cooling cycle. No additional dehumidification efforts taken.
Low	When RH is > 50% and unit is running in low speed cooling requests. The unit adjusts EEVs, indoor fan speed and compressor speed to optimize coil temperature for more dehumidification.
Standard	Same as Low cycle but adds 1KW of electric heat when RH is > 70%.
High	Same as Low cycle but adds 1KW of electric heat when RH is > 60%.

NOTE: Use of the Standard or High settings will likely result in increased energy consumption.

Default settings for Humidity Sentinel:

– Non Makeup Air models = Off

– Makeup Air models = Standard

Standard Features

Standard Physical Dimensions

GE Appliances has maintained the same wall sleeve dimensions since 1961 – 42" wide x 16" high x 13-3/4" deep—making replacement of older units easy.

Weather Resistant System Seal

Per AHRI, the air infiltration rate shall not exceed 19.3 CFM at the perimeter of the wall sleeve where it normally projects through the wall.

With superior design and premium materials, a properly installed Zoneline unit in an undistorted sleeve maintains air leakage to a minimum (5 CFM).

Composite Base Pan

The base pan is made of SMC and comes standard on all models. Since the base pan is exposed to the elements and is a water bearing device, this composite (non-metal) base pan eliminates the concern or problem of rusting metal base pans.

Unit Controls

AZE, AZH and AZV Series – touch pad controls with large, white LED readout with auto dimming feature, eliminates the need for the control cover.

Temperature Display

The GE Zoneline AZE, AZH and AZV temperature display can be adjusted to display the temperature settings in either Fahrenheit, or Celsius. The unit is preset from the factory to read in Fahrenheit, but it can be changed to display Celsius via the auxiliary control setting.

Freeze Sentinel

- Detects low room temperature and turns on heater to help protect against damage caused by freezing room temperatures.
- As long as there is power to the unit (even when the unit is in the "OFF" mode) the electric heater turns on if the room temperature drops to 41° F and warms the room up to 46° F and then shuts off.
- Freeze Sentinel may be turned off via the auxiliary control.

Heat Sentinel

The property owner may choose to activate the Heat Sentinel feature on the Zoneline unit. If the Heat Sentinel is activated and room temperature reaches 85°F (even when the unit is in the "OFF" mode), the unit will automatically start the air conditioning operation and will shut off when the room temperature reaches 80°F. This will help dehumidify the air and lower high temperatures so the guests will not be entering an extremely hot room.

Indoor Coil Frost Control

Prevents indoor coil from freezing and causing complaints due to lack of cooling. Frost can form on the indoor coil when the unit is operated in cooling when outdoor temperatures are low. The unit automatically shuts the compressor off (and keeps the indoor fan running) until the indoor coil temperature warms to the point where frosting will no longer occur.

Automatic Emergency Heat

Automatically uses electric resistance heat if the heat pump output is not sufficient to maintain selected room temperature.

Reverse-Cycle Heat Pump Defrost System

- Standard on all Zoneline AZH and AZV Series heat pumps.
- Enables heat pump to operate at lower temperatures when other systems switch to more expensive electric resistance heat.

See page 25 for discussion of heat pump operation and defrost systems.

High-Temperature Heat Pump Operation Protection

- Automatically protects the compressor if heat pump is operated with high outdoor temperatures.
- Power to the outdoor fan is turned off if the indoor coil gets too hot during heat pump operation to prevent damage to the compressor.

DC Fan Motors – Permanently Lubricated

- All units have two fan motors for quiet operation and maximum operating efficiency.
- Motors are permanently lubricated to reduce maintenance and totally enclosed to keep dirt and water out of the motor windings.

The unit automatically selects the most efficient speed for the outdoor fan. The operating sound level is lower when the outdoor fan can operate at a low speed, yet there are situations where it must operate at high speed. The outdoor fan speed changes automatically and is not adjustable.

Indoor Fan Speed Selections – High/Low

Single Speed Units may be operated in HIGH HEAT, LOW HEAT, HIGH COOL or LOW COOL. The unit also provides the option of selecting either HIGH or LOW speed for Fan-Only operation.

Variable speed compressor units still have a low and high fan speed setting, but the speed will vary in a range to match the speed of the compressor.

Fan-Cycle Switch – "SmartFan"

- The Smart Fan feature allows the indoor fan to operate differently depending on whether the unit is in cooling or heating mode, without requiring manual adjustments as seasonal weather changes occur. The Zoneline "Smart Fan" comes preset from the factory so the indoor fan runs continuously in cooling operation and in the cycle mode for heating, to provide better guest comfort.

Smart Fan provides:

- Air circulation in summer which helps in cooling and also eliminates the cold-air draft during the heating season.
- Eliminates the need for changing fan-cycle switch seasonally.
- "SmartFan" settings are programmed or changed via the auxiliary control settings.

Compressor Random Restart

In the event of a power failure, all compressors attempting to restart immediately when power is restored can result in a power surge that can cause another power interruption.

The microprocessors in the Zoneline units have a random restart logic system that prevents all units from starting at the same time.

Compressor Restart Delay

Zoneline units are designed to provide a minimum of three minutes of compressor-off time to allow refrigerant pressures to equalize before restarting to prevent compressor damage.

Zoneline units are also designed to provide a minimum of three minutes of compressor-run time to prevent room occupant disturbance due to short-cycling of the air conditioner.

Transfer Fan Interface

A 24 VAC connector is available (RAKCDC) to operate a relay to control a fan mounted in a wall to move conditioned air into another space. The electrical power for the operation of the transfer fan itself is not provided by the Zoneline unit. Transfer fans and their controlling relays, power and wiring are field supplied.

To enable this feature, a new service main board and a RAKCDC accessory kit are required.

See page 61 for more information.

Go to https://www.ordergeappliancesparts.com to look up the proper part number for your specific model number.

Electronic Temperature Limiting

Eight independent programmable heating temperature limits and eight independent programmable cooling temperature limits

Central Desk Control Capability

See page 16.

HEATING TEMPERATURE LIMITS							HIGHEST HEAT
65	70	72	74	76	78	80	85

LOWEST COOL	COOLING TEMPERATURE LIMITS						
60	64	66	68	70	72	74	76

Limits can be adjusted via the auxiliary control settings. To help you with energy conservation, GE Zoneline units are shipped with truncated temperature limiting preset to 66° minimum cooling and 78° maximum heating.

Reversible Indoor Air Louvers

- Allows air to be directed into room at 45° or 65° angle (from horizontal) to provide better air distribution. Indoor air louver is shipped in the 45° position.
- Angle is changed by removing room front and screws holding louver in place on the chassis and rotating the louver section 180° and reinstalling.

Up-Front Air Filters

Two interchangeable up-front filters, easy to remove and reinstall, may be cleaned without opening or removing the room front. Clean filters by brushing, vacuuming or back-flushing under a faucet. Dry the filter prior to reinstalling.

Corrosion Protection

Corrosion protection is standard on most Zoneline units. This special protection withstands damage from salt air and salt water in seacoast or other corrosive areas.

> Makeup Air module units and heat pump units with ICR are not available with corrosion protection and should not be installed in seacoast or other corrosive environments.

Units installed in corrosive areas should use the RAB42PG wall sleeve and be examined/cleaned more frequently than normal installations.

Internal Condensate Removal (ICR)

See pages 25 and 41 for more information on the Internal Condensate Removal (ICR) for the AZH and AZV Series heat pumps

Concealed Manual Vent Control

A ventilation door on GE Appliances Zoneline® packaged terminal air conditioners and heat pumps allows outside air to enter the room through a screen-covered opening in the weather barrier that separates the indoor and outdoor sections of the unit.

A concealed lever, located along the left side of the unit under the front cover, is used to open and close the vent door.

NOTE: Two shipping screws must be removed from the vent door before use.

The manual vent door offers continuous adjustability with the slide rod and wing nut to meet diverse application needs. Simply tighten the wing nut at the desired opening level. Positive vent door closure and tightening of the wing nut prevents accidental opening and unwanted air infiltration.

Outside ambient air entering the room through this screened vent opening is not conditioned. This unconditioned air becomes mixed with the conditioned air that is circulated by the indoor fan. This air mixture generates an additional heat load/heat loss that causes the unit to run longer and may translate into higher operating costs.

For each CFM of air to enter the room, an equal amount of air must be removed through exhaust fans in the bathroom or rooftops. Greater amounts of air will be introduced (from the chart shown above) depending on the size of the exhaust fan.

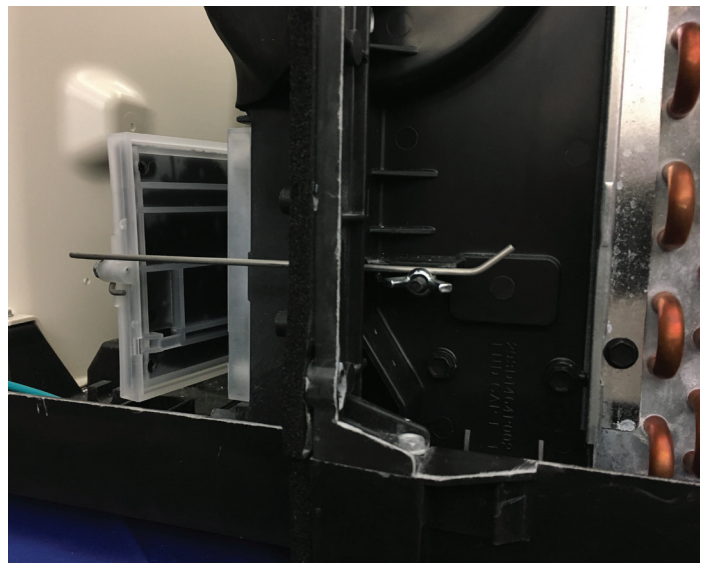
Zoneline vent openings are not intended to be the source of Makeup Air for building ventilation systems since the vent is not continuously conditioned or powered by separate fans.

See page 9 for more information on Makeup Air.

VENT CFM*-HIGH FAN		
BTU SIZE	AZE SERIES	AZH SERIES
7,000	32 CFM	32 CFM
9,000	34 CFM	36 CFM
12,000	36 CFM	39 CFM
15,000	39 CFM	42 CFM

*CFM using additional RAKVENT1 kit

NOTE: RAKVENT1 kit may not be used on ICR units



Central Desk Control (CDC)

Zoneline units are compatible with simple on/off two-wire Central Desk Control (CDC) systems. The unit utilizes a 3-pin port to interface with such a system. This requires the separate purchase of the RAKCDC connector accessory. The most common installation of this type of system is a switch mounted at the registration desk; and, upon guest check-in, the switch is activated to allow the air conditioner to operate. Likewise, when the guest checks out, the device is switched to the "OFF" setting so the unit will not operate when the room is not rented.

In some resort areas, this feature is usually used with a normally open switch connected to sliding glass doors, where opening the doors causes a contact to close, turning the air conditioner off. This prevents the unit from running and wasting energy with the sliding glass door open.

Important CDC Notes:

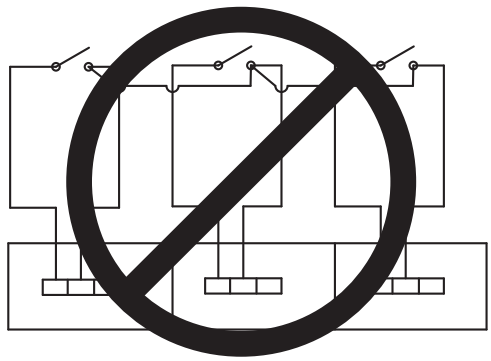
1. The unit requires the use of a normally open switch. Closing the circuit shuts off the system.
2. Both wires comprising the circuit must connect to the CDC terminals on the unit and to the controlling switch. Do not use a common bus (at the unit or at the switch panel) in the wiring.
3. A 24-volt transformer is contained within the Zoneline Unit. No external voltage may be applied to the unit through the CDC terminals.
4. Minimum wire size for CDC wiring:

WIRE SIZE # AWG	MAXIMUM ALLOWABLE LENGTH
#22	600 Ft.
#20	900 Ft.
#18	1,500 Ft.
#16	2,000 Ft.

5. Freeze Sentinel and Heat Sentinel still remain operational when the unit is connected to a CDC system.

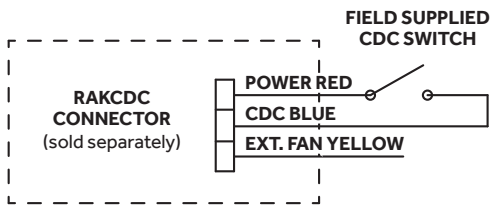
CDC Typical Wiring

RAKCDC
EXAMPLE OF COMMON BUSING
NOT PERMITTED



INCORRECT COMMON BUSING

NORMALLY OPEN SWITCH =
UNIT OPERATIONAL



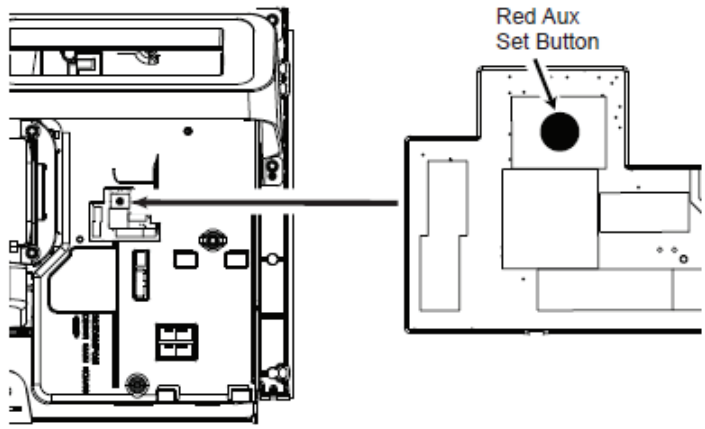
TYPICAL WIRING
(Wiring from RAKCDC connector to field devices is field supplied)

Auxiliary Controls – Aux Set Button

The auxiliary control push button is located behind the room front, below the control panel. The auxiliary controls come preset to the modes most desired by customers. However, the owner is responsible for ensuring the auxiliary controls are set to the desired function. There are up to 15 different modes that can be set using the auxiliary set button.

To Change Modes:

- Press the POWER button to turn off the unit (or turn off the remote thermostat).
- Press the AUX SET button ("A1" appears on the display).
- Press the "+" or "-" buttons to increment through the AUX settings (A1, A2, etc).
- Press the FAN SPEED button to enter the selected AUX Setting. Then press "+" or "-" to change the setting. Note: Some settings will also use the MODE SELECT button for additional selections.
- Press the FAN SPEED button to exit the current Aux Setting and return to the Aux Menu list. Note: Settings are saved/applied when the FAN SPEED button is pressed.
- Press the red AUX button or POWER button to save and exit the set-up process and return to normal operations.



Wifi | [+ & –] Press: Check Status | Hold 3 sec: Commission - - (No signal), OF (No module), Cn (Connecting), Co (Connected).
AUX Menu | [AUX] Enter-Exit, **[Fan]** Select **Setting Menu | [Mode]** Adjust mode. **[Fan]** Apply, return to AUX menu. **[AUX]** Apply and exit **[+ / –] Navigate | OF = Off, On = On** * Settings not available on all models.
A1 – Smart Fan | CY (Cyclic), Co (Continuous). **[Mode]:** Cool or Heat.
A2 – Fahrenheit-Celsius | F (Fahrenheit), C (Celsius).
A3 – Freeze-Heat Sentinel | OF, On. **[Mode]:** Cool (Freeze Sentinel), Heat (Heat Sentinel).
A4 – Constant Fan | OF, On (Fan always allowed).
A5 – Temperature Limit | Set Limit (F/C). **[Mode]:** Cool (66-85F / 19-29C) , Heat (60-78F / 15-25C).
A6 – Wall Thermostat | OF (Local / 2-Way), On (24v Thermostat).

A7 – Fan Boost | OF, On.
A8* – Heat Mode | EH (E-Heat Only), Hd (High Demand), HY (Hybrid), Bo (Boost HP), HP (HP Only).
A9* – E-Heat Lockout | OF, On (E-Heat Lockout; **NO E-HEAT**).
B1* – MUAM Fan Speed | 0-Max CFM.
B2* – MUAM Filter | no (No Filter), 13 (MERV 13 Filter).
B3* – MUAM Occupancy Control | OF (Constant MUA), On (MUAM Occupancy control).
B4* – Humidity Sentinel | OF, Lo (50%RH Target), Sd (Boost at 70%RH), HI (Boost at 60%RH).
B5* – UVC | OF, On (UVC on with fan).
C1 – 24V Control Signal | OF, Cd (CDC), Oc (Occupancy).

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The above AUX menu is located on the inside of the room cover for reference while changing settings.

Auxiliary Control Settings
AUX A1 – Smart Fan – Cooling/Heating

Used to program the desired fan settings when in cooling or heating mode. They can be set to run in either continuous or cyclical mode.

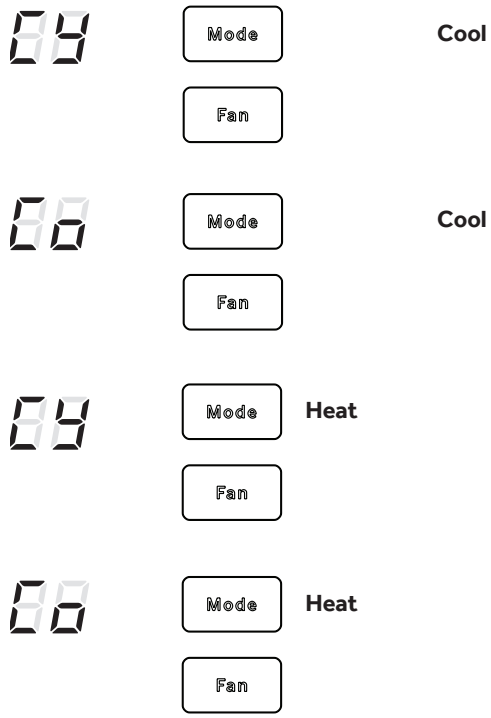
The default setting for AUX A1 is as follows:
Cooling: Continuous (Co)
Heating: Cycle (CY)

Use + or – to navigate to the A1 setting. Enter the sub menu by pressing the FAN SPEED button.
The COOL LED will be illuminated.
Press the + or – button to change between Continuous or Cyclic.

Press the MODE SELECT to adjust the heating fan selection (HEAT LED will be illuminated) and adjust with the + or –

Press the FAN SPEED button to save and exit.

NOTE: In cyclic Mode, the indoor fan will activate occasionally to verify air temperature in the room (not applicable for 2-way connected thermostat operation). If using a remote 24V thermostat, the thermostat controls the fan and therefore these settings do not apply.



AUX A2 Fahrenheit/Celsius

This feature switches the temperature in the display between Fahrenheit and Celsius.

The default setting for AUX A2 is Fahrenheit.

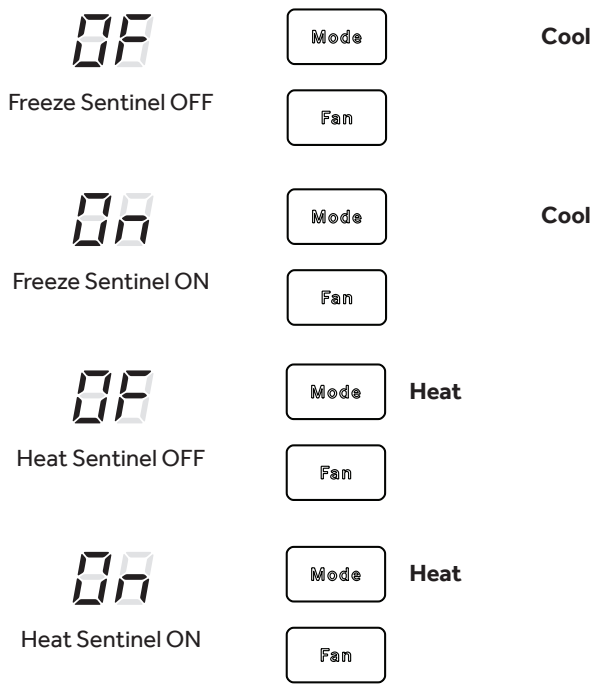
AUX A3 Freeze Sentinel/Heat Sentinel

The default settings for AUX A3 are:
Heat Sentinel is OFF.
Freeze Sentinel is ON.

When Freeze Sentinel is activated, it automatically provides heat without user action. This helps to prevent plumbing damage by turning the heater and indoor fan ON at 41°F and OFF at 46°F.

When Heat Sentinel is activated, it automatically provides cooling without user interface. This helps to prevent an excessively hot room by turning the air conditioner ON at 85°F and OFF at 80°F.

NOTE: These functions are active whenever the unit is plugged in, even if the unit is in the OFF mode.



AUX A4 Constant Fan

The default setting for AUX A4 is OFF

NOTE: Constant Fan "ON" runs the indoor fan continuously at high speed-even if the unit is turned off.

Constant Fan OFF

Constant Fan ON

AUX A5 Temperature Limiting

The default setting for Mode 5 is as follows:

Cool: 66°F to 85°F (19 to 29 C)

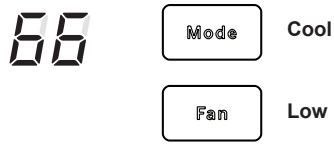
Heat: 60°F to 78°F (15 to 25 C)

Temperature limits-Cool

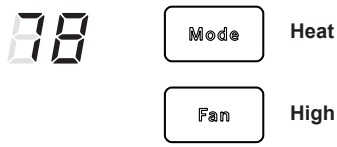
0 = 60°F to 85°F
1 = 64°F to 85°F
2 = 66°F to 85°F
3 = 68°F to 85°F
4 = 70°F to 85°F
5 = 72°F to 85°F
6 = 74°F to 85°F
7 = 76°F to 85°F

Temperature limits-Heat

0 = 60°F to 65°F
1 = 60°F to 70°F
2 = 60°F to 72°F
3 = 60°F to 74°F
4 = 60°F to 76°F
5 = 60°F to 78°F
6 = 60°F to 80°F
7 = 60°F to 85°F



Temperature Limiting Cool



Temperature Limiting Heat

AUX A6 Use Wall Thermostat

Setting this mode to ON will allow the unit to operate with a Class 2 Remote Control Wall Thermostat.

The default setting for AUX A6 is OFF.

When a 2-Way thermostat is connected, the unit will automatically set A6 to "OF" to allow 2-way thermostat control.

Class 2 OFF -Local/2-Way Control

Class 2 ON (Standard 24v Remote Thermostat Control

AUX A7 Fan Boost Setting

This setting is used to increase airflow from the unit to ensure proper circulation with ducted applications.

The default setting for AUX A7 is OFF.

Fan Boost OFF

Fan Boost ON

AUX A8 Heat Mode Selector (AZH and AZV only)

This setting is used to limit which modes of heating in which the unit can operate.

The default setting for AUX A8 is Hybrid "HY"

EH: Electric heat only (unless faulted)

Hd: High Demand-AZH will use Boost Heat Pump (heat pump + 1KW electric heat) and AZV will use an increased compressor speed

HY: Hybrid – Unit can provide heat through all available modes

Bo: Boost Heat Pump – Unit will use Boost Heat Pump (heat pump + 1KW electric heat) or normal Heat Pump.

HP: Heat Pump Only

E Heat Only | High Demand | Hybrid | Boost HP | HP Only

NOTE: If unit cannot run HP (for whatever reason) unit will switch to electric heat.

Exception to this is if AUX A9 is turned on.

AUX A9 Heat Fault Override (AZH and AZV only)

This setting is used to further limit which modes of heating in which the unit can operate – depending on which AUX setting is used in AUX A8.

The default setting for AUX A9 is OFF

AUX A9 will only be visible if Boost Heat Pump "Bo" or Heat Pump Only "HP" are selected in AUX A8.

ON enables strict heat operation control.

OFF enables the unit to override AUX A8 selection if heat pump operation is not available (due to software or temperature operational limits)

Heat Fault Override OFF

Heat Fault Override ON

AUX b1 Digital Makeup Air Module Fan Speed (available only on Makeup Air models)

The default setting for AUX b1 is 35 CFM

The Makeup Air ventilation system is designed to provide continuous outdoor air through the vent door and into the room. Options are between 30 and 50 CFM in increments of 5.

NOTE: Shutting off the fan also closes the Makeup Air duct door.

35 CFM

MUA Off

AUX b2 Makeup Air filter settings (available only on Makeup Air models)

The default setting for AUX b2 is no filter.

Internal adjustment of fan speed when a filter is installed to ensure CFM chosen in AUX b1 is maintained.

No: No Makeup Air filter installed

13: MERV13 filter installed

No Filter

MERV 13 Filter

AUX b3 Digital Makeup Air Occupancy (available only on Makeup Air models)

The default setting for AUX b3 is OFF

On: MUA is controlled via 2-way thermostat occupancy sensor or 24V auxiliary Input if C1 is configured to "Oc"

Off: "OF" Makeup Air runs continuously

Occupancy Off

Occupancy On

AUX b4 Humidity Sentinel

The default setting for AUX b4 is OFF

Off "**OF**": No additional dehumidification control

Low "**Lo**": When RH is >50% the system adjusts parameters and speeds to optimize coil temperature for more dehumidification.

Standard "**Sd**": Same as Low cycle but adds 1 KW of electric heat when RH is > 70%.

High "**HI**": Same as Low cycle but adds 1 KW of electric heat when RH is > 60%.

Off Low Standard High

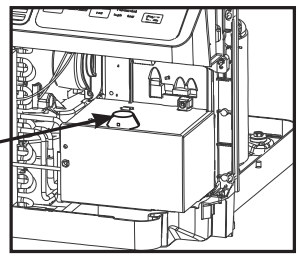
AUX b5 UVC Control (only available on UVC models)

The default setting for AUX b5 is OFF

On: UVC module operates when unit fan is running.

Off "OF": UVC module does not operate.

Indicator LED on top of junction box will illuminate when UVC is active



UVC Off UVC On

AUX C1 24V Auxiliary Input Configuration Option

An auxiliary 24V input is provided to allow integration with some external devices such as door switches, occupancy sensors or control from a remote location. Operation of this feature requires that an ON-OFF switch at a remote location be wired to the appropriate line of the RAKCDC Accessory.

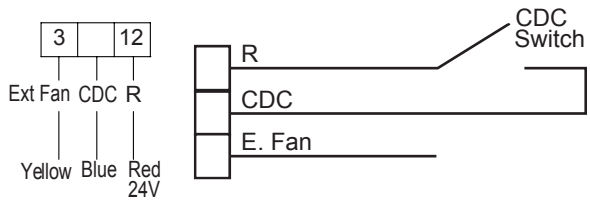
Central Desk Control Occupancy Mode

Central Desk Control "Cd" (Balcony Door Shutoff)

- If contacts are closed unit shuts down and ignores input from external thermostat or unit control panel. Indoor fan runs and sentinel modes still operate.
- If contacts are open, the unit will run normally.

Occupancy Control "Oc"

- If contacts are closed (and a 2-way thermostat is not connected) the unit will go into an unoccupied state. Therefore, Makeup Air Operation will be disabled.
- If contacts are open, the unit will go into an occupied state and makeup air will resume.



Remote Thermostat Control

In many installations, a remote wall-mounted thermostat is required, while in others, it enhances functionality. For example, when a unit is installed high on a wall or above a doorway, its onboard controls may be difficult to access. In such cases, the unit can be connected to a wall-mounted thermostat via low-voltage wiring or, depending on the thermostat model, wirelessly. A remote thermostat not only monitors temperature but also improves room aesthetics and user experience. Additionally, it can incorporate occupancy detection to optimize energy efficiency for heating, cooling, and lighting.

All Zoneline® AZE, AZH and AZV Series units are adaptable to Class 2 remote low-voltage thermostats. The only additional field-supplied components are the remote thermostat and wiring necessary to connect it.

The controls on the unit are not functional when the remote-control function is used.

Control Panel

USE WALL THERMOSTAT – will illuminate whenever any button on the unit controls is pressed if the unit is set up to be controlled by a remote wall thermostat. The LED will dim down after a few seconds and then turn off after a few minutes as to not disturb the guest in a dark room.

Resistance Heat Models

The Zoneline AZE series may be connected to a single-stage thermostat designed for use with cooling with electric heat systems. GE Appliances offers six thermostats compatible with the AZE Series unit.

The remote thermostat-Class 2 option (AuxA6 in the auxiliary control setting) must be turned ON to enable remote thermostat control. Refer to installation instructions packaged with the chassis.

NOTE: The 2-way thermostat works with Aux A6 in the OFF mode.

Please see page 23 for installation recommendations for the remote thermostat wiring. Compatibility of other thermostats considered for use with GE Appliances Zoneline units is the responsibility of the customer.

The control voltage on the remote-control conductors is 24-volts AC. The AC voltage may not be compatible with some older solid-state thermostats.

If using a single speed remote thermostat, the fan speed for the AZE Series in remote thermostat operation is selected by the connection of the fan wire from the thermostat to either the HIGH or LOW wire on the remote thermostat connector. See the sketch of the 8 pin connector on the next page for the color of the HIGH and LOW fan-speed wires. Operating the unit in low fan speed reduces the operating sound level of the unit and increases dehumidification of the room.

Freeze Sentinel and Heat Sentinel remain operational if the unit is connected to a remote thermostat. The unit may be connected to a Central Desk Control (CDC) system and controlled with a remote thermostat when the CDC system has the unit in operation.

Unit temperature-limiting settings are not functional when connected to a remote thermostat.

Heat Pump Models (fixed speed)

The Zoneline AZH Series heat pump units may be connected to a single-stage cooling/two-stage heating thermostat designed for use with heat pump systems. GE Appliances offers six thermostats compatible with the AZH Series units:

Compatibility of other thermostats considered for use with the GE Appliances Zoneline unit is the responsibility of the customer.

The control voltage on the remote-control conductors is 24 VAC.

The Class 2 remote thermostat option (Aux A6 in the auxiliary control setting) must be turned ON to enable remote thermostat control. Refer to installation instructions packaged with the chassis.

NOTE: The 2-way thermostat works with Aux A6 in the OFF mode.

If using a 1-fan speed remote thermostat, the fan speed for the AZH Series in remote thermostat operation is selected by the connection of the fan wire from the thermostat to either the HIGH or LOW wire on the remote thermostat connector. See the sketch of the 8 pin connector on the next page for the color of the HIGH and LOW fan speed wires. Operating the unit at a low fan speed reduces the operating sound level of the unit.

When connected to a remote thermostat, indoor air-temperature sensing is shifted from the unit to the remote thermostat. For this reason, the units will operate slightly differently when connected to a remote thermostat.

NOTE: The low voltage transformer which powers the remote thermostat (and other controls) is "self-recovering" from potential wiring shorts. Should you lose low voltage control power (to the thermostat and the display panel on the unit), remove power to the unit, check the thermostat wiring for shorts, correct the issue and reapply power to the unit.

NOTE: With the AZE, AZH and AZV Series, thermostat twinning (where more than one unit may be connected to a single remote thermostat) is allowed.

To accomplish this, ONLY ONE POWER SOURCE (24VAC – R TERMINAL WIRE) CAN BE CONNECTED TO THE THERMOSTAT. All other thermostat wires of the additional unit should be connected as directed.

Perfect Control Heat Pump Models

Zoneline AZV (variable speed units) are best controlled by a wall-mounted thermostat.

The unit is capable of operating in a two-way communication mode (available with the RAK190V thermostat). Two-way communication will enable even greater precision in temperature and humidity control by providing the AZV unit with exact temperature and relative humidity readings from the thermostat. For two-way communication, low voltage connections are made using the 5-pin connector included with each unit. The harnesses allow for a single point thermostat connection to simplify chassis removal and reinstallation. See diagrams for terminal designations.

AZV units are capable of operating with a standard 24VAC thermostat with a Y1 and Y2 terminal along with the aux-heat terminal. For a standard thermostat connection, low voltage wiring connections are made to the 8-pin harness included with each unit.

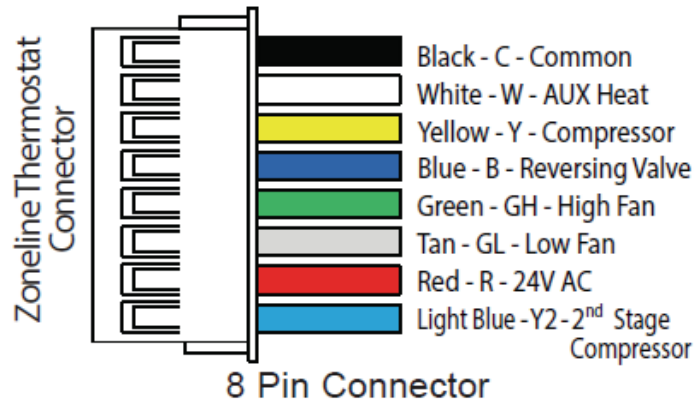
If a non-GE Appliances thermostat is used, the compatibility of the thermostat with the unit is the responsibility of the installer. The unit has an integral transformer, and no external voltage or transformer may be used.

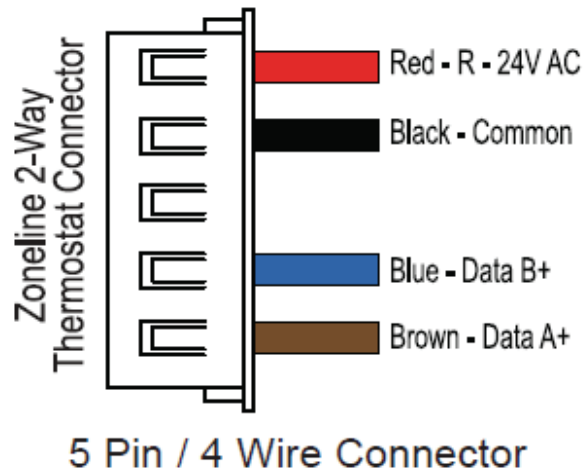
Maximum wiring length and wire size: AWG 18 up to 66 feet-AWG 20 up to 66 feet.

NOTE: The low voltage transformer which powers the remote thermostat (and other controls) is "self-recovering" from potential wiring shorts. Should you lose low voltage control power (to the thermostat and the display panel on the unit), remove power to the unit, check the thermostat wiring for shorts, correct the issue and reapply power to the unit.

NOTE: With the AZE, AZH and AZV Series, thermostat twinning (where more than one unit may be connected to a single remote thermostat) is allowed.

To accomplish this, ONLY ONE POWER SOURCE (24VAC – R TERMINAL WIRE) CAN BE CONNECTED TO THE THERMOSTAT. All other thermostat wires of the additional unit should be connected as directed.





ACTIVE UNIT FEATURES when using a REMOTE THERMOSTAT

Feature	Perfect Control Heat Pump	Single Speed Heat Pump	Electric Heat
Indoor Frost Control	Yes	Yes	Yes
Freeze Sentinel	Yes	Yes	Yes
Heat Sentinel	Yes	Yes	Yes
Humidity Sentinel	Yes	N/A	N/A
Constant Fan	Yes	Yes	Yes
Electronic Temperature Limiting	Determined by Remote Thermostat		
Switch to Resistance heat based on indoor temperature	Determined by Remote Thermostat		N/A
Switch to Resistance heat based on outdoor temperature	Yes	Yes	N/A
Reverse Cycle Defrost	Yes	Yes	N/A
Boost Heat	Yes	Yes	N/A
"Smart Fan"	Fan ON/AUTO set on Remote Thermostat		

ACTIVE UNIT FEATURES when using 2-Way REMOTE THERMOSTAT

Feature	Perfect Control Heat Pump	Single Speed Heat Pump	Electric Heat
Indoor Frost Control	Yes	Yes	Yes
Freeze Sentinel	Yes	Yes	Yes
Heat Sentinel	Yes	Yes	Yes
Humidity Sentinel	Yes	N/A	N/A
Constant Fan	Yes	Yes	Yes
Electronic Temperature Limiting	Yes	Yes	Yes
Switch to Resistance heat based on indoor temperature	Yes	Yes	N/A
Switch to Resistance heat based on outdoor temperature	Yes	Yes	N/A
Reverse Cycle Defrost	Yes	Yes	N/A
Boost Heat	Yes	Yes	N/A
"Smart Fan"	Yes	Yes	Yes

Remote Thermostat Selection

GE Appliances offers a variety of thermostats to cover most all applications in the field.

Picking the correct thermostat is important for proper operation.

Please review the chart below to assist you in purchasing the best remote thermostat for your situation.

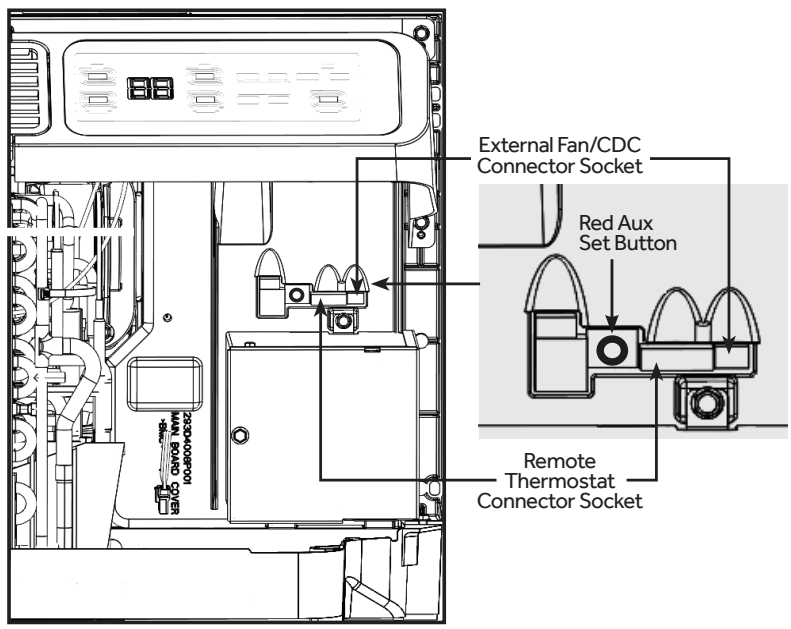
Zoneline Series	Thermostat Model	Type	Function	Low-Voltage conductors
AZV	RAK190V	2-Way Communication	Variable Speed Control	4
	RAK150VF2	Two Fan Speeds	Two Stage Cool/Heat	8
AZH	RAK190V	1-Way Communication	Single Stage Cooling and Two Stage Heating	4
	RAK180W1	Energy Management/ Wireless		2-wire/wireless
	RAK160W2	Wireless		2-wire/wireless
	RAK150VF2	Two Compressor and Fan Speeds		7
	RAk149P2A	Programmable-One speed fan		6
	RAK149F2A	Two Fan Speeds		7
AZE	RAK190V	1-Way Communication	Single Stage Cooling and Heating	4
	RAK180W1	Energy Management/ Wireless		2-wire/wireless
	RAK160W2	Wireless		2-wire/wireless
	RAK150VF2	Two Compressor and Fan Speeds		6
	RAk149P2A	Programmable-One fan speed		5
	RAK149F2A	Two Fan Speeds		6

For Remote Thermostat Operation Follow the Steps Below*:

1. Turn on the unit and ensure it is working properly BEFORE proceeding.
2. Unplug the unit or disconnect power and remove the room cover.
3. Connect the thermostat wiring per the appropriate diagram/colors for your model.
4. Plug the unit back in or reconnect power.
5. With the unit in the "off" mode, press the Aux Set button once. A1 will appear in the display.
6. Press the + until "A6" appears in the display and press the FAN SPEED button to enter the menu.
7. Press the + button once so "On" appears in the display.
8. Press the FAN SPEED button to save and go back to Aux Settings or press the Aux Set button to save the settings and exit the setup function.
9. Replace the room cover.

*Thermostat wiring connector is shipped with each unit – located in base pan area below control box. Thermostat wire size up to 60 ft AWG 20, up to 66 ft AWG 18.

See pages 17-21 for full instructions on using the Auxiliary Controls Feature.



Heat pumps save energy and cost less to operate than units with electric resistance heaters as the only heat source. Just as the EER/SEER2 are an indication of the efficiency of an air conditioner, COP/HSPF2 are indications of the efficiency of a heat pump. This relative efficiency of a heat pump compares the unit to electric resistance heat. If a unit has a COP/HSPF2 of 3.0, it means the unit will produce three times as much heat at rating conditions for the same electrical input wattage used for electric resistance heat.

GE Zoneline heat pumps are designed to provide cost-efficient heat pump operation while monitoring room conditions to maintain comfort.

The Zoneline AZH and AZV series employs extensive software and logic that monitors and reacts to both outdoor and indoor temperatures to determine the heat source. This increases energy savings by operating longer in the heat pump mode.

Just as in air conditioning operation, the compressor is used in heat pump operation. The difference is that in heat pump operation, the hot refrigerant gas is directed to the indoor coil rather than to the outdoor coil. With the indoor fan, room air circulates over the indoor coil, gains heat from the coil and distributes it into the room.

At some point as the outdoor temperature falls, the heat pump cannot extract as much heat from the outdoor air to maintain the temperature of the room. For this reason, all packaged terminal heat pumps also have electric resistance heaters as backup to heat pump operation.

The point where Packaged Terminal Heat Pumps cease heat pump operation and change to the more expensive resistance heat (to maintain room temperature) is called the "switchover point." It is important to compare the switchover point of the various manufacturers since it may occur at higher outdoor temperatures with other brands where savings from the GE Zoneline heat pump operation could still be realized.

Zoneline AZH and AZV series heat pump units, with their extensive software and features, react to the indoor and outdoor temperatures to determine the best heat source to provide comfortable room conditions for the guest AND energy.

Balance Point

An important consideration in the selection of a heat pump unit is the "balance point" of the installation – the point at which the heat pump is unable to produce enough heat to compensate for the heat loss of the room or area being heated.

Virtually every room is unique – with different insulation, different sizes and types of windows, different types of construction and different directional exposures. All these variables, as well as geographical location, must be considered in order to determine the balance point. For these reasons, a professional engineer should be engaged to calculate the heat loss of the space and specify the heat pump unit required.

Heat Pump Operation – ZONELINE AZH and AZV Series

Zoneline heat pumps employ a highly featured control system interfaced with computer chips and sensors to accurately measure indoor air temperature, outdoor air temperature, indoor coil temperature and outdoor coil temperature. This system allows the unit to precisely and predictably react to changing conditions in order to provide an advanced packaged terminal heat pump operating system.

ZONELINE Heat Pump Heat Source Logic

The charts on the following page detail the standard heating source logic of the Zoneline AZH Series and AZV Series under various indoor and outdoor conditions (no remote thermostat connected).

The full heat output of the resistance heater is dependent upon circuit amperage and the power connection kit used. See pages v, w–x and z for information on power connection kits and available heater capacities.

An option is provided in the auxiliary controls (AUX A8) to allow the unit to operate only in resistance heat. The use of this option significantly increases the cost of heating.

Boost Heat

The Zoneline AZH and AZV series offers a Boost Heat feature that utilizes partial (1KW) supplemental resistance heat at the same time as the heat pump operation. The boost heat feature changes stage one heating (heat pump) to be heat pump with partial resistance heat. Stage two heating stays as full resistance heat. This applies to both unit control and remote thermostat control.

NOTE: Heat Pump and full resistance heat shall never be on at the same time.

Heat Pump Defrost

Zoneline heat pumps utilize a reverse-cycle, demand-defrost system to extend heat pump operation and increase savings from extended operation. The microprocessor determines the need for defrosting from criteria based on continuous compressor run time, outdoor air temperature and outdoor coil temperature. When defrosting is required, the unit reverses the flow of refrigerant to direct the hot gas into the outdoor coil to melt the frost buildup.

Before and after the reverse-cycle defrost, the unit shuts off the compressor to allow the refrigerant pressures to equalize throughout the system. During these periods of pressure equalization, the full resistance heat capacity of the unit is activated to help ensure room comfort conditions during the defrost cycle. The unit remains in the defrost cycle for a minimum of three minutes and up to a maximum of nine minutes. The defrost cycle terminates when the outdoor coil reaches a temperature of 68°F or the maximum time has been reached.

Heat Pump Condensate

Zoneline AZH and AZV Series heat pumps may be ordered with a factory-installed Internal Condensate Removal (ICR) system to minimize the amount of condensate water draining from the unit during heat pump operation. The ICR system has proven to be an effective means of minimizing the amount of heat pump condensate dripping from the unit during the heating season. However, if the requirements of a particular installation will allow no dripping of condensate water from the wall sleeve, the installation of an internal or external drain system is recommended. **See pages 41-43 for more information on heat pump condensate.**

Units with an ICR system may not be installed in seacoast or other corrosive environments.

Heat Pump Heat Source Logic - For Aux A8 Modes (Aux A9 Off)

Fixed Speed AZH Models Hybrid Mode (default)		
	Outdoor Temperature	
Room Temp vs. Set Point	**> ~35° F**	**< 25° F**
1.8 to 2.9°F Below	Heat Pump	Full Electric Resistance Heat
2.9 to 4.0°F Below	Heat Pump + 1KW Elec Heat	Full Electric Resistance Heat
More than 4°F Below	Full Electric Resistance Heat	Full Electric Resistance Heat

Variable Speed AZV Models Hybrid Mode (default)		
	Outdoor Temperature	
Room Temp vs. Set Point	**> ~3° F**	**< 0° F***
1.8 to 2.9° F Below	Y1 Heat Pump	Full Electric Resistance Heat
2.9 to 4.0° F Below	Y2 Heat Pump	Full Electric Resistance Heat
4.0 to 5.0° F Below	Y2 Heat Pump + 1KW Elec Heat	Full Electric Resistance Heat
More than 5° F Below	Full Electric Resistance Heat	Full Electric Resistance Heat

*265V vertical ICR units only go down to 25° F before switching over to resistance heat

NOTE: Heat Stage bands are slightly different when using two-way communication thermostat

Application Comments

It is important that any air conditioning system be properly sized and applied in order to achieve the desired temperature and humidity levels in the space to be conditioned. Zoneline units are designed primarily to provide heating and cooling with the additional benefit that during operation in the cooling mode, the units also remove moisture from the conditioned space. The following are some brief application comments on undersizing, oversizing, heating, wall coverings, and air infiltration: all are important in the proper matching of the heating/air conditioning system to the building structure.

Undersizing

Cooling: If an air conditioner is undersized (cooling capacity is less than required for a specific application), the unit will typically not be able to cool the space down to the desired temperature (thermostat set point), nor be able to remove enough moisture from the air. The result could be a warm and humid or warm and dry conditioned space.

Heating: Undersizing can result in not being able to maintain the desired temperature level within the conditioned space.

Oversizing

Cooling: If an air conditioner is oversized (cooling capacity is greater than required for the specific application), the unit will typically cool the space down to the desired temperature (thermostat set point) too quickly. Since dehumidification for single/fixed speed units only takes place when the compressor is operating in the cooling mode, typical result in a hot/humid climate could be a cool but excessively humid space.

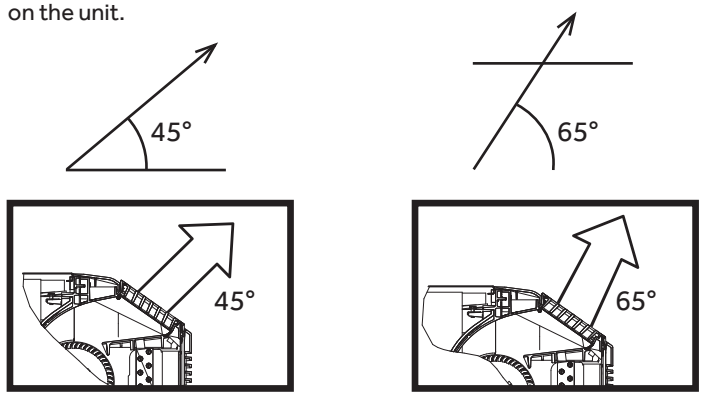
Wall Covering: Use of non-permeable wall coverings (some paints, some wallpapers, and other types of coverings) which severely restricts passage of air or water vapor and can cause a severe moisture problem. Typical results could be staining of room surfaces, wall damage, as well as mold and mildew growth in hot/humid climates.

Air Infiltration: Excessive air infiltration can magnify problems associated with undersizing or oversizing of an air conditioner unit and can be the root cause of insufficient cooling, dehumidification or heating problems. Some sources of air infiltration include vents, gaps around windows and doors, and improperly sealed wall sleeve, floor, ceiling and wall joints.

Recommendation: For the above reasons it is strongly recommended that a professional engineer be retained to calculate the size of the Zoneline unit with the building design.

Air Distribution

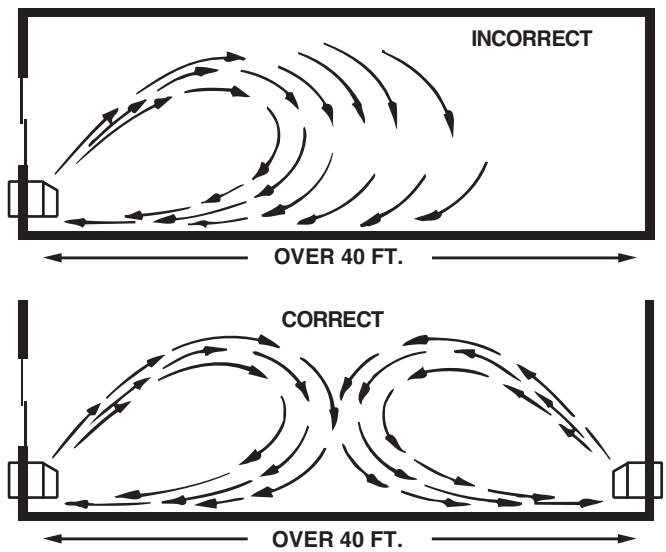
Zoneline packaged terminal air conditioners and heat pumps discharge air from the top of the unit through reversible two-position discharge louvers. Unit discharge louvers are reversed by removing the cover from the unit, removing four screws that hold the louver section in place; removing the louver section and rotating it 180 degrees end for end, reinstalling the louver section with the four screws, and reinstalling the room cover on the unit.



High Wall Mount: For units mounted high in the wall, the discharge louvers should be at a setting that provides the most horizontal air discharge. Recommended installation is at least 3" below the ceiling.

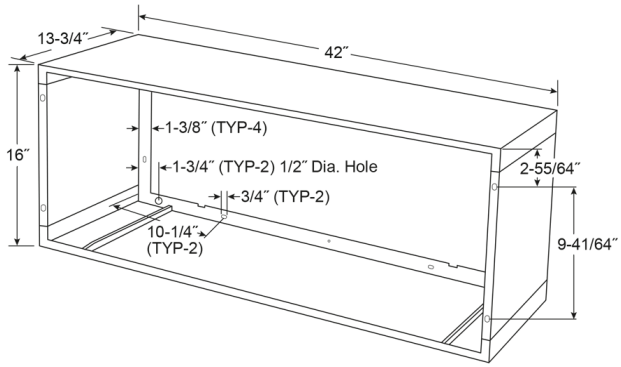
In installations where units are close to the ceiling, the greatest horizontal discharge angle can be obtained by removing the discharge grille from the room cabinet. For best room control, a remote wall thermostat is recommended.

Supply Air Throw: One Zoneline unit should not be required to do a job obviously requiring two or more units. Units should be located around large rooms according to calculated loads or in such fashion as to achieve balanced air distribution in all parts of the room. The single unit in the "Incorrect" illustration below obviously cannot condition the entire room. Add a second unit as shown in the "Correct" illustration.



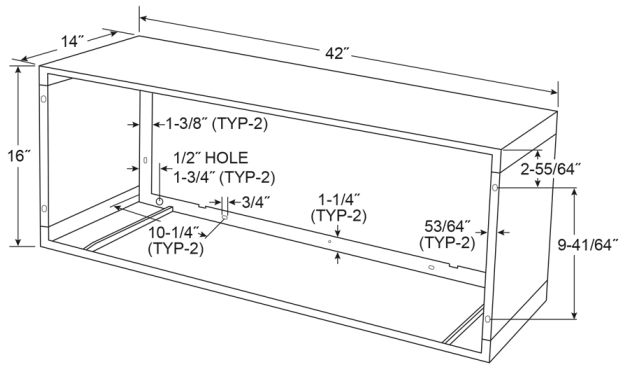
Wall Sleeve Dimensions

RAB42MG
Metal Wall Sleeve



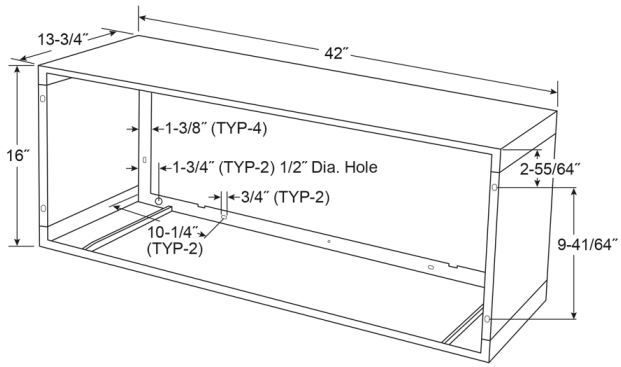
Wall Opening
16-1/4" MIN. x 42-1/4" MIN.

RAB42PG
Polymer Wall Sleeve



Wall Opening
16-1/8" MIN. x 42-1/4" MIN.

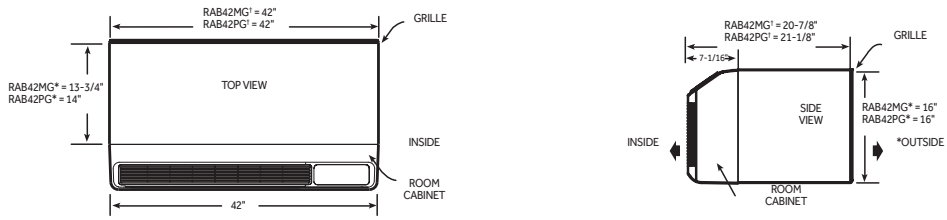
RAB42XXMG Wall Sleeve**
Extended Depth Metal Wall Sleeves



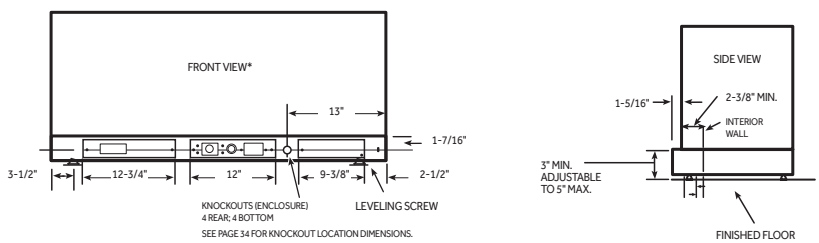
Wall Opening
16-1/4" MIN. x 42-1/4" MIN.

Additional
Wall Sleeve Depths
RAB4216MG-16"
RAB4218MG-18"
RAB4220MG-20"
RAB4224MG-24"

WALL Sleeve with Chassis Installed



Wall Sleeve with Sub-Base



*SHOWN WITH ACCESS COVERS REMOVED.

**ILLUSTRATIONS ABOVE INTENDED FOR DIMENSIONAL REFERENCE ONLY. REFER TO PHOTOGRAPHS FOR ACTUAL PRODUCT APPEARANCE.

†WORKS FOR ALL RAB42MG OR RAB42PG SERIES WALL SLEEVE.

NOTE: CAUTION - Remove knockouts from inside out.

Installation instructions packed with wall sleeve.

A choice of wall sleeves is available for Zoneline® units

RAB42MG– This insulated sleeve is constructed of heavy-gauge galvanized steel and finished with a baked-enamel grey white color finish for protection and appearance. The RAB42MG wall sleeve has insulated top and sides and is a 4 piece "Quick Snap" universal design. This easy to assembly product is shipped in an easy-to-handle box, making it better for shipping and better for the job site.

Design of the sleeve provides support for the chassis and free draining of any water entering the wall sleeve. The dimensions of the RAB42MG wall sleeve are 42" wide by 16" high by 13-3/4" deep, the same dimensions as the original wall sleeve for GE Zoneline units built in 1961.

The RAB42MG wall sleeve is also available as a special order in greater depths.

RAB4216MG – 16" deep
RAB4218MG – 18" deep
RAB4220MG – 20" deep
RAB4224MG – 24" deep

All these special-order deep wall sleeves are insulated and have sheet-metal dividers, or splitters, to prevent the recirculation of condenser discharge air.

RAB42MGSTC – Acoustic wall sleeve-metal; grey white color. Same design as the RAB42MG with the exception that the unit comes with an additional white insulation layer of Owens Corning AcoustiZorb™ (8mm thick) which increases Zoneline PTAC STC level to 31 (Does not apply to Makeup Air units).

Ideal for high noise areas like airports or highways.

RAB42PG – This non-insulated wall sleeve is four molded Quick Snap pieces made of fiberglass-reinforced polyester compound (grey white color) and stainless steel latches. This sheet-molded compound (SMC) wall sleeve offers outstanding strength, durability, color retention, water integrity and corrosion resistance. The dimensions of the RAB42PG wall sleeve are 42" wide by 16" high by 14" deep.

- Wall sleeves are of universal design, accepting all Zoneline chassis of current design as well as all GE Appliances Zoneline chassis produced since 1961.
- Drain holes are provided in the rear of all wall sleeves to permit excessive cooling condensate water, heat pump condensate or precipitation entering the wall sleeve to drain freely. A drain kit may be connected to the wall sleeve to control any water draining from the wall sleeve.

See pages 41-43 for information on **RAD10 Drain Kit**.

Wall Sleeve Installation Data

General

Generally, Zoneline® units are installed 3" to 5" above the floor (flush to finished floor installation is possible) as near to the center of the room as possible; underneath a window or a glass panel is typical. Normal installation of the wall sleeve allows installation flexibility; from flush with the finished interior wall to a minimum of 1/4" of the wall sleeve extending beyond the finished exterior of the building. Special consideration must be given to installations where the wall sleeve does not extend a minimum of 1/4" beyond the finished exterior wall.

See pages 37-38 for information on this type of installation.

The unit may be installed high in the wall and these installations usually require a remote thermostat (discussed on pages 23-25).

Regardless of the installation, there are several things to consider when selecting a location for installing the unit.

For instance, drapery location could interfere with air discharge, and placement of furniture may have an impact on the performance of the unit. The following information is intended to minimize installation problems and assure you of trouble-free installation.

Refer to page 33 for required wall opening dimensions. Minimum recommended interior and exterior sleeve projections for standard wall thicknesses are shown in the drawings in this manual. The sleeve may be installed flush with the finished indoor wall. Special attention must be paid to room-side sleeve projection when the unit is installed in a ducted application as shown on pages 42-46.

In walls thicker than 13-1/2" for line-cord-connected units and 11-1/8" for sub-base installations, it may be necessary to install a field-fabricated sleeve extension or use one of the special-order RAB42MG deep wall sleeves. Field fabricated extensions must be carefully flashed and sealed both to the wall sleeve and to the wall to ensure water integrity. This is necessary to ensure that any water entering the wall sleeve, either from operation of the unit or from other sources, such as rain storms or from washing the exterior of the building, will drain from the sleeve without the possibility of capillary action drawing the water into either the room or the wall cavity. In an installation where the sleeve is recessed less than 3" from the outside surface, flashing and sealing may be all the modification necessary. In such an installation, the sides and top of the wall opening must be waterproof to prevent moisture from seeping into and damaging the walls. See pages 37-38 for suggested detail. Since the installation of a sleeve extension requires a considerable amount of attention, we recommend using one of the deep wall sleeves if the standard sleeve is not of sufficient depth.

Mounting an outdoor grille or louver section to the building face may cause a space between the outdoor coil and the louver section. Air splitters, aligned with the ends of the outdoor coil, must be installed between the outdoor coil inlet and outlet air streams. Gaps between the outdoor coil and the louver section may allow condenser air recirculation and affect the operation of the unit. See page 48 for requirements for custom louvers.

The wall sleeve should be level from side to side and from level to 1/4 bubble (max) tilt to the outdoors. The condensate disposal system in the unit is designed to dissipate the condensate water generated during cooling operation in accordance with AHRI standards and actually uses this water for maximum unit efficiency. A level unit will also ensure proper drainage from the RAD10 drain kit to a building internal drain and proper performance of the Internal Condensate Removal (ICR) system optional on heat pump units.

SUB-BASE

The sub-base is an optional accessory for the Zoneline unit. It is discussed with the wall sleeve information since deciding whether or not to use a sub-base in the installation is a factor in the location of the wall opening. National Electrical Code® (NEC) requires that air conditioning units connected to voltages in excess of 250 volts be "permanently connected." There are also some installations where units connected to voltage sources under 250 volts may also need to be "permanently connected." If you are in doubt about the requirements for a particular installation, consult Article 440 of the NEC or the local electrical inspector. These requirements are designed to protect personal safety and should be strictly followed. Although NEC is cited here as a reference, all electrical wiring and installations must conform to any and all local electrical codes and regulations.

"Permanent connection" generally means wiring to the unit must be contained in an enclosed "chaseway," where access to the wiring connections is more restrictive than a normal line cord plugged into a receptacle. NEC requirements may be met by using flexible or rigid conduit to contain the wiring between the unit and a junction box that contains the wiring connections. The conduit is connected to the unit and to the junction box with connectors to hold the conduit in place. The junction box may be located in the floor or the wall of the structure, but only approved connectors may be used outside the unit or the junction box. The sub-base is UL® listed as a junction box for permanent connection of a Zoneline unit.

Using a sub-base in an installation requiring permanent connection provides a convenient, consistent location for unit wiring to be connected to building wiring. The use of a sub-base is not required, but the convenience and the improved aesthetics it offers make the use of a sub-base a viable means of permanent connection.

230/208-volt receptacles can also be mounted in the cover plate for easy access when direct-connect wiring is not required. 265-volt units are to be "Permanently (or Direct) Connected" and the external receptacle (when wiring is not enclosed in a chaseway) does not meet this requirement.

A knockout for a fuseholder or a disconnect is also provided in the cover plate.

The 230/208-volt and 265 volt sub-bases include a short, sub-base power connection kit. Since sub-base connected units are not considered to be line-cord connected, a Leakage Current Detection Interrupter or Arc Fault Current Interrupter device is not necessary.

RAK204D15C 208/230-volt 15-amp receptacle. Receptacle is NEMA6-20R with 18" of #12AWG wires attached to the receptacle. Short (3 ft) power connection kit and chaseway included.

RAK204D20C 208/230-volt 20-amp receptacle. Receptacle is NEMA6-20R with 18" of #12AWG wires attached to the receptacle. Short (3 ft) power connection kit and chaseway included.

RAK204D30C 208/230 volt 30-amp receptacle. Receptacle is NEMA6-30R with 18" of #12AWG wires attached to the receptacle. Short (3 ft) power connection kit and chaseway included.

Junction box RAK4002D (for the AZE, AZH and AZV series) must be purchased separately. Junction box mounts on the chassis and is connected to the sub-base via the included chaseway.

Sub-Bases for the 265-Volt Units:

RAK204E15C 265-volt 15-amp receptacle.
Receptacle is NEMA7-15R with 18" of #12AWG wires attached to the receptacle. Short (3 ft) power connection kit and chaseway included.

RAK204E20C 265-volt 20-amp receptacle.
Receptacle is NEMA7-20R with 18" of #12AWG wires attached to the receptacle. Short (3 ft) power connection kit and chaseway included.

RAK204E30C 265-volt 30-amp receptacle.
Receptacle is NEMA7-30R with 18" of #12AWG wires attached to the receptacle. Short (3 ft) power connection kit and chaseway included.

The junction box for 265-volt units is shipped attached to the chassis since all 265-volt units are to be "permanently (or direct) connected."

RAK204U – The RAK204U Series of sub-base provides a design that fits the site needs and is available for use with Zoneline PTAC/PTHP units. The RAK204U will most likely be used for support of the wall sleeve and unit. The RAK204U is the same physically as the other sub-bases except there is no receptacle installed. Receptacles and wiring can be field installed and, by using the RAK205CW chaseway and the RAK4002D junction box, perform the same function as any of the other sub-base kits by selecting the correct receptacle and installing it in the interior mounting plate inside the RAK204U.

There are separate internal compartments to permit separation of low-voltage (Class 2) connections from line-voltage connections as required by National Electrical Code (NEC). Conduit containing building wiring enters the sub-base through knockouts located in the rear or bottom of the sub-base and is not accessible when the wall sleeve is installed.

The sub-base attaches to the RAB42MG and RAB42PG wall sleeve with two clips (field-assembled) that (See pages 39-40 for illustration.) Since the sub-base extends under the wall sleeve, clearance from the inner edge of the wall sleeve to the finished wall must be 2-3/8" or greater. The sub-base has four leveling legs and adjustable side channels to enable the area under the wall sleeve to be enclosed. Clearance from the bottom edge of the wall sleeve to the finished floor must be between 3" and 5".

The sub-base may be used as support for the chassis and wall sleeve in installations where the wall is of insufficient thickness to provide secure mounting of the wall sleeve.

SUB-BASE (CONTINUED) For new construction, early planning with the architect is necessary. Unit location, electrical connection locations and wall openings of the proper dimensions are essential to avoid the necessity of rework, fillers, framing, moving electrical outlets and other expensive modifications.

For existing construction, it is important that carpentry, masonry and electrical work be performed by competent, qualified personnel. Since installations in existing construction may involve removal of building material from the structure, locating the wall sleeve must be done correctly.

Architectural Window/Louver Installation

Many installations utilize an architectural window/louver combination to enhance the exterior appearance of the building. The exterior grille for the air conditioner is built as an integral part of the window frame. An internal drain system is highly recommended for these installations (see page 43). When this type of installation is made, there must be provision in the grille work for condensate water to drain to the exterior (including the overflow relief drain holes) and not be routed back into the interior of the building or into the wall cavity. Failure to allow for the drainage of condensate water can cause extensive damage to structural components.

The problems associated with the lack of condensate drain consideration often show up shortly after the air conditioners are turned on in a new building. New buildings that have been virtually wide-open during construction have a significant amount of moisture in the air and in the building components that the air conditioners start removing as they operate.

The free area in the louver section must also comply with the requirements shown on page 48.

The back flange of the wall sleeve should anchored and sealed to the architectural window/louver to prevent water and air penetrating the building structure. This also prevents potential noise from the sleeve vibrating against the louver. Field-fabricated and -installed sleeve angles are the recommended method of securing the wall sleeve to the window/louver framework.

Window, Curtain and Panel Wall Construction

With this type of construction, provision for support of the unit, other than by the wall itself, is often required. Such support may be in the form of wood or metallic material of the proper thickness to maintain a level sleeve. This additional support should be located both near the wall and at the front of the wall sleeve. Sub-base (RAK204 Series) with four leveling legs provides an excellent support for the unit in this type of installation.

(See page 35 for details of this type of installation.)

In existing construction, common practice is to remove a pane of glass, metal, wood, or other construction material and build a frame around the wall sleeve. Similar filler panel material may be installed around the sleeve for appearance and weather seal.

Masonry Wall Construction

The wall sleeve should be installed during construction and **lintels must be used** to support the blocks above the wall sleeve. The wall sleeve will not support the concrete block. The installation instructions show how the wall sleeve must be secured to the masonry and caulked. (See page 34 for details of installation in masonry wall).

For existing masonry construction, wall openings must be made by removing concrete blocks to achieve the proper- size opening. Consult the builder, architect or owner to determine the necessity for lintels to support the block above the wall sleeve.

Anchor bolts are normally required to secure the sleeve to the wall and shims may be required to prevent distortion of the wall sleeve when securing the wall sleeve to the wall. Field- supplied sleeve angles can be used to position and secure the wall sleeve to the wall and to cover oversized wall openings.

Brick, Frame, Stucco and Shingle Construction

For new construction, the opening for the wall sleeve should be framed and the wall sleeve inserted into the opening during construction. Lintels must be used when the building material is heavy and is not self-supporting (such as brick). The wall sleeve will fit an opening of six courses of standard brick or five courses of jumbo brick. Wall framing in this type construction is normally on 16" centers and the wall sleeve will fit a framed opening spanning three 16" O.C. 2" x 4" stud spaces.

For existing construction, the indoor and outdoor wall will need to be cut out, allowing for clearances of 1/8" on all sides of the wall sleeve. Work should begin on the inside wall. Cut the correct dimensions and mark (using drill holes) the outside wall from each corner of the inside cutout. Studding that interferes with the opening must be removed and a suitable frame constructed to secure the wall sleeve and provide adequate support for sleeve and chassis.

As shipped, the RAB42MG Series or RAB42PG is ready for installation once snapped together.

Preparation of the Wall Sleeve for All Types of Construction

Attach the weather barrier to the back of the wall sleeve and do not remove until the outdoor grille and chassis are ready to be installed.

1. Position the wall sleeve into the wall. The room-side edge of the RAB42MG or RAB42PG wall sleeve should be at least flush with the finished wall for line-cord installations and permanent-connection installations when no sub-base is used, and should project into the room at least 2-3/8" when a sub-base is used. The outside edge of the wall sleeve should extend at least 1/4" beyond the outside wall. This is necessary for proper caulking, to prevent sealing the drain holes in the rear flange of the wall sleeve, and to facilitate the installation of an accessory drain, if used. If the minimum exterior dimensions are not met, refer to pages 37-38.

The wall sleeve should be level from side to side and from level to 1/4 bubble (max) tilt to the outdoors. The condensate disposal system in the unit is designed to dissipate the condensate water generated during cooling operation in accordance with AHRI standards and actually uses this water for maximum unit efficiency. A level unit will also ensure proper drainage from the RAD10 drain kit to a building internal drain and proper performance of the Internal Condensate Removal (ICR) system optional on heat pump units.

2. The wall sleeve should be secured to the wall at both sides. Use a minimum of two screws or other fastening device on each side. (See Figure 2 on page 33.) Mark the wall sleeve on each side 2" from the bottom and 2" from the top at a point where basic wall structure is located. Drill wall sleeve and use fasteners appropriate for wall construction. All holes for fasteners in the side of the wall sleeve must be at least 2" up from the bottom of the wall sleeve. **Never locate screws or put other holes in the bottom of the wall sleeve**. The only exception is when an RAD10 drain kit is installed to connect to an internal drain system. (See page 43 for RAD10 drain kit information.)

   If the wall opening is greater than the sleeve dimensions, spacers must be used on the sides between the wall sleeve and the wall support structure to prevent distorting the wall sleeve.

3. Caulk or gasket the entire opening on the outside between the wall sleeve and exterior wall surface (four sides) to provide total water and air seal.

4. Caulk or gasket room-side opening between wall sleeve and interior wall surface (four sides). Openings beneath or around the wall sleeve can allow outdoor air to leak into the room, resulting in increased operating costs and improper room temperature control.

Care should be taken in location of electrical supply entry in relationship to wall sleeve to assure access to receptacle or junction box once unit is installed.

- Refer to page 50 for maximum power cord reach.
- Permanently connected units close to finished floor must allow for conduit clearance.

Sleeve Angles

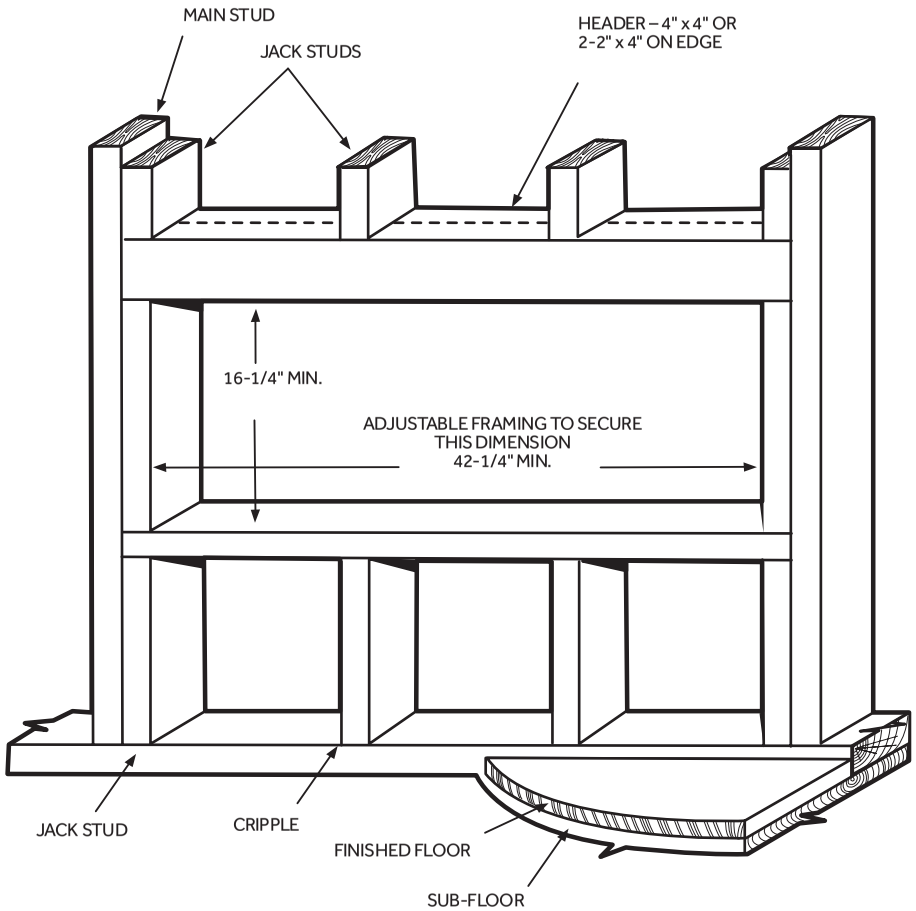
In some installations, such as curtain walls, window walls, or where the structural material of the wall is insufficient to support or fasten wall sleeve, sleeve angles may be used. Sleeve angles are pieces of steel or other material of similar structural strength that are formed to a 90° angle, with holes to fasten the sleeve angle to the wall sleeve and to the structural component of the wall surrounding the wall sleeve.

The following describes the procedure when field-fabricated and -installed sleeve angles are applied.

1. Position sleeve angles around top and sides of wall sleeve at the desired location. Position sleeve angles vertically on each side of wall sleeve to provide a level installation.
2. Mark wall sleeve through holes in sleeve angles. The lowest hole on the sides of the wall sleeve must be a minimum of 2" above the bottom of the sleeve.
3. For RAB42MG wall sleeve, drill 5/32" diameter holes at locations marked on wall sleeve in Step 2, and assemble angles to wall sleeve using #10 x 1/2" self-tapping screws. For RAB42PG wall sleeve, follow the same procedure except use a #10 x 1/2" bolt, washer and nut to attach sleeve angles to sleeve. Install screws or bolts from inside wall sleeve.
4. Do not drill any holes in bottom of wall sleeve. Do not distort wall sleeve.
5. Do not use sleeve angles for a lintel.

Framing for Wall Sleeve

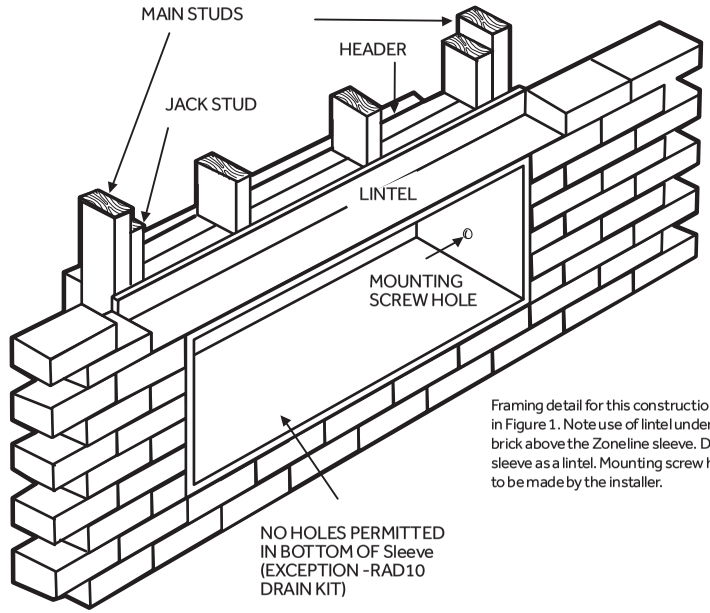
Brick Veneer and Frame Construction



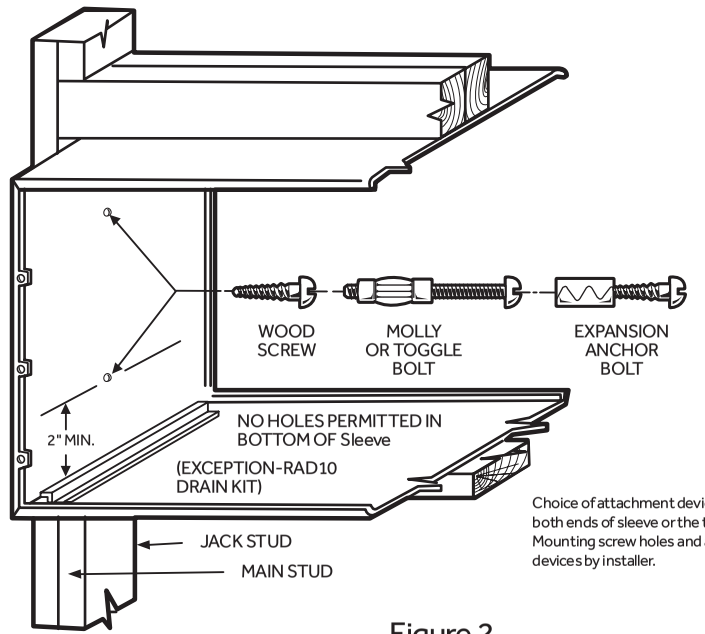
†WORKS FOR ALL RAB42MG OR RAB42PG SERIES WALL SLEEVE

Figure 1

Fastening Wall Sleeve



Framing detail for this construction is as shown in Figure 1. Note use of lintel under first course of brick above the Zoneline sleeve. Do not use the sleeve as a lintel. Mounting screw holes shown are to be made by the installer.



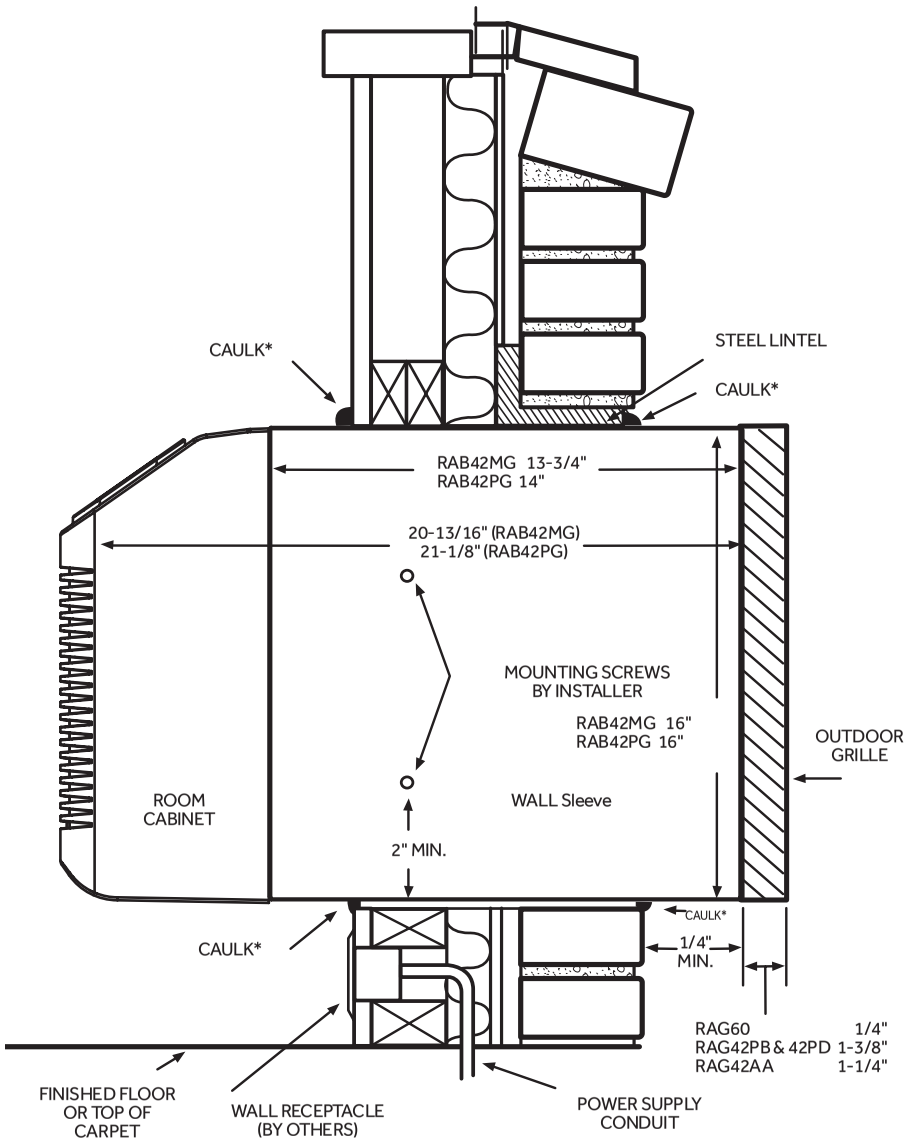
Choice of attachment devices through both ends of sleeve or the top. Mounting screw holes and attachment devices by installer.

Figure 2

Wall Section – Detailed Side View

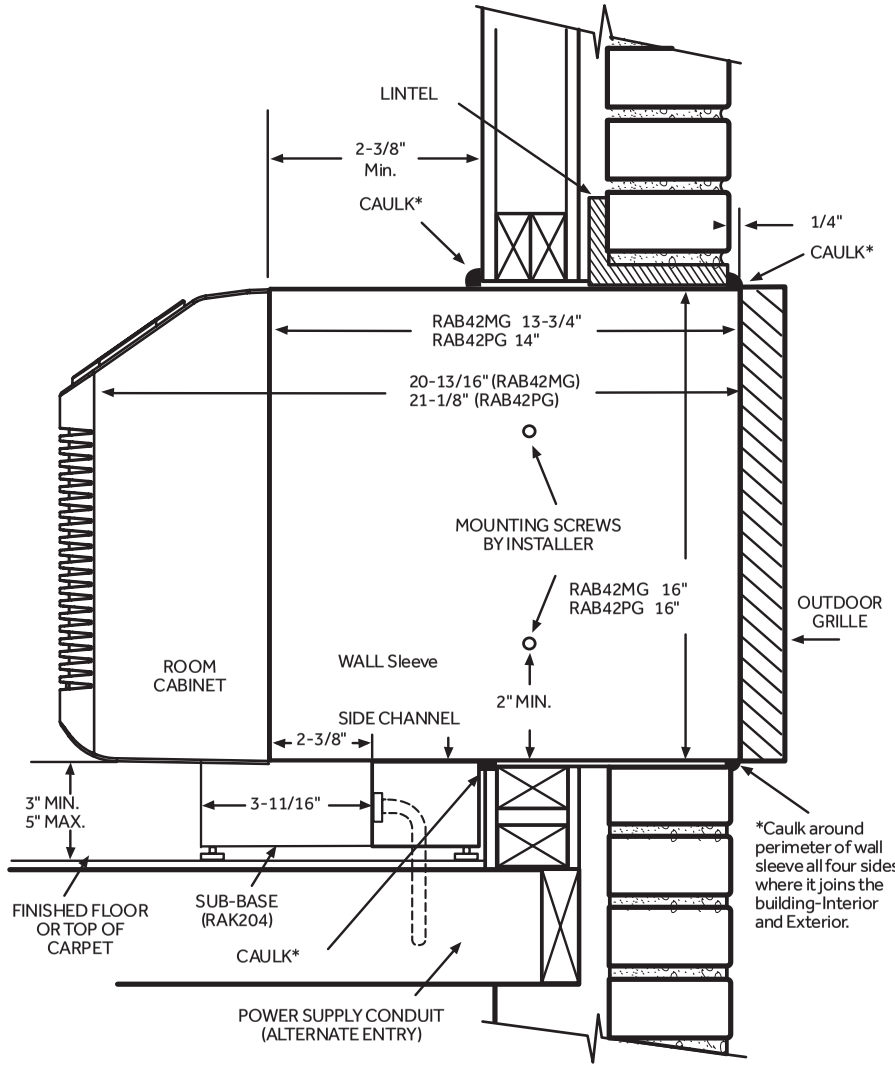
Frame and Brick Veneer Installation

Cord-Set Connected



*Caulk around perimeter of wall sleeve all four sides where it joins the building-Interior and Exterior.

SUB-BASE CONNECTED

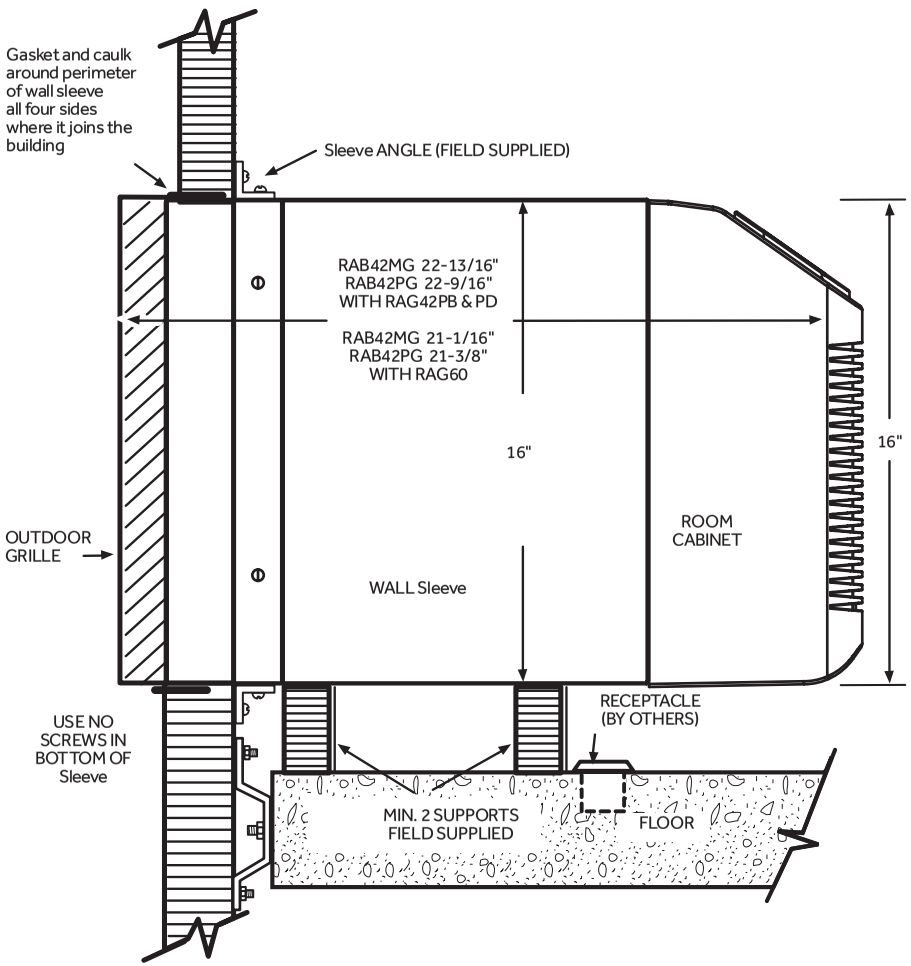


*Caulk around perimeter of wall sleeve all four sides where it joins the building-Interior and Exterior.

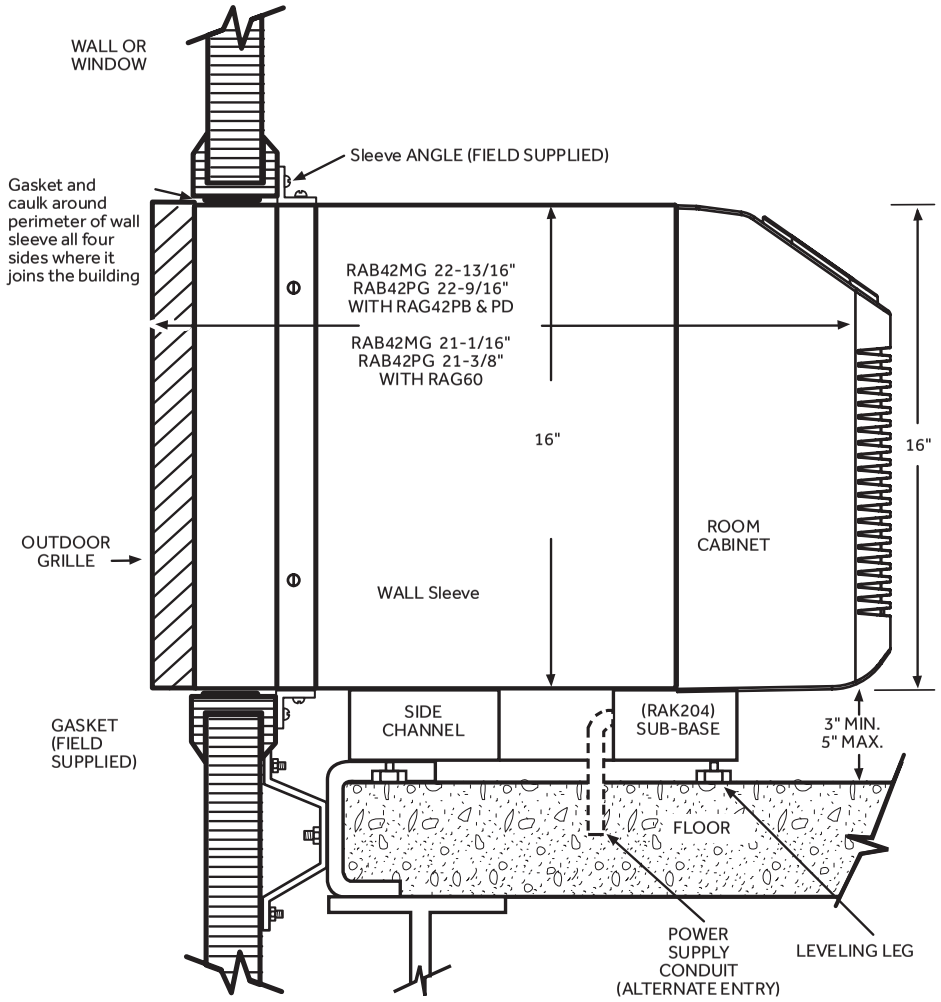
Wall Section – Detailed Side View

Window, 2" curtain or panel wall installation with rag rear grille extended beyond outer wall surface

Cord-Set Connected

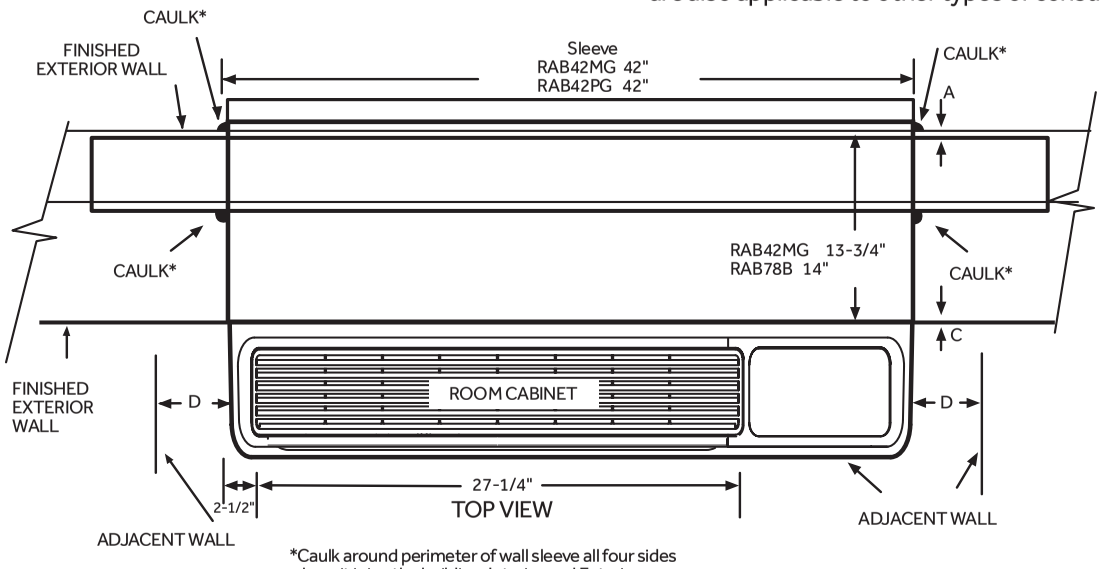


Sub-Base Connected

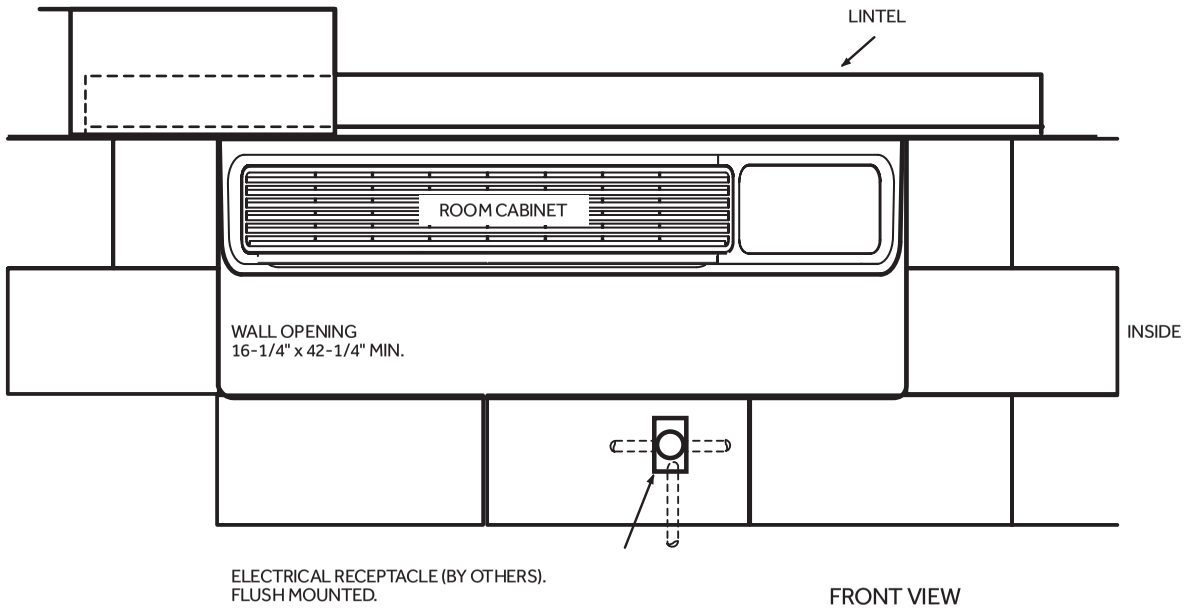


Wall Sleeve Installation – Cord-Set Connected

Example: block and veneer – dimensional data and comments are also applicable to other types of construction

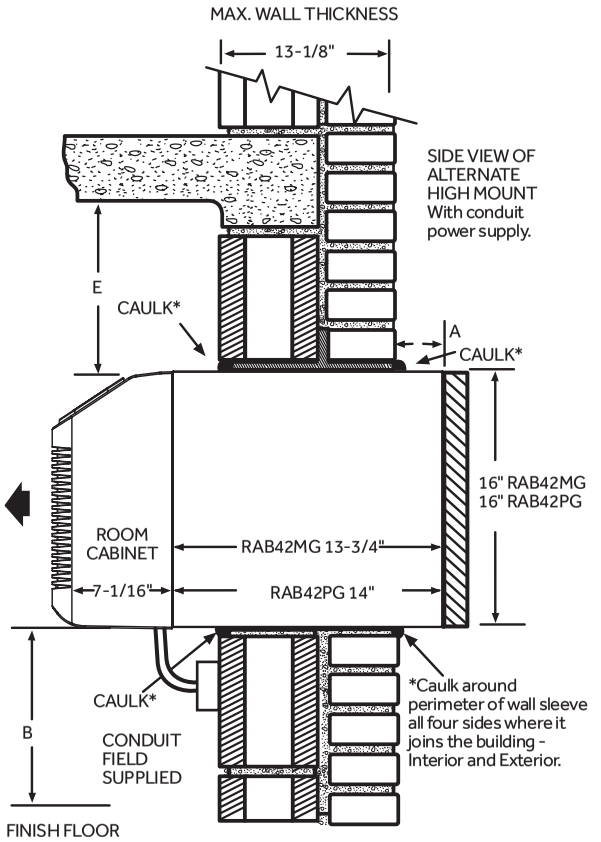


*Caulk around perimeter of wall sleeve all four sides where it joins the building-Interior and Exterior.



Dimension	Manufacturer Required Minimum Installation Clearance
A	1/4" (See note 1)
B	Allow For Electrical Wiring 0" Min. (See page 34)
C	0" Minimum
D	0" Minimum 2" Recommended See pages 45-46+ for ducted application.
E	3" Minimum

NOTE:
1. FOR OUTSIDE FLUSH MOUNTING SEE PAGE 38 FOR DRAIN INSTALLATION.



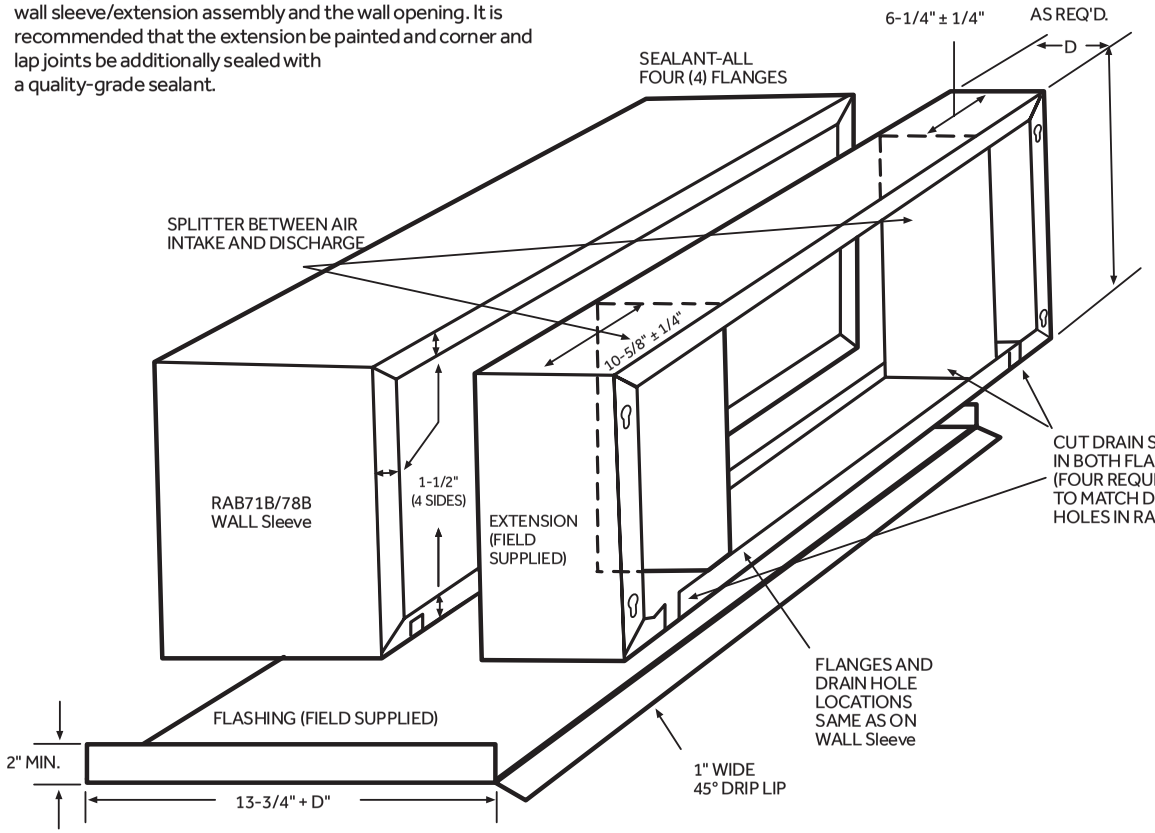
See page 50 for line cord reach.

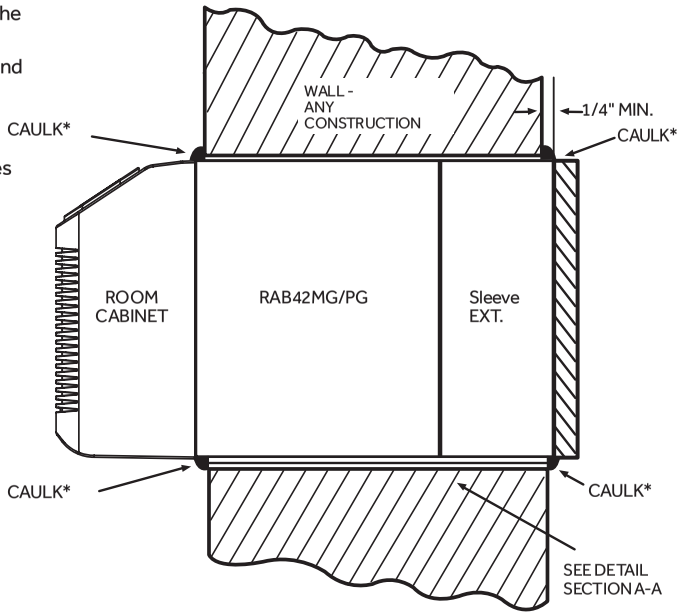
Metal Sleeve Extension for Walls Deeper Than 13-1/8" (11-1/8" with Sub-Base)

Field fabricated – GE Appliances recommends the use of one of the deeper RAB42MG† wall sleeves offered as special order items.

GE Zoneline® units can be installed in walls of greater depth than the wall sleeve. Where the sleeve recession is less than 3" and where it is possible to waterproof the exposed sides and top of the opening, the suggested procedure is to apply a flashing to the bottom of the wall sleeve as shown on page 38. Where waterproofing is questionable or not possible, or for installations in walls of greater depth, the following is a suggested application procedure. It involves the field fabrication of a sleeve extension. **Since the wall sleeve is a water-bearing container, the extension likewise must also be water-bearing and the connection between the two must be watertight. The sleeve extension must contain splitters to prevent recirculation of the outdoor air circuit.**

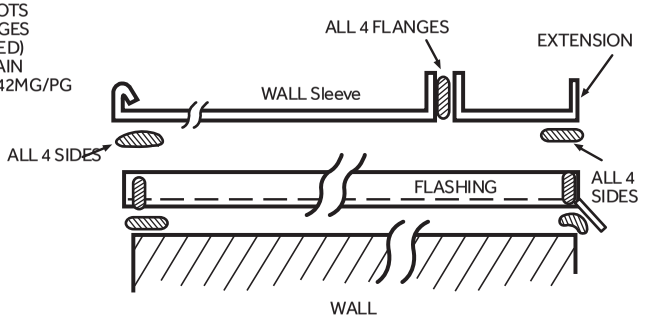
1. The sleeve extension is field fabricated. The extension depth "D" should allow for a minimum outdoor projection of 1/4". This allows for room cabinet clearance to the finished wall and ample surfaces to apply sealant or caulking for a tight weather seal between the completed wall sleeve/extension assembly and the wall opening. It is recommended that the extension be painted and corner and lap joints be additionally sealed with a quality-grade sealant.
2. The wall sleeve and extension should be connected prior to installation in the wall opening. A quality-grade sealant should be applied to all four (4) butting flanges. Use bolts and nuts or oversized self-tapping screws (driven from the wall sleeve to the extension) to attach the two assemblies. Clean all drain holes of excess sealant. The assembly must be free draining.
3. Install flashing, using a quality-grade sealant between the flashing and wall as shown in section A-A below.
4. Install the wall sleeve/extension assembly following procedures described for a standard installation. See diagrams below. The assembly should be sealed or caulked to the wall around all four sides both outdoors and indoors.
   NOTE: The wall sleeve/extension assembly should be level.
5. Suggested materials for sleeve extension and flashing should be non-ferrous metals. Minimal acceptable material: Galvanized G-90 painted.





*Caulk around perimeter of wall sleeve all four sides where it joins the building-Interior and Exterior.

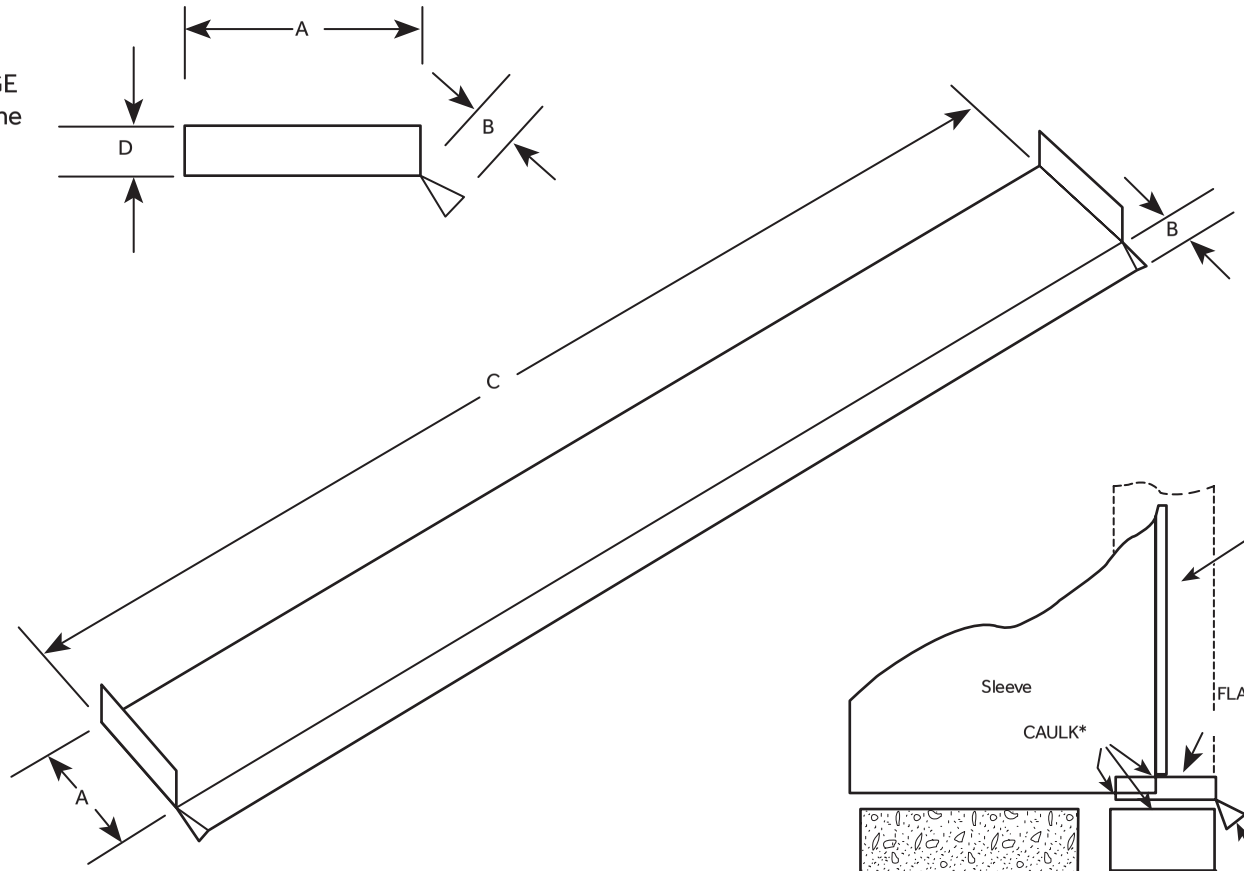
SECTION A-A
BASEPAN/FLANGE DESIGN
SHOWING SEALANT LOCATIONS.

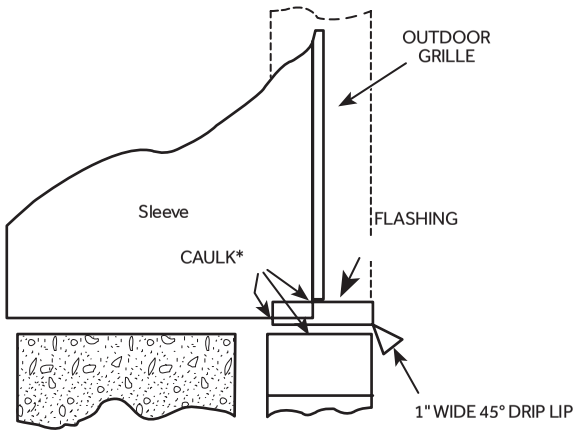


†WORKS FOR ALL RAB71 OR RAB78B SERIES WALL SLEEVE

Alternate – Sleeve Recession Less Than 3" with Sides and Top of Wall Opening Waterproof, Flashing on Bottom Only

For an installation that will provide better protection against water infiltration, GE Appliances recommends the use of one of the deeper RAB42XXMG Series wall sleeves offered as special-order items. (See page 29.)





*Caulk around perimeter of wall sleeve all four sides where it joins the building-Interior and Exterior.

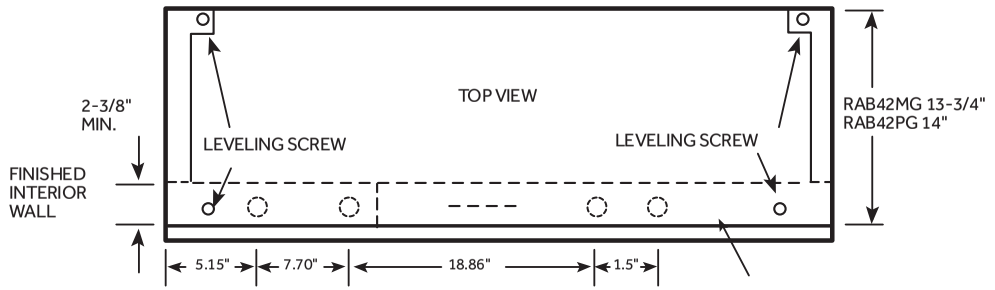
DIMENSIONS:
A. DISTANCE FROM GRILLE OR Sleeve TO OUTSIDE SURFACE OF WALL PLUS 2" TO 4" (TO INSERT UNDER Sleeve).
B. 1" DRIP LIP (MINIMUM)
C. 42" PLUS-SUFFICIENT TO FIT SNUGGLY UNDER AND UP AROUND THE Sleeve.
D. 2" MINIMUM
(CAUTION: WHEN CAULKING DO NOT BLOCK DRAIN HOLES IN Sleeve OR GRILLE.)
IF GRILLE IS TO BE MOUNTED TO WALL SURFACE "A" SPLITTERS MUST BE USED. (SEE PAGE 37.)

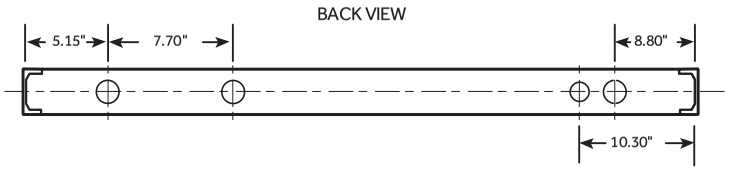
RAB42MG/PG Wall Sleeve Installation-RAK204 Series Sub-Base Connected

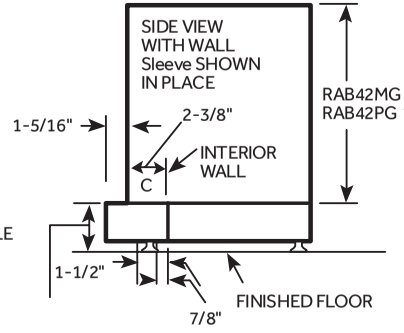
Example: frame and brick veneer-dimensional data and comments are also applicable to other types of construction

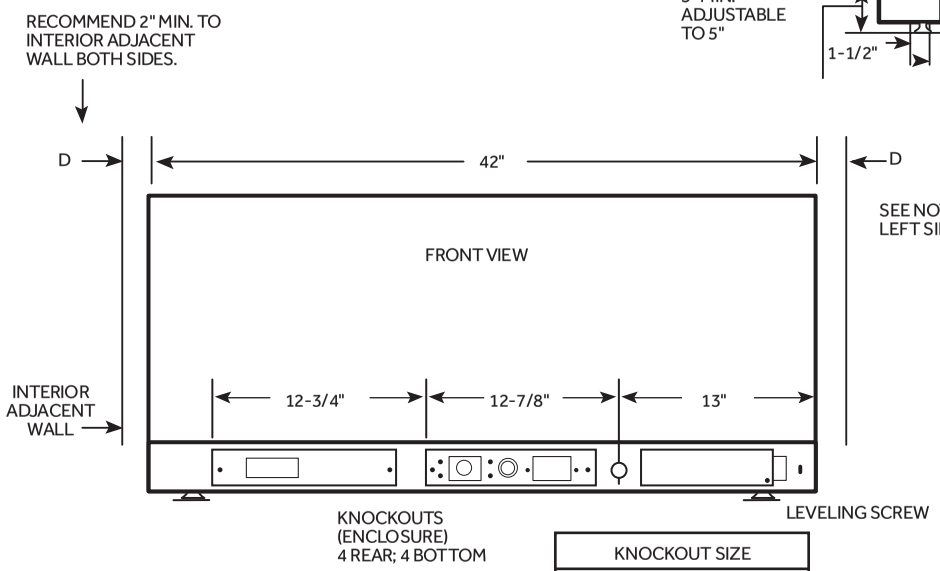
Dimension	Manufacturer Required Minimum Installation Clearance
A	1/4" (See note 1)
B	3" Min. (5" MAX.)
C	2-3/8" Minimum
D	0" Minimum 2" Recommended See pages 45-46 for ducted application.

NOTE:
1. FOR OUTSIDE FLUSH MOUNTING SEE PAGE 38 FOR FLASHING INSTALLATION.



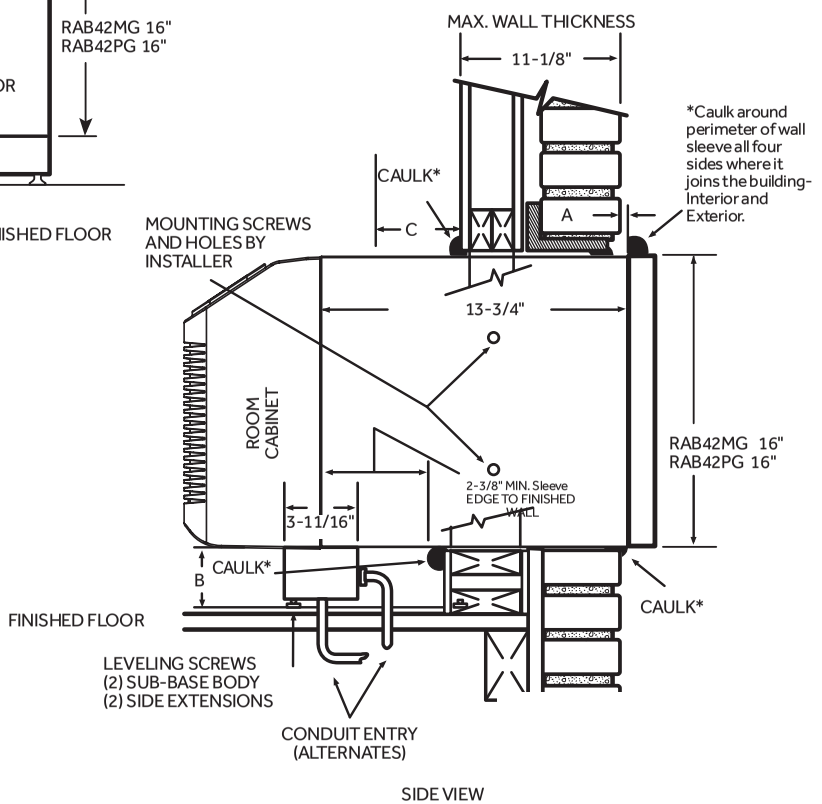






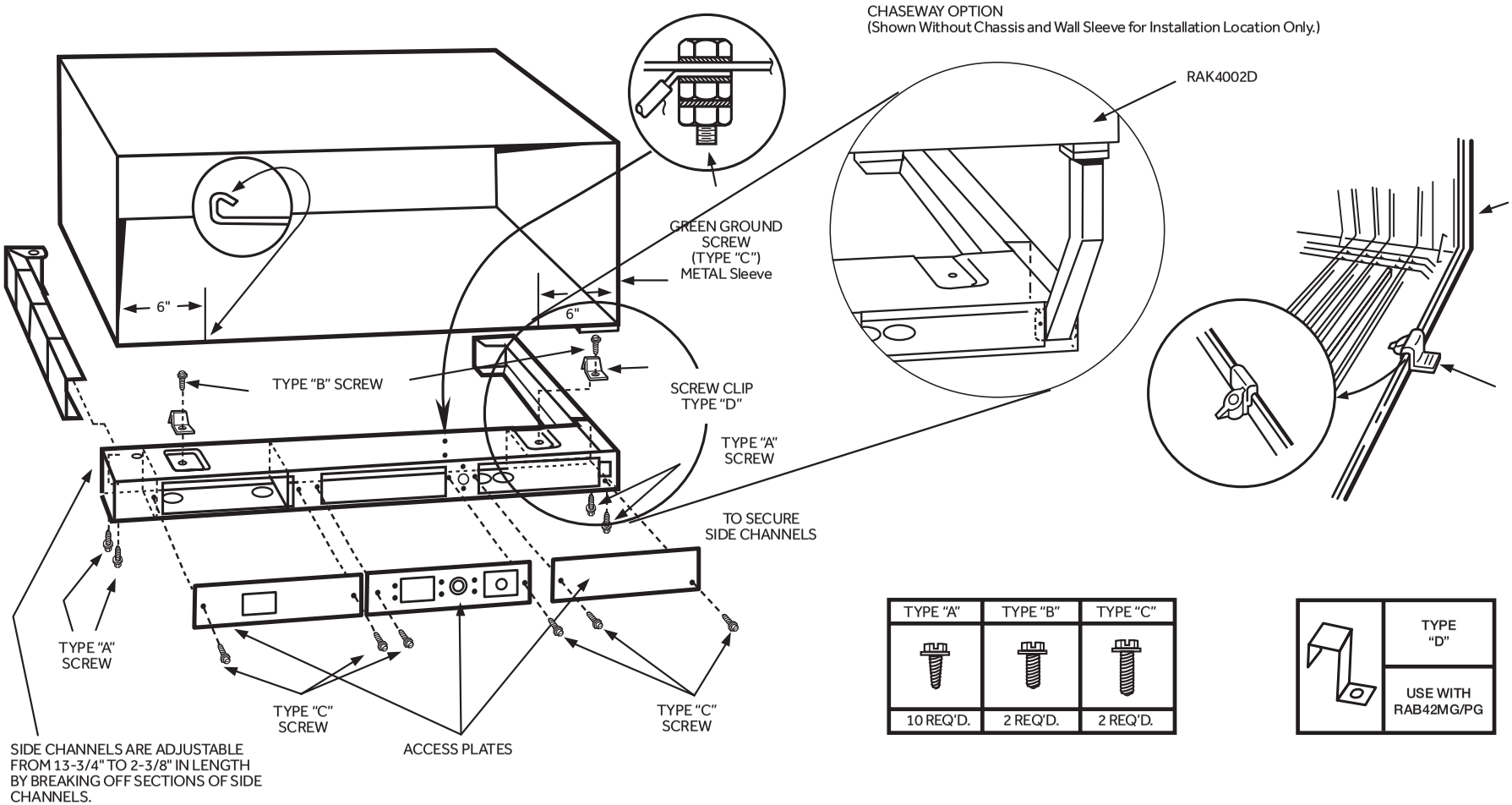
KNOCKOUT SIZE
LARGE 1-1/8" DIA.
SMALL 7/8" DIA.

*SHOWN WITH ACCESS COVERS REMOVED.
NOTE: CAUTION-REMOVE KNOCKOUTS FROM INSIDE OUT.



RAK204 Series Sub-Base Installation and Electrical Data

RAB42MG/PG Wall Sleeve



TYPE "A"	TYPE "B"	TYPE "C"
10 REQ'D.	2 REQ'D.	2 REQ'D.

	TYPE "D"
	USE WITH RAB42MG/PG

Electrical wiring may enter the sub-base through any of the knockout holes provided in the sub-base.
Knockout holes in the sub-base access plate may accommodate a receptacle, which allows the use of a power cord (if permitted by code for the particular installation). A knockout for a circuit breaker, fuseholder or a disconnect is also provided. See page 30 for description of electrical contents of these sub-bases.

Cooling Condensate

Air conditioners produce condensate water as a result of lowering the humidity of the area being conditioned. When the indoor coil temperature is below the dew point, moisture in the air condenses into water droplets on the indoor coil. This water drains to a pan located under the indoor coil and is routed through the weather barrier or bulkhead (the partition separating the indoor and outdoor sides of the unit) to the base pan on the outdoor side. It is then picked up and dispersed against the outdoor coil-which is hot when the unit is in the air conditioning mode – where it is evaporated into the atmosphere by contact with the hot outdoor coil. This evaporation process also helps lower the temperature of the outdoor coil and improves the operating efficiency of the unit.

Slinger Ring Systems

Packaged terminal units employ various means of dispersing the condensate water. One of the most popular, and most effective, means is by the use of a "slinger ring." A slinger ring is a ring around the circumference of the outdoor fan. The design of the unit positions the slinger ring very close to the bottom of the base pan so water in the base pan is lifted by the rotating ring. Water picked up by the slinger ring will be dispersed into the air stream and deposited on the hot outdoor coil where it evaporates.

All Zoneline® Series packaged terminal air conditioners and packaged terminal heat pumps utilize a slinger ring for cooling condensate disposal.

Certification Test Requirements

AHRI (Air Conditioning, Heating & Refrigerating Institute) requires that all certified packaged terminal air conditioners and packaged terminal heat pumps pass a cooling condensate disposal test. One stipulation of the AHRI test is that under standard rating conditions "the equipment shall be started with its condensate collection pan filled to the overflowing point." In order to pass the AHRI Condensate Disposal Test the unit must operate continuously for four hours without condensed water dripping, running, or blowing off the unit during the test or after the unit has been turned off.

Under extremely high outdoor humidity conditions or extreme operating conditions, such as exceptionally high air infiltration (a door or window left open while the unit is running, for instance) it is possible for any air conditioner to be unable to dissipate all the cooling condensate generated.

All Zoneline Series packaged terminal air conditioners and packaged terminal heat pumps meet the condensate disposal requirements of AHRI standards 310/380.

Heat Pump Condensate

During the operation of a unit in the heat pump, or "reverse cycle," mode, the outdoor coil becomes the cold coil and the indoor coil becomes the hot coil due to reversing the flow of the refrigerant. When the temperature of the outdoor coil is below the dew point, condensation will form on the outdoor coil just as it does on the indoor coil during cooling operation. Since the dew point is humidity and temperature-related, there may be more condensate on days when the relative humidity is high.

Heat Pump Condensate Disposal

Since the outdoor coil is cold during heat pump operation, the condensate water cannot be deposited on the outdoor coil because the water would cause frost to form on the coil. This frost would block the airflow through the coil. Rather than allow this problem to occur, heat pump units must dispose of the condensate in another manner. The most widely used method of disposing of heat pump condensate is by a temperature-activated drain valve.

Temperature-Activated Drain Valve

This is a device mounted in the base pan of a heat pump unit with a bellows that expands on temperature rise and contracts with temperature drop. A shaft with a rubber plug on the end is connected to the bellows. When the outdoor temperature remains above a certain temperature, the bellows is expanded and the plug fits tightly into a hole in the bottom, or base pan, of the unit. When the plug is blocking the hole, as it should be during cooling operation, the condensate water is contained in the base pan. At temperatures when heating is required, the bellows contracts, the rubber plug is retracted from the hole and the heat pump condensate water is allowed to drain into the wall sleeve. The valve is fully open at approximately 45°F.

Drain Kits

Although the Zoneline units are designed to dissipate most of the condensate generated during normal cooling operation, there may be times when abnormal operating conditions cause more condensate than the unit can dissipate. Heat pumps also generate condensate that the unit may not be designed to dissipate. For these reasons, if condensate dripping from the wall sleeve is objectionable, an internal or external drain system should be installed. See pages 42-43 for information covering the drain systems and the RAD10 kit available to connect to the wall sleeve.

Internal Condensate Removal (ICR) System

GE has developed an Internal Condensate Removal (ICR) system for packaged terminal heat pumps. This system has been offered as an option on Zoneline packaged terminal Heat Pumps since 1982, and thousands of them are in use. During heat pump operation, the ICR system utilizes a small pump to lift the water from the base pan and pump it into a collector tray positioned above the indoor coil. The water drains from the collector tray and drips onto the warm indoor coil where it is evaporated into the room atmosphere. If an excess amount of water is pumped to the indoor side, it is routed back to the outdoor portion of the base pan.

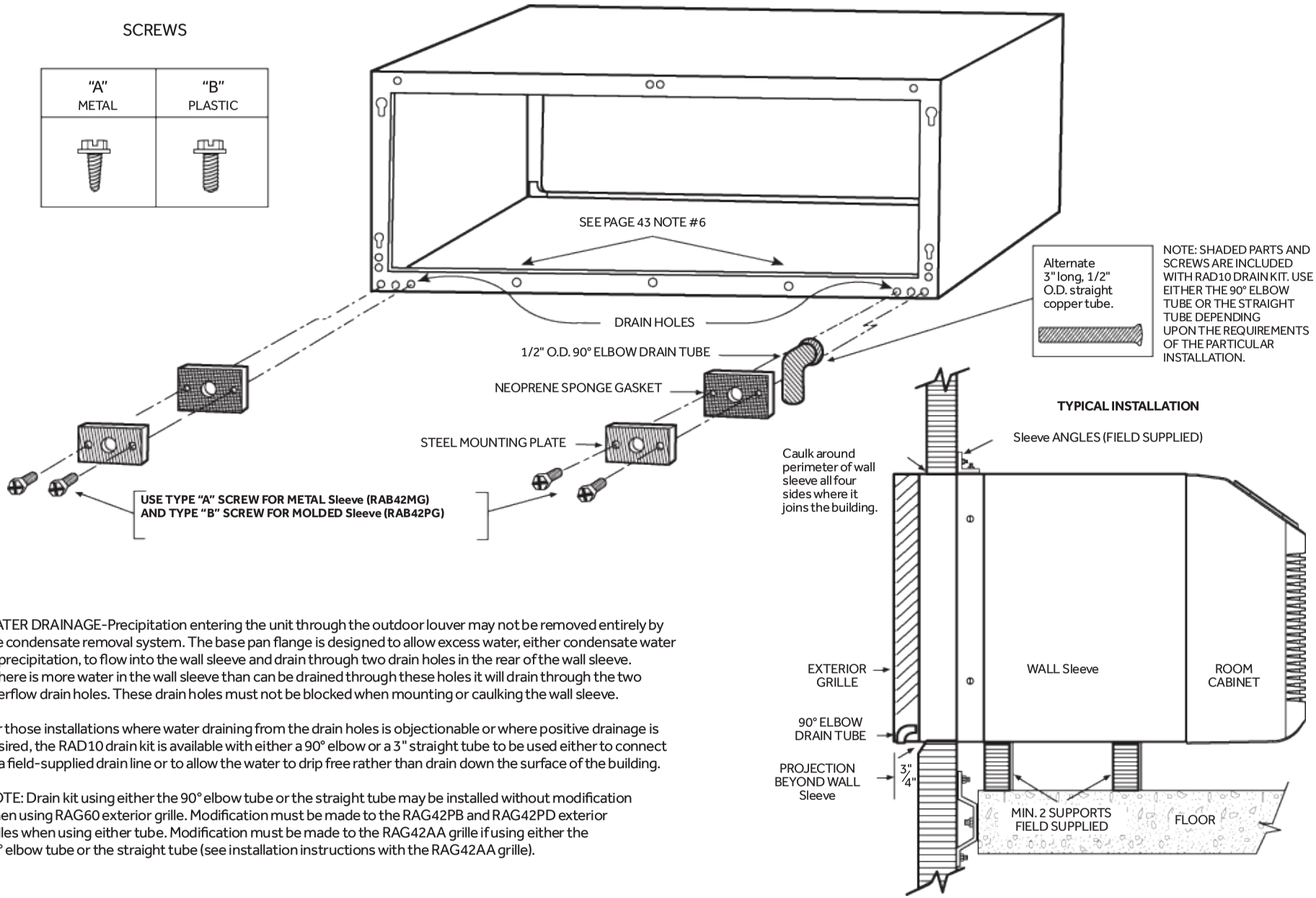
The ICR system has proven to be an effective means of minimizing the amount of heat pump condensate dripping from the unit. However, if the restrictions of a particular installation will allow absolutely no drippage of condensate water from the wall sleeve, the installation of an internal or external drain system is recommended.

Units with ICR may not be installed in seacoast or other corrosive environment applications.

ICR model not compatible with RAKVENT1 kit and Makeup Air models.

Wall Sleeve with RAD10 Drain Kit

External Drain. See page 43 for internal drain.



WATER DRAINAGE-Precipitation entering the unit through the outdoor louver may not be removed entirely by the condensate removal system. The base pan flange is designed to allow excess water, either condensate water or precipitation, to flow into the wall sleeve and drain through two drain holes in the rear of the wall sleeve. If there is more water in the wall sleeve than can be drained through these holes it will drain through the two overflow drain holes. These drain holes must not be blocked when mounting or caulking the wall sleeve.

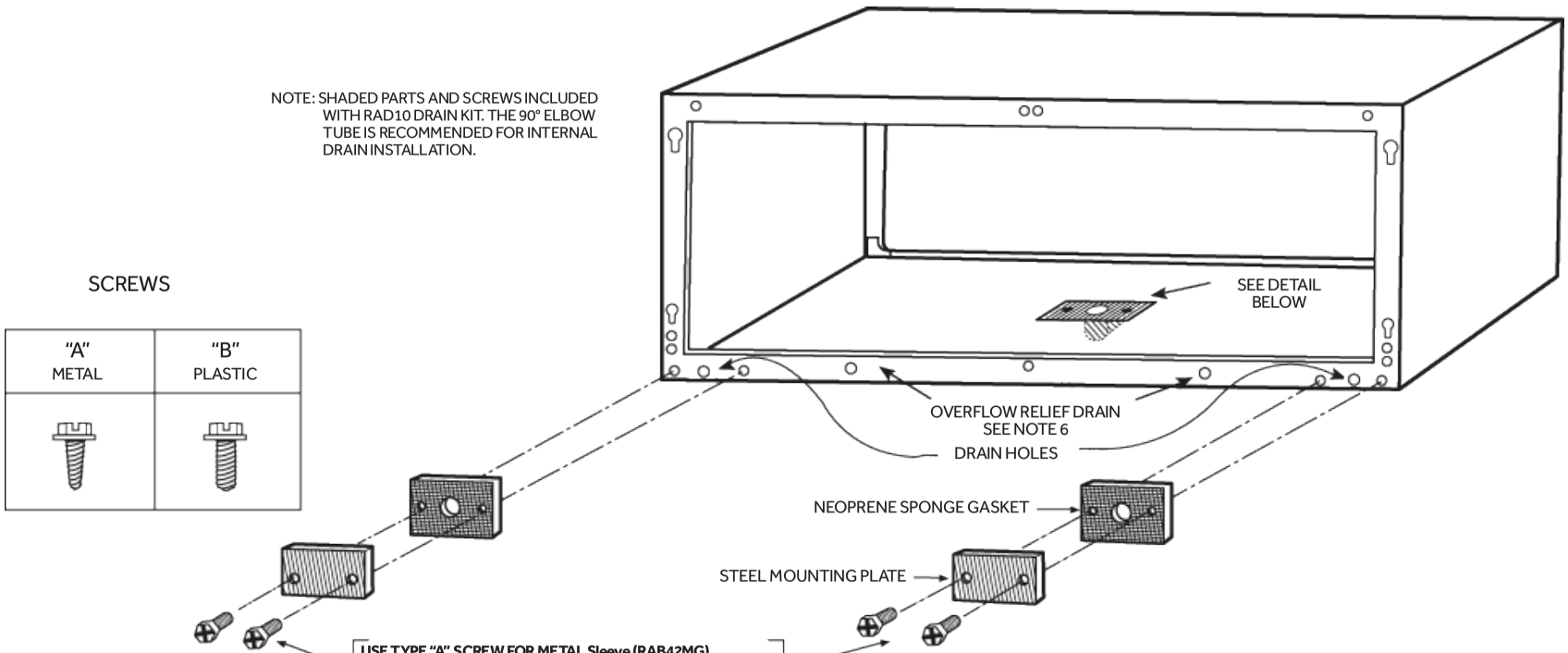
For those installations where water draining from the drain holes is objectionable or where positive drainage is desired, the RAD10 drain kit is available with either a 90° elbow or a 3" straight tube to be used either to connect to a field-supplied drain line or to allow the water to drip free rather than drain down the surface of the building.

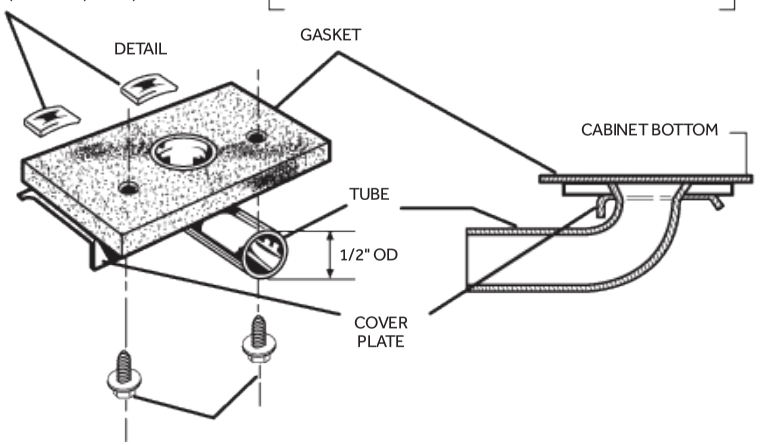
NOTE: Drain kit using either the 90° elbow tube or the straight tube may be installed without modification when using RAG60 exterior grille. Modification must be made to the RAG42PB and RAG42PD exterior grilles when using either tube. Modification must be made to the RAG42AA grille if using either the 90° elbow tube or the straight tube (see installation instructions with the RAG42AA grille).

Wall Sleeve with RAD10 Drain Kit

Internal Drain. See page 42 for external drain.

NOTE: SHADED PARTS AND SCREWS INCLUDED WITH RAD10 DRAIN KIT. THE 90° ELBOW TUBE IS RECOMMENDED FOR INTERNAL DRAIN INSTALLATION.





USE TYPE "A" SCREWS FOR BOTH RAB42MG AND RAB42PG

1. The RAD10 drain kit is installed in the bottom of the wall sleeve when it is desired to drain condensate to an internal drain system in the building.
2. The drain kit is mounted on the bottom of the wall sleeve prior to installation of the sleeve in the wall. It may be located an where on the room-side portion except for sub-base installations. For these the drain should be at least 3" from the indoor edge of the sleeve so as to adequately clear the sub-base.
3. A template is furnished with the kit for locating the necessary three holes in the sleeve bottom —two to provide a securing means and one to provide a drain hole for the 1/2" OD tubing (see details at left).
   Paint raw edges of drilled holes with rust preventive paint.
4. A tube or hose 1/2" I.D. (obtained locally) must be installed on the drain tube and connected to the internal drain system in the building.
5. With the RAD10 the two drain holes in the bottom outer flange of the wall sleeve are sealed by the gaskets and mounting plates shown above.
6. Two 1/2" diameter holes located 1/4" above the sleeve bottom in the bottom outer flange provide overflow drainage to the outdoors when wind-driven rain enters the chassis.

NOTE: If using RAD10 internal drain kit with an integral window louver system special attention should be paid to:

- Allowance for drainage from overflow drain holes in rear flange of wall sleeve.
- Alternative methods for sealing drain holes (and associated screw holes) in rear corners of the wall sleeve. The RAD10 drain kit will interfere with the seal and fit of the sleeve to the inside face of the integral window louver system.
- Sealing of wall sleeve to the building structure (see wall sleeve installation instructions) and integral window louver system to prevent the elements from entering the structure.

AZE and AZH Series ZONELINE® Units May Be Used in Ducted Installations.

With a ducted installation it is possible to condition the air in two areas that have a common wall separating them.

A special adapter mounts on the wall sleeve and a transition piece directs the air from the unit into the adapter duct. Instructions for mounting the adapter to the wall sleeve are included with the duct adapter. The adapter contains a grille that allows air from the unit to be discharged into the primary room and the adapter connects to a duct extension that allows the air to flow to the adjoining room. Ducting a unit may allow a single unit to be used rather than a separate unit in each room, providing a means of reducing initial equipment cost. The duct may extend a total of 15 feet (with a field-fabricated insulated duct extension) in one direction, either to the right or to the left of the unit. A baffle or damper installed in the discharge duct of the adapter is provided from the factory to provide approximately 70% air discharge into the primary room (room in which the unit is installed) and 30% into the secondary (adjacent) room. Completely removing the discharge damper will result in approximately 80% air discharge into the primary room and 20% into the secondary room.

The installation of the wall sleeve and sub-base, if used, is the same for units being ducted as for free-standing units. The duct adapter support bracket overlaps the wall sleeve by 1" and the bracket and mounting screws add approximately 3/8" (3/16" on each side) to the width of the wall sleeve. If less than 1" of the wall sleeve projects into the room it will be necessary to allow for the additional width in the opening for the wall sleeve. The duct adapter mounting brackets should be mounted prior to installing the sleeve in the wall.

Refer to pages 45-46 for drawings of ducted installations.
Prior to the installation of the transition from the room cabinet to the adapter, it will be necessary to remove the discharge grille from the room cabinet. Instructions for this modification are included with the duct adapter.

New Ducted Installations

Components

Duct Adapter RAK6053 – The duct adapter is secured to each side of the wall sleeve and requires the drilling of mounting holes in the wall sleeve during installation. A template for the hole location is in the installation instructions. By securing the duct adapter to the wall sleeve, the chassis retains the slide-out feature for servicing after the transition piece is removed.

DUCT ADAPTER RAK6053

Duct Extension RAK601B – This kit contains a 44"-long insulated duct, a register mounting collar, and an air supply register. It can be secured to the duct adapter at either end of the adapter. This duct may be cut at any dimension and used in two applications, providing the sum of the two duct lengths necessary does not exceed the 44" length.

Even in single applications, the mounting flange must be cut off one end of the duct to accept the collar and supply register.

DUCT EXTENSION, MOUNTING COLLAR AND REGISTER RAK602B

Mounting Collar and Supply Register RAK602B —Are components included in the duct extension kit RAK601B. They may be ordered separately for installations where two duct extensions are made from one RAK601B.

Ducted Application Considerations

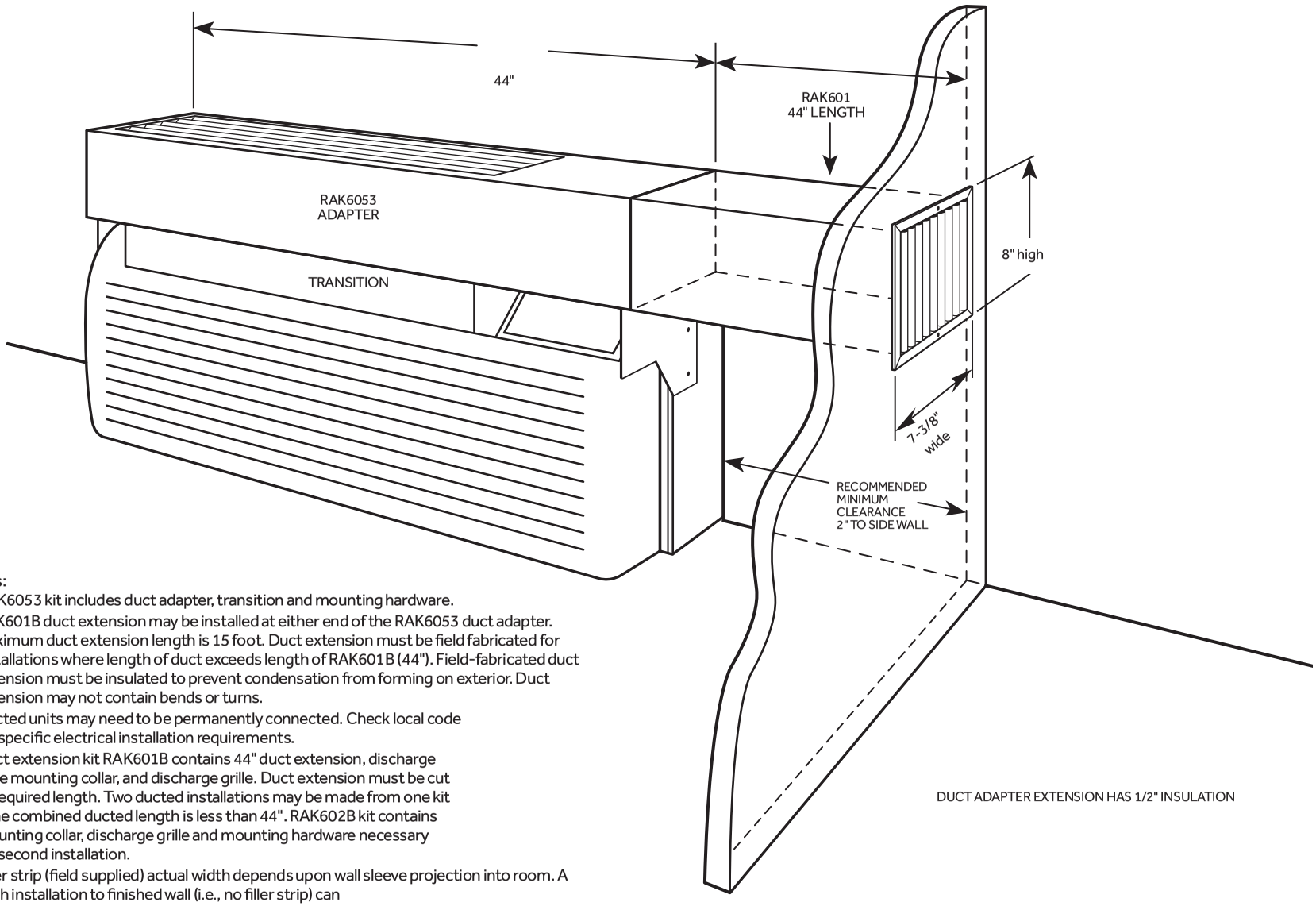
When designing a ducted application, some application considerations to be made include:

1. Do not exceed the 15-foot-length maximum for the duct extension. Field-supplied duct extension must be completely insulated with minimum of 1/2" insulation.
2. The duct must be a straight run. Turns or bends in the duct extension create air pressure drops that the unit is not designed to overcome.
3. Turn the "Fan Boost" on in the auxiliary control settings (AUX A7). This increases the fan speed to ensure proper circulation.
4. Minimum recommended clearance between the unit and the adjacent wall is 2".
5. Provisions for return air must be made to allow air circulation from secondary room. Doors in both secondary and primary rooms may be undercut or a return grille may be installed through a common wall.
6. When calculating the heat gain/heat loss, take both areas into consideration.
7. **Duct adapters are not for use on AZV models or Makeup Air models.**
8. Remote thermostats should be used with ducted systems.
9. Heater wattages are reduced when using fan boost Aux A7 (see chart below).

FAN BOOST-HEATER WATTS OUTPUT (265V AND 230/208V)			
	POWER CORD CONNECTION KIT		
FAN SPEED	30 AMP	20 AMP	15 AMP
High	3800/3100	3400/2780	2400/1960
Low	2400/1960	2400/1960	2400/1960

NOTE: Duct kits are not allowed on AZV models and should not be used with Makeup Air models.

Ducted Application AZE/AZH Series)



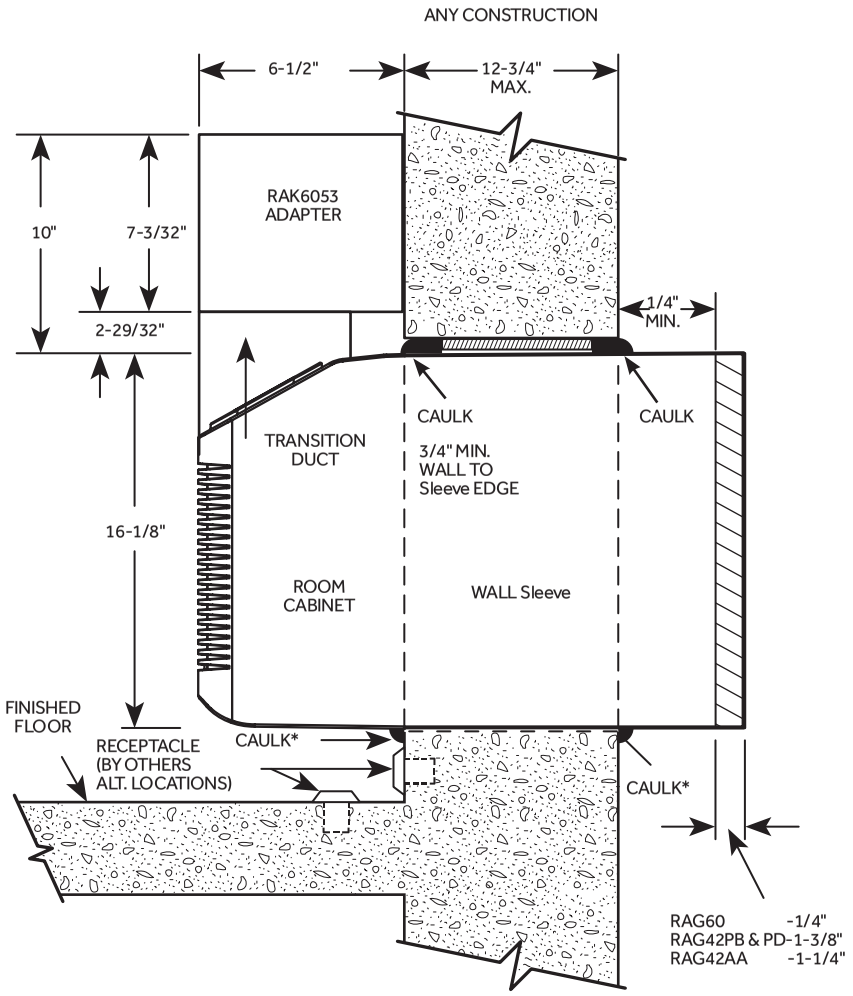
Notes:

1. RAK6053 kit includes duct adapter, transition and mounting hardware.
2. RAK601B duct extension may be installed at either end of the RAK6053 duct adapter. Maximum duct extension length is 15 foot. Duct extension must be field fabricated for installations where length of duct exceeds length of RAK601B (44"). Field-fabricated duct extension must be insulated to prevent condensation from forming on exterior. Duct extension may not contain bends or turns.
3. Ducted units may need to be permanently connected. Check local code for specific electrical installation requirements.
4. Duct extension kit RAK601B contains 44" duct extension, discharge grille mounting collar, and discharge grille. Duct extension must be cut to required length. Two ducted installations may be made from one kit if the combined ducted length is less than 44". RAK602B kit contains mounting collar, discharge grille and mounting hardware necessary for second installation.
5. Filler strip (field supplied) actual width depends upon wall sleeve projection into room. A flush installation to finished wall (i.e., no filler strip) can be made.
6. Unit must be installed to provide at least a 2" clearance between side of unit and wall.
7. Provisions for return air must be made in order to allow air circulation from secondary room. Doors in both secondary and primary rooms may be undercut or a return grille may be installed through common wall.
8. For replacement of previous-design units, see pages 44 and 47.

Ducted Detailed Side Views - AZE/AZH Series

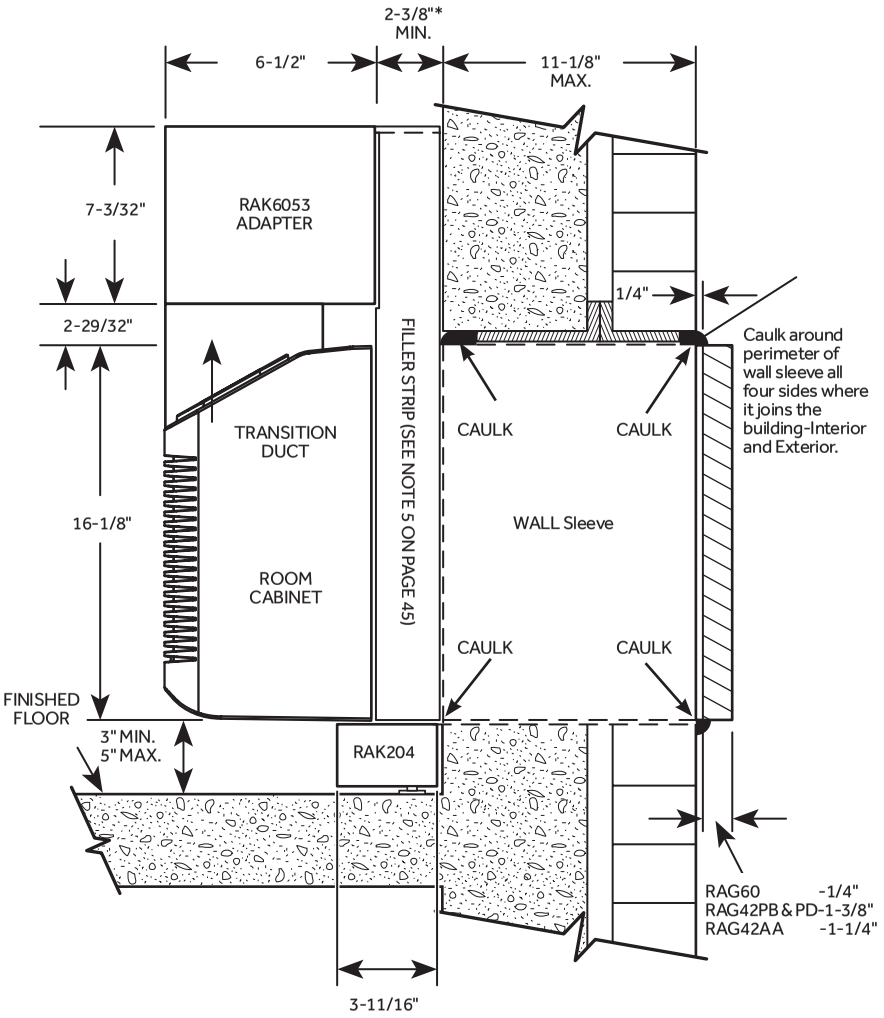
See page 45 for all notes

Line Cord Installation



*Caulk around perimeter of wall sleeve all four sides where it joins the building-Interior and Exterior.

Sub-Base Installation



*2-3/8" min. when installed with RAK204.

The design of the Zoneline chassis has changed over the years to provide better performance and appearance, therefore, some of the components used in ducted applications have changed. Select the proper components from the information below. The best procedure in determining the correct kit is to measure the existing duct extension cross section.

Existing Duct Extension cross-section measurements: 8-3/8" H x 6-1/2" W (used prior to 1988)

Duct Adapter RAK7013 - This duct adapter will allow the replacement of a new chassis (AZE or AZH Series unit) into an existing ducted application. This adapter will align properly with the duct extension and will eliminate the need to modify the wall opening. In order to minimize replacement costs, some of the components of the old duct adapter must be removed and used in the new installation. Consult the Installation Instructions of the RAK7013 before removing and discarding the old duct adapter. (See notes on pages 56-57.)

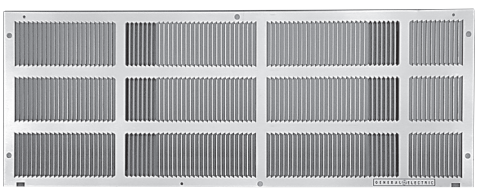
Existing Duct Extension Cross-Section Measurements: 7-3/32" H x 6 -1/2" W

Duct Transition RAK7023 - This transition duct will allow the replacement of a previous Zoneline chassis with a new AZE/AZH series. (See notes on pages 56-57.)

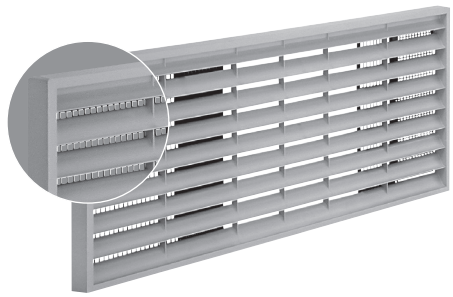
Exterior Grilles

Four styles of outdoor grilles are available for exterior treatments. The standard stamped aluminum grille (RAG60), the molded architectural louvered exterior grilles (RAG42PB and PD) and the extruded aluminum architectural louvered grille (RAG42AA). All grilles include air deflectors (RAK40) and gaskets to prevent condenser air recirculation.

RAG60 Outdoor Grille - The standard exterior grille is made of durable aluminum to protect chassis components and prevent air recirculation.



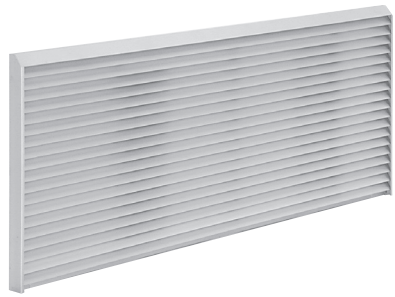
RAG60 OUTDOOR GRILLE



RAG42PB OUTDOOR GRILLE

RAG42PB and PD Architectural Grille - One-piece molded grille and frame assembly provides improved appearance, protection and weatherability. Molded of durable polycarbonate, the surfaces of the grille have a colorfast, slightly textured finish which blends well with most types of wall surfaces. The grilles can be painted in the field to match the building for improved aesthetics.

Colors: RAG42PB – Beige
RAG42PD – Dark brown



RAG42AA

RAG42AA Extruded Aluminum Grille - The RAG42AA is made from extruded anodized aluminum for use where an aluminum architectural grille is preferred. The RAG42AA comes in a clear finish and may be special ordered from GE Appliances in other colors. Minimum order quantities may be required. Contact your GE Appliances sales representative for details.

All grilles are installed and secured to the wall sleeve from the inside. Keyhole slots in the rear flange of the sleeve allow the grille to be placed in position before securing it firmly to the wall sleeve.

Replacement of existing units: If an existing grille is not replaced, capacity and efficiency will be reduced and the unit may fail to operate properly or fail prematurely. A deflector kit, RAK40, must be used on Zoneline® units. If the existing grille is from 1992 to present and has deflectors, the RAK40 is not needed. The RAK40 contains air deflectors and gaskets that mount to the chassis to direct the hot exhaust air away from the air intake to allow the unit to function properly. If RAK40 deflectors are used on the chassis, all old deflectors on the exterior grille must be removed. All grilles used with GE Appliances' Zoneline units must comply with requirements of Exterior Architectural Treatments and Special Outdoor Grilles (See page 48).

Exterior Architectural Treatments and Special Outdoor Grilles

The architectural design of a building may dictate the use of special or oversized louvers for aesthetic reasons. Louvers other than standard Zoneline® exterior grilles may be used on the Zoneline unit, however, these special louvers, or any special exterior architectural treatments of the building facade that may restrict the free circulation of condenser airflow, should be referred to GE Appliances Application Engineering for evaluation and approval. The following guidelines should be followed in selecting a louver:

1. **The louver must have a minimum of 65% free area.** ASHRAE defines "free area" as the minimum area of the opening in an air inlet or outlet through which air can pass. Percent (%) free area equals the X dimension divided by the Y dimension.
2. The louver should be attached to the wall sleeve in a manner that will prevent recirculation of condenser discharge air into the air inlet. If the louver is not attached directly to the wall sleeve, a field-supplied splitter or gasket is required between the chassis and the louver to prevent recirculation.

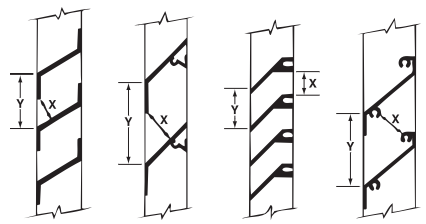
It is important that the above criteria be followed since a louver that is too restrictive or allows recirculation will reduce the unit's capacity and efficiency, increase the electrical current draw, cause intermittent operation due to the compressor overload protector shutting the compressor off, and cause failure of the compressor overload protector and shorten compressor life. Using the unit with a grille that is too restrictive or allows recirculation may constitute improper installation and will void the unit's warranty.

A scale drawing of the louver section should be sent to GE Appliances Application Engineering. To assure the proper performance of the Zoneline unit and comply with Underwriters Laboratories® requirements, it may be necessary to send a sample louver section (at least 16" x 42") to an independent lab to be tested with the Zoneline unit.

Sample Calculations

Free Area (%) = $\frac{x}{y} \times 100$ $x = 1"$ $y = 1.5"$

F.A. % = $\frac{1}{1.5} \times 100 = 66.7\%$



Power Connection for AZE, AZH and AZV Series ZONELINE® Units

All AZE, AZH and AZV Series Zoneline units are equipped with universal heaters allowing chassis installation flexibility. The Zoneline units are connected to the building power supply by a unique power connection kit. By utilizing a separate universal power connection kit, each unit is capable of providing various outputs of electric resistance heat to more closely meet the heating requirements of the particular room, thereby increasing the installation flexibility of the particular chassis. This power connection kit is the only means of supplying power to the Zoneline chassis.

The appropriate kit is determined by the voltage, the means of electrical connection, either line-cord connected or permanently connected, and the desired resistance heat output that may be supported by the branch circuit.

230/208 Volt Line Cord Connected Units

Line Cord Kits consist of a self-aligning four-pin molded connector that plugs into a mating connector on the Zoneline chassis and 6 foot insulated line cord with an electrical plug on the end.

FOUR PIN CONNECTOR AND 20 AMP PERSONALITY PLUG

The configuration of the electrical plug conforms to Nation Electrical Code (NEC) standards for the circuit amperage, and the configuration of the extra personality plug determines the heater wattage and current requirements when it is plugged into the Zoneline chassis. If the four pin connector does not have a personality plug (or the plug is not connected) the unit identifies it as a 15 amp circuit.

The power connection kit is selected by the amperage of the circuit where it will be installed. Each line cord kit has an integral Leakage Current Detection Interrupter (LCDI) device as required by the NEC and Underwriters Laboratory (UL) for line-cord connected air conditioners manufactured on or after August 1, 2004. The line-cord power connection kits are shown in the table below.

230/208 VOLT	7,000/9,000			12,000/15,000		
LINE CORD KIT	RAK315P	RAK320P	RAK330P	RAK315P	RAK320P	RAK330P
Total Watts	2,410/1,990	3,420/2,830	4,830/3,990	2,430/2,020	3,450/2,860	4,860/4,020
Heater Watts	2,400/1,960	3,400/2,780	4,800/3,930*	2,400/1,960	3,400/2,780	4,800/3,930*
Heater BTU	8,100/6,600	11,600/9,400	16,300/13,400	8,100/6,600	11,600/9,400	16,300/13,400
Total Amps	10.5/9.6	14.9/13.6	21.0/19.2	10.6/9.7	15.1/13.8	21.2/19.3
MCA	15	20	25	15	20	25
Recommended Protective Device (MOCP)	15 amp time-delay fuse or breaker	20 amp time-delay fuse or breaker	30 amp time-delay fuse or breaker	15 amp time-delay fuse or breaker	20 amp time-delay fuse or breaker	30 amp time-delay fuse or breaker

Total watts and total amps include electric heat and fan motor

Specifications subject to change.

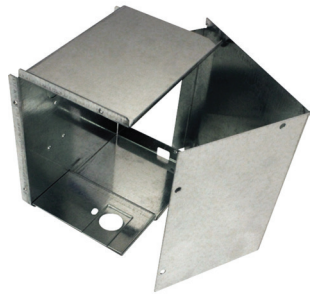
* 30-amp heater wattage is reduced in low fan operation.

230/208 Volt Permanently Connected Units

Permanently connected units do not require the LCDI or AFCI device. Permanent connection is usually made through the use of a sub-base. Each 230/208 volt sub-base consists of a sub-base with appropriate receptacle for minimum circuit amperage, a chaseway to route power connector from the sub-base to the chassis, wiring to connect the sub-base to building wiring and a short line cord with a self-aligning four-pin connector to connect to the chassis and plug into the receptacle in the sub-base. Permanent, or direct-wired, installation of a 230/208 volt unit requires a junction box kit, RAK4002D, which attaches to the chassis to form an enclosed junction box.

NOTE: The short sub-base line cord may not be used without the sub-base and junction box.

For AZE, AZH and AZV Series 230/208-volt units where a permanent installation using flexible conduit is desired, the



RAK4002D forms an enclosed junction box on the chassis. The RAK4002D has a hole to allow a 1/2" trade size electrical conduit and a square knockout for the chaseway to be connected to the junction box. For direct connection, purchase and install the appropriate universal power supply kit (also referred to as the direct connection kit below) that matches the ampacity of the building circuit connected to the unit. This four-pin connector with three 7"-long conductor wires is used for direct connections to the building wiring inside a direct-connect junction box.

These wires are then connected to the building wiring by field-supplied connectors.

230/208 VOLT	7,000/9,000			12,000/15,000		
SUB BASE	RAK204D15C	RAK204D20C	RAK204D30C	RAK204D15C	RAK204D20C	RAK204D30C
DIRECT CONNECT KIT	RAK315D	RAK320D	RAK330D	RAK315D	RAK320D	RAK330D
Total watts	2,410/1,990	3,420/2,830	4,830/3,990	2,430/2,020	3,450/2,860	4,860/4,020
Heater watts	2,400/1,960	3,400/2,780	4,800/3,930 *	2,400/1,960	3,400/2,780	4,800/3,930 *
Heater btu	8,100/6,600	11,600/9,400	16,300/13,400	8,100/6,600	11,600/9,400	16,300/13,400
Total Amps	10.5/9.6	14.9/13.6	21.0/19.2	10.6/9.7	15.1/13.8	21.2/19.3
MCA	15	20	25	15	20	25
Recommended protective device (MOCP)	15 amp time-delay fuse or breaker	20 amp time-delay fuse or breaker	30 amp time-delay fuse or breaker	15 amp time-delay fuse or breaker	20 amp time-delay fuse or breaker	30 amp time-delay fuse or breaker

Total watts and total amps include electric heat and fan motor
230/208 Volt sub base includes non LCDI 3 foot short power cord
*30-Amp heater wattage is reduced in low fan operation.

265 or 277 Volt Unit Installation - Permanently Connected Units

NEC (Article 440.60) requires permanent connection for units connected to power sources over 250 volts; therefore these units must be permanently connected (direct-wired) with field-supplied connectors. Units connected using a sub-base meet the requirement for permanent connection since all wiring is internal wiring between the sub-base and the chassis and it is enclosed.

Since 265-volt units may not be line-cord connected, an LCDI device is not required.

265 VOLT	7,000/9,000			12,000/15,000		
SUB BASE	RAK204E15C	RAK204E20C	RAK204E30C	RAK204E15C	RAK204E20C	RAK204E30C
DIRECT CONNECT KIT	RAK515D	RAK520D	RAK530D	RAK515D	RAK520D	RAK530D
Total Watts	2440	3450	4850	2460	3470	4870
Heater Watts	2400	3400	4800 *	2400	3400	4800 *
Heater BTU	8100	11600	16300	8100	11600	16300
Total Amps	9.1	12.9	18.1	9.3	13.1	18.4
MCA	15	20	25	15	20	25
Recommended protective device (MOCP)	15 amp time-delay fuse or breaker	20 amp time-delay fuse or breaker	25 amp time-delay fuse or breaker	15 amp time-delay fuse or breaker	20 amp time-delay fuse or breaker	25 amp time-delay fuse or breaker

Total watts and total amps include electric heat and fan motor
Each 265 volt sub base kit consists of a sub base with appropriate receptacle for minimum circuit amperage, a chaseway to route the power connector from the sub base to the chassis junction box and wiring to connect the receptacle to the building wiring.
265 volt sub base includes a 3 foot short power cord
* 30-amp heater wattage is reduced in low fan operation.

The 265-volt power connection kit must be ordered separately. All wiring must conform to local electrical regulations and codes.

Specifications subject to change.

Electrical Wiring Information - AZE, AZH and AZV Series

All Zonelines are single-phase 60-hertz units.

For all installations, the feeder, sub-feeder, branch circuit and electrical protective devices and selection must conform to the National Electrical Code (NEC) and to local codes.

Maximum connected load in amperes, including demands for the electric heater and the fan motor, are shown on pages 48-49.

Branch circuit ampacity and electrical protective device sizing are shown on pages 48-49 for 230/208-volt and for 265-volt units.

More than one unit per branch circuit is not recommended. When in doubt, consult the NEC. All wiring, including installation of receptacle, must conform to local electrical regulations and codes.

Replacement of Existing Chassis

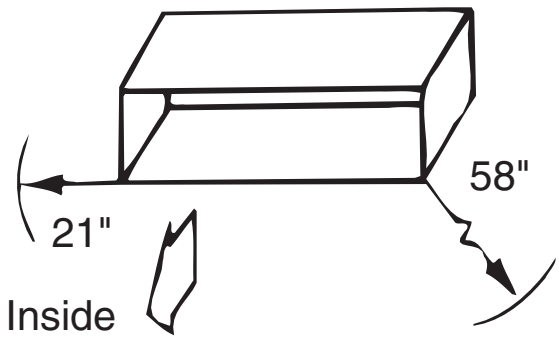
230/208 Volt and 265 Volt Units

There have been changes to NEC and improvements and modifications to the Zoneline® chassis and sub-bases since the unit was first introduced. Some of these changes require alterations to be made when replacing an older unit with a new chassis.

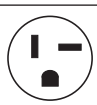
Line Cord Connected Units

The plug configuration of new line-cord connected units complies with the current NEC standards. Older installations may have wall receptacles that conformed to NEC standards at the time the building was constructed and may not match the configuration of the plug on the new line cord. The recommended solution is to change the wall receptacle to conform to current standard plug configuration. See chart on this page for current receptacle configuration.

TYPICAL 6 FOOT LINE CORD POWER CONNECTION KIT RAK320P SHOWN



RECEPTACLE

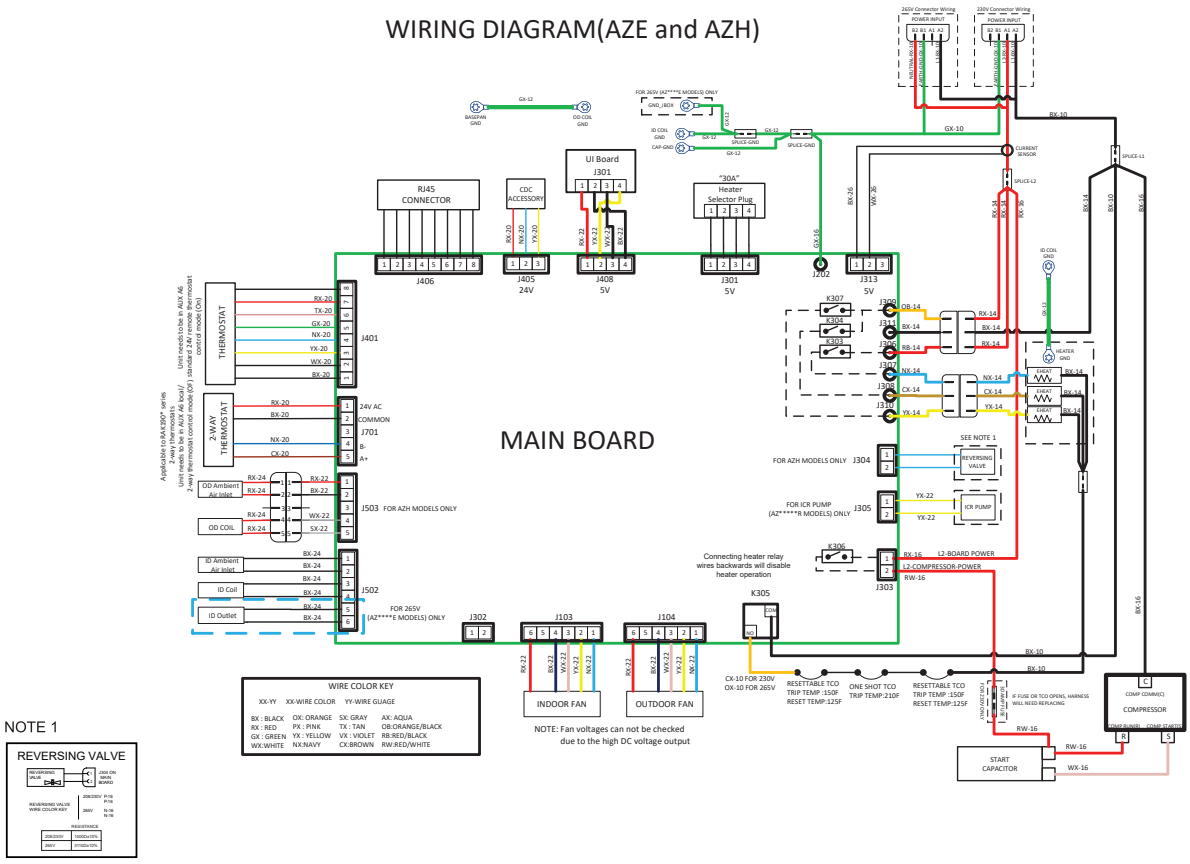
TYPE	MFG	PART NO	CONFIGURATION
15 AMP Tandem NEMA6-15R	Hubbell P&S	5661 5671	
20 AMP Perpendicular NEMA6-20R	Hubbell P&S	5461 5871	
30 AMP Large Tandem NEMA6-30R	Hubbell P&S	9330 3801	

Permanently Connected Units with Sub Base

If the existing unit is connected to a sub-base, the installation of the new unit may involve modifying the existing installation slightly. It is recommended these modifications be made by a qualified electrician. **If more assistance is needed, contact the Zoneline Application Engineer.**

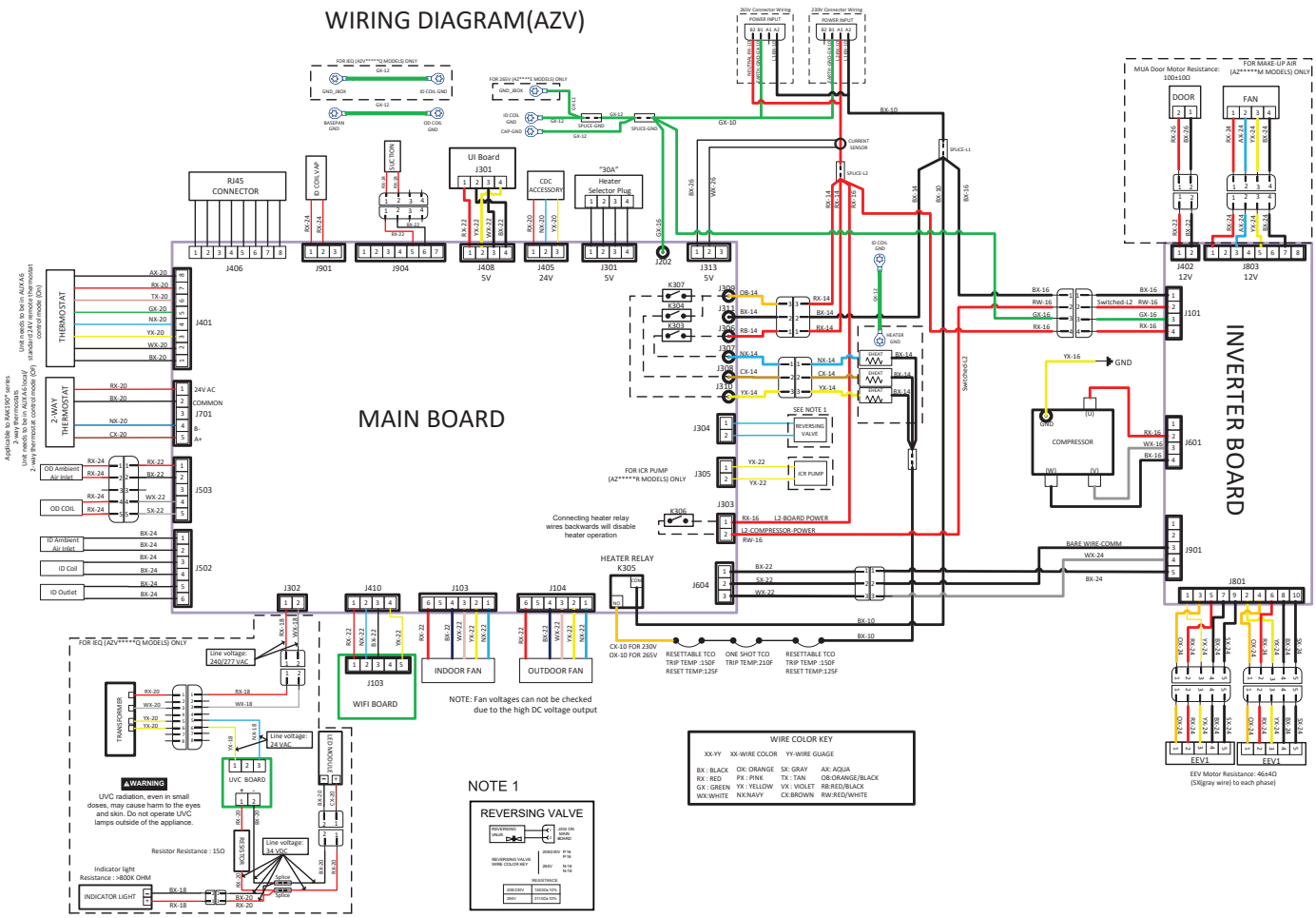
Typical AZE/AZH/AZV Series Wiring Diagram

WIRING DIAGRAM(AZE and AZH)



NOTE 1

WIRING DIAGRAM(AZV)



NOTE 1

The following are suggested specifications for the Zoneline® AZE Series Packaged Terminal Air Conditioner and the AZH Series Packaged Terminal Heat Pump.

The contractor will furnish packaged terminal air conditioners of the sizes and capacities shown on the schedule and in the specifications. The units shall be located as shown on the drawings and each shall consist of a chassis, room cabinet, wall sleeve, sub-base if specified, and outdoor grille.

Units shall be listed by UL, and AHRI and cUL certified as to capacity and efficiency and shall be GE Appliances Zoneline® models or equal. Unit dimensions shall not exceed 42-1/8" wide and 16-1/4" high with room cabinet in place.

Units shall be designed to operate on 230/208 or 265 volts, 60 Hz, single-phase power.

Chassis. The air conditioner chassis shall be the standard product of the manufacturer and shall be shipped in protective cartons to prevent damage. Cartons shall be appropriately marked at the factory with wording sufficient to warn handlers against improper stacking, up-ending, rolling or dropping. The chassis shall be the slide-in type, ready to operate after installation.

Each shall consist of the following sections and components:

- Each unit shall have a matching, easily removable, textured finish, wrap-around room cabinet molded of high-impact Polystyrene to resist corrosion and damage. The room cabinet shall have slide-out washable filters accessible without requiring removal of room cabinet from chassis;
- Hermetically sealed refrigerant system with external vibration isolated rotary-type compressor, condenser and evaporator coils and capillary refrigerant control. Airflow system consisting of one permanently lubricated variable-speed fan motor for the outdoor fan and a separate permanently lubricated variable-speed fan motor for the indoor fan. Outdoor fan shall be multi-blade axial-flow design made of non-corrosive material. Indoor fan shall be of a design to optimize airflow and operating sound. All motors on the exterior side of the weather barrier shall be of an enclosed design to reduce the effects of moisture and corrosion;
- Line-cord connected units shall require a line-cord power connection kit with integral Leakage Current Detection Interruption device or (Arc Fault Current Interrupter) as required by National Electrical Code® (NEC) and Underwriters' Laboratories. The unit shall have a universal resistance heater with output determined by connection to the power source with the appropriate power connection kit to provide specified heat output;
- A fan-cycle option to permit continuous fan operation or fan cycle operation, independently selectable for heating and cooling operation;
- Fan-only operation in either high or low fan speed selectable by room occupant;
- A positive cooling condensate disposal system which meets the test requirements of applicable AHRI Standard 310 (for packaged terminal air conditioners) and 380 (for packaged terminal heat pumps) (80°F dry bulb, 75°F wet bulb, 80% relative humidity);
- Condenser and evaporator coils to be constructed of copper tubing and aluminum plate fins designed to achieve EER and COP rating of the unit;
- Indoor and outdoor airflows that match the capacity of the coils for efficient heat transfer. Water blow-off shall not occur on the indoor coil;
- Adjustable indoor discharge air louvers that provide a 45° off horizontal air pattern with an alternate position to provide a 65° off horizontal air pattern;
- Easily accessible controls for selection of unit operation and thermostat setting.
- Controls shall automatically dim to not disturb the guest;
- Positive-closing, manually controlled, multi-position fresh-air vent capable of providing selection anywhere from fully open to fully closed. Vent door is to be secured for shipping;
- Integrated circuit and software to sense and control room temperature;
- Electronic temperature limiting with seven independent heating and cooling settings to limit maximum and minimum temperatures.
- Freeze Sentinel to automatically activate the electric resistance heater and fan motor to warm and circulate indoor air to help prevent damage due to freezing temperatures. Freeze Sentinel shall operate as long as unit is connected to a powered electrical circuit and unit shall provide ability for owner to defeat the Freeze Sentinel operation;
- Heat Sentinel to automatically activate air conditioner operation as long as unit is connected to a powered electrical circuit (even if the unit is in the off mode when the room temperature warms to 85°F and turns air conditioner operation off when the room temperature cools to 80°F, if selected by owner;
- Compatible with two-wire Central Desk Control systems;
- Remote thermostat compatibility with Class 2 remote thermostat;
- Connections to interface with a transfer fan to move air into another room;

Unit shall have means of electrical connection listed by Underwriters' Laboratories and compatible with the unit's required voltage and ampacity in conformance with National Electrical Code and local codes.

Additional specifications for GE Appliances Zoneline Fixed Speed compressor AZE and AZH Series Packaged Terminal Heat Pumps:

Heat pump units shall provide operation that will either: A) automatically phase in electric resistance heat, if heat pump alone is unable to maintain room temperature; or B) use partial electric resistance heat simultaneous with heat pump operation. Selection of A or B operation is made by means of a selector concealed from room occupant. In either A or B operation, the unit will switch to full resistance heat if room temperature continues to decline or the outdoor temperature falls below 25°F.

Additional specification for GE Appliances AZV Variable Speed Heat Pumps:

The GE Zoneline AZV series is a Packaged Terminal Air Conditioner (PTAC) with variable speed inverter technology, designed for commercial and residential applications like hotels and multi-family buildings.

Below are the critical specifications to note:

1. **Capacity and Voltage**:
   - **BTU Capacity:** 15,000 BTU for cooling and heating, suitable for spaces up to approximately 550 sq. ft.
   - **Voltage:** Operates on 230/208V or 265V (model-dependent).
   - **Refrigerant:** Uses R-454B, a low-global-warming-potential refrigerant, enhancing environmental compliance.
2. **Variable Speed Inverter Technology Compressor:**
   - Features a variable speed inverter compressor that adjusts output to match demand, improving energy efficiency and temperature consistency compared to fixed-speed units.
   - **Low-Temperature Performance:** Maintains heat pump operation near 0°F, below this, supplemental electric heat will engage.
3. **Efficiency:**
   - **SEER2:** Rated at 16.3, indicating high cooling efficiency for a PTAC unit.
   - **HSPF2:** Rated at 8.0, reflecting solid heating efficiency.
   - Inverter technology reduces energy spikes from on/off cycling, lowering operating costs.
4. **Makeup Air and Ventilation**:
   - **Makeup Air:** Introduces fresh, conditioned air without ductwork, improving indoor air quality in tightly sealed spaces.
   - **UV-C Light:** Applies UV-C to the interior unit and air stream, reducing airborne viruses and providing cleaner air. (made to order)
5. **Wi-Fi Connectivity:**
   - Built-in Wi-Fi with SmartHQ™ Management for remote monitoring and performance optimization.

Heat pump unit shall include reverse cycle defrost that automatically begins a defrost cycle when hardware and software determines the criteria for defrosting has been met. Defrosting shall be accomplished by systematically ceasing heat pump operation, pausing to allow internal refrigerant pressures to equalize, and then operating the compressor with the flow of refrigerant reversed to allow the hot gas to flow through the outdoor coil, melting the accumulated frost. The unit shall automatically resume heat pump operation, after pausing to allow refrigerant pressures to equalize, at conclusion of defrost cycle.

The unit shall be equipped with a temperature-activated drain valve to allow water generated in heat pump operation and defrost cycles to drain into the wall sleeve.

The unit shall have a switch concealed from room occupant to allow heat pump operation to be overridden and heat provided by electric resistance heat regardless of outdoor temperature.

In the event of compressor failure during heat pump operation, unit shall automatically switch to electric resistance heat to maintain selected room temperature regardless of outdoor temperatures.

Specifications for optional Internal Condensate Removal (ICR) system for AZH and AZV Series heat pump units.

The unit shall have a factory-installed Internal Condensate Removal (ICR) system to permit unit to automatically dispose of heat-pump-generated condensate water with no overflow to outdoors during heating under outdoor ambient of 55°F dry bulb, 90% relative humidity; indoor ambient 70°F dry bulb, 52% relative humidity, for four hours of continuous run time.

Wall Sleeves and Grilles (Needed for New Installations.)

(Alternate specification for steel wall sleeve)

Wall Sleeve. The metal wall sleeve shall be constructed from heavy-duty 20-gauge galvanneal steel, powder-coated for enhanced adhesion and corrosion resistance.

It shall be line on the top and sides with 0.25-inch thick acoustical and thermal insulation to minimize heat loss, prevent sleeve sweating, and reduce outdoor noise transmission.

It shall be made of a snap together design for easy and effortless assembly. With welded corners for a leak-proof base pan, eliminating the need for sealant or caulk.

It shall have keyhole slots for easy rear grille alignment and mounting and includes an exterior weather barrier for construction purposes.

In no instance shall fasteners be used through the bottom of the sleeve in order to retain the water integrity required of the wall sleeve.

Outside weather panels shipped with the sleeves shall remain in place until the outdoor grille and chassis are installed, at which time they are to be removed and discarded by the installer.

(Alternate specification for plastic wall sleeve)
Wall Sleeve. The wall sleeve shall be constructed of a non-corrosive fiberglass-reinforced polyester compound, ensuring durability and offering superior corrosion resistance compared to traditional steel sleeves.

The sleeve shall provide a flammability rating higher than UL94-5V, indicating strong fire resistance for safety in commercial and residential settings.

It shall be made of an easy and effortless snap-together design, allowing for quick and tool-free assembly during installation, thus reducing labor time.

Lined with 0.25-inch thick acoustical and thermal insulation factory-installed within the sleeve which reduces noise transmission and prevents sleeve condensation that occurs when outdoor temperatures are cold and indoor conditions are warm and humid.

Sleeves shall be installed through exterior walls where shown on the plans and shall be installed per manufacturer's installation instructions.

In no instance shall fasteners be used through the bottom of the sleeve in order to retain the water integrity required of the wall sleeve.

Outside weather panels shipped with the sleeves shall remain in place until the outdoor grille and chassis are installed, at which time they are to be removed and discarded by the installer.

Outside Grille. Each unit shall be equipped with a standard exterior grille that has been designed to allow unit operation in high ambient conditions. Grilles shall be of material and design specified.

Special grilles or customer louver sections to be supplied by others will conform to a minimum of 65% free area (as calculated by Ashrae) to allow for proper unit operation and shall be submitted to the PTAC/PTHP manufacturer, if requested, for feasibility and airflow characteristics.

Specifications for Sub-Base (If Required) Sub-Base. Each unit shall have a field-installed UL-listed electrical sub-base. The sub-base shall be attached to the lower inside flange of the wall sleeve prior to installation in the exterior wall. It shall include adjustable screws at the bottom corners to permit exact leveling of the wall sleeve. The sub-base shall have a factory-installed receptacle to allow unit line cord to plug into mating receptacle and shall have a chaseway to contain and conceal the line cord. The sub-base shall have side panels adjustable from a minimum of 2-3/8" to a maximum of 13-3/4" to enclose the area under the wall sleeve.

Weather Resistance. Complete unit including outside louver shall be submitted to an independent agency for weather-resistance tests.

Air-infiltration test to be conducted in accordance with AHRI 310/380 and in such a facility for leakage air flow measurements described in ANSI/ASHRAE 16 and 58. With indoor static pressure maintained at 0.1" in H_2O below the outdoor static pressure, the allowable air infiltration shall not exceed 19.3 $ft.^3$/min.

Water-infiltration test to be conducted in accordance with ASTM E331-86 with static air pressure differential of 10.0 lb./ft^2 (1.93" H_20) equivalent to 63 mph wind, 5.0 gal./ft^2 (8" rain/ft^2/hr.) for 15 minutes and there shall be no leakage into the room.

Approvals. Units shall be certified under the AHRI and cUL certification program and listed by UL.

Service. Submit complete information with bid covering service availability to whom service on units will be assigned, along with complete address and phone number, including phone number of emergency service personnel.

Start-Up, Adjust, Demonstrate. Contractor shall be responsible for the initial starting of units, adjustments thereto, etc., to place the units in required operating condition. Contractor shall demonstrate to the owner or his representative the operation of units for both summer and winter functions.

Warranty. The warranty shall be a full one-year parts and labor on the entire unit, plus an additional full four years parts and labor for the sealed refrigerating system, including service call for diagnosis and transportation to and from service shop (if necessary) at no charge to the customer. The warranty shall also include a limited second-through- fifth-year parts-only warranty for fan motors, switches, heater, heater protectors, compressor overload, solenoids, circuit boards, auxiliary controls, thermistors, frost controls, ICR pump, capacitors, varistors and indoor blower bearing.

Installation Responsibility. Units shall be installed according to the manufacturer's recommendations and the manufacturer shall not be responsible for unit failure as a result of improper installation, or unit performance when installed with accessories not approved by the manufacturer.

Cooling

Room air conditioner sizing is all about matching the room size to the air conditioner size. Since air conditioners remove both heat and humidity from the air, a unit that is too large, will cool the room before it has a chance to remove the humidity. The result will be a room that's not very comfortable-cool, but feeling damp and clammy. Most musty odors in rooms are due to excess humidity. Using a smaller-capacity unit or using AZV variable speed units will provide better dehumidification. The largest factor in causing mold and mildew in the room is excess moisture. A smaller unit running longer or a AZV model can remove more moisture. Mold behind wall coverings that do not allow water vapor to pass through – vinyl wallpaper or oil-based paints, for example – is not a problem of excessive moisture in the room, but rather is caused by moisture trapped in the walls.

Since larger capacity units typically are louder, oversized air conditioners also create guest complaints due to the noise and short cycling.

Heating

Using a resistance heater larger than required – using a 4.8 kW heater when a 3.4 kW heater would suffice, for example – may not cost any more in electrical consumption since the larger heater will operate, for less time. The "demand charge" portion of the utility bill – which is based on the highest electrical load for a period of time – may be a significant portion of the utility bill. Some customers have reported the demand charge actually being more than the usage charge. In a 100-room property it would be possible for the demand of the 4.8 kW heater versus a 3.4 kW heater to be 140 kW more than the demand charge if the lower wattage heaters were used. Working with the utility companies to understand their method of billing and taking advantage of any rebates they may offer can reduce the utility bill.

A heat load analysis should be performed to determine the heating and cooling load required for the space in question. How much heat is coming into the space that the air conditioner must remove and how much heat is lost during the winter months that must be replaced. The heat load analysis takes many factors into play, including cubic footage of space, location and construction type/materials. Getting the right size means getting the comfort and the energy efficiency right.

Key Terms

Capacity - The capacity of an air conditioner is measured by the amount of cooling it can do when running continuously. The total capacity is the sum of the latent capacity (ability to remove moisture from the air) and sensible capacity (ability to reduce the dry-bulb temperature). Each of these capacities is rated in BTUs per hour (Btu/h).

Air conditioner capacity is rated per AHRI 310/380 conditions at 95°F drybulb and 75°F wetbulb outside with an inside temperature of 80°F drybulb and 67°F wetbulb.

Latent System Capacity - The total capacity of an air conditioner is made up of the sensible capacity (the output of the unit used to remove heat from the air in the area being conditioned) and the latent capacity (the output of the unit used to dehumidify the air in the area being conditioned). For humid climates and applications, the sensible/latent capacity split of the unit should be considered.

The latent system capacity is 1.00 minus the sensible capacity. (If the sensible capacity is listed at 74% the latent capacity is 26%. This means that 74% of the capacity of the unit is used to remove heat from the air and 26% is used to remove moisture from the air at standard test conditions.)

Latent Cooling Load - The net amount of moisture added to the inside air by plants, people, cooking, infiltration, and any other moisture source. The amount of moisture in the air can be calculated from a combination of dry-bulb and wet-bulb temperature measurements.

Sensible Cooling Load - The heat gain of the room due to conduction, solar radiation, infiltration, appliances, people, and pets. Burning a light bulb, for example, adds only sensible load to the house. This sensible load raises the dry-bulb temperature.

Dry-bulb Temperature - The temperature measured by a standard thermometer.

Wet-bulb Temperature - When a wet wick is placed over a standard thermometer and air is blown across the surface, the water evaporates and cools the thermometer below the dry-bulb temperature. This cooler temperature (called the wet-bulb temperature) depends on how much moisture is in the air.

Many times poor or non-existent caulking around the exterior of the wall sleeve results in air infiltration, causing the unit to run excessively. One way to check for air infiltration is to look under and around the unit to the outdoors. If you can see light, there is air infiltration.

The first floor of a building is where this problem frequently occurs since caulking the bottom of the wall sleeve from the exterior may require lying outside in the dirt while working. The most frequent issue is the bottom of the sleeve to the interior wall on ALL floors. Again, it is hard to get too and difficult to caulk. These have been the cause of many complaints about the "short cycling" of the unit.

Curtains, furniture or other obstructions interfering with the discharge air circulation will make the unit cycle/turn off too soon since the cooled (or heated) discharge air is pulled back into the unit. This results in a room that is not adequately heated or cooled.

Blocking the discharge air on the unit during the heating operation can result in the unit overheating or shutting off prematurely. In these cases it is recommend that a "tent card" be used advising room occupants not to put anything on the unit.

Electrical Wiring Installation

Do not allow the installer to drill a hole in the wall sleeve to run the electrical wiring. If this is done, the wiring will have to be run between the chassis and the edge of the wall sleeve so it can be connected to the unit wiring on the room side of the wall sleeve. When the chassis is removed for servicing or cleaning, the insulation on the wires can be cut and can create a safety hazard.

If the electrical connection on a 230-volt or 208-volt installation is to be made by the line cord plugged into a wall-mounted receptacle, the receptacle should be located in the wall under the sleeve or close to the side of the wall sleeve. This installation makes a much neater appearance than a line cord running a foot or more across the floor.

The electrician may want to place the receptacle as far from the unit as possible to save a few feet of wiring without considering how the installation may appear.

Central Desk Control and Remote Thermostat Wiring

Do not allow the installer to drill a hole in the wall sleeve to run Central Desk Control (CDC) wiring or remote thermostat wiring to the unit terminals. CDC and remote thermostat wiring is classified as low-voltage wiring and does not have to be run in conduit unless required by local code. CDC and remote thermostat wiring should be run in the walls and exit the wall under the wall sleeve about 2" from the right-hand side. The base pan is designed with a clearance for the line cord and the low-voltage wiring can also be run to the chassis in this area. Wire molding can be used to hold the wiring close to the bottom of the wall sleeve.

If a sub-base is used, the wiring can be run through the sub-base, entering the rear and exiting through one of the front panels. When the room cabinet is in place, the CDC or remote thermostat wiring is usually not visible to someone standing or sitting in the room.

Do not run the low-voltage wiring in conduits with line-voltage wiring or near uninsulated line-voltage wiring since induced current can interrupt the low-voltage controls.

Consult the electrical inspector early in the project, especially if the power to the air conditioner is to be 265 volts, to understand what is required to comply with local electrical codes.

Wall Sleeve/Exterior Grille

When making an installation where the exterior grille is flush with the exterior wall, or part of a custom window/louver section, make sure the installer caulks the wall sleeve to the exterior wall, especially the bottom of the sleeve. Many times the air conditioners are run during construction and the building is not closed. This can result in excessive humidity from the warm humid air entering the building, or from the "drying out" of the building materials. Many problems have been caused by condensate water or rainwater running back into the building where proper caulking has not been done.

Exterior Grilles

When replacing an older unit, the existing outdoor grille may need to be changed or modified. Outdoor airflow patterns have changed over the years and this may dictate the need for outdoor grille replacement or modification.

If using an existing non-GE exterior grille, special attention must be paid to ensuring the air deflectors are in the proper locations on the exterior grille. Otherwise they should be removed and replaced with new RAK40 deflectors on the back of the chassis.

Ducted Installation Comments

Anytime a duct extension is used, it is required to go into the auxiliary controls and turn on the Aux A7 Fan Boost feature. This will boost the fan speeds to allow for proper air circulation for ducted applications.

NOTE: Heater wattages are reduced in Fan Boost mode ***(see page 44).***

New Installations

The GE Zoneline® AZE and AZH Series are approved for ducted installation using the GE Duct Adapter model RAK6053 and the GE Duct Extension RAK601B (Not for use with AZV variable speed series). A field-fabricated duct extension with the same interior measurements as the RAK601B may be used with the RAK6053 duct adapter. GE does not allow ducting in more than one direction.

The use of a duct adapter other than the RAK6053 is not approved by GE Appliances and may cause problems such as inadequate airflow to the secondary room or the unit shutting off on one of the overload devices.

Failure to allow for adequate air return from the secondary room is often the cause of less than satisfactory performance of a ducted installation.

General Installation Suggestions (continued)

Replacement Installations

GE offers duct adapters to allow for easy replacements of previous-design chassis in ducted installations where a GE duct adapter was used in the original installation. A duct adapter is available that will align with the duct extension when GE-built components were used in the original installation.

The duct adapter/extension used from the early 1960s until late 1987 was **8-3/8" high by 6-1/2" wide**. If the chassis to be replaced uses this size duct, use the duct adapter model RAK7013 with the new product to match up to the existing duct extension. This means the duct extension will not have to be changed.

However, to keep the cost of the replacement to a minimum there are components that will need to be taken off the existing installation and reused on the RAK7013 duct adapter. Therefore, save all parts from the existing setup until after the new installation is complete. It is important that those parts not be discarded until the new installation is complete.

If the existing duct dimensions are **7-3/32" high by 6-1/2" wide**, the RAK7023 transition piece is required to install an AZE or AZH Series unit in the ducted installation.

There were a number of Zoneline units installed in ducted installations that did not use a GE duct adapter. The easiest way to determine if the existing duct adapter is a GE duct adapter is to compare the duct adapter dimensions to the dimensions above. If the dimensions are different from the dimensions above or if the duct adapter is not made of sheet metal, it is not a GE duct adapter.

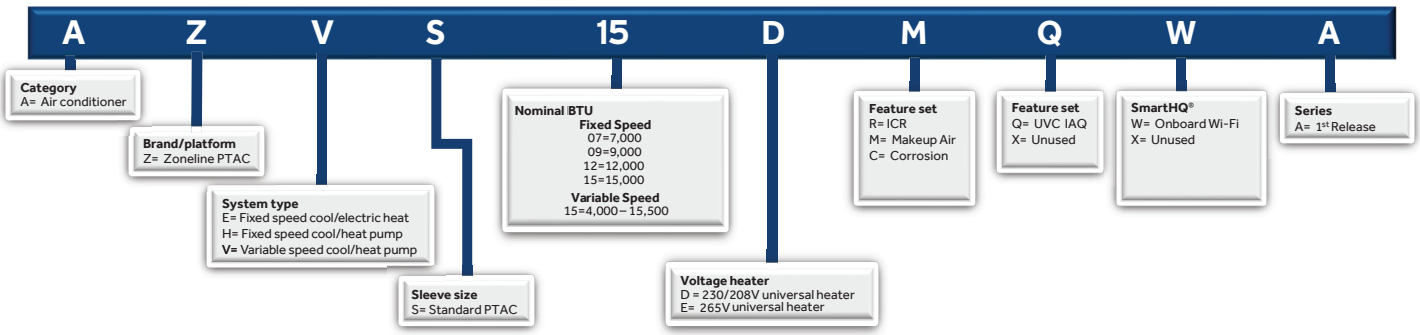
In such installations, GE recommends the removal of the old duct adapter and duct extension and the installation of a RAK6053 duct adapter and a RAK601B duct extension. Zoneline units installed in installations not using GE duct adapters and an extension with the same cross-section dimensions as the duct adapter may not be covered by the warranty.

ZONELINE® Warranty

FOR THE PERIOD OF	GE APPLIANCES WILL REPLACE
ONE YEAR From the date of the original purchase	Any part of the air conditioner which fails due to a defect in materials or workmanship. During this limited one-year warranty, GE will provide, free of charge, all labor and related service costs to replace the defective part.
FIVE YEARS From the date of the original purchase	Sealed Refrigerating System – if any part of the Sealed Refrigerating System (the compressor, condenser, evaporator, and all connecting tubing) should fail due to a defect in materials or workmanship. During this limited five-year warranty, GE will provide, free of charge, all labor and related service costs to replace the defective part.
SECOND THROUGH FIFTH YEAR From the date of the original purchase	Fan Motors, Switches, Internal Thermostat, Heater, Heater Protectors, Compressor Overload, Solenoids, Circuit Boards, Auxiliary Controls, Freeze Sentinel, Frost Controls, ICR Pump, Capacitors, Varistors, and Indoor Blower Bearing, and Makeup Air damper door system, if any of these parts should fail due to a defect in materials or workmanship. During this additional four-year limited warranty, the customer will be responsible for any labor and related service costs.

*See written warranty for details

ZONELINE® Chassis Nomenclature



Receptacles/Sub-Bases

Tandem
230/208V 15 Amp
NEMA6-15R

Perpendicular
230/208V 20 Amp
NEMA6-20R

Large tandem
230/208V 30 Amp
NEMA6-30R

265V 15 amp
NEMA7-15R;
receptacle used on
265V sub-base

265V 20 amp
NEMA7-20R;
receptacle used on
265V sub-base

265V 30 amp
NEMA7-30R;
receptacle used on
265V sub-base

SUB-BASES

	RAK204U	RAK204D15C	RAK204D20C	RAK204D30C	RAK204E15C	RAK204E20C	RAK204E30C
Voltage	N/A	230/208	230/208	230/208	265	265	265
Amps	N/A	15	20	30	15	20	30
Receptacle	N/A	NEMA6-20R	NEMA6-20R	NEMA6-30R	NEMA7-15R	NEMA7-20R	NEMA7-30R

Power Connection Kits are Required on all ZONELINE Chassis (See Chart Below).

The correct kit for the installation is determined by the voltage and amperage of the electrical circuit and the means of connecting the unit to the building wiring.

ZONELINE Connection Kits Now Come With "Personality Plugs."

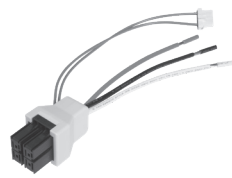
The black connector carries the power to the unit, but the extra wiring and connector attached to the plug determine the wattage of the heater to be engaged (which should match the breaker feeding the unit). Kits without a personality connector (or if connector is not plugged in) will provide the 15 amp heater values described below. The two-wire connector is for a 20 amp circuit and the four-wire connector is for the 30 amp circuit.

If the unit is to be plugged into a receptacle, a line-cord kit would be used; if the unit is to be permanently connected, a permanent-connection kit would be used. 265 volt cord set units must be installed in compliance with National Electrical Code®.

Power Connection Kits

Required on all models. See specification sheet for heater KW and branch circuit ampacity.

230/208 Volt Line-Cord Connection Kit



Direct Connect Kit

230/208 VOLT	CORD-CONNECTED (P) & DIRECT-CONNECT UNITS (D)					
		7,000/9,000			12,000/15,000	
POWER CONNECTION KIT	RAK315P & RAK315D	RAK320P & RAK320D	RAK330P & RAK330D*	RAK315P & RAK315D	RAK320P & RAK320D	RAK330P & RAK330D*
Total Watts	2,410/1,990	3,420/2,830	4,830/3,990	2,430/2,020	3,450/2,860	4,860/4,020
Heater Watts	2,400/1,960	3,400/2,780	4,800/3,930	2,400/1,960	3,400/2,780	4,800/3930
Heater BTU	8,100/6,600	11,600/9,400	16,300/13,400	8,100/6,600	11,600/9,400	16,300/13,400
Total Amps	10.5/9.6	14.9/13.6	21.0/19.2	10.6/9.7	15.1/13.8	21.2/19.3
MCA	15	20	25	15	20	25
Recommended Protective Device (MOCP)	15 amp time-delay fuse or breaker	20 amp time-delay fuse or breaker	30 amp time-delay fuse or breaker	15 amp time-delay fuse or breaker	20 amp time-delay fuse or breaker	30 amp time-delay fuse or breaker

265 VOLT	CORD-CONNECTED (P) (SUB-BASE USE ONLY) & DIRECT-CONNECT UNITS (D)					
	7,000/9,000			12,000/15,000		
POWER CONNECTION KIT	RAK515P/RAK515D	RAK520P/RAK520D	RAK530P/RAK530D*	RAK515P/RAK515D	RAK520P/RAK520D	RAK530P/RAK530D*
Total Watts	2,440	3,450	4,850	2,460	3,470	4,870
Heater Watts	2,400	3,400	4,800	2,400	3,400	4,800
Heater BTU	8,100	11,600	16,300	8,100	11,600	16,300
Total Amps	9.1	12.9	18.1	9.3	13.1	18.4
MCA	15	20	25	15	20	25
Recommended Protective Device (MOCP)	15 amp time-delay fuse or breaker	20 amp time-delay fuse or breaker	25 amp time-delay fuse or breaker	15 amp time-delay fuse or breaker	20 amp time-delay fuse or breaker	25 amp time-delay fuse or breaker

Total watts and total amps include electric heat and fan motor(s)
RAK515P, RAK520P and RAK530P are only to be used with a sub-base
* 30-amp heater wattage is reduced in low fan operation.

AZE Series Specifications

	AZE SERIES - FIXED SPEED COOLING W/ELECTRIC HEAT			
230/208	**AZES07DCXXA**	**AZES09DCXXA**	**AZES12DCXXA**	**AZES15DCXXA**
COOLING BTUH	7200/7200	9500/9500	12100/12000	14800/14500
EER	13.2/13.4	12.3/12.5	11.6/11.7	10.5/10.6
COOLING AMPS	2.6/2.8	3.6/3.9	4.7/5.1	6.3/6.8
COOLING WATTS	545/535	770/755	1035/1020	1400/1365
DEHUMIDIFICATION (Pts/Hr) High Cool	1.2	2.2	3.3	4.5
SENSIBLE HEAT RATIO Low cool – 230V	75%	75%	75%	75%
ELECTRIC HEATING BTU/HR (15A-20A-30A power conn kit req'd)	8100 – 11600 – 16300/ 6600 – 9400 – 13400	8100 – 11600 – 16300/ 6600 – 9400 – 13400	8100 – 11600 – 16300/ 6600 – 9400 – 13400	8100 – 11600 – 16300/ 6600 – 9400 – 13400
ELECTRIC HEAT WATTS (15A-20A-30A power conn kit req'd)	2400 – 3400 – 4800/ 1960 – 2780 – 3930	2400 – 3400 – 4800/ 1960 – 2780 – 3930	2400 – 3400 – 4800/ 1960 – 2780 – 3930	2400 – 3400 – 4800/ 1960 – 2780 – 3930
POWER FACTOR	0.95 min	0.95 min	0.95 min	0.95 min
CFM-ID FAN HIGH (dry)	335	375	410	440
CFM-ID FAN LOW (dry)	240	265	275	330
VENT CFM * (High Fan)	32	34	36	39
STC/OITC (Not applicable for MUA)	29/21	29/21	29/21	29/21
INDOOR SOUND PRESSURE (Max dbA)	50	50	52	53
AMPERES (Locked Rotor)	16.2	20.0	28.7	32.0
REFRIGERANT TYPE	R454B	R454B	R454B	R454B
REFRIGERANT CHARGE (oz)	26.0	27.0	32.0	34.0
WEIGHT (Net/Ship)	90/100	90/100	90/100	90/100
CORROSION PROTECTION	Yes	Yes	Yes	Yes
INTEGRATED Wi-Fi (SmartHQ Capable)	Yes	Yes	Yes	Yes

* Using RAKVENT1 kit

AZH Series Specifications

	AZH SERIES-FIXED SPEED COOLING/HEAT PUMP			
230/208	**AZHS07DCXXA**	**AZHS09DCXXA**	**AZHS12DCXXA**	**AZHS15DCXXA**
COOLING BTUH	7200/7100	9700/9600	12100/11900	15100/14700
EER	13.0/13.2	12.4/12.4	11.6/11.6	10.4/10.4
COOLING AMPS	2.6/2.8	3.6/3.9	4.7/5.1	6.7/7.1
COOLING WATTS	550/535	780/770	1035/1020	1450/1410
DEHUMIDIFICATION (Pts/Hr) High Cool	0.9	2.0	3.1	4.1
SENSIBLE HEAT RATIO Low cool – 230V	75%	75%	75%	75%
HEAT PUMP BTUH	6200/6200	8000/7900	10600/10600	13500/13300
COP	3.9/4.1	3.7/3.8	3.6/3.7	3.3/3.4
HEAT PUMP AMPS	2.3/2.5	3.0/3.2	3.7/3.5	5.6/6.0
HEAT PUMP WATTS	455/440	625/600	855/825	1180/1125
ELECTRIC HEATING BTU/HR (15A-20A-30A power conn kit req'd)	8100 – 11600 – 16300/ 6600 – 9400 – 13400	8100 – 11600 – 16300/ 6600 – 9400 – 13400	8100 – 11600 – 16300/ 6600 – 9400 – 13400	8100 – 11600 – 16300/ 6600 – 9400 – 13400
ELECTRIC HEAT WATTS (15A-20A-30A power conn kit req'd)	2400 – 3400 – 4800/ 1960 – 2780 – 3930	2400 – 3400 – 4800/ 1960 – 2780 – 3930	2400 – 3400 – 4800/ 1960 – 2780 – 3930	2400 – 340 0 – 4800/ 1960 – 2780 – 3930
POWER FACTOR	0.95 min	0.95 min	0.95 min	0.95 min
CFM-ID FAN HIGH (dry)	335	400	440	495
CFM-ID FAN LOW (dry)	240	290	305	330
VENT CFM* (High Fan)	32	36	39	42
STC/OITC (Not applicable for MUA)	29/21	29/21	29/21	29/21
INDOOR SOUND PRESSURE (Max dbA)	50	50	53	55
AMPERES (Locked Rotor)	16.2	20.0	28.7	32.0
REFRIGERANT TYPE	R454B	R454B	R454B	R454B
REFRIGERANT CHARGE (oz)	26.8	28.0	30.5	34.0
WEIGHT (Net/Ship)	90/100	90/100	90/100	90/100
CORROSION PROTECTION	Yes	Yes	Yes	Yes
INTEGRATED Wi-Fi (SmartHQ Capable)	Yes	Yes	Yes	Yes

*Using RAKVENT1 kit

	AZH SERIES-FIXED SPEED COOLING/HEAT PUMP W/ICR			
230/208	**AZHS07DRXXA**	**AZHS09DRXXA**	**AZHS12DRXXA**	**AZHS15DRXXA**
COOLING BTUH	7200/7100	9700/9600	12100/11900	15100/14700
EER	13.0/13.1	12.4/12.4	11.6/11.6	10.4/10.4
COOLING AMPS	2.6/2.8	3.6/3.9	4.7/5.1	6.7/7.1
COOLING WATTS	550/540	780/770	1035/1020	1450/1410
DEHUMIDIFICATION (Pts/Hr) High Fan Cool	0.9	2.0	3.1	4.1
SENSIBLE HEAT RATIO Low cool-230V	75%	75%	75%	75%
HEAT PUMP BTUH	6500/6400	8100/7900	11000/10900	14000/13800
COP	4.1/4.2	3.8/3.9	3.7/3.8	3.4/3.5
HEAT PUMP AMPS	2.3/2.5	3.0/3.2	3.7/3.5	5.6/6.0
HEAT PUMP WATTS	460/440	620/595	855/830	1185/1135
ELECTRIC HEATING BTU/HR (15A-20A-30A power conn kit req'd)	8100 – 11600 – 16300/ 6600 – 9400 – 13400	8100 – 11600 – 16300/ 6600 – 9400 – 13400	8100 – 11600 – 16300/ 6600 – 9400 – 13400	8100 – 11600 – 16300/ 6600 – 9400 – 13400
ELECTRIC HEAT WATTS (15A-20A-30A power conn kit req'd)	2400 – 3400 – 4800/ 1960 – 2780 – 3930	2400 – 3400 – 4800/ 1960 – 2780 – 3930	2400 – 3400 – 4800/ 1960 – 2780 – 3930	2400 – 3400 – 4800/ 1960 – 2780 – 3930
POWER FACTOR	0.95 min	0.95 min	0.95 min	0.95 min
CFM-ID FAN HIGH (dry)	335	400	440	495
CFM-ID FAN LOW (dry)	240	290	305	330
VENT CFM (High Fan Only)	36.8	41.3	43.2	47.5
STC/OITC (Not applicable for MUA)	29/21	29/21	29/21	29/21
INDOOR SOUND PRESSURE (Max dbA)	50	50	53	55
AMPERES (Locked Rotor)	16.2	20.0	28.7	32.0
REFRIGERANT TYPE	R454B	R454B	R454B	R454B
REFRIGERANT CHARGE (oz)	26.8	28.0	30.5	34.0
WEIGHT (Net/Ship)	90/100	90/100	90/100	90/100
CORROSION PROTECTION	No	No	No	No
INTEGRATED Wi-Fi (SmartHQ Capable)	Yes	Yes	Yes	Yes

	AZH SERIES-FIXED SPEED COOLING/HEAT PUMP (265V)			
265 Volt	**AZHS07ECXXA**	**AZHS09ECXXA**	**AZHS12ECXXA**	**AZHS15ECXXA**
COOLING BTUH	7100	9700	12000	14600
EER	12.7	12.1	11.4	10.4
COOLING AMPS	2.3	3.3	4.4	5.4
COOLING WATTS	555	775	1045	1395
DEHUMIDIFICATION (Pts/Hr) High Cool	0.9	1.9	3.0	4.2
SENSIBLE HEAT RATIO Low cool-230V	75%	75%	75%	75%
HEAT PUMP BTUH	6100	8000	10500	13500
COP	4.0	3.5	3.6	3.4
HEAT PUMP AMPS	1.9	2.8	3.7	4.5
HEAT PUMP WATTS	440	660	850	1145
ELECTRIC HEATING BTU/HR (15A-20A-30A power conn kit req'd)	8100 – 11600 – 16300	8100 – 11600 – 16300	8100 – 11600 – 16300	8100 – 11600 – 16300
ELECTRIC HEAT WATTS (15A-20A-30A power conn kit req'd)	2400 – 3400 – 4800	2400 – 3400 – 4800	2400 – 3400 – 4800	2400 – 3400 – 4800
POWER FACTOR	0.95 min	0.95 min	0.95 min	0.95 min
CFM-ID FAN HIGH (dry)	335	400	440	495
CFM-ID FAN LOW (dry)	240	290	305	330
VENT CFM * (High Fan)	32	36	39	42
STC/OITC (Not applicable for MUA)	29/21	29/21	29/21	29/21
INDOOR SOUND PRESSURE (Max dbA)	50	50	53	55
AMPERES (Locked Rotor)	12.7	15.0	20.7	26.0
REFRIGERANT TYPE	R454B	R454B	R454B	R454B
REFRIGERANT CHARGE (oz)	26.5	28.0	32.0	34.0
WEIGHT (Net/Ship)	90/100	90/100	90/100	90/100
CORROSION PROTECTION	Yes	Yes	Yes	Yes
INTEGRATED Wi-Fi (SmartHQ Capable)	Yes	Yes	Yes	Yes

* Using RAKVENT1 kit

AZV Series Specifications

	AZV SERIES-230/208 VARIABLE SPEED COOLING/HEAT PUMP			AZV SERIES-265 VARIABLE SPEED COOLING/HEAT PUMP		
	AZVS15DCXWA	**AZVS15DMXWA**	**AZVS15DMQWA**	**AZVS15ECXWA**	**AZVS15ERXWA**	**AZVS15EMXWA**
RATED COOLING CAPACITY BTUH	14300/14200	14300/14200	14300/14200	14300	14300	14300
RATED COOLING BTUH RANGE (95F)	4000 – 15500	4000 – 15500	4000 – 15500	4000 – 15500	4000 – 15500	4000 – 15500
SEER2 15,000 BTU (AHRI 210/240)	16.3	16.3	16.3	16.3	16.3	16.3
COOLING AMPS	5.8/6.4	5.8/6.4	5.8/6.4	5.1	5.1	5.1
COOLING WATTS	1295/1300	1295/1300	1295/1300	1295	1295	1295
DEHUMIDIFICATION (Pts/Hr)- Hi Comp Spd (95F)	4.2	4.2	4.2	4.2	4.2	4.2
SENSIBLE HEAT RATIO- Hi Comp Spd (95F)	68%	68%	68%	68%	68%	68%
RATED HEAT PUMP CAPACITY BTUH	13500/13500	13500/13500	13500/13500	13500	13800	13500
RATED HEAT PUMP BTUH RANGE (47F)	3600 – 16200	3600 – 16200	3600 – 16200	3600 – 16200	3600 – 16200	3600 – 16200
HSPF2 at 15,000 BTU (AHRI 210/240)	8.0	8.0	8.0	8.0	TBD	8.0
HP BTU max at 17F	10300	10300	10300	10300	10300	10300
HP BTU max at 5F	9000	9000	9000	9000	9000	9000
HEAT PUMP AMPS	5.2/5.8	5.2/5.7	5.2/5.7	4.5	4.5	4.5
HEAT PUMP WATTS	1160/1160	1155/1155	1155/1155	1160	1150	1160
ELECTRIC HEATING BTU/HR (15A-20A-30A power conn kit req'd)	8100 – 11600 – 16300/ 6600 – 9400 – 13400	8100 – 11600 – 16300/ 6600 – 9400 – 13400*	8100 – 11600 – 16300/ 6600 – 9400 – 13400	8100 – 11600 – 16300	8100 – 11600 – 16300	8100 – 11600 – 16300
ELECTRIC HEAT WATTS (15A-20A-30A power conn kit req'd)	2400 – 3400 – 4800/ 1960 – 2780 – 3930	2400 – 3400 – 4800/ 1960 – 2780 – 3930	2400 – 3400 – 4800/ 1960 – 2780 – 3930	2400 – 3400 – 4800	2400 – 3400 – 4800	2400 – 3400 – 4800
POWER FACTOR	0.95 min	0.95 min	0.95 min	0.95 min	0.95 min	0.95 min
CFM-ID FAN HIGH (dry)	300-525	300-525	300-525	300 – 525	300 – 525	300 – 525
CFM-ID FAN LOW (dry)	250-465	250-465	250-465	250 – 465	250 – 465	250 – 465
MUA CFMs (Increments of 5 cfm)	NA	30-50	30-50	NA	NA	30 – 50
VENT CFM * (High Fan)	45	NA	NA	45	45	NA
STC/OITC (Not applicable for MUA)	29/21	NA	NA	29/21	29/21	NA
INDOOR SOUND PRESSURE (Max dbA)	47 – 60	47 – 60	47 – 60	47 – 60	47 – 60	47 – 60
AMPERES (Locked Rotor)	6.6	6.6	6.6	6.6	6.6	6.6
REFRIGERANT TYPE	R454B	R454B	R454B	R454B	R454B	R454B
REFRIGERANT CHARGE (oz)	29.0	29.0	29.0	29.0	29.0	29.0
WEIGHT (Net/Ship)	102/112	103/113	110/120	102/112	103/113	103/113
CORROSION PROTECTION	Yes	No	No	Yes	Yes	No
INTEGRATED Wi-Fi (SmartHQ Capable)	Yes	Yes	Yes	Yes	Yes	Yes

* Using RAKVENT1 kit

Additional Data

EER @ 15, 000 BTU (95F)	11.0/10.9	11.0/10.9	11.0/10.9	11.0	11.0	11.0
EER @ 12, 000 BTU (95F)	12.0	12.0	12.0	12.0	12.0	12.0
EER @ 9, 000 BTU (95F)	12.7	12.7	12.7	12.7	12.7	12.7
EER @ 7, 700 BTU (95F)	13.3	13.3	13.3	13.3	13.3	13.3
COP @ 15,000 BTU (47F)	3.4/3.4	3.4/3.4	3.4/3.4	3.4	3.5	3.4
COP @ 12,000 BTU (47F)	3.7	3.7	3.7	3.7	3.7	3.7
COP @ 9,000 BTU (47F)	4.0	4.0	4.0	4.0	4.0	4.0
COP @ 4,000 BTU (47F)	4.5	4.5	4.5	4.5	4.5	4.5
COP @ 17F	2.4	2.4	2.4	2.4	2.4	2.4
COP @ 5F	2.0	2.0	2.0	2.0	2.0	2.0
Dehumidification (Pts/Hr) Low Comp Spd (75F)	1.5	1.5	1.5	1.5	1.5	1.5
Dehum Rate at 95F Boost Dehum (60% RH) Max rate (pts/hr)	5.0	5.0	5.0	5.0	5.0	5.0
Dehum Rate at 95F Dehum Sentinel (60% RH) pts/hr	1.5 – 5.0	1.5 – 5.0	1.5 – 5.0	1.5 – 5.0	1.5 – 5.0	1.5 – 5.0
Sensible heat ratio -Low Comp Spd (75F)	65%	65%	65%	65%	65%	65%
"Sensible Heat Ratio (SHR) at 95F Dehum Sentinel Mode (60% RH) Low Comp Speed"	0%	0%	0%	0%	0%	0%

Accessory List

KIT NUMBER	DESCRIPTION	REF PAGE
RAA13Z	MERV 13 replacement air filter for AZV Makeup Air models	
RAA13	Replacement filter for RAK13	
RAK13	MERV 13 filter kit for AZ45/65 Makeup Air models (California 1-1-2020)	
RAA65	Replacement filters for AZE, AZH, AZV	
RAB42MG	Quick snap wall sleeve-metal grey white	
RAB42MGSTC	Acoustic wall sleeve	
RAB42PG	Quick snap wall sleeve-plastic grey	
RAB4216MG	Quick snap wall sleeve 16" extended depth-metal grey white	
RAB4218MG	Quick snap wall sleeve 18" extended depth-metal grey white	
RAB4220MG	Quick snap wall sleeve 20" extended depth-metal grey white	
RAB4224MG	Quick snap wall sleeve 24" extended depth-metal grey white	
RAD10	Internal/external drain kit	
RAG42AA	Architectural rear grille-aluminum	
RAG42PB	Architectural rear grille-beige	
RAG42PD	Architectural rear grille-dark brown	
RAG60	Stamped aluminum rear grille	
RAK40	Air deflector kit	
RAK44	PTAC curtain guard (5 pack)	
RAK4002D	Direct-connect junction box 230/208V for AZE, AZH and AZV series and AZ45/65 models ending in W5 or higher	
RAK315P	Universal power supply, 15 amp with 6 foot power cord	
RAK320P	Universal power supply, 20 amp with 6 foot power cord	
RAK330P	Universal power supply, 30 amp with 6 foot power cord	
RAK315D	230/208V Universal power supply-Direct Connect-15 amp	
RAK320D	230/208V Universal power supply-Direct Connect-20 amp	
RAK330D	230/208V Universal power supply-Direct Connect-30 amp	
RAK515D	265V Universal power supply-Direct Connect- 15 amp	
RAK520D	265V Universal power supply-Direct Connect- 20 amp	
RAK530D	265V Universal power supply-Direct Connect- 30 amp	
RAK315SP	230/208V Universal power supply, short 3 foot cord for sub-base use only-15 amp	
RAK320SP	230/208V Universal power supply, short 3 foot cord for sub-base use only-20 amp	
RAK330SP	230/208V Universal power supply, short 3 foot cord for sub-base use only-20 amp	
RAK515P	265V Universal power supply, short 3 foot cord for sub-base use only-15 amp	
RAK520P	265V Universal power supply, short 3 foot cord for sub-base use only-20 amp	
RAK530P	265V Universal power supply, short 3 foot cord for sub-base use only-30 amp	
RAK205CW	Chaseway for RAK204 sub-base	
RAK204D15C	230/208V, 15 amp sub-base with short 3 foot cord for sub-base use only	
RAK204D20C	230/208V, 20 amp sub-base with short 3 foot cord for sub-base use only	
RAK204D30C	230/208V, 30 amp sub-base with short 3 foot cord for sub-base use only	
RAK204E15C	265V, 15 amp sub-base with short 3 foot cord for sub-base use only	
RAK204E20C	265V, 20 amp sub-base with short 3 foot cord for sub-base use only	
RAK204E30C	265V, 15 amp sub-base with short 3 foot cord for sub-base use only	
RAK204U	Sub-base without electrical devices or wiring	
RAK601B	Duct extension (Includes RAK602B)	
RAK602B	Air register and trim flange	
RAK6053	Duct adapter for new installations w/AZE, AZH, AZV and AZ45/65 only	
RAK7013	Duct adapter AZ45/65, AZE, AZH, AZV with existing ductwork measuring 8-3/8" H x 6-1/2" W	
RAK7023	Duct transition for replacement of new units and existing ductwork measuring 7-3/32" x 6-1/2"W for AZE, AZH, AZV and AZ45/65	
RAKCDC	CDC Wiring Connector for AZE, AZH, AZV and AZ45/65 (Also used with occupancy thermostats for Makeup Air)	
RAKVENT1	Vent manifold for AZE, AZH and AZ45/65 (excludes Variable Speed, Makeup Air and ICR models)	
SHCM10PK, SHCM10PKC	SmartHQ™ Home connect module (10 pack)	

Thermostats

KIT NUMBER	DESCRIPTION	REF PAGE
RAK149F2A	Digital 2 fan speed thermostat for AZE, AZH and AZ45/65	
RAK149P2A	Programmable thermostat for AZE, AZH and AZ45/65	
RAK150VF2	Up to 3 heat/2 cool, digital 2 fan speed thermostat for AZV (also compatible with AZE, AZH and AZ45/65	
RAK160W2	Wireless two fan speed thermostat for AZE, AZH and AZ45/65	
RAK180W1	Energy management/occupancy sensing wireless thermostat Makeup Air compatible for AZE, AZH and AZ45/65	
RAK190V	Energy management thermostat 1-way/2-way communication configuration	
RAKTK8W1	Thermostat connector-8 pin/8 wire	
RAKTK8W10	Thermostat connector-8 pin/8 wire (10pk)	

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Colors may vary slightly due to printing process.

Beige

Dark Brown

Notes

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