

# Architects and Engineers Design Data Manual

cooling performance data

estimated cooling hours

air distribution

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Featuring The NEW 5500 Series



*We bring good things to life.*

# Quick Reference

## 2500 Series Cooling with Electric Heat

MODEL NUMBER	COOLING (Btuh)	Cooling Watts	EER	Electric Heat (Btuh)	Electric Heater Watts	Electric Heat Amps	Min. Circuit Protection (Amps)
AZ25E07D2*	7100/6900	600/585	11.8/11.8	8600/7100	2550/2090	11.0/10.0	15
AZ25E07D3*	7100/6900	600/585	11.8/11.8	11700/9600	3450/2820	15.0/13.6	20
AZ25E09D2*	9000/8800	785/765	11.5/11.5	8600/7100	2550/2090	11.0/10.0	15
AZ25E09D3*	9000/8800	785/765	11.5/11.5	11700/9600	3450/2820	15.0/13.6	20
AZ25E09D5*	9000/8800	785/765	11.5/11.5	17000/13900	5000/4090	21.7/19.7	30
AZ25E12D2*	11700/11500	1075/1055	10.9/10.9	8600/7100	2550/2090	11.0/10.0	15
AZ25E12D3*	11700/11500	1075/1055	10.9/10.9	11700/9600	3450/2820	15.0/13.6	20
AZ25E12D5*	11700/11500	1075/1055	10.9/10.9	17000/13900	5000/4090	21.7/19.7	30
AZ25E15D2*	14600/14300	1520/1490	9.6/9.6	8600/7100	2550/2090	11.0/10.0	15
AZ25E15D3*	14600/14300	1520/1490	9.6/9.6	11700/9600	3450/2820	15.0/13.6	20
AZ25E15D5*	14600/14300	1520/1490	9.6/9.6	17000/13900	5000/4090	21.7/19.7	30
AZ25E07E3*	7100	600	11.8	8600	2550	9.6	15
AZ25E07E4*	7100	600	11.8	12600	3700	14.0	20
AZ25E09E3*	9000	785	11.5	8600	2550	9.6	15
AZ25E09E4*	9000	785	11.5	12600	3700	14.0	20
AZ25E09E5*	9000	785	11.5	17000	5000	18.9	30
AZ25E12E3*	11700	1075	10.9	8600	2550	9.6	15
AZ25E12E4*	11700	1075	10.9	12600	3700	14.0	20
AZ25E12E5*	11700	1075	10.9	17000	5000	18.9	30
AZ25E15E3*	14600	1520	9.6	8600	2550	9.6	15
AZ25E15E4*	14600	1520	9.6	12600	3700	14.0	20
AZ25E15E5*	14600	1520	9.6	17000	5000	18.9	30

## 2500 and 3500 Series Control Panel



## 3500 Series Heat Pump with Backup Resistance Heat

MODEL NUMBER	COOLING (Btuh)	Cooling Watts	EER	Reverse Cycle Heat (Btuh)	COP	Electric Heat (Btuh)	Electric Heater Watts	Electric Heat Amps	Min. Circuit Protection (Amps)
AZ35H07D2*	7100/6900	600/585	11.8/11.8	6400/6200	3.5/3.5	8600/7100	2550/2090	11.0/10.0	15
AZ35H07D3*	7100/6900	600/585	11.8/11.8	6400/6200	3.5/3.5	11700/9600	3450/2820	15.0/13.6	20
AZ35H09D2*	9000/8800	785/765	11.5/11.5	8400/8200	3.5/3.5	8600/7100	2550/2090	11.0/10.0	15
AZ35H09D3*	9000/8800	785/765	11.5/11.5	8400/8200	3.5/3.5	11700/9600	3450/2820	15.0/13.6	20
AZ35H09D5*	9000/8800	785/765	11.5/11.5	8400/8200	3.5/3.5	17000/13900	5000/4090	21.7/19.7	30
AZ35H12D2*	11700/11500	1075/1055	10.9/10.9	10900/10700	3.3/3.3	8600/7100	2550/2090	11.0/10.0	15
AZ35H12D3*	11700/11500	1075/1055	10.9/10.9	10900/10700	3.3/3.3	11700/9600	3450/2820	15.0/13.6	20
AZ35H12D5*	11700/11500	1075/1055	10.9/10.9	10900/10700	3.3/3.3	17000/13900	5000/4090	21.7/19.7	30
AZ35H15D2*	14600/14300	1520/1490	9.6/9.6	13400/13200	3.1/3.1	8600/7100	2550/2090	11.0/10.0	15
AZ35H15D3*	14600/14300	1520/1490	9.6/9.6	13400/13200	3.1/3.1	11700/9600	3450/2820	15.0/13.6	20
AZ35H15D5*	14600/14300	1520/1490	9.6/9.6	13400/13200	3.1/3.1	17000/13900	5000/4090	21.7/14.7	30
AZ35H07E3*	7100	600	11.8	6400	3.5	8600	2550	9.6	15
AZ35H07E4*	7100	600	11.8	6400	3.5	12600	3700	14.0	20
AZ35H09E3*	9000	785	11.5	8400	3.5	8600	2550	9.6	15
AZ35H09E4*	9000	785	11.5	8400	3.5	12600	3700	14.0	20
AZ35H09E5*	9000	785	11.5	8400	3.5	17000	5000	18.9	30
AZ35H12E3*	11700	1075	10.9	10900	3.3	8600	2550	9.6	15
AZ35H12E4*	11700	1075	10.9	10900	3.3	12600	3700	14.0	20
AZ35H12E5*	11700	1075	10.9	10900	3.3	17000	5000	18.9	30
AZ35H15E3*	14600	1520	9.6	13400	3.1	8600	2550	9.6	15
AZ35H15E4*	14600	1520	9.6	13400	3.1	12600	3700	14.0	20
AZ35H15E5*	14600	1520	9.6	13400	3.1	17000	5000	18.9	30

### LEGEND

**COP** – Coefficient of Performance

**EER** – Energy Efficient Ratio

\* – Covers All Model Versions

All Units are 60 hertz single phase.

Dual rated 230/208 volt units are shown with ratings separated by “/”.

Units with one rating are 265 volt units.

# Quick Reference

## 5500 Series Heat Pump with Backup Resistance Heat

MODEL NUMBER	COOLING (Btuh)	Voltage 60 Hz 1-phase	Cooling Watts	EER	COP	Reverse Cycle Heat (Btuh)
AZ55H07DA*	7100/6800	230/208	590/565	12.0/12.0	3.5/3.5	6400/6200
AZ55H09DA*	9000/8800	230/208	785/765	11.5/11.5	3.5/3.5	8400/8200
AZ55H12DA*	11800/11600	230/208	1085/1065	10.9/10.9	3.3/3.3	10900/10700
AZ55H15DA*	14700/14400	230/208	1470/1440	10.0/10.0	3.1/3.1	13400/13200
AZ55H07EA*	7100	265	590	12.0	3.5	6400
AZ55H09EA*	9000	265	785	11.5	3.5	8400
AZ55H12EA*	11800	265	1085	10.9	3.3	10900
AZ55H15EA*	14700	265	1470	10.0	3.1	13400

## 5500 Series Control Panel



### LEGEND

**COP** - Coefficient of Performance

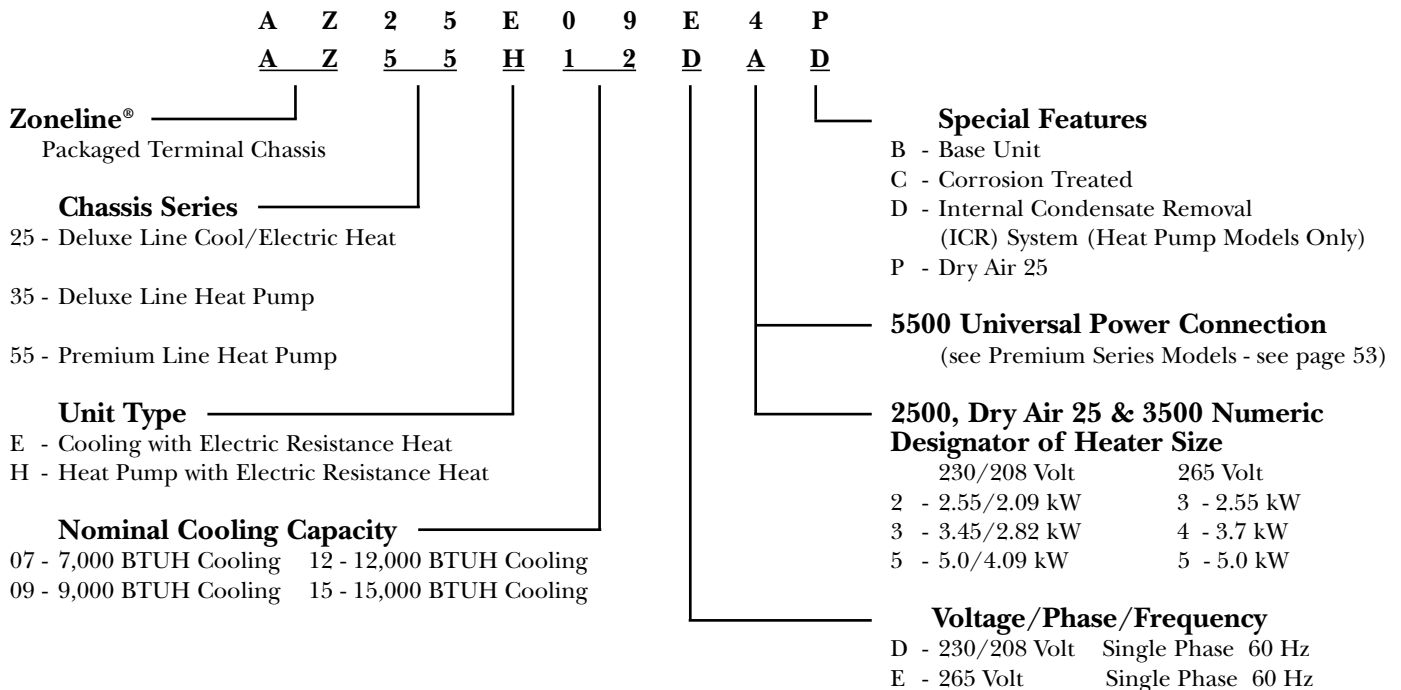
**EER** - Energy Efficient Ratio

\* - Covers All Model Versions

## Zoneline® Chassis Nomenclature

The Zoneline chassis is identified by a model number defining the type of unit, cooling capacity, electrical information and optional features included on the unit. When specifying or ordering the Zoneline chassis use of this nomenclature will assure receiving the correct unit.

### Example



**The Zonline 2500, 3500 and 5500 Series have incorporated changes suggested by customers and enhancements by GE's Technology team:**

- Auto Heat/Auto Cool settings to reduce operating sound level while increasing occupant comfort
- Ability to connect to wall thermostat or Central Desk Control without additional interface module
- 7-step temperature limiting with separately selectable heating and cooling limits
- Transfer Fan interface - enables a fan mounted in the wall to operate in conjunction with the unit fan (fan, wiring and relay are field supplied)
- "Smart Fan" fan cycle/fan continuous operation to increase room occupant comfort
- Easier installation of chassis in existing wall cases

See the "Features and Benefits" section for in depth explanation of these changes and the industry leading features of the GE Zonline retained from the previous series.

**The Deluxe 2500 Series Zonline Models Includes The "Dry Air 25" Models Which Remove 25% More Moisture Than Other Zonline Models.**

**Deluxe Dry Air 25 Models**

*Cooling With Resistance Heat*

- Removes 25% More Moisture than other Zonline Models, up to 2.7 Additional Gallons Per Day
- Cool and Dry Air in Less Time than Standard Zonline Models
- Heat Pipe is a Separate Sealed Refrigerant System
  - No Mechanical Parts - No Special Maintenance Required
- Helps Maintain Lower Relative Humidity In Rooms
- Maintains Comfort at Slightly Higher Room Temperatures
  - Reduces Operating Costs - Provides Comfort Without Overcooling
- Corrosion Treatment is Standard
- Excellent Choice for Humid Climates
- Available in 7000, 9000 and 12000 BTU Sizes



The Dry Air 25 system, a heat pipe, is a hermetically sealed heat transfer surface installed in a "saddlebag" configuration around the indoor (evaporator) coil of the Zonline. This coil arrangement will transfer heat from the front coil of the saddlebag to the rear coil without power consumption. This assembly uses R-22 as the refrigerant and is not connected to the regular Zonline refrigerant circuit.

As warm humid air is pulled through the pre-cool (front) section of the heat pipe, the heat removed from the air is absorbed by the refrigerant, causing the refrigerant to change to a gas and flow to the re-heat (rear) section of the heat pipe. The air leaving the pre-cool section of the heat pipe is cooler and at a higher relative humidity level than the room air. The pre-cooled air is further cooled as it passes through the evaporator; consequently, the relative humidity increases allowing the evaporator coil to remove more moisture.

When the cold air from the evaporator comes in contact with the re-heat section of the heat pipe, the heat that was removed by the pre-cool section is added back to the air and the refrigerant in the heat pipe condenses and flows back to the indoor coil. The air discharged into the room by this process is much drier, creating a more comfortable room condition.

**The Newest Innovation from GE...**

The Dry Air 25 Models center around GE's exclusive use of the patented Dinh® Dehumidifier Heat Pipe from Heat Pipe Technology, Inc. This innovative NASA spin-off technology enables Dry Air 25 to remove 25% more moisture from the air than other leading manufacturers' packaged terminal air conditioners. This helps maintain room comfort at a higher room temperature, reducing operating costs.

The Dry Air 25 keeps a room cool and dry, and this is the most important benefit when it comes to the occupant of the room - hotel guests, apartment residents, students... In a hot, humid climate, getting away from the humidity is just as important as the heat, and the Dry Air 25 is the perfect solution. The dehumidification of the Dry Air 25 has been verified by the same ARI test conditions that standard units are rated under. A list of customers using Dry Air 25 is available from GE.

**COMPARISON OF DRY AIR 25 DEHUMIDIFICATION\***

GE Dry Air 25	Removes <b>25%</b> More Moisture
GE 2500 Series Zonline®	
Amana	
Carrier	

\*Based on 12,000 BTU Units.

NOTE: The Dry Air 25 models include all features of the 2500 series.

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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 this 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.**

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# Introduction

This manual is designed to provide product, performance and application information to our customers and their architects and engineers for use in selection and design of a zonal comfort control system utilizing GE Zoneline® Packaged Terminal Air Conditioners (PTAC) and Packaged Terminal Heat Pumps (PTHP). GE Zoneline® PTACs and PTHPs are self-contained units designed for through-the-wall installations in hotels, motels, apartments, hospitals, nursing homes and add-on rooms.

Zonelines provide individual room or zone control in both cooling and heating operation. There is a model for practically every application, ranging in cooling capacities from 7,100 to 14,700 BTUH and heating capacities from 6,400 to 13,400 BTUH in heat pump operation. See page 54 for resistance heaters available.

The Zoneline offers a two tier lineup; the Deluxe Line - the 2500 Series with electric resistance heat, including the Dry Air 25 Models with enhanced dehumidification for hot and humid climates, and the 3500 Series heat pump; the Premium Line - the 5500 Series heat pump.

## Deluxe Line Standard Features:

- Freeze Sentinel™
- Indoor Coil Frost Control
- Central Desk Control Interface
- Standard Remote Thermostat Control Capability
- Random Restart
- Electronic Temperature Limiting
- "Smart Fan" Fan Cycle/Continuous Control
- Transfer Fan Interface
- Separate Indoor and Outdoor Fan Motors
- Room Occupancy Sensor Interface

**NOTE: The Dry Air 25 models include all features of the 2500 series.**

## Premium Line Standard Features:

- All the Standard Features of the Deluxe Line
- Exclusive Simultaneous Heat Pump and Resistance Heat Operation (when needed)
- Exclusive Reverse Cycle Defrost to Increase Heat Pump savings
- Touch Pad Controls with Digital Temperature Readout

## Advantages of the GE Zoneline® System:

### • Flexible Application

- May be installed flush to finished floor to 3" from the ceiling
- 7,100 to 14,700 BTUH units in same physical size
- Deluxe 2500 and 3500 Series may be ducted to condition more than one room
- Compatible with Class 2 Remote Thermostat Control
- Compatible with 2 wire CDC and many Energy Management systems

### • Economical Installation

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

### • Quiet Operation

- Auto Fan operates unit at lowest, quietest fan speed when possible to reduce the sound from the unit
- Indoor double cut-off scroll: two fan motor 2500 and 3500 Series units
- Indoor cross-flow blower: 2 fan motor 5500 Series units

### • Energy-Saving Operation

- Units in unoccupied areas may be turned off
- Designed for efficient cooling operation - EERs from 9.6 to 12.0
- Efficient heat pump units - COPs from 3.1 to 3.5
- Extended heat pump operation without sacrificing room comfort

### • Ease of Maintenance

- Permanently lubricated fan motors
- Upfront lift out filters
- Air Discharge area is easily accessed for cleaning - Deluxe Series
- Slide out chassis for easy access if service is required

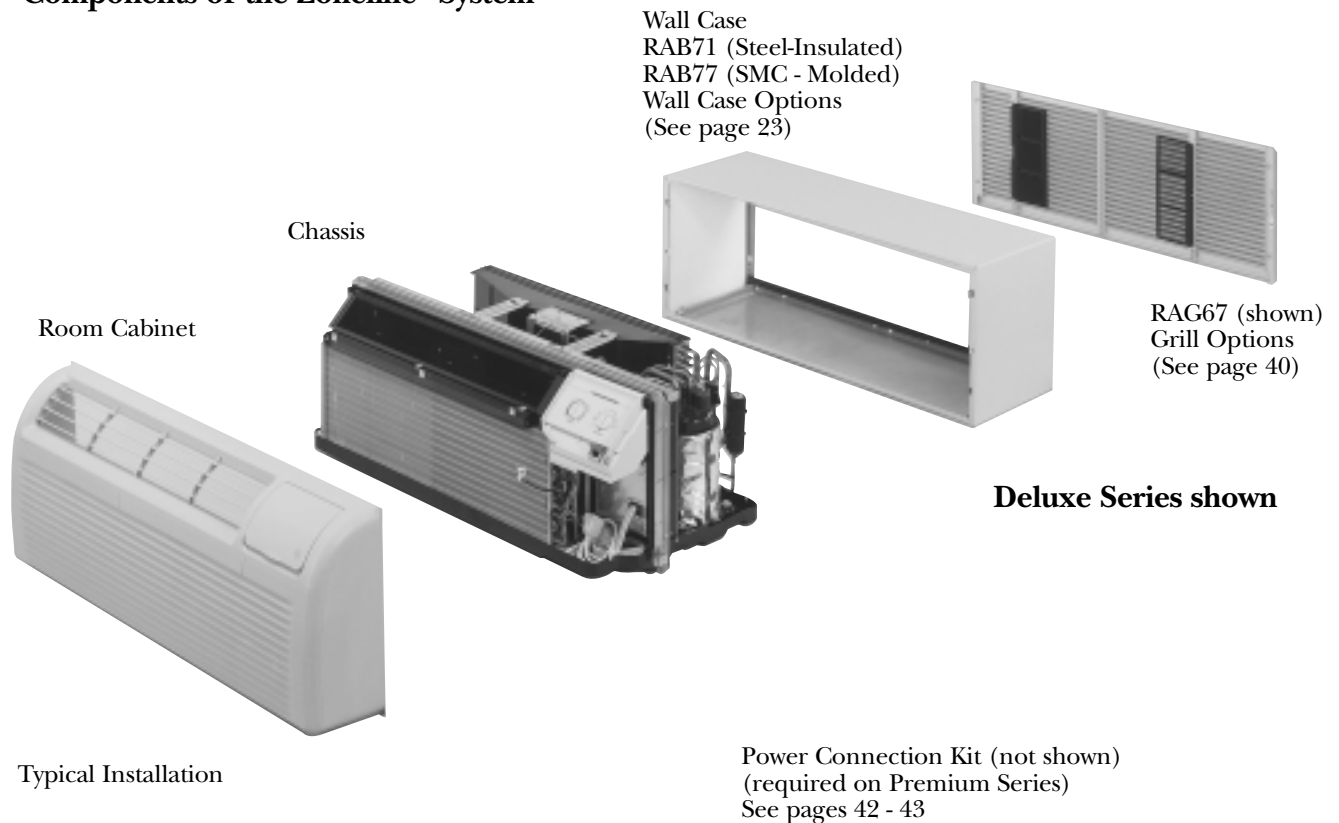
### • Heat Pump Operation (Defrost Termination)

After the heat pump models have switched to resistance heat they will change back to heat pump operation as the outdoor temperature rises - the 3500 series returns to heat pump operation at 37°F outdoor coil temperature, and the 5500 series returns to heat pump operation at 32°F outdoor air temperature.

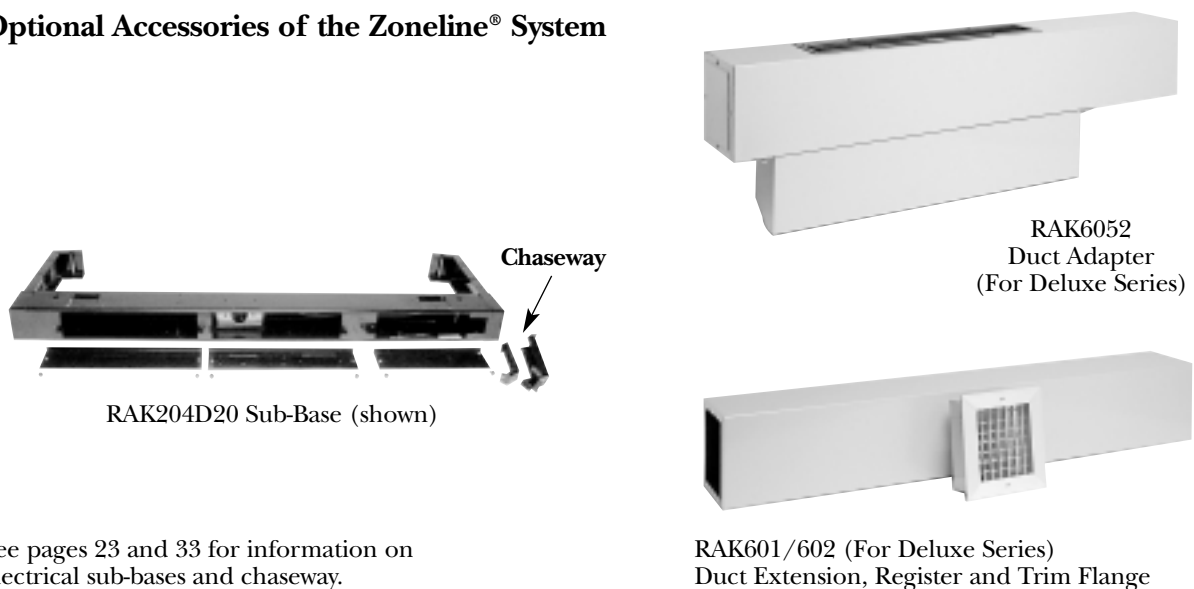
# The Zonline<sup>®</sup> System

The typical Zonline installation consists of the wall case (or sleeve), chassis, and exterior grille. Some installations may use a sub-base for support of the unit or for ease of electrical connections. Each of the components should be the standard products offered by GE or, in the case of the exterior grille, approved by GE Applications Engineering. Use of components not specifically designed or approved for use with the Zonline can result in unsatisfactory operation and can be the cause of failure not covered by the warranty.

## Components of the Zonline<sup>®</sup> System



## Optional Accessories of the Zonline<sup>®</sup> System



# Zonline® Features

# Model Series

	AZ 2500	AZ 3500	AZ 5500
Enhanced Dehumidification - Dry Air 25	Optional	N/A	N/A
Cooling EER Range (230 Volts/265 Volts)	9.6 - 11.6	9.6 - 11.6	10.0 - 12.0
Heating COP Range (230 Volts/265 Volts)	N/A	3.1 - 3.5	3.1 - 3.5
Heat Source - Electric Resistance Heat	Page 54	—	—
Heat Source - Heat Pump With Backup Resistance Heat	—	Std. Pages 19, 55	—
Heat Source - Heat Pump With Selectable Full Time or On Demand Simultaneous/ Supplemental Resistance Heat	—	—	Std. Pages 20, 55
Staged Heating	—	2 Stage	3 Stage
Universal Heater	—	—	Standard
Automatic Emergency Heat	—	Standard	Standard
Highly Featured Microprocessor Controls	Standard	Standard	Standard-Plus
Electric Resistance Heat Lock-Out (above 46°F)	—	—	Standard
Heat Pump Defrost System	—	Passive	Reverse Cycle
Unit Diagnostics	—	—	Standard
Quick Heat Recovery	—	Standard	Standard
Service Indicator	—	—	Temp Display Blinks
Touch Controls (Tactile Controls)	—	—	Standard
Electronic Temperature Selection (Slews Up & Down) with Digital Display	—	—	Standard
Rotary Control Knobs	Standard	Standard	—
Fan Motors - Permanently Lubricated	2	2	2
2 Speed Outdoor Fan	Standard	Standard	Standard
Indoor Fan Speed Selections - AUTO/HIGH	Standard	Standard	Standard
Fan Only Setting - HIGH/LOW	Standard	Standard	Standard
Fan Cycle Switch	“Smart Fan”	“Smart Fan”	“Smart Fan”
Rotary Compressor	Standard	Standard	Standard
Automatic Compressor Restart Delay	Standard	Standard	Standard
Power Connection Cord	Included	Included	UPC*
Freeze Sentinel™	Standard	Standard	Standard
Indoor Coil Frost Control	Standard	Standard	Standard
Transfer Fan Connections	Standard	Standard	Standard
7 Step Electronic Temperature Limiting	Standard	Standard	Standard
Energy Management System Interface	Standard	Standard	Standard
Remote Control Capability With Wall Mounted Thermostat	Standard	Standard	Standard
Central Desk Control Capability With Load Shedding Option	Standard	Standard	Standard
Reversible Indoor Air Louvers 40°/50°	Standard	Standard	Standard
Up-Front Filters	Standard	Standard	Standard
Easy Clean Air Discharge Area	Standard	Standard	—
Concealed Manual Vent Control	Standard	Standard	Standard
Ducted Installation Capability	RAK6052	RAK6052	—
Corrosion Treated	Optional	Optional	—
Internal Condensate Removal (ICR) Factory Installed Option. Cannot be used in Corrosion Areas.	N/A	Optional	Optional

\*UPC - Universal Power Cord Connection (See pages 42, 43 and 55)

\*\*265 volt units must be connected in a manner to meet National Electrical Code and all local codes.



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# Features and Benefits

## Standard Physical Dimensions

GE has maintained the same dimension since 1961- 42" wide x 16" high x 13 3/4" deep.

Replacement of older units made easy.

## Weather Protected Electrical Components

Vital electrical components are protected from the weather by locating them on the indoor side of the weather barrier.

## Weather-Resistant "Superseal"

Properly installed unit in undistorted case keeps air leakage to a minimum.

7 CFM air infiltration with 25 MPH wind on non-ICR units - 10 CFM on units with ICR.

Industry specification is 19 CFM of air infiltration.

## Heater Sizes to Meet Room Requirements

### 2500 and 3500 Series

#### 230/208 Volt

- 15 Amp - 2.55/2.09 KW
- 20 Amp - 3.45/2.82 KW
- 30 Amp - 5.0/4.09 KW

#### 265 Volt

- 15 Amp - 2.55 KW
- 20 Amp - 3.7 KW
- 30 Amp - 5.0 KW

**5500 Series have universal heater** – resistance heat output is determined by power connection kit.

#### 230/208 Volt

- 15 Amp - with RAK3152 - 2.55/2.09 KW
- 20 Amp - with RAK3202 - 3.45/2.82 KW
- 30 Amp - with RAK3202 - 5.0/4.09 KW

#### 265 Volt

- 15 Amp - with RAK5152 - 1.7 KW
- 15 Amp - with RAK5172 - 3.0 KW
- 20 Amp - with RAK5302 - 3.7 KW
- 30 Amp - with RAK5302 - 5.0 KW

## Unit Controls

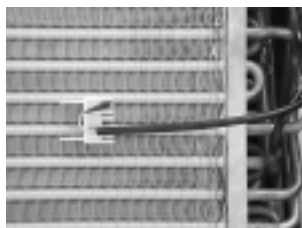
**2500 and 3500 series** - rotary knobs for temperature and operation selection

**5500 series** - touch pad controls with digital readout of temperature set point

## Highly Featured Microprocessor Controls

Microprocessor controls are programmed to interface with the temperature sensors to maximize comfort conditions for the room occupant and provide the outstanding features on the units.

Thermistors are used to sense small changes in temperature to give excellent room control and to allow the microprocessor to monitor and react to changing conditions.



## Electric Resistance Heat Lock-Out

To maximize the savings of the heat pump operation, the 5500 series Zoneline does not utilize the resistance heater when the outdoor temperature is above 45°F during normal operation. The resistance heat is used in the Quick Heat Recovery feature.

## Automatic Emergency Heat

## Heat Pump Defrost Systems

See pages 19 and 20 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.

Shuts the outdoor fan off if the indoor coil gets too hot during heat pump operation to prevent damage to the compressor.

## Quick Heat Recovery - Heat Pump Units

When the unit operation is changed from STOP or COOL to HEAT, the electric resistance heaters are used to warm the room to the thermostat set point. This provides faster room temperature increase for greater guest comfort.

## Unit Diagnostics

The 5500 series has a dip switch that activates each of the various components of the unit to operate briefly. This enables the service technician to determine if individual components are functioning properly.

## Service Indicator

On the 5500 series, the microprocessor detects a compressor malfunction, the digital temperature display will blink. If the malfunction occurs during cooling operation, the indoor fan will operate to circulate room air. If in the heating mode, the unit will automatically switch to resistance heat so the room occupant will not be uncomfortable. The blinking display is an alert that the unit is operating in the more expensive resistance heat mode.

## 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.

## 2 Speed Outdoor Fan

The unit automatically selects the most efficient speed for the outdoor fan. The operating sound level is lower when the outdoor fan can operate in low speed yet there are situations where it must operate in high speed - the unit changes the fan speed automatically.

## Indoor Fan Speed Selections - AUTO/HIGH

Unit may be operated in HIGH HEAT, AUTO HEAT, HIGH COOL or AUTO COOL.

In "AUTO", the indoor fan will be in low speed for quieter operation if the room temperature is within 1.8°F of the set point, or in high speed if the room temperature is more than 1.8°F away from the set point.

This feature allows the greatest control over the room temperature while reducing the operating sound level.

## Fan Only Setting - HIGH/LOW

The unit provides the option of selecting either HIGH or LOW speed for Fan Only operation.

## Fan Cycle Switch - "SmartFan"

Unique "SmartFan" allows unit to operate in fan continuous in cooling operation and fan cycle in heating to provide better guest comfort. This eliminates complaint of cold air draft during heating operation.

This feature eliminates need of changing fan cycle switch seasonally.

"SmartFan" settings are controlled by separate fan cycle/continuous switches for heating and cooling modes.

## Automatic 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 microprocessor in the Zoneline units have a random restart logic system that prevents all units from starting at the same time.

## Rotary Compressor

Smoother operation for quiet, dependable service. GE has used rotary compressors since 1961.

## Compressor Restart Delay

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

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

## Freeze Sentinel™

Detects low room temperature and turns on heater to help protect against damage by freezing temperature in the room. Heater automatically turns on at 41°F, warms indoor thermistor temperature to 46°F, and shuts off.

Freeze Sentinel may be turned off by dip switch on auxiliary control.

## 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 until the indoor coil temperature warms to the point where frosting will no longer occur.



## Transfer Fan Interface

24 VAC terminals are provided to operate a relay to control a fan mounted in a wall to move conditioned air into another space. Transfer fans and their controlling relays are field supplied.

## Electronic Temperature Limiting

7 independent programmable heating temperature limits and 7 independent programmable cooling temperature limits. Wide selection of limits eliminates need to reset the limits seasonally.

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 are set by dip switches on auxiliary control panel.

## Remote Control Capability with Wall Mounted Thermostat

See pages 15 - 18

## Central Desk Control Capability

See page 14

## Energy Management System Interface With Load Shedding Option

All units have a switch on the auxiliary control panel to allow the indoor fan to continue operating if the unit is connected to an Energy Management System that shuts off compressor or heater operation. By allowing the indoor fan to run when the heater or compressor is shut off by the Energy Management System, the guest is less likely to realize the operation of the unit has been altered. This helps to reduce peak energy demand loads without disturbing the room occupant.

## Reversible Indoor Air Louvers

Allows air to be directed into room at 40 or 50 degree angles to provide better air distribution.

Angle is changed by removing room front and screws holding louver in place and rotating louver section 180°.

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## Up-Front Air Filters

Two up-front filters, easy to remove and reinstall, may be cleaned without removing the room front. Clean by brushing, vacuuming, or back flushing under faucet or shower head.



## Easy Clean Air Discharge Area

**2500 and 3500 series** units have an out-of-sight vertical protective screen over the indoor fan. This allows easy cleaning of air discharge area by simply removing room front and wiping clean.

There is no screen directly below discharge louver to trap unsightly dirt and debris where it may be seen by room occupants.

## Concealed Manual Vent Control

Vent can allow up to 70 CFM of outside air to enter the room (40 CFM on 7100 BTUH unit; 65 CFM on 9000 BTUH unit; 70 CFM on 11700 BTUH and 14600 BTUH units).

Greater amounts of air can be introduced if the room has an exhaust fan.



An open vent door brings unconditioned outdoor air into the room, increasing heating and cooling costs.

Positive vent door closure prevents accidental opening and unwanted air infiltration.

Shipping hardware may be left on the door for a permanent closure.

## Corrosion Protection (Optional)

2500 and 3500 series units may be ordered with special protection to better withstand the damage by salt air and salt water in seacoast areas.

Corrosion protected chassis is standard on Dry Air 25 models.

Heat Pump units with ICR are not available with corrosion protection and should not be installed in seacoast or corrosive environment.

Units installed in corrosive areas should be examined and cleaned more frequently than normal installations.

## Internal Condensate Removal (ICR)

See page 34 for a discussion of the Internal Condensate Removal system available on the 3500 and 5500 series heat pumps.

## Enhanced Dehumidification

Moisture removal is an important function of an air conditioner. People are more comfortable at higher temperatures when the humidity level is relatively low. Air conditioners operate with less energy consumption when the room temperatures are set higher.

The GE Zoneline 2500 series with the Dry Air 25 heat pipe application removes 25% more moisture than our base 2500 series unit - which is already an industry leader among the major brands of Packaged Terminal Units.

The GE Zoneline Dry Air 25 chassis is the only unit available with the application of the patented Dinh Dehumidifier Heat Pipe under license from Heat Pipe Technology, Inc.

Customers who are using the Dry Air 25 report a fresher smelling room as a result of the lower humidity levels - as well as lower operating costs.

## Locking Door Kit

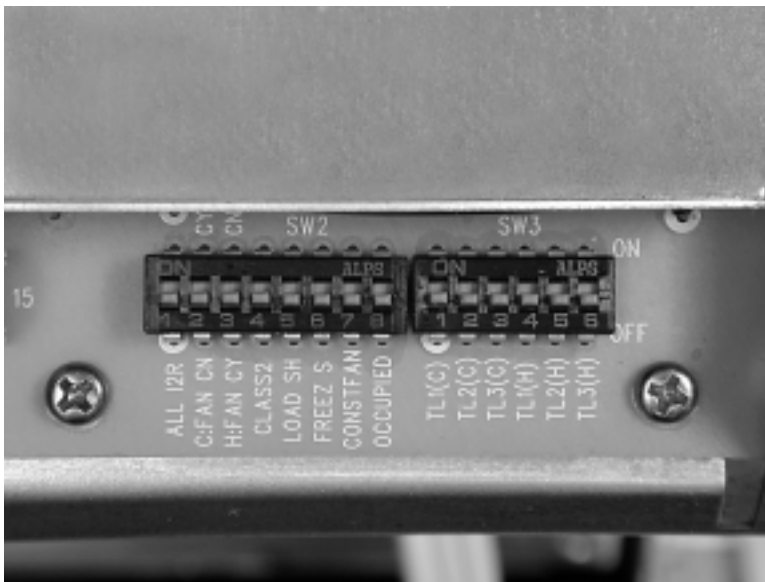
**RAK8022** - A door with a lock, that replaces the standard control cover door to prevent unauthorized changing of control setting, is offered as an accessory.

# Auxiliary Control Switches

These switches are located behind the room cabinet under the control panel.

## 2500 and 3500 Series

Switches	Description
(1)	ALL I2R Heat pump override - Down - heat pump operation Up - resistance heat only (not used on 2500 series)
(2)	C:FAN Fan control for cooling operation - Down - Fan Continuous Up - Fan Cycle
(3)	H:FAN Fan control for heating operation - Down - Fan Cycle Up - Fan Continuous
(4)	CLASS 2 Remote Thermostat Mode Down - Unit Control Up - Remote Thermostat
(5)	LOAD SHED Load Shedding when connected to Central Desk Control System Down - Fan shuts off with unit Up - Fan under "Smart Fan" settings
(6)	FREEZ S Freeze Sentinel Override - Down - Freeze Sentinel ON Up - Freeze Sentinel OFF
(7)	CONST FAN Constant Fan - Fan runs when unit is in STOP mode
(8)	OCCUPIED Occupancy Sensor Mode - Down - Unit Control Up - Occupancy Sensor Connected
Temp L1 - Temp L3	Cooling temperature limiting (See table at bottom of page)
Temp L4 - Temp L6	Heating temperature limiting (See table at bottom of page)



Cooling and Heating temperature limits are set independently.  
Temperature limiting switches in factory set down position except as noted.

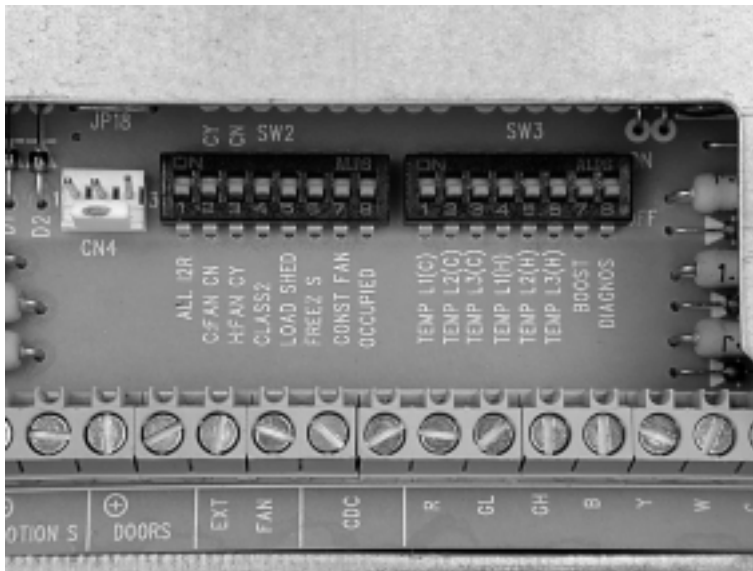
		Cooling Temperature Limits							
Switches Up	LC Minimum Temperature	NONE	1	1,2	2	2,3	1,2,3	1,3	3
		60	64	66	68	70	72	74	76
		Heating Temperature Limits							
Switches Up	LC Minimum Temperature	6	4,6	4,5,6	5,6	5	4,5	4	NONE
		65	70	72	74	76	78	80	85

# Auxiliary Control Switches

These switches are located behind the room cabinet under the control panel.

## 5500 Series

Switches	Description
(1)	ALL I2R Heat pump override - Down - Heat pump operation Up - Resistance heat only
(2)	C:FAN Fan control for cooling operation - Down - Fan Continuous Up - Fan Cycle
(3)	H:FAN Fan control for heating operation - Down - Fan Cycle Up - Fan Continuous
(4)	CLASS 2 Remote Thermostat Mode Down - Unit Control Up - Remote Thermostat
(5)	LOAD SHED Load Shedding when connected to Central Desk Control System Down - Fan shuts off with unit Up - Fan under "Smart Fan" settings
(6)	FREEZ S Freeze Sentinel Override - Down - Freeze Sentinel ON Up - Freeze Sentinel OFF
(7)	CONST FAN Constant Fan - Fan runs when unit is in STOP mode
(8)	OCCUPIED Occupancy Sensor Mode - Down - Unit Control Up - Occupancy Sensor Connected
Temp L1 - Temp L3	Cooling temperature limiting (See table at bottom of page)
Temp L4 - Temp L6	Heating temperature limiting (See table at bottom of page)
BOOST	Turns on supplemental heater with heat pump when outdoor temperature is below 45°F
DIAGNOS	Used by service technician to briefly operate unit components for diagnostics



Cooling and Heating temperature limits are set independently.  
Temperature limiting switches in factory set down position except as noted.

### Cooling Temperature Limits

Switches Up	NONE	1	1,2	2	2,3	1,2,3	1,3	3
LC Minimum Temperature	60	64	66	68	70	72	74	76
<b>Heating Temperature Limits</b>								
Switches Up	6	4,6	4,5,6	5,6	5	4,5	4	NONE
LC Minimum Temperature	65	70	72	74	76	78	80	85

# Central Desk Control

Some installations may want to govern the ability of the unit to operate from a control device remote to the unit or even remote to the room in which the unit is located. The general term given to systems such as this is **Central Desk Control**. The most common installation of this type of system is a switch mounted at the registration desk and, upon guest check-in, a button is pushed or a switch is moved to allow the air conditioner to operate. Likewise, when the guest checks out, the device is put into the "OFF" position so the unit will not operate while the room is vacant.

It is not necessary that the controlling device be located at a central desk to employ a device that will control the unit operation. For instance, in some resort areas, devices are connected to sliding glass doors and opening the door causes a contact to close, turning the air conditioner off. This prevents energy being wasted by operating the air conditioner when warm humid air is entering the room. Some systems operate by motion sensors or heat sensing detectors mounted in the room. These types of systems determine occupant presence in the room and allow the unit to operate; if no one is in the room, the device signals the air conditioner to turn off.

Zoneline models offer Load Shedding capabilities on units connected to Central Desk Control Systems. For more information on the Models' Load Shedding Feature, see page 10.

**All Zoneline 2500, 3500, and 5500 Series units are compatible with simple on/off 2 wire Central Desk Control systems. Consult with the provider of other energy management systems to be sure they are compatible with the GE Zoneline units. Zoneline units have standard connectors factory installed to provide a CDC interface that permits the unit to be connected to most energy management systems. The devices connected to the Zoneline units require no power supply or transformers external to the unit.**

### Important CDC Comments (all series applicable)

- 1) When the switching device closes the circuit of the CDC conductors, the unit operation stops.
- 2) **Do not use a common buss (at the unit or at the switch panel) in the wiring.** Both wires comprising the circuit must connect to the unit connectors and to the controlling switch. Running one wire from one unit to another unit is common bussing and may damage internal components or cause erratic operation of the system.
- 3) A 24 volt transformer is contained within the Zoneline units. *No external voltage may be applied to the unit through the CDC terminals. (Voltage on the CDC conductors is 24 volts AC.)*
- 4) Recommended wire size must be followed as a minimum requirement.

Wire Size #AWG	Maximum Allowable Length
#22	600 Ft.
#20	900 Ft.
#18	1500 Ft.
#16	2000 Ft.

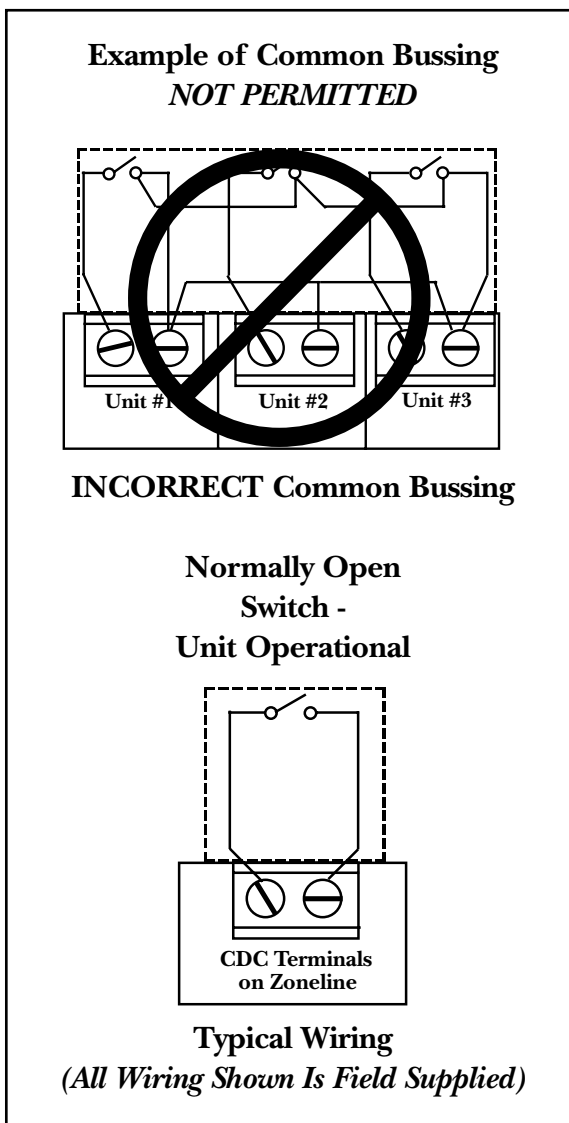
**Freeze Sentinel™** remains operational when the unit is connected to a CDC system. Even if the unit is turned "OFF" at the central location, if the sensor at the unit detects the low temperature, the electric resistance heaters and fan will automatically turn on.

**Connecting the Zoneline unit to a CDC system does not eliminate the ability to connect the unit to a remote thermostat. Once the circuit is "opened", and control of the unit removed from the CDC system, the selected controls - either the unit mounted control or the remote thermostat - govern the operation of the unit.**

Please see page 57 for installation recommendations for the Central Desk Control wiring.

## CDC Terminal Location and Typical Wiring

See page 12 and 13 for location of CDC terminals on unit



# Remote Thermostat Control

In some installations, control of the operation of the unit at a location remote to the unit itself may be desired. Unit mounting locations (high in the wall or over a transom) resulting in inaccessible unit mounted controls can be connected to a remote thermostat. Other installations may use remote thermostat control for design or performance enhancement. The unit is connected to the thermostat by low voltage wiring, which permits the operation of the unit to be selected and the temperature to be sensed at the thermostat.



(shown closed)

**All Zoneline 2500, 3500 and 5500 Series units are adaptable to Class 2 remote low voltage thermostat. 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.**

## Resistance Heat Models

The **Zoneline 2500** resistance heat units may be connected to a single-stage thermostat designed for use with cooling with electric heat systems. GE offers 3 thermostats compatible with the 2500 series unit.

**RAK163A1** - a mechanical manual changeover thermostat requiring 4 connection wires.



**RAK163D1** - a solid state digital manual changeover thermostat requiring 5 connection wires.



**RAK163P1** - a solid state digital programmable auto changeover thermostat requiring 5 connection wires.



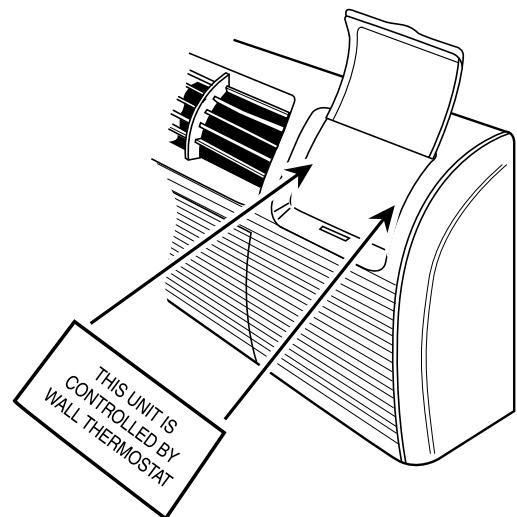
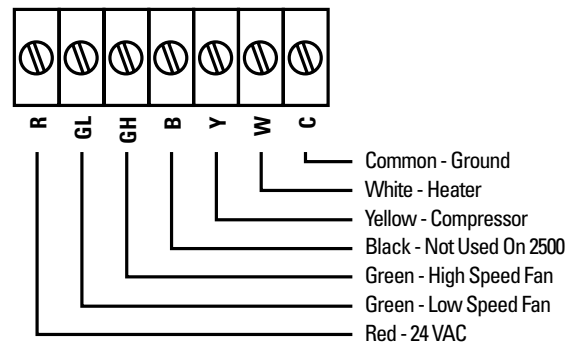
The Class 2 Mode Switch (dip switch 12 on the auxiliary control board) must be set to the ON/UP mode to enable remote thermostat control. Refer to installation instructions packaged with the chassis.

Please see page 57 for installation recommendations for the remote thermostat wiring.

Compatibility of other thermostats considered for use with the GE Zoneline unit is the responsibility of the customer. The control voltage on the remote control conductors is 24 VAC. The units may not be compatible with some solid state thermostats.

The fan speed for the 2500 series in remote thermostat operation is selected by the connection of the fan wire from the thermostat to either the HIGH or LOW terminal on the unit. See the sketch of the unit terminals for the location of the HIGH and LOW fan speed terminals. Operating in low fan speed reduces the operating sound level of the unit.

**Freeze Sentinel™** remains 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 an operational status. See page 14 for additional information on the CDC system.



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# Remote Thermostat Control

## RAK806 Universal Control Cover Label

When a Zoneline unit is using a remote thermostat control, the RAK806 Universal Control Cover Label is recommended. The RAK806 is only available in a package of 10 labels. The label is placed over the control panel directing the user to the wall thermostat for operation of the Zoneline unit.

## Heat Pump Models

The Zoneline 3500 and 5500 Series heat pump units may be connected to a single stage cooling/two stage heating thermostat designed for use with heat pump systems. GE offers 3 thermostats compatible with the 3500 and 5500 series units.



(shown closed)

**RAK147** - mechanical manual changeover thermostat requiring 6 connection wires



**RAK147D1** - solid state digital manual changeover thermostat requiring 6 connection wires.



**RAK147P1** - solid state digital programmable auto changeover thermostat requiring 6 connection wires.



Please see page 57 for installation recommendations for the remote thermostat wiring.

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

The control voltage on the remote control conductors is 24 VAC. The units voltage may not be compatible with some solid state thermostats.

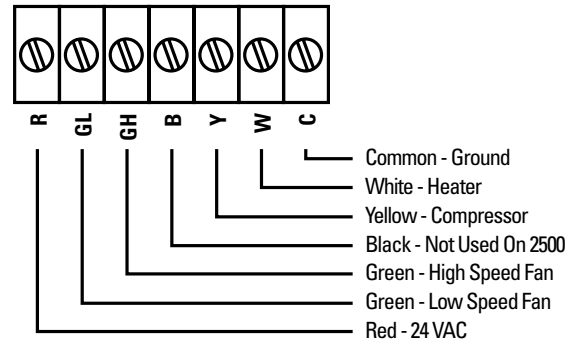
The Class 2 Mode Switch, dip switch #4 on the 3500 & 5500 series must be set to the ON/UP mode to enable remote thermostat control. Refer to installation instructions packaged with the chassis.



# Remote Thermostat Control

When connected to a remote thermostat, the 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. The following chart shows the unit operation when connected to a remote thermostat.

Feature	3500 Series	5500 Series
Indoor Frost Control	Yes	Yes
Freeze Sentinel	Yes	Yes
Auto Fan Speed	No	No
Electronic Temperature Limiting	No	No
Switch to Resistance Heat Based On Indoor Temperature	Determined by Remote Thermostat	Determined by Remote Thermostat
Switch to Resistance Heat Based On Outdoor Temperature	Yes	Yes
Reverse Cycle Defrost	-	Yes
Simultaneous Resistance Heat with Heat Pump	-	No
Resistance Heat Lockout	-	Yes
"Smart Fan" Fan Cycle	Fan ON/AUTO Set On Remote Thermostat	Fan ON/AUTO Set On Remote Thermostat
Central Desk Control	Yes	Yes



Temperature Boost option should not be used with remote thermostat operation since this will cause the unit to switch to resistance heat when outdoor temperatures are below 46°F.

See RAK806 Universal Control cover Label on page 15.

## Remote Thermostat Control Selection Chart For Zoneline Packaged Terminal Units

ZONELINE SERIES	THERMOSTAT MODEL	TYPE	FUNCTION	LOW VOLTAGE CONDUCTORS
2500	RAK163A1	Mechanical	Cooling and Heating	4
	RAK163D1	Digital		5
	RAK163P1	Digital Programmable		5
3500 and 5500	RAK147	Mechanical	Single Stage Cooling	6
	RAK147D1	Digital	2 - Stage Heating	6
	RAK147P1	Digital Programmable		6

Thermostat wire size - up to 60 feet AWG20 - up to 66 feet AWG18

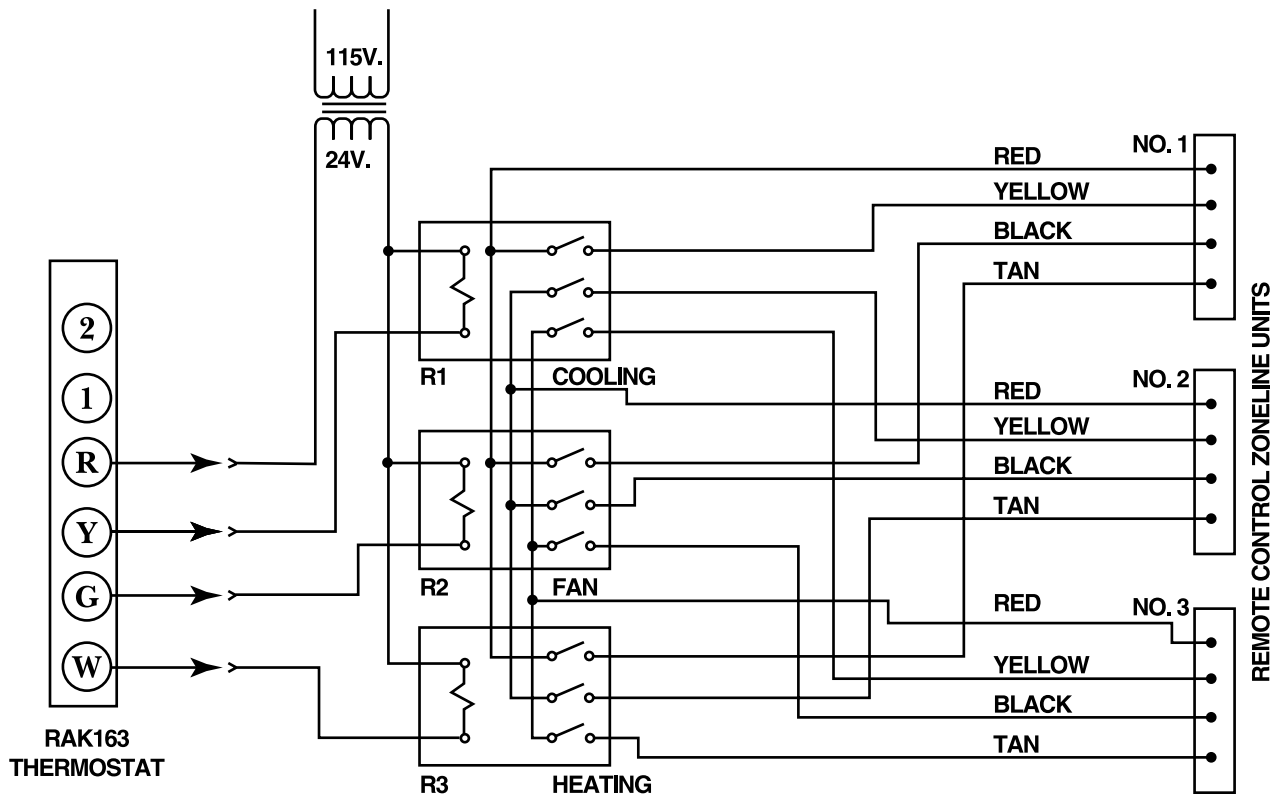
# Remote Thermostat Control

## Multiple Units Connected to One Remote Thermostat (2500 Series)

One remote control thermostat may be used to control multiple resistance heat Zonline units, however the units may not be wired direct. Since each Zonline unit has an integral transformer, direct wiring can result in a “bucking”

or “boosting” voltage condition, and is in violation of the National Electric Code. The diagram below shows the correct wiring for such an installation through the use of field supplied isolation relays.

### For Use With Mechanical 4-Wire Systems Only



### Remote Control (Low Voltage) Wiring

One stage Thermostat Controlling Three Zonline Units  
Resistance Heat Zonline 2500 Series Units  
(Not Applicable on Heat Pump Units)

#### FIELD SUPPLIED RELAY SPECIFICATIONS

NUMBER OF UNITS CONTROLLED	RELAY DESIGNATION R1, R2, and R3
2	POTTER and BRUMFIELD TYPE KA11AY-24 OR EQUIVALENT
3	POTTER and BRUMFIELD TYPE KA14AY-24* OR EQUIVALENT
4	POTTER and BRUMFIELD TYPE KU17A11-24* OR EQUIVALENT
MORE THAN 4	USE COMBINATION OF RELAYS SPECIFIED ABOVE

NOTE: Current draw through thermostat contacts should not exceed 1.0 amps.

\*Special order, 100 piece minimum order.

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# Heat Pumps and Energy Savings

- **GE Zonline Heat Pumps are designed to provide cost efficient heat pump operation while monitoring room conditions to maintain comfort.**

The units employ a logic system monitoring both outdoor and indoor temperatures to determine the heat source, thus increasing energy savings by operating longer in the heat pump mode.

Heat pumps save energy and cost less to operate than units with electric resistance heaters as the only heat source. Just as the EER of an air conditioner is an indication of the efficiency of the unit, COP (Coefficient of Performance) is the indication of the efficiency of the heat pump. This relative efficiency of a heat pump compares the unit to electric resistance heat. If a unit has a COP 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.

The compressor is used in heat pump operation just as in air conditioning operation. In heat pump operation, the hot refrigerant gas is directed to the indoor coil rather than to the outdoor coil. Room air that circulates over the indoor coil gains heat from the coil rather than losing heat to the coil as during cooling operation.

As the outdoor temperature falls, the heat pump is able to extract less heat from the outdoor air to raise the temperature of the indoor air. For this reason, all packaged terminal heat pumps also have electric resistance heaters as backup to heat pump operation. At some point, the heat pump is unable to provide sufficient heat to adequately warm the room. Many Packaged Terminal Heat Pumps cease heat pump operation and change to more expensive resistance heat at some pre-determined outdoor temperature to compensate for the inability of the heat pump to maintain room temperature. This point, called the "switchover point", is usually at an outdoor temperature where savings from heat pump operation may still be realized, if the unit is designed to maintain room comfort at the lower outdoor temperatures.

## Balance Point

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

**GE offers two series of Zonline Heat Pump units - the 3500 Series with Standard Microprocessor controls and the 5500 Series with Highly Featured Microprocessor controls - and both series react to the indoor temperature as well as the outdoor temperature in determining the heat source to provide comfortable room conditions and energy savings. This determination of the heat source based on the indoor temperature helps provide a more comfortable room.**

- **Heat Pump Operation - Zonline 3500 Series**

**Switchover to resistance heat is determined by indoor temperature differential and outdoor coil temperature**

The Zonline 3500 Series heat pumps are Standard Microprocessor controlled units. A solid state thermostat control is used to measure the room temperature and compare it to the temperature selected with the "TEMP" control knob. A temperature sensor is in contact with the outdoor coil to monitor the outdoor coil temperature during heat pump operation.

The switchover point of the 3500 Series heat pump is determined by the outdoor coil temperature or the indoor air temperature. When the outdoor coil temperature is above 9°F. (which corresponds to approximately 25°F. outdoor air temperature), the unit attempts to provide sufficient heat through heat pump operation to satisfy the selected temperature setting.

The microprocessor monitors the indoor room temperature and determines if the heat pump output is adequate to maintain comfort conditions. As long as the heat pump output maintains the room temperature within 2.7°F of the set point, the unit will operate in the heat pump mode. If the room temperature continues to decline with the heat pump operating, heat pump operation will terminate and the unit will switch over to electric resistance heat to warm the room. This heat source logic allows the heat pump to operate to lower outdoor temperatures, increasing the savings from heat pump operation, while providing the ability to use resistance heat only when necessary. **The heat pump and the electric resistance heaters never operate simultaneously on the Zonline 3500 Series Units.**

**A heat pump override switch is provided in the auxiliary controls to allow the unit to operate only in resistance heat. The use of this option significantly increases the cost for heating.**

## Heat pump defrost - Zonline 3500 Series

If the outdoor coil drops below 9°F. (which corresponds to approximately 25°F. outdoor air temperature), the unit employs a passive defrost system. A "passive defrost system" prevents heat pump operation until outdoor temperatures rise sufficiently to enable economical heat pump operation to resume. During the defrost mode, the indoor temperature is maintained by the electric resistance heater. The defrost cycle terminates when the outdoor coil temperature rises above 36°F., at which point the microprocessor will allow the unit to return to economical heat pump operation.

## Heat pump condensate

See page 34 for information on heat pump condensate. The Zonline 3500 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. However, if the requirements of a particular installation will allow no dripping of condensate water from the wall case, the installation of an internal or external drain system is recommended.

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

# Heat Pumps and Energy Savings

## • Heat Pump Operation - Zonline 5500 Series

Heat sources: Heat pump, heat pump and simultaneous electric resistance heat, or electric resistance heat

The Zonline 5500 Series heat pumps employ a highly featured microprocessor control system interfaced with thermistors to accurately measure indoor air temperature, outdoor air temperature, indoor coil temperature, and outdoor coil temperature. This system allows the microprocessor to precisely and predictably react to changing conditions in order to provide a very advanced Packaged Terminal Heat Pump operating system.

The Zonline 5500 series is designed to help insure a comfortable room. When "HEAT" is selected, the unit will determine if the room air is warm enough to satisfy the thermostat setting. If the temperature at the unit sensor is below the desired temperature, the electric resistance heater will be utilized to warm the room to the point where the thermostat is satisfied. This feature is designed to allow the temperature of an unoccupied room to be maintained at an energy saving level without inconveniencing the room occupant. Once the thermostat has been satisfied, the resistance heater will turn off and the heat pump will operate as shown in Zonline 5500 Series Heat Source Logic chart when the thermostat calls for heat again. The unit will operate in this manner even if connected to a Central Desk Control.

Zonline 5500 Series Heat Source Logic			
ROOM TEMPERATURE VS. THERMOSTAT SET POINT	Above 46°F.	Between 46°F. and 25°F.	Below 25°F.
Less Than 1.8°F. Below	Heat Pump	Heat Pump*	Full Resistance Heat
1.8°F to 2.7°F. Below	Heat Pump	Heat Pump + Supplemental Heater	Full Resistance Heat
More than 2.7°F. Below	Heat Pump	Full Resistance Heat	Full Resistance Heat

\*If the "Temperature Boost" switch (dip switch #8) is in the "ON" position, the supplemental simultaneous heater will be used with heat pump operation. Simultaneous supplemental heater: 1.0 KW @ 230 V; 0.8 KW @ 208 V; 1.7 KW @ 265 V

The "Temperature Boost" option utilizes the supplemental simultaneous heater simultaneously with heat pump operation when the outdoor temperature is below 46°F. regardless of the indoor air temperature. The chart above indicates the heat source of the Zonline 5500 series heat pump under various indoor and outdoor conditions. The unit is designed to provide heat pump savings without sacrificing room comfort. The Quick Heat Recovery feature is not affected by the Zonline 5500 Series Heat Source Logic shown in the chart above. For more information about the Quick Heat Recovery Feature, see page 9. The full heat output of the resistance heater is dependent upon circuit amperage and the power connection kit used. See pages 42 - 43 for information on the power connection kits and available heater capacities.

A heat pump override switch is provided in the auxiliary controls to allow the unit to operate only in resistance heat. The use of this option significantly increases the cost for heating.

## Heat pump defrost - Zonline 5500 Series

The Zonline 5500 Series has a reverse cycle demand defrost system to extend heat pump operation and increase savings from extended operation. The microprocessor determines the need for defrosting by criteria based on continuous compressor running time, outdoor air temperature, outdoor coil temperature, and the rate of temperature change of the outdoor coil. When defrosting is required, the unit reverses the flow of refrigerant to direct the hot gas into the outdoor coil to melt the frost build-up. Before and after the reverse cycle defrosting, the unit shuts off the compressor to allow the refrigerant pressures to equalize throughout the system. This eliminates the possibility of a loud reversing noise. During these periods of pressure equalization, the full resistance heat capacity of the unit is activated to help insure room comfort conditions during the defrost cycle. The unit remains in the defrost cycle for a minimum of 2 minutes up to a maximum of 9 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** See page 34 for information on heat pump condensate. The Zonline 5500 Series heat pump 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.

# Application Comments

Use and Care Manual and installation instructions are shipped with Zoneline units. It is important that any air conditioning system be properly sized and applied in order to achieve the desired temperature and humidity levels with the space to be conditioned. Air conditioners are designed primarily to provide heating and cooling with the additional benefit that during operation in the cooling mode, the units also remove some 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:** 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. A result could be a warm and humid or warm and dry conditioned space.

**Oversizing:** 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. The compressor then begins to cycle on and off. Dehumidification only takes place when the compressor is operating. A typical result in a hot/humid climate could be a cool but excessively humid space.

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

**Wall Covering:** Use of a non-permeable wall covering (some paints, some wallpapers, and other types of coverings) which severely restricts passage of air or water vapor 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. Some sources of air infiltration include vents, gaps around windows and doors, and improperly sealed floor, ceiling and wall joints.

### Recommendation

For the above reasons it is strongly recommended that a professional engineer be retained to match the Zoneline unit with the building structure.

## Air Distribution

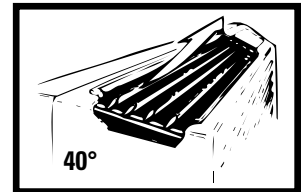
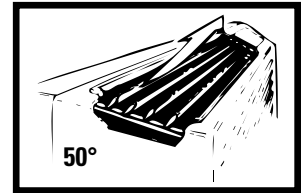
Zoneline packaged terminal air conditioners and heat pumps discharge air from the top of the unit through reversible 2-position discharge louvers. Unit discharge louvers are reversed by removing the room cabinet from the unit, removing seven screws that hold the louver section in place, removing the louver section and rotating it end for

end, reinstalling the louver section in the room cabinet with the seven screws, and reinstalling the room cabinet on the unit. The unit is shipped from the factory with the discharge louvers at an angle of 50° off vertical. In the alternate position, the louvers will be at an angle of 40° off vertical.

All room cabinets return air through the front of the unit.

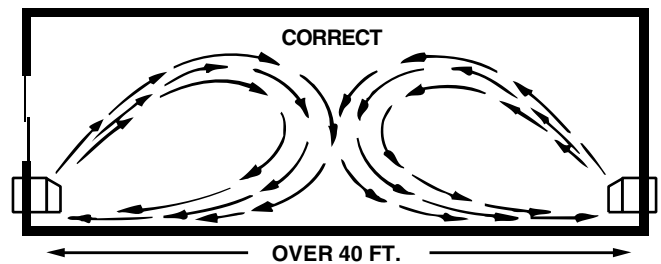
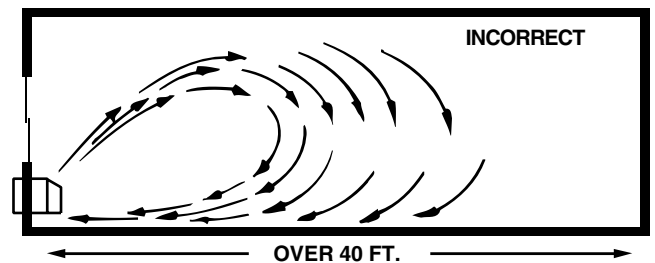
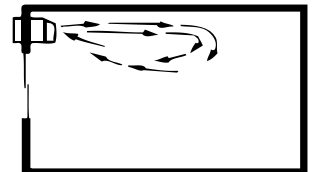
**High Wall Mount** - For units mounted high in the wall, the discharge louvers should be at a setting that provides the most horizontal air discharge.

Recommended installation is at least 3" below the ceiling. In installations where units are close to the ceiling, the most horizontal discharge angle can be obtained by removing the discharge grill from the room cabinet.



**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.

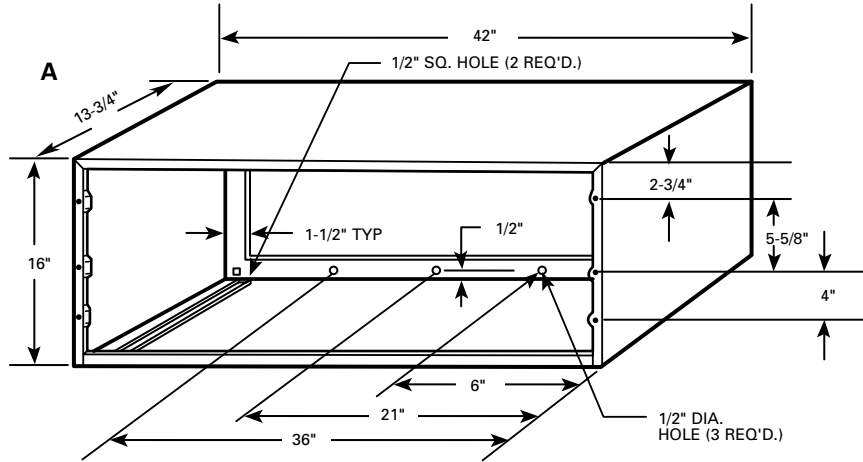
Add a second unit as shown in the "Correct" illustration.



# Dimensions

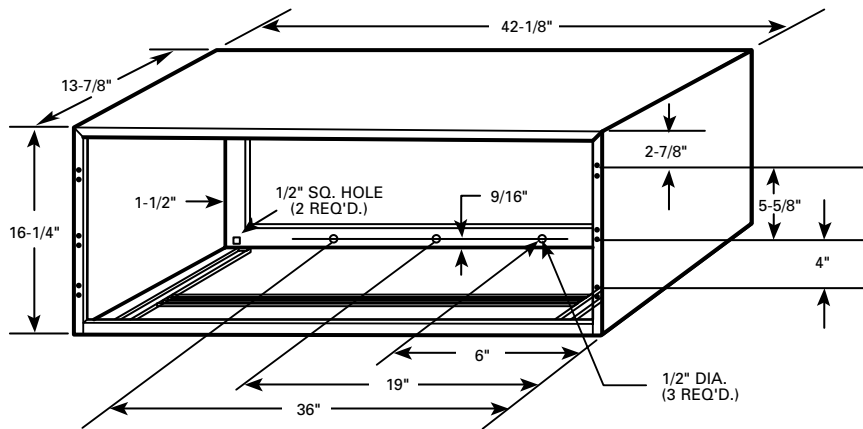
**A-Additional  
Wall Case Depths**  
**RAB7116 - 16"**  
**RAB7124 - 24"**  
**RAB7128 - 28"**  
**RAB7131 - 31"**

## RAB71 WALL CASE



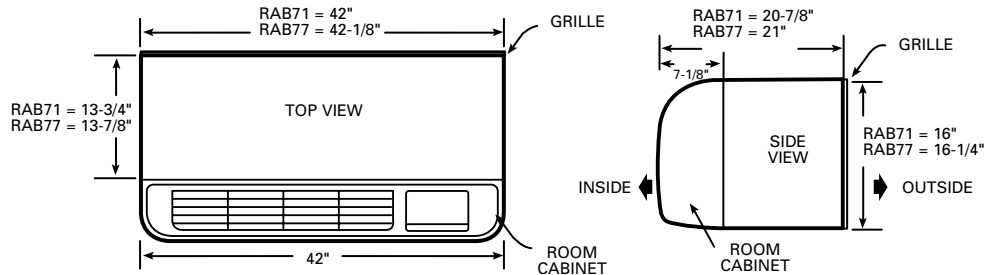
**WALL OPENING**  
 16-1/4" MIN. x 42-1/4" MIN.

## RAB77 WALL CASE

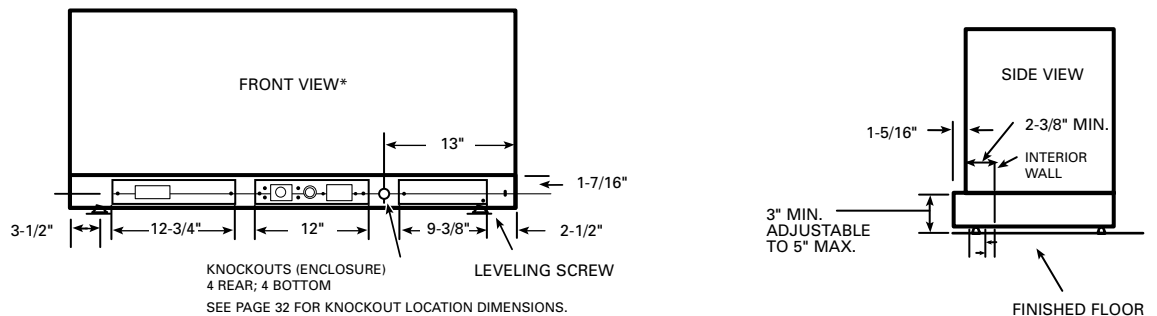


**WALL OPENING**  
 16-1/2" MIN. x 42-3/8" MIN.

## WALL CASE WITH CHASSIS INSTALLED



## WALL CASE WITH SUB-BASE



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

**Installation Instructions Packed With Wall Case . . . See Page 25 For Additional Information Concerning Outdoor Weather Panel and Case Stiffener.**

## Wall Case

A choice of wall cases is available for the Zonline unit.

**RAB71** - This insulated case is constructed of heavy gauge galvanized steel and finished with a protective baked enamel finish for protection and appearance. Design of the case provides for support of the chassis and free draining of any water entering the wall case.

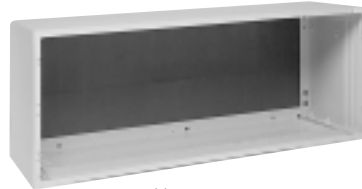


RAB71 Wall Case

A petroleum microcrystalline wax is applied at critical points of fabrication to seal against moisture. The dimensions of the RAB71 wall case are: 42" wide by 16" high by 13 3/4" deep, the same dimensions as the original wall case for GE Zonline units built in 1961. The RAB71 wall case is also available in depths other than the standard depth of 13 3/4".

Special order steel case are: **RAB7116** - 16" deep; **RAB7124** - 24" deep; **RAB7128** - 28" deep; and **RAB7131** - 31" deep. All of these special order deep wall cases are insulated and have sheet metal dividers, or splitters, to prevent the recirculation of condenser discharge air.

**RAB77** - This non-insulated wall case is molded from fiberglass-reinforced polyester compound. This SMC (Sheet Molded Compound) wall case offers outstanding



RAB77 Wall Case

strength, durability, color retention, water integrity and corrosion resistance. The dimensions of the RAB77 wall case are: 42 1/8" wide by 16 1/4" high by 13 7/8" deep.

- Both wall cases are of universal design, accepting all Zonline chassis of current design as well as all GE Zonline chassis produced since 1961.
- Drain holes are provided in the rear of the wall case to permit excessive cooling condensate water, heat pump condensate, or precipitation entering the wall case to drain freely. A drain kit may be connected to the wall case to control any water draining from the wall case. See pages 34 - 36 for information on **RAD10 Drain Kit**.

**RAK901L** - For installations when the wall case extends into room, an RAK901L is an insulation kit that can be used with the RAB77 or any existing non-insulated wall case to minimize the possibility of condensation forming on the indoor side of the case during the winter.

## Sub-Base

The sub-base is an optional accessory for the Zonline unit and is presented with the wall case information since the decision to use or not to use a sub-base in the installation is a factor in the location of the wall opening for the unit. National Electrical Code® 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 being designed, 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 between the building wiring and 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 Zonline 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 makes the use of a sub-base a viable means of permanent connection.

**RAK204** - The RAK204 Series of sub-bases provides a variety of designs that fit the site needs and are available for



Typical RAK204D20 sub-base shown

use with Zonline PTAC/PTHP units. The RAK204U will most likely be used for support of the wall case and unit.

**208/230 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 "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.**

**RAK204U** - No receptacle or wiring but will accept any field supplied 15, 20 or 30 amp receptacle and wiring. Chaseway not included. RAK205CW chaseway must be ordered separately.

The **RAK4002A** (2500/3500 Series) or **RAK4002B** (5500 Series) junction box performs 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.

**RAK204D20** - 208/230 volt 15/20 amp receptacle. Receptacle is NEMA6-20R (GE4181-2 or other of same design) with 18" of #12AWG wires attached to the receptacle. Chaseway included.

**RAK204D30** - 208/230 volt 30 amp receptacle. Receptacle is NEMA6-30R (large tandem) with 18" of #12AWG wires attached to the receptacle. Chaseway included.

**RAK204E15** - 265 volt 15 amp receptacle. Receptacle is NEMA7-15R (GE0716-6 or other of same design) with 18" of #12AWG wires attached to the receptacle. Chaseway included.

**RAK204E20** - 265 volt 20 amp receptacle. Receptacle is NEMA7-20R (GE0720-3 or other of same design) with 18" of #12AWG wires attached to the receptacle. Chaseway included.

**RAK204E30** - 265 volt 30 amp receptacle. Receptacle is NEMA7-30R (GE0730 or other of same design) with 18" of #12AWG wires attached to the receptacle. Chaseway included.

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## Sub-Base (Cont.)

There are separate internal compartments to permit separation of low voltage (Class 2) connections from line voltage connections as required by 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 case is installed.

The sub-base attaches to the RAB71 wall case with two clips (field assembled) that are screwed into pre-drilled holes in the bottom front flange of the wall case. It attaches to the RAB77 wall case with clips that fit over molded ribs without requiring the use of screws into the wall case. See page 33 for illustration. Since the sub-base extends under the wall case, clearance from the inner edge of the wall case to the finished wall must be 2-3/8" or greater. The sub-base has 4 leveling legs and adjustable side channels to enable the area under the wall case to be enclosed. Clearance from the bottom edge of the wall case to the finished floor must be between 3" and 5".

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

## Wall Case 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 case allows installation flexibility; from flush with the finished interior wall to a minimum of 1/4" of the wall case extending beyond the finished exterior of the building. Special consideration must be given to installations where the wall case does not extend a minimum of 1/4" beyond the finished exterior wall. See pages 30 and 31 for information on this type of installation. The unit may be installed high in the wall and these installations usually require a remote thermostat and are discussed on pages 17 and 18.

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 22 for required wall opening dimensions. Minimum recommended interior and exterior case projection for standard wall thicknesses are shown in the drawings in this manual. The case may be installed flush with the finished indoor wall. Special attention must be paid to room-side case projection when the unit is installed in a ducted application as shown on page 39.

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 case extension or use one of the special order RAB71 deep wall cases. If you are unable to locate a local source for case extensions please contact your salesperson for a possible supplier. Such extension must be carefully flashed and sealed both to the wall case and to the wall to insure water integrity. This is necessary to insure that

any water entering the wall case, 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 case without the possibility of capillary action drawing the water into either the room or the wall cavity. In an installation where the case 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 30 and 31 for suggested detail. Since the installation of a case extension requires a considerable amount of attention, we recommend using one of the deep wall cases if the standard case 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 40 for requirements for custom louver sections.

**The wall case should be level from side to side and from level to 1/4 bubble 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 ARI standards and actually uses this water for maximum unit efficiency. A level unit will also insure proper performance of the Internal Condensate Removal (ICR) system optional on heat pump units.**

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 case must be done correctly.**

### 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 case. This additional support should be located both near the wall and at the front of the wall case. Sub-base (RAK204 Series) with four leveling legs provides an excellent support for the unit in this type of installation. See page 28 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 case. Similar filler panel material may be installed around the case for appearance and weather seal.



## Masonry Wall Construction (Cont.)

The wall case should be installed during construction and lintels should be used to support the blocks above the wall case. The wall case **will not** support the concrete block. The installation instructions show how the wall case must be secured to the masonry and caulked. Do not remove the cardboard stiffener supplied with the wall case until ready to install the chassis. See page 29 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 case.

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

## Brick, Frame, Stucco and Shingle Construction

For new construction, the opening for the wall case should be framed and the wall case inserted into the opening during construction. Lintels should be used when the building material is heavy and is not self supporting (such as brick). The wall case 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 case 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 case. 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. Studing that interferes with the opening must be removed and a suitable frame constructed to secure the wall case and provide adequate support for case and chassis.

## Preparation of the Wall Case for All Types of Construction

As shipped, the RAB71 or RAB77 is ready for installation. Do not remove the stiffener from inside the wall case or the weather closure panel from the outside face of the wall case until the outdoor grille and chassis are ready to be installed.

## Installation of Wall Case in Wall Opening

1. Position the wall case into the wall. The room side edge of the RAB71 or RAB77 wall case 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. If the minimum exterior dimensions are not met, refer to page 27 and 28. The outside edge of the wall case 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 case, and to facilitate the installation of an accessory drain, if used.

**The wall case should be level from side to side and from level to 1/4 bubble 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 ARI standards and actually uses this water for maximum unit efficiency. A level unit will also insure proper performance of the Internal Condensate Removal (ICR) system optional on heat pump units.**

2. The wall case 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 page 26. Mark the wall case on each side 2" from the bottom and 2" from the top at a point where basic wall structure is located. Drill wall case and use fasteners appropriate for wall construction. All holes for fasteners in the side of the wall case must be at least 2" up from the bottom of the wall case. **Never locate screws or put other holes in the bottom of the wall case. The only exception is when an RAD10 drain kit is installed to connect to an internal drain system. See page 36 for RAD10 Drain Kit information.** If the wall opening is greater than the case dimensions, spacers must be used on the sides between the wall case and the wall support structure to prevent distorting the wall case.
3. Caulk or gasket the entire opening on the outside between the wall case and exterior wall surface (4 sides) to provide total water and air seal.
4. Caulk or gasket room-side opening between wall case and interior wall surface (4 sides). Opening beneath or around the wall case 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 42 for maximum power cord length.
- Permanent connected units close to finished floor must allow for conduit clearance.

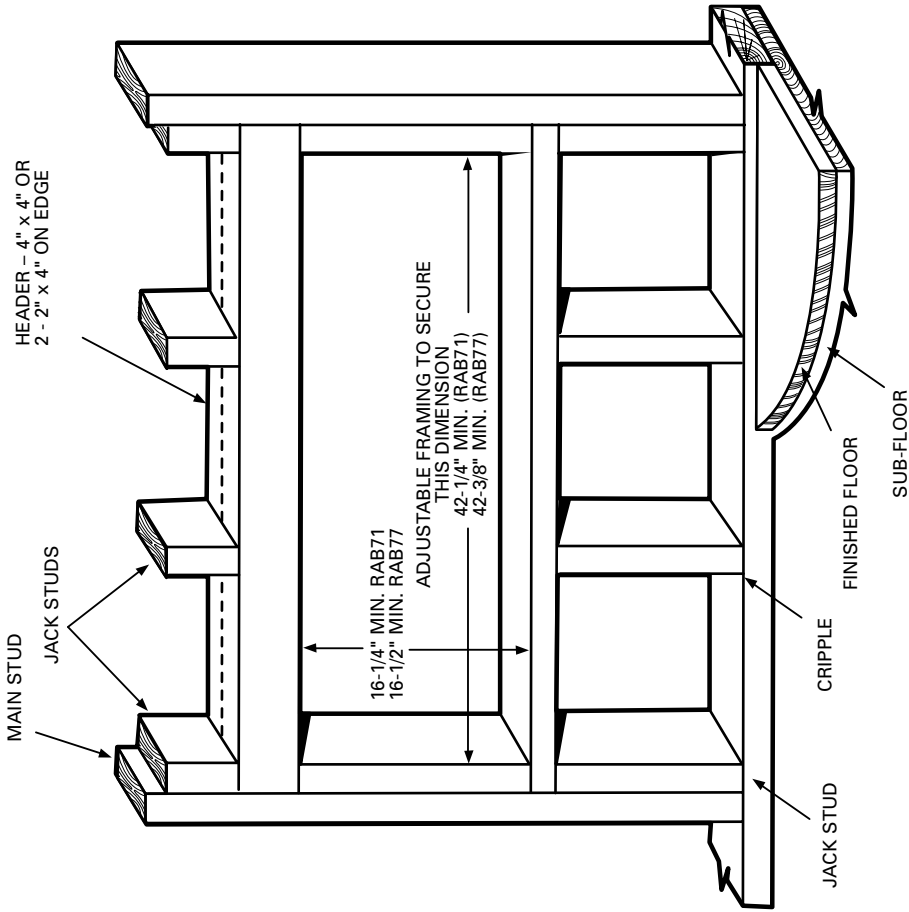
## Case Angles

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

The following describes the procedure when **field fabricated and installed** case angles are applied.

1. Position case angles around top and sides of wall case at the desired location. Position case angles vertically on each side of wall case to provide a level installation.
2. Mark wall case through holes in case angles. The lowest hole on the sides of the wall case must be a minimum of 2" above the bottom of the case.
3. For **RAB71** wall case drill 5/32" diameter holes at locations marked on wall case in Step 2, and assemble angles to wall case using #10 x 1/2" self tapping screws. For **RAB77** wall case follow the same procedure except use a #10 x 1/2" bolt, washer and nut to attach case angles to case. Install screws or bolts from outside wall case.
4. **Do not** drill any holes in bottom of wall case. Do not distort wall case.
5. **Do not** use case angles for a lintel.

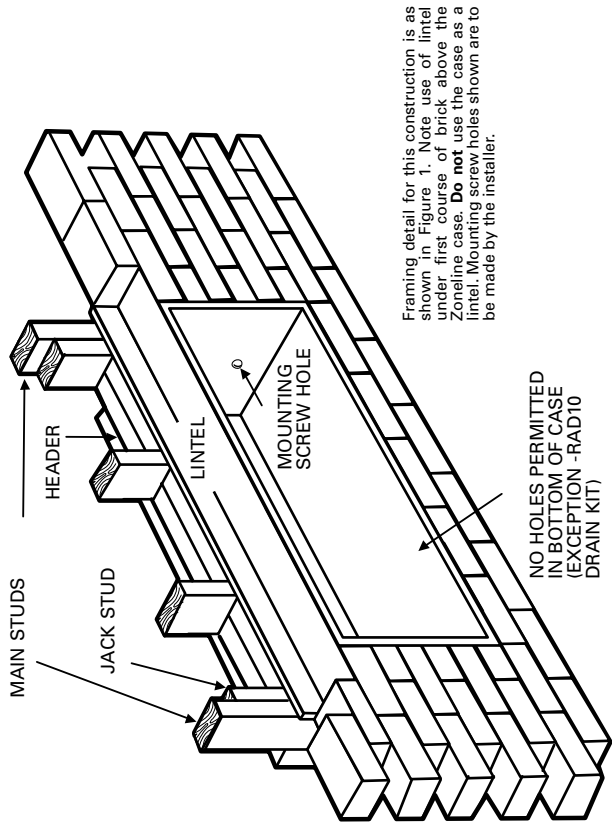
**FRAMING FOR WALL CASE  
BRICK VENEER AND FRAME CONSTRUCTION**



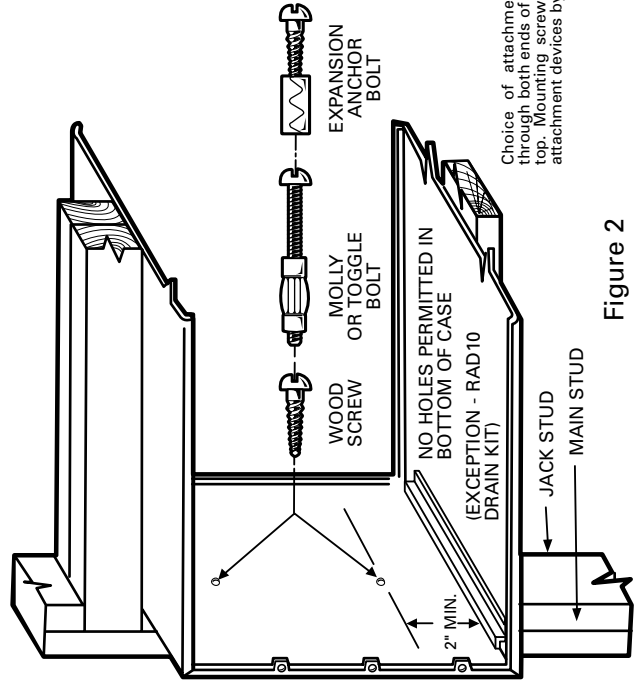
**Note:** Do not remove the stiffener support from inside the wall case until the chassis is to be installed.

Figure 1

**FASTENING WALL CASE**



NO HOLES PERMITTED IN BOTTOM OF CASE (EXCEPTION - RAD10 DRAIN KIT)

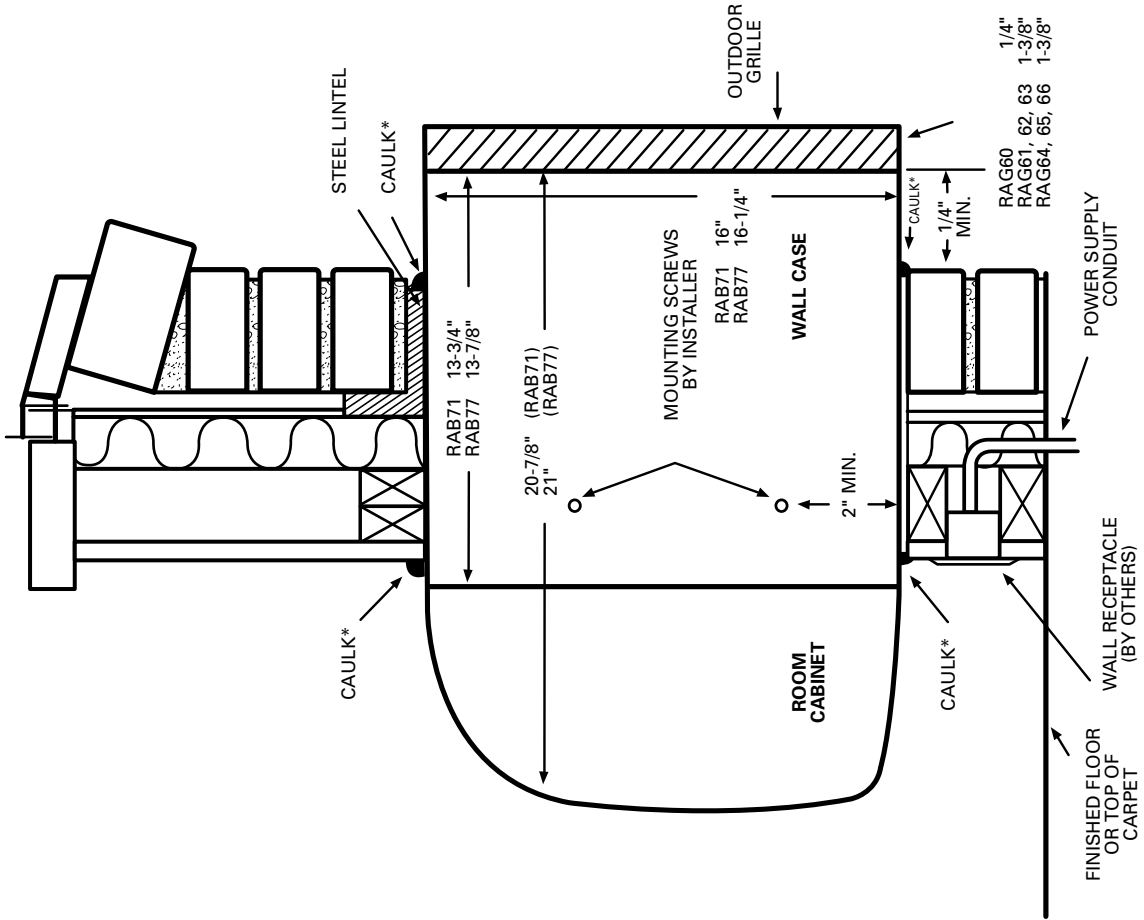


Choice of attachment devices through both ends of case or the top. Mounting screw holes and attachment devices by installer.

Figure 2

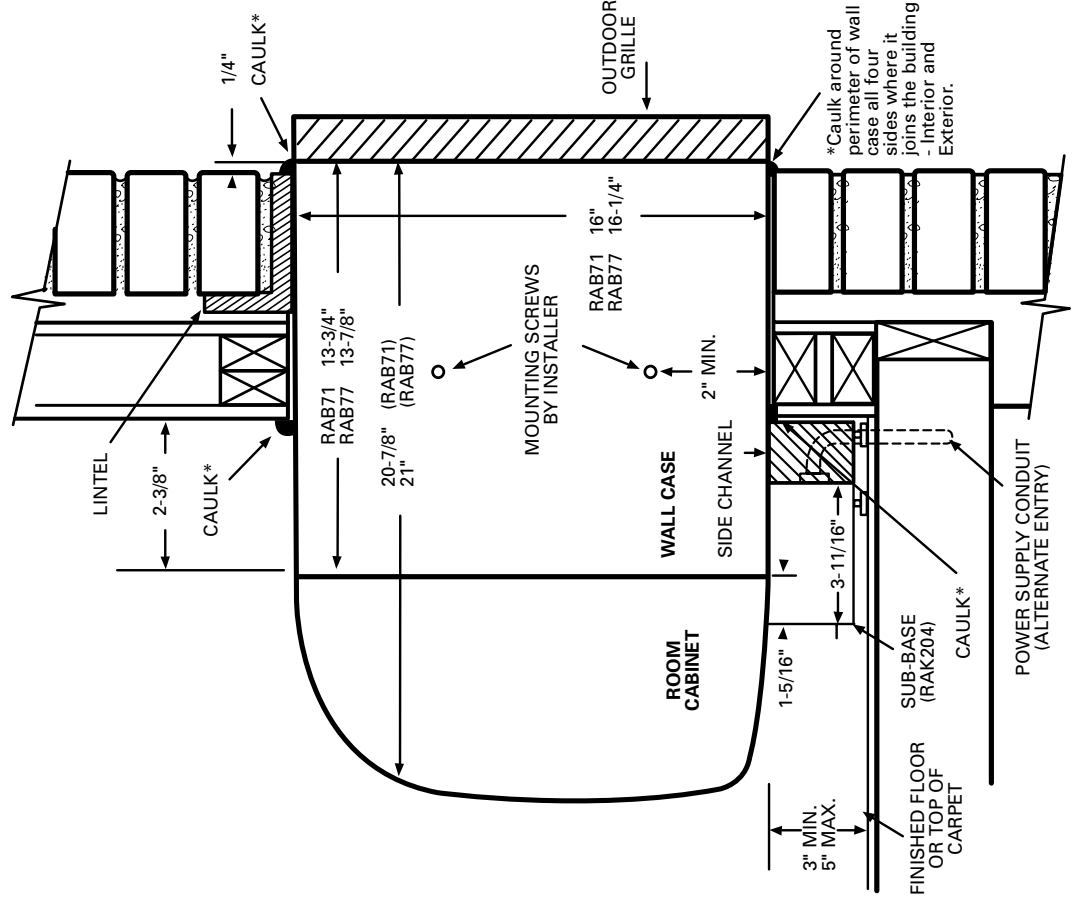
**WALL SECTION - DETAILED SIDE VIEW  
FRAME AND BRICK VENEER INSTALLATION**

**Cord Set Connected**



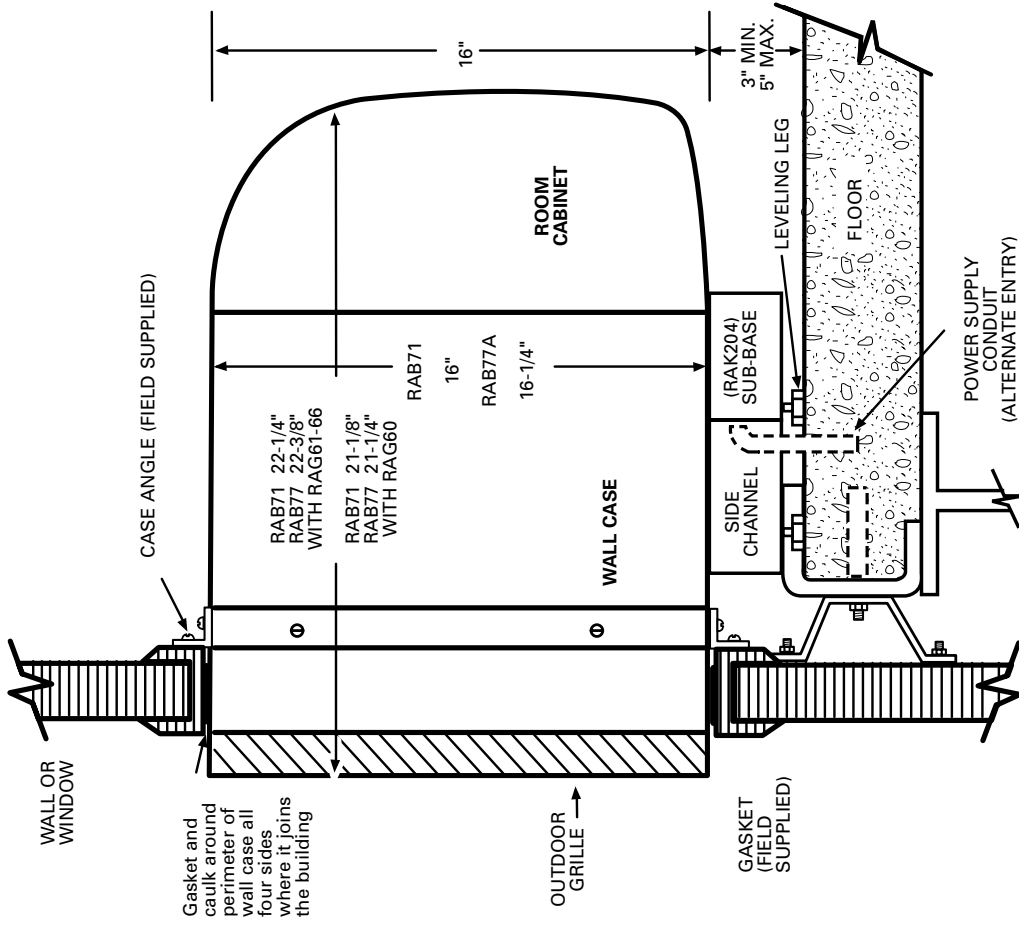
\*Caulk around perimeter of wall case all four sides where it joins the building - Interior and Exterior.

**Sub-Base Connected**

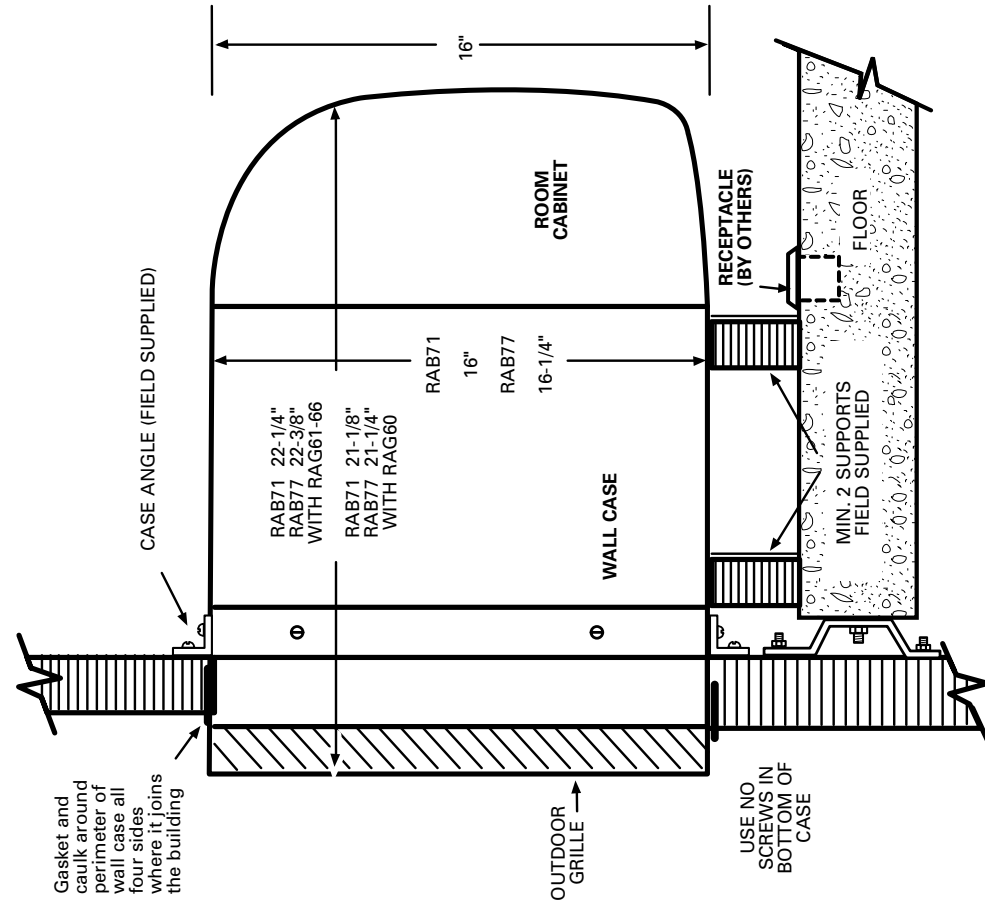


\*Caulk around perimeter of wall case all four sides where it joins the building - Interior and Exterior.

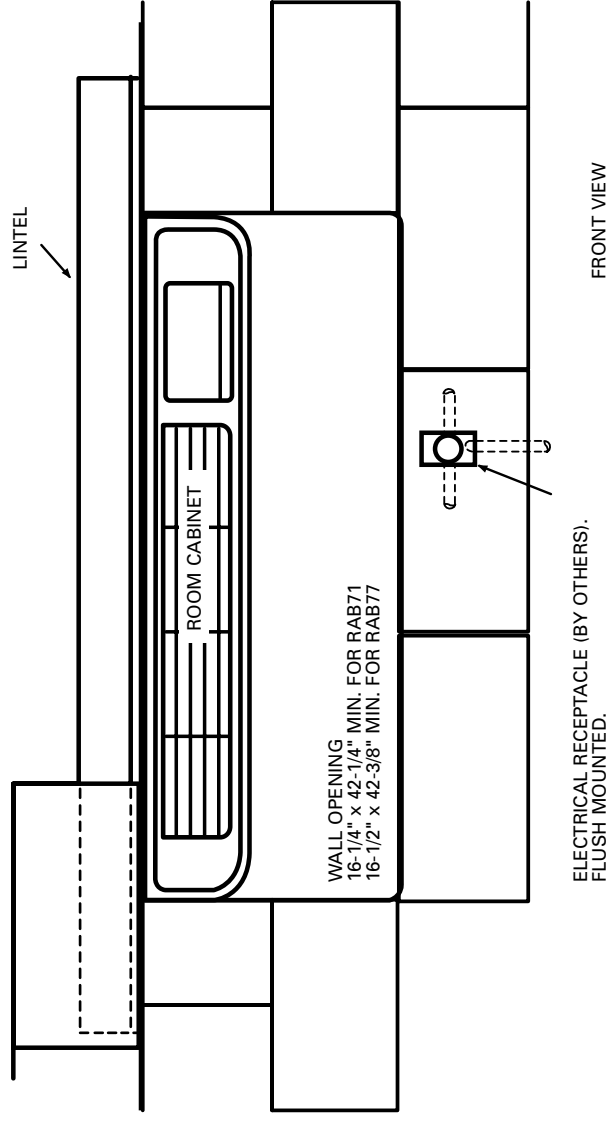
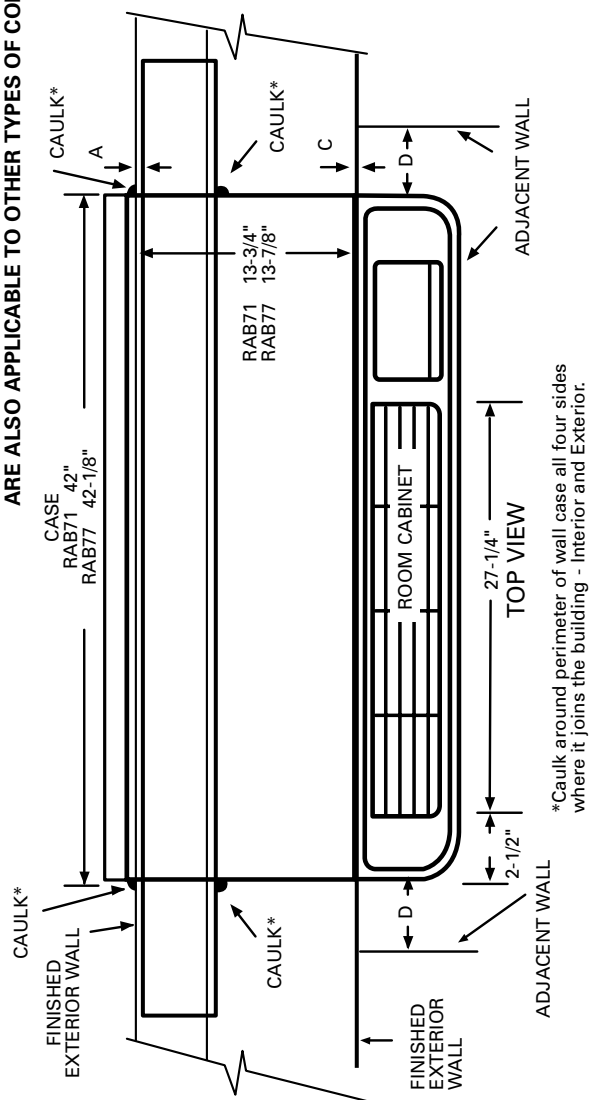
**WALL SECTION - DETAILED SIDE VIEW**  
**WINDOW, 2" CURTAIN OR PANEL WALL INSTALLATION WITH RAG REAR GRILLE EXTENDED BEYOND OUTER WALL SURFACE**  
**Sub-Base Connected**



**WALL SECTION - DETAILED SIDE VIEW**  
**WINDOW, 2" CURTAIN OR PANEL WALL INSTALLATION WITH RAG REAR GRILLE EXTENDED BEYOND OUTER WALL SURFACE**  
**Cord Set Connected**

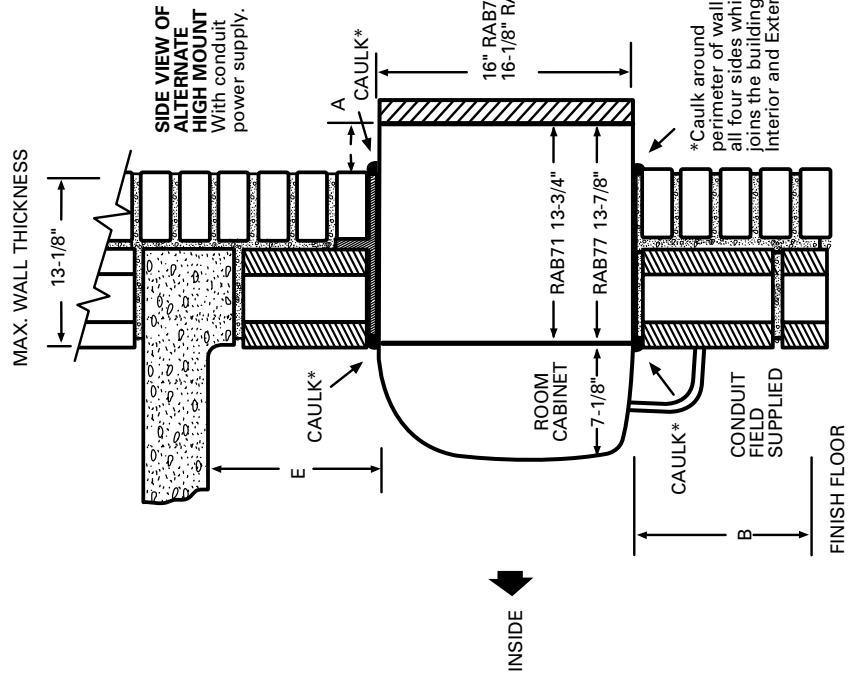


**WALL CASE INSTALLATION – CORD SET CONNECTED**  
**EXAMPLE: BLOCK AND VENEER – DIMENSIONAL DATA AND COMMENTS**  
**ARE ALSO APPLICABLE TO OTHER TYPES OF CONSTRUCTION**



Dimension	Manufacturer Required Minimum Installation Clearance
A	1/4" (See note 1)
B	Allow For Electrical Wiring 0" Min. (See page 27)
C	0" Minimum
D	0" Minimum 2" Recommended See pages 38-39 for ducted application.
E	3" Minimum

NOTE:  
 1. FOR OUTSIDE FLUSH MOUNTING SEE PAGE 35 FOR DRAIN INSTALLATION.



See page 42 for line cord length.

**METAL CASE EXTENSION FOR WALLS DEEPER THAN 13-1/8" (11-1/8" WITH SUB-BASE)**

**FIELD FABRICATED – GE RECOMMENDS THE USE OF ONE OF THE DEEPER RAB71 WALL CASES OFFERED AS SPECIAL ORDER ITEMS. SEE PAGE 29.**

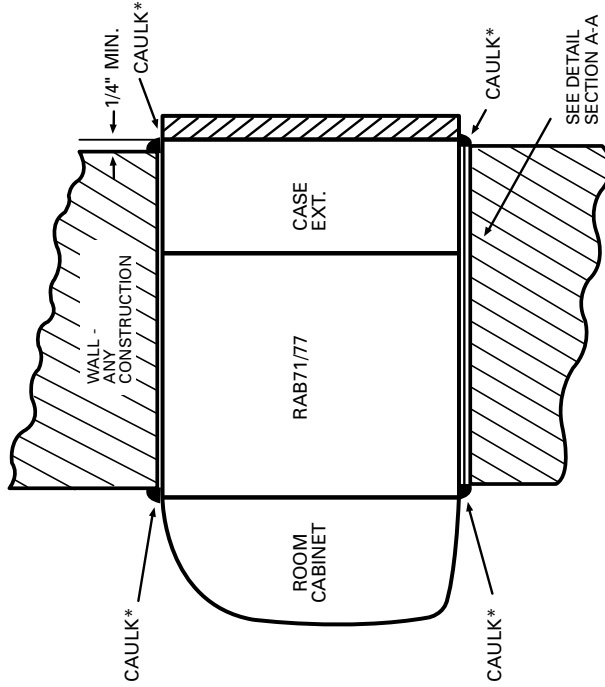
Zoneline units can be installed in walls of greater depth than the wall case. Where the case recession is less than 3" and where it is possible to waterproof the exposed sides and top of the opening, the suggested procedure is to apply a flashing to the bottom of the wall case as shown on page 29. Where 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 case extension. Since the wall case is a water bearing container, the extension likewise must also be water bearing and the connection between the two must be watertight. The case extension must contain splitters to prevent recirculation of the outdoor air circuit.

1. The case 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 case/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.

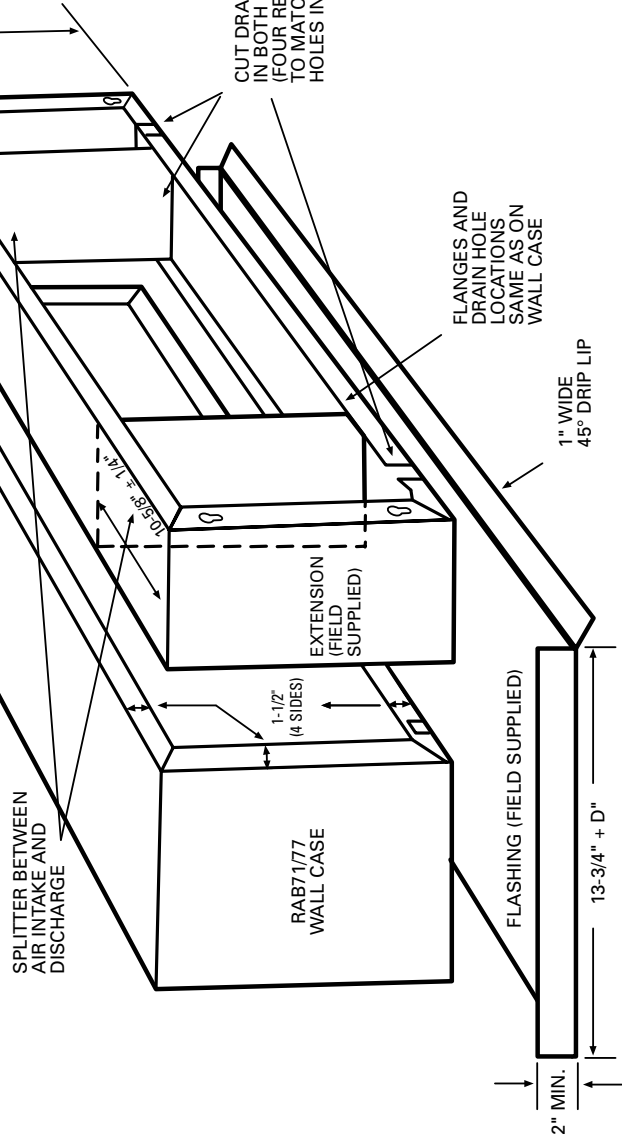
2. The wall case and extension should be connected prior to installation in the wall opening. A quality grade sealant should be applied to all four (4) butting flanges. Use bolts and nuts or oversized self tapping screws (driven from the wall case to the extension) to attach the two assemblies. Clean 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 case/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 case/extension assembly should be level.

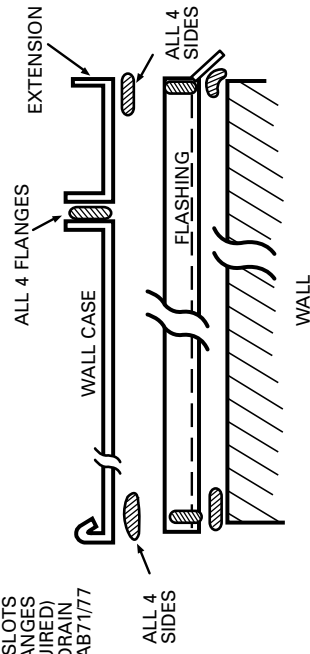
5. Suggested materials for case extension and flashing should be non-ferrous metals. Minimal acceptable material: Galvanized G-90 painted.



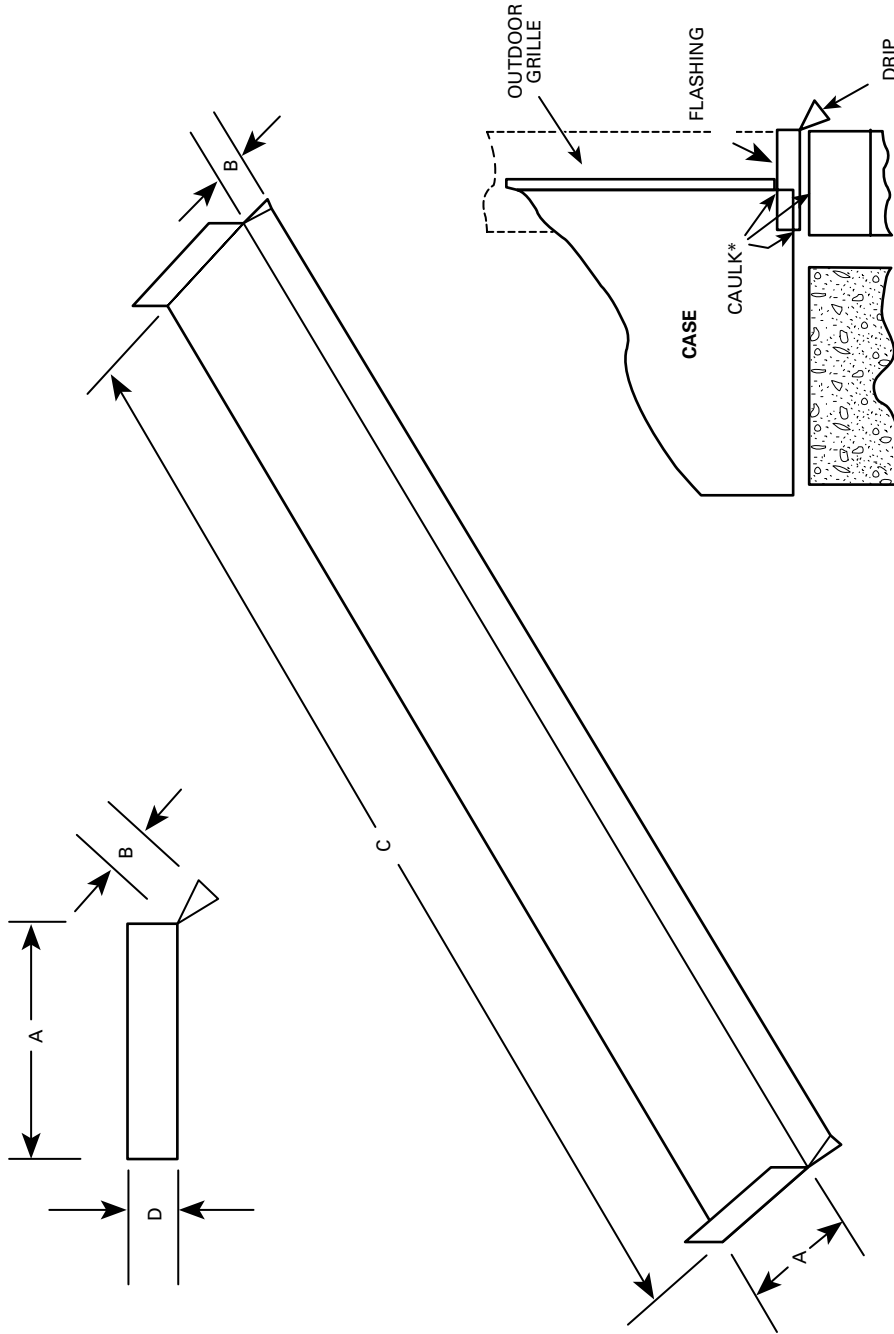
\*Caulk around perimeter of wall case all four sides where it joins the building - Interior and Exterior.



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



**ALTERNATE – CASE 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 recommends the use of one of the deeper RAB71 wall cases offered as special order items. See page 23.

**DIMENSIONS:**

- A. DISTANCE FROM GRILLE OR CASE TO OUTSIDE SURFACE OF WALL PLUS 2" TO 4" (TO INSERT UNDER CASE).
- B. 1" DRIP LIP (MINIMUM)
- C. 42" PLUS - SUFFICIENT TO FIT SNUGGLY UNDER AND UP AROUND THE CASE.
- D. 2" MINIMUM

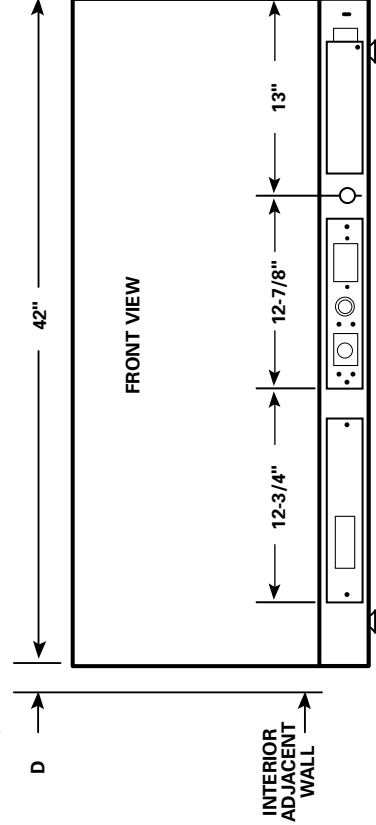
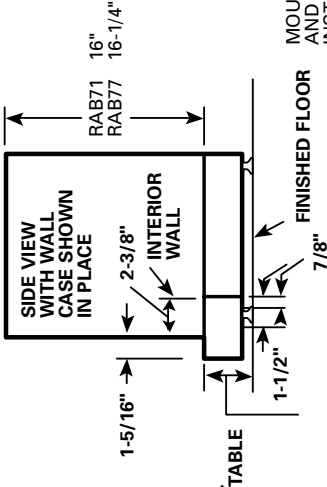
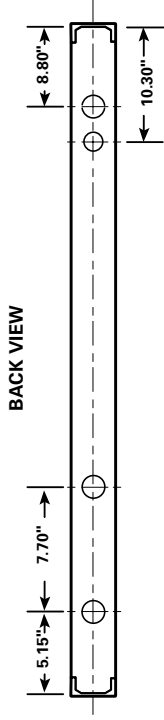
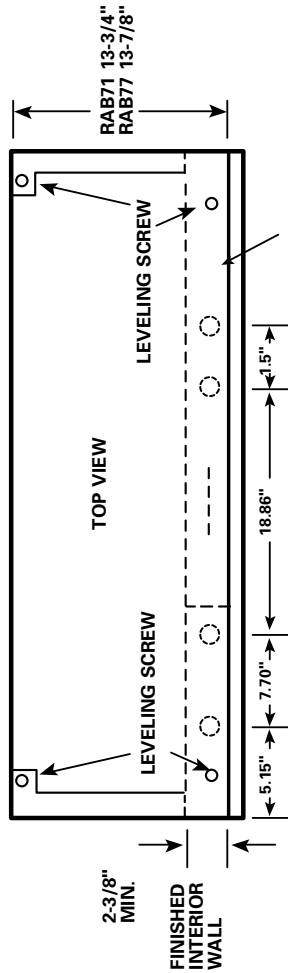
(CAUTION: WHEN CAULKING DO NOT BLOCK DRAIN HOLES IN CASE OR GRILLE.) IF GRILLE IS TO BE MOUNTED TO WALL SURFACE A SPLITTERS MUST BE USED, SEE PAGE 30.

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

**RAB71/77 WALL CASE INSTALLATION - RAK204 SERIES SUB-BASE CONNECTED**  
 EXAMPLE: FRAME & BRICK VENEER - DIMENSIONAL DATA AND COMMENTS  
 ARE ALSO APPLICABLE TO OTHER TYPES OF CONSTRUCTION

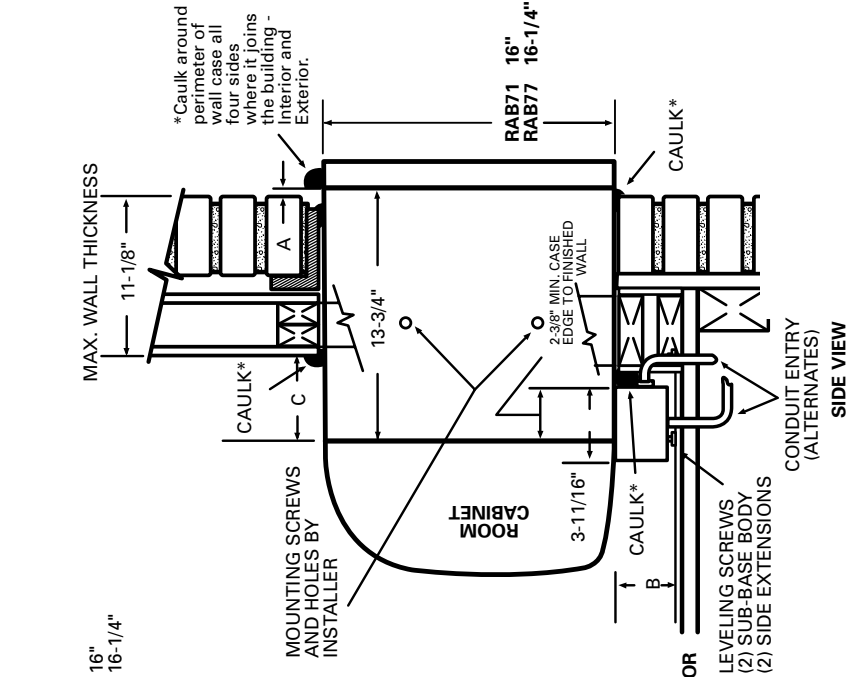
Dimension	Manufacturer Required Minimum Installation Clearance
A	1/4" (See note 1)
B	3" Min. [5" MAX.]
C	2-3/8" Minimum
D	0" Minimum 2" Recommended See pages 38-39 for ducted application.

NOTE:  
 1. FOR OUTSIDE FLUSH MOUNTING SEE PAGE 31 FOR DRAIN INSTALLATION.



KNOCKOUTS (ENCLOSURE) 4 REAR; 4 BOTTOM	
KNOCKOUT SIZE	LARGE 1-1/8" DIA.
	SMALL 7/8" DIA.

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



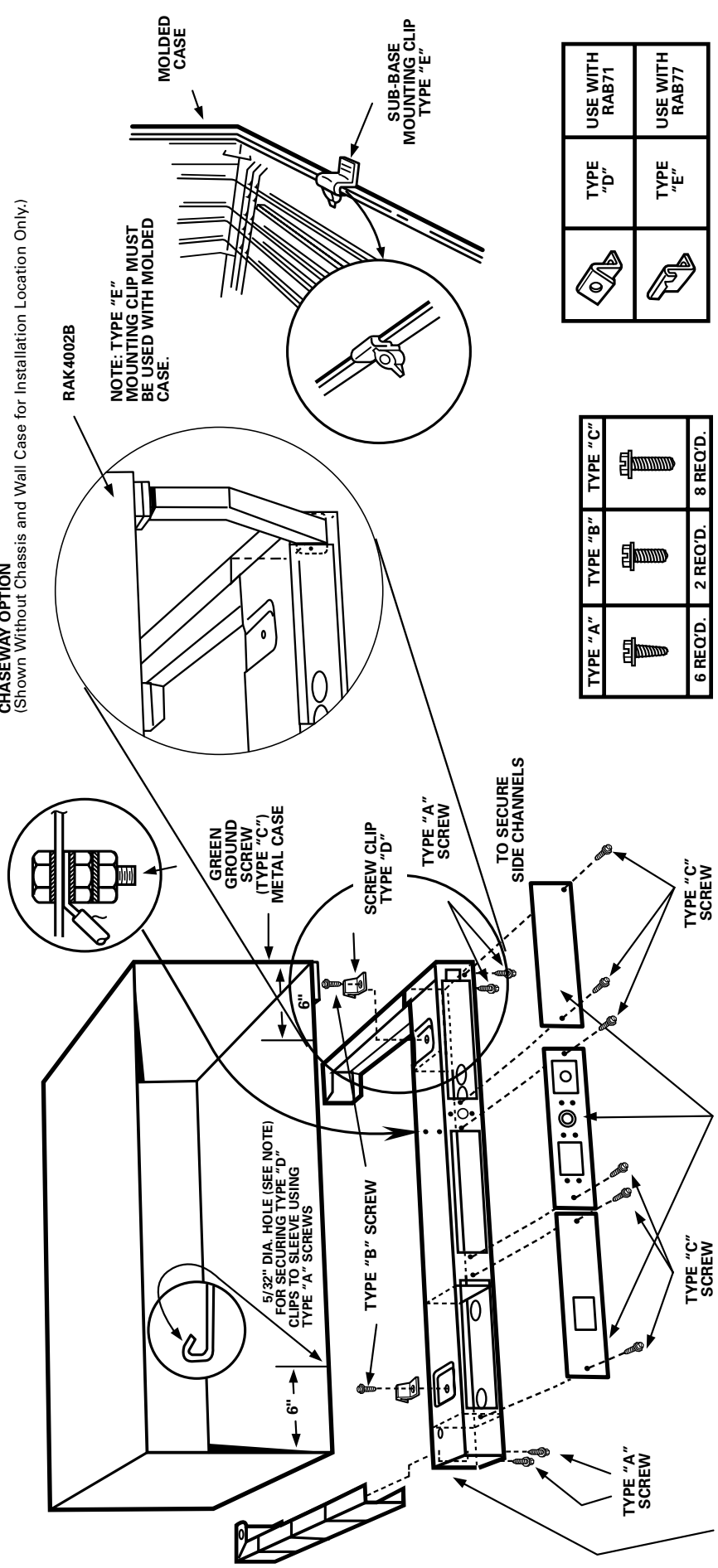
\*Caulk around perimeter of wall case all four sides where it joins the building - interior and exterior.  
 CAULK\*  
 CAULK\*  
 CONDUIT ENTRY (ALTERNATES)  
 SIDE VIEW  
 LEVELING SCREWS (2) SUB-BASE BODY (2) SIDE EXTENSIONS  
 FINISHED FLOOR  
 ROOM CABINET  
 MOUNTING SCREWS AND HOLES BY INSTALLER  
 2-3/8" MIN. CASE EDGE TO FINISHED WALL  
 11-1/8" MAX. WALL THICKNESS  
 13-3/4"  
 3-11/16"  
 B  
 C  
 RAB71 16" RAB77 16-1/4"  
 RAB71 16" RAB77 16-1/4"  
 7/8" FINISHED FLOOR  
 2-3/8" INTERIOR WALL  
 1-5/16"  
 1-1/2"  
 3" MIN. ADJUSTABLE TO 5"  
 SEE NOTE LEFT SIDE  
 D  
 D



# RAK204 SERIES SUB-BASE INSTALLATION AND ELECTRICAL DATA

## RAB71/77 WALL CASE

**CHASEWAY OPTION**  
(Shown Without Chassis and Wall Case for Installation Location Only.)



	TYPE "D"	USE WITH RAB71
	TYPE "E"	USE WITH RAB77

	TYPE "A"	TYPE "B"	TYPE "C"
	6 REQ'D.	2 REQ'D.	8 REQ'D.

**NOTE: IF METAL CASE DOES NOT HAVE SCREW HOLES, 5/32" DIA. HOLES MUST BE DRILLED 6" FROM EACH SIDE IN FRONT FLANGE. (SEE INSERT).**

**SIDE CHANNELS ARE ADJUSTABLE FROM 13-3/4" TO 2-3/8" IN LENGTH BY BREAKING OFF SECTIONS OF SIDE CHANNELS.**

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 23 for description of electrical contents of these sub-bases.

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# Condensate Disposal Systems

## *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 coil. This water drains to a pan located under the indoor coil and is routed through the barrier, 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. The water 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 against the outdoor coil. 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*

ARI (Air Conditioning & 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 ARI test is that “the test start with condensate collection pan brimful”. In order to pass the ARI Condensate Disposal Test the unit must operate continuously for four hours without condensed water blowing, dripping, or running off the unit casing 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 ARI standards 310-93 and 380-93.

## *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 as well as 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 as the water would cause frost to form on the coil. This frost would block the air flow through the coil and greatly

diminish the ability of the heat pump to extract heat from the outdoor air. Rather than allow this problem to occur, heat pump units must dispose of the condensate in another manner.

## *Temperature Activated Drain Valve*

The most widely used method of disposing of heat pump condensate is with a “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 case. The valve is fully open at 49°F.



## *Drain Kits*

Although the Zoneline units are designed to dissipate all 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 case is objectionable, an internal or external drain system should be installed. See pages 35 and 36 for information covering the drain systems and the RAD10 kit available to connect to the wall case.

## *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.

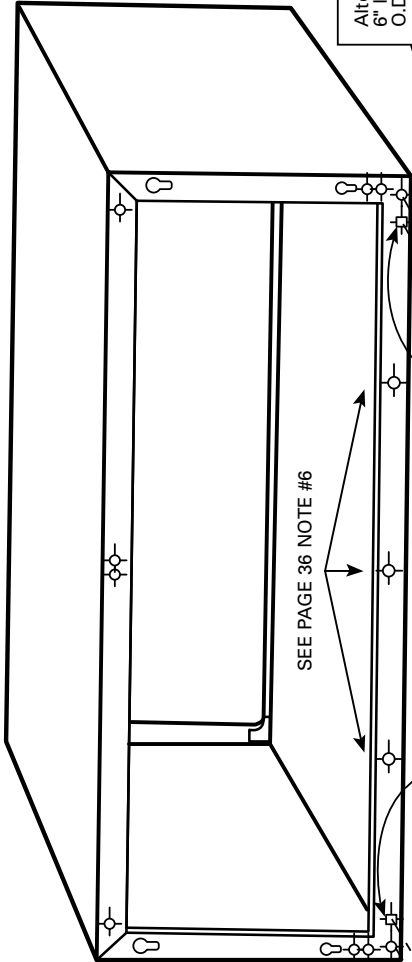
The ICR system has proven to be an effective means of minimizing the amount of heat pump condensate dripping from the unit. However, if the restrictions of a particular installation will allow absolutely no drippage of condensate water from the wall case, the installation of an internal or external drain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

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

# WALL CASE WITH RAD10 DRAIN KIT EXTERNAL DRAIN SEE PAGE 36 FOR INTERNAL DRAIN

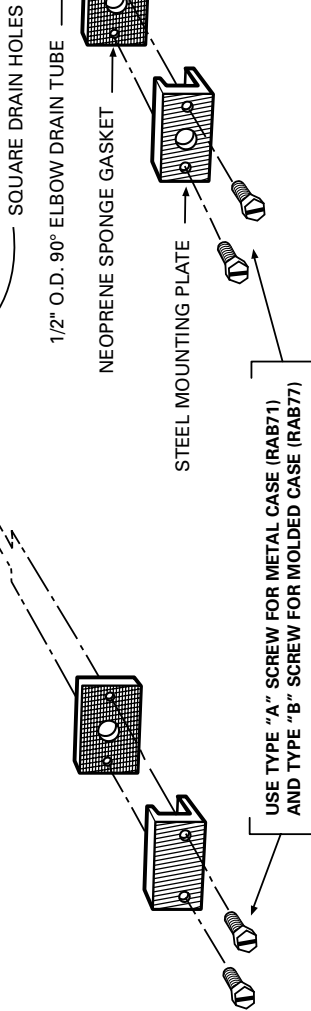
SCREWS

"A" METAL	"B" PLASTIC



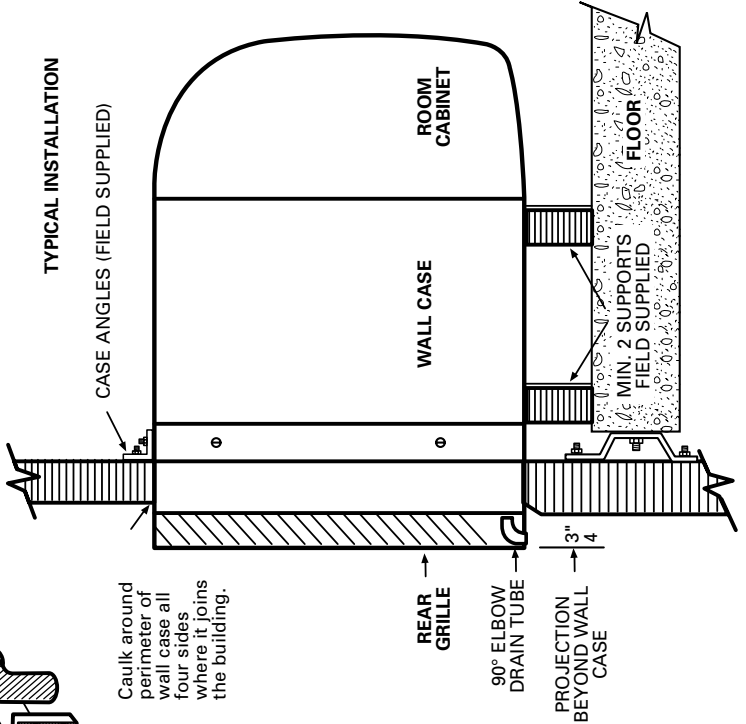
**NOTE:** SHADED PARTS AND SCREWS ARE INCLUDED WITH RAD10 DRAIN KIT. USE EITHER THE 90° ELBOW TUBE OR THE STRAIGHT TUBE DEPENDING UPON THE REQUIREMENTS OF THE PARTICULAR INSTALLATION.

Alternate 6" long, 1/2" O.D. straight copper tube.



Caulk around perimeter of wall case all four sides where it joins the building.

## TYPICAL INSTALLATION



**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 case and drain through two drain holes in the rear of the wall case. If there is more water in the wall case than can be drained through these holes it will drain through the three overflow drain holes. These drain holes must not be blocked when mounting or caulking the wall case.

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 6" 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.

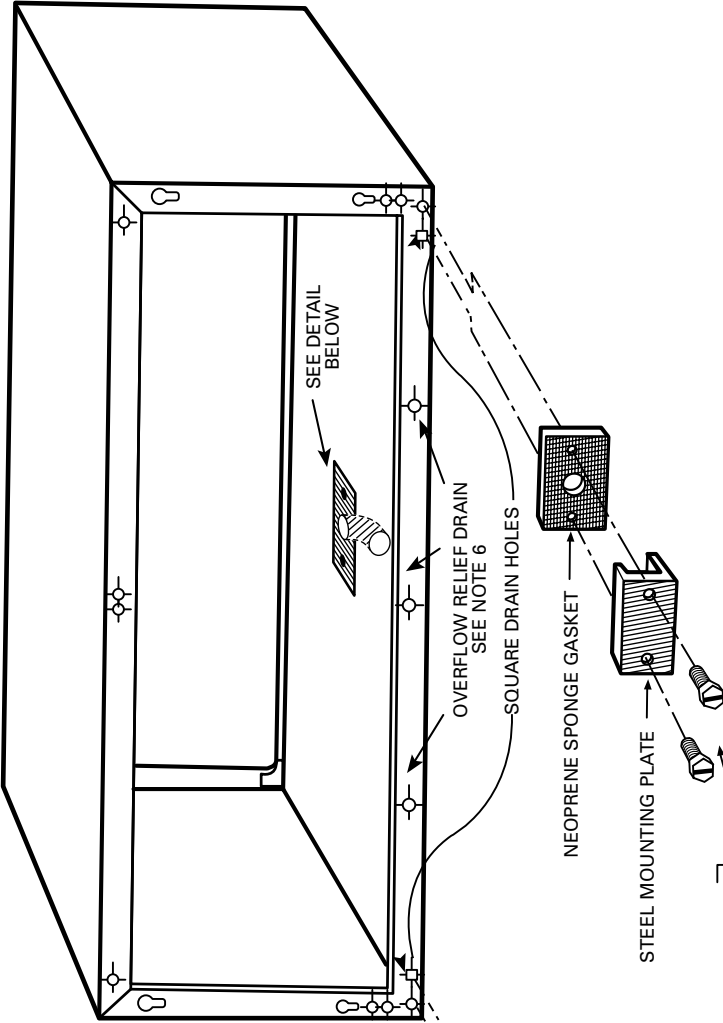
**NOTE:** Drain kit using either the 90° elbow tube or the straight tube may be installed without modification when using RAG60 exterior grille. Drain kit using the 90° elbow tube may be installed without modification when using RAG61 through RAG66 exterior grilles. Modification must be made to the RAG61 through RAG66 exterior grilles when using the straight tube. Modification must be made to the RAG67 grille if using either the 90° elbow tube or the straight tube (see installation instructions with the RAG67 grille).

**WALL CASE WITH RAD10 DRAIN KIT**  
INTERNAL DRAIN  
SEE PAGE 35 FOR EXTERNAL DRAIN

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

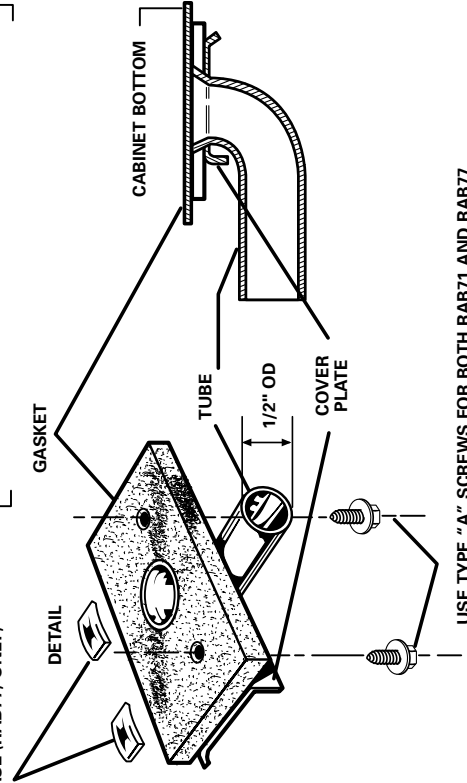
SCREWS

"A" METAL	
"B" PLASTIC	



NUT  
(MOLDED CASE (RAB77) ONLY)

USE TYPE "A" SCREW FOR METAL CASE (RAB71)  
AND TYPE "B" SCREW FOR MOLDED CASE (RAB77)



USE TYPE "A" SCREWS FOR BOTH RAB71 AND RAB77

1. THE RAD10 DRAIN KIT IS INSTALLED IN THE BOTTOM OF THE WALL CASE 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 CASE PRIOR TO INSTALLATION OF THE CASE IN THE WALL. IT MAY BE LOCATED ANYWHERE 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 CASE SO AS TO ADEQUATELY CLEAR THE SUB-BASE.
3. A TEMPLATE IS FURNISHED WITH THE KIT FOR LOCATING THE NECESSARY 3 HOLES IN THE CASE BOTTOM - TWO TO PROVIDE A SECURING MEANS AND ONE TO PROVIDE A DRAIN HOLE FOR THE 1/2" OD TUBING. (SEE DETAILS AT LEFT)
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 SQUARE DRAIN HOLES IN THE BOTTOM OUTER FLANGE OF THE WALL CASE ARE SEALED BY THE GASKETS AND MOUNTING PLATES SHOWN ABOVE.
6. THREE (3) 1/2" DIAMETER HOLES LOCATED 1/4" ABOVE THE CASE BOTTOM IN THE BOTTOM OUTER FLANGE PROVIDE OVERFLOW DRAINAGE TO THE OUTDOORS WHEN WIND DRIVEN RAIN ENTERS THE CHASSIS.

## Ducted Installations

### 2500 and 3500 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 case and a transition piece directs the air from the unit into the adapter. Instructions for mounting the adapter to the wall case 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 in the adapter allows up to 50% of the discharge air to be delivered to the secondary room.

The installation of the wall case 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 case by 1" and the bracket and mounting screws add approximately 3/8" (3/16" on each side) to the width of the wall case. If less than 1" of the wall case projects into the room it will be necessary to allow for the additional width in the opening for the wall case. The duct adapter mounting brackets should be mounted prior to installing the case in the wall.

Refer to pages 38 and 39 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 RAK6052** - The duct adapter is secured to each side of the wall case and requires the drilling of mounting holes in the wall case during installation. A template for the hole location is in the installation instructions. By securing the duct adapter to the wall case, the chassis retains the slide-out feature for servicing after the transition piece is removed.



Duct Adapter RAK6052

**Duct Extension RAK601** - 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 do 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.

**Mounting Collar and Supply Register RAK602** These components are included in the Duct Extension Kit RAK601. They may be ordered separately for installations where two duct extensions are made from one RAK601.



RAK601 Duct Extension, Mounting Collar and Register

## 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. Minimum recommended clearance between the unit and the adjacent wall is 2".
4. 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.
5. When calculating the heat gain / heat loss take both areas into consideration.

## Replacements of Existing Ducted Units

Since the design of the Zoneline chassis has changed over the years to provide better performance and appearance, 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 duct extension cross section.

### Flat Top-Discharge Units (Zoneline Units Built Prior to 1988)

**Existing Duct Extension Cross Section Measurements:**  
8-3/8" height x 6-1/2" width

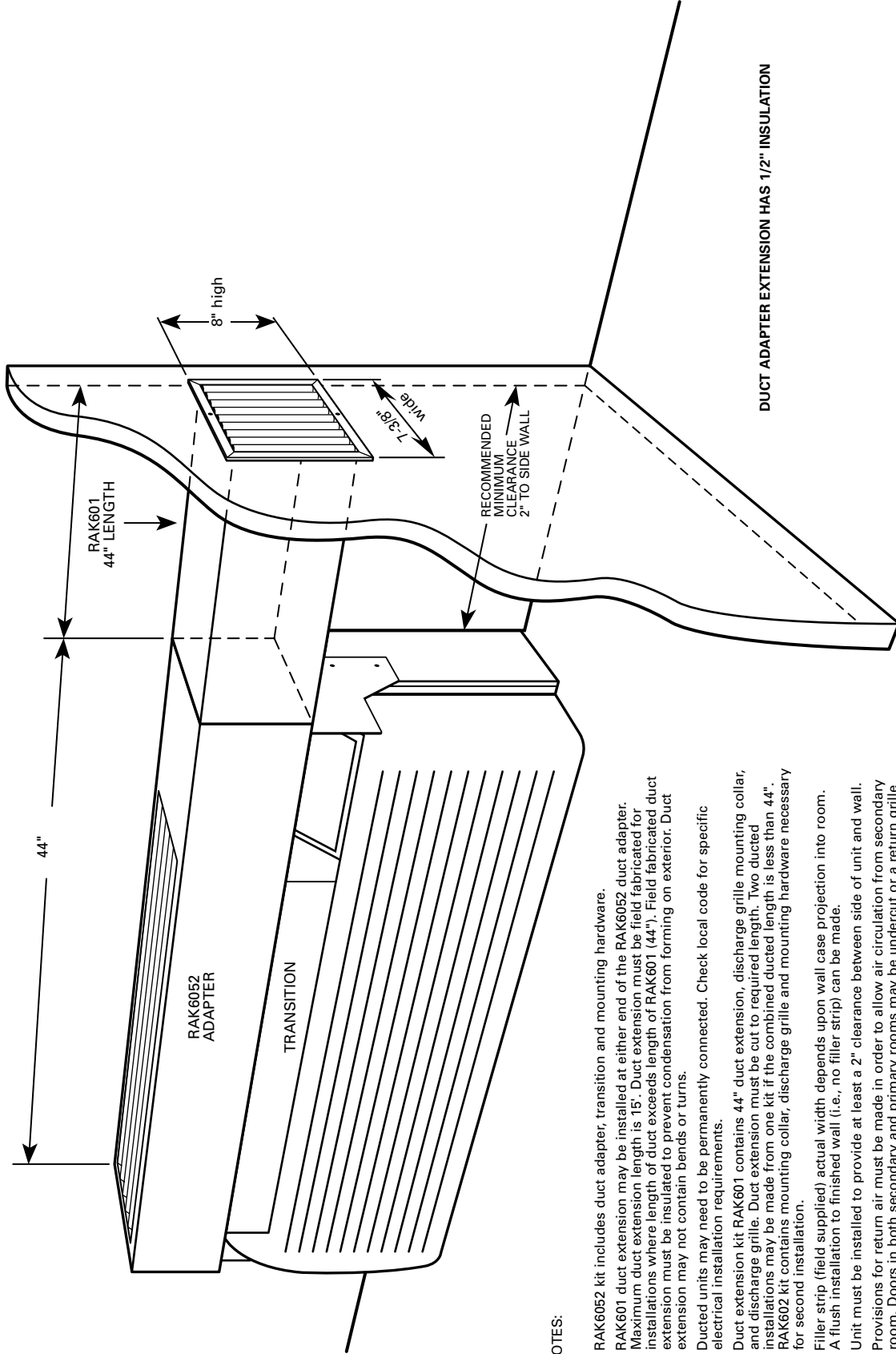
**Duct Adapter RAK7012** - This duct adapter will allow the replacement of a new chassis (2500 or 3500 Series unit) into an existing ducted application. This adapter will align properly with the duct extension and will eliminate the need to modify the wall opening. In order to minimize replacement costs, some of the components of the old duct adapter must be removed and used in the new installation. Consult the Installation Instructions of the RAK7012 before removing and discarding the old duct adapter. See additional notes page 58.

### Slope-Front Discharge Units (Models With AZC, AZR, AZW, or AZ21 or AZ31 Prefix)

**Existing Duct Extension Cross Section Measurements:**  
7-3/32" height x 6-1/2" width

**Duct Transition RAK7022** - This duct transition will allow the replacement of a new slope-front discharge Zoneline chassis (2500 or 3500 Series unit) into a previous design slope-front ducted installation. See additional notes page 58.

**DUCTED APPLICATION (AZ2500/3500 SERIES)**

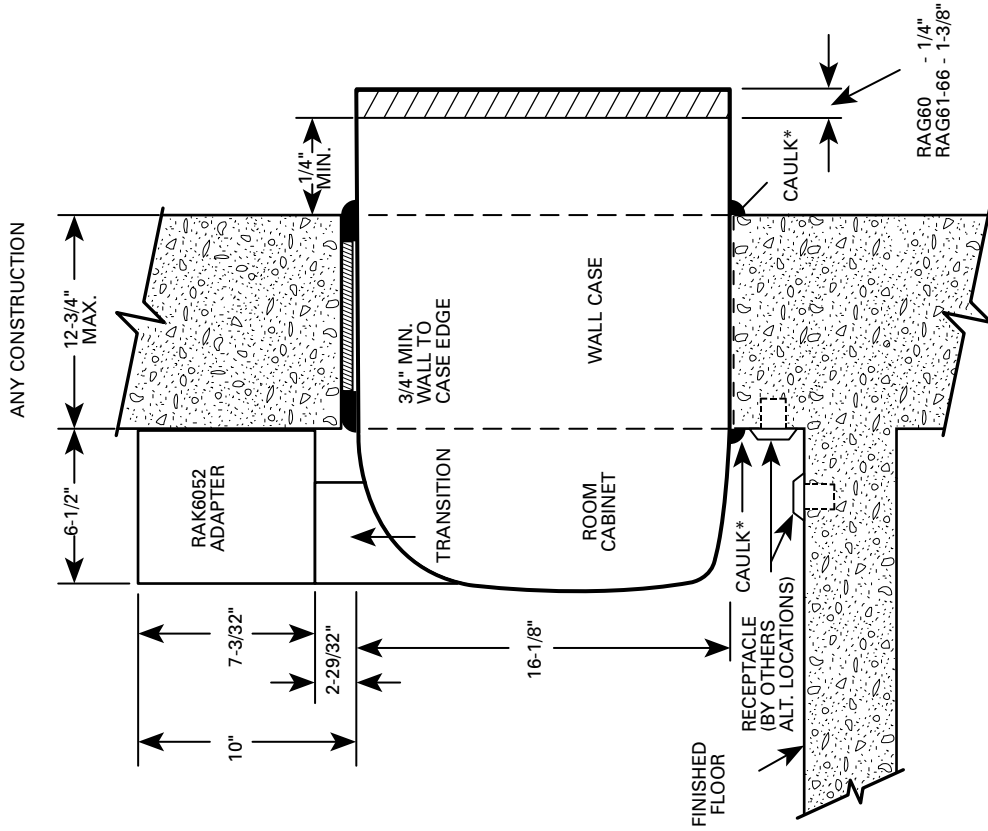


**NOTES:**

1. RAK6052 kit includes duct adapter, transition and mounting hardware.
2. RAK601 duct extension may be installed at either end of the RAK6052 duct adapter. Maximum duct extension length is 15'. Duct extension must be field fabricated for installations where length of duct exceeds length of RAK601 (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 RAK601 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". RAK602 kit contains mounting collar, discharge grille and mounting hardware necessary for second installation.
5. Filler strip (field supplied) actual width depends upon wall case 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 37 and 58.

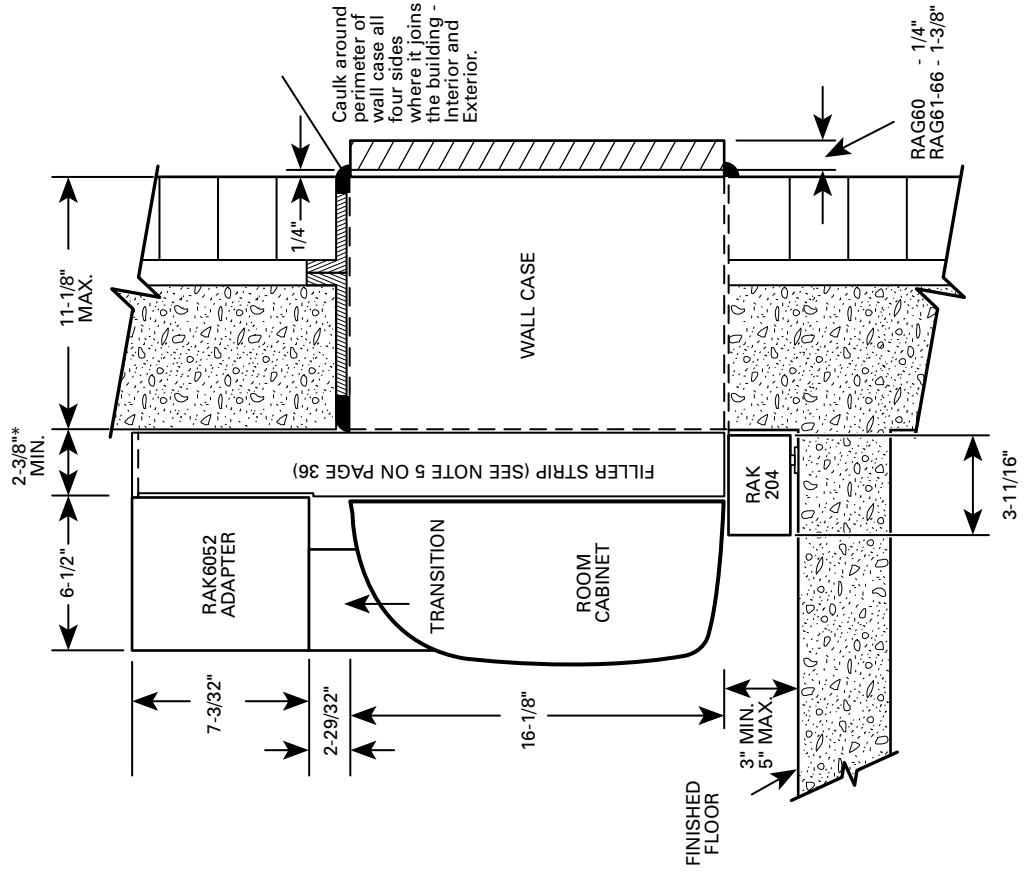
**DUCTED DETAILED SIDE VIEWS (AZ2500/3500 SERIES)**  
SEE PAGE 38 FOR ALL NOTES

**Line Cord Installation**



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

**Sub-Base Installation**



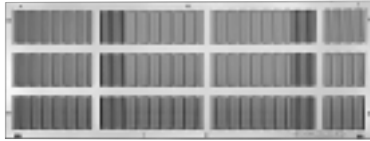
\*2-3/8" min. when installed with RAK204.

# Exterior Grilles

Four styles of outdoor grilles are available for exterior treatments. The standard stamped aluminum grille (RAG60), the molded architectural louvered exterior grilles (RAG61-63), the molded architectural louvered exterior grilles with flange (RAG64-66), and the extruded aluminum architectural louvered grille (RAG67). All grilles include air deflectors and gaskets to prevent condenser air recirculation.

## RAG60 Outdoor Grille -

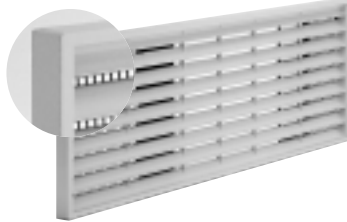
The standard exterior grille is made of durable aluminum to protect chassis components and prevent air recirculation.



RAG60 Outdoor Grille

## RAG61, 62, 63 Architectural Grille -

One piece optional 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.



RAG61 Outdoor Grille

## RAG64, 65, 66 Architectural Grille with Flange -

Identical to RAG61-63 grilles with the addition of a 1/2" flange around the top and sides to help conceal the juncture of the RAB71 wall case and the wall opening. The best appearance is achieved with this grille when the wall case extends minimally (between 1/4" and 1/2") beyond the exterior face of the building.

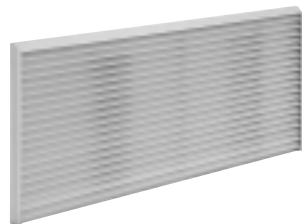


RAG64 Outdoor Grille

**Colors:** RAG61 and 64 - Beige; RAG62 and 65 - Dark Maple  
RAG63 and 66 - Bittersweet Chocolate.

## RAG67 Extruded Aluminum Grille -

The RAG67 is made from extruded anodized aluminum for use where an aluminum architectural grille is preferred. The RAG67 is available in a clear finish and may be special ordered from GE in other colors. Minimum order quantities may be required. Contact your General Electric salesperson for details.



RAG67

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

**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**, may be used with grilles that were not designed for current AZ Series GE Zoneline units. 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. All grilles used with GE Zoneline units must comply with requirements of **Exterior Architectural Treatments and Special Outdoor Grilles**, as follows.

# 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 Application Engineering for evaluation and approval. The following guidelines should be followed in selecting a louver:

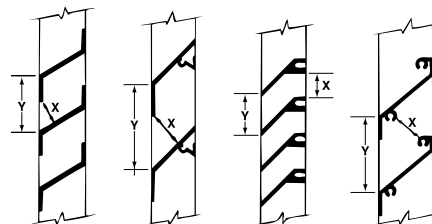
1. **The louver must have a minimum of 65% free area.** ASHRAE defines free area as the minimum area of the opening in an air inlet or outlet through which air can pass. Percent (%) free area equals the X dimension divided by the Y dimension.
2. The louver should be attached to the wall case in a manner that will prevent recirculation of condenser discharge air into the air inlet. If the louver is not attached directly to the wall case, 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 and shorten compressor life. Using the unit with a grille that is too restrictive or allows recirculation **may constitute improper installation**. A scale drawing of the louver section should be sent to GE 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 GE to be tested with the Zoneline unit.

### Sample Calculations

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

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





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## Power Connection For Deluxe Series (2500 & 3500)

The Zoneline 2500 and 3500 Series units have discrete heater wattages. Each unit has a factory installed heater and must be installed on an electrical circuit with sufficient over-current protection to carry the amperage load of the unit. See specifications on page 54 for model number nomenclature, heater amperage, and minimum circuit ampacity for the particular Zoneline model. To determine maximum connected load for individual model see page 44.

### 230/208 Volt Unit Installation - Line Cord Connected Units

Zoneline 2500 and 3500 series units for installation on 230 or 208 volt circuits have a factory installed line cord with a plug conforming to NEC standards for the circuit amperage. Graphic representation of the wall receptacles are shown on page 42. The line cord length is also shown on page 42.

### 230/208 Volt Unit Installation - Permanent Connected Units

If a permanent, or direct wired, installation of a 230 or 208 volt units is desired, a junction box kit, RAK4002A, is available to allow direct connection when the 208/230 volt chassis is installed with the appropriate electrical sub-base. When the cord set is enclosed by the RAK4002A and the sub-base chase way RAK205CW, the wiring is totally enclosed and the unit is considered to be permanently connected (correct ampacity RAK204 series sub-base required).

If an installation using flexible conduit is desired, the RAK4002A kit mounts to the chassis to form an enclosed junction box with a removable front panel for access to the unit wiring. A 7/8" diameter hole in the bottom of the enclosure enables field supplied rigid or flexible conduit to be connected to the kit. A wiring harness of three conductors and an in-line connector is included with the RAK4002A.

The factory installed line cord must be cut off approximately 8" from where it comes through the barrier, or bulkhead, of the unit. Strip insulation off 3/4" of each conductor to expose wire for field connection. These wires are then connected to the building wiring by field supplied connectors.

### 265 or 277 Volt Unit Installation - Permanent Connected Units

National Electric Code (Article 440 Section G) requires permanent connection for units connected to power sources over 250 volts, therefore these units must be permanently connected (direct wired).

Zoneline 2500 or 3500 Series units rated for installation on 265 volt circuits have discrete heater wattages and the appropriate cord set to match the 265 volt sub-base receptacle installed in this sub-base. When installed with the correct sub-base and chase way the wiring is totally enclosed and the installation is considered to be permanently connected. If there are any questions regarding electrical connection at the unit GE recommends consulting with your local electrical inspector.

A junction box is included with every 265/277 volt chassis to facilitate the installation of conduit if desired. A 7/8" diameter hole in the bottom of the RAK4002A junction box enables field supplied rigid or flexible conduit to be connected to the unit. A knockout is provided in the junction box for the installation of a field supplied cartridge type fuse, if required. A wiring harness of three conductors and an in-line connector is included with the RAK4002A. This wiring harness can be ordered separately as RAK4002CW to facilitate chassis removal.

When direct connecting the unit, connections to the building wiring should be made in the junction box with field supplied connectors.

**All wiring must conform to local electrical regulations and codes.**



### RAK4002A

Wire harness can be ordered separately with RAK4002CW

# Power Connection Kits For Premium Series (5500)

The Zonline 5500 Series units are connected to the building power supply by a unique power connection kit. By utilizing a separate universal power connection (UPC) 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 Zonline chassis and the appropriate kit is determined by the voltage and the desired resistance heat output that may be supported by the branch circuit.

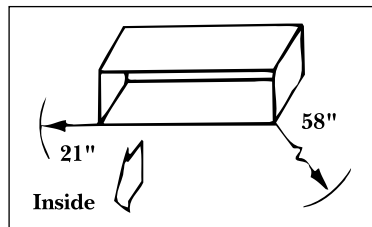
## 230/208 Volt Installations

Connections to 208 or 230 volt circuits may be made with a line cord power connection kit.

**Line Cord Kits** consist of a self-aligning 9-pin molded connector that plugs into a mating connector on the Zonline chassis and insulated line cord with an electrical plug on the end. The configuration of the electrical plug conforms to NEC standards for the circuit amperage and the position of the wires in the 9-pin connector determines the heater wattage and current requirements when it is plugged into the Zonline chassis.



Premium Typical Line Cord Power Connection Kit



Maximum Cord Extension

**Permanent Connection** is accomplished by ordering the correct ampacity electrical sub-base to match the Power Cord Kit being used. See page 23 Sub-Base for description.

There may be special requirements by some sites that rigid or flexible conduit be used. (Such as the wall case must be installed flush to finished floor and there is no room for a sub-base.) In these installations the RAK4002B junction box will be needed and the Power Cord/Cord Set will be cut and connected to building wiring inside the RAK4002B junction box. Conduit will be attached to the RAK4002B and to the site supplied building/room junction box where the building wiring enters the room. Wiring will be totally enclosed by conduit and junction boxes.

<b>Line Cord Kit</b>	<b>Voltage</b>	<b>Heater KW</b>	<b>Circuit Ampacity</b>	<b>Protective Device</b>
RAK3152	230/208	2.55/2.09	15 Amp	15 Amp Time Delay Fuse or Breaker
RAK3202	230/208	3.45/2.82	20 Amp	20 Amp Time Delay Fuse or Breaker
RAK3302	230/208	5.00/4.09	30 Amp	30 Amp Time Delay Fuse or Breaker

<b>Type</b>	<b>Receptacle</b>		<b>Configuration</b>
	<b>Mfg</b>	<b>Part No</b>	
15 AMP Tandem NEMA6-15R	GE Hubbell P&S	GE4069 5661 5661	
20 AMP Perpendicular NEMA6-20R	GE Hubbell P&S	GE4182 5461 5871	
30 AMP Large Tandem NEMA6-30R	Hubbell P&S	9330 5930	

# Power Connection Kits For Premium Series (5500)

## 265 or 277 Volt Installations

National Electrical Code (Article 440 section G) requires permanent connection for installation on circuit in excess of 250 volts.

**Permanent Connection Kits** are available for 265 volt installations. The regular kit consists of a self-aligning 9-pin connector that plugs into a mating connector on the chassis, a length of power cord with the plug cap molded to the end. There are four 265 volt cord sets so that the desired heater KW will be achieved when the correct RAK5\*\*\* kit is selected. See chart below for guide. These cord sets will match the receptacle in the RAK204E Series sub-base. It is important that care be used in this selection process. This cord set, when used with the appropriate sub-base with provided chase way from the junction box to the sub-base, is considered to be permanently connected.

For those installations that require a method of direct connection using flexible or rigid conduit, the RAK4002B junction box (provided with chassis) can be used and the field supplied conduit attached to it. The universal cord set will be cut off and connections made inside the junction box.

See page 44 for total connected load for 5500 series units.

## Electrical Wiring Information - 2500/3500/5500 Series

All Zoneline units are single phase 60 hertz units.

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

Maximum connected load in amperes, including demands for the electric heater and the fan motor, are shown on page 44. Branch circuit ampacity and electrical protective device sizing are shown on page 42 for 230/208 volt units and on this page for 265 volt units. (Although presented with Premium 5500 Series this information also is valid for Deluxe Series 2500 and 3500 Series units.)

More than one unit per branch circuit is not recommended; however, when in doubt, consult the National Electrical Code. **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. Recommended solution is to change the wall receptacle to conform to current standard plug configuration. See chart on page 42 for current receptacle configuration.




## Permanent 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 the **existing sub-base is the full width of the wall case**, RAK201 sub-base access plate may be ordered and used to replace the cover on the old sub-base. Field supplied wiring, conduit and conduit connectors should be used to make connection between new chassis and the center knockout of the RAK201. The wiring connections should be made inside the sub-base and the RAK201 attached to the sub-base with the 2 screws provided.

If the **existing sub-base is not the full width of the wall case** the electrician will have to modify the existing cover plate to allow field supplied wiring, conduit, and conduit connectors to be run from the permanent connection kit to the sub-base.

<b>Permanent Connection Kit</b>	<b>Voltage</b>	<b>Heater KW</b>	<b>Circuit Ampacity</b>	<b>Protective Device (Fuse Included)</b>
RAK5152	265	1.7	15 Amp	15 Amp
RAK5172	265	3.0	15 Amp	15 Amp
RAK5202	265	3.7	20 Amp	20 Amp
RAK5302	265	5.0	30 Amp	30 Amp

NEMA7-15R; receptacle used on 265V sub-base GE0715		15 Amp
NEMA7-20R; receptacle used on 265V sub-base GE0720-3		20 Amp
NEMA7-30R; receptacle used on 265V sub-base GE073		30 Amp



RAK4002B Installed



RAK4002B

## Maximum Connected Load For Deluxe Series (2500 and 3500)

The maximum connected load of a Zonline unit occurs when the unit is in resistance heating operation. The maximum amperage shown in the tables below is the combined total of the resistance heater and the indoor fan motor.

Model Number	230 V		208 V	
	Watts	Amps	Watts	Amps
AZ25E07D2*	2600	11.4	2130	10.2
AZ25E07D3*	3500	15.3	2860	13.8
AZ25E09D2*	2610	11.4	2140	10.3
AZ25E09D3*	3510	15.3	2870	13.9
AZ25E09D5*	5060	22.0	4140	20.0
AZ25E12D2*	2620	11.5	2150	10.3
AZ25E12D3*	3520	15.4	2880	13.9
AZ25E12D5*	5070	22.1	4150	20.0
AZ25E15D2*	2630	11.5	2160	10.4
AZ25E15D3*	3520	15.4	2890	14.0
AZ25E15D5*	5080	22.1	4160	20.1
AZ35H07D2*	2600	11.4	2130	10.2
AZ35H07D3*	3500	15.3	2860	13.8
AZ35H09D2*	2610	11.4	2140	10.3
AZ35H09D3*	3510	15.3	2870	13.9
AZ35H09D5*	5060	22.0	4140	20.0
AZ35H12D2*	2620	11.5	2150	10.3
AZ35H12D3*	3510	15.4	2880	13.9
AZ35H12D5*	5070	22.1	4150	20.0
AZ35H15D2*	2630	11.5	2160	10.4
AZ35H15D3*	3530	15.4	2890	14.0
AZ35H15D5*	5080	22.1	4160	20.1

Model Number	265 V	
	Watts	Amps
AZ25E07E3*	2600	9.8
AZ25E07E4*	3750	14.3
AZ25E09E3*	2610	9.9
AZ25E09E4*	3760	14.3
AZ25E09E5*	5060	19.2
AZ25E12E3*	2620	9.9
AZ25E12E4*	3770	14.3
AZ25E12E5*	5070	19.2
AZ25E15E3*	2630	9.9
AZ25E15E4*	3780	14.3
AZ25E15E5*	5080	19.2
AZ35H07E3*	2600	9.8
AZ35H07E4*	3750	14.3
AZ35H09E3*	2610	9.9
AZ35H09E4*	3760	14.3
AZ35H09E5*	5060	19.2
AZ35H12E3*	2620	9.9
AZ35H12E4*	3770	14.3
AZ35H12E5*	5070	19.2
AZ35H15E3*	2630	9.9
AZ35H15E4*	3780	14.3
AZ35H15E5*	5080	19.2

## Maximum Connected Load For Premium Series (5500) 230/208 V

Model Number	With RAK3152 Watts/Amps		With RAK3202 Watts/Amps		With RAK3302 Watts/Amps	
	230V	208V	230V	208V	230V	208V
AZ55H07DA*	2615/11.4	2145/10.3	3515/15.3	2880/13.9	3515/15.3**	2880/13.9**
AZ55H09DA*	2615/11.4	2145/10.3	3515/15.3	2880/13.9	5065/22.0	4150/20.0
AZ55H12DA*	2640/11.5	2165/10.4	3540/15.4	2900/14.0	5090/22.1	4170/20.1
AZ55H15DA*	2685/11.7	2210/10.6	3585/15.6	2945/14.2	5135/22.3	4215/20.3

## Maximum Connected Load For Premium Series (5500) 265V

Model Number	With RAK5152*** Watts/Amps	With RAK5172 Watts/Amps	With RAK5202 Watts/Amps	With RAK5302 Watts/Amps
AZ55H07EA*	2235/8.6	3075/11.6	3775/14.3	3775/14.3**
AZ55H09EA*	2400/9.1	3075/11.6	3775/14.3	5075/19.2
AZ55H12EA*	2670/10.3	3100/11.7	3800/14.4	5100/19.3
AZ55H15EA*	2965/11.4	3135/11.8	3835/14.5	5135/19.4

\* Covers all model versions.

\*\* AZ55H07 does not have 5 kW heater.

\*\*\* Maximum connected load occurs when this unit with this power connection kit is in simultaneous operation of heat pump with supplemental 1700 watt heater.

# Cooling Performance Data

**Total Capacity - BTU/Hr.  
BTUH At 80°F D.B. - 67°F W.B.**

Temperature of Air Entering Condenser	<b>Zoneline 2500 Series</b>				<b>Zoneline 3500 Series</b>				<b>Zoneline 5500 Series</b>			
	AZ	AZ	AZ	AZ	AZ	AZ	AZ	AZ	AZ	AZ	AZ	AZ
	25E07D 25E07E	25E09D 25E09E	25E12D 25E12E	25E15D 25E15E	35H07D 35H07E	35H09D 35H09E	35H12D 35H12E	35H15D 35H15E	55H07D 55H07E	55H09D 55H09E	55H12D 55H12E	55H15D 55H15E
75	7750	9900	12800	15900	7750	9900	12800	15900	7750	9900	12900	16000
82	7580	9690	12590	15620	7580	9690	12590	15620	7580	9690	12690	15720
85	7500	9600	12500	15500	7500	9600	12500	15500	7500	9600	12600	15600
95	7100	9000	11700	14600	7100	9000	11700	14600	7100	9000	11800	14700
105	6600	8250	10750	13600	6600	8250	10750	13600	6600	8250	10850	13700
115	6000	7500	9650	12300	6000	7500	9650	12300	6000	7500	9750	12400

# Heat Pump Performance Data

**Capacities and COP at Various Outdoor Temperatures  
BTUH At 70°F Indoor Temperature**

## Zoneline 3500 Series

Outdoor Temperature F°	AZ35H07D AZ35H07E		AZ35H09D AZ35H09E		AZ35H12D AZ35H12E		AZ35H15D AZ35H15E	
	BTUH	COP	BTUH	COP	BTUH	COP	BTUH	COP
	65	7200	3.75	10000	3.75	13050	3.55	15950
60	7000	3.70	9600	3.70	12550	3.50	15300	3.30
55	6800	3.65	9100	3.65	11950	3.45	14650	3.25
50	6600	3.55	8700	3.55	11350	3.35	13850	3.15
47	6400	3.50	8400	3.50	10900	3.30	13400	3.10
45	6250	3.45	8200	3.45	10600	3.25	13050	3.05
40	5950	3.35	7700	3.30	9800	3.10	12250	2.95
35	5550	3.20	7100	3.20	9000	3.00	11300	2.80
30	5150	3.05	6500	3.05	8200	2.85	10300	2.65
25	4700	2.90	5900	2.85	7300	2.65	9250	2.50

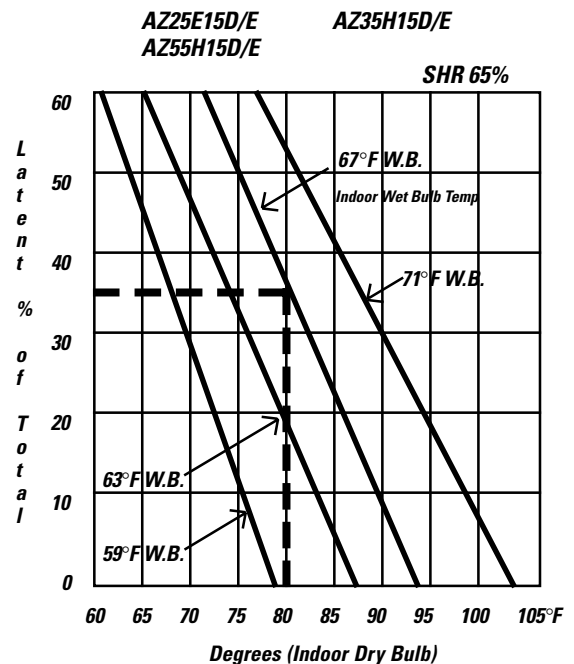
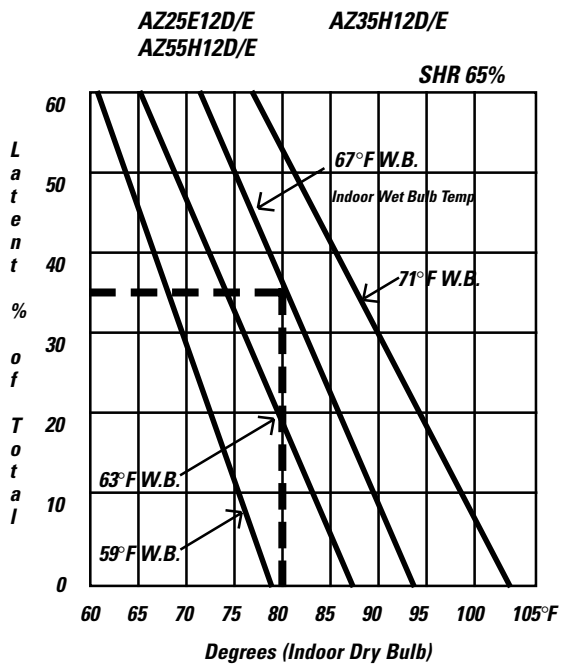
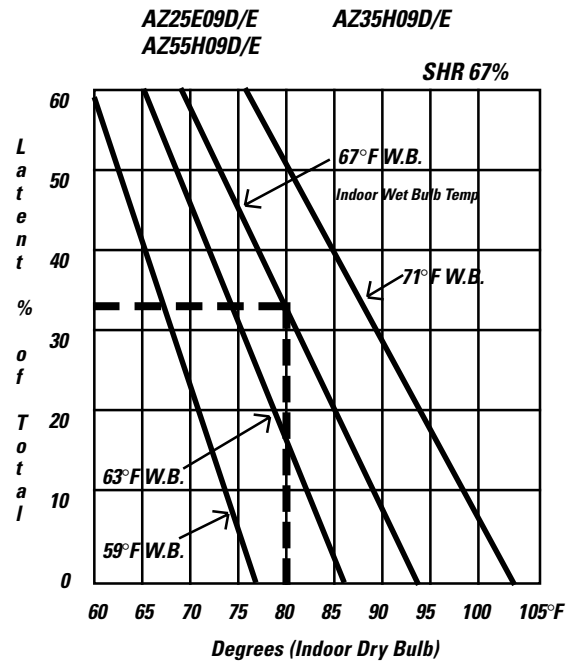
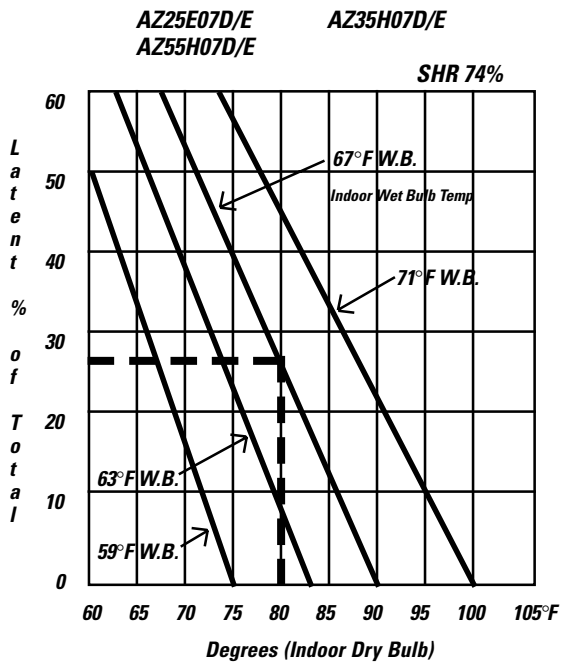
## Zoneline 5500 Series

Outdoor Temperature F°	AZ55H07D AZ55H07E		AZ55H09D AZ55H09E		AZ55H12D AZ55H12E		AZ55H15D AZ55H15E	
	BTUH	COP	BTUH	COP	BTUH	COP	BTUH	COP
	65	7200	3.75	10000	3.75	13050	3.55	15950
60	7000	3.70	9600	3.70	12550	3.50	15300	3.30
55	6800	3.65	9100	3.65	11950	3.45	14650	3.25
50	6600	3.55	8700	3.55	11350	3.35	13850	3.15
47	6400	3.50	8400	3.50	10900	3.30	13400	3.10
45	6250	3.45	8200	3.45	10600	3.25	13050	3.05
40	5950	3.35	7700	3.30	9800	3.10	12250	2.95
35	5550	3.20	7100	3.20	9000	3.00	11300	2.80
30	5150	3.05	6500	3.05	8200	2.85	10300	2.65
25	4700	2.90	5900	2.85	7300	2.65	9250	2.50

# 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 Sensible capacity listed in the specification charts on pages 52 and 53 are at standard rating conditions of 95°F. dry bulb/75°F. wet bulb outdoors; 80°F. dry bulb/67°F. wet bulb indoors. The Latent system capacity is 1.00 minus the Sensible capacity. (If the Sensible capacity is listed as .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).

In some applications information about the Sensible/Latent split, or ratio, at conditions other than the standard rating conditions is needed. The charts below provide data at various indoor conditions. To use the charts, first determine which Zoneline model is being considered and refer to the appropriate chart. Next, locate the indoor dry bulb temperature under consideration across the horizontal axis of the chart and draw a line straight up until it touches the line representing the indoor wet bulb temperature of the area; from this point draw a horizontal straight line to the vertical axis. The point where the line touches the axis represents the latent percent of the total capacity of the unit. An example is shown for the standard indoor conditions of 80°F. dry bulb/67°F. wet bulb.



# Normal Yearly Operating Data (Cooling Hours based on 75°F. indoor temperature with air conditioner sized to meet the design conditions.)

Location	ASHRAE Heating Degree Days	Estimated Cooling Hours	Location	ASHRAE Heating Degree Days	Estimated Cooling Hours	Location	ASHRAE Heating Degree Days	Estimated Cooling Hours
ALABAMA			KENTUCKY			OHIO		
Birmingham	2,551	1,390	Lexington	4,683	830	Cincinnati	5,265	840
Huntsville	3,070	1,340	Louisville	4,660	1,130	Cleveland	6,351	610
Mobile	1,560	1,640	LOUISIANA			Columbus	5,660	810
Montgomery	2,291	1,580	Alexandria	1,921	1,670	Dayton	5,622	740
ARIZONA			Baton Rouge	1,560	1,860	Toledo	6,494	590
Flagstaff	7,152	310	New Orleans	1,385	1,790	OKLAHOMA		
Phoenix	1,765	2,280	Shreveport	2,184	1,470	Oklahoma City	3,725	1,200
Tucson	1,800	1,920	MAINE			Tulsa	3,860	1,410
Yuma	974	2,520	Portland	7,511	290	OREGON		
ARKANSAS			MARYLAND			Medford	5,008	620
Fort Smith	3,292	1,410	Baltimore	4,654	850	Pendleton	5,127	590
Little Rock	3,219	1,330	MASSACHUSETTS			Portland	4,635	270
CALIFORNIA			Boston	5,634	500	PENNSYLVANIA		
Bakersfield	2,122	1,530	MICHIGAN			Harrisburg	5,251	730
Fresno	2,611	1,210	Detroit	6,293	590	Philadelphia	5,144	810
Los Angeles	2,061	310	Flint	7,377	440	Pittsburgh	5,987	590
Sacramento	2,502	1,030	Grand Rapids	6,894	530	Scranton	6,254	440
San Diego	1,458	390	MINNESOTA			Williamsport	5,934	600
San Francisco	3,015	110	Duluth	10,000	200	RHODE ISLAND		
COLORADO			Minneapolis	8,382	550	Providence	5,954	470
Colorado Springs	6,423	520	MISSISSIPPI			SOUTH CAROLINA		
Denver	6,283	550	Jackson	2,239	1,560	Charleston	2,033	1,390
Grand Junction	5,641	910	MISSOURI			Columbia	2,484	1,440
CONNECTICUT			Columbia	5,046	960	Greenville	2,980	1,120
Hartford	6,235	480	Kansas City	4,711	1,210	SOUTH DAKOTA		
D.C.			Springfield	4,900	970	Rapid City	7,345	580
Washington	4,224	1,010	St. Louis	4,900	1,080	Sioux Falls	7,839	610
DELAWARE			MONTANA			TENNESSEE		
Wilmington	4,930	770	Billings	7,049	520	Chattanooga	3,254	1,180
FLORIDA			Glasgow	8,996	410	Knoxville	3,494	1,070
Jacksonville	1,239	1,690	Great Falls	7,750	420	Memphis	3,232	1,320
Miami	214	2,850	Missoula	8,125	350	Nashville	3,578	1,220
Orlando	766	1,930	NEBRASKA			TEXAS		
Tallahassee	1,485	1,500	Grand Island	6,530	770	Corpus Christi	914	2,380
Tampa	683	2,350	Omaha	6,612	750	Dallas	2,363	1,900
GEORGIA			NEVADA			El Paso	2,700	1,580
Atlanta	2,961	1,130	Ely	7,733	500	Houston	1,396	1,850
Augusta	2,397	1,400	Las Vegas	2,709	1,980	Lubbock	3,578	1,310
Macon	2,136	1,440	Reno	6,332	520	San Antonio	1,546	1,920
Savannah	1,819	1,510	NEW JERSEY			UTAH		
IDAHO			Newark	4,589	710	Milford	6,497	910
Boise	5,809	670	NEW MEXICO			Salt Lake City	6,052	830
Lewiston	5,542	600	Albuquerque	4,348	1,040	VERMONT		
Pocatello	7,033	570	Clayton	5,158	720	Burlington	8,269	130
ILLINOIS			Silver City	3,705	1,260	VIRGINIA		
Chicago	6,155	780	NEW YORK			Norfolk	3,421	1,010
Moline	6,408	760	Albany	6,875	480	Richmond	3,865	1,020
Springfield	5,429	890	Binghamton	7,286	310	Roanoke	4,150	870
INDIANA			Buffalo	7,062	450	WASHINGTON		
Evansville	4,435	1,090	New York	4,811	790	Seattle	5,145	180
Fort Wayne	6,205	710	Rochester	6,748	470	Spokane	6,655	430
Indianapolis	5,699	820	Syracuse	6,756	500	Yakima	5,941	530
South Bend	6,439	600	NORTH CAROLINA			WEST VIRGINIA		
IOWA			Asheville	4,042	690	Charleston	4,476	860
Burlington	6,114	730	Charlotte	3,191	1,230	Huntington	4,446	820
Des Moines	6,588	710	Raleigh	3,393	1,070	WISCONSIN		
Sioux City	6,951	770	Winston-Salem	3,595	960	Madison	7,863	530
KANSAS			NORTH DAKOTA			Milwaukee	7,635	450
Dodge City	4,986	1,020	Bismarck	8,851	510	WYOMING		
Goodland	6,141	800	Fargo	9,226	490	Casper	7,410	600
Topeka	5,182	880	Williston	9,243	580	Cheyenne	7,381	420
Wichita	4,620	1,070				Sheridan	7,680	530

## Formula for Calculating Operating Costs Using Above Data:

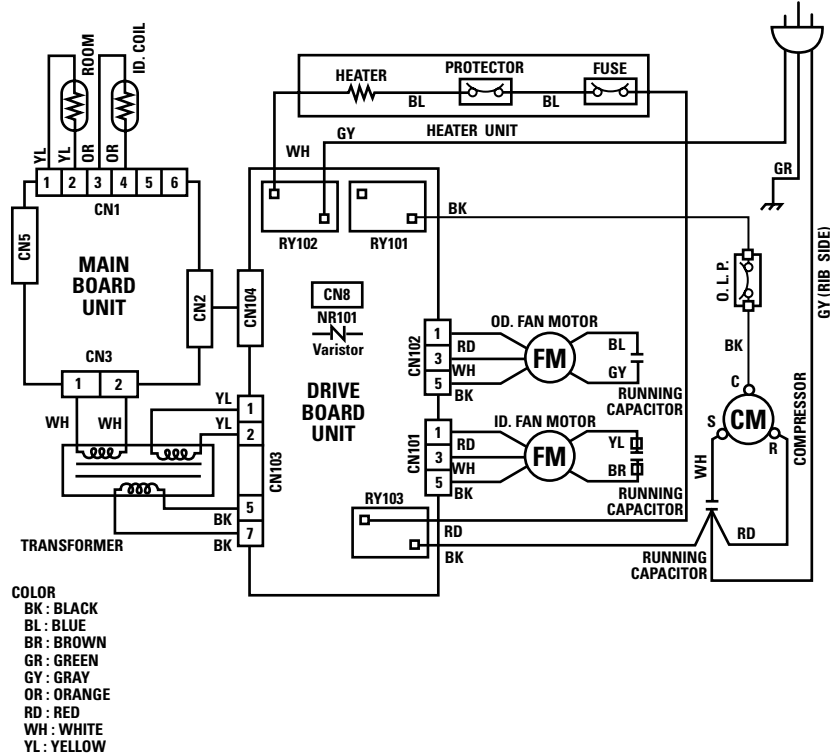
$$\text{Heating*} - \frac{\text{Heat Loss KW} \times \text{Heating Degree Days} \times \text{"C"} \times \text{Cost per KWH}}{\text{Outdoor Design Temperature Difference}} = \text{Operating Cost}$$

\*The above formula is for electric resistance heating only. Power consumption using the Zoneline Heat Pumps should be adjusted by Seasonal Performance Factor (SPF).

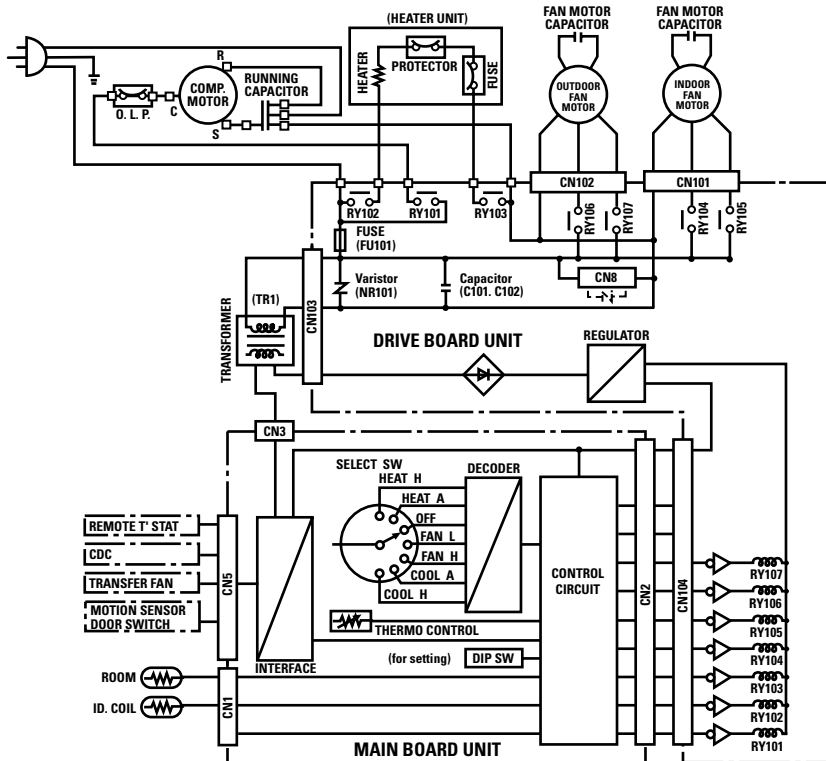
The local power supplier should be consulted for recommended value of "C." This factor will vary between 17 and 24.

$$\text{Cooling} - \frac{\text{Calculated Heat Gain (BTUH)}}{\text{Installed unit capacity (BTUH)}} \times \frac{\text{Unit Cooling Watts}}{1000 \text{ Watts/KW}} \times \text{Cooling Hours} \times \text{Cost per KWH} = \text{Operating Cost}$$

# Typical 2500 Series Wiring Diagram

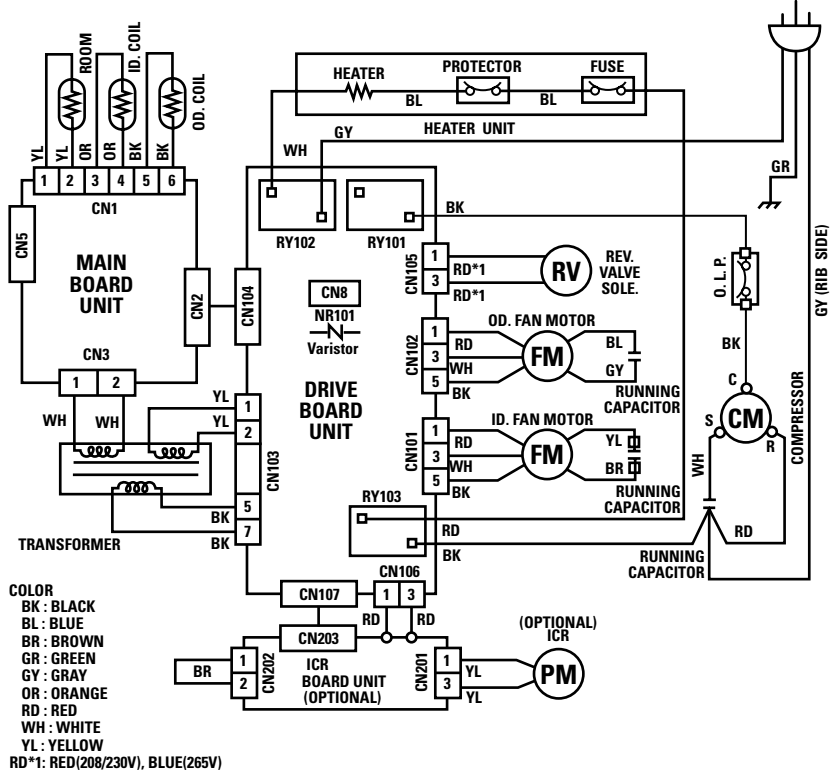


# Typical 2500 Series Schematic Diagram

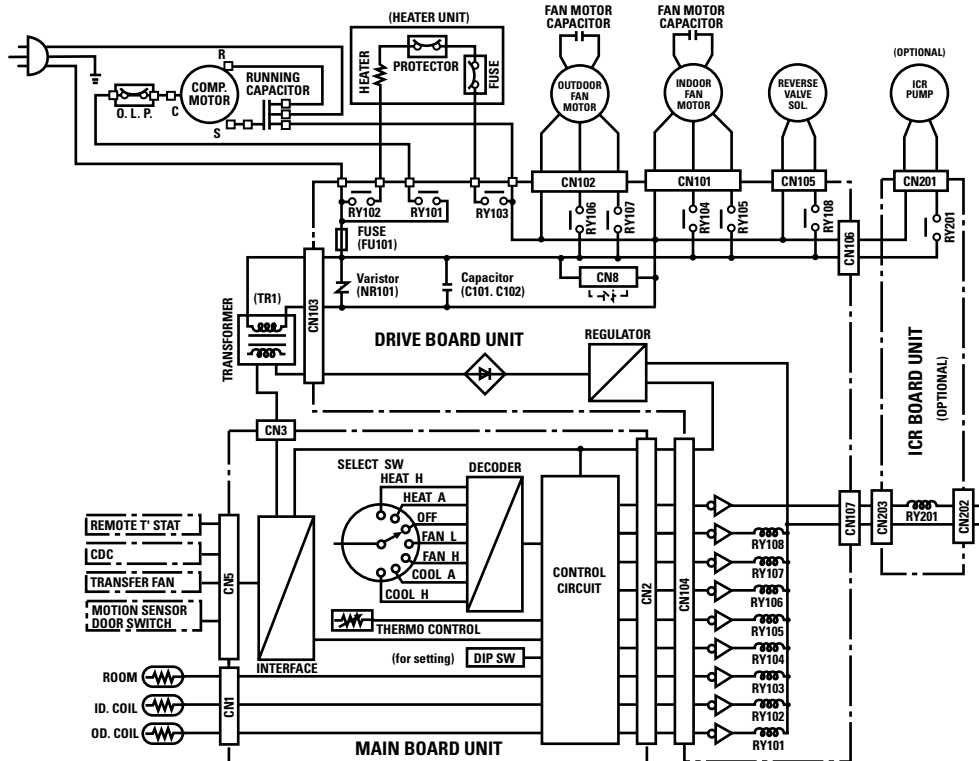




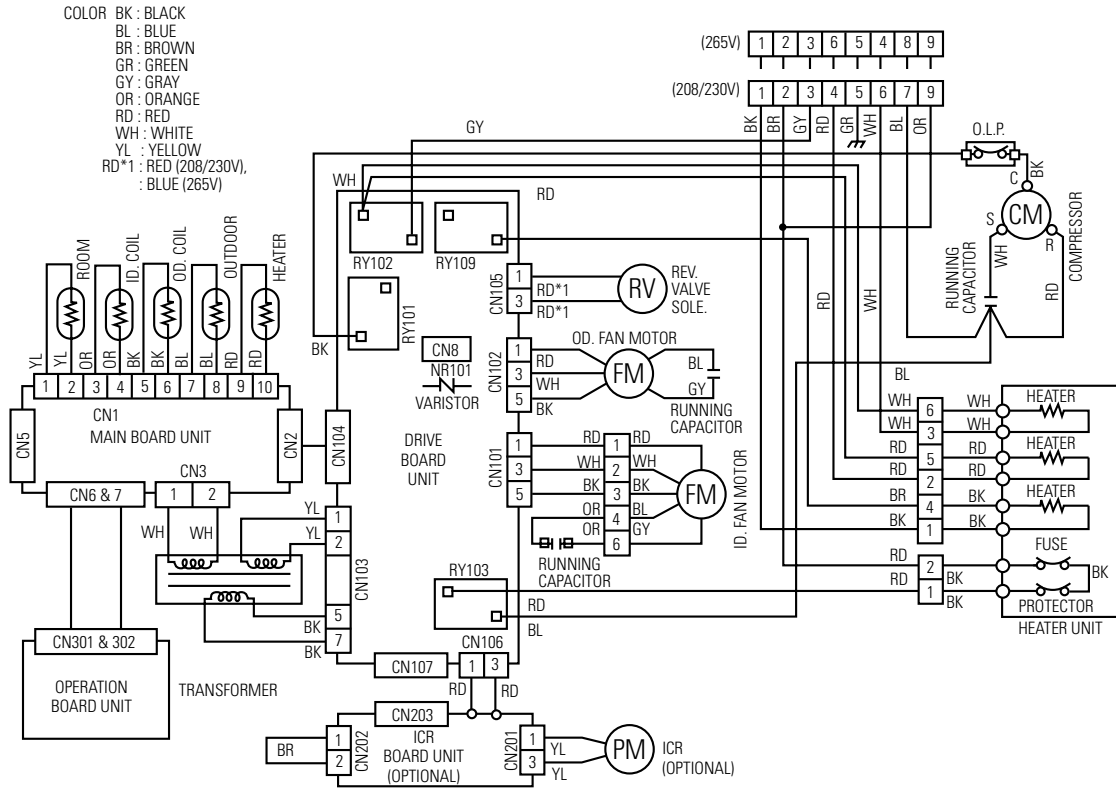
# Typical 3500 Series Wiring Diagram



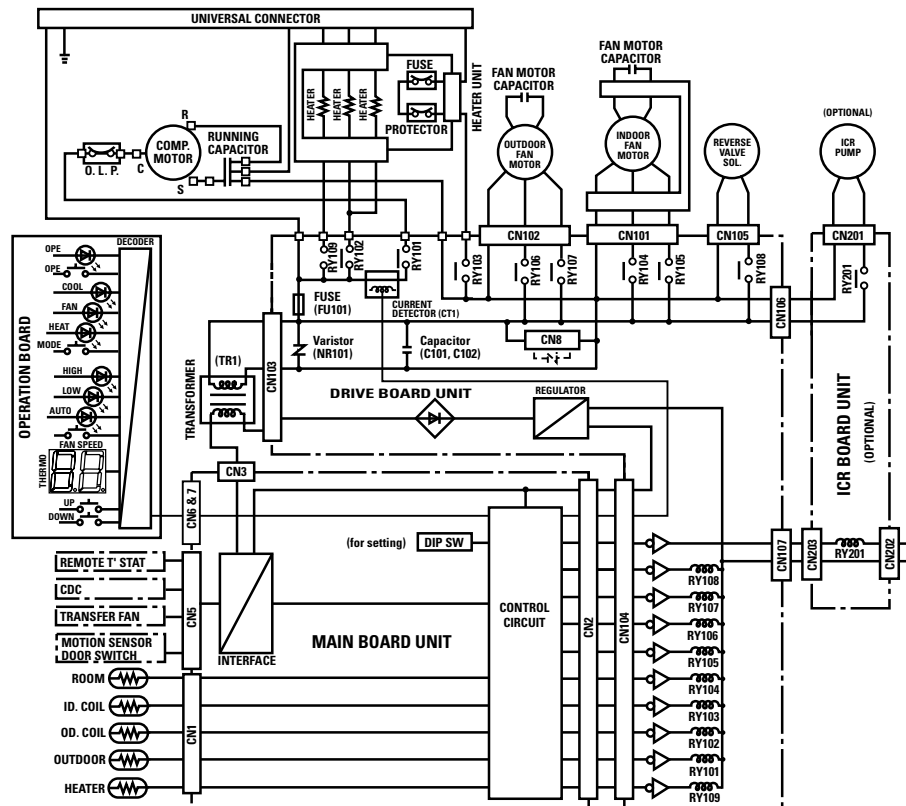
# Typical 3500 Series Schematic Diagram



# Typical 5500 Series Wiring Diagram



# Typical 5500 Series Schematic Diagram



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# Suggested Bid Form Specifications

*The following are suggested specifications for the Zonline 2500 Series Packaged Terminal Air Conditioner, the 3500 series Packaged Terminal Heat Pump and the 5500 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 case, sub-base if specified, and outdoor grille.

Units shall be listed by UL, and ARI and cUL certified as to capacity and efficiency and shall be GE Zonline® 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 \_\_\_\_\_ volts, 60 Hz., single phase power.

**Chassis.** 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.

Chassis shall be 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 temperature styrene to resist corrosion and damage. 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. Cooling shall be possible to outdoor temperature of 35°F. without damage to the compressor. Airflow system consisting of one permanently lubricated two-speed fan motor for the outdoor fan and a separate permanently lubricated two-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 air flow 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.

Unit shall have a resistance heater to provide specified heat output;

A fan cycle switch to permit continuous fan operation or fan cycle operation, independently selectable for heating and cooling operation;

A positive cooling condensate disposal system which meets the test requirements of applicable A.R.I. Standard 310-93 (for Packaged Terminal Air Conditioners) and 380-93 (for Packaged Terminal Heat Pump). (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 with enhancements necessary 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 50° off vertical air pattern with an alternate position to provide a 40° off vertical air pattern;

Easily accessible controls for selection of unit Operation and Thermostat setting. Controls shall be covered by a hinged door;

Air discharge area accessible for cleaning without tools when room front is removed;

Positive-closing fresh air vent, with vent door secured for shipping, and optional securing in the closed position, with a concealed manual control;

Solid state thermostat control to sense room temperature;

Electronic temperature limiting with seven independent heating and cooling settings to limit maximum and minimum temperatures without restricting movement of thermostat control knob;

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 powered electrical circuit and unit shall provide ability for owner to defeat the Freeze Sentinel operation;

Compatible with 2 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;

Connections to interface with occupancy sensors;

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® (NEC) and local codes.

### ***Additional specifications for GE Zonline 2500 Series Packaged Terminal Air Conditioner with Dry Air 25***

Unit shall be equipped with factory installed heat pipe around evaporator coil to increase dehumidification by at least 25% over other non-heat pipe Zonline units. Unit must be certified by ARI for capacity and dehumidification. Heat pipe system must be separate from the sealed refrigerating system of the unit.

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***Additional specifications for GE Zonline 3500 Series Packaged Terminal Heat Pump (for 5500 series units use specifications noted for 5500 series instead of these specifications).***

Heat pump units shall automatically change from heat pump operation to electric resistance heat when heat pump operation is unable to produce sufficient heat to maintain room temperature within 2.7°F. of thermostat set point, or when the outdoor coil temperature falls below 9°F. - approximately 25°F. outdoor temperature.

Heat pump unit shall automatically begin a passive defrost cycle when the outdoor coil temperature drops below 9°F. Defrosting shall be accomplished by natural defrost with unit automatically reinitiating heat pump operation when outdoor coil reaches 37°F.

Unit shall be equipped with a temperature activated drain valve to allow water generated in heat pump operation and defrost cycles to drain into wall case rather than being deposited on outdoor coil.

Each time the heat mode is selected, or the unit is powered up in the heat mode selection, the heat pump will use electric resistance heat to bring room temperature to selected thermostat set point. Heat pump operation will be used on subsequent unit heating operation if the room temperature is within 2.7°F of the set point and the unit is not in the defrost cycle.

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.

***Alternate specifications for GE Zonline 5500 Series Packaged Terminal Heat Pump (for 3500 series units use specifications noted for 3500 series instead of these specifications).***

Heat pump units shall provide operation that will either: A) automatically phase in partial electric resistance heat, if outdoor temperature is below 46°F., simultaneously with heat pump if heat pump alone is unable to maintain room temperature; or B) use partial electric resistance heat simultaneous with heat pump operation any time the outdoor temperature is below 45°F. Selection of A or B operation is made by means of a selector switch 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. If the outdoor temperature is above 46°F., unit will lock out electric resistance heat and operate on heat pump only.

Heat pump unit shall include Reverse Cycle Defrost that automatically begins a defrost cycle when microprocessor determines criteria for defrosting has been met. Defrosting shall be accomplished by systematically ceasing heat pump operation, pausing to allow internal refrigerant pressures to equalize, 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. Unit shall automatically resume heat pump operation, after pausing to allow refrigerant pressures to equalize, at conclusion of defrost cycle.

Unit shall be equipped with a temperature activated drain valve to allow water generated in heat pump operation and defrost cycles to drain into wall case rather than being deposited on outdoor coil.

Each time the heat mode is selected, or the unit is powered up in the heat mode selection, the heat pump will use electric resistance heat to bring room temperature to selected thermostat set point. Heat pump operation will be used on subsequent unit heating operation if the room temperature is within 2.7°F of the set point and the unit is not in the defrost cycle.

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 Zonline 3500 or 5500 series heat pump units.***

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 to occur 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.

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**Wall Cases and Grilles are needed for new installations**

**Alternate specification for steel wall case.**

**Wall case** shall be constructed of heavy gauge, zinc-coated, phosphated steel, insulated and shall have a protective baked-on enamel finish. Bottom critical points of the steel wall case shall be treated with petroleum microcrystalline wax for added corrosion protection and shall meet ASTM B-117, 1800 hour hot air aerated salt spray test.

**Alternate specification for molded wall case.**

**Wall case** shall be constructed of a non-corroding fiberglass reinforced polyester compound.

Cases 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 in order to retain the water integrity of the bottom of the wall case.

Outside weather panels shipped with the cases shall remain in place until the outdoor air louvers 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 minimum free area requirements for unit performance 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 case prior to installation in the exterior wall and shall include adjustable screws at the bottom corners to permit exact leveling of the wall case. 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 case.

**Weather Resistance.** Complete unit including outside louver shall be submitted to an independent agency for weather resistance and water infiltration tests.

Air infiltration test to be conducted in accordance with ASTM E283-91. With static air pressure differential of 1.57 lb./ft.<sup>2</sup> (.3" H<sub>2</sub>O) equivalent to 25 mph wind, allowable air infiltration shall not exceed 7 ft.<sup>3</sup>/min.

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

**Approvals.** Units shall be certified under the ARI 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, 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 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 customer. The warranty shall also include a limited 2nd thru 5th year parts only warranty for fan motors, switches, thermostat, 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.

# Zoneline® Chassis Nomenclature

The Zoneline chassis is identified by a model number defining the type of unit, cooling capacity, electrical information and optional features included on the unit. When specifying or ordering the Zoneline chassis the use of this nomenclature will assure receiving the correct unit.

## Example

**A Z 2 5 E 0 9 E 4 P**  
**A Z 5 5 H 1 2 D A D**

### Zoneline®

Packaged Terminal Chassis

### Chassis Series

25 - Deluxe Line Cool/Electric Heat

35 - Deluxe Line Heat Pump

55 - Premium Line Heat Pump

### Unit Type

E - Cooling with Electric Resistance Heat

H - Heat Pump with Electric Resistance Heat

### Nominal Cooling Capacity

07 - 7,000 BTUH Cooling    12 - 12,000 BTUH Cooling

09 - 9,000 BTUH Cooling    15 - 15,000 BTUH Cooling

### Special Features

B - Base Unit

C - Corrosion Treated

D - Internal Condensate Removal (ICR) System (Heat Pump Models Only)

P - Dry Air 25

### 5500 Universal Power Connection

(see Premium Series Models - see page 53)

### 2500, Dry Air 25 & 3500 Numeric Designator of Heater Size

(see Heater Table Below)

### Voltage/Phase/Frequency

D - 230/208 Volt    Single Phase    60 Hz

E - 265 Volt    Single Phase    60 Hz

## Deluxe Line: 2500, Dry Air 25 & 3500 Series -

Models are manufactured with fixed heater wattages with the appropriate power cord attached (all 265 volt models are permanently connected). 5.0 KW heaters are not available on 7,000 BTUH models.

### Heater Table

Heater Voltage	Heater Amps	Designator	Watts	Minimum KWH	Ampacity	BTUH
230/208	11.1/10.0	2	2550/2090	2.55/2.09	15	8,600/7,100
230/208	15.0/13.6	3	3450/2820	3.45/2.82	20	11,700/9,600
230/208	21.7/19.7	5	5000/4090	5.00/4.09	30	17,000/13,900
265	9.6	3	2550	2.55	15	8,600
265	14.0	4	3700	3.7	20	12,600
265	18.9	5	5000	5.0	30	17,000

### Deluxe Series - Cooling & Electric Heat

### Dry Air 25

#### 230/208V Models

	2500 Series Units				Dry Air 25		
	AZ25E07D	AZ25E09D	AZ25E12D	AZ25E15D	AZ25E07D*P	AZ25E09D*P	AZ25E12D*P
<b>Capacity</b>							
Cooling BTUH	7,100/6,900	9,000/8,800	11,700/11,500	14,600/14,300	6,800/6,600	8,600/8,400	11,200/11,000
EER (BTU/Watt)	11.8/11.8	11.5/11.5	10.9/10.9	9.6/9.6	11.1/11.1	10.8/10.8	10.2/10.2
Dehumidification Pts/Hr	1.7	2.7	3.6	4.5	2.2	3.4	4.5
Sensible Heat Ratio @ 230 Volts	75%	68%	67%	67%	66%	58%	57%
CFM, Indoor Fan High	240	260	270	310	230	230	240
CFM, Indoor Fan Low	210	230	240	280	200	200	210
Vent CFM	40/35	65/60	70/65	70/65	40/35	65/60	70/65
<b>Power/Ratings</b>							
Power Factor	95	96	97	94	95	96	97
Watts	600/585	785/765	1075/1055	1520/1490	600/585	785/765	1075/1055
Amperes, E.L.	2.8/3.0	3.6/3.9	4.9/5.3	7.0/7.5	2.8/3.0	3.6/3.9	4.9/5.3
Amperes, L.R.	19.0	21.0	33.0	38.0	19.0	21.0	33.0
<b>Weight (Net/Ship)**</b>	92/108	93/109	101/117	111/127	98/114	99/115	107/123
<b>Sound Transmission Class (STC)</b>	28	28	28	28	28	28	28

#### 265V Models

	2500 Series Units				Dry Air 25		
	AZ25E07E	AZ25E09E	AZ25E12E	AZ25E15E	AZ25E07E*P	AZ25E09E*P	AZ25E12E*P
<b>Capacity</b>							
Cooling BTUH	7,100	9,000	11,700	14,600	6,800	8,600	11,200
EER (BTU/Watt)	11.8	11.5	10.9	9.6	11.1	10.8	10.2
Dehumidification Pts/Hr	1.7	2.7	3.6	4.5	2.2	3.4	4.5
Sensible Heat Ratio @ 265 Volts	75%	68%	67%	67%	66%	58%	57%
CFM, Indoor Fan High	240	260	270	310	230	230	240
CFM, Indoor Fan Low	210	230	240	280	200	200	210
Vent CFM	40	65	70	70	40	65	70
<b>Power/Ratings</b>							
Power Factor	96	94	94	96	96	94	94
Watts	600	785	1075	1520	600	785	1075
Amperes, E.L.	2.4	3.2	4.4	6.0	2.4	3.2	4.4
Amperes, L.R.	16.0	18.0	24.0	31.0	16.0	18.0	24.0
<b>Weight (Net/Ship)**</b>	92/108	93/109	101/117	111/127	98/114	99/115	107/123
<b>Sound Transmission Class (STC)</b>	28	28	28	28	28	28	28

\*For Dry Air 25 model number, designate respective heater number using chart above, followed by the letter "P".

\*\* ICR adds 3 pounds to unit weight

# Receptacles/Sub-Bases



**Tandem**  
230/208V 15 Amp  
NEMA6-20R



**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	RAK204D20	RAK204D30	RAK204E15	RAK204E20	RAK204E30
Voltage	N/A	230/208	230/208	265	265	265
Amps	N/A	15/20	30	15	20	30
Receptacle	N/A	NEMA6-20R	NEMA6-30R	NEMA7-15R	NEMA7-20R	NEMA7-30R

265 Volt units are to be direct connected. Cordset through enclosed chaseway into interior sub-base receptacle meets the NEC requirements.

230/208 Volt	Line Cord Connected Units		
Power Connection Kit	RAK3152	RAK3202	RAK3302
Heater KW	2.55/2.09	3.45/2.82	5.00/4.09
Watts	2,550/2,090	3,450/2,820	5,000/4,090
BTUH	8,600/7,100	11,700/9,600	17,000/13,900
Amps	11.0/10.0	15.0/13.6	21.7/19.7
Min. Circuit Amps	15	20	30
Recommended Protective Device	15 Amp Time Delay Fuse or Breaker	20 Amp Time Delay Fuse or Breaker	30 Amp Time Delay Fuse or Breaker

# Premium Line: 5500 Series - Power Connection Kits are REQUIRED on Premium Zonline 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. 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 premium models. See specification sheet for heater KW and branch circuit ampacity.



RAK3152/3202/3302  
230/208 volt Line Cord Connection Kit

265 Volt	Permanent Connected Units** (Cord Set)			
	RAK5152	RAK5172	RAK5202	RAK5302
	1.7	3.0	3.7	5.0
	1,700	3,000	3,700	5,000
	5,800	10,200	12,600	17,000
	6.4	11.3	14.0	18.9
	15	15	20	30
	15 Amp	15 Amp	20 Amp	30 Amp
	Time Delay Fuse	Time Delay Fuse	Time Delay Fuse	Time Delay Fuse

230/208V Models	Deluxe Series - Heat Pump Units				Premium Series - Heat Pump Units			
	3500 Series Units				5500 Series Units			
	AZ35H07D	AZ35H09D	AZ35H12D	AZ35H15D	AZ55H07D	AZ55H09D	AZ55H12D	AZ55H15D
Capacity								
Cooling BTUH	7,100/6,900	9,000/8,800	11,700/11,500	14,600/14,300	7,100/6,800	9,000/8,800	11,800/11,600	14,700/14,400
EER (BTU/Watt)	11.8/11.8	11.5/11.5	10.9/10.9	9.6/9.6	12.0/12.0	11.5/11.5	10.9/10.9	10.0/10.0
Dehumidification Pts/Hr	1.7	2.7	3.6	4.5	1.7	2.8	3.6	4.8
Sensible Heat Ratio @ 230 Volts	75%	68%	67%	67%	75%	67%	68%	65%
CFM, Indoor Fan High	250	260	280	310	240	290	330	350
CFM, Indoor Fan Low	220	230	250	280	220	270	310	330
Vent CFM	40/35	65/60	70/65	70/65	40/35	65/60	70/65	70/65
Power/Ratings								
Power Factor	95	96	97	94	95	96	94	95
Watts	600/585	785/765	1075/1055	1520/1490	590/565	785/765	1085/1065	1470/1440
Amperes, F.L.	2.8/3.0	3.6/3.9	4.9/5.3	7.0/7.5	2.7/2.9	3.6/3.9	5.1/5.5	6.7/7.3
Amperes, L.R.	19.0	21.0	33.0	38.0	19.0	21.0	33.0	38.0
Reverse Cycle Heat BTUH	6400/6200	8400/8200	10900/10700	13400/13200	6400/6200	8400/8200	10900/10700	13400/13200
COP	3.5/3.5	3.5/3.5	3.3/3.3	3.1/3.1	3.5/3.5	3.5/3.5	3.3/3.3	3.1/3.1
Watts	535/520	705/685	970/950	1265/1250	535/520	705/685	970/950	1,265/1,250
Amps	2.4/2.6	3.1/3.4	4.3/4.7	5.8/6.3	2.4/2.6	3.1/3.3	4.3/4.7	5.8/6.3
Weight (Net/Ship)**	96/112	99/115	111/127	121/137	101/117	106/122	116/132	123/139
Sound Transmission Class (STC)	28	28	28	28	28	28	28	28
265V Models	AZ35H07E	AZ35H09E	AZ35H12E	AZ35H15E	AZ55H07E	AZ55H09E	AZ55H12E	AZ55H15E
Capacity								
Cooling BTUH	7,100	9,000	11,700	14,600	7,100	9,000	11,800	14,700
EER (BTU/Watt)	11.8	11.5	10.9	9.6	12.0	11.5	10.9	10.0
Dehumidification Pts/Hr	1.7	2.7	3.6	4.5	1.7	2.8	3.6	4.8
Sensible Heat Ratio @ 265 Volts	75%	68%	67%	67%	75%	67%	68%	65%
CFM, Indoor Fan High	250	260	280	310	240	290	330	350
CFM, Indoor Fan Low	220	230	250	280	220	270	310	330
Vent CFM	40	65	70	70	40	65	70	70
Power/Ratings								
Power Factor	96	94	94	96	96	94	94	96
Watts	600	785	1075	1520	590	785	1085	1470
Amperes, F.L.	2.4	3.2	4.4	6.0	2.3	3.2	4.5	5.8
Amperes, L.R.	16.0	18.0	24.0	31.0	16.0	18.0	24.0	31.0
Reverse Cycle Heat BTUH	6,400	8,400	10,900	13,400	6,400	8,400	10,900	13,400
COP	3.5	3.5	3.3	3.1	3.5	3.5	3.3	3.1
Watts	535	700	970	1265	535	705	970	1,265
Amps	2.2	2.8	3.9	5.0	2.2	2.8	3.9	5.0
Weight (Net/Ship)**	96/112	99/115	111/127	121/137	101/117	106/122	116/132	123/139
Sound Transmission Class (STC)	28	28	28	28	28	28	28	28

\*\* ICR adds 3 pounds to unit weight

# Complete Accessory List

<b>Kit Number</b>	<b>Description</b>	<b>For Additional Information Refer to Page</b>
RAA62A	Spare filters for AZ25, AZ35, and AZ55 Models (10 per box)	10
RAB71	Steel Wall Case - 13 3/4" deep	22
RAB7116	Steel Wall Case - 16" deep	22
RAB7124	Steel Wall Case - 24" deep	22
RAB7128	Steel Wall Case - 28" deep	22
RAB7131	Steel Wall Case - 31" deep	22
RAB77	Molded Wall Case	22
RAD10	Interior/Exterior Drain kit	35
RAF452A	Room Front Grille for AZ25, AZ35, and AZ55 Models	7
RAG60	Stamped Aluminum Exterior Grille	39
RAG61	Architectural Exterior Grille, Beige Molded Durable Polycarbonate	39
RAG62	Architectural Exterior Grille, Maple Molded Durable Polycarbonate	39
RAG63	Architectural Exterior Grille, Bittersweet Chocolate Molded Durable Polycarbonate	39
RAG64	Architectural Exterior Grille w/Flange, Beige Molded Durable Polycarbonate	39
RAG65	Architectural Exterior Grille w/Flange, Maple Molded Durable Polycarbonate	39
RAG66	Architectural Exterior Grille w/Flange, Bittersweet Chocolate Molded Durable Polycarbonat	39
RAG67	Aluminum Architectural Grille (Custom Colors Available by Special Order)	39
RAK40	Condenser Air Deflector Kit	21
RAK147	Wall Thermostat For Heat Pump Models - Mechanical	16
RAK147D1	Wall Thermostat For Heat Pump Models - Electronic Digital	16
RAK147P1	Wall Thermostat For Heat Pump Models - Electronic Digital Programmable	16
RAK163A1	Wall Thermostat For Resistance Heat Models - Mechanical	15
RAK163D1	Wall Thermostat For Resistance Heat Models - Electronic Digital	15
RAK163P1	Wall Thermostat For Resistance Heat Models - Electronic Digital Programmable	15
RAK201	Sub-base Cover Plate with Knockouts	43
RAK240D20	Sub-base - 208/230 Volt with NEMA 6-20R 15/20 Amp Receptacle -Chaseway Included	23
RAK204D30	Sub-base - 208/230 Volt with NEMA 6-30R 30 Amp Receptacle -Chaseway Included	23
RAK204E15	Sub-base - 265 Volt with NEMA 7-15R 15 Amp Receptacle - Chaseway Included	23
RAK204E20	Sub-base - 265 Volt with NEMA 7-20R 20 Amp Receptacle - Chaseway Included	23
RAK204E30	Sub-base - 265 Volt with NEMA 7-30R 30 Amp Receptacle - Chaseway Included	23
RAK204U	Sub-base - non-electrical Chaseway not Included	23
RAK205CW	Chaseway for Sub-base	41
RAK3152	Universal Power Cord - 5500 series - 15 Amp 230/208 V - 2.55/2.09 kW heat	41
RAK3202	Universal Power Cord - 5500 series - 20 Amp 230/208 V - 3.45/2.82 kW heat	41
RAK3302	Universal Power Cord - 5500 series - 30 Amp 230/208 V - 5.0/4.09 kW heat	42
RAK4002A	Direct Connect Junction Box - 230/208 Volts for use with AZ25 or AZ35	41
RAK4002B	Direct Connect Junction Box - 230/208 Volts for use with AZ55 Models	42
RAK4002CW	Wiring Harness w/In-Line Connector - Adapt Line Cord to Direct Connection	41
RAK5152	Universal Power Cord - 5500 series - 265 V / 15 Amp - Use w/RAK204E15 Sub-base - 1.7 kW heat	42
RAK5172	Universal Power Cord - 5500 series - 265 V - 15 Amp - Use w/RAK204E15 Sub-base - 3.0 kW heat	42
RAK5202	Universal Power Cord - 5500 series - 265 V - 20 Amp - Use w/RAK204E20 Sub-base - 3.7 kW heat	42
RAK5302	Universal Power Cord - 5500 series - 265 V - 30 Amp - Use w/RAK204E30 Sub-base - 5.0 kW heat	42
RAK601	Duct extension - Insulated - 44" long - includes Register and Mounting Flange	37
RAK602	Register and Trim Flange (Included with RAK601)	37
RAK6052	Duct Adapter for New Installation (or Older non-GE Duct Adapter Installation)	37
RAK7012	Duct Transition for 2500/3500 Replacing Existing Chassis (Original Installation Pre-1988)	37
RAK7022	Duct Transition for 2500/3500 Replacing Existing Chassis (1988 - 1998 Original Installation)	37
RAK8022	Locking Door Kit	11
RAK806	Control Panel Cover (for use with remote thermostat)	15
RAK901L	Wall Case Insulation Kit	23



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## General Installation Suggestions

Many times poor or non-existent caulking around the exterior of the wall case 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 most frequently occurs since caulking the bottom of the wall case may require lying outside in the dirt while working. This has been the cause of many complaints about the “short cycling” of the Freeze Sentinel™.

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 left side during heating operation can result in the air getting hot enough to distort the plastic room front. If you have a property where this may occur we recommend a “tent card” 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 case 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 case so it can be connected to the unit wiring on the room side of the wall case. 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 case or close to the side of the wall case. 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 case to run Central Desk Control 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 case 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 be run to the chassis in this area also. Wire molding can be used to hold the wiring close to the bottom of the wall case. 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 Case/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 case to the exterior wall, especially the bottom of the case. 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 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.

### Capacity Considerations

A unit that has a greater cooling capacity than required will cool the room quickly but will usually not run long enough under normal operation to adequately dehumidify the room. Most musty odors in rooms are due to excess humidity. Using a smaller capacity unit or using Dry Air 25 units will provide better dehumidification. The largest factor in causing mold and mildew in the room is excess moisture, and a smaller unit running longer or a Dry Air 25 model can remove more moisture. Mold behind wall coverings that do not allow water vapor to pass through - vinyl wallpaper or oil base paints, for example - is not a problem of excessive moisture in the room, but rather is caused by moisture trapped in the walls.

Using a resistance heater larger than required - using a 5 kW heater when a 3.45 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 5.0 kW heater versus a 3.45 kW heater to be 155 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.

### Exterior Grilles

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

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## Ducted Installation Comments

### New Installations

The GE Zonline 2500 and 3500 series are approved for ducted installation using the GE Duct Adapter model RAK6052 and the GE Duct Extension RAK601. A field fabricated duct extension with the same interior measurements as the RAK601 may be used with the RAK6052 duct adapter. GE does not recommend ducting in more than one direction.

The use of a duct adapter other than the RAK6052 is not approved by GE 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.

### 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 extension used from the early 1960's until late 1987 was 8-3/8" high by 6-1/2" wide. If the chassis to be replaced is the flat-top discharge (design until late 1987) the duct adapter model RAK7012 will align with 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 used on the RAK7012 duct adapter. The wall case mounting brackets, screws, discharge grille, damper, and end cap will need to be retained.

If the chassis is a slope-front discharge and the duct dimensions are 8-3/8" high by 6-1/2" wide then the chassis has already been replaced and the purchase of a new duct adapter is not required. The only piece that needs to be replaced in this installation is the transition piece, model RAK7022, which fits between the chassis and the duct adapter.

If the chassis being replaced has a model number that begins with AZ22E or AZ32H the new 2500 or 3500 series unit can be installed using the same components that were used for the 2200 or 3200 series unit.

If the chassis is a slope-front discharge and the duct dimensions are 7-3/32" high by 6-1/2" wide only the RAK7022 transition piece is required to install a 2500 or 3500 series unit in the ducted installation.

There were a number of Zonline 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 than 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 RAK6052 duct adapter and a RAK601 duct extension. Zonline 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.

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# ZONELINE WARRANTY

Staple sales slip or cancelled check here. Proof of original purchase date is needed to obtain service under warranty. For service in the U.S., call 800-GE-CARES. In Canada, contact: Manager, Consumer Relations, Camco Inc., 5800 Keaton Crescent, Mississauga, Ontario, Canada L5R 3K2.

## WHAT IS COVERED FULL ONE-YEAR WARRANTY

For one year from date of original purchase, we will provide, free of charge, parts and service labor on site to repair or replace **any part of the Zoneline unit** that fails because of a manufacturing defect.

## FULL FIVE-YEAR SEALED REFRIGERATING SYSTEM WARRANTY

For five years from the date of original purchase, we will provide, free of charge, parts and on-site service labor to repair or replace **any part of the sealed refrigerating system** (the compressor, condenser, evaporator and all connecting tubing) that fails because of a manufacturing defect.

## LIMITED 2ND THROUGH 5TH YEAR PARTS WARRANTY

For the second through the fifth year from date of original purchase, General Electric will provide, free of charge, parts that fail as a result of a manufacturing defect. Parts covered are fan motors, switches, thermostat, heater, heater protectors, compressor overload, solenoids, circuit boards, auxiliary controls, thermistors, frost controls, ICR pump, capacitors, varistors, and indoor blower bearing. This is a limited parts-only warranty, and does not include labor or transportation to and from the service shop.

## WHAT IS NOT COVERED

- Service trips to your site to teach you how to use the product.
- Improper installation.

If you have an installation problem, or if the air conditioner is of improper cooling capacity for the intended use, contact your dealer or installer. You are responsible for providing adequate electrical connecting facilities.

- Replacement of fuses or resetting of circuit breakers.
- In commercial locations, labor necessary to move the unit to a location where it is accessible for service by an individual technician.
- Failure of the product resulting from

modifications to the product or due to unreasonable use including failure to provide reasonable and necessary maintenance.

- Failure or damage resulting from corrosion due to installation in an environment containing corrosive chemicals.
- Failure or damage resulting from corrosion due to installation in a coastal environment, except for models treated with special factory-applied anti-corrosion protection as designated in the model number.
- Damage to product caused by improper power supply voltage, accident, fire, floods or acts of God.
- Incidental or consequential damage to personal property caused by possible defects with this air conditioner.

## Warrantor: General Electric Company, Louisville, KY 40225

This warranty is extended to the original purchaser and any succeeding owner for products purchased for use within the USA and Canada. In Alaska, the warranty excludes the cost of shipping or service calls to your site.

Some states do not allow the exclusion or limitation of incidental or consequential damages. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. To know what your legal rights are in your state, consult your local or state consumer affairs office or your state's Attorney General.

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 this 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. See page 21.

GE has a policy of continuous improvement on its products and reserves the right to change materials and specifications without notice.



**GE Appliances**



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