

Appendix I

Noise Calculations and HVAC Specifications

Report date:

1/28/2026

Case Description:

Bassett Villas Project_Demolition Phase

Receptor	Land Use	Daytime	Evening	Night
Single-family residences to south (along Millbury Avenue)	Residential	60	55	50

Equipment	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40	80		100	0
Backhoe	No	40	80		100	0

Results

Equipment	Calculated (dBA)	
	*Lmax	Leq
Backhoe	74	70
Backhoe	74	70
Total	74	73

*Calculated Lmax is the Loudest value.

Report date: 1/28/2026
Case Description: Bassett Villas Project_Demolition Phase

Receptor	Land Use	Daytime	Evening	Night
Florence Flanner School to west	Residential	60	55	50

Equipment	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40	80		100	0
Backhoe	No	40	80		100	0

Results

Equipment	Calculated (dBA)	
	*Lmax	Leq
Backhoe	74	70
Backhoe	74	70
Total	74	73

*Calculated Lmax is the Loudest value.

Report date: 1/28/2026
Case Description: Bassett Villas Project_Demolition Phase

Receptor	Land Use	Daytime	Evening	Night
Mobile homes to east	Residential	60	55	50

			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Equipment	Impact Device	Usage(%)				
Backhoe	No	40	80		415	0
Backhoe	No	40	80		415	0

Results

	Calculated (dBA)	
Equipment	*Lmax	Leq
Backhoe	62	58
Backhoe	62	58
Total	62	61

*Calculated Lmax is the Loudest value.

Report date:

1/28/2026

Case Description:

Bassett Villas Project_Demolition Phase

Receptor	Land Use	Daytime	Evening	Night
Multi-family housing at 1510 Vineland Avenue	Residential	60	55	50

Equipment	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40	80		730	0
Backhoe	No	40	80		730	0

Results

Equipment	Calculated (dBA)	
	*Lmax	Leq
Backhoe	57	53
Backhoe	57	53
Total	57	56

*Calculated Lmax is the Loudest value.

Report date: 1/28/2026

Case Description: Bassett Villas Project_Site Preparation Phase

Receptor	Land Use	Daytime	Evening	Night
Mobile homes to east	Residential	60	55	50

			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Equipment	Impact Device	Usage(%)				
Backhoe	No	40	80		25	0
Dozer	No	40	85		25	0

Results

	Calculated (dBA)	
Equipment	*Lmax	Leq
Backhoe	86	82
Dozer	91	87
Total	91	88

*Calculated Lmax is the Loudest value.

Report date:

1/28/2026

Case Description:

Bassett Villas Project_Site Preparation Phase

Receptor	Land Use	Daytime	Evening	Night
Single-family residences to south (along Millbury Avenue)	Residential	60	55	50

Equipment	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40	80		25	0
Dozer	No	40	85		25	0

Results

Equipment	Calculated (dBA)	
	*Lmax	Leq
Backhoe	86	82
Dozer	91	87
Total	91	88

*Calculated Lmax is the Loudest value.

Report date: 1/28/2026

Case Description: Bassett Villas Project_Site Preparation Phase

Receptor	Land Use	Daytime	Evening	Night
Florence Flanner School to west	Residential	60	55	50

Equipment	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40	80		25	0
Dozer	No	40	85		25	0

Results

Equipment	Calculated (dBA)	
	*Lmax	Leq
Backhoe	86	82
Dozer	91	87
Total	91	88

*Calculated Lmax is the Loudest value.

Report date:

1/28/2026

Case Description:

Bassett Villas Project_Site Preparation Phase

Receptor	Land Use	Daytime	Evening	Night
Multi-family housing at 1510 Vineland Avenue	Residential	60	55	50

Equipment	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40	80		335	0
Dozer	No	40	85		335	0

Results

Equipment	Calculated (dBA)	
	*Lmax	Leq
Backhoe	64	60
Dozer	69	65
Total	69	66

*Calculated Lmax is the Loudest value.

Report date: 1/28/2026

Case Description: Bassett Villas Project_Grading Phase

Receptor	Land Use	Daytime	Evening	Night
Mobile homes to east	Residential	60	55	50

			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Equipment	Impact Device	Usage(%)				
Dozer	No	40	85		25	0
Grader	No	40	85		25	0

Results

	Calculated (dBA)	
Equipment	*Lmax	Leq
Dozer	91	87
Grader	91	87
Total	91	90

*Calculated Lmax is the Loudest value.

Report date:

1/28/2026

Case Description:

Bassett Villas Project_Grading Phase

Receptor	Land Use	Daytime	Evening	Night
Single-family residences to south (along Millbury Avenue)	Residential	60	55	50

Equipment	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		25	0
Grader	No	40	85		25	0

Results

Equipment	Calculated (dBA)	
	*Lmax	Leq
Dozer	91	87
Grader	91	87
Total	91	90

*Calculated Lmax is the Loudest value.

Report date: 1/28/2026
Case Description: Bassett Villas Project_Grading Phase

Receptor	Land Use	Daytime	Evening	Night
Florence Flanner School to west	Residential	60	55	50

Equipment	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		25	0
Grader	No	40	85		25	0

Results

Equipment	Calculated (dBA)	
	*Lmax	Leq
Dozer	91	87
Grader	91	87
Total	91	90

*Calculated Lmax is the Loudest value.

Report date:

1/28/2026

Case Description:

Bassett Villas Project_Grading Phase

Receptor	Land Use	Daytime	Evening	Night
Multi-family housing at 1510 Vineland Avenue	Residential	60	55	50

Equipment	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40	85		335	0
Grader	No	40	85		335	0

Results

Equipment	Calculated (dBA)	
	*Lmax	Leq
Dozer	69	65
Grader	69	65
Total	69	68

*Calculated Lmax is the Loudest value.

Report date: 1/28/2026

Case Description: Bassett Villas Project_Building Construction Phase

Phase	Land Use	Daytime	Evening	Night
Mobile homes to east	Residential	60	55	50

			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Equipment	Impact Device	Usage(%)				
Crane	No	16	85		25	0
Excavator	No	40	85		25	0

Results

	Calculated (dBA)	
Equipment	*Lmax	Leq
Crane	91	83
Excavator	91	87
Total	91	89

*Calculated Lmax is the Loudest value.

Report date: 1/28/2026

Case Description: Bassett Villas Project_Building Construction Phase

Phase	Land Use	Daytime	Evening	Night
Florence Flanner School to west	Residential	60	55	50

Equipment	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16	85		30	0
Excavator	No	40	85		30	0

Results

Equipment	Calculated (dBA)	
	*Lmax	Leq
Crane	89	82
Excavator	89	86
Total	89	87

*Calculated Lmax is the Loudest value.

Report date:

1/28/2026

Case Description:

Bassett Villas Project_Building Construction Phase

Phase	Land Use	Daytime	Evening	Night
Single-family residences to south (along Millbury Avenue)	Residential	60	55	50

Equipment	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16	85		40	0
Excavator	No	40	85		40	0

Results

Equipment	Calculated (dBA)	
	*Lmax	Leq
Crane	87	79
Excavator	87	83
Total	87	84

*Calculated Lmax is the Loudest value.

Report date:

1/28/2026

Case Description:

Bassett Villas Project_Building Construction Phase

Phase	Land Use	Daytime	Evening	Night
Multi-family housing at 1510 Vineland Avenue	Residential	60	55	50

Equipment	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16	85		335	0
Excavator	No	40	85		335	0

Results

Equipment	Calculated (dBA)	
	*Lmax	Leq
Crane	69	61
Excavator	69	65
Total	69	66

*Calculated Lmax is the Loudest value.

Report date: 1/28/2026
Case Description: Bassett Villas Project_Paving Phase

Phase	Land Use	Daytime	Evening	Night
Florence Flanner School to west	Residential	60	55	50

Equipment	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		20	0
Roller	No	20	85		20	0

Results

Equipment	Calculated (dBA)	
	*Lmax	Leq
Paver	93	90
Roller	93	86
Total	93	91

*Calculated Lmax is the Loudest value.

Report date: 1/28/2026
Case Description: Bassett Villas Project_Paving Phase

Phase	Land Use	Daytime	Evening	Night
Mobile homes to east	Residential	60	55	50

			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Equipment	Impact Device	Usage(%)				
Paver	No	50	85		27	0
Roller	No	20	85		27	0

Results

	Calculated (dBA)	
Equipment	*Lmax	Leq
Paver	90	87
Roller	90	83
Total	90	89

*Calculated Lmax is the Loudest value.

Report date:

1/28/2026

Case Description:

Bassett Villas Project_Paving Phase

Phase	Land Use	Daytime	Evening	Night
Single-family residences to south (along Millbury Avenue)	Residential	60	55	50

Equipment	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		35	0
Roller	No	20	85		35	0

Results

Equipment	Calculated (dBA)	
	*Lmax	Leq
Paver	88	85
Roller	88	81
Total	88	87

*Calculated Lmax is the Loudest value.

Report date:

1/28/2026

Case Description:

Bassett Villas Project_Paving Phase

Phase	Land Use	Daytime	Evening	Night
Multi-family housing at 1510 Vineland Avenue	Residential	60	55	50

Equipment	Impact Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	85		320	0
Roller	No	20	85		320	0

Results

Equipment	Calculated (dBA)	
	*Lmax	Leq
Paver	69	66
Roller	69	62
Total	69	67

*Calculated Lmax is the Loudest value.

24ABA4
Base Series 14 Air Conditioner
with Puron Refrigerant
Sizes 18 to 60 (1 – 1/2 to 5 Nominal Tons)



Turn to the Experts.™

Product Data



Carrier's Air Conditioners with Puron® refrigerant provide a collection of features unmatched by any other family of equipment. The 24ABA has been designed utilizing Carrier's Puron refrigerant. The environmentally sound refrigerant allows you to make a responsible decision in the protection of the earth's ozone layer. Carrier's air conditioning system with Puron refrigerant meets the Energy Star® guidelines for energy efficiency.

INDUSTRY LEADING FEATURES / BENEFITS

Efficiency

- 14 SEER/11 EER
- Microtube Technology™ refrigeration system
- Indoor air quality accessories available

Sound

- Sound level as low as 76 dBA

Comfort

- System supports Thermidstat™ or standard thermostat controls

Reliability

- Puron® refrigerant - environmentally sound, won't deplete the ozone layer and low lifetime service cost.
- Front-seating service valves
- Scroll compressor
- Internal pressure relief valve
- Internal thermal overload
- Filter drier
- Balanced refrigeration system for maximum reliability

Durability

WeatherArmor™ protection package:

- Solid, Durable sheet metal construction
- Dense wire coil guard
- Baked-on, complete coverage, powder paint

Applications

- Long-line - up to 250 feet (76.20 m) total equivalent length, up to 200 feet (60.96 m) condenser above evaporator, or up to 80 ft. (24.38 m) evaporator above condenser (See Longline Guide for more information.)
- Low ambient (down to -20°F/-28.9°C) with accessory kit

Warranty

- 5 year limited compressor warranty
- 5 year limited parts warranty

MODEL NUMBER NOMENCLATURE

1	2	3	4	5	6	7	8	9	10	11	12	13
N	N	A	A	A/N	N	N	N	A/N	A/N	A/N	N	N
2	4	A	B	A	4	3	6	A	0	0	3	0
Product Series	Product Family	Tier	Major Series	SEER	Cooling Capacity	Variations	Open	Open	Voltage	Series		
24=AC	A=RES AC	B=Base	A=Puron	4=14 SEER		A=Standard	0=Not Defined	0=Not Defined	3=208/230-1	0 = Original Series		

24ABA4



This product has been designed and manufactured to meet Energy Star® criteria for energy efficiency when matched with appropriate coil components. However, proper refrigerant charge and proper air flow are critical to achieve rated capacity and efficiency. Installation of this product should follow all manufacturing refrigerant charging and air flow instructions. **Failure to confirm proper charge and air flow may reduce energy efficiency and shorten equipment life.**

STANDARD FEATURES

FEATURE	18	24	30	36	42	48	60
Puron Refrigerant	X	X	X	X	X	X	X
Maximum SEER Rating	15	15	15	15	15.5	15.5	14.5
Scroll Compressor	X	X	X	X	X	X	X
Dense Wire Coil Guard	X	X	X	X	X	X	X
Field Installed Filter Drier	X	X	X	X	X	X	X
Front Seating Service Valves	X	X	X	X	X	X	X
Internal Pressure Relief Valve	X	X	X	X	X	X	X
Internal Thermal Overload	X	X	X	X	X	X	X
Long Line capability	X	X	X	X	X	X	X
Low Ambient capability with Kit	X	X	X	X	X	X	X

PHYSICAL DATA

UNIT SIZE – VOLTAGE, SERIES	18 – 31	24 – 31	30 – 31	36 – 31	42 – 32	48 – 32	60 – 32
Operating Weight lb (kg)	171 (77.56)	185 (83.92)	188 (85.28)	191 (86.64)	225 (102.10)	231 (104.78)	272 (123.38)
Shipping Weight lb (kg)	199 (90.27)	214 (97.07)	217 (98.43)	225 (102.06)	263 (119.29)	269 (122.02)	310 (140.61)
Compressor Type	Scroll						
REFRIGERANT	Puron® (R – 410A)						
Control	TXV (Puron® Hard Shutoff)						
Charge lb (kg)	5.7 (2.59)	7.25 (3.29)	7.1 (3.22)	7.25 (3.29)	8.7 (3.95)	9.5 (4.31)	11.4 (5.17)
COND FAN	Propeller Type, Direct Drive						
Air Discharge	Vertical						
Air Qty (CFM)	2235	2615	3170	3800	3800	3800	4050
Motor HP	1/12	1/10	1/5	1/5	1/5	1/5	1/5
Motor RPM	800	1100	1100	800	800	800	800
COND COIL							
Face Area (Sq ft)	19.40	23.71	23.71	22.63	25.15	25.15	25.15
Fins per In.	25	25	25	25	25	25	20
Rows	1	1	1	1	1	1	2
Circuits	3	4	4	5	6	7	7
VALVE CONNECT. (In. ID)							
Vapor	5/8	5/8	3/4	3/4	7/8	7/8	7/8
Liquid	3/8	3/8	3/8	3/8	3/8	3/8	3/8
REFRIGERANT TUBES* (In. OD)							
Vapor (0 – 80 Ft Tube Length)	5/8		3/4		7/8		1 – 1/8
Liquid (0 – 80 Ft Tube Length)	3/8						

* For tubing sets between 80 and 200 ft. (24.38 and 60.96 m) horizontal or 20 ft. (6.09 m) vertical differential, consult the Longline Guideline.

Note: See unit Installation Instruction for proper installation.

VAPOR LINE SIZING AND COOLING CAPACITY LOSS

1-STAGE AIR CONDITIONER APPLICATIONS

LONG LINE APPLICATION: An application is considered "Long line" when the total equivalent tubing length exceeds 80 ft. (24.38 m) or when there is more than 20 ft. (6.09 m) vertical separation between indoor and outdoor units. These applications require additional accessories and system modifications for reliable system operation. The maximum allowable total equivalent length is 250 ft. (76.2 m). The maximum vertical separation is 200 ft. (60.96 m)

when outdoor unit is above indoor unit, and 80 ft. (24.38 m) when the outdoor unit is below the indoor unit. Refer to Accessory Usage Guideline below for required accessories. See Longline Application Guideline for required piping and system modifications. Also, refer to the table below for the acceptable vapor tube diameters based on the total length to minimize the cooling capacity loss.

Unit Nominal Size (Btuh)	Acceptable Vapor Line Diameters (In.) OD	Cooling Capacity Loss (%) Total Equivalent Line Length ft. (m)										
		Standard Application			Long Line Application Requires Accessories							
		25 (7.62)	50 (15.24)	80 (24.38)	80+ (24.38+)	100 (30.48)	125 (38.10)	150 (45.72)	175 (53.34)	200 (60.96)	225 (68.58)	250 (76.2)
18,000 1–Stage Puron AC	1/2	1	2	3	3	4	6	7	8	9	10	12
	5/8	0	0	1	1	1	1	2	2	3	3	3
24,000 1–Stage Puron AC	5/8	0	1	1	1	2	3	3	4	4	5	6
	3/4	0	0	0	0	0	1	1	1	1	1	2
	7/8	0	0	0	0	0	0	0	0	0	0	1
30,000 1–Stage Puron AC	5/8	1	2	3	3	3	4	5	6	7	8	9
	3/4	0	0	1	1	1	1	2	2	2	3	3
	7/8	0	0	0	0	0	1	1	1	1	1	1
36,000 1–Stage Puron AC	5/8	1	2	4	4	5	6	7	9	10	11	13
	3/4	0	0	1	1	1	2	2	3	3	4	4
	7/8	0	0	0	0	0	1	1	1	1	2	2
42,000 1–Stage Puron AC	3/4	0	1	2	2	2	3	4	4	5	6	6
	7/8	0	0	1	1	1	1	2	2	2	3	3
	1–1/8	0	0	0	0	0	0	0	0	0	0	1
48,000 1–Stage Puron AC	3/4	0	1	2	2	3	4	5	5	6	7	8
	7/8	0	0	1	1	1	2	2	2	3	3	4
	1–1/8	0	0	0	0	0	0	0	0	1	1	1
60,000 1–Stage Puron AC	3/4	1	2	4	4	5	6	7	9	10	11	12
	7/8	0	1	2	2	2	3	4	4	5	5	6
	1–1/8	0	0	0	0	1	1	1	1	1	1	2

Standard Length = 80 ft. (24.38 m) or less total equivalent length

Applications in this area are long line. Accessories are required as shown recommended on Long Line Application Guidelines

Applications in this area may have height restrictions that limit allowable total equivalent length, when outdoor unit is below indoor unit. See Long Line Application Guidelines

ACCESSORY THERMOSTATS

THERMOSTAT / SUBBASE PKG.	DESCRIPTION
TSTATCCPRH01 – B	Thermostat Control – Programmable / Non – Programmable Thermostat with Humidity control
TSTATCCPAC01 – B	Thermostat – Auto Changeover, 7 – Day Programmable, °F/°C, 1 – Stage Heat, 1 – Stage Cool
TSTATCCNAC01 – C	Thermostat – Auto Changeover, Non – Programmable, °F/°C, 1 – Stage Heat, 1 – Stage Cool
TSTATCCBAC01 – B	Builder's Thermostat – Manual Changeover, Non – Programmable, °F/°C, 1 – Stage Heat, 1 – Stage Cool
TSTATCCSEN01 – B	Outdoor Air Temperature Sensor
TSTATXXBBP01	Backplate for Builder's Thermostat
TSTATXXNBP01	Backplate for Non – Programmable Thermostat
TSTATXXBP01	Backplate for Programmable Thermostat
TSTATXXCNV10	Thermostat Conversion Kit (4 to 5 wires) – 10 Pack
TB – PAC – 01	Base Series Programmable AC Stat
TB – NAC – 01	Base Series Non – programmable AC Stat

ACCESSORIES

KIT NUMBER	DESCRIPTION	18 – 31	24 – 31	30 – 31	36 – 31	42 – 32	48 – 32	60 – 32
HC32GE234	MOTOR FAN BALL BEARING	X						
HC34GE239	MOTOR FAN BALL BEARING		X	X				
HC40GE226	MOTOR FAN BALL BEARING				X		X	
HC38GE219	MOTOR FAN BALL BEARING					X		
HC40GE228	MOTOR FAN BALL BEARING							X
KAACH1201AAA	CRANKCASE HTR					X	X	X
KAACH1401AAA	CRANKCASE HTR	X	X	X	X			
KAACS0201PTC	START ASSIST PTC	X	X	X	X	X	X	X
KAAFT0101AAA	FREEZE THERMOSTAT	X	X	X	X	X	X	X
KAHI0501PUR	HIGH PRESSURE SWITCH	X	X	X	X	X	X	X
KAALP0401PUR	LOW PRESSURE SWITCH	X	X	X	X	X	X	X
KAATD0101TDR	TIME DELAY RELAY	X	X	X	X	X	X	X
KAWS0101AAA	WINTER START	X	X	X	X	X	X	X
KSACY0101AAA	CYCLE PROTECTOR	X	X	X	X	X	X	X
KSAS1701AAA	HARD START (CAP / RELAY)	X	X	X	X	X	X	X
KSALA0301410	LOW AMBIENT PSW	X	X	X	X	X	X	X
KSALA0601AAA	MOTORMASTER 230V	X	X	X	X	X	X	X
KSASF0101AAA	SUPPORT FEET	X	X	X	X	X	X	X
KSASH0601COP	SOUND HOOD	X	X	X	X	X	X	
KSASH2101COP	SOUND HOOD							X
KSATX0201PUR	TXV PURON HSO	X	X	X				
KSATX0301PUR	TXV PURON HSO				X	X		
KSATX0401PUR	TXV PURON HSO						X	
KSATX0501PUR	TXV PURON HSO							X

x = Accessory

ACCESSORY USAGE GUIDELINE

ACCESSORY	REQUIRED FOR LOW-AMBIENT COOLING APPLICATIONS (Below 55°F/12.8°C)	REQUIRED FOR LONG LINE APPLICATIONS* (Over 80 ft./24.38 m)	REQUIRED FOR SEA COAST APPLICATIONS (Within 2 miles/3.22 km)
Ball Bearing Fan Motor	Yes†	No	No
Compressor Start Assist Capacitor and Relay	Yes†	Yes	No
Crankcase Heater	Yes†	Yes	No
Evaporator Freeze Thermostat	Yes†	No	No
Hard Shut-Off TXV	Yes†	Yes	Yes
Liquid Line Solenoid Valve	No	See Long Line Application Guideline	No
Motor Master® Control or Low-ambient Pressure Switch	Yes†	No	No
Support Feet	Recommended	No	Recommended

* For tubing line sets between 80 and 200 ft. (24.38 and 60.96 m) and/or 20 ft. (6.09 m) vertical differential, refer to Residential Split-System Longline Application Guideline.

† Required for Low-Ambient Controller (full modulation feature) MotorMaster® Control.

Accessory Description and Usage (Listed Alphabetically)

1. Ball-Bearing Fan Motor

A fan motor with ball bearings which permits speed reduction while maintaining bearing lubrication.

Usage Guideline:

Required on all units when MotorMaster® —

2. Compressor Start Assist - Capacitor and Relay

Start capacitor and relay gives a "hard" boost to compressor motor at each start up.

Usage Guideline:

Required for reciprocating compressors in the following applications:

Long line

Low ambient cooling

Hard shut off expansion valve on indoor coil

Liquid line solenoid on indoor coil

Required for single-phase scroll compressors in the following applications:

Long line

Low ambient cooling

Suggested for all compressors in areas with a history of low voltage problems.

3. Compressor Start Assist — PTC Type

Solid state electrical device which gives a "soft" boost to the compressor at each start-up.

Usage Guideline:

Suggested in installations with marginal power supply.

4. Crankcase Heater

An electric resistance heater which mounts to the base of the compressor to keep the lubricant warm during off cycles. Improves compressor lubrication on restart and minimizes the chance of liquid slugging.

Usage Guideline:

Required in low ambient cooling applications.

Required in long line applications.

Suggested in all commercial applications.

5. Cycle Protector

The cycle protector is designed to prevent compressor short cycling. This control provides an approximate 5-minute delay after power to the compressor has been interrupted for any reason, including power outage, protector control trip, thermostat jiggling, or normal cycling.

6. Evaporator Freeze Thermostat

An SPST temperature-actuated switch that stops unit operation when evaporator reaches freeze-up conditions.

Usage Guideline:

Required when low ambient kit has been added.

7. Low-Ambient Pressure Switch Kit

A long life pressure switch which is mounted to outdoor unit service valve. It is designed to cycle the outdoor fan motor in order to maintain head pressure within normal operating limits (approximately 100 psig to 225 psig). The control will maintain working head pressure at low-ambient temperatures down to 0°F/-17.78°C when properly installed.

Usage Guideline:

A Low-Ambient Pressure Switch or MotorMaster®

Low-Ambient Controller must be used when cooling operation is used at outdoor temperatures below 55°F (12.8°C).

8. MotorMaster® Low-Ambient Controller

A fan-speed control device activated by a temperature sensor, designed to control condenser fan motor speed in response to the saturated, condensing temperature during operation in cooling mode only. For outdoor temperatures down to -20°F (-28.9°C), it maintains condensing temperature at 100°F ±10°F (37.8°C ± 11°C).

Usage Guideline:

A MotorMaster® Low Ambient Controller or Low-Ambient Pressure Switch must be used when cooling operation is used at outdoor temperatures below 55°F (12.8°C).

Suggested for all commercial applications.

9. Outdoor Air Temperature Sensor

Designed for use with Carrier Thermostats listed in this publication. This device enables the thermostat to display the outdoor temperature. This device also

is required to enable special thermostat features such as auxiliary heat lock out.

Usage Guideline:

Suggested for all Carrier thermostats listed in this publication.

Accessory Description and Usage (Listed Alphabetically) (Continued)

10. Sound Hood

Wraparound sound reducing cover for the compressor. Reduces the sound level by about 2 dBA.

Usage Guideline:

Suggested when unit is installed closer than 15 ft (4.57 m) to quiet areas, bedrooms, etc.

Suggested when unit is installed between two houses less than 10 ft (3.05 m) apart.

11. Support Feet

Four stick-on plastic feet that raise the unit 4 in. (101.6 mm) above the mounting pad. This allows sand, dirt, and other debris to be flushed from the unit base, minimizing corrosion.

Usage Guideline:

Suggested in the following applications:

Coastal installations.

Windy areas or where debris is normally circulating.

Rooftop installations.

For improved sound ratings.

12. Thermostatic Expansion Valve (TXV)

A modulating flow-control valve which meters refrigerant liquid flow rate into the evaporator in response to the superheat of the refrigerant gas leaving the evaporator.

Kit includes valve, adapter tubes, and external equalizer tube. Hard shut off types are available.

NOTE: When using a hard shut off TXV with single phase reciprocating compressors, a Compressor Start Assist Capacitor and Relay is required.

Usage Guideline:

Required to achieve ARI ratings in certain equipment combinations. Refer to combination ratings.

Hard shut off TXV or LLS required in air conditioner long line applications.

Required for use on all zoning systems.

13. Time-Delay Relay

An SPST delay relay which briefly continues operation of indoor blower motor to provide additional cooling after the compressor cycles off.

NOTE: Most indoor unit controls include this feature. For those that do not, use the guideline below.

Usage Guideline:

For improved efficiency ratings for certain combinations of indoor and outdoor units. Refer to ARI Unitary Directory.

14. Winter Start Control

This control is designed to alleviate nuisance opening of the low-pressure switch by bypassing it for the first 3 minutes of operation.

ELECTRICAL DATA

UNIT SIZE	V/PH	OPER VOLTS*		COMPR		FAN	MCA	MIN WIRE SIZE† 60° C	MIN WIRE SIZE† 75° C	MAX LENGTH (FT)‡ 60° C	MAX LENGTH (FT)‡ 75° C	MAX FUSE** or BRK AMPS
		MAX	MIN	LRA	RLA	FLA						
18–31	208/230/1–60	253	197	48.0	9.0	0.5	11.7	14	14	67	64	15
24–31				58.3	13.5	0.7	17.6	14	14	45	43	25
30–31				73.0	14.1	1.1	18.7	14	14	42	40	30
36–31				79.0	16.7	1.2	22.0	12	12	57	54	35
42–32				112.0	17.9	1.2	23.6	10	10	85	80	40
48–32				117.0	21.8	1.2	28.4	10	10	70	67	40
60–32				134.0	26.4	1.2	34.2	8	8	91	86	50

* Permissible limits of the voltage range at which the unit will operate satisfactorily

† If wire is applied at ambient greater than 30° C (86° F), consult table 310–16 of the NEC (ANSI/NFPA 70). The ampacity of non-metallic-sheathed cable (NM), trade name ROMEX, shall be that of 60° C conditions, per the NEC (ANSI/NFPA 70) Article 336–26. If other than uncoated (no-plated), 60 or 75° C insulation, copper wire (solid wire for 10 AWG or smaller, stranded wire for larger than 10 AWG) is used, consult applicable tables of the NEC (ANSI/NFPA 70).

‡ Length shown is as measured 1 way along wire path between unit and service panel for voltage drop not to exceed 2%.

** Time-Delay fuse.

FLA – Full Load Amps

LRA – Locked Rotor Amps

MCA – Minimum Circuit Amps

RLA – Rated Load Amps

NOTE: Control circuit is 24–V on all units and requires external power source. Copper wire must be used from service disconnect to unit. All motors/compressors contain internal overload protection.

SOUND POWER

UNIT SIZE – VOLTAGE, SERIES	STANDARD RATING (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dB, without tone adjustment)						
		125	250	500	1000	2000	4000	8000
18–31	76	56.0	60.0	65.0	72.0	65.0	60.5	53.5
24–31	76	52.5	62.5	66.0	69.5	66.5	62.0	57.0
30–31	76	53.5	64.5	69.0	70.0	68.5	66.0	59.5
36–31	76	52.0	60.0	65.5	69.5	64.0	63.0	56.0
42–32	77	55.0	62.0	66.0	70.5	65.5	60.0	54.0
48–32	78	51.5	62.0	67.5	73.5	69.0	64.5	62.0
60–32	78	57.0	62.5	69.0	73.0	66.0	62.0	57.5

SOUND POWER WITH ACCESSORY SOUND HOOD

UNIT SIZE – VOLTAGE, SERIES	STANDARD RATING (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dB, without tone adjustment)						
		125	250	500	1000	2000	4000	8000
18–31	74	56.0	60.0	65.0	69.0	63.0	60.0	52.5
24–31	74	52.0	62.0	66.5	68.5	66.0	61.0	56.5
30–31	75	53.5	64.5	69.0	69.5	68.0	65.5	59.0
36–31	75	52.0	62.0	65.5	67.5	63.0	61.0	53.5
42–32	74	55.0	61.5	65.0	68.5	65.0	59.0	52.0
48–32	76	53.0	61.5	67.5	72.0	68.0	61.5	59.0
60–32	75	57.0	62.5	68.5	71.0	65.0	60.5	58.5

CHARGING SUBCOOLING (TXV-TYPE EXPANSION DEVICE)

UNIT SIZE–VOLTAGE, SERIES	REQUIRED SUBCOOLING °F (°C)
18–31	10 (5.6)
24–31	11 (6.1)
30–31	8 (4.4)
36–31	10 (5.6)
42–32	8 (4.4)
48–32	8 (4.4)
60–32	9 (5.0)