

**REZNOR**°

Supersedes: — (Original Version)

# **TECHNICAL SPECIFICATIONS FOR MODEL UDXC**

# COMMERCIAL/INDUSTRIAL/RESIDENTIAL POWER-VENTED LOW-STATIC AXIAL FAN CONVERTABLE GAS-FIRED UNIT HEATER



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In keeping with our policy of continuous product improvement, we reserve the right to alter, at any time, the design, construction, dimensions, weights, etc., of equipment information shown here.

### **Unit Sizes**

These heaters are available in fourteen unit sizes based on 30,000-400,000 BTUh input.

### **Features**

- 115/1/60 voltage/phase/Hz
- 82-83% thermal efficient
- May be converted to separated-combustion for use in installation locations where dirt, dust, or other airborne contaminants are present in the indoor environment
- Natural gas standard (propane conversion kit available)
- · Integrated circuit board with seven-segment display
- · Easily-viewed status-indicating LED
- Hinged access door panel with quarter-turn latch
- Improved cabinet design with removable front face
- · Two-toned black and white glossy, scratch-resistant paint scheme
- · Patented single-burner combustion system
- TCORE<sup>2</sup>® titanium-stabilized aluminized-steel heat exchanger
- · External terminal strip for 24V wiring
- · Built in disconnect switch
- Four-point suspension standard on all unit sizes (two-point suspension available on unit sizes 30–125 when installed without downturn nozzle or stepdown transformer)

### **Factory-Installed Options**

Option	Description
AC1	Aluminized-steel heat exchanger
AC2	409 SST heat exchanger
AC4	316 SST heat exchanger
AG1	Single-stage combination gas valve
AG2	Two-stage combination gas valve
AL1	Open drip-proof motor
AL14	Totally-enclosed motor

### **Field-Installed Options**

Option	Description
CC1	Vent cap
CC21	SST vent cap
CD1	Vertical louvers, direct discharge air to provide wider throw pattern
CD2	Downturn nozzle, 25- to 65-degree variable air deflection range
CD3	Downturn nozzle, 50- to 90-degree variable air deflection range
CD4	Downturn nozzle, 25- to 65-degree variable air deflection range with vertical louvers
CD5	Downturn nozzle, 50- to 90-degree variable air deflection range with vertical louvers
CE1	Manual shutoff valve, natural gas or propane
CG1	208V–115V stepdown transformer
CG4	230V–115V or 460V–115V stepdown transformer
CG5	575V–115V stepdown transformer
CK8	Adapts 3/8-inch hangers for two-point suspension from 1-inch threaded pipe
CK10	Adapts 3/8-inch hangers for four-point suspension from 1-inch threaded pipe
CK22	Angle brackets for low ceiling mounting (does not include hanger rods)

Option	Description
CL1	Single-stage thermostat
CL22, CL23, CL83, CL84, CL90	Two-stage thermostat
CL31, CL32	Multiple unit control: option CL31 includes components for one control unit and one additional unit—option CL32 includes components for each additional non-control unit
CM1	Locking cover for CL1 thermostat
CM1B	Locking cover for CL22 thermostat
CM3	Bracket assembly for mounting thermostat on unit
DJ20	High-elevation pressure switch
DL2	Propane conversion
SC1	Separated-combustion conversion (requires either vertical (option CC2) or horizontal (option CC6) vent/combustion air inlet terminal kit)

### **Technical Data**

Paramatar.	Unit of	Unit Size (MBTUh)								
Parameter	Measure	30	45	60	75	100	125			
Thermal efficiency	%	82	83	8	33	8	83			
Innut heating conseits	BTUh	30,000	45,000	60,000	75,000	105,000	120,000			
Input heating capacity	kW	8.8	13.2	17.6	22.0	30.8	35.2			
Outrout booting consists loss fine*	BTUh	17,220	26,145	34,860	43,575	61,005	69,720			
Output heating capacity, low fire*	kW	5.0	7.6	10.2	12.7	17.9	20.4			
Outrout booting conseits bink fire*	BTUh	24,600	37,350	49,800	62,250	87,150	99,600			
Output heating capacity, high fire*	kW	7.2	10.9	14.6	18.2	25.5	29.2			
Gas connection**	inala			1	/2					
Vent connection diameter***	inch				4					
Control, 24V				1	.0					
Full load amps, 115V	amp	1.9	2.4	2.4	3.7	4.3	5.6			
Maximum overcurrent protection, 115V <sup>†</sup>	j '	15								
Normal power consumption	watt	109	155	155	217	276	354			
Discharge oir temperature vice	°F	50	50 55 60 6			6	0			
Discharge air temperature rise	°C	10	12.8	15	5.5	15.5				
Atmos Lucia	CFM	456	629	769	961	1345	1537			
Air volume	meter <sup>3</sup> /minute	12.9	17.8	21.8	27.5	36.7	45.9			
5	foot <sup>2</sup>	0.	96	1.	25	2.	01			
Discharge air opening area	meter <sup>2</sup>	0.	09	0.	12	0.	19			
Outrout value it.	FPM	475	656	616	770	668	763			
Output velocity	meter/minute	145	200	188	235	204	233			
Open fan motor horsepower	HP	0.02	0.03	0.03	0.06	1/30	1/20			
Totally-enclosed fan motor horsepower	7 82	0.	06	0.	06	1.	<sup>'</sup> 4			
Fan motor speed	RPM	15	50	15	550	10	50			
Fan diameter	inch	1	0	1	2	1	16			
Sound level @ 15 feet	dBa	4	.0	40	49	54	55			
*ETI ratings for algustions up to 2 000 foot										

<sup>\*</sup>ETL ratings for elevations up to 2,000 feet.

 $<sup>^{\</sup>dagger}$ MOCP = 2.25  $\times$  (largest motor FLA) + smallest motor FLA. Answer is rounded to the next lower standard circuit breaker size.

Parameter	Unit of	Unit Size (MBTUh)								
Parameter	Measure	150	175	200	225	250	300	350	400	
Thermal efficiency	8	3								
lanut hooting consoit.	BTUh	150,000	175,000	200,000	225,000	250,000	300,000	350,000	400,000	
Input heating capacity	kW	44.0	51.3	58.6	65.9	73.3	87.9	102.6	117.2	
Outrot hasting a second it. Jam fine*	BTUh	87,150	101,675	116,200	130,725	145,250	174,300	203,350	232,400	
Output heating capacity, low fire*	kW	25.5	29.8	34.0	38.3	42.6	51.0	59.6	68.1	
Outrot hasting a second it. In the first	BTUh	124,500	145,250	166,000	186,750	207,500	249,000	290,500	332,000	
Output heating capacity, high fire*	kW	36.5	42.6	48.7	54.7	60.8	73.0	85.1	97.3	
*ETL ratings for elevations up to 2,000 fe	et.									

<sup>\*\*</sup>Size shown is for natural gas or propane gas connection to a single-stage gas valve—not supply line size.

<sup>\*\*\*</sup>Smaller and/or larger vent and combustion air pipe diameters may be permissible.

### **Technical Data—Continued**

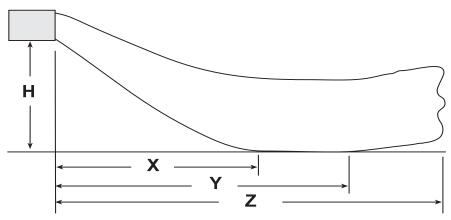
Davamatav	Unit of	Unit Size (MBTUh)									
Parameter	Measure	150	175	200	225	250	300	350	400		
Gas connection**	to als		1/2		3/4	3/4					
Vent connection diameter***	inch			5	•	5 6					
Control, 24V		1.0									
Full load amps, 115V	amp	3	.8	4.6	7.5	7.5		11.0			
Maximum overcurrent protection, 115V <sup>†</sup>			1	5		15		20			
Normal power consumption	watt	3:	92	491	747	747		1086			
Disabarga sir tamparatura rica	°F	60									
Discharge air temperature rise	°C	15.5									
A :	CFM	1921	2242	2562	2882	3202	3843	4483	5123		
Air volume	meter <sup>3</sup> /minute	54.4	63.5	72.5	81.6	90.7	108.8	126.9	145.1		
B	foot <sup>2</sup>	2.56			3.51	3.51	4.79				
Discharge air opening area	meter <sup>2</sup>		0.24		0.33	0.33	0.45				
Outrout value it v	FPM	752	877	1003	820	911	802	936	1069		
Output velocity	meter/minute	229	267	306	250	278	244	285	326		
Open fan motor horsepower	HP		1/6		1/4	1/4		1/2			
Totally-enclosed fan motor horsepower	HP		1/4		1/4	1/4		1/2			
Fan motor speed	RPM				10	50					
Fan diameter	inch		18		20	20		24			
Sound level @ 15 feet	dBa	51	52	53	56	56	59	61	62		
**Size shown is for natural gas or propan	e gas connection to	a single-	stage gas	valve—no	t supply lir	ne size.					
***Smaller and/or larger vent and combu	stion air pipe diame	ters may l	oe permiss	sible.							
†MOCP = 2.25 × (largest motor FLA) + sr	nallest motor FLA.	Answer is	rounded to	the next	lower stan	dard circui	it breaker s	size.			

Certification

These unit heaters are listed by Intertek for use in industrial and commercial installations in the United States and Canada. In addition, unit sizes 30, 45, 60, 75, 100, and 125 are listed in the United States and Canada as utility heaters for use in non-living spaces that are attached to, adjacent to, or part of a structure that contains space for family living quarters.

### **Heater Throw Distances with Standard Horizontal Louvers**

The graphic shows throw patterns and the table lists throw distances for heaters suspended at varying mounting heights. The louver angles listed are relative to the top of the heater. The throw pattern changes with the addition of optional vertical louvers and/or downturn nozzles.



H = Distance from bottom of heater to the floor

X = Distance from heater to start of floor coverage

Y = Distance to end of floor coverage

Z = Distance at which air velocity drops below 50 feet (15.2 meters) per minute

				Ur	nit Size (MBTL	Jh)		
H* (Feet	Distance* or Angle	30	45	60	75	100	125	150
(Meters))					Feet (Meters)			
	Х	6 (1.8)	7 (2.1)	8 (2.4)	9 (2.7)	9 (2.7)	10 (3.0)	
- (4 F)	Υ	14 (4.3)	16 (4.9)	18 (5.5)	20 (6.1)	20 (6.1)	22 (6.7)	
5 (1.5)	Z	30 (9.1)	40 (12.2)	45 (13.8)	57 (17.4)	59 (18.0)	65 (19.9)	_
	Downward louver angle	21°	20°	16°	14°	18°	14°	
	X	7 (2.1)	9 (2.7)	10 (3.0)	12 (3.7)	11 (3.4)	12 (3.7)	13 (4.0)
0 (0 4)	Υ	13 (4.0)	16 (4.9)	18 (5.5)	22 (6.7)	21 (6.4)	23 (7.0)	24 (7.3)
8 (2.4)	Z	26 (7.9)	37 (11.3)	42 (12.8)	54 (16.5)	56 (17.1)	63 (19.2)	73 (22.3)
	Downward louver angle	39°	34°	29°	25°	28°	24°	26°
	X	6 (1.8)	9 (2.7)	10 (3.0)	12 (3.7)	12 (3.7)	13 (4.0)	14 (4.3)
10 (0.0)	Υ	11 (3.4)	15 (4.6)	17 (5.2)	22 (6.7)	20 (6.1)	24 (7.3)	24 (7.3)
10 (3.0)	Z	22 (6.7)	33 (10.0)	39 (11.9)	52 (15.8)	52 (15.8)	60 (18.3)	69 (21.0)
	Downward louver angle	52°	43°	37°	32°	36°	30°	32°
	X		8 (2.4)	10 (3.0)	12 (3.7)	11 (3.4)	14 (4.3)	14 (4.3)
	Y	1	12 (3.7)	16 (4.9)	21 (6.4)	19 (5.8)	23 (7.0)	24 (7.3)
12 (3.7)	Z	1 —	27 (8.2)	34 (10.4)	48 (14.6)	47 (14.3)	57 (17.4)	64 (19.5)
İ	Downward louver angle	1	55°	46°	39°	44°	36°	39°
	X			9 (2.7)	12 (3.7)	11 (3.4)	14 (4.3)	14 (4.3)
	Y	1		14 (4.3)	19 (5.8)	17 (5.2)	22 (6.7)	22 (6.7)
14 (4.3)	Z		_	29 (8.8)	44 (13.4)	42 (12.8)	53 (16.1)	59 (18.0)
ŀ	Downward louver angle	1		56°	46°	51°	43°	45°
	X				11 (3.4)	10 (3.0)	13 (4.0)	13 (4.0)
	Y	1			17 (5.4)	14 (4.3)	20 (6.1)	20 (6.1)
16 (4.9)	Z	1	_		38 (11.6)	34 (10.4)	47 (14.3)	
-	Downward louver angle	-			54°	58°	50°	53 (16.2) 51°
	X	-			] 54	56		
}	Y	-					11 (3.4)	11 (3.4)
18 (5.5)		-		17 (5.2)	17 (5.2)			
-	Z	-					40 (12.2)	44 (13.4)
	Z Downward louver angle	-		He	sit Sizo (MBTI	lb)	40 (12.2) 57°	44 (13.4) 58°
H*	Downward louver angle	175	200		nit Size (MBTL		57°	58°
(Feet	<u> </u>	175	200	Ur 225	250	300		
	Downward louver angle  Distance* or Angle			225	250 Feet (Meters)	300	57°	58°
(Feet	Downward louver angle  Distance* or Angle  X	15 (4.6)	16 (4.9)	<b>225</b> 14 (4.3)	250 Feet (Meters) 16 (4.9)	<b>300</b> 15 (4.6)	57° 350 17 (5.2)	58° 400 18 (5.5)
(Feet	Downward louver angle  Distance* or Angle  X Y	15 (4.6) 28 (8.5)	16 (4.9) 30 (9.1)	225 14 (4.3) 27 (8.2)	250 Feet (Meters) 16 (4.9) 29 (8.8)	300 15 (4.6) 28 (8.5)	57°  350  17 (5.2) 31 (9.4)	58° 400 18 (5.5) 34 (11.3)
(Feet (Meters))	Downward louver angle  Distance* or Angle  X  Y  Z	15 (4.6) 28 (8.5) 90 (27.4)	16 (4.9) 30 (9.1) 93 (28.0)	225 14 (4.3) 27 (8.2) 86 (26.2)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3	300 15 (4.6) 28 (8.5) 94 (28.7)	350 350 17 (5.2) 31 (9.4) 105 (32.0)	58° 400 18 (5.5) 34 (11.3) 113 (34.4)
(Feet (Meters))	Downward louver angle  Distance* or Angle  X Y Z  Downward louver angle	15 (4.6) 28 (8.5) 90 (27.4) 22°	16 (4.9) 30 (9.1) 93 (28.0) 20°	225 14 (4.3) 27 (8.2) 86 (26.2) 24°	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21°	300 15 (4.6) 28 (8.5) 94 (28.7) 24°	57° 350 17 (5.2) 31 (9.4) 105 (32.0) 20°	58° 400 18 (5.5) 34 (11.3) 113 (34.4) 17°
(Feet (Meters))	Downward louver angle  Distance* or Angle  X Y Z Downward louver angle X	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2)	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2)	225 14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2)	300 15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9)	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5)	18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1)
(Feet (Meters))	Downward louver angle  X Y Z Downward louver angle X Y Y	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8)	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4)	225 14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1)	300 15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5)	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8)	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7)
(Feet (Meters)) 8 (2.4)	Downward louver angle  X Y Z Downward louver angle X Y Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6)	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7)	225 14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4	300 15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1)	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4)	18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5)
(Feet (Meters)) 8 (2.4)	Downward louver angle  X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27°	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25°	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30°	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26°	300 15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29°	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25°	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21°
(Feet (Meters)) 8 (2.4)	Downward louver angle  X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y X X	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5)	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5)	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5)	300 15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2)	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8)	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4)
(Feet (Meters)) 8 (2.4)	Downward louver angle  X Y Z	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5) 29 (8.8)	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5) 31 (9.4)	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9) 27 (8.2)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5) 30 (9.1)	300 15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2) 28 (8.5)	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8) 32 (9.8)	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4) 36 (11.0)
(Feet (Meters)) 8 (2.4)	Downward louver angle  X Y Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5) 29 (8.8) 84 (25.6)	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5) 31 (9.4) 88 (26.8)	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9) 27 (8.2) 78 (23.8)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5) 30 (9.1) 87 26.5	300 15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2) 28 (8.5) 85 (25.9)	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8) 32 (9.8) 98 (29.9)	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4) 36 (11.0) 108 (32.9)
(Feet (Meters)) 8 (2.4)	Downward louver angle  X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5) 29 (8.8) 84 (25.6) 32°	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5) 31 (9.4) 88 (26.8) 30°	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9) 27 (8.2) 78 (23.8) 35°	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5) 30 (9.1) 87 26.5 31°	300 15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2) 28 (8.5) 85 (25.9) 34°	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8) 32 (9.8) 98 (29.9) 30°	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4) 36 (11.0) 108 (32.9) 25°
(Feet (Meters)) 8 (2.4)	Downward louver angle  X Y Z Downward louver angle  X X X X X X X X X X X X X X X X X X	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5) 29 (8.8) 84 (25.6) 32° 18 (5.5)	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5) 31 (9.4) 88 (26.8) 30° 19 (5.8)	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9) 27 (8.2) 78 (23.8) 35° 16 (4.9)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5) 30 (9.1) 87 26.5 31° 18 (5.5)	300 15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2) 28 (8.5) 85 (25.9) 34° 17 (5.2)	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8) 32 (9.8) 98 (29.9) 30° 20 (6.1)	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4) 36 (11.0) 108 (32.9) 25° 23 (7.0)
(Feet (Meters)) 8 (2.4)	Downward louver angle  X Y Z Y Z Downward louver angle  X Y Z	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5) 29 (8.8) 84 (25.6) 32° 18 (5.5) 28 (8.5)	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5) 31 (9.4) 88 (26.8) 30° 19 (5.8) 30 (9.1)	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9) 27 (8.2) 78 (23.8) 35° 16 (4.9) 26 (7.9)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5) 30 (9.1) 87 26.5 31° 18 (5.5) 30 (9.1)	300 15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2) 28 (8.5) 85 (25.9) 34° 17 (5.2) 27 (8.2)	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8) 32 (9.8) 98 (29.9) 30° 20 (6.1) 32 (9.8)	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4) 36 (11.0) 108 (32.9) 25° 23 (7.0) 35 (10.7)
(Feet (Meters))  8 (2.4)  10 (3.0)  12 (3.7)	Downward louver angle  X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Z Downward louver angle X Y Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5) 29 (8.8) 84 (25.6) 32° 18 (5.5) 28 (8.5) 79 (24.1)	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5) 31 (9.4) 88 (26.8) 30° 19 (5.8) 30 (9.1) 84 (25.6)	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9) 27 (8.2) 78 (23.8) 35° 16 (4.9) 26 (7.9) 73 (22.3)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5) 30 (9.1) 87 26.5 31° 18 (5.5) 30 (9.1) 83 25.3	300 15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2) 28 (8.5) 85 (25.9) 34° 17 (5.2) 27 (8.2) 80 (24.4)	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8) 32 (9.8) 98 (29.9) 30° 20 (6.1) 32 (9.8) 95 (29.0)	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4) 36 (11.0) 108 (32.9) 25° 23 (7.0) 35 (10.7) 105 (32.0)
(Feet (Meters))  8 (2.4)  10 (3.0)  12 (3.7)	Downward louver angle  X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5) 29 (8.8) 84 (25.6) 32° 18 (5.5) 28 (8.5) 79 (24.1) 37°	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5) 31 (9.4) 88 (26.8) 30° 19 (5.8) 30 (9.1) 84 (25.6) 34°	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9) 27 (8.2) 78 (23.8) 35° 16 (4.9) 26 (7.9) 73 (22.3) 41°	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5) 30 (9.1) 87 26.5 31° 18 (5.5) 30 (9.1) 83 25.3 36°	300 15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2) 28 (8.5) 85 (25.9) 34° 17 (5.2) 27 (8.2) 80 (24.4) 40°	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8) 32 (9.8) 98 (29.9) 30° 20 (6.1) 32 (9.8) 95 (29.0) 34°	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4) 36 (11.0) 108 (32.9) 25° 23 (7.0) 35 (10.7) 105 (32.0) 29°
(Feet (Meters))  8 (2.4)  10 (3.0)  12 (3.7)	Downward louver angle  X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y X	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5) 29 (8.8) 84 (25.6) 32° 18 (5.5) 28 (8.5) 79 (24.1) 37° 18 (5.5)	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5) 31 (9.4) 88 (26.8) 30° 19 (5.8) 30 (9.1) 84 (25.6) 34° 19 (5.8)	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9) 27 (8.2) 78 (23.8) 35° 16 (4.9) 26 (7.9) 73 (22.3) 41° 16 (4.9)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5) 30 (9.1) 87 26.5 31° 18 (5.5) 30 (9.1) 83 25.3 36° 19 (5.8)	300  15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2) 28 (8.5) 85 (25.9) 34° 17 (5.2) 27 (8.2) 80 (24.4) 40° 17 (5.2)	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8) 32 (9.8) 98 (29.9) 30° 20 (6.1) 32 (9.8) 95 (29.0) 34° 21 (6.4)	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4) 36 (11.0) 108 (32.9) 25° 23 (7.0) 35 (10.7) 105 (32.0) 29° 23 (7.0)
(Feet (Meters))  8 (2.4)  10 (3.0)  12 (3.7)  14 (4.3)	Downward louver angle  X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z Downward louver angle X Y Z	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5) 29 (8.8) 84 (25.6) 32° 18 (5.5) 28 (8.5) 79 (24.1) 37° 18 (5.5) 27 (8.2)	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5) 31 (9.4) 88 (26.8) 30° 19 (5.8) 30 (9.1) 84 (25.6) 34° 19 (5.8) 29 (8.8)	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9) 27 (8.2) 78 (23.8) 35° 16 (4.9) 26 (7.9) 73 (22.3) 41° 16 (4.9) 24 (7.3)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5) 30 (9.1) 87 26.5 31° 18 (5.5) 30 (9.1) 83 25.3 36° 19 (5.8) 28 (8.5)	300  15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2) 28 (8.5) 85 (25.9) 34° 17 (5.2) 27 (8.2) 80 (24.4) 40° 17 (5.2) 25 (7.6)	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8) 32 (9.8) 98 (29.9) 30° 20 (6.1) 32 (9.8) 95 (29.0) 34° 21 (6.4) 31 (9.4)	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4) 36 (11.0) 108 (32.9) 25° 23 (7.0) 35 (10.7) 105 (32.0) 29° 23 (7.0) 35 (10.7)
(Feet (Meters))  8 (2.4)  10 (3.0)  12 (3.7)	Downward louver angle  X Y Z Z Downward louver angle  X Y Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5) 29 (8.8) 84 (25.6) 32° 18 (5.5) 28 (8.5) 79 (24.1) 37° 18 (5.5) 27 (8.2) 74 (22.6)	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5) 31 (9.4) 88 (26.8) 30° 19 (5.8) 30 (9.1) 84 (25.6) 34° 19 (5.8) 29 (8.8) 79 (24.1)	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9) 27 (8.2) 78 (23.8) 35° 16 (4.9) 26 (7.9) 73 (22.3) 41° 16 (4.9) 24 (7.3) 67 (20.4)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5) 30 (9.1) 87 26.5 31° 18 (5.5) 30 (9.1) 83 25.3 36° 19 (5.8) 28 (8.5) 78 23.8	300  15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2) 28 (8.5) 85 (25.9) 34° 17 (5.2) 27 (8.2) 80 (24.4) 40° 17 (5.2) 25 (7.6) 74 (22.6)	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8) 32 (9.8) 98 (29.9) 30° 20 (6.1) 32 (9.8) 95 (29.0) 34° 21 (6.4) 31 (9.4) 90 (27.4)	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4) 36 (11.0) 108 (32.9) 25° 23 (7.0) 35 (10.7) 105 (32.0) 29° 23 (7.0) 35 (10.7) 101 (30.8)
(Feet (Meters))  8 (2.4)  10 (3.0)  12 (3.7)  14 (4.3)	Downward louver angle  X Y Z Downward louver angle	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5) 29 (8.8) 84 (25.6) 32° 18 (5.5) 28 (8.5) 79 (24.1) 37° 18 (5.5) 27 (8.2) 74 (22.6) 42°	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5) 31 (9.4) 88 (26.8) 30° 19 (5.8) 30 (9.1) 84 (25.6) 34° 19 (5.8) 29 (8.8) 79 (24.1) 39°	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9) 27 (8.2) 78 (23.8) 35° 16 (4.9) 26 (7.9) 73 (22.3) 41° 16 (4.9) 24 (7.3) 67 (20.4) 47°	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5) 30 (9.1) 87 26.5 31° 18 (5.5) 30 (9.1) 83 25.3 36° 19 (5.8) 28 (8.5) 78 23.8 41°	300  15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2) 28 (8.5) 85 (25.9) 34° 17 (5.2) 27 (8.2) 80 (24.4) 40° 17 (5.2) 25 (7.6) 74 (22.6) 45°	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8) 32 (9.8) 98 (29.9) 30° 20 (6.1) 32 (9.8) 95 (29.0) 34° 21 (6.4) 31 (9.4) 90 (27.4) 38°	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4) 36 (11.0) 108 (32.9) 25° 23 (7.0) 35 (10.7) 105 (32.0) 29° 23 (7.0) 35 (10.7) 101 (30.8) 33°
(Feet (Meters))  8 (2.4)  10 (3.0)  12 (3.7)  14 (4.3)	Downward louver angle  X Y Z Downward louver angle  X Y	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5) 29 (8.8) 84 (25.6) 32° 18 (5.5) 28 (8.5) 79 (24.1) 37° 18 (5.5) 27 (8.2) 74 (22.6)	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5) 31 (9.4) 88 (26.8) 30° 19 (5.8) 30 (9.1) 84 (25.6) 34° 19 (5.8) 29 (8.8) 79 (24.1)	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9) 27 (8.2) 78 (23.8) 35° 16 (4.9) 26 (7.9) 73 (22.3) 41° 16 (4.9) 24 (7.3) 67 (20.4)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5) 30 (9.1) 87 26.5 31° 18 (5.5) 30 (9.1) 83 25.3 36° 19 (5.8) 28 (8.5) 78 23.8	300  15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2) 28 (8.5) 85 (25.9) 34° 17 (5.2) 27 (8.2) 80 (24.4) 40° 17 (5.2) 25 (7.6) 74 (22.6)	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8) 32 (9.8) 98 (29.9) 30° 20 (6.1) 32 (9.8) 95 (29.0) 34° 21 (6.4) 31 (9.4) 90 (27.4)	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4) 36 (11.0) 108 (32.9) 25° 23 (7.0) 35 (10.7) 105 (32.0) 29° 23 (7.0) 35 (10.7) 101 (30.8)
(Feet (Meters))  8 (2.4)  10 (3.0)  12 (3.7)  14 (4.3)	Downward louver angle  X Y Z Downward louver angle  X Y	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5) 29 (8.8) 84 (25.6) 32° 18 (5.5) 28 (8.5) 79 (24.1) 37° 18 (5.5) 27 (8.2) 74 (22.6) 42°	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5) 31 (9.4) 88 (26.8) 30° 19 (5.8) 30 (9.1) 84 (25.6) 34° 19 (5.8) 29 (8.8) 79 (24.1) 39°	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9) 27 (8.2) 78 (23.8) 35° 16 (4.9) 26 (7.9) 73 (22.3) 41° 16 (4.9) 24 (7.3) 67 (20.4) 47°	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5) 30 (9.1) 87 26.5 31° 18 (5.5) 30 (9.1) 83 25.3 36° 19 (5.8) 28 (8.5) 78 23.8 41°	300  15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2) 28 (8.5) 85 (25.9) 34° 17 (5.2) 27 (8.2) 80 (24.4) 40° 17 (5.2) 25 (7.6) 74 (22.6) 45°	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8) 32 (9.8) 98 (29.9) 30° 20 (6.1) 32 (9.8) 95 (29.0) 34° 21 (6.4) 31 (9.4) 90 (27.4) 38°	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4) 36 (11.0) 108 (32.9) 25° 23 (7.0) 35 (10.7) 105 (32.0) 29° 23 (7.0) 35 (10.7) 101 (30.8) 33°
(Feet (Meters))  8 (2.4)  10 (3.0)  12 (3.7)  14 (4.3)	Downward louver angle  X Y Z Downward louver angle  X Y	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5) 29 (8.8) 84 (25.6) 32° 18 (5.5) 28 (8.5) 79 (24.1) 37° 18 (5.5) 27 (8.2) 74 (22.6) 42° 17 (5.2)	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5) 31 (9.4) 88 (26.8) 30° 19 (5.8) 30 (9.1) 84 (25.6) 34° 19 (5.8) 29 (8.8) 79 (24.1) 39° 19 (5.8)	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9) 27 (8.2) 78 (23.8) 35° 16 (4.9) 26 (7.9) 73 (22.3) 41° 16 (4.9) 24 (7.3) 67 (20.4) 47° 14 (4.3)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5) 30 (9.1) 87 26.5 31° 18 (5.5) 30 (9.1) 83 25.3 36° 19 (5.8) 28 (8.5) 78 23.8 41° 18 (5.5)	300  15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2) 28 (8.5) 85 (25.9) 34° 17 (5.2) 27 (8.2) 80 (24.4) 40° 17 (5.2) 25 (7.6) 74 (22.6) 45° 16 (4.9) 24 (7.3) 66 (20.1)	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8) 32 (9.8) 98 (29.9) 30° 20 (6.1) 32 (9.8) 95 (29.0) 34° 21 (6.4) 31 (9.4) 90 (27.4) 38° 20 (6.1) 30 (9.1) 85 (25.9)	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4) 36 (11.0) 108 (32.9) 25° 23 (7.0) 35 (10.7) 105 (32.0) 29° 23 (7.0) 35 (10.7) 101 (30.8) 33° 23 (7.0) 35 (10.7) 97 (26.9)
(Feet (Meters))  8 (2.4)  10 (3.0)  12 (3.7)  14 (4.3)	Downward louver angle  X Y Z Downward louver angle  X Y	15 (4.6) 28 (8.5) 90 (27.4) 22° 17 (5.2) 29 (8.8) 87 (26.6) 27° 18 (5.5) 29 (8.8) 84 (25.6) 32° 18 (5.5) 28 (8.5) 79 (24.1) 37° 18 (5.5) 27 (8.2) 74 (22.6) 42° 17 (5.2) 26 (7.9)	16 (4.9) 30 (9.1) 93 (28.0) 20° 17 (5.2) 31 (9.4) 91 (27.7) 25° 18 (5.5) 31 (9.4) 88 (26.8) 30° 19 (5.8) 30 (9.1) 84 (25.6) 34° 19 (5.8) 29 (8.8) 79 (24.1) 39° 19 (5.8) 28 (8.5)	225  14 (4.3) 27 (8.2) 86 (26.2) 24° 15 (4.6) 27 (8.2) 82 (25.0) 30° 16 (4.9) 27 (8.2) 78 (23.8) 35° 16 (4.9) 26 (7.9) 73 (22.3) 41° 16 (4.9) 24 (7.3) 67 (20.4) 47° 14 (4.3) 22 (6.7)	250 Feet (Meters) 16 (4.9) 29 (8.8) 93 28.3 21° 17 (5.2) 30 (9.1) 90 27.4 26° 18 (5.5) 30 (9.1) 87 26.5 31° 18 (5.5) 30 (9.1) 83 25.3 36° 19 (5.8) 28 (8.5) 78 23.8 41° 18 (5.5) 27 (8.2)	300  15 (4.6) 28 (8.5) 94 (28.7) 24° 16 (4.9) 28 (8.5) 89 (27.1) 29° 17 (5.2) 28 (8.5) 85 (25.9) 34° 17 (5.2) 27 (8.2) 80 (24.4) 40° 17 (5.2) 25 (7.6) 74 (22.6) 45° 16 (4.9) 24 (7.3)	57°  350  17 (5.2) 31 (9.4) 105 (32.0) 20° 18 (5.5) 32 (9.8) 103 (31.4) 25° 19 (5.8) 32 (9.8) 98 (29.9) 30° 20 (6.1) 32 (9.8) 95 (29.0) 34° 21 (6.4) 31 (9.4) 90 (27.4) 38° 20 (6.1) 30 (9.1)	58°  400  18 (5.5) 34 (11.3) 113 (34.4) 17° 20 (6.1) 35 (10.7) 110 (33.5) 21° 21 (6.4) 36 (11.0) 108 (32.9) 25° 23 (7.0) 35 (10.7) 105 (32.0) 29° 23 (7.0) 35 (10.7) 101 (30.8) 33° 23 (7.0) 35 (10.7)

### **Hazards of Chlorine**

The presence of chlorine vapors in the combustion air of gas-fired heating equipment presents a potential corrosion hazard for separated-combustion heaters with regard to the combustion air inlet. Chlorine is usually found in the form of freon or degreaser vapors. When chlorine is exposed to flame, it will precipitate from the compound and go into solution with any condensation that is present in the heat exchanger or associated parts. The result is hydrochloric acid, which readily attacks all metals including 300 grade stainless steel. Care should be taken to separate these vapors from the combustion process. This may be done by wise location of the unit vent and combustion air terminals with regard to exhausters or prevailing wind directions. Chlorine is heavier than air. Keep these facts in mind when determining installation location of the heater in relation to building exhaust systems.

### **Installation Codes**

- These units must be installed in accordance with local building codes. In the absence of local codes, in the United States, the unit must be installed in accordance with the National Fuel Gas Code (ANSI Z223.1, latest edition). A Canadian installation must be in accordance with the Natural Gas and Propane Installation Code (CSA B149, latest edition). This code is available from CSA Information Services, 1-800-463-6727. Local authorities having jurisdiction should be consulted before installation is made to verify local codes and installation procedure requirements.
- Installations in aircraft hangars should be in accordance with the Standard for Aircraft Hangars (ANSI/NFPA No. 409, latest edition). Installations in public garages should be in accordance with the Standard for Parking Structures (ANSI/NFPA No. 88A, latest edition). Installations in repair garages should be in accordance with the Standard for Repair Garages (ANSI/NFPA No. 88B, latest edition). In Canada, installations in aircraft hangars should be in accordance with the requirements of the enforcing authorities, and in public garages, in accordance with the CSA B149 code.
- If the heater is being installed in the Commonwealth of Massachusetts, installation must be performed by a licensed plumber or licensed gas fitter.

### Clearances

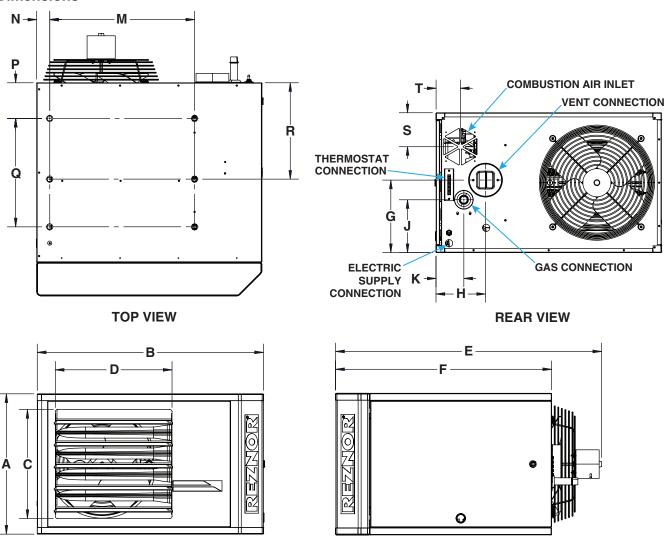
Units must be located so that clearances are provided for with regards to combustion air space, inspection, and service and for proper spacing from combustible construction. Clearance to combustibles is defined as the minimum distance from the heater to a surface or object for which it is necessary to ensure that a surface temperature of 90°F (50°C) above the surrounding ambient temperature is not exceeded.

	Unit Siz	e (MBTUh)
Heater Surface	30–125	150–400
Surface	Minimum Cleara	ance (Inches (mm))
Тор	1 (25)	4 (102)
Flue connector	6 (152)	6 (152)
Access panel	18 (457)	18 (457)
Non-access side	1 (25)	2 (51)
Bottom*	1 (25)	1 (25)
Rear**	18 (457)	18 (457)
Front	Refer to values for variable X (distant in Heater Throw Distances with S	ce from heater to start of floor coverage) Standard Horizontal Louvers section
Suspend the heater so that the bottom is a	minimum of 5 feet (1.5 meters) above the floor.	
*Measure rear clearance from the fan motor		

### Weights

		Unit Size (MBTUh)											
Туре	30	45	60	75	100	125	150	175, 200	225	250	300	350	400
						Р	ounds (k	g)					
Unit	57 (26)	62 (28)	71 (32)	76 (34)	101 (46)	106 (48)	178 (81)	193 (88)	211 (96)	223 (101)	277 (126)	303 (137)	316 (143)
Shipping	63 (29)	68 (31)	76 (34)	81 (37)	120 (54)	125 (57)	206 (93)	221 (100)	247 (112)	259 (117)	323 (147)	348 (158)	360 (163)

### **Dimensions**



**FRONT VIEW** 

**SIDE VIEW** 

Dimension				Unit Size	t Size (MBTUh)						
(See Graphic	30, 45	60	75	100	125	150, 175, 200	225, 250	300, 350, 400			
Above)				Inche	s (mm)						
Α	13-3/4 (349)	16-3/4	1 (425)	24-3/4	(629)	20-1/8 (511)	26-1/8 (664)	34-1/8 (867)			
В			27 (686)			38-3/1	6 (970)	41 (1041)			
С	10 (254)	13 (	330)	21 (	533)	16 (406)	22 (559)	30 (762)			
D			13-13/16 (351)				23 (584)				
E	29-3/4 (756)	32-23/32 (831)	31-29/32 (810)	34-9/32 (871)	34-9/32 (871)	48-7/16	(1230)	48-29/32 (1243)			
F			25-9/16 (649)				40 (1016)				
G	6 (152)	8-11/1	6 (221)	15-5/16 (389)		9-5/8 (244)	13-1/16 (332)	17-1/16 (433)			
Н			5-15/16 (151)			8-5/16 (211) 8-1/2 (216)					
J	3-1/2 (89)	6 (	152)	8-29/32 (226)		5-3/8 (137)	9 (229)	11-13/16 (300)			
K			3-11/32 (85)			6-1/2	7-5/16 (186)				
M*			17-3/8 (441)			25-11/1	6 (652)	27-11/16 (703)			
N*			1-9/16 (40)				1-13/32 (36)				
P*			4-9/32 (109)				8-1/8 (206)				
Q*			13 (330)				22-3/16 (564	)			
R**			11-9/16 (294)			16-3/8 (416)	15-5/8 (397)	16-1/4 (413)			
S	3-3/4 (95)	4-1/16	6 (103)	5-15/3	2 (139)	5-1/2 (140)	8-1/16 (205)	11-9/16 (294)			
Т	İ		2-15/16 (75)		,	4-1/4 (108)	4-5/16 (110)	4-1/2 (114)			
*Heater suspen	sion points (3/	/8-16 FEM).	•			• • • • • • • • • • • • • • • • • • • •	` ` ` ` `				
			ension (3/8-16 F	EM).							

### **Gas Supply Pressure**

- The unit is equipped for a maximum gas supply pressure of 1/2 psi, 3.5 kPa, or 14 IN WC for natural gas or propane. The minimum supply pressure, as measured while the unit is operating at full fire, is 5 IN WC for natural gas or 11 IN WC for propane.
- Supply pressure higher than 1/2 psi requires the installation of an additional service regulator external to the unit.
- Pressure testing supply piping: For test pressures above 1/2 psi, disconnect the heater and manual valve from
  the gas supply line to be tested and cap or plug the supply line. For test pressures below 1/2 psi, before testing,
  close the manual valve on the heater.

### **Gas Supply Piping**

- All piping must be in accordance with requirements outlined in the *National Fuel Gas Code* (ANSI/Z223.1, latest edition) or the *Natural Gas and Propane Installation Code* (CSA B149.1, latest edition).
- The heater is orificed for operation with natural gas having a heating value of 1,050 (±50) BTU per cubic foot or with propane gas having a heating value of 2,550 (±100) BTU per cubic foot. Sizing of gas supply lines depends on piping capacity and is based on cubic feet per hour based on a 0.3 IN WC pressure drop, a 0.6 specific gravity for natural gas at 1,050 BTU per cubic feet, and a 1.6 specific gravity for propane at 2,550 BTU per cubic feet. If the gas at the installation does not meet this specification, consult the factory for proper orificing.
- Variables for sizing gas supply lines are listed in the table below. When sizing supply lines, consider possibilities
  of future expansion and increased requirements. Refer to the National Fuel Gas Code for additional information
  on line sizing.

					Di	iameter of	Pipe (Inch	es)				
Length	1/2		3/4			1	1-	1/4	1-	1/2		2
of Pipe (Feet)	Natural Gas	Propane	Natural Gas	Propane	Natural Gas	Propane	Natural Gas	Propane	Natural Gas	Propane	Natural Gas	Propane
						Cubic Fee	t per Hou	r				
20	92	56	190	116	350	214	730	445	1100	671	2100	1281
30	73	45	152	93	285	174	590	360	890	543	1650	1007
40	63	38	130	79	245	149	500	305	760	464	1450	885
50	56	34	115	70	215	131	440	268	670	409	1270	775
60	50	31	105	64	195	119	400	244	610	372	1105	674
70	46	28	96	59	180	110	370	226	560	342	1050	641
80	43	26	90	55	170	104	350	214	530	323	990	604
90	40	24	84	51	160	98	320	195	490	299	930	567
100	38	23	79	48	150	92	305	186	460	281	870	531
125	34	21	72	44	130	79	275	168	410	250	780	476
150	31	19	64	39	120	73	250	153	380	232	710	433
175	28	17	59	36	110	67	225	137	350	214	650	397
200	26	16	55	34	100	61	210	128	320	195	610	372

### **Vent Connections**

Vent system methods vary depending on whether the installation is residential or commercial/industrial, whether the vent is dedicated or common, and whether the unit is standard or separated-combustion. Refer to the installation manual provided with the unit and select and follow the venting instructions that apply to the installation only. For venting separated-combustion units, refer to the installation manual provided with the unit as well as the separated-combustion conversion instructions provided with the conversion kit.

# **⚠** CAUTION **⚠**

- When an existing appliance is removed or replaced in a venting system, verify that the venting system is properly sized to vent the new appliance. An improperly sized venting system may result in the formation of condensate, leakage, and/or spillage.
- Do not intermix different vent system parts from different manufacturers in the same venting system.

NOTE: Venting must be in accordance with local codes and with the *National Fuel Gas Code* (ANSI Z223.1) or the *Installation Code for Gas Burning Appliances and Equipment* (CSA B149.1). Local requirements supersede national requirements.

# ⚠ DANGER ⚠

### FIRE OR EXPLOSION HAZARD

- Failure to follow safety warnings exactly could result in serious injury, death, or property damage.
- Improper installation, adjustment, alteration, service, or maintenance can cause serious injury, death, or property damage.
- Installation and service must be performed by a qualified installer, service agency, or the gas supplier.
- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

### WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- · Leave the building immediately.
- Immediately call your gas supplier from a phone remote from the building. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

## For more information on Reznor HVAC products:

- Contact your local Reznor representative at 1-800-695-1901
- Refer to the manuals and additional consumer materials found at www.reznorhvac.com



