Product Catalog

Horizon™ Outdoor Air Unit

Models: OABD, OABE, OABF, OADG, OAND, OANE, OANF, OANG

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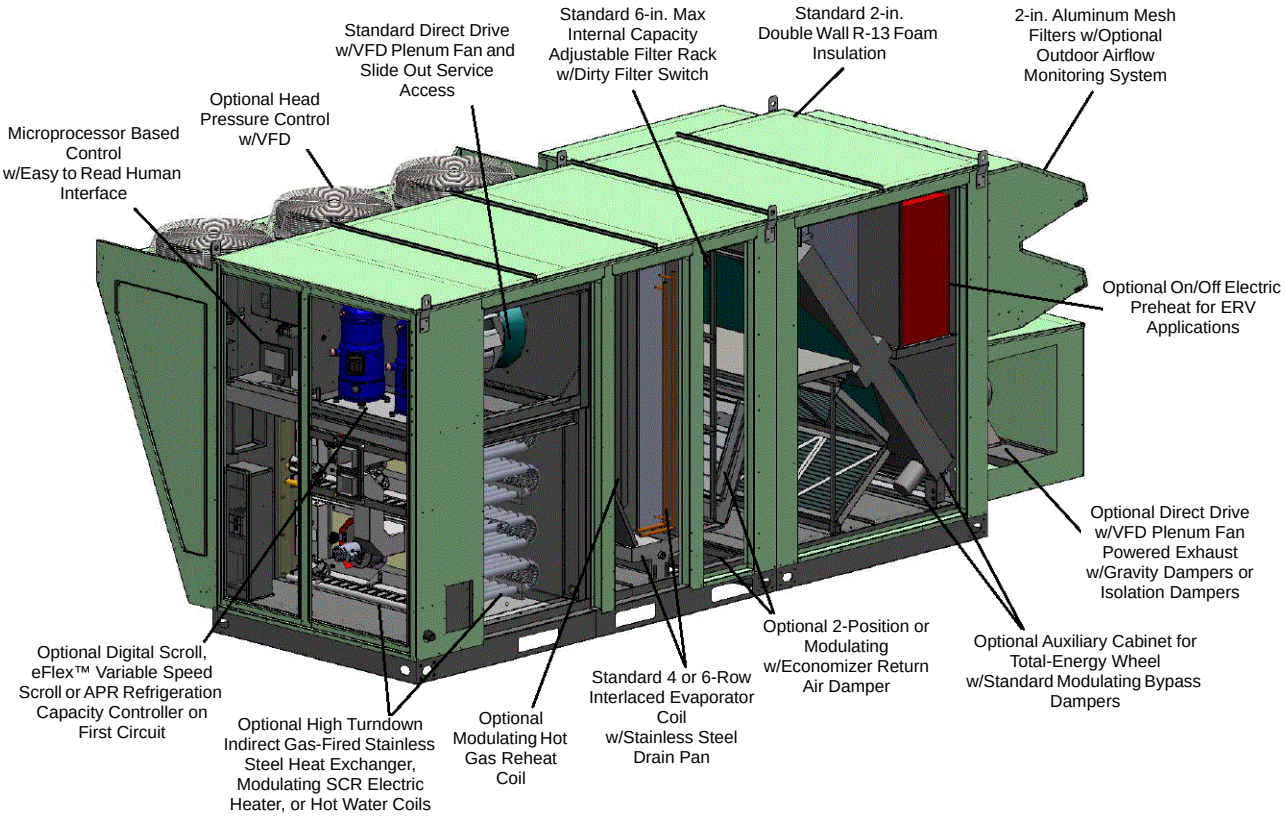
Introduction

The Horizon Outdoor Air Unit

The Trane Horizon™ Outdoor Air DX and Water Source Heat Pump Units for 100 percent outdoor air or dew point design applications lead the industry in:

- Indoor Air Quality (IAQ) Features
- Moisture Management
- High Quality and Durability
- Advanced Controls



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Model Number Descriptions

Horizon Outdoor Air Unit

Model: OAN Rev5

Digit 1, 2 — Unit Type

OA = Outdoor Air

Digit 3 — Cabinet Size

N = 3,750 – 13,500 CFM

Digit 4 — Major Design Sequence

C = Revision 4
D = Revision 5
E = Heat Pump
F = Indoor WSHP

Digit 5, 6, 7 — Normal Gross Cooling Capacity (MBh)

000 = No Cooling
360 = 30 Tons High Efficiency
420 = 35 Tons High Efficiency
480 = 40 Tons High Efficiency
540 = 45 Tons High Efficiency
600 = 50 Tons High Efficiency
648 = 54 Tons High Efficiency
720 = 60 Tons High Efficiency

Digit 8 — Minor Design Sequence

A = Vertical Discharge/Vertical Return
B = Vertical Discharge/ Horizontal Return
C = Horizontal Discharge/ Vertical Return
D = Horizontal Discharge/ Horizontal Return
E = Vertical Discharge/No Return
F = Horizontal Discharge/No Return
G = Vertical Discharge/ Split Vertical Return-Exhaust
H = Horizontal Discharge/ Split Vertical Return-Exhaust

Digit 9 — Voltage Selection

3 = 208-230/60/3
4 = 460/60/3
5 = 575/60/3

Digit 10 — Reserved for Future Use

Digit 11 — Evaporator Type

0 = No Cooling
B = DX 4-Row
C = DX 4-Row Interlaced
D = DX 6-Row Interlaced
F = Glycol/Chilled Water Coil

Digit 12 — Hot Gas Reheat

0 = No HGRH
1 = Fin and Tube Modulating
2 = Fin and Tube On/Off

Digit 13 — Compressor

0 = No Compressors
A = Scroll Compressors
B = Digital Scroll (1st Circuit Only)
C = Digital Scroll (1st and 2nd Circuit)
D = Variable Speed Scroll (1st Circuit Only)
E = Variable Speed Scroll (1st and 2nd Circuit)
F = Scroll Compressors w/Sound Attenuation Package
G = Digital Scroll (1st Circuit Only) w/Sound Attenuation Package
H = Digital Scroll (1st Circuit and 2nd Circuit) w/Sound Attenuation Package
J = Variable Speed Scroll (1st Circuit Only) w/Sound Attenuation Package
K = Variable Speed Scroll (1st Circuit and 2nd Circuit) w/Sound Attenuation Package
L = Variable Speed Scroll (1st Circuit), Digital Scroll (2nd Circuit)
M = Variable Speed Scroll (1st Circuit), Digital Scroll (2nd Circuit) w/Sound Attenuation Package

Digit 14 — Condenser

0 = No Condenser
1 = Air-Cooled Fin and Tube
2 = Air-Cooled Fin and Tube w/Head Pressure On/Off Control
3 = Water Cooled DX Condenser Copper/Steel
4 = Air-Cooled Fin and Tube w/Head Pressure Variable Speed
8 = Water Cooled DX Condenser Copper/Nickel

Digit 15 — Refrigerant Capacity Control

0 = No RCC Valve
A = RCC Valve on 1st Circuit
G = Low GWP Refrigerant and No RCC Valve
H = Low GWP Refrigerant and RCC Valve on 1st Circuit
J = Low GWP Refrigerant and RCC Valve on 1st and 2nd Circuit

Digit 16 — Indoor Fan Motor (IFM)

0 = Direct Drive w/VFD
1 = Direct Drive (VFD by Others)
4 = Direct Drive w/Shaft Grounding Ring w/VFD
5 = Special Motor Option

Digit 17 — Indoor Fan Wheel

A = 120
B = 120.6
C = 140
D = 140.6
E = 160
F = 160.6
G = 180
H = 180.6
J = 200
K = 200.6
L = 180 × 2
M = 180.6 × 2

Digit 18 — Indoor Fan Motor Power (hp)

E = 1 hp –1800 rpm
F = 1 hp – 3600 rpm
G = 1.5 hp – 1800 rpm
H = 1.5 hp – 3600 rpm
J = 2 hp – 1800 rpm
K = 2 hp – 3600 rpm
L = 3 hp – 1800 rpm
M = 3 hp – 3600 rpm
N = 5 hp – 1800 rpm
P = 5 hp – 3600 rpm
R = 7.5 hp – 1800 rpm
S = 7.5 hp – 3600 rpm
T = 10 hp – 1800 rpm
U = 10 hp – 3600 rpm
V = 15 hp – 1800 rpm
W = 15 hp – 3600 rpm

Digit 19 — Reserved for Future Use

Digit 20 — Heat Type (PRI/SEC)

0 = No Heat
A = Indirect-Fired (IF)
C = Electric – Stage
D = Electric – SCR Modulating
G = Dual Fuel (PRI-IF/SEC-ELEC-STAGED)
H = Dual Fuel (PRI-ELEC-SCR/SEC-ELEC-STAGED)
J = Hot Water
L = No Primary Heat, Secondary (ELEC-STAGED)
N = Dual Fuel (PRI-ELEC-STAGED/ SEC-ELEC)
Q = Dual Fuel (PRI-HW/SEC-ELEC-STAGED)

Digit 21 — Primary Fuel Type

0 = No Heat
1 = Natural Gas
2 = Propane
3 = Electric – Open Coil
5 = Hot Water
7 = Natural Gas - 81% Eff.
8 = Propane - 81% Eff.

Digit 22 — Heat Capacity (Primary Heat Source)

		IF	ELEC	Hot Water
0	=	No Heat	No Heat	No Heat
A	=	50 MBh	10 kW	1 Row/10 FPI
B	=	75 MBh	20 kW	1 Row/12 FPI
C	=	100 MBh	24 kW	1 Row/14 FPI
D	=	125 MBh	28 kW	2 Row/10 FPI
E	=	150 MBh	32 kW	2 Row/12 FPI
F	=	200 MBh	40 kW	2 Row/14 FPI
G	=	250 MBh	48 kW	3 Row/10 FPI
H	=	300 MBh	60 kW	3 Row/12 FPI
J	=	350 MBh	68 kW	3 Row/14 FPI
K	=	400 MBh	79 kW	
L	=	500 MBh	99 kW	
M	=	600 MBh	111 kW	
N	=	700 MBh	119 kW	
O	=		111 kW	
P	=	800 MBh	139 kW	
R	=	1000 MBh	159 kW	
S	=		179 kW	
T	=		199 kW	
U	=		215 kW	
X	=	Special Heater Option		

Digit 23 — Heat Capacity (Secondary Heat Source)

		IF	ELEC
0	=	No Secondary Heat	No Secondary Heat
A	=	50 MBh	10 kW
B	=	75 MBh	20 kW
C	=	100 MBh	24 kW
D	=	125 MBh	28 kW
E	=	150 MBh	32 kW
F	=	200 MBh	40 kW
G	=	250 MBh	48 kW
H	=	300 MBh	60 kW
J	=	350 MBh	68 kW
K	=	400 MBh	79 kW
L	=	500 MBh	99 kW
M	=	600 MBh	111 kW
N	=	700 MBh	119 kW
P	=	800 MBh	139 kW
R	=	1000 MBh	159 kW
S	=		179 kW
T	=		199 kW
U	=		215 kW

Digit 24 — Corrosive Environment Package

0 = No Corrosive Package
1 = S/S Interior, S/S Evap Coil Casing
2 = S/S Interior, Eco Coated Coils
3 = S/S Interior, Copper/Copper Evap Coil
4 = S/S Coil Casing
5 = S/S Interior Casing
6 = Eco-Coated Coils
7 = S/S Coil Casing with Eco-Coated Coils
8 = Copper/Copper Evap, HGRH Coils
9 = Corrosion Resistant Package

Digit 25, 26 — Unit Controls

00 = Non-DDC – Electromechanical
AC = Trane – Discharge Air Control w/BACnet® (No Display)
AD = Trane – Space Control w/BACnet (No Display)
AF = Trane – Discharge Air Control w/BACnet w/Display
AG = Trane – Space Control w/BACnet w/Display
AL = Trane – Multi-Zone VAV Control w/BACnet w/Display
AN = Trane – Multi-Zone VAV Control w/BACnet (No Display)
AP = Trane – Single-Zone VAV Control w/BACnet w/Display
AR = Trane – Single-Zone VAV Control w/BACnet (No Display)
BB = Trane – Space Control w/BACnet (No Display) w/Thumbwheel
BC = Trane – Space Control w/BACnet w/Display w/Thumbwheel
BG = Trane – Single-Zone VAV Control w/BACnet w/Display w/ Thumbwheel
BJ = Trane – Single-Zone VAV Control w/BACnet (No Display) w/ Thumbwheel
CA = Trane – Lab Space Control w/ BACnet (No Display)
CB = Trane – Lab Space Control w/ BACnet w/Display
CC = Trane – Lab Discharge Air Control w/BACnet (No Display)
CD = Trane – Lab Discharge Air Control w/BACnet w/Display
CE = Trane – Lab Multi-Zone VAV Control w/BACnet (No Display)
CF = Trane – Lab Multi-Zone VAV Control w/BACnet w/Display
CG = Trane – Lab Space Control w/ BACnet (No Display) w/ Thumbwheel
CH = Trane – Lab Space Control w/ BACnet w/Display w/Thumbwheel
DA = Trane – Horizon Thrive Control w/ BACnet (No Display)
DB = Trane – Horizon Thrive Control w/ BACnet w/Display
XX = Control Special

Digit 27 — Powered Exhaust Fan Motor (PFM) and Exhaust Dampers

0 = No Powered Exhaust
1 = Direct Drive w/VFD and Gravity Dampers
2 = Direct Drive (VFD by Others)
5 = Special Motor Option
6 = Direct Drive w/VFD and Barometric Relief Damper
7 = Direct Drive w/VFD and Isolation Dampers w/End Switch
8 = Barometric Relief Dampers (NO PFM)

Digit 28 — Powered Exhaust Fan Wheel

0 = No Powered Exhaust
A = 120
B = 120.6
C = 140
D = 140.6
E = 160
F = 160.6
G = 180
H = 180.6
J = 200
K = 200.6
L = 180 × 2
M = 180.6 × 2

Digit 29 — Powered Exhaust Fan Motor Power

0 = No Powered Exhaust
E = 1 hp – 1800 rpm
F = 1 hp – 3600 rpm
G = 1.5 hp – 1800 rpm
H = 1.5 hp – 3600 rpm
J = 2 hp – 1800 rpm
K = 2 hp – 3600 rpm
L = 3 hp – 1800 rpm
M = 3 hp – 3600 rpm
N = 5 hp – 1800 rpm
P = 5 hp – 3600 rpm
R = 7.5 hp – 1800 rpm
S = 7.5 hp – 3600 rpm
T = 10 hp – 1800 rpm
U = 10 hp – 3600 rpm
V = 15 hp – 1800 rpm
W = 15 hp – 3600 rpm

Digit 30 — UC600 Hardware Template

- = Prior to v8.0
1 = v8.X, v9.X, or v10.X
2 = v11.0 / Thrive v2.1
3 = v11.1 - v11.3 / Thrive v2.1
4 = v12.0 / Thrive v2.2
5 = v12.1 / Thrive v2.3

Digit 31 — ERV (Requires Powered Exhaust)

0 = No ERV
A = ERV – Composite Construction
B = ERV – Composite Construction with Frost Protection w/VFD
C = ERV – Composite Construction with Bypass
D = ERV – Composite Construction with Frost Protection and Bypass
E = ERV – Aluminum Construction
F = ERV – Aluminum Construction with Frost Protection w/VFD

G = ERV – Aluminum Construction with Bypass
H = ERV – Aluminum Construction with Frost Protection and Bypass

Digit 32 — ERV Size

0 = No ERV
4 = 4634
5 = 5856
6 = 6488
7 = 6876
8 = 74122

Digit 33 — Damper Options

0 = 100% OA 2-Position Damper
1 = 100% OA 2-Position Damper w/RA 2-Position Damper
2 = Modulating OA and RA Dampers w/Economizer
3 = 100% OA 2-Position Damper – Class 1A
4 = 100% OA 2-Position Damper w/RA 2-Position Damper – Class 1A
5 = Modulating OA and RA Dampers w/Economizer – Class 1A
6 = 100% RA Opening (No Damper)
7 = 100% RA w/ 2-Position Damper
8 = 100% RA w/ 2-Position Damper – Class 1A

Digit 34 — Filtration Options

A = Aluminum Mesh Intake Filters (ALM)
B = MERV-8,30%, and ALM
C = MERV-13, 80%, and ALM
D = MERV-14, 95%, and ALM
E = MERV-8 30%, MERV-13 80%, and ALM
F = MERV-8 30%, MERV-14 95%, and ALM
G = MERV-8, 30%, and ALM, with UVC
H = MERV-13, 80%, and ALM, with UVC
J = MERV-14, 95%, and ALM, with UVC
K = MERV-8 30%, MERV-13 80%, ALM, and UVC
L = MERV-8 30%, MERV-14 95%, ALM, and UVC
X = Special Filter Options

Digit 35 — Smoke Detector (Factory-Installed)

0 = No Smoke Detector
1 = Supply Smoke Detector
2 = Return Smoke Detector
3 = Supply and Return Smoke Detectors

Digit 36 — Electrical Options

0 = Non-Fused Disconnect
A = Fused Disconnect Switch
B = Non-Fused Disconnect Switch w/Convenience Outlet
C = Fused Disconnect Switch w/Convenience Outlet
D = Dual Point Power
E = Dual Point Power w/Convenience Outlet
F = 65 SCCR Electrical Rating w/Non-Fused Disconnect
G = 65 SCCR Electrical Rating w/Fused Disconnect
H = 65 KAIC Electrical Rating w/Non-Fused Disconnect
J = 65 KAIC Electrical Rating w/Fused Disconnect
K = 65 KAIC Non-Fused w/Convenience Outlet
L = 65 KAIC Fused w/Convenience Outlet
M = 65 SCCR Non-Fused w/Convenience Outlet

Digit 37 — Airflow Monitoring

0 = No Airflow Monitoring
1 = Airflow Monitoring – IFM Piezo Ring
2 = Airflow Monitoring – PE Piezo Ring
3 = Airflow Monitoring – Outdoor Air with Display and IFM w/Piezo Ring
4 = Airflow Monitoring – IFM Piezo Ring and PE Piezo Ring
5 = Airflow Monitoring – Outdoor Air Monitoring w/Display Supply Air and Exhaust Air w/Piezo Rings

Digit 38 — Accessories

0 = No Options
A = Hailguards
B = LED Service Light
C = Hailguards and LED Service Light
D = LED Service Light in Exhaust Fan Section
E = LED Service Light in Supply and Exhaust Fan Section
F = Hailguards and LED Service Light in Exhaust Fan Section
G = Hailguards and LED Service Light in Supply and Exhaust Fan Section

Digit 39 — Altitude

0 = Sea Level to 1,000 Feet
1 = 1,001 to 2,000 Feet
2 = 2,001 to 3,000 Feet
3 = 3,001 to 4,000 Feet
4 = 4,001 to 5,000 Feet
5 = 5,001 to 6,000 Feet
6 = 6,001 to 7,000 Feet
7 = Above 7,000 Feet

Horizon Outdoor Air Unit

Model: OADG Rev6 and OANG Rev6

Digit 1, 2 — Unit Type

OA = Outdoor Air

Digit 3 — Cabinet Size

D = 1,250 – 8,000 CFM
N = 5,000 – 20,000 CFM

Digit 4 — Major Design Sequence

G = Revision 6

Digit 5, 6, 7 — Normal Gross Cooling Capacity (MBh)

000 = No DX Cooling
010 = 10 Tons High Efficiency
012 = 12 Tons High Efficiency
015 = 15 Tons High Efficiency
017 = 17 Tons High Efficiency
020 = 20 Tons High Efficiency
025 = 25 Tons High Efficiency
030 = 30 Tons High Efficiency
040 = 40 Tons High Efficiency
045 = 45 Tons High Efficiency
050 = 50 Tons High Efficiency
055 = 55 Tons High Efficiency
060 = 60 Tons High Efficiency
065 = 65 Tons High Efficiency
070 = 70 Tons High Efficiency
075 = 75 Tons High Efficiency
080 = 80 Tons High Efficiency

Digit 8 — Airflow Configuration

A = Vertical Discharge/No Return
B = Horizontal Discharge/No Return
C = Vertical Discharge/Vertical Return
D = Vertical Discharge/Horizontal Return/Exhaust
E = Horizontal Discharge/Vertical Return/Exhaust
F = Horizontal Discharge/Horizontal Return/Exhaust
G = Vertical Discharge/Vertical Return/Vertical Exhaust
H = Vertical Discharge/Vertical Return/Horizontal Exhaust
J = Vertical Discharge/Horizontal Return/Vertical Exhaust
K = Vertical Discharge/Horizontal Return/Horizontal Exhaust
L = Horizontal Discharge/Vertical Return/Vertical Exhaust
M = Horizontal Discharge/Vertical Return/Horizontal Exhaust
N = Horizontal Discharge/Horizontal Return/Vertical Exhaust
P = Horizontal Discharge/Horizontal Return/Horizontal Exhaust

Digit 9 — Voltage Selection

1 = 208/60/3
2 = 230–240/60/3
3 = 460/60/3
4 = 575/60/3

Digit 10 — Not Used

Digit 11 — Indoor Coil Type

0 = No Indoor Coil
C = DX 4-Row
D = DX 6-Row
F = Glycol/Chilled Water Coil – 4-Row
G = Glycol/Chilled Water Coil – 6-Row
H = Glycol/Chilled Water Coil with Cooney Freeze Block Technology – 4-Row
J = Glycol/Chilled Water Coil with Cooney Freeze Block Technology – 6-Row

Digit 12 — Reheat

0 = No Reheat
A = Fin and Tube Modulating HGRH
B = Fin and Tube On/Off HGRH

Digit 13 — Compressor

0 = No Compressor
A = Scroll Compressors
B = Digital Scroll – 1st Circuit Only
C = Digital Scroll – 1st Circuit and 2nd Circuit
D = eFlex™ – 1st Circuit Only
E = eFlex™ – 1st Circuit and 2nd Circuit
F = eFlex™ – 1st Circuit, Digital Scroll-2nd Circuit

Digit 14 — Outdoor Coil

0 = No Condenser
1 = Air-cooled Fin and Tube
3 = Water-cooled Copper/Nickel
4 = Water-cooled Copper/Steel
5 = ASHP Fin and Tube
7 = WSHP Copper/Nickel
8 = WSHP Copper/Steel

Digit 15 — Refrigerant Capacity Control

0 = No RCC Valve
1 = RCC Valve on 1st Circuit
2 = RCC Valve on 1st and 2nd Circuit
G = Low GWP Refrigerant and No RCC Valve
H = Low GWP Refrigerant and RCC Valve on 1st Circuit
J = Low GWP Refrigerant and RCC Valve on 1st and 2nd Circuit

Digit 16 — Heat Type — Primary

0 = No Heat
A = Indirect Fired NG (IF) – Standard Efficiency (80%)
B = Indirect Fired NG (IF) – High Efficiency (82%)
C = Indirect Fire NG (IF) – Premium Efficiency (+90%)
D = Indirect Fired LP (IF) – Standard Efficiency (80%)
E = Indirect Fired LP (IF) – High Efficiency (82%)
F = Indirect Fire LP (IF) – Premium Efficiency (+90%)
G = Hot Water
H = Electric – Staged
J = Electric – SCR Modulating
Q = Hot Water – Eco Coated Coils
R = Hot Water – S/S Coil Casing
S = Hot Water – S/S Coil Casing with Eco Coated Coils

Digit 17 — Heat Capacity — Primary

		IF	ELEC	HOT WATER
0	=	No Heat		
A	=	50 MBh	5 kW	1 Row/10 FPI
B	=	75 MBh	10 kW	1 Row/12 FPI
C	=	100 MBh	15 kW	1 Row/14 FPI
D	=	125 MBh	20 kW	2 Row/10 FPI
E	=	150 MBh	24 kW	2 Row/12 FPI
F	=	200 MBh	28 kW	2 Row/14 FPI
G	=	250 MBh	32 kW	3 Row/10 FPI
H	=	300 MBh	40 kW	3 Row/12 FPI
J	=	350 MBh	48 kW	3 Row/14 FPI
K	=	400 MBh	60 kW	
L	=	500 MBh	68 kW	
M	=	500 MBh (Dual 250)	79 kW	
N	=	600 MBh	99 kW	
P	=	600 MBh (Dual 300)	111 kW	
R	=	800 MBh	119 kW	
S	=	800 MBh (Dual 400)	139 kW	
T	=	1000 MBh	159 kW	
U	=	1000 MBh (Dual 500)	179 kW	
V	=	1200 MBh	199 kW	
W	=		215 kW	
Y	=		230 kW	
Z	=		250 kW	

Digit 18 — Heat Type — Secondary

0 = No Secondary Heat
4 = Electric – Staged
5 = Electric – SCR Modulating

Digit 19 — Heat Capacity — Secondary

0 = No Secondary Heat
A = 5 kW
B = 10 kW
C = 15 kW
D = 20 kW
E = 24 kW
F = 28 kW
G = 32 kW
H = 40 kW
J = 48 kW
K = 60 kW
L = 68 kW
M = 79 kW
N = 99 kW
P = 111 kW
R = 119 kW

Digit 20 — Not Used

Digit 21 — Supply Fan Motor

A = 1 hp – 1800 rpm
B = 1 hp – 3600 rpm
C = 1.5 hp – 1800 rpm
D = 1.5 hp – 3600 rpm
E = 2 hp – 1800 rpm
F = 2 hp – 3600 rpm
G = 3 hp – 1800 rpm
H = 3 hp – 3600 rpm
J = 5 hp – 1800 rpm
K = 5 hp – 3600 rpm
L = 7.5 hp – 1800 rpm
M = 7.5 hp – 3600 rpm
N = 10 hp – 1800 rpm
P = 10 hp – 3600 rpm
R = 15 hp – 1800 rpm
S = 15 hp – 3600 rpm
T = 20 hp – 1800 rpm
U = 20 hp – 3600 rpm

Digit 22 — Supply Fan Motor Type

1 = Direct Drive w/VFD
2 = Direct Drive (VFD by Others)
3 = Direct Drive w/Shaft Grounding Ring w/VFD

Digit 23, 24 — Supply Fan Wheel Diameter

AA = 12-in. Wheel
AB = 12-in. – 60% Width Wheel
AC = 14-in. Wheel
AD = 14-in. – 60% Width Wheel
AE = 16-in. Wheel
AF = 16-in. – 60% Width Wheel
AG = 18-in. Wheel
AH = 18-in. – 60% Width Wheel
AJ = 20-in. Wheel
AK = 20-in. – 60% Width Wheel
AL = 22-in. Wheel
AM = 22-in. – 60% Width Wheel
AN = 25-in. Wheel
AP = 25-in. – 60% Width Wheel
BG = Dual 18-in. Wheel
BH = Dual 18-in. – 60% Width Wheel
BJ = Dual 20-in. Wheel
BK = Dual 20-in. – 60% Width Wheel
BL = Dual 22-in. Wheel
BM = Dual 22-in. – 60% Width Wheel
BN = Dual 25-in. Wheel
BP = Dual 25-in. – 60% Width Wheel

Digit 25 — Exhaust Fan Motor

0 = No Powered Exhaust
A = 1 hp – 1800 rpm
B = 1 hp – 3600 rpm
C = 1.5 hp – 1800 rpm
D = 1.5 hp – 3600 rpm
E = 2 hp – 1800 rpm
F = 2 hp – 3600 rpm
G = 3 hp – 1800 rpm
H = 3 hp – 3600 rpm
J = 5 hp – 1800 rpm
K = 5 hp – 3600 rpm
L = 7.5 hp – 1800 rpm
M = 7.5 hp – 3600 rpm
N = 10 hp – 1800 rpm
P = 10 hp – 3600 rpm
R = 15 hp – 1800 rpm
S = 15 hp – 3600 rpm
T = 20 hp – 1800 rpm
U = 20 hp – 3600 rpm

Digit 26 — Exhaust Fan Motor Type

0 = No Powered Exhaust
1 = Direct Drive w/VFD
2 = Direct Drive (VFD by Others)
3 = Direct Drive w/Shaft Grounding Ring w/VFD

Digit 27, 28 — Exhaust Fan Wheel Diameter

00 = No Powered Exhaust
AA = 12-in. Wheel
AB = 12-in. – 60% Width Wheel
AC = 14-in. Wheel
AD = 14-in. – 60% Width Wheel
AE = 16-in. Wheel
AF = 16-in. – 60% Width Wheel
AG = 18-in. Wheel
AH = 18-in. – 60% Width Wheel
AJ = 20-in. Wheel
AK = 20-in. – 60% Width Wheel
AL = 22-in. Wheel
AM = 22-in. – 60% Width Wheel
AN = 25-in. Wheel
AP = 25-in. – 60% Width Wheel
BG = Dual 18-in. Wheel
BH = Dual 18-in. – 60% Width Wheel
BJ = Dual 20-in. Wheel
BK = Dual 20-in. – 60% Width Wheel
BL = Dual 22-in. Wheel
BM = Dual 22-in. – 60% Width Wheel
BN = Dual 25-in. Wheel
BP = Dual 25-in. – 60% Width Wheel

Digit 29 — Airflow Monitoring

0 = No Piezo Ring
1 = Supply Fan Piezo Ring
2 = Exhaust Fan Piezo Ring
3 = Supply Fan Piezo Ring and Exhaust Fan Piezo Ring

Digit 30 — Not Used

Digit 31 — Unit Controls

0 = No Controls
1 = Space Control
2 = Discharge Air Control
3 = Multi-Zone VAV
4 = Single-Zone VAV
5 = Trane – Lab Space Control
6 = Trane – Lab Discharge Air Control
7 = Trane – Lab Multi-Zone VAV Control
8 = Horizon Thrive Control

Digit 32 — Building Interface

0 = No Controls
1 = BACnet®

Digit 33 — Filter Options

0 = No Filters
A = MERV-8, 30%
B = MERV-13, 80%
C = MERV-14, 95%
D = MERV-8 30%, MERV-13 80%
E = MERV-8 30%, MERV-14 95%

Digit 34 — Energy Recovery

0 = No Energy Recovery
1 = ERV – Composite Construction with Bypass for Frost Protection
2 = ERV – Composite Construction with Frost Protection w/VFD
3 = ERV – Aluminum Construction with Bypass for Frost Protection
4 = ERV – Aluminum Construction with Frost Protection w/VFD

Digit 35 — Energy Recover Option, Purge

0 = No Purge
1 = Purge

Digit 36 — Energy Recover Wheel Size

0 = No ERV
A = 3014
B = 3622
C = 4136
D = 4634
E = 5262
F = 5856
G = 6488
H = 6876
J = 74122
K = 81146
L = 86170
M = 92180

Digit 37 — Energy Recovery Option, Rotation Sensor

0 = No Rotation Sensor
1 = Rotation Sensor

Digit 38 — Damper Options

1 = 100% OA 2-Position Damper
2 = 100% OA 2-Position Damper w/RA 2-Position Damper
3 = Modulating OA and RA Dampers w/Economizer
4 = Modulating OA Damper
5 = Manually Adjusted OA Damper
6 = 100% RA Opening (No Damper)
7 = 100% RA w/ 2-Position Damper

Digit 39 — Exhaust Dampers

0 = No Exhaust Dampers
A = Gravity Dampers
B = Isolation Dampers
C = Barometric Relief Dampers

Digit 40 — Not Used

Digit 41 — Electrical Options

0 = Terminal Block – No Factory Installed Disconnect
A = Non-Fused Disconnect
B = Fused Disconnect Switch
C = 65 SCCR Electrical Rating w/Non-Fused Disconnect
D = 65 SCCR Electrical Rating w/Fused Disconnect
E = 65 KAIC Electrical Rating w/Non-Fused Disconnect
F = 65 KAIC Electrical Rating w/Fused Disconnect
G = Dual Point Power
H = Dual Point Power 65 KAIC
J = Dual Point Power 65 SCCR

Digit 42 — Corrosive Environment Package

0 = No Corrosive Package
A = Eco Coated Coils
B = S/S Interior
C = S/S Coil Casing
D = S/S Coil Casing with Eco Coated Coils
E = S/S Interior, Eco Coated Coils
F = Corrosion Resistant Package

Digit 43 — Outdoor Air Monitoring

0 = No Outdoor Air Monitoring
1 = Airflow Probes

Digit 44 — Condenser Fan Options

0 = No Condenser Fans
A = Standard Condenser Fan
B = Passive Head Pressure Control
C = Active Head Pressure Control
D = ECM Condenser Fans with Active Head Pressure Control
E = ECM Condenser Fans with Active Head Pressure Control for Sound Attenuation

Digit 45 — Compressor Sound Blankets and Sound Attenuation

0 = No Sound Attenuation Package
A = Compressor Sound Blankets
B = Compressor Sound Blankets with Sound Attenuation Condenser Fans

Digit 46 — Smoke Detector

0 = No Smoke Detector
1 = Supply Smoke Detector
2 = Return Smoke Detector
3 = Supply and Return Smoke Detector
4 = Supply Smoke Detector (Factory Provided/Field Installed)
5 = Return Smoke Detector (Factory Provided/Field Installed)
6 = Supply and Return Smoke Detector (Factory Provided/Field Installed)

Digit 47 — Hailguards

0 = No Hailguards
A = Hailguards
B = Outdoor Coil Wind Blockers

Digit 48 — Service Lights

0 = No Service Lights
A = Supply Fan Section Service Light
B = Exhaust Fan Section Service Light
C = Supply and Exhaust Fan Section Service Light

Digit 49 — UV Lights

0 = No UV Lights
1 = UV Lights

Digit 50 — Not Used

Digit 51 — Unit Installation Location

A = Outdoor
B = Indoor

Digit 52 — Convenience Outlet

0 = No Convenience Outlet
A = Convenience Outlet

Digit 53 — Controls Display

0 = No Display
1 = TD7 Factory Installed
2 = TD7 Remote Mounted

Digit 54 — Cooling Controls

0 = No ReliaTel™
A = ReliaTel™
B = ReliaTel™ with BCIR Card

Digit 55 — Face and Bypass on Indoor Coil

0 = No Face and Bypass

Digit 56 — Thermostat

0 = No Thermostat
1 = Thumbwheel Thermostat

Digit 57 — Altitude

0 = Sea Level to 1000 Feet
1 = 1001 to 2000 Feet
2 = 2001 to 3000 Feet
3 = 3001 to 4000 Feet
4 = 4001 to 5000 Feet
5 = 5001 to 6000 Feet
6 = 6001 to 7000 Feet
7 = Above 7000 Feet

Digit 58 — Condensate Overflow Switch

0 = No Condensate Overflow Switch
A = Condensate Overflow Switch

Digit 59 — Frostat

0 = No Frostat™
A = Frostat™ Installed

Digit 60 — Not Used

Digit 61 — Outdoor Coil Fluid Type

0 = None
1 = Water
2 = Ethylene Glycol
3 = Propylene Glycol
4 = Methanol
5 = Other

Digit 62 — Minimum Damper Leakage

0 = Standard
1 = Class 1A

Digit 63, 64 — UC600 Hardware Template

00 = Prior to Hardware Template
AA = v7.X
AB = v8.X
AC = v9.X
AD = v10.0
AE = v11.0 / Thrive v2.1
AF = v11.1 / Thrive v2.1
AG = v11.2 / Thrive v2.1
AH = v11.3 / Thrive v2.1
AK = v12.0 / Thrive v2.2
AL = v12.1 / Thrive v2.3

Digit 65, 66, 67, 68, 69 — Reserved for Future Use

Horizon Outdoor Air Unit

Model: OAB Rev5

Digit 1, 2 — Unit Type

OA = Outdoor Air

Digit 3 — Cabinet Size

B = 500 – 3,000 CFM

Digit 4 — Major Design Sequence

D = Revision 1
E = Heat Pump
F = Indoor WSHP

Digit 5, 6, 7 — Normal Gross Cooling Capacity (MBh)

000 = No Cooling
036 = 3 Tons High Efficiency
048 = 4 Tons High Efficiency
060 = 5 Tons High Efficiency
072 = 6 Tons High Efficiency
084 = 7 Tons High Efficiency
096 = 8 Tons High Efficiency
108 = 9 Tons High Efficiency

Digit 8 — Minor Design Sequence

A = Vertical Discharge/Vertical Return
B = Vertical Discharge/Horizontal Return
C = Horizontal Discharge/Vertical Return
D = Horizontal Discharge/Horizontal Return
E = Vertical Discharge/No Return
F = Horizontal Discharge/No Return

Digit 9 — Voltage Selection

3 = 208-230/60/3
4 = 460/60/3
5 = 575/60/3

Digit 10 — Reserved for Future Use

Digit 11 — Evaporator Type

0 = No Cooling
B = DX 4-Row
C = DX 4-Row Interlaced
D = DX 6 Row Interlaced
F = Glycol/Chilled Water Coil

Digit 12 — Hot Gas Reheat

0 = No HGRH
1 = Fin and Tube Modulating
2 = Fin and Tube On/Off

Digit 13 — Compressor

0 = No Compressors
A = Scroll Compressors
B = Digital Scroll (1st Circuit Only)
C = Digital Scroll (1st Circuit and 2nd Circuit)
D = Variable Speed Scroll (1st Circuit Only)
E = Variable Speed Scroll (1st Circuit and 2nd Circuit)
F = Scroll Compressors w/Sound Attenuation Package
G = Digital Scroll (1st Circuit Only) w/Sound Attenuation Package
H = Digital Scroll (1st Circuit and 2nd Circuit) w/Sound Attenuation Package
J = Variable Speed Scroll (1st Circuit Only) w/Sound Attenuation Package
K = Variable Speed Scroll (1st Circuit and 2nd Circuit) w/Sound Attenuation Package
L = Variable Speed Scroll (1st Circuit), Digital Scroll (2nd Circuit)
M = Variable Speed Scroll (1st Circuit), Digital Scroll (2nd Circuit) w/Sound Attenuation Package

Digit 14 — Condenser

0 = No Condenser
1 = Air Cooled Fin and Tube
2 = Air Cooled Fin and Tube w/Head Pressure On/Off Control
3 = Water Cooled DX Condenser Copper/Steel
4 = Air Cooled Fin and Tube w/Head Pressure Variable Speed
8 = Water Cooled DX Condenser Copper/Nickel

Digit 15 — Refrigerant Capacity Control

0 = No RCC Valve
A = RCC Valve on 1st Circuit
B = RCC Valve on 1st and 2nd Circuit
G = Low GWP Refrigerant and No RCC Valve
H = Low GWP Refrigerant and RCC Valve on 1st Circuit
J = Low GWP Refrigerant and RCC Valve on 1st and 2nd Circuit

Digit 16 — Indoor Fan Motor (IFM)

1 = Direct Drive w/VFD
4 = Special Motor Option

Digit 17 — Indoor Fan Wheel

J = 120.6
K = 140.6
L = 100.6

Digit 18 — Indoor Fan Motor (hp)

	ECM	BELT DRIVE	DIRECT DRIVE
E =			1 hp – 1800 rpm
F =			1 hp – 3600 rpm
G =			1.5 hp – 1800 rpm
H =			1.5 hp – 3600 rpm
J =			2 hp – 1800 rpm
K =			2 hp – 3600 rpm
L =			3 hp – 1800 rpm
M =			3 hp – 3600 rpm
N =			5 hp – 1800 rpm
P =			5 hp – 3600 rpm

Digit 19 — Reserved for Future Use

Digit 20 — Heat Type (PRI/SEC)

0 = No Heat
A = Indirect Fired (IF)
C = Electric – Staged
D = Electric – SCR Modulating
G = Dual Fuel (PRI-IF/SEC-ELEC-STAGED)
H = Dual Fuel (PRI-ELEC-SCR/SEC-ELEC-STAGED)
J = Hot water (HW)
L = No Primary Heat, Secondary ELEC-STAGED
N = Dual Fuel (PRI-ELEC-STAGED/SEC-ELEC-STAGED)
Q = Dual Fuel (PRI-HW/SEC-ELEC-STAGED)
T = Dual Fuel (PRI-IF/SEC-ELEC-SCR)
U = Dual Fuel (PRI-ELEC-SCR/SEC-ELEC-SCR)
V = No Primary Heat, Secondary ELEC-SCR
W = Dual Fuel (PRI-ELEC-STAGED/SEC-ELEC-SCR)
Y = Dual Fuel (PRI-HW/SEC-ELEC-SCR)
X = Special Heat Option

Digit 21 — Primary Fuel Type

0 = No Heat
1 = Natural Gas
2 = Propane
3 = Electric – Open Coil
4 = Electric – Sheathed Coil
5 = Hot Water
7 = Nature Gas – 81% Eff.
8 = Propane – 81% Eff.

Digit 22 — Heater Capacity — Primary Heat Source

	IF	ELEC	HOT WATER
0 =	No Heat	No Heat	No Heat
A =	50 MBh	5 kW	1 Row/10 FPI
B =	75 MBh	10 kW	1 Row/12 FPI
C =	100 MBh	15 kW	1 Row/14 FPI
D =	125 MBh	20 kW	2 Row/10 FPI
E =	150 MBh	24 kW	2 Row/12 FPI
F =	200 MBh	28 kW	2 Row/14 FPI
G =		32 kW	3 Row/10 FPI
H =		40 kW	3 Row/12 FPI
J =		48 kW	3 Row/14 FPI
K =		60 kW	
L =		68 kW	
M =		79 kW	
N =		99 kW	
P =		111 kW	
R =		119 kW	
X =	Special Heater Option		

Digit 23 — Heat Capacity — Secondary Heat Source

		ELEC
0	=	No Secondary-Heat
A	=	5 kW
B	=	10 kW
C	=	15 kW

Digit 24 — Corrosive Environment Package

0 = No Corrosive Package
1 = S/S Interior, S/S Coil Casing
2 = S/S Interior, Eco Coated Coils
3 = S/S Interior, Copper/Copper Evap Coil
4 = S/S Coil Casing
5 = S/S Interior
6 = Eco Coated Coils
7 = S/S Coil Casing with Eco Coated Coils
8 = Copper/Copper Evap, HGRH Coils
9 = Corrosion Resistant Package

Digits 25, 26 — Unit Controls

00 = Non DDC – Electromechanical
AC = Trane – Discharge Air Control w/BACnet (No Display)
AD = Trane – Space Control w/BACnet (No Display)
AF = Trane – Discharge Air Control w/BACnet w/Display
AG = Trane – Space Control W/BACnet w/Display
AL = Trane – Multi-Zone Vav Control w/BACnet w/Display
AN = Trane – Multi-Zone Vav Control w/BACnet (No Display)
AP = Trane – Single-Zone Vav Control w/BACnet w/Display
AR = Trane – Single-Zone Vav Control w/BACnet (No Display)
BB = Trane – Space Control w/BACnet (No Display) w/Thumbwheel
BC = Trane – Space Control w/BACnet w/Display w/Thumbwheel
BG = Trane – Single-Zone Vav Control w/BACnet w/Display w/Thumbwheel
BJ = Trane – Single-Zone Vav Control w/BACnet (No Display) w/Thumbwheel
CA = Trane – Lab Space Control w/BACnet (No Display)
CB = Trane – Lab Space Control w/BACnet w/Display
CC = Trane – Lab Discharge Air Control w/BACnet (No Display)
CD = Trane – Lab Discharge Air Control w/BACnet w/Display
CE = Trane – Lab Multi-Zone Vav Control w/BACnet (No Display)
CF = Trane – Lab Multi-Zone Vav Control w/BACnet w/Display
CG = Trane – Lab Space Control w/BACnet (No Display) w/Thumbwheel
CH = Trane – Lab Space Control w/BACnet w/Display w/Thumbwheel
DA = Trane – Horizon Thrive Control w/BACnet (No Display)
DB = Trane – Horizon Thrive Control w/BACnet w/Display
XX = Control Special

Digit 27 — Powered Exhaust Fan Motor (PFM) and Exhaust Dampers

0 = No Powered Exhaust
1 = Direct Drive w/VFD
5 = Special Motor Option
9 = Barometric Relief Dampers (No PFM)\
A = Direct Drive w/VFD and Barometric Relief Damper
B = Direct Drive w/VFD and Isolation Dampers w/End Switch

Digit 28 — Powered Exhaust Fan Wheel

0 = No Powered Exhaust
J = 120.6
K = 140.6
L = 100.6

Digit 29 — Powered Exhaust Fan Motor (hp)

		ECM	DIRECT DRIVE
0	=	No Powered Exhaust	
E	=		1 hp – 1800 rpm
F	=		1 hp – 3600 rpm
G	=		1.5 hp – 1800 rpm
H	=		1.5 hp – 3600 rpm
J	=		2 hp – 1800 rpm
K	=		2 hp – 3600 rpm
L	=		3 hp – 1800 rpm
M	=		3 hp – 3600 rpm
N	=		5 hp – 1800 rpm
P	=		5 hp – 3600 rpm

Digit 30 — UC600 Hardware Template

- = Prior to v8.0
1 = v8.X, v9.X, or v10.X
2 = v11.0 / Thrive v2.1
3 = v11.1 - v11.3 / Thrive v2.1
4 = v12.0 / Thrive v2.2
5 = v12.1 / Thrive v2.3

Digit 31 — ERV (Requires Powered Exhaust)

0 = No ERV
A = ERV – Composite Construction w/Bypass
B = ERV – Composite Construction with Frost Protection w/VFD
C = ERV – Aluminum Construction w/Bypass
D = ERV – Aluminum Construction with Frost Protection w/VFD

Digit 32 — ERV Size

0 = No ERV
1 = 3014
2 = 3622

Digit 33 — Damper Options

0 = 100% OA 2-Position Damper
1 = 100% OA 2-Position Damper w/RA 2-Position Damper
2 = Modulating OA and RA Dampers w/Economizer
3 = 100% OA 2-Position Damper – Class 1A
4 = 100% OA 2-Position Damper w/RA 2-Position Damper – Class 1A
5 = Modulating OA and RA Dampers w/Economizer – Class 1A
6 = 100% RA Opening (No Damper)
7 = 100% RA w/2-Position Damper
8 = 100% RA w/2-Position Damper – Class 1A

Digit 34 — Filtration Options

A = No Filters
B = MERV-8, 30%
C = MERV-13, 80%
D = MERV-14, 95%
E = MERV-8 30%, MERV-13 80%
F = MERV-8 30%, MERV-14 95%
G = MERV-8, 30%, with UVC
H = MERV-13, 80%, with UVC
J = MERV-14, 95%, with UVC
K = MERV-8 30%, MERV-13 80%, and UVC
L = MERV-8 30%, MERV-14 95%, and UVC
X = Special Filter Options

Digit 35 — Smoke Detector — Factory Installed

0 = No Smoke Detector
1 = Supply Smoke Detector
2 = Return Smoke Detector
3 = Supply and Return Smoke Detectors

Digit 36 — Electrical Options

0 = Terminal Block
A = Non-Fused Disconnect
B = Fused Disconnect Switch
C = Non-Fused Disconnect w/ Convenience Outlet
D = Fused Disconnect Switch w/ Convenience Outlet
E = Dual Point Power
F = Dual Point Power w/Convenience Outlet
G = 65 SCCR Electrical Rating w/Non-Fused Disconnect
H = 65 SCCR Electrical Rating w/ Fused Disconnect
J = 65 KAIC Electrical Rating w/Non-Fused Disconnect
K = 65 KAIC Electrical Rating w/Fused Disconnect
L = 65 KAIC Non-Fused w/Convenience Outlet
M = 65 KAIC Fused w/Convenience Outlet
N = 65 SCCR Non-Fused w/Convenience Outlet

Model Number Descriptions

Digit 37 — Airflow Monitoring

0 = No Airflow Monitoring
1 = Airflow Monitoring – IFM Piezo Ring
2 = Airflow Monitoring – PE Piezo Ring
3 = Airflow Monitoring – Outdoor Air with Display and IFM w/Piezo Ring
4 = Airflow Monitoring – IFM Piezo Ring and PE Piezo Ring
5 = Airflow Monitoring – OA w/Display Supply and Exhaust Air w/Piezo Rings
6 = Airflow Monitoring – Outdoor Air Monitoring for Direct Fired Heat Units

Digit 38 — Accessories

0 = No Options
A = Hailguards
B = Hailguards and LED Service Light in Supply Fan Section
C = LED Service Light in Supply Fan Section
D = Hailguards and LED Service Light in Exhaust Fan Section
E = Hailguards and LED Service Light in Supply and Exhaust Fan Section
F = LED Service Light in Exhaust Fan Section
G = LED Service Light in Supply and Exhaust Fan Section

Digit 39 — Altitude

0 = Sea Level to 1,000 feet
1 = 1,001 to 2,000 feet
2 = 2,001 to 3,000 feet
3 = 3,001 to 4,000 feet
4 = 4,001 to 5,000 feet
5 = 5,001 to 6,000 feet
6 = 6,001 to 7,000 feet
7 = Above 7,000 feet

Features and Benefits

We designed the Horizon™ Outdoor Air Unit based on customer requirements from across the country. Thorough analysis of the performance requirements resulted in a robust design with the ability to effectively operate over an expansive performance envelope required for the year-round treatment of outdoor air.

Also, we took into account today's HVAC market issues, such as indoor air quality (IAQ). We equipped the Horizon Outdoor Air Unit to meet your ventilation needs – in direct response to the ventilation and humidity control requirements of ASHRAE standards 62.1 and 90.1.

Trane's Horizon Outdoor Air Unit leads the industry in the key areas of:

- indoor air quality (IAQ)
- energy efficiency
- high quality and durability
- advanced, integrated controls
- flexibility (including indoor installation)
- enhanced serviceability

Indoor Air Quality (IAQ) Features

- Stainless steel drain pan sloped in two directions to ensure proper drainage and reduce the potential for microbial growth
- Double-wall foamed panel construction throughout the indoor section of unit to provide, non-porous, cleanable interior surfaces
- Inlet hood with moisture eliminators
- High efficiency filter option with standard 2-, 4-, or 6-inch adjustable filter rack
- Piezometer airflow measurement option
- Easy filter access encourages regular changing
- Superior humidity control through refrigerant hot gas reheat for low dew point supply air

Energy Efficiency

- Total energy wheel option for recovered energy from centralized building exhaust
- Optional modulating recovered refrigerant reheat for unit supply air

High Quality and Durability

- Robust unit construction with 2-inch double wall panels with foam insulation for an R-value of 13
- Reversible, hinged access doors
- High quality, long-lasting latches and hinges for all access doors
- Standard factory protective prepainted finish on cabinet exterior with optional corrosion inhibiting coatings available for the unit exterior, interior and coils
- Refrigeration Detection System initiates mitigation actions at 12% LFL of R-454B.

Advanced Controls

- All controls are factory-engineered, mounted, configured and tested to minimize field start-up time
- UC600 BACnet microprocessor control
- Human interface with touch-pad screen for monitoring, setting, editing and controlling
- Capable of supply-air control or zone control of both temperature and relative humidity
- Occupied and unoccupied control sequences
- Optional remote human interface for ease of control access without going outdoors

Flexibility

- Numerous heater options and temperature rise capabilities available
- Multiple roof curb options (1- or 2-inch vibration isolation, horizontal discharge, multiple heights) and seismic certification
- Dual fuel option with electric preheat and electric, indirect fired gas, or hot water primary heat
- Optional indoor WSHP installation with ducted OA/EA and horizontal supply and return
- Optional split return/exhaust

Figure 1. Condenser side view of the Trane Horizon™ outdoor air unit

Figure 2. Condenser side view of the Trane Horizon™ outdoor air unit water source heat pump

Enhanced Serviceability

- Hinged access doors for ease of maintenance and service
- Easy-open door latches
- Slide out access direct-drive plenum fan
- Optional slide out, self-cleaning total-energy wheel
- Sight glass for each refrigeration circuit
- Optional control display
- High voltage cover

Standard Unit Features

- Multiple cabinet sizes with airflow range from 500 to 20,000 CFM
- Two-inch double-wall, R-13 construction (including unit floor and roof) with heavy gauge galvanized metal skin
- R-454B optimized design
- Outdoor air inlet hood
- Prepainted exterior finish
- Air-cooled DX refrigeration system
- Water-cooled DX refrigeration system with WSHP unit
- Completely factory-piped and leak-tested refrigeration system
- Stainless steel drain pans sloped in two planes
- Scroll compressors
- Single-point power connections for units with optional total-energy wheel, powered exhaust, and electric heat
- Filter rack adjustable for 2-, 4-, or 6-inch filters
- Factory-assembled inlet hood with 2-inch mist eliminators
- Non-fused disconnect switch
- Type 439 stainless steel heat exchanger
- Class 2 low leak parallel blade air damper with edge seals
- High-efficiency fan motors
- Variable frequency drive (VFD)
- Neoprene vibration isolation under supply and exhaust fan base and compressors
- Low ambient operation down to 40°F

Standard Control Features

- Fully integrated, factory-installed and commissioned microelectronic controls
- Supply airflow proving
- Emergency stop for safety interlock
- Occupied/unoccupied control modes
- High turn-down (up to 20:1) modulating indirect gas-fired heat
- Clogged filter switch
- Refrigerant detection system and mitigation response, per safety standard UL 60335-2-40

Optional Features

- SCR electric heat
- Hot water coils
- Indirect-fired gas heat
- Class 1A, ultra low leak parallel blade air damper with edge seals
- Modulating damper control systems
- Low ambient/head pressure control down to 0°F

Features and Benefits

- Pleated media filters (2-inch MERV-8, 2-inch MERV-13, 4-inch MERV-14, or a combination 2-inch/4-inch filter)
- 24 V electrostatic filters
- 120 V UVC downstream of evaporator coil
- Adjustable powered exhaust
- Exhaust dampers (gravity, barometric relief, and 2-position isolation)
- Fused disconnect switch
- Smoke detectors (supply and/or return)
- Stainless steel inner liner
- Integral total-energy wheel
- Protective coatings for the coils
- Factory or field-wired convenience outlet
- Air source heat pump
- Water source heat pump
- Hailguards
- LED service lights
- Direct drive BI airfoil plenum fan
- Digital scroll compressors on 1st and 2nd circuits
- Variable speed compressors with eFlex™ technology
- Unit mounted or remote mounted human interface panel
- Horizontal supply/return through the unit casing for units with indirect fired gas heat, hot water heat, or no heat option
- Horizontal supply/return and ducted OA/EA for indoor WSHP installation
- Split return/exhaust paths
- Chilled water coils with optional Cooney Freeze Block
- Compressor sound blankets
- Condensate overflow switch
- 65 kA SCCR rating
- Mechanical refrigeration capacity control (RCC)

Application Considerations

Overview

Outdoor Air Unit Functions

The Horizon™ Outdoor Air Unit (OAU) provides conditioned outdoor air suitable for mechanical ventilation or make-up air. The Horizon OAU conditions outdoor air as necessary to meet system performance requirements by ventilation with filtration, cooling, dehumidification, and/or heating. The Horizon OAU may deliver ventilation air in a number of ways. Refer to "System Configurations," p. 19 and Figure 6, p. 21, Figure 7, p. 21, and Figure 9, p. 22 for more information.

- Ventilation with Filtration
- Dehumidification
- Cooling
- Heating

System Configurations

Dedicated outdoor air systems (DOAS) can deliver conditioned outdoor air in one of the following ways:

1. Conditioned outdoor air supplied directly to each occupied space, with the local terminal unit controlling the space dry-bulb temperature. Refer to Figure 3, p. 19.
2. Conditioned outdoor air supplied directly to local terminal units, or return ducts of local RTUs, which deliver a mixture of the conditioned outdoor air and (conditioned) recirculated air to the space. Refer to Figure 4, p. 20.
3. Conditioned outdoor air supplied directly to a single space to control the space temperature and humidity. For example, this application will provide temperature and humidity control of ventilated spaces, such as commercial kitchens or laboratories.

Figure 3. Direct discharge to conditioned space

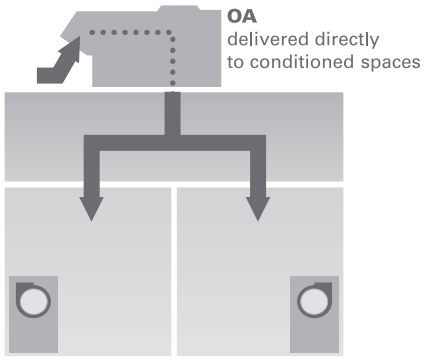
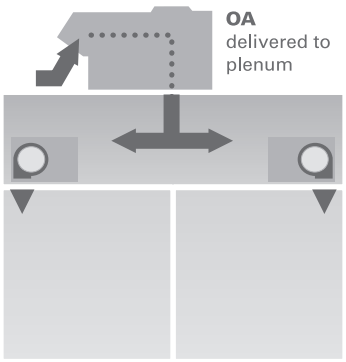


Figure 4. Indirect discharge to fan-coil units



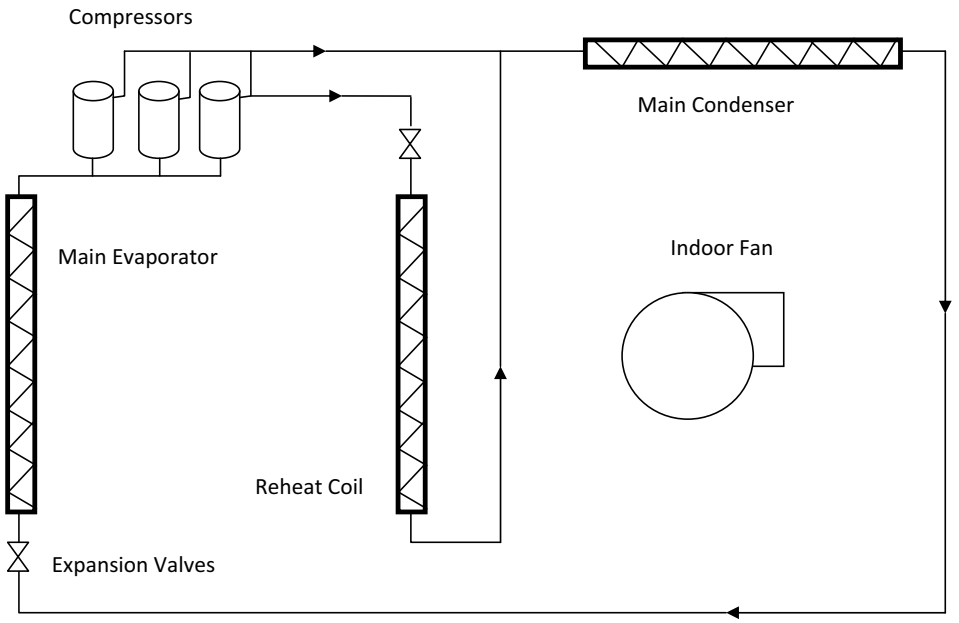
Horizon™ Outdoor Air Unit (OAU) Operation

The Horizon OAU can use either DX cooling, condenser reheat, electric or gas heat to condition outdoor air. The unit controls modulate cooling and heating capacity, reducing the supply air temperature swings associated with staged heating and cooling.

Horizon™ OAU with Reheat

Figure 5, p. 20 shows the Horizon OAU system with a DX refrigerant circuit design using reheat.

Figure 5. Refrigeration system diagram with reheat



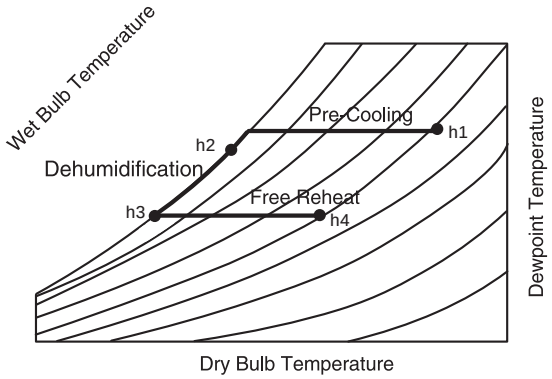
Dehumidification

Consider Figure 6, p. 21. If the outdoor air dew point is above the dehumidification setpoint (or in the case of zone control, the zone RH is above the RH setpoint), the Horizon™ OAU will:

- cool the outdoor air to remove required moisture and
- reheat to meet the discharge temperature setpoint.

At h1, 100 percent outdoor air enters the Horizon OAU. The Horizon OAU filters, cools, and dehumidifies the air as it moves through the evaporator coil. Air leaves the evaporator coil saturated at the preset dew point condition (h3) and is reheated by the reheat coil to the pre-set reheat temperature setpoint (h4). The reheat coil transfers energy to the airstream. A liquid solenoid valve effectively modulates the reheat capacity. The outdoor condenser rejects surplus heat. The reheat circuit is first on and last off, so reheat energy is available at full and part load conditions. Since both the dew point setpoint and discharge temperature setpoint are fully adjustable, the desired supply air conditions are maintained at all load conditions.

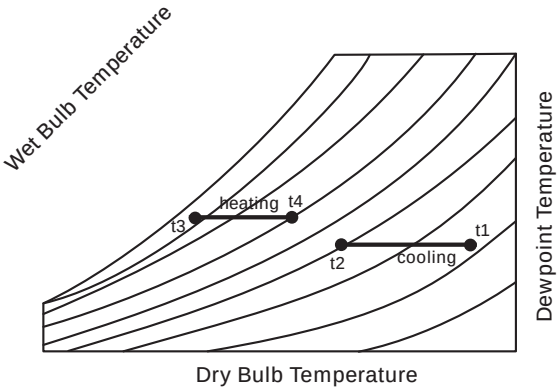
Figure 6. Psychrometric chart with dehumidification and reheat



Cooling or Heating

Consider Figure 7, p. 21. If the outdoor air dew point or zone RH is equal to or below the dehumidification setpoint, the Horizon™ OAU will heat or cool the outdoor air to separate cooling or heating setpoints. At t1 or t3, 100 percent outdoor air enters the Horizon OAU. The Horizon OAU filters, and cools or heats the air as it is drawn through the evaporator and heating section. The air leaves the Horizon OAU at the cooling or heating discharge setpoint (t2 or t4).

Figure 7. Psychrometric chart with cooling or heating only

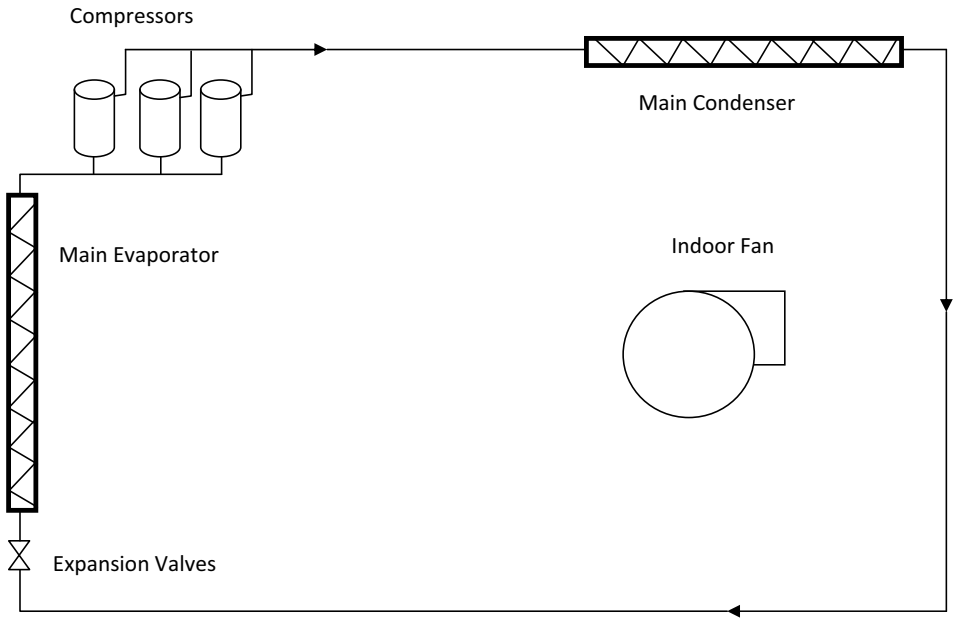


Horizon™ OAU Outdoor Air Control without Reheat

Figure 8, p. 22 shows the Horizon OAU DX system, using a refrigerant circuit design without reheat.

Note: *Space control not available without reheat.*

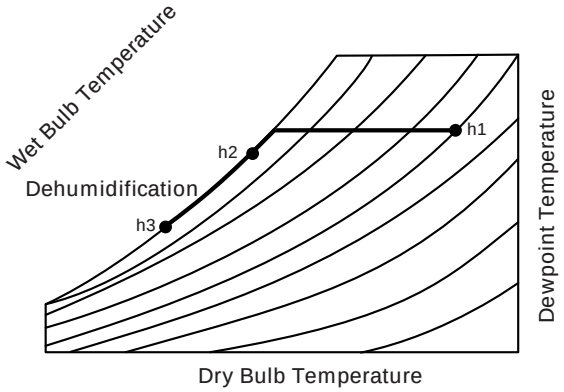
Figure 8. Refrigeration system diagram without reheat



Dehumidification

Consider Figure 9, p. 22. If the outdoor air dew point is above the dehumidification setpoint, the Horizon™ OAU will dehumidify the outdoor air. 100 percent outdoor air enters the Horizon OAU (h1). The unit filters, cools and dehumidifies the air as it is drawn through the evaporator coils. Air leaves the evaporator coils saturated at a preset dew point setpoint (h3). Since the dew point setpoint is fully adjustable, the desired dew point condition is maintained at all load conditions.

Figure 9. Psychrometric chart with dehumidification, no reheat

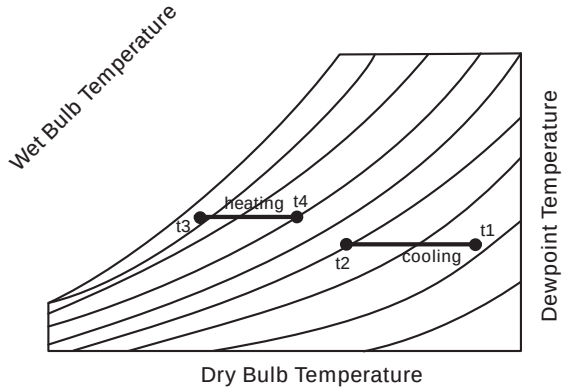


Cooling or Heating

Consider Figure 10, p. 23. If the outdoor air dew point is below the dehumidification setpoint, the Horizon™ OAU will heat or cool the outdoor air to separate cooling or heating setpoints. 100 percent outdoor air

enters the Horizon OAU (t1 or t3). The unit filters and cools or heats the air as it is drawn through the evaporators and heating section. The air leaves the Horizon OAU at the cooling or heating setpoint.

Figure 10. Psychrometric chart with cooling and heating only



Establishing Capacity Requirements

Determining the Horizon™ OAU capacity requirements requires careful thought. Light Commercial equipment is typically selected based on design **sensible** conditions. Since **latent** loads drive the need for the Horizon OAU, base the selection on design **latent** conditions.

Cooling and Dehumidification Selection Criteria

Evaporator Design Entering Conditions

For many climates the peak outdoor air enthalpy occurs at a time when the outdoor dry-bulb temperature is not the highest. Refer to the chapter on climatic design information in the ASHRAE Handbook of Fundamentals. The cooling and dehumidification design condition data is provided three ways:

1. Design dry-bulb temperature with mean coincident wet bulb temperature
2. Design wet-bulb temperature with mean coincident dry-bulb temperature
3. Design dew point temperature with mean coincident dry-bulb temperature

The design wet-bulb condition typically represents a significantly higher outdoor air enthalpy than the design dry-bulb condition. Use the condition that represents the highest enthalpy as the entering evaporator selection condition.

Evaporator Design Leaving Conditions

Due to the uncertainty of the local terminal unit latent capacity at part load, it is usually most straightforward to size the Horizon™ OAU to handle the entire latent load on the system, both indoor and outdoor. With this design approach, the terminal units may do some latent cooling (dehumidification) during periods of higher sensible load. At these times, the space will run slightly drier than the design RH limit. This is why it makes sense to select the Horizon OAU to limit the space RH to a maximum allowable level for those conditions when the terminal units are providing no space latent cooling, such as 60 percent RH. Using lower humidity limits may result in an unnecessary increase in system operating energy use.

Use Table 1, p. 24, Table 2, p. 24, and Table 3, p. 25 to identify the appropriate supply air dew point for specific design conditions. For a more detailed discussion on determining the selection criteria of a Horizon OAU, refer to *Dedicated Outdoor Air Systems, Application Guide* (SYS-APG001-EN) or *Dehumidification in HVAC Systems, Applications Engineering Manual* (SYS-APM004-EN).

Reheat

Table 1. Supply air dew point temperature, 75°F at 60 percent RH space limit

Latent Load Btu/h per Person	CFM per person										
	10	15	20	25	30	35	40	45	50	55	60
100	54.6	56.6	57.5	58.1	58.4	58.7	58.9	59.0	59.2	59.2	59.3
120	53.3	55.8	57.0	57.6	58.1	58.4	58.6	58.8	58.9	59.1	59.2
140	52.0	55.0	56.4	57.2	57.7	58.1	58.3	58.6	58.7	58.9	59.0
160	50.6	54.2	55.8	56.7	57.3	57.8	58.1	58.3	58.5	58.7	58.8
180	49.2	53.3	55.2	56.3	57.0	57.4	57.8	58.1	58.3	58.5	58.6
200	47.7	52.5	54.6	55.8	56.6	57.1	57.5	57.8	58.1	58.3	58.4
220	46.1	51.6	54.0	55.3	56.2	56.8	57.2	57.6	57.9	58.1	58.3
240	—	50.6	53.3	54.8	55.8	56.5	57.0	57.3	57.6	57.9	58.1
260	—	49.7	52.7	54.3	55.4	56.1	56.7	57.1	57.4	57.7	57.9
280	—	48.7	52.0	53.8	55.0	55.8	56.4	56.8	57.2	57.5	57.7
300	—	47.7	51.3	53.3	54.6	55.5	56.1	56.6	57.0	57.3	57.5
320	—	46.6	50.6	52.8	54.2	55.1	55.8	56.3	56.7	57.1	57.3
340	—	45.5	49.9	52.3	53.8	54.8	55.5	56.1	56.5	56.8	57.1
360	—	—	49.2	51.7	53.3	54.4	55.2	55.8	56.3	56.6	57.0
380	—	—	48.5	51.2	52.9	54.1	54.9	55.5	56.0	56.4	56.8
400	—	—	47.7	50.6	52.5	53.7	54.6	55.3	55.8	56.2	56.6
420	—	—	46.9	50.1	52.0	53.3	54.3	55.0	55.6	56.0	56.4
440	—	—	46.1	49.5	51.6	53.0	54.0	54.7	55.3	55.8	56.2
460	—	—	45.3	48.9	51.1	52.6	53.6	54.4	55.1	55.6	56.0
480	—	—	—	48.3	50.6	52.2	53.3	54.2	54.8	55.4	55.8
500	—	—	—	47.7	50.2	51.8	53.0	53.9	54.6	55.1	55.6

Note: Minimum dew point selectable is 45°F.

Table 2. Supply air dew point temperature, 75°F at 55 percent RH space limit

Latent Load Btu/h per Person	CFM per person										
	10	15	20	25	30	35	40	45	50	55	60
100	51.6	53.8	54.9	55.5	55.9	56.1	56.3	56.5	56.6	56.7	56.8
120	50.2	53.0	54.2	55.0	55.5	55.8	56.1	56.2	56.4	56.5	56.6
140	48.8	52.1	53.6	54.5	55.1	55.5	55.8	56.0	56.2	56.3	56.4
160	47.2	51.2	53.0	54.0	54.6	55.1	55.5	55.7	55.9	56.1	56.2
180	45.6	50.2	52.3	53.5	54.2	54.8	55.2	55.5	55.7	55.9	56.1
200	—	49.3	51.6	53.0	53.8	54.4	54.9	55.2	55.5	55.7	55.9
220	—	48.3	50.9	52.4	53.4	54.1	54.5	54.9	55.2	55.5	55.7
240	—	47.2	50.2	51.9	53.0	53.7	54.2	54.6	55.0	55.2	55.5
260	—	46.2	49.5	51.4	52.5	53.3	53.9	54.4	54.7	55.0	55.3
280	—	45.1	48.8	50.8	52.1	53.0	53.6	54.1	54.5	54.8	55.1
300	—	—	48.0	50.2	51.6	52.6	53.3	53.8	54.2	54.6	54.9
320	—	—	47.2	49.7	51.2	52.2	53.0	53.5	54.0	54.3	54.6
340	—	—	46.4	49.1	50.7	51.8	52.6	53.3	53.7	54.1	54.4
360	—	—	45.6	48.5	50.2	51.4	52.3	53.0	53.5	53.9	54.2
380	—	—	—	47.9	49.8	51.0	52.0	52.7	53.2	53.7	54.0
400	—	—	—	47.2	49.3	50.6	51.6	52.4	53.0	53.4	53.8
420	—	—	—	46.6	48.8	50.2	51.3	52.1	52.7	53.2	53.6
440	—	—	—	46.0	48.3	49.8	50.9	51.8	52.4	53.0	53.4
460	—	—	—	45.3	47.8	49.4	50.6	51.5	52.2	52.7	53.2
480	—	—	—	—	47.2	49.0	50.2	51.2	51.9	52.5	53.0
500	—	—	—	—	46.7	48.6	49.9	50.9	51.6	52.2	52.7

Note: Minimum dew point selectable is 45°F.

Table 3. Supply air dew point temperature, 75°F at 50 percent RH space limit

Latent Load	CFM per person										
Btu/h per Person	10	15	20	25	30	35	40	45	50	55	60
100	48.4	50.8	51.9	52.6	53.0	53.3	53.6	53.8	53.9	54.0	54.1
120	46.8	49.8	51.3	52.1	52.6	53.0	53.3	53.5	53.6	53.8	53.9
140	45.2	48.9	50.6	51.5	52.2	52.6	52.9	53.2	53.4	53.5	53.7
160	—	47.9	49.8	51.0	51.7	52.2	52.6	52.9	53.1	53.3	53.5
180	—	46.8	49.1	50.4	51.3	51.8	52.3	52.6	52.9	53.1	53.3
200	—	45.7	48.4	49.8	50.8	51.5	51.9	52.3	52.6	52.8	53.0
220	—	—	47.6	49.3	50.3	51.1	51.6	52.0	52.3	52.6	52.8
240	—	—	46.8	48.7	49.8	50.7	51.3	51.7	52.1	52.4	52.6
260	—	—	46	48.1	49.4	50.3	50.9	51.4	51.8	52.1	52.4
280	—	—	45.2	47.4	48.9	49.8	50.6	51.1	51.5	51.9	52.2
300	—	—	—	46.8	48.4	49.4	50.2	50.8	51.3	51.6	51.9
320	—	—	—	46.2	47.9	49.0	49.8	50.5	51.0	51.4	51.7
340	—	—	—	45.5	47.3	48.6	49.5	50.2	50.7	51.1	51.5
360	—	—	—	—	46.8	48.2	49.1	49.8	50.4	50.9	51.3
380	—	—	—	—	46.3	47.7	48.7	49.5	50.1	50.6	51.0
400	—	—	—	—	45.7	47.3	48.4	49.2	49.8	50.4	50.8
420	—	—	—	—	45.2	46.8	48.0	48.9	49.6	50.1	50.6
440	—	—	—	—	—	46.3	47.6	48.5	49.3	49.8	50.3
460	—	—	—	—	—	45.9	47.2	48.2	49.0	49.6	50.1
480	—	—	—	—	—	45.4	46.8	47.9	48.7	49.3	49.8
500	—	—	—	—	—	—	46.4	47.5	48.4	49.1	49.6

Note: Minimum dew point selectable is 45°F.

The Trane Horizon™ OAU utilizes recovered energy from the cooling process to reheat the air leaving the evaporator coil as required to meet the discharge air setpoint. The reheat refrigeration circuit is adequate to deliver enough reheat to supply neutral-temperature air (e.g., 75°F dry-bulb) under most operating conditions. On very low load days, the reheat circuit may not contain enough energy to meet the desired reheat setpoint.

Heating

The Horizon™ OAU has electric, heat pump, hot water, or gas heat options. The electric heat option is available in 0°F to 80°F temperature rise offerings with staged or SCR modulation. This means that the lowest temperature rise provided depends only on heater size and unit airflow. Calculate the temperature rise to confirm that it provides acceptable control. The electric heat will modulate to maintain heating setpoint.

When using hot water heat, the unit controller will modulate a field-provided coil control valve. Provide an ethylene glycol and water mixture or other means of freeze protection for the hot water coil if the Horizon OAU will be subject to sub-freezing temperatures.

Capacity Control

The capacity control system on the Horizon™ Outdoor Air Unit is flexible enough to accommodate a variety of system applications. These applications include:

- treating outdoor air to supply a single space or multiple spaces or
- simultaneously meet building make-up air needs while controlling the temperature and relative humidity of a single space.

Each of these applications requires careful consideration to achieve the desired results.

Discharge Air Control

For many multiple space, dedicated outdoor air systems, the Horizon™ OAU will continuously supply outdoor air at a dry-bulb setpoint and a dew point that does not exceed its dew point setpoint. This control approach is simple because it allows the unit to function independent of local terminal unit operation or actual space conditions. If the unit selection criteria is determined using the method suggested

in"Establishing Capacity Requirements," p. 23, the Outdoor Air Unit will limit the space relative humidity to the target level.

Many dedicated outdoor air systems supply reheated air directly to terminal units or to spaces that have terminal units performing local sensible cooling. This results in the local terminal units re-cooling the previously re-heated outdoor air. Resetting the supply air dry-bulb temperature of the Outdoor Air Unit offers the opportunity to minimize the amount of time re-cooling occurs. Refer to "Cooling Setpoint," p. 26 for more information.

Cooling Setpoint

Because the Trane Horizon™ OAU dehumidifies the outdoor air by cooling it, this cool outdoor air can reduce the sensible cooling load on the local terminal unit. At low space sensible loads, the cool outdoor air may sub-cool the space, causing the local terminal unit to add heat (new energy heat). Therefore, reset occupied Space Cooling Setpoint (SPCS – Space Control Sequence) or Evaporator Cooling Setpoint (ECS – Outdoor Air Control Sequence) of the Horizon OAU to minimize space sensible re-cooling so the terminal unit with the lowest sensible load is almost at zero cooling capacity (within the limit of the dew point setpoint). To take full advantage of space demand based dry-bulb reset, you may need to size some of the local terminal units based on neutral outdoor air temperature. This strategy will more effectively manage occupant comfort during seasonal changeover for two-pipe terminal unit systems. Because the Horizon OAU is not connected to the chiller or boiler plant, accomplish this by resetting the Outdoor Air Unit SPCS or ECS to keep the critical zone at zero heating capacity when the boiler is off and zero cooling capacity when the chiller is off. A Trane Integrated Comfort™ system can provide this control capability.

Unoccupied Space Humidity Control

The Horizon™ OAU provides conditioned outdoor air for the ventilation and/or make-up air needs of a building during occupied hours. It can also limit building relative humidity during unoccupied hours. To do this, provide a return air path to the Horizon OAU and place a relative humidity sensor in the space served by the Horizon OAU or in a common relief air path (like a return corridor) if the Horizon OAU serves multiple spaces. The unit will cycle as required to limit the space humidity to the unoccupied dew point Setpoint (NSDS) setpoint. Reheat and return air damper options are required for this operation. For dedicated outdoor air systems ducted to terminal units, these units must cycle with the operation of the Horizon OAU. A Trane Integrated Comfort™ system can provide this control capability.

Space Control

For single space applications, the Horizon OAU can control space temperature and limit space relative humidity. To do this, size the airflow to meet whichever is the highest: the space loads and ventilation and/or make-up air needs of the application. Install a temperature sensor in the space to provide temperature control and reset the supply air temperature. If reset of the supply air dew point is desired, install a space relative humidity sensor in the space to provide relative humidity limit control.

Outdoor Airflow Balancing

Establish final unit airflow through a field air balancing procedure. Change the fan speed through replacement or fan sheave adjustment (belt drive indoor fan motor) or VFD Setpoint via the UC600 controller (direct drive fan motor).

Air to Air Energy Recovery

Energy recovery can significantly reduce HVAC system first-cost and operating energy costs. You can use recovered energy for two purposes:

1. To temper or reheat supply air for independent control of sensible and latent capacity, or
2. To precondition outdoor air as it enters the building for ventilation.

The Horizon™ OAU offers refrigerant heat recovery for reheating the supply air. To precondition the outdoor air, use the optional total-energy wheel to recover energy from building exhaust.

Controlling the Total-Energy Wheel

One way to control an energy recovery device is to turn it on and off with the Horizon™ OAU system exhaust fan. In this case, the total energy wheel enables when the unit is in occupied mode and the exhaust fan is running. While this control method is certainly simple and effective in some applications, it may not provide the expected energy saving benefit, particularly when cold air (vs. neutral air) is supplied to the building.

Another more effective approach is to use the outdoor air dry-bulb to determine when to energize or de-energize the energy recovery device. See Figure 12, p. 27 for an example of this simplified control. In addition to being more effective from a control standpoint, it's also a very simple control method because the wheel is enabled when all of the following are true:

- Unit is in occupied mode,
- Exhaust fan is enabled,
- Unit Main Control Module (MCM) calls for unit to operate in dehumidification, cooling, or heating modes, and
- Outside air temperature is above the frost protection setpoint (default setpoint 12°F).

If using the Horizon OAU to deliver cold, dry conditioned air to the building (outdoor air is cooled to a low dew point but not reheated), use the cooling setpoint control strategy (see "Cooling Setpoint," p. 26).

Figure 11. Dry-bulb control in a cold DB/dry DP application

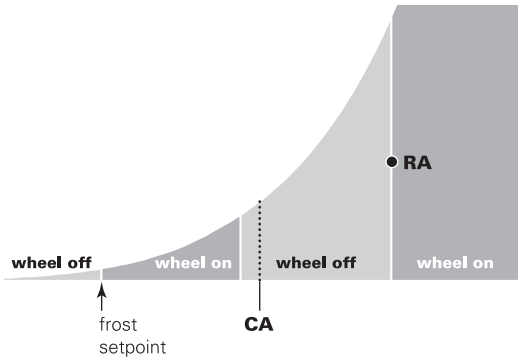
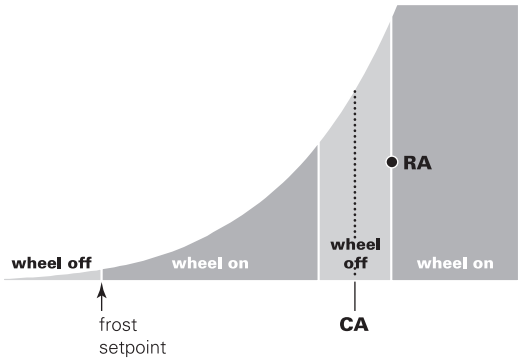


Figure 12. Dry-bulb control in a neutral DB/dry DP application



Cross Leakage

All energy wheels have some cross leakage. Therefore, do not use energy wheels in applications involving toxic or hazardous air streams. The percentage of cross leakage depends on the pressure differentials

across the wheel section. With Trane Horizon™ OAU energy wheels, the exhaust air transfer ratios are typically low (less than 4 percent).

Condensate Drain Configuration

Horizon™ OAU units are selected based on dehumidification capability. As such, condensate can form at a high rate. Therefore, the Horizon OAU drain pan and condensate line are sized and designed accordingly. However, an often-overlooked element of proper condensate drainage is proper P-Trap and drain line sizing and installation. An incorrectly-designed and -installed P-Trap can restrict condensate flow or cause water in the condensate drain pan to **spit** or **geyser** which may cause condensate overflow. Carefully install and trap the drain pan to ensure adequate condensate removal under all conditions.

An evaporator condensate drain connection is provided on each unit. For more information, refer to *Horizon™ Outdoor Air Unit Horizon UC600 Controls Program Version 12.1 Installation, Operation, and Maintenance* (OAU-SVX008*-EN).

A condensate trap must be installed at the unit due to the drain connection being on the **negative pressure side** of the fan. Install the P-Trap using the guidelines in Figure 13.

Pitch drain lines connected to P-Trap at least 1/2-inch for every 10-feet of horizontal run to assure proper condensate flow. Do not allow the horizontal run to sag causing a possible double-trap condition which could result in condensate backup due to **air lock**.

Figure 13. Condensate trap installation

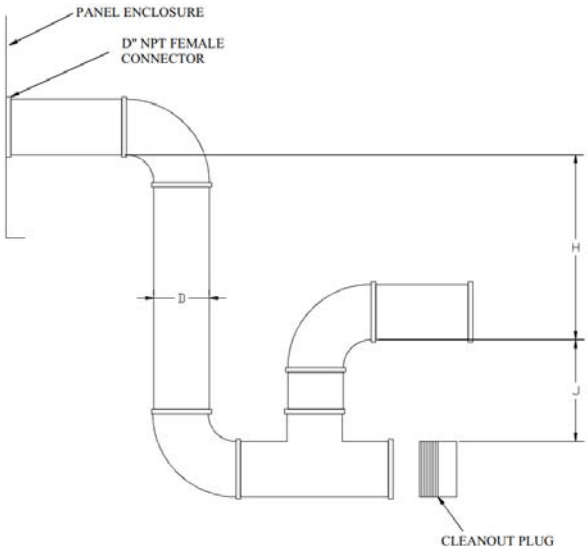


Table 4. Condensate P-Trap sizing based on static pressure

Pressure (In. WC)	H	J
1	2	1
2	3	1.5
3	4	2
4	5	2.5
5	6	3

Notes:
1. Pitch drain at least 1/2 in. per 10 ft horizontal run.
2. Condensate drain pan will not drain properly if P-trap is not primed and of adequate height to allow for cabinet operating negative pressure.
3. Pressure is the static pressure measured in the drain pan. If unsure of operating static, use the design total static.
4. For variable air volume applications, pressure must be at the maximum operating static.

Acoustical Considerations

Proper unit placement is critical to reducing transmitted sound levels from the Horizon™ OAU to the building. Therefore, consider acoustic concerns during the design phase and place the unit accordingly. The most economical means of avoiding an acoustical problem is to place the unit(s) away from acoustically critical areas. If possible, do not locate units directly above areas such as: offices, conference rooms, executive office areas, and classrooms. Instead, ideal locations to consider are: over corridors, utility rooms, toilets, or other areas where higher sound levels directly below the unit(s) are acceptable.

Follow these basic guidelines for unit placement to minimize sound transmission through the building structure.

1. Never cantilever the compressor side of the unit. A structural cross member or full perimeter roof curb, supported by roof structural members, must support this side of the unit.
2. Locate the unit center of gravity close to or over column or main support beam.
3. If the roof structure is very light, replace roof joists by a structural shape in the critical areas described above.
4. If several units are to be placed on one span, stagger them to reduce deflection over that span.

It is impossible to totally quantify the building structure effect on sound transmission because it is dependent on how the roof and building members respond to the Horizon OAU sound and vibration. However, following the guidelines listed above will help reduce sound transmissions.

Clearance Requirements

Follow the recommended unit clearances to assure adequate serviceability, maximum capacity, and peak operating efficiency. Reducing unit clearances may result in condenser coil starvation or warm condenser air recirculation. If the recommended clearances are not possible on a particular job, consider the following:

- Do the clearances available allow for major service work, such as changing compressors or coils?
- Do the clearances available allow for proper outside air intake, exhaust air removal, and condenser airflow?
- If screening around the unit is used, is there a possibility of air recirculation from the exhaust to the outside air intake or from condenser exhaust to condenser intake?

Review any actual clearances that appear inadequate with your local Trane sales engineer.

When two or more units are placed side by side, increase the distance between the units to twice the recommended single unit clearance. Stagger the units for these two reasons:

1. To reduce span deflection if more than one unit is placed on a single span. Reducing deflection discourages sound transmission.
2. To assure proper exhaust air diffusion before contact with the adjacent unit outside air intake.

Corrosive Environment

Sites that are located near the coast and/or sites exposed to corrosive substances are recommended to equip units with protective measures ensuring there is no degradation from environmental factors. Corrosive environment offerings include stainless steel interior, stainless steel coil casing and eco-coated coils.

Duct Design

It is important to note that the rated capacities of the Horizon™ OAU can be met only if the unit is properly installed. A well-designed duct system is essential to meet these capacities.

Satisfactory air distribution throughout the system requires an unrestricted and uniform airflow from the Horizon OAU discharge duct.

However, when job conditions dictate installation of elbows near the Horizon OAU outlet, using guide vanes may reduce capacity loss and static pressure loss.

Controls Sequence

For sequence of operation, see *Horizon™ Outdoor Air Unit Horizon UC600 Controls Program Version 12.1 Installation, Operation, and Maintenance* (OAU-SVX008*-EN).

A2L Considerations

This product is listed to UL standard 60335-2-40, Household and Similar Electrical Appliances – Safety – Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers, which defines safe design and use strategies for equipment using A2L refrigerants. This standard limits the refrigerant concentration in a space in the event of a refrigerant leak.

To meet the requirements, the UL standard defines minimum room area, refrigerant charge limit, minimum circulation airflow and/or ventilation airflow requirements, and limits the use of ignition sources in ductwork and spaces. The standard may require a unit refrigerant leak detection system.

Depending on the application, a specific requirement of ANSI/ASHRAE Standard 15, Safety Standard for Refrigeration Systems, could be more stringent than UL 60335-2-40 requirements. See Refrigeration Systems and Machinery Rooms Application Considerations for Compliance with ASHRAE® Standard 15-2022 Application Engineering Manual (APP-APM001*-EN) for more information.

Minimum Room Area Limits

Equipment with R–454B charge amounts greater than 3.91 lb per circuit may require additional circulation or ventilation airflow mitigation strategies. In this case, there are two minimum room area (Amin) thresholds:

- The first threshold defines when equipment serving a single room is required to provide circulation airflow, either continuous or activated by a leak detection system. A ducted system requires circulation airflow unless the smallest room it serves is larger than the adjusted Amin threshold. This product contains a leak detection system if a circuit charge is greater than 3.91 lbs. As a result, no further leak detection system evaluation is required.
- The second threshold defines when additional ventilation airflow is required. If the room area, A or TA, is below the adjusted Amin or TAmin threshold, additional ventilation is required to remove refrigerant in the event of a leak. Refer to UL 60335-2-40 Clause GG.8 and ANSI\ASHRAE Standard 15 Section 7 for natural and mechanical ventilation requirements. See equipment nameplate for minimum room area.

Determining Room Area (A or TA)

The room area (A) is the room area enclosed by the projection to the floor of the walls, partitions, and doors of the space that the equipment serves. For ducted systems, total room area (TA) of all rooms connected by ducts, may be used instead of A.

Rooms connected by drop ceilings only are not considered a single room. Rooms on the same floor of the building, and connected by an open passageway, can be considered part of the same room if the passageway is a permanent opening, extends to the floor and is intended for people to walk through. Adjacent rooms on the same floor of the building and connected by permanent openings in the walls and/

or doors between rooms (including gaps between the wall and the floor), can be considered part of the same room if the openings meet the following criteria.

- The opening is permanent and cannot be closed.
- Openings extending to the floor, such as door gaps, need to be at least 20mm above the floor covering surface.
- Natural ventilations opening areas must meet the requirements of ANSI\ASHRAE Standard 15-2022, Section 7.2.3.2.

Rooms that are connected by a mechanical ventilation system can be considered a single room area if the mechanical ventilation system meets the requirements of ANSI\ASHRAE Standard 15-2022, Section 7.6.4.

Refrigerant Detection System (RDS)

The refrigerant detection system consists of one or more refrigerant detection sensors. When the system detects a refrigerant leak, the following mitigation actions will be initiated. Once refrigerant is no longer detected, mitigation will continue for 5 minutes. The 5-minute timer operation is performed by the sensor.

- If a leak is detected in the airstream, energize the supply fan(s) to deliver a required minimum amount of circulation airflow for dilution of refrigerant.
- If a leak is detected in the controls cabinet, the supply fan(s) will be de-energized and mechanical ventilation in the controls cabinet will be energized.
- Disable heater operation.
- Disable compressor operation.
- Provide an output status signal to fully open all zoning dampers, such as VAV boxes or fire dampers. This output status is to be used as a 24VAC trigger for a 24VAC compatible relay coil being utilized for power transmission to audible alarms, visual alarms, and additional mechanical ventilation for units installed indoors.

Building or unit fire and smoke detection systems will override the refrigerant detection system operation and will shut the unit down.

General Data

Table 5. OABD general data – cooling 3 to 5 tons high efficiency

	3 Tons	4 Tons	5 Tons
	OABD036A	**OABD048A**	**OABD060A**
Cooling Performance[a]			
Gross Cooling Capacity, Btu (kW)	40,724 (11.93)	47,876 (14.03)	59,996 (17.58)
Compressor			
Number	1	1	1
Type	Scroll	Scroll	Scroll
Outdoor Fan			
Type	Propeller	Propeller	Propeller
Number Used	1	1	1
Diameter, in. (mm)	27	27	27
Drive Type	Direct	Direct	Direct
No. Speeds	1	1	1
CFM (m^3/h)	7,000 (11,893)	7,000 (11,893)	7,000 (11,893)
Number Motors	1	1	1
Motor HP (kW), per motor	1.0 (0.75)	1.0 (0.75)	1.0 (0.75)
Motor RPM	1140	1140	1140
Indoor Fan			
Type	Backward Curved	Backward Curved	Backward Curved
Number Used	1	1	1
Diameter	Varies	Varies	Varies
Drive Type	Direct Drive	Direct Drive	Direct Drive
Number Motors	1	1	1
Motor HP (kW), Standard–Oversized	2.68–4.0 (2–3)	2.68–4.0 (2–3)	2.68–4.0 (2–3)
Motor RPM	Varies	Varies	Varies
Filters			
Type Furnished	Varies	Varies	Varies
Evap Size, in. (Qty)	20 x 24 x 2 (2)	20 x 24 x 2 (2)	20 x 24 x 2 (2)
Type Furnished	MERV-8	MERV-8	MERV-8
ERV Size, in. (Qty)	20 x 24 x 2 (4)	20 x 24 x 2 (4)	20 x 24 x 2 (4)
Refrigerant Charge, lb of R-454B	See Nameplate	See Nameplate	See Nameplate

(a) Cooling performance based off 53.8 dew point, default digital compressors without hot gas reheat.

Table 6. OABD general data – cooling 6 to 9 tons high efficiency

	6 Tons	7 Tons	8 Tons	9 Tons
	OABD072A	**OABD084A**	**OABD096A**	**OABD108A**
Cooling Performance[a]				
Gross Cooling Capacity, Btu (kW)	72,439 (21.23)	82,534 (24.19)	90,262 (26.45)	109,374 (32.05)
Compressor				
Number	1	1	1	1
Type	Scroll	Scroll	Scroll	Scroll
Outdoor Fan				
Type	Propeller	Propeller	Propeller	Propeller
Number Used	1	1	1	1
Diameter, in. (mm)	27	27	27	27
Drive Type	Direct	Direct	Direct	Direct

Table 6. OABD general data – cooling 6 to 9 tons high efficiency (continued)

	6 Tons	7 Tons	8 Tons	9 Tons
	OABD072A	OABD084A	OABD096A	OABD108A
No. Speeds	1	1	1	1
CFM (m^3/h)	7,000 (11,893)	7,000 (11,893)	7,000 (11,893)	7,000 (11,893)
Number Motors	1	1	1	1
Motor HP (kW), per motor	1.0 (0.75)	1.0 (0.75)	1.0 (0.75)	1.0 (0.75)
Motor RPM	1140	1140	1140	1140
Indoor Fan				
Type	Backward Curved	Backward Curved	Backward Curved	Backward Curved
Number Used	1	1	1	1
Diameter	Varies	Varies	Varies	Varies
Drive Type	Direct Drive	Direct Drive	Direct Drive	Direct Drive
Number Motors	1	1	1	1
Motor HP (kW), Standard–Oversized	2.68–4.0 (2–3)	2.68–4.0 (2–3)	2.68–4.0 (2–3)	2.68–4.0 (2–3)
Motor RPM	Varies	Varies	Varies	Varies
Filters				
Type Furnished	Varies	Varies	Varies	Varies
Evap Size, in. (Qty)	20 x 24 x 2 (2)	20 x 24 x 2 (2)	20 x 24 x 2 (2)	20 x 24 x 2 (2)
Type Furnished	MERV-8	MERV-8	MERV-8	MERV-8
ERV Size, in. (Qty)	20 x 24 x 2 (4)	20 x 24 x 2 (4)	20 x 24 x 2 (4)	20 x 24 x 2 (4)
Refrigerant Charge, lb of R-454B	See Nameplate	See Nameplate	See Nameplate	See Nameplate

(a) Cooling performance based off 53.8 dew point, default digital compressors without hot gas reheat.

Table 7. OAND general data – cooling 30 to 40 tons high efficiency

	30 Tons Downflow	35 Tons Downflow	40 Tons Downflow
	OAND360A	OAND420A	OAND480A
Cooling Performance[(a)]			
Gross Cooling Capacity, Btu (kW)	351,414 (102.99)	409,244 (119.94)	456,992 (133.93)
Compressor			
Number	2	2	4
Type	Scroll	Scroll	Scroll
Outdoor Fan			
Type	Propeller	Propeller	Propeller
Number Used	4	4	4
Diameter, in. (mm)	24	24	24
Drive Type	Direct Drive	Direct Drive	Direct Drive
No. Speeds	1	1	1
CFM (m^3/h)	26,000 (44,174)	26,000 (44,174)	26,000 (44,174)
Number Motors	4	4	4
Motor HP (kW), per motor	1.0 (0.75)	1.0 (0.75)	1.0 (0.75)
Motor RPM	1140	1140	1140
Indoor Fan			
Type	Backward Inclined	Backward Inclined	Backward Inclined
Number Used	1	1	1 or 2
Diameter	Varies	Varies	Varies

Table 7. OAND general data – cooling 30 to 40 tons high efficiency (continued)

	30 Tons Downflow	35 Tons Downflow	40 Tons Downflow
	OAND360A	OAND420A	OAND480A
Drive Type	Direct Drive	Direct Drive	Direct Drive
Number Motors	1	1	1 or 2
Motor HP (kW), Standard–Oversized	1.5–15 (1.12–11.19)	1.5–15 (1.12–11.19)	2.0–15 (1.49–11.19)
Motor RPM, Standard–Oversized	1750–3500	1750–3500	1750–3500
Motor Frame Size, Standard–Oversized	Varies	Varies	Varies
Filters			
Type Furnished	Refer to "Horizon™ OAU Filter Guide," p. 105	Refer to "Horizon™ OAU Filter Guide," p. 105	Refer to "Horizon™ OAU Filter Guide," p. 105
Number Size Recommended			
Refrigerant Charge, lb of R-454B			
Downflow	See Nameplate	See Nameplate	See Nameplate

(a) Cooling performance based off 53.8 dew point, default digital compressors without hot gas reheat.

Table 8. OAND general data – cooling 45 to 60 tons high efficiency

	45 Tons Downflow	50 Tons Downflow	54 Tons Downflow	60 Tons Downflow
	OAND540A	OAND600A	OAND648A	OAND720A
Cooling Performance[a]				
Gross Cooling Capacity, Btu (kW)	526,698 (154.36)	596,876 (174.93)	642,213 (188.21)	719,737 (210.93)
Compressor				
Number	4	4	4	4
Type	Scroll	Scroll	Scroll	Scroll
Outdoor Fan				
Type	Propeller	Propeller	Propeller	Propeller
Number Used	4	4	4	4
Diameter, in. (mm)	24 (609.6)	24 (609.6)	24 (609.6)	24 (609.6)
Drive Type	Direct	Direct	Direct	Direct
No. Speeds	1	1	1	1
CFM (m^3/h)	26,000 (44,174)	32,000 (44,174)	32,000 (44,174)	32,000 (44,174)
Number Motors	4	4	4	4
Motor HP (kW), per motor	1.0 (0.75)	1.5 (0.75)	1.5 (0.75)	1.5 (0.75)
Motor RPM	1140	1140	1140	1140
Indoor Fan				
Type	Backward Inclined	Backward Inclined	Backward Inclined	Backward Inclined
Number Used	1 or 2	1 or 2	1 or 2	1 or 2
Diameter	Varies	Varies	Varies	Varies
Drive Type	Direct Drive	Direct Drive	Direct Drive	Direct Drive
Number Motors	1 or 2	1 or 2	1 or 2	1 or 2
Motor HP (kW), Standard–Oversized	2.0–15 (1.49–11.19)	3.0–15 (2.24–11.19)	3.0–15 (2.24–11.19)	3.0–15 (2.24–11.19)
Motor RPM, Standard–Oversized	1750–3500	1750–3500	1750–3500	1750–3500
Motor Frame Size, Standard–Oversized	Varies	Varies	Varies	Varies
Filters				
Type Furnished	Refer to "Horizon™ OAU Filter Guide," p. 105	Refer to "Horizon™ OAU Filter Guide," p. 105	Refer to "Horizon™ OAU Filter Guide," p. 105	Refer to "Horizon™ OAU Filter Guide," p. 105
Number Size Recommended				
Refrigerant Charge, lb of R-454B				

Table 8. OAND general data – cooling 45 to 60 tons high efficiency (continued)

	45 Tons Downflow	50 Tons Downflow	54 Tons Downflow	60 Tons Downflow
	OAND540A	OAND600A	OAND648A	OAND720A
Downflow	See Nameplate	See Nameplate	See Nameplate	See Nameplate

(a) Cooling performance based off 53.8 dew point, default digital compressors without hot gas reheat.

Table 9. OABE general data – cooling 3 to 5 tons high efficiency

	3 Tons	4 Tons	5 Tons
	OABE036A	OABE048A	OABE060A
Performance[a]			
Gross Cooling Capacity, Btu (kW)	38,654 (11.30)	44,592 (13.07)	55,867 (16.37)
Compressor			
Number	1	1 / Scroll	1 / Scroll
Type	Scroll	1 / Scroll	1 / Scroll
Indoor Fan			
Type	Backward Curved	Backward Curved	Backward Curved
Number Used	1	1	1
Diameter	Varies	Varies	Varies
Drive Type	Direct Drive	Direct Drive	Direct Drive
Number Motors	1	1	1
Motor HP (kW), Standard–Oversized	2.68–4.0 (1.97–2.94)	2.68–4.0 (1.97–2.94)	2.68–4.0 (1.97–2.94)
Motor RPM	Varies	Varies	Varies
Filters			
Type Furnished	Varies	Varies	Varies
Evap Size, in. (Qty)	20 x 24 x 2 (2)	20 x 24 x 2 (2)	20 x 24 x 2 (2)
Type Furnished	MERV-8	MERV-8	MERV-8
ERV Size, in. (Qty)	20 x 24 x 2 (4)	20 x 24 x 2 (4)	20 x 24 x 2 (4)
Refrigerant Charge, lb of R-454B	See Nameplate	See Nameplate	See Nameplate

(a) Cooling performance based off 53.8 dew point, default digital compressors without hot gas reheat.

Table 10. OABE general data – cooling 6 to 9 tons high efficiency

	6 Tons	7 Tons	8 Tons	9 Tons
	OABE072A	OABE084A	OABE096A	OABE108A
Performance[a]				
Gross Cooling Capacity, Btu (kW)	67,404 (19.75)	76,840 (22.52)	86,461 (25.34)	104,051 (30.49)
Compressor				
Number	1	1	1	1
Type	Scroll	Scroll	Scroll	Scroll
Indoor Fan				
Type	Backward Curved	Backward Curved	Backward Curved	Backward Curved
Number Used	1	1	1	1
Diameter	Varies	Varies	Varies	Varies
Drive Type	Direct Drive	Direct Drive	Direct Drive	Direct Drive
Number Motors	1	1	1	1
Motor HP (kW), Standard–Oversized	2.68–4.0 (1.97–2.94)	2.68–4.0 (1.97–2.94)	2.68–4.0 (1.97–2.94)	2.68–4.0 (1.97–2.94)

Table 10. OABE general data – cooling 6 to 9 tons high efficiency (continued)

	6 Tons	7 Tons	8 Tons	9 Tons
	OABE072A	OABE084A	OABE096A	OABE108A
Motor RPM	Varies	Varies	Varies	Varies
Filters				
Type Furnished	Varies	Varies	Varies	Varies
Evap Size, in. (Qty)	20 x 24 x 2 (2)	20 x 24 x 2 (2)	20 x 24 x 2 (2)	20 x 24 x 2 (2)
Type Furnished	MERV-8	MERV-8	MERV-8	MERV-8
ERV Size, in. (Qty)	20 x 24 x 2 (4)	20 x 24 x 2 (4)	20 x 24 x 2 (4)	20 x 24 x 2 (4)
Refrigerant Charge, lb of R-454B	See Nameplate	See Nameplate	See Nameplate	See Nameplate
ERV Size, in. (Qty)	20 x 24 x 2 (4)	20 x 24 x 2 (4)	20 x 24 x 2 (4)	20 x 24 x 2 (4)

(a) Cooling performance based off 53.8 dew point, default digital compressors without hot gas reheat.

Table 11. OANE general data – cooling 30 to 40 tons high efficiency

	30 Tons Downflow	35 Tons Downflow	40 Tons Downflow
	OANE360A	OANE420A	OANE480A
Performance[a]			
Gross Cooling Capacity, Btu (kW)	341,332 (100.03)	394,966 (115.75)	446,202 (130.77)
Compressor			
Number	2	3	3
Type	Scroll	Scroll	Scroll
Indoor Fan			
Type	Backward Inclined	Backward Inclined	Backward Inclined
Number Used	1	1	1 or 2
Diameter	Varies	Varies	Varies
Drive Type	Direct Drive	Direct Drive	Direct Drive
Number Motors	1	1	1 or 2
Motor HP (kW), Standard–Oversized	1.5 to 15 (1.1–11.03)	1.5 to 15 (1.1–11.03)	2.0–15 (1.47–11.03)
Motor RPM	1750–3500	1750–3500	1750–3500
Motor Frame Size (Standard/Oversized)	Varies	Varies	Varies
Filters			
Type Furnished	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"
Number/Size Recommended			
Refrigerant Charge, lb of R-454B			
Downflow	See Nameplate	See Nameplate	See Nameplate

(a) Cooling performance based off 53.8 dew point, default digital compressors without hot gas reheat.

Table 12. OANE general data – cooling 45 to 54 tons high efficiency

	45 Tons Downflow	50 Tons Downflow	54 Tons Downflow
	OANE540A	OANE600A	OANE648A
Cooling Performance[a]			
Gross Cooling Capacity, Btu (kW)	493,794 (144.72)	592,071 (170.59)	624,599 (183.05)
Compressor			
Number	3	4	4
Type	Scroll	Scroll	Scroll
Indoor Fan			
Type	Backward Inclined	Backward Inclined	Backward Inclined
Number Used	1 or 2	1 or 2	1 or 2
Diameter			
Drive Type	Direct Drive	Direct Drive	Direct Drive
Number Motors	1 or 2	1 or 2	1 or 2
Motor HP (kW), Standard–Oversized	2.0–15 (1.47–11.03)	3.0–15 (2.21–11.03)	3.0–15 (2.21–11.03)
Motor RPM	1750-3500	1750-3500	1750-3500
Motor Frame Size (Standard/Oversized)	Varies	Varies	Varies
Filters			
Type Furnished	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"
Number/Size Recommended			
Refrigerant Charge, lb of R-454B			
Downflow	See Nameplate	See Nameplate	See Nameplate

(a) Cooling performance based off 53.8 dew point, default digital compressors without hot gas reheat.

Table 13. OADG general data – cooling 10 to 20 tons high efficiency

	10 Tons Downflow	12 Tons Downflow	15 Tons Downflow	17 Tons Downflow	20 Tons Downflow	25 Tons Downflow	30 Tons Downflow
	OADG010	OADG012	OADG015	OADG017	OADG020	OADG025	OADG030
Cooling Performance (6-row)[a]							
Gross Cooling Capacity, Btu (kW)	125,375 (36.74)	142,180 (41.67)	196,617 (57.62)	211,189 (61.89)	234,116 (68.62)	315,477 (92.46)	394,549 (115.63)
Cooling Performance (4-row)[a]							
Gross Cooling Capacity, Btu (kW)	122,587 (35.93)	138,891 (40.70)	186,324 (54.61)	202,971 (59.48)	225,971 (65.99)	N/A	N/A
Compressor							
Number	2	2	2	2	2	2	2
Type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Outdoor Fan							
Type	Propeller	Propeller	Propeller	Propeller	Propeller	Propeller	Propeller
Number Used	2	2	2	3	3	3	3
Diameter, in. (mm)	27 (685.8)	27 (685.8)	27 (685.8)	27 (685.8)	27 (685.8)	27 (685.8)	27 (685.8)
Drive Type	Direct	Direct	Direct	Direct	Direct	Direct	Direct
No. Speeds	1	1	1	1	1	1	1
Fan CFM (m^3/h)	7,000 (11,893)	7,000 (11,893)	7,000 (11,893)	7,000 (11,893)	7,000 (11,893)	7,000 (11,893)	7,000 (11,893)
Number Motors	2	2	2	2	2	2	2
Motor HP (kW), per motor	1.0 (0.75)	1.0 (0.75)	1.0 (0.75)	1.0 (0.75)	1.0 (0.75)	1.0 (0.75)	1.0 (0.75)
Motor RPM	1,140	1,140	1,140	1,140	1,140	1,140	1,140
Indoor Fan							
Type	Airfoil	Airfoil	Airfoil	Airfoil	Airfoil	Airfoil	Airfoil

Table 13. OADG general data – cooling 10 to 20 tons high efficiency (continued)

	10 Tons Downflow	12 Tons Downflow	15 Tons Downflow	17 Tons Downflow	20 Tons Downflow	25 Tons Downflow	30 Tons Downflow
	OADG010	**OADG012**	**OADG015**	**OADG017**	**OADG020**	**OADG025**	**OADG030**
Number Used	1	1	1	1	1	1	1
Diameter, in. (mm)	Varies	Varies	Varies	Varies	Varies	Varies	Varies
Drive Type	Direct Drive	Direct Drive	Direct Drive	Direct Drive	Direct Drive	Direct Drive	Direct Drive
Number Motors	1	1	1	1	1	1	1
Motor HP (kW)	1–7.5 (0.75–5.59)	1–7.5 (0.75–5.59)	1–7.5 (0.75–5.59)	1–7.5 (0.75–5.59)	1–7.5 (0.75–5.59)	1–7.5 (0.75–5.59)	1–7.5 (0.75–5.59)
Motor RPM	1750–3500	1750–3500	1750–3500	1750–3500	1750–3500	1750–3500	1750–3500
Motor Frame Size	Varies	Varies	Varies	Varies	Varies	Varies	Varies
Filters							
Type Furnished	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"
Number Size Recommended							

(a) Cooling performance based off 53.8 dew point, default digital compressors without hot gas reheat.

Table 14. OADG general data – ASHP 10 to 20 tons high efficiency

	10 Tons Downflow	12 Tons Downflow	15 Tons Downflow	17 Tons Downflow	20 Tons Downflow
	OADG010	**OADG012**	**OADG015**	**OADG017**	**OADG020**
Performance[(a)]					
Gross Cooling Capacity, Btu (kW)	121,332 (35.56)	137,353 (40.25)	194,707 (57.06)	201,757 (59.13)	236,420 (69.29)
Compressor					
Number	2	2	2	2	2
Type	Scroll	Scroll	Scroll	Scroll	Scroll
Outdoor Fan					
Type	Propeller	Propeller	Propeller	Propeller	Propeller
Number Used	2	2	2	3	3
Diameter, in. (mm)	27 (685.8)	27 (685.8)	27 (685.8)	27 (685.8)	27 (685.8)
Drive Type	Direct	Direct	Direct	Direct	Direct
No. Speeds	1	1	1	1	1
Fan CFM (m^3/h)	7,000 (11,893)	7,000 (11,893)	7,000 (11,893)	7,000 (11,893)	7,000 (11,893)
Number Motors	2	2	2	3	3
Motor HP (kW), per motor	1.0 (0.75)	1.0 (0.75)	1.0 (0.75)	1.0 (0.75)	1.0 (0.75)
Motor RPM	1,140	1,140	1,140	1,140	1,140
Indoor Fan					
Type	Airfoil	Airfoil	Airfoil	Airfoil	Airfoil
Number Used	1	1	1	1	1
Diameter, in. (mm)	Varies	Varies	Varies	Varies	Varies
Drive Type	Direct Drive	Direct Drive	Direct Drive	Direct Drive	Direct Drive
Number Motors	1	1	1	1	1
Motor HP (kW)	1–7.5 (0.75–5.59)	1–7.5 (0.75–5.59)	1–7.5 (0.75–5.59)	1–7.5 (0.75–5.59)	1–7.5 (0.75–5.59)
Motor RPM	1750–3500	1750–3500	1750–3500	1750–3500	1750–3500
Motor Frame Size	Varies	Varies	Varies	Varies	Varies
Filters					
Type Furnished	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"
Number Size Recommended					

(a) Cooling performance based off 53.8 dew point, default digital compressors without hot gas reheat.

Table 15. OANG general data – cooling 40 to 80 tons high efficiency

	40 Tons Downflow	45 Tons Downflow	50 Tons Downflow	55 Tons Downflow	60 Tons Downflow	70 Tons Downflow	80 Tons Downflow
	OANG040	**OANG045**	**OANG050**	**OANG055**	**OANG060**	**OANG070**	**OANG080**
Cooling Performance (6-row)[a]							
Gross Cooling Capacity, Btu (kW)	487,698 (143.01)	539,740 (158.18)	601,892 (176.40)	645,148 (189.07)	699,401 (204.97)	822,340 (241.00)	899,241 (263.54)
Cooling Performance (4-row)[a]							
Gross Cooling Capacity, Btu (kW)	463,899 (135.96)	514,394 (150.75)	556,577 (163.12)	658,283 (192.92)	739,356 (216.68)	825,144 (241.83)	N/A
Compressor							
Number	4	4	4	4	4	4	4-6
Type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Outdoor Fan							
Type	Propeller	Propeller	Propeller	Propeller	Propeller	Propeller	Propeller
Number Used	4	4	4	6	6	6	6
Diameter, in. (mm)	30 (762)	30 (762)	30 (762)	30 (762)	30 (762)	30 (762)	30 (762)
Drive Type	Direct	Direct	Direct	Direct	Direct	Direct	Direct
No. Speeds	1	1	1	1	1	1	1
Fan CFM (m^3/h)	40,000 (67,960)	40,000 (67,960)	40,000 (67,960)	60,000 (101,941)	60,000 (101,941)	60,000 (101,941)	60,000 (101,941)
Number Motors	4	4	4	6	6	6	6
Motor HP (kW), per motor	1.5 (1.12)	1.5 (1.12)	1.5 (1.12)	1.5 (1.12)	1.5 (1.12)	1.5 (1.12)	1.5 (1.12)
Motor RPM	1,140	1,140	1,140	1,140	1,140	1,140	1,140
Indoor Fan							
Type	Backward Inclined	Backward Inclined	Backward Inclined	Backward Inclined	Backward Inclined	Backward Inclined	Backward Inclined
Number Used	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2
Diameter, in. (mm)	Varies	Varies	Varies	Varies	Varies	Varies	Varies
Drive Type	Direct Drive	Direct Drive	Direct Drive	Direct Drive	Direct Drive	Direct Drive	Direct Drive
Number Motors	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2	1 or 2
Motor HP (kW) (Standard/ Oversized)	1.5–20 (1.12–14.91)	1.5–20 (1.12–14.91)	1.5–20 (1.12–14.91)	1.5–20 (1.12–14.91)	1.5–20 (1.12–14.91)	1.5–20 (1.12–14.91)	1.5–20 (1.12–14.91)
Motor RPM (Standard/ Oversized)	1750–3500	1750–3500	1750–3500	1750–3500	1750–3500	1750–3500	1750–3500
Motor Frame Size (Standard/ Oversized)	Varies	Varies	Varies	Varies	Varies	Varies	Varies
Filters							
Type Furnished	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"	Refer to "Horizon™ OAU Filter Guide"
Number Size Recommended							

(a) Cooling performance based off 53.8 dew point, default digital compressors without hot gas reheat.

Unit Clearances, Curb Dimensions, and Dimensional Data

⚠WARNING

Combustible Materials!

Failure to maintain proper clearance between the unit and combustible materials could cause a fire which could result in death, serious injury, or property damage.
Refer to unit nameplate and installation instructions for proper clearances.

⚠AVERTISSEMENT

Matériaux combustibles!

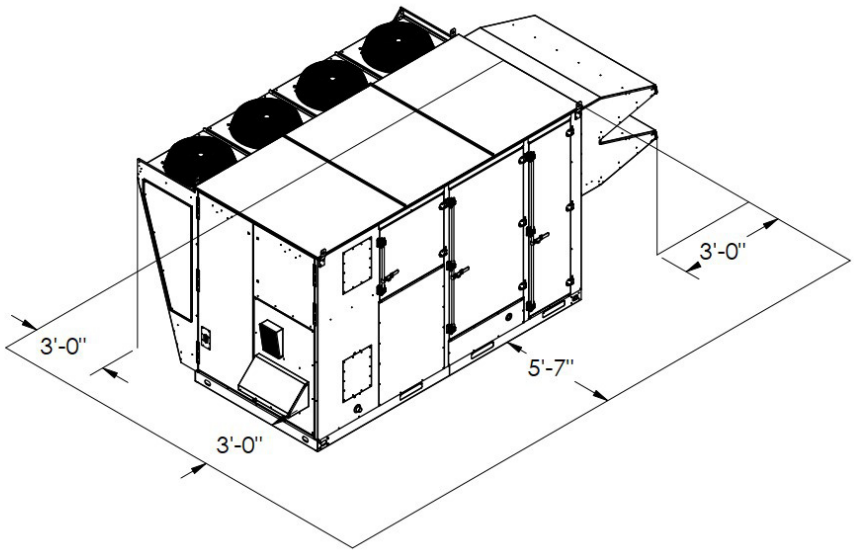
Tout manquement à l'obligation de maintenir une distance appropriée entre l'échangeur de chaleur de l'unité, les surfaces de ventilation et les matériaux combustibles peut provoquer un incendie pouvant résulter en des blessures corporelles graves, voire mortelles, ou des dommages matériels. Reportez-vous à la plaque signalétique de l'unité et aux instructions d'installation pour connaître les distances appropriées.

OAN Units

Unit Clearances

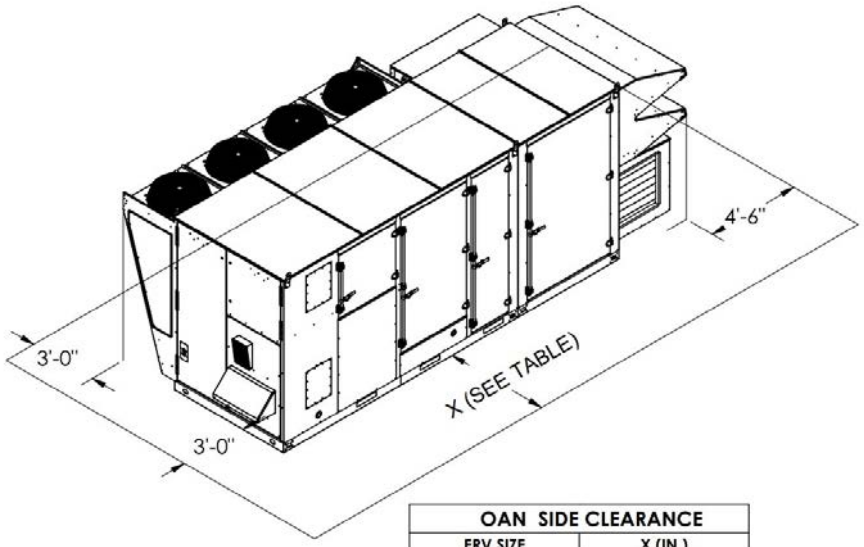
Note: *Minimum clearance above the unit is 72-inches.*

Figure 14. Typical installation clearances for OAN unit



Note: *Minimum clearance above the unit is 72-inches.*

Figure 15. Typical installation clearances for OAN unit with auxiliary cabinet



OAN SIDE CLEARANCE	
ERV SIZE	X (IN.)
58XX	67
68XX	74
74XX	80

Note: *Certain options require auxiliary cabinet. Refer to project-specific unit submittals.*

Figure 16. Typical installation clearances for OAN unit

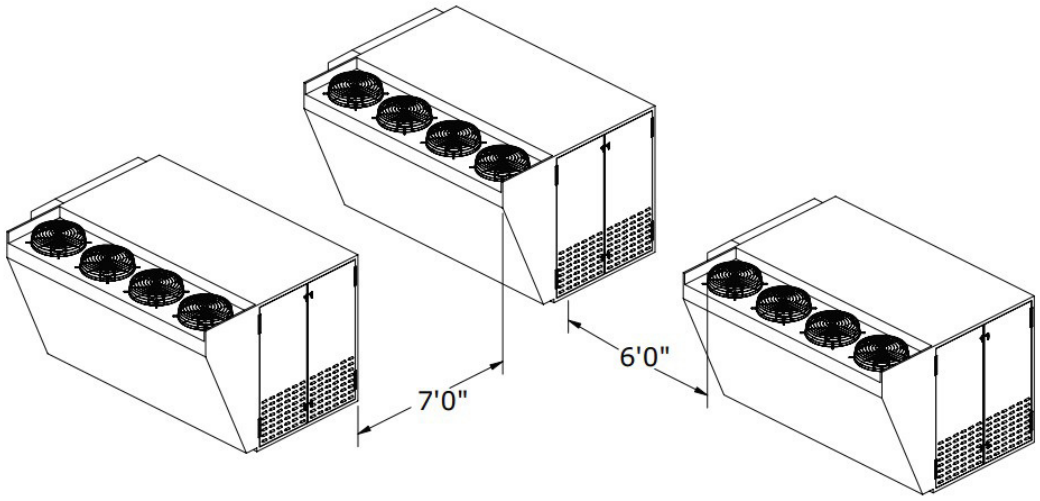
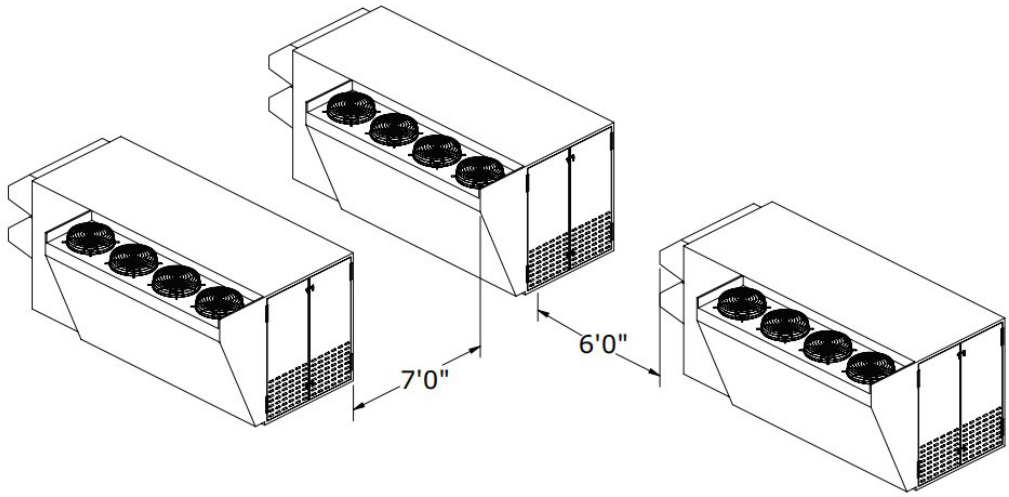


Figure 17. Typical installation clearances for OAN unit with auxiliary cabinet



Note: *Certain options require auxiliary cabinet. Refer to project-specific unit submittals.*

Curb Dimensions

Figure 18. Unit curb data for OAN 30 to 60 tons

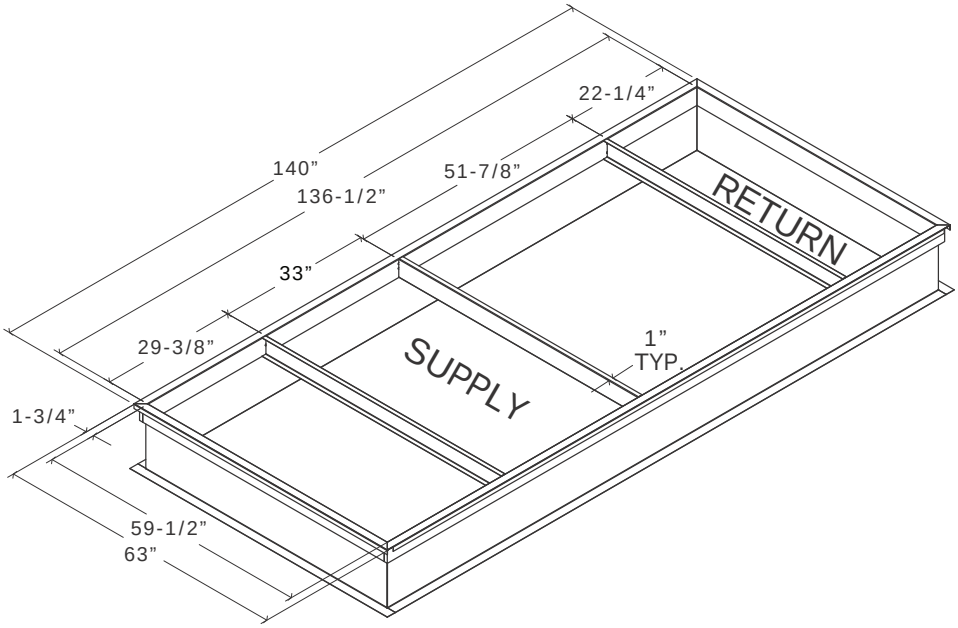
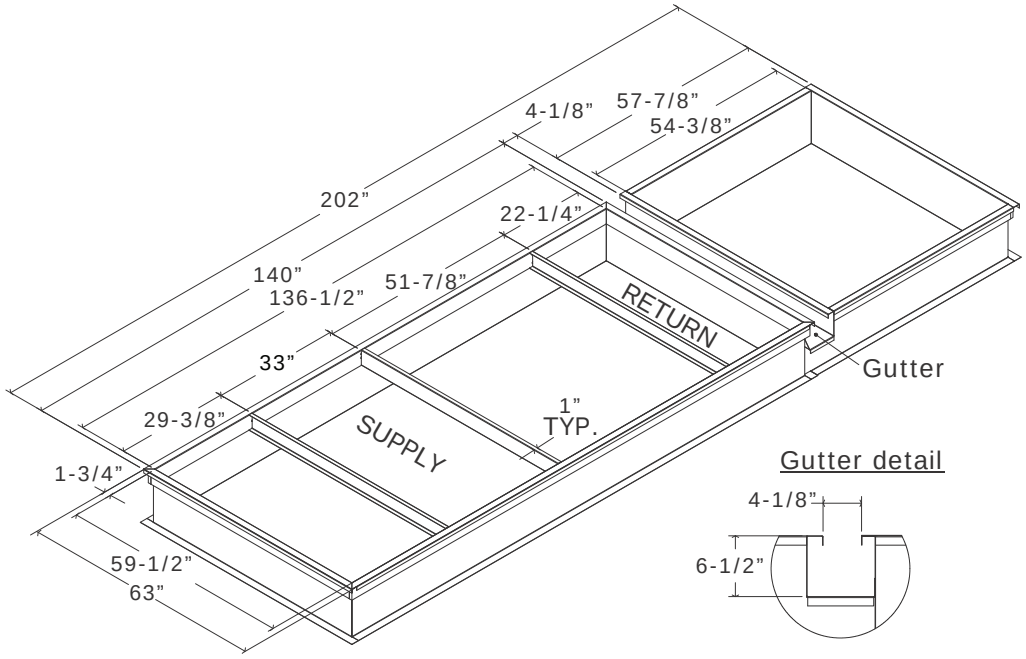


Figure 19. Unit curb data for OAN 30 to 60 tons with auxiliary cabinet



Note: *Certain options require auxiliary cabinet. Refer to project-specific unit submittals.*

Dimensional Data

Figure 20. Unit dimensional data for OAN 30 to 60 tons, vertical supply and vertical/no return without ERV

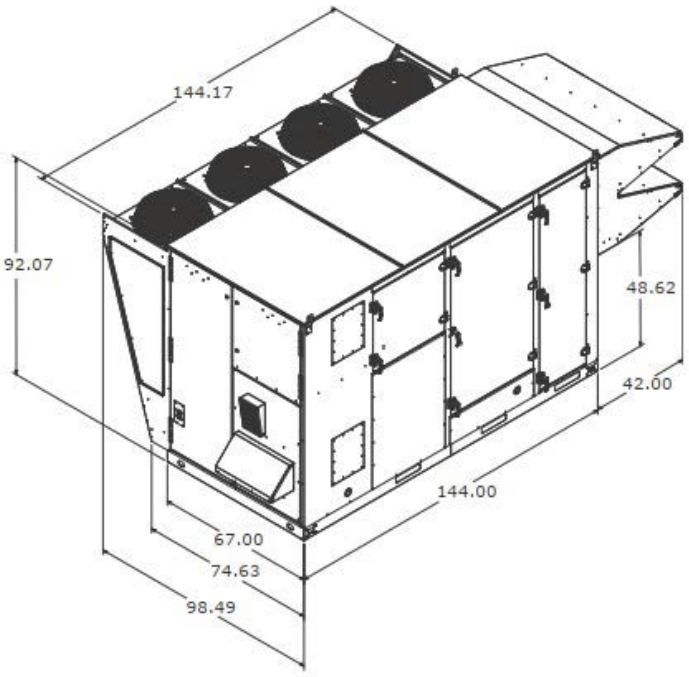


Figure 21. Unit dimensional data for OAN 30 to 60 tons with auxiliary cabinet, vertical supply and vertical return with ERV

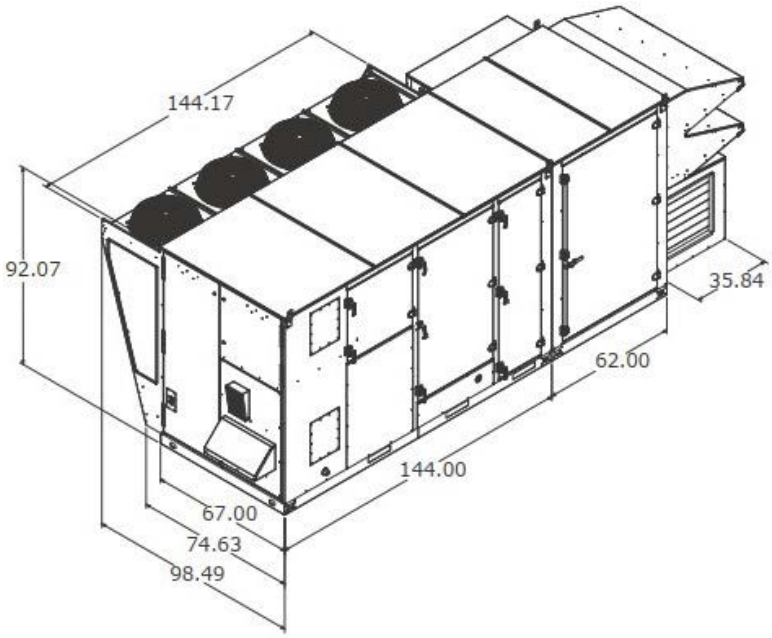


Figure 22. Unit dimensional data for OAN 30 to 60 tons, vertical/no return (dual dimensions, in. [cm])

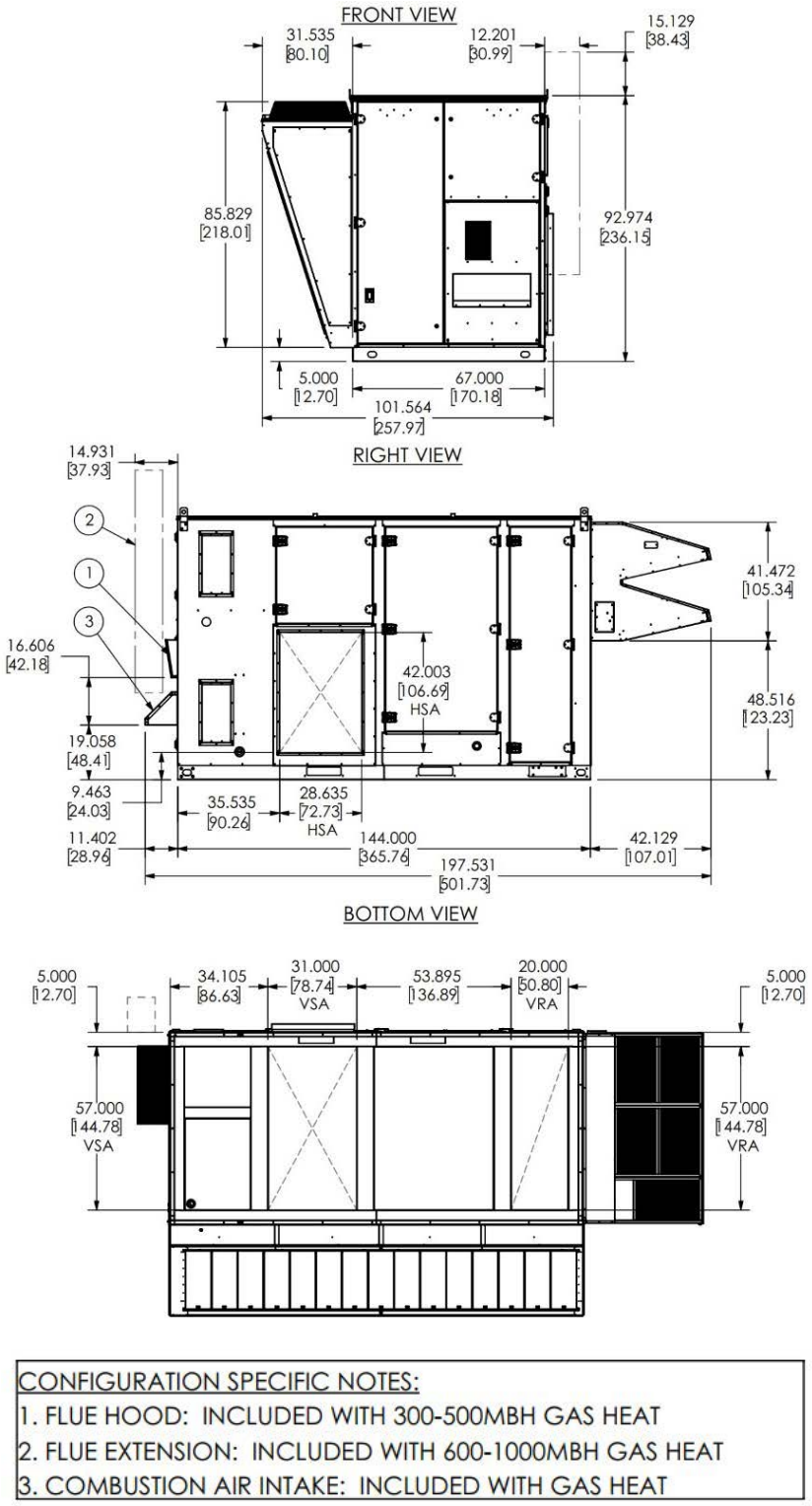


Figure 23. Unit dimensional data for OAN 30 to 60 tons horizontal return (dual dimensions, in. [cm])

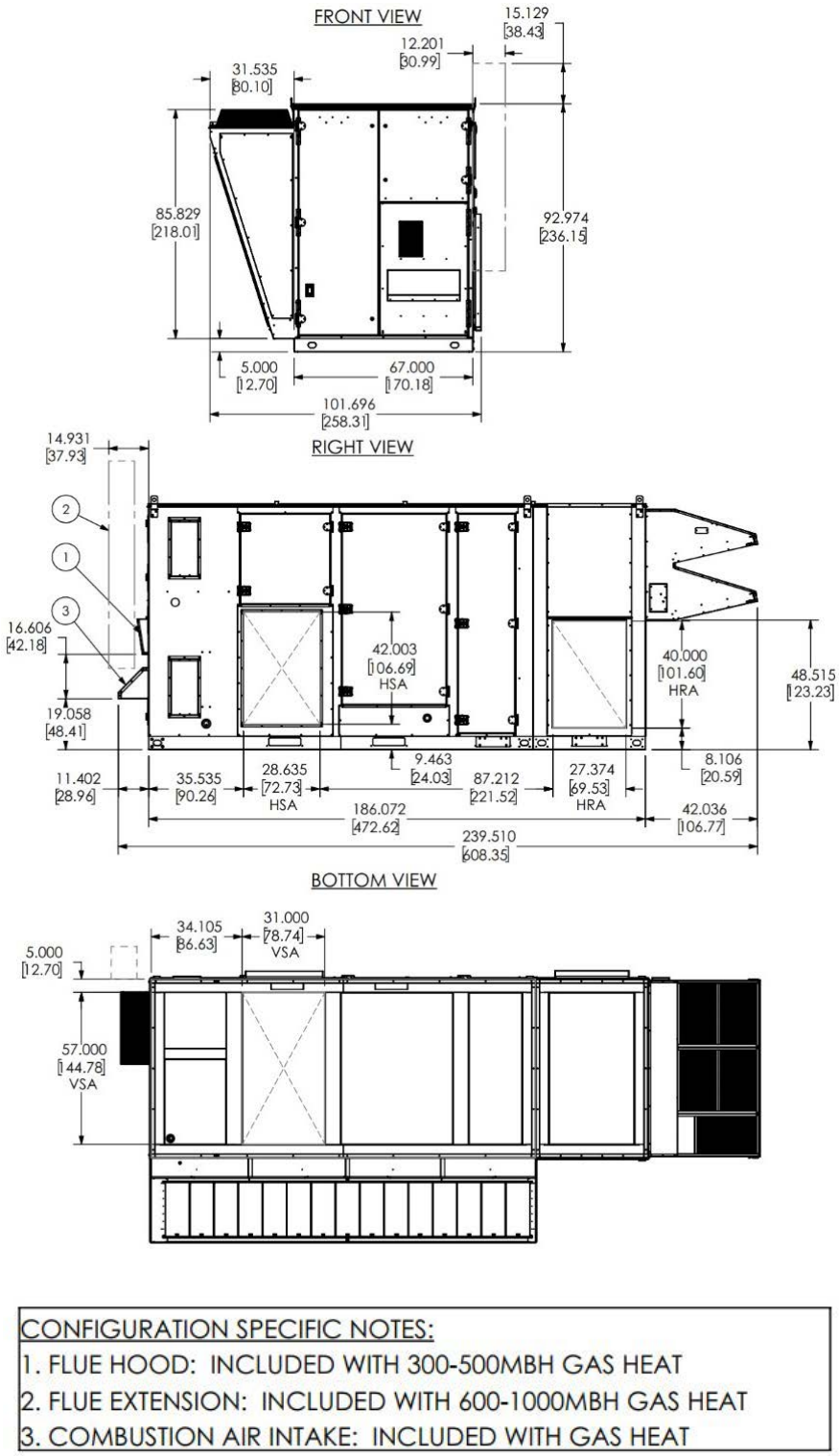
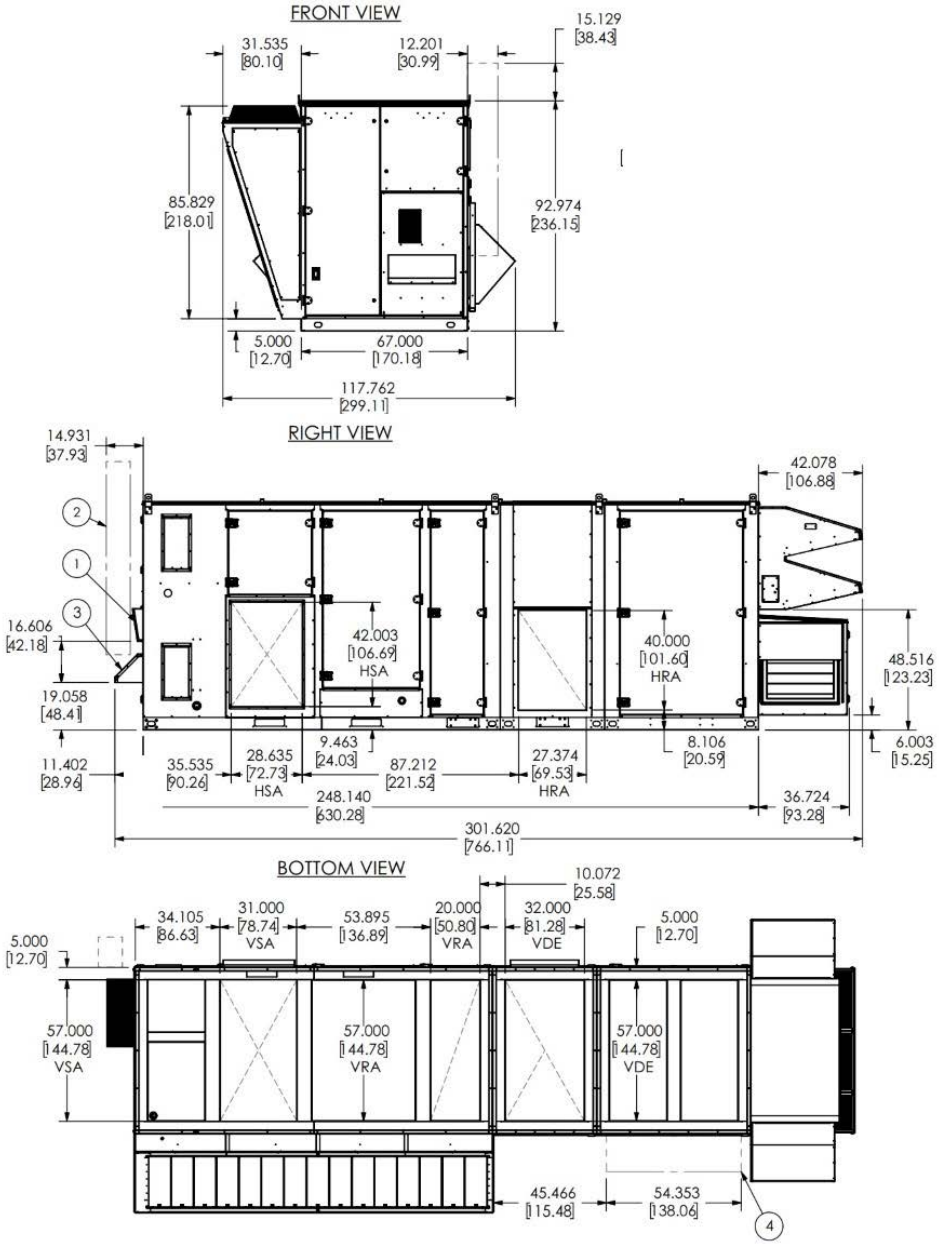


Figure 24. Unit dimensional data for OAN 30 to 60 tons, vertical/horizontal supply and horizontal return with ERV (dual dimensions, in. [cm])



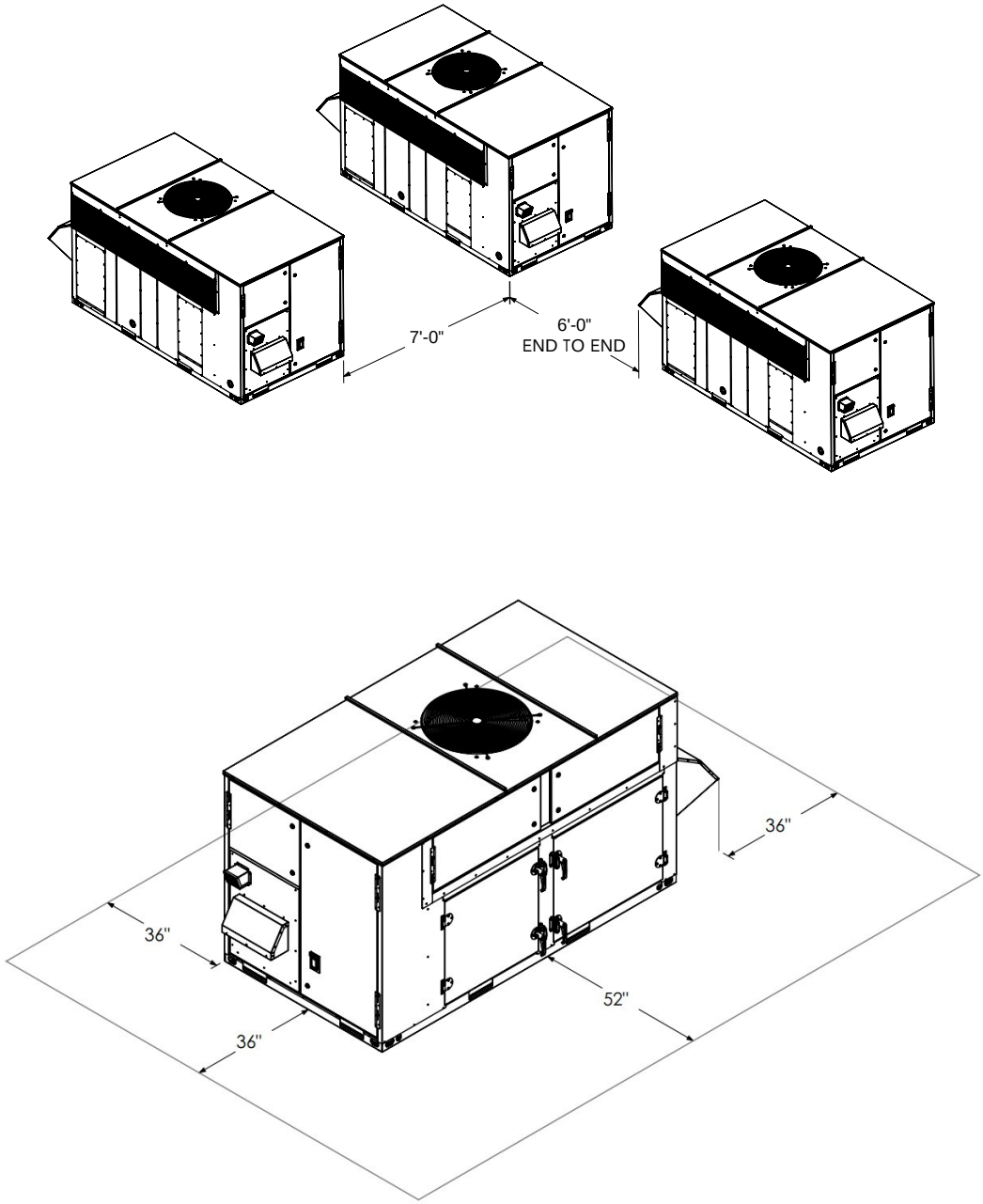
Note: *Certain options require auxiliary cabinet. Refer to project-specific unit submittals.*

OAB Units

Unit Clearances

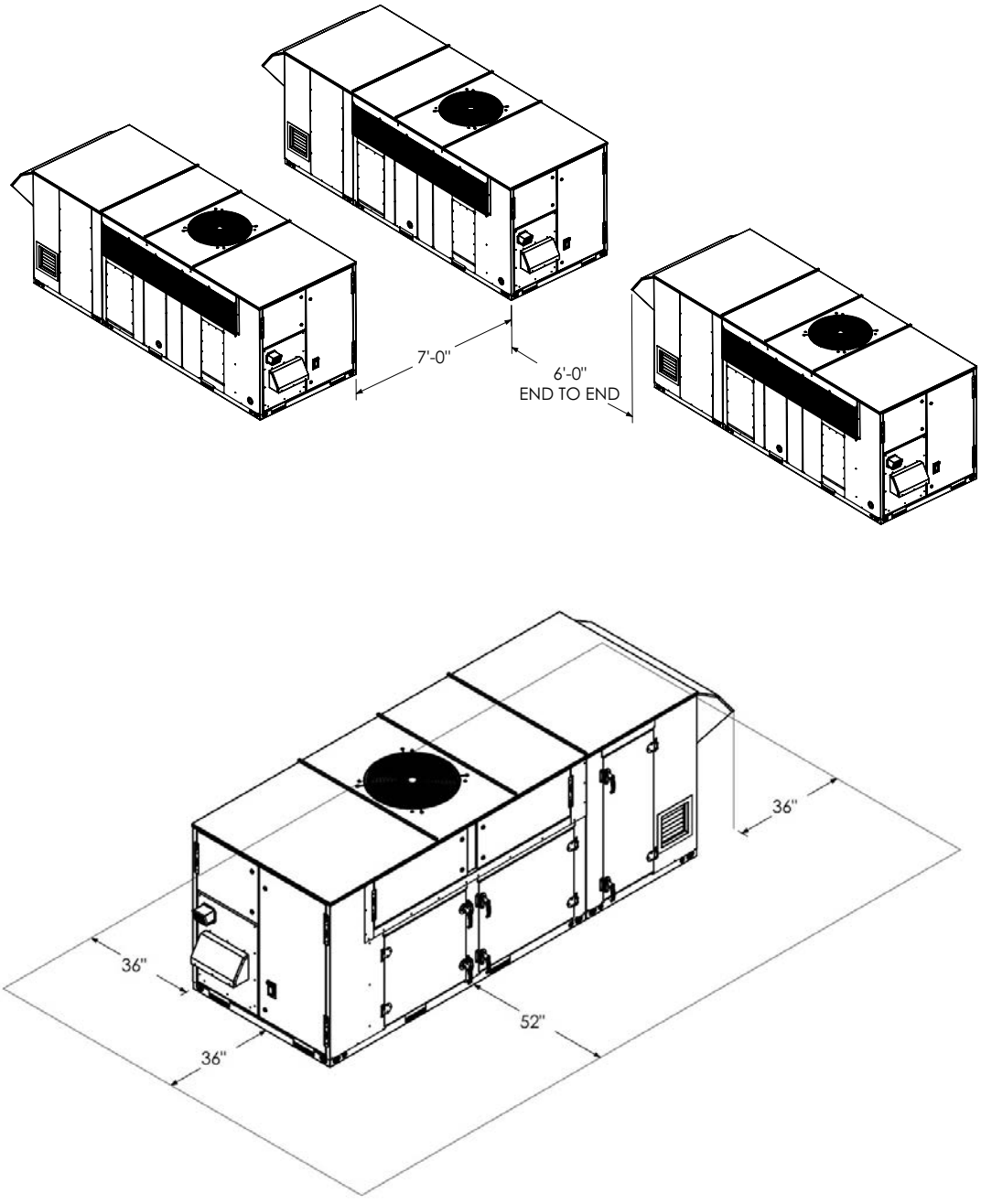
Note: *Minimum clearance above the unit is 72-inches.*

Figure 25. Typical installation clearances for OAB unit



Note: *Minimum clearance above the unit is 72-inches.*

Figure 26. Typical installation clearances for OAB unit with auxiliary cabinet



Note: *Certain options require auxiliary cabinet. Refer to project-specific unit submittals.*

Curb Dimensions

Figure 27. Unit curb data for OAB 3 to 9 tons

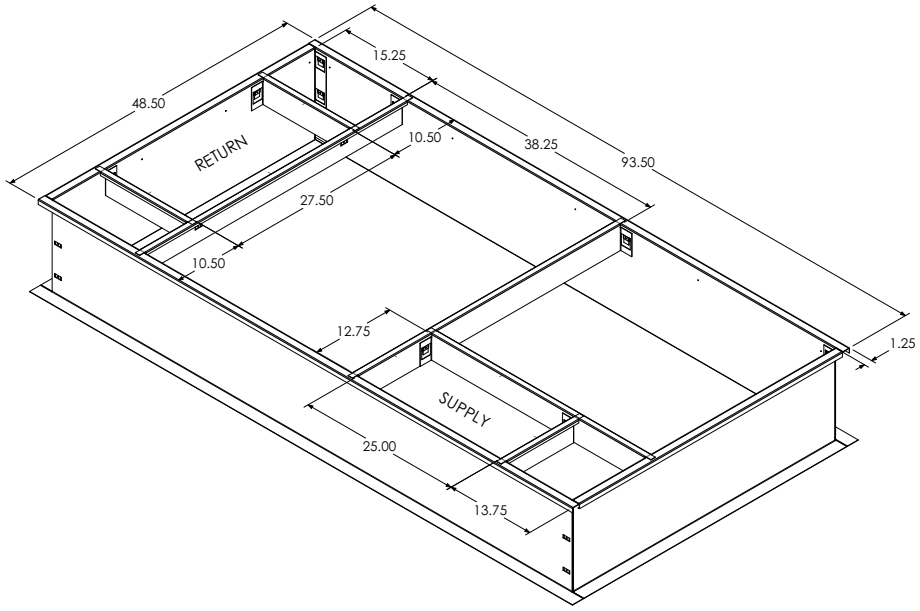
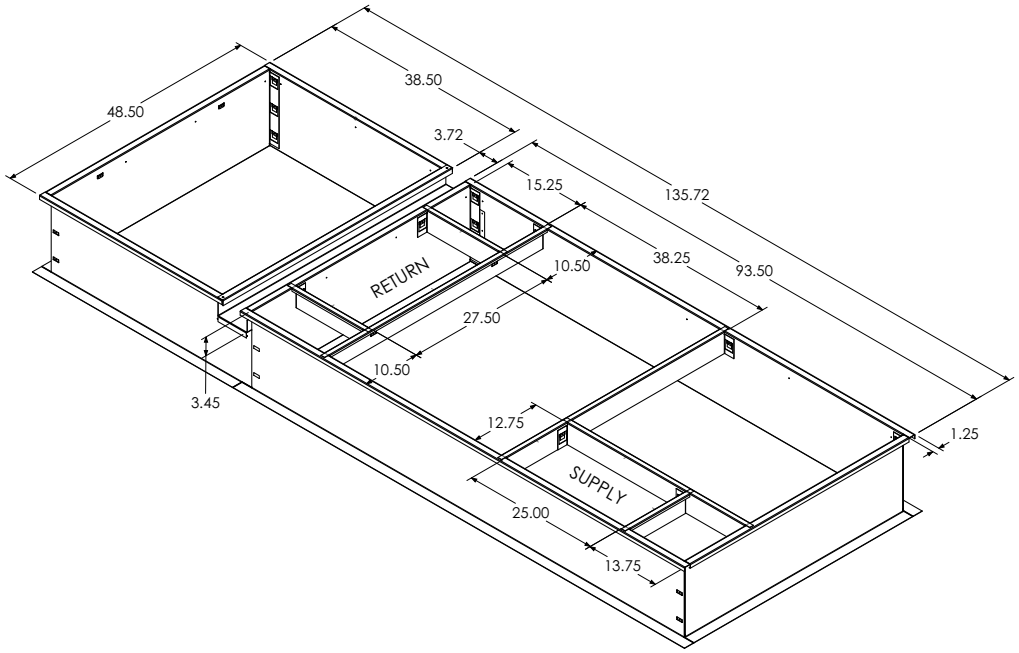


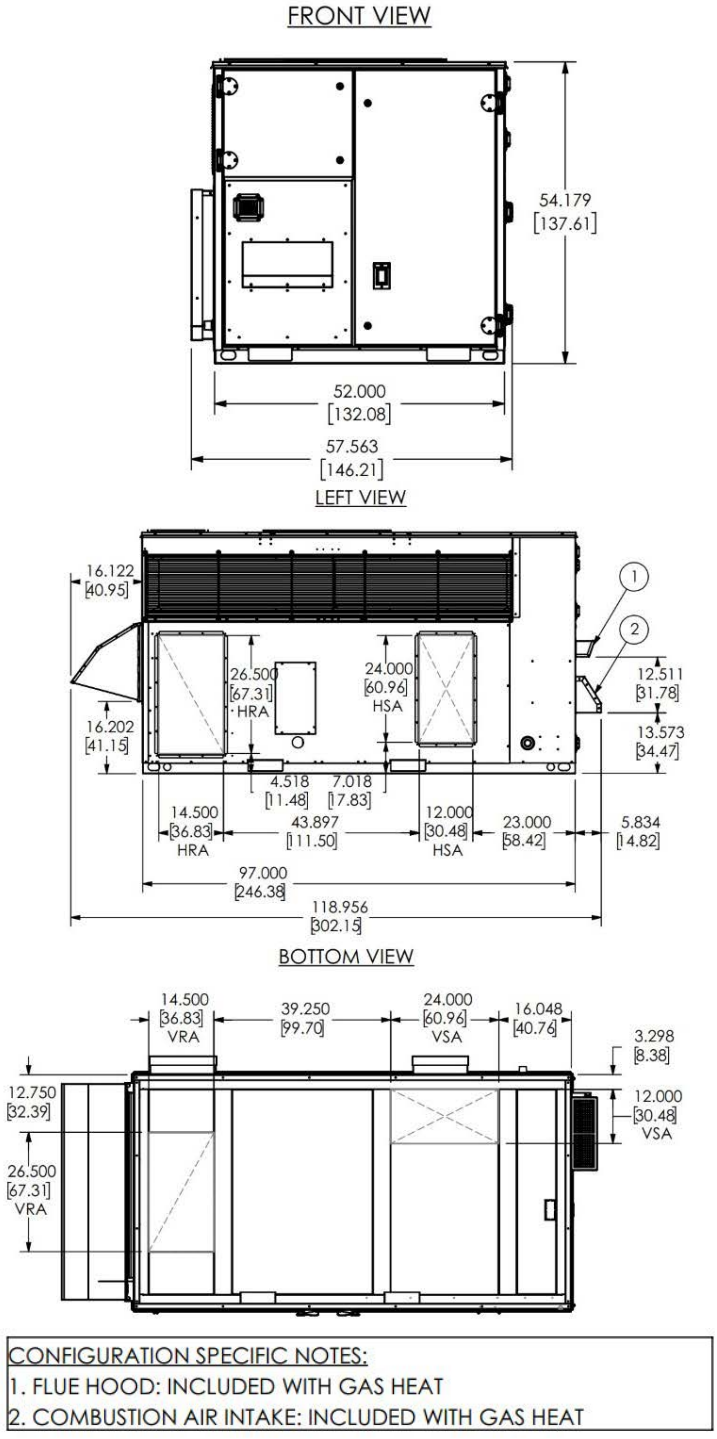
Figure 28. Unit curb data for OAB 3 to 9 tons with auxiliary cabinet



Note: *Certain options require auxiliary cabinet. Refer to project-specific unit submittals.*

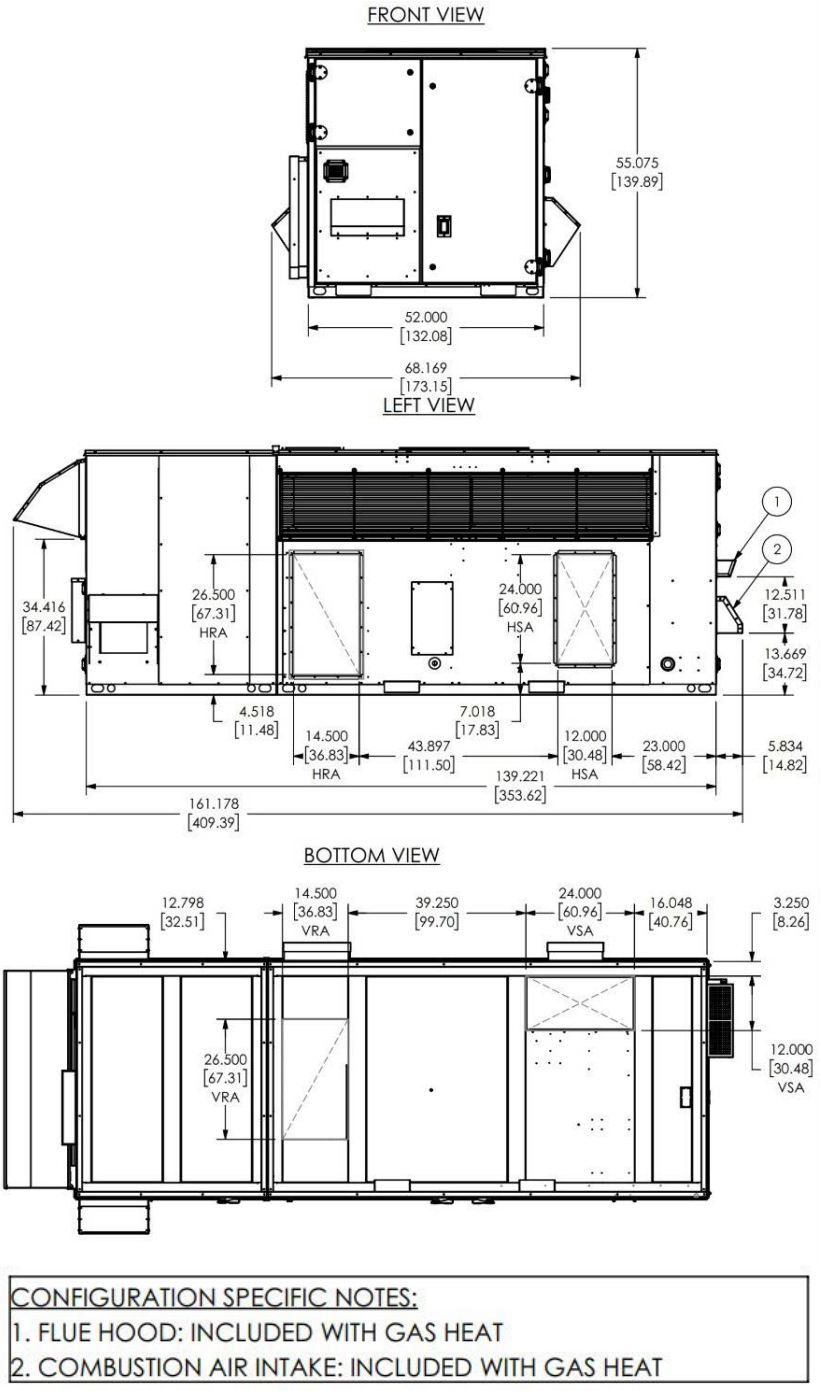
Dimensional Data

Figure 29. Unit dimensional data for OAB 3 to 9 tons (dual dimensions, in. [cm])



Note: *Sound attenuation package will add 17.76 in. to the height of the condenser fan section. Refer to project-specific unit submittals.*

Figure 30. Unit dimensional data for OAB 3 to 9 tons with auxiliary cabinet (dual dimensions, in. [cm])



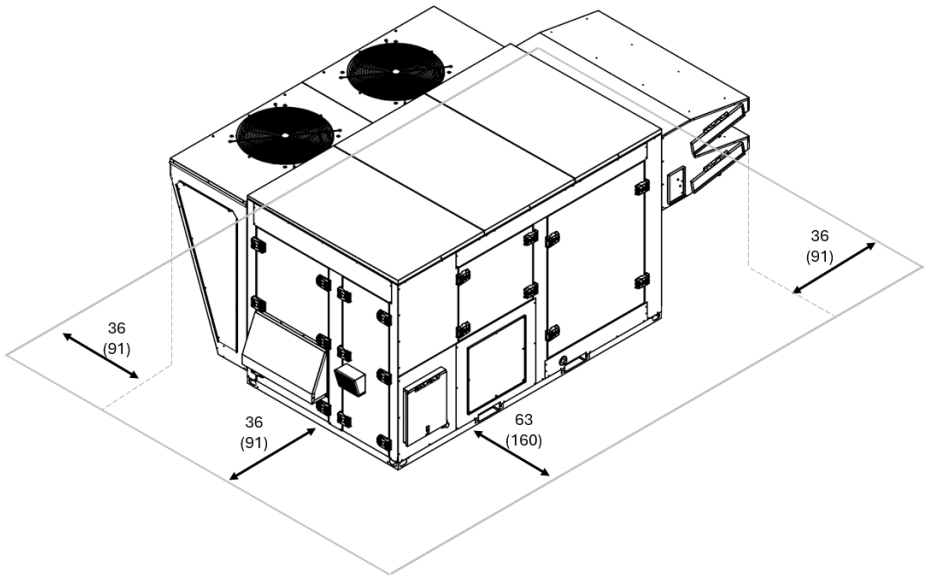
Notes:

- *Certain options require auxiliary cabinet. Refer to project-specific unit submittals.*
- *Sound attenuation package will add 17.76 in. to the height of the condenser fan section. Refer to project-specific unit submittals.*

OADG Units

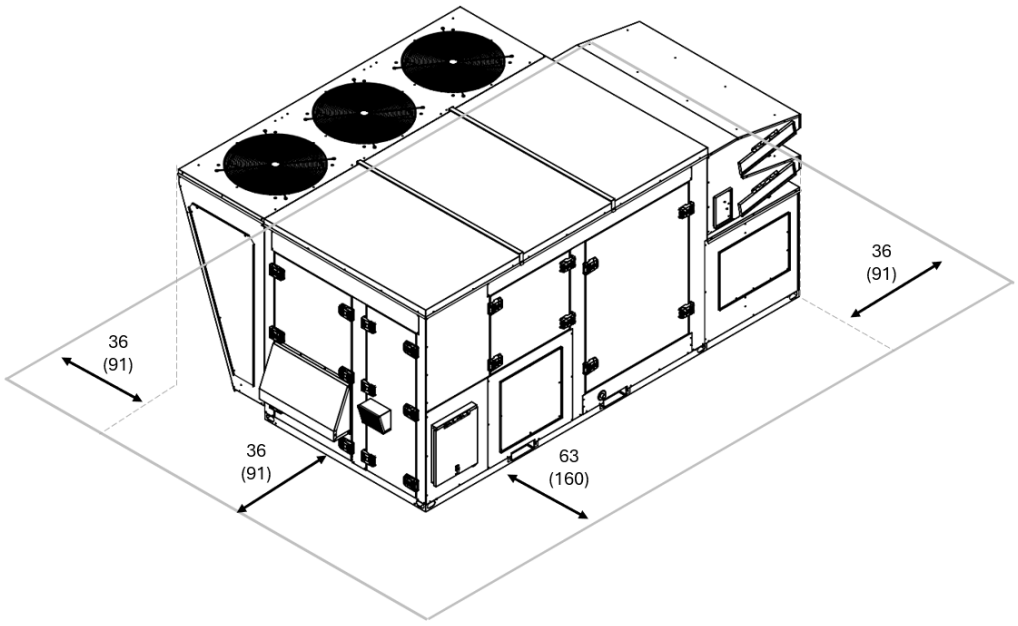
Unit Clearances

Figure 31. Installation clearances for units with no powered exhaust or ERV, in. (cm)



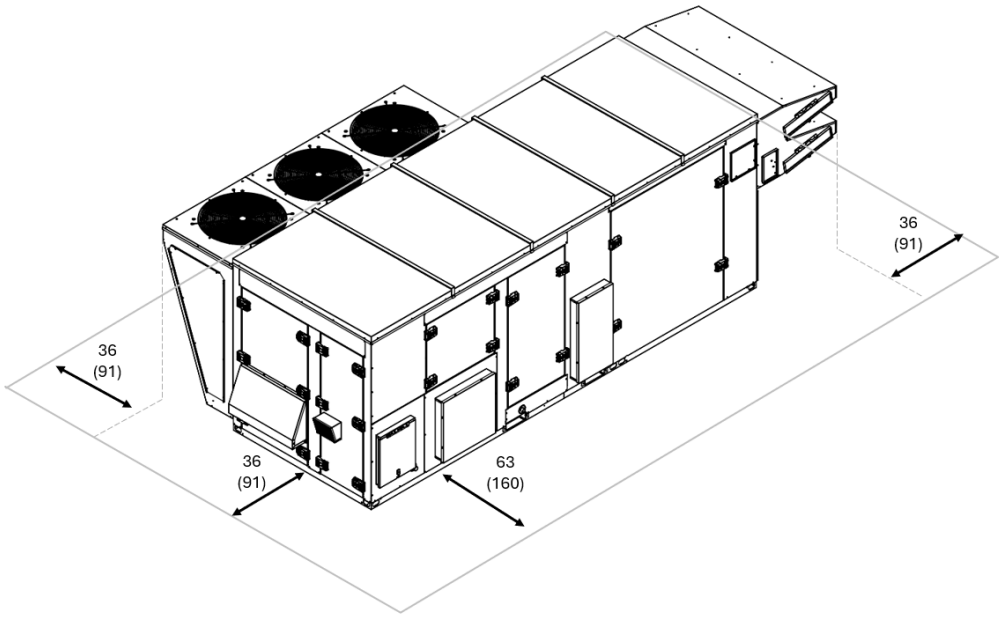
Note: *Minimum of 72 in. (182.9 cm) clearance is required above the condenser fans.*

Figure 32. Installation clearances for unit with powered exhaust but no ERV, in. (cm)



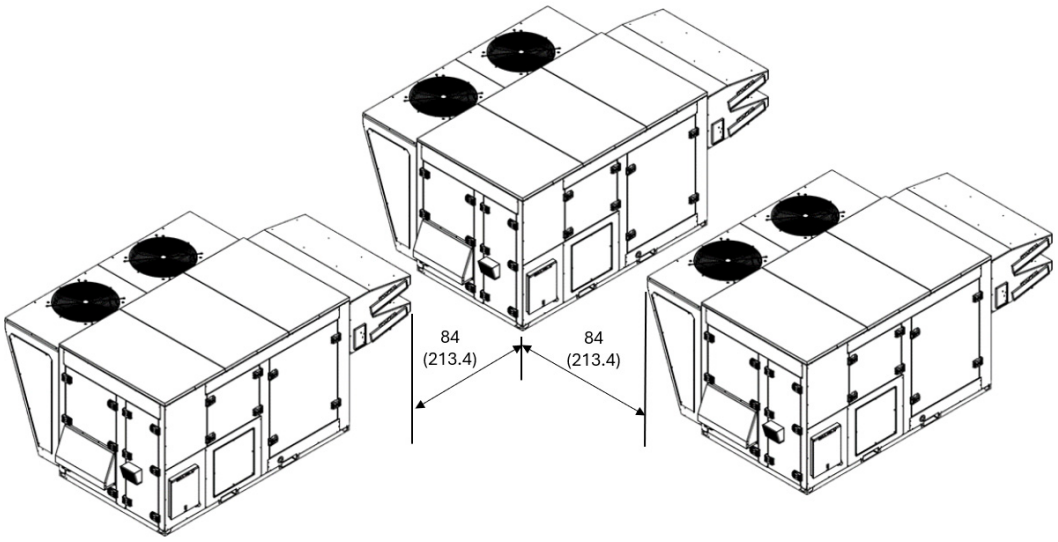
Note: *Minimum of 72 in. (182.9 cm) clearance is required above the condenser fans.*

Figure 33. Installation clearances for unit with ERV, in. (cm)



Note: *Minimum of 72 in. (182.9 cm) clearance is required above the condenser fans.*

Figure 34. Unit to unit clearance, in. (cm)



Curb Dimensions

Figure 35. Unit curb data for OADG cabinet with no powered exhaust or ERV, in. (cm)

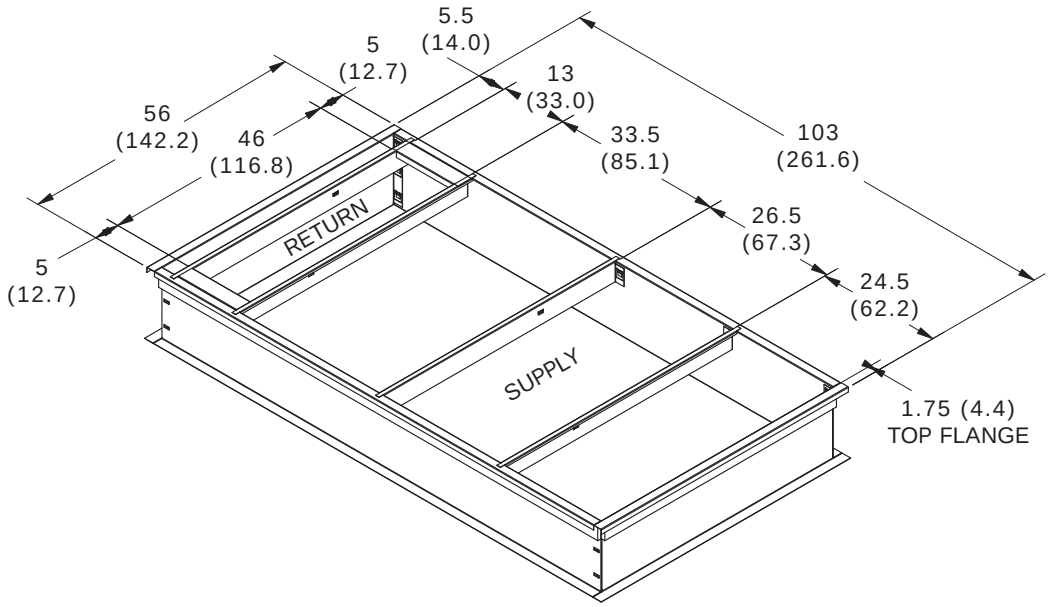


Figure 36. Unit curb data for OADG cabinet with powered exhaust but no ERV, in. (cm)

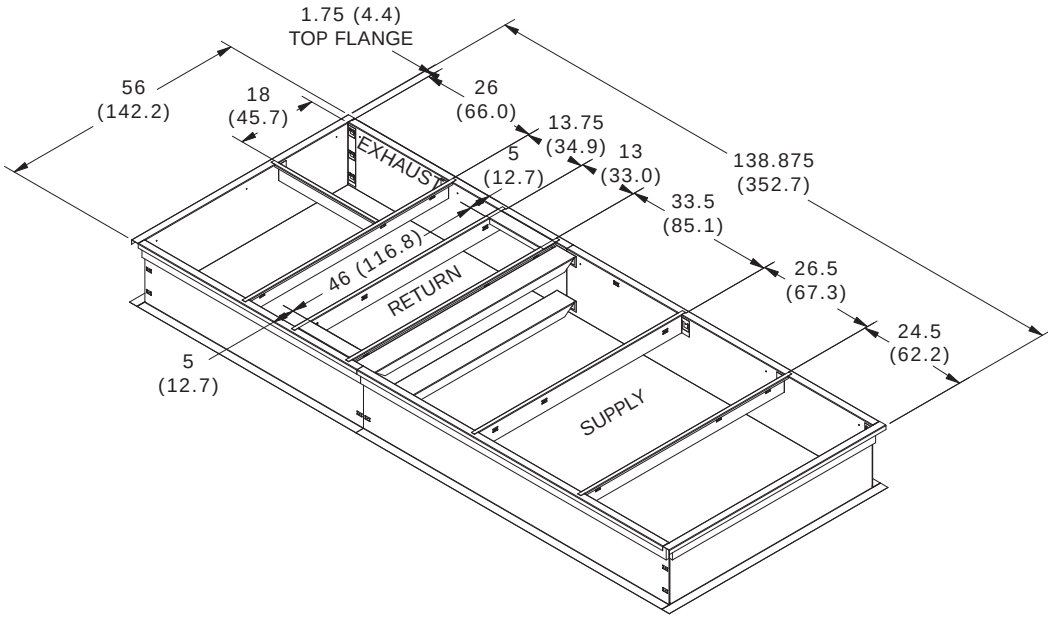
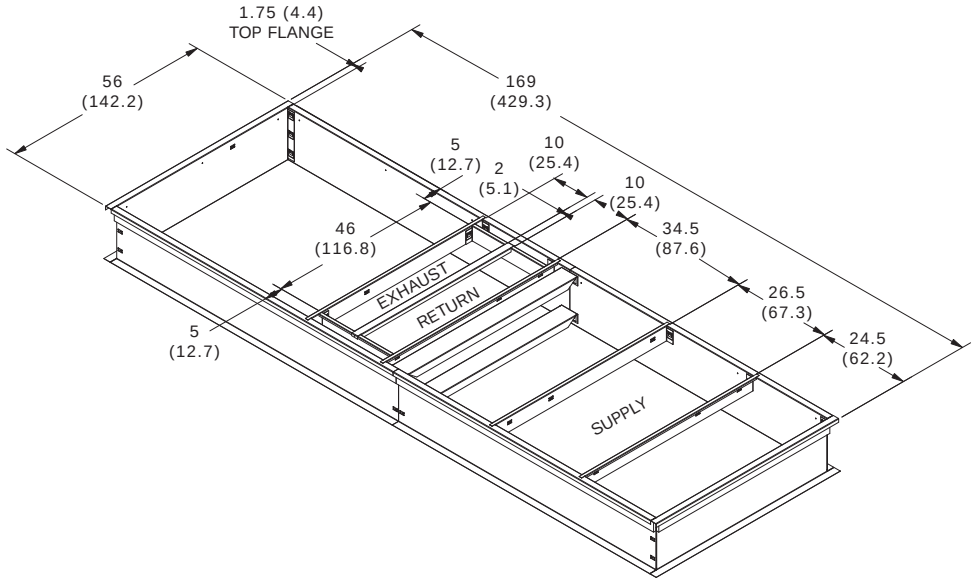
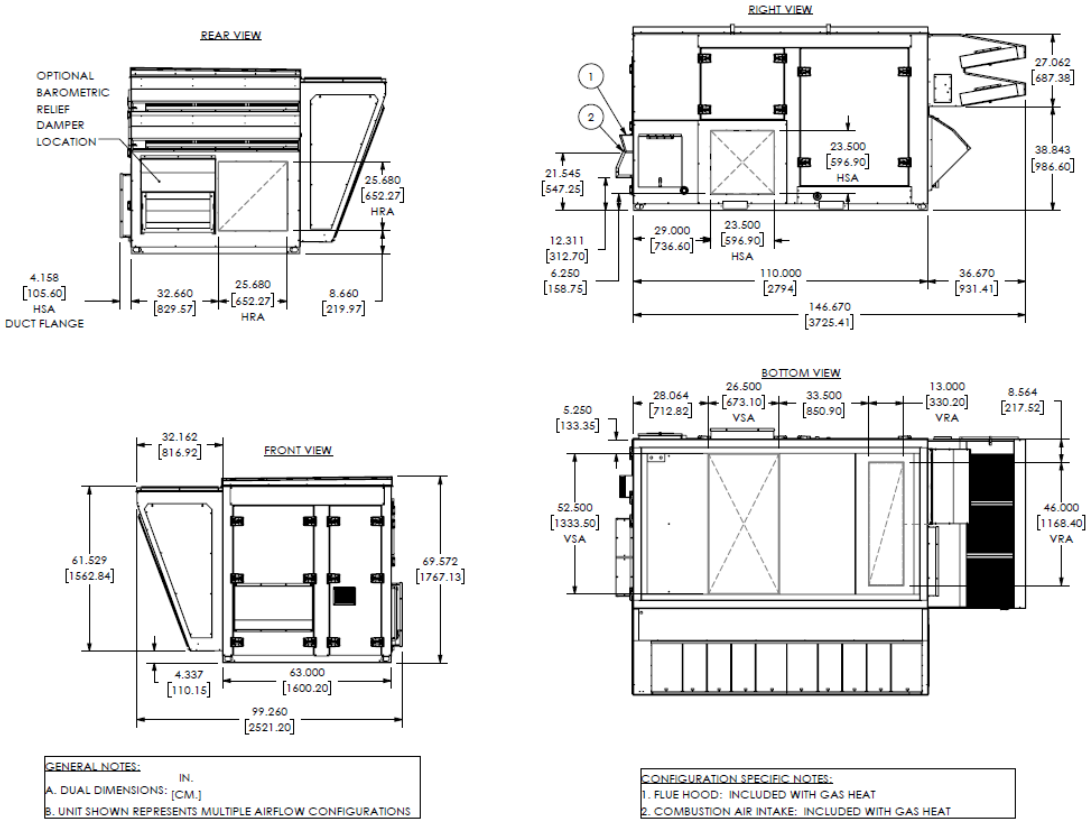


Figure 37. Unit curb data for OADG cabinet with ERV, in. (cm)



Dimensional Data

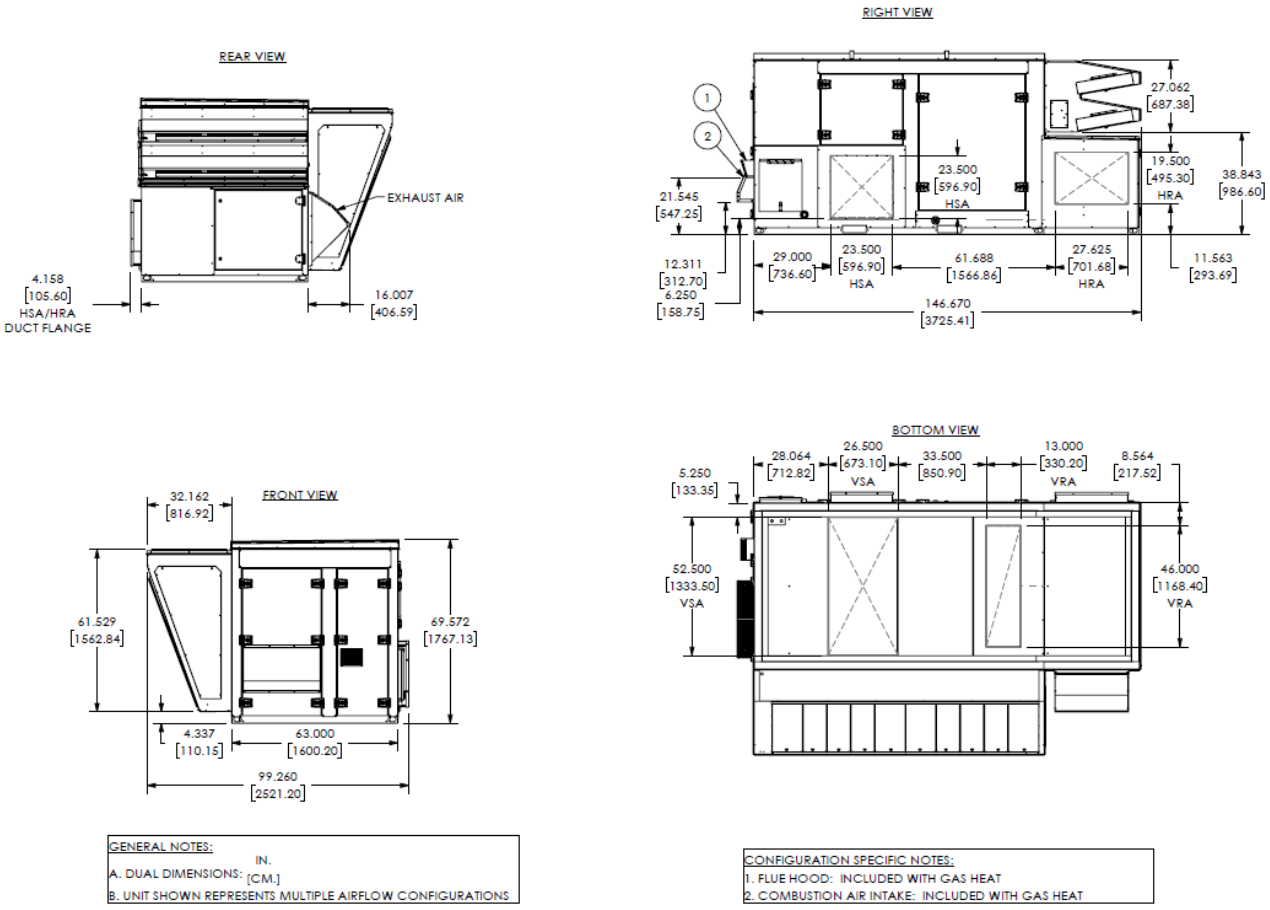
Figure 38. Unit dimensional data for OADG unit with no powered exhaust or ERV, in. (cm)



Notes:

- *Sound attenuation package will add 16 in. (40.6 cm) to the height of the condenser fan section.*
- *Units with no cooling will have the same dimensions, less the condensing section.*
- *Units with chilled water cooling will have the same dimensions, less the condensing section, and with an 18 in. (45.7 cm) deep pipe cabinet added.*
- *Refer to project-specific unit submittals.*

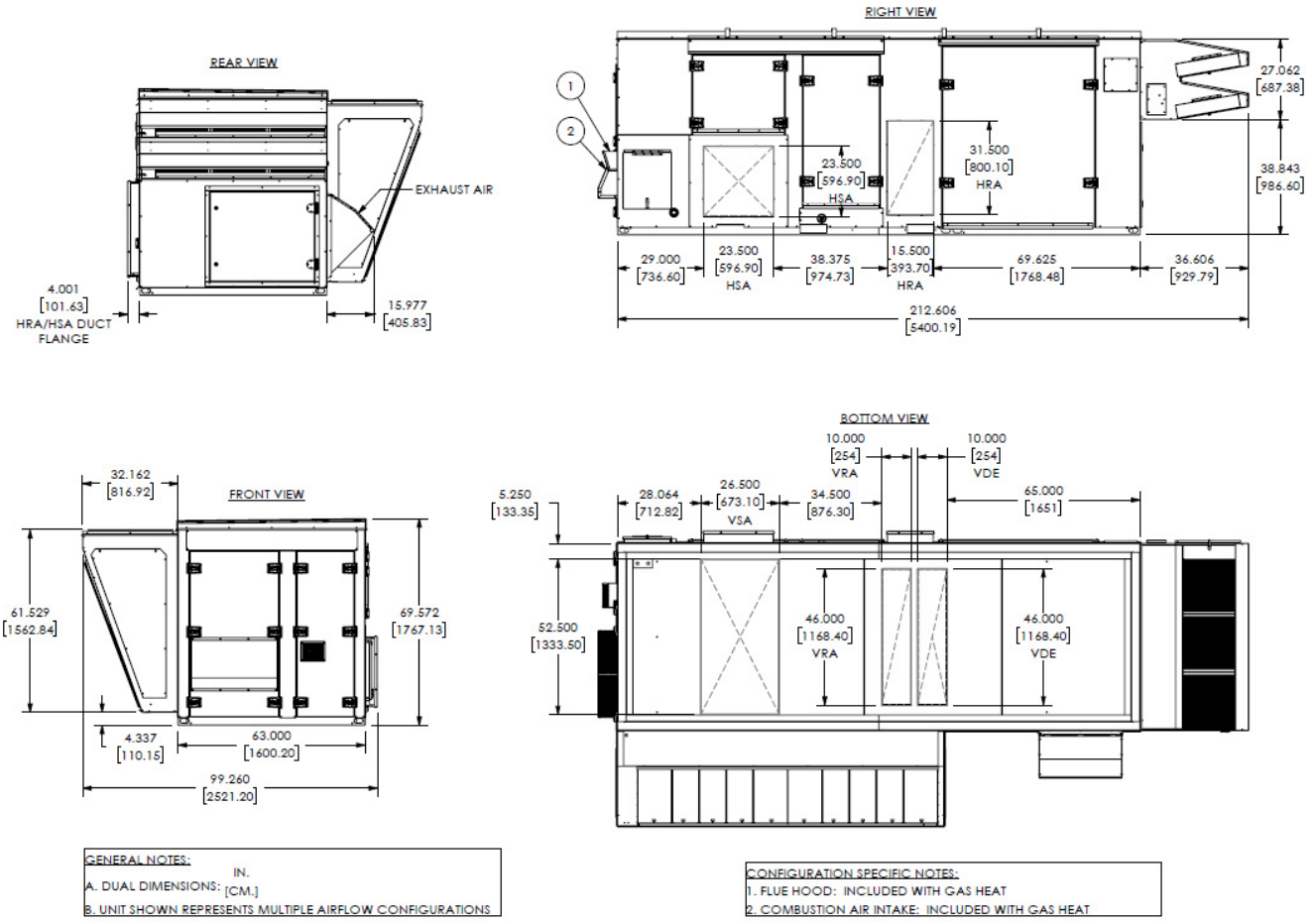
Figure 39. Unit dimensional data for OADG cabinet with powered exhaust but no ERV, in. (cm)



Notes:

- *Sound attenuation package will add 16 in. (40.6 cm) to the height of the condenser fan section.*
- *Units with no cooling will have the same dimensions, less the condensing section.*
- *Units with chilled water cooling will have the same dimensions, less the condensing section, and with an 18 in. (45.7 cm) deep pipe cabinet added.*
- *Refer to project-specific unit submittals.*

Figure 40. Unit dimensional data for OADG cabinet with ERV, in. (cm)



Notes:

- *Sound attenuation package will add 16 in. (40.6 cm) to the height of the condenser fan section.*
- *Units with no cooling will have the same dimensions, less the condensing section.*
- *Units with chilled water cooling will have the same dimensions, less the condensing section, and with an 18 in. (45.7 cm) deep pipe cabinet added.*
- *Refer to project-specific unit submittals.*

OANG Units

Unit Clearances

Figure 41. Installation clearances for units with no powered exhaust or ERV, in. (cm)

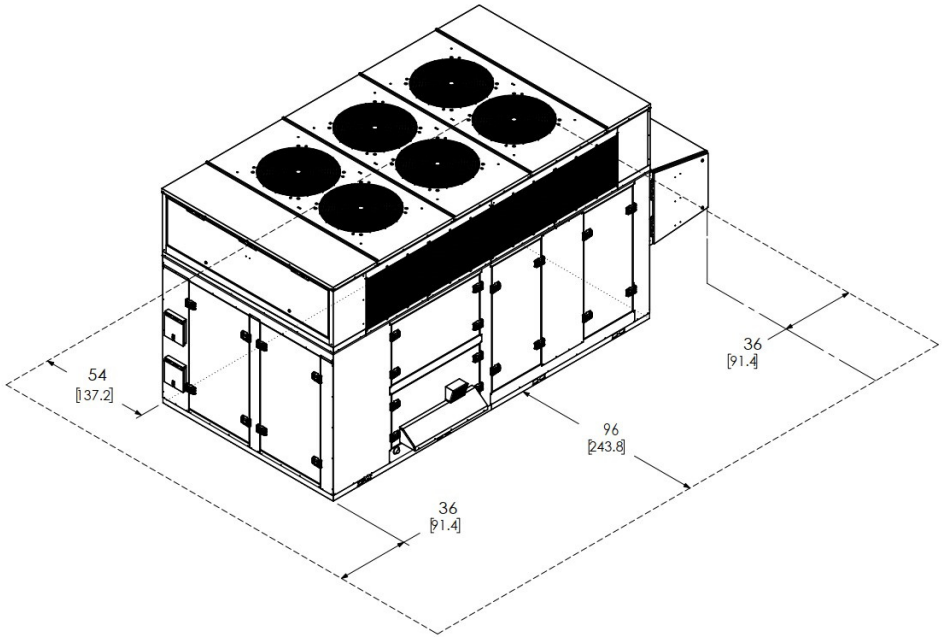
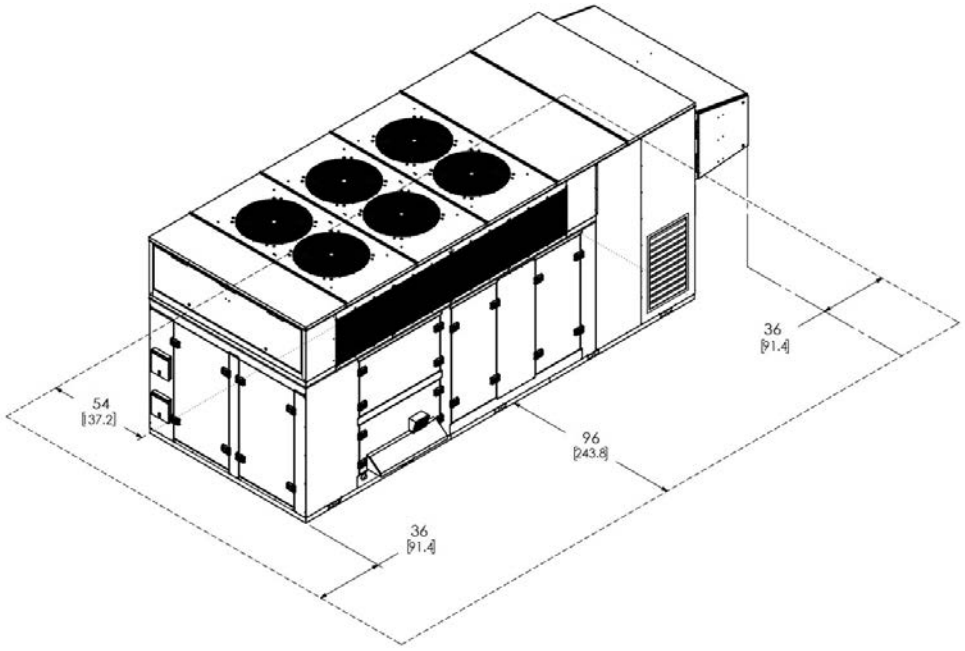
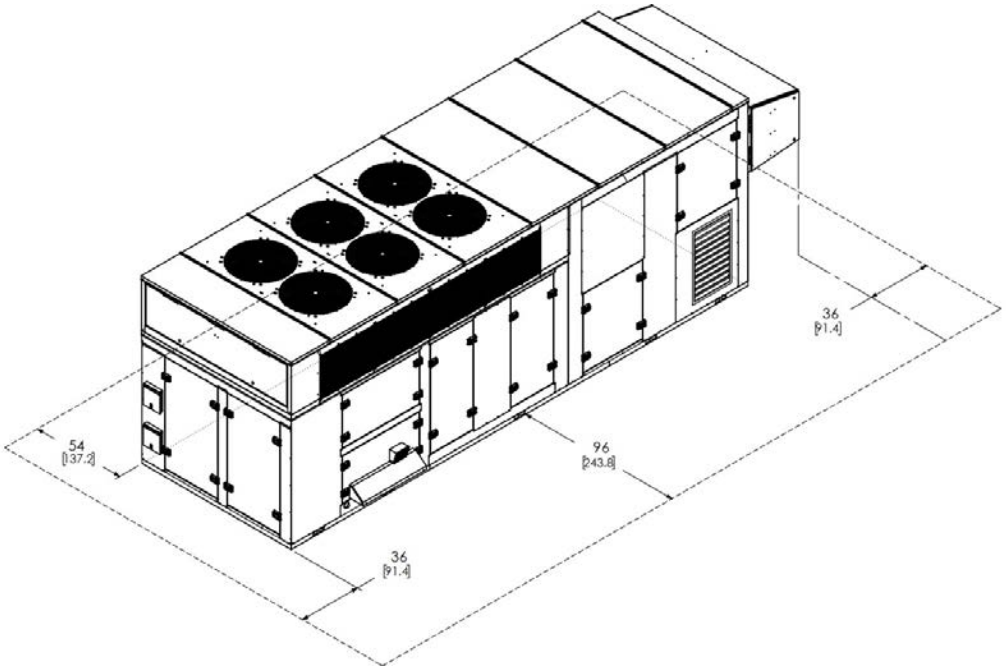


Figure 42. Installation clearances for unit with powered exhaust but no ERV, in. (cm)



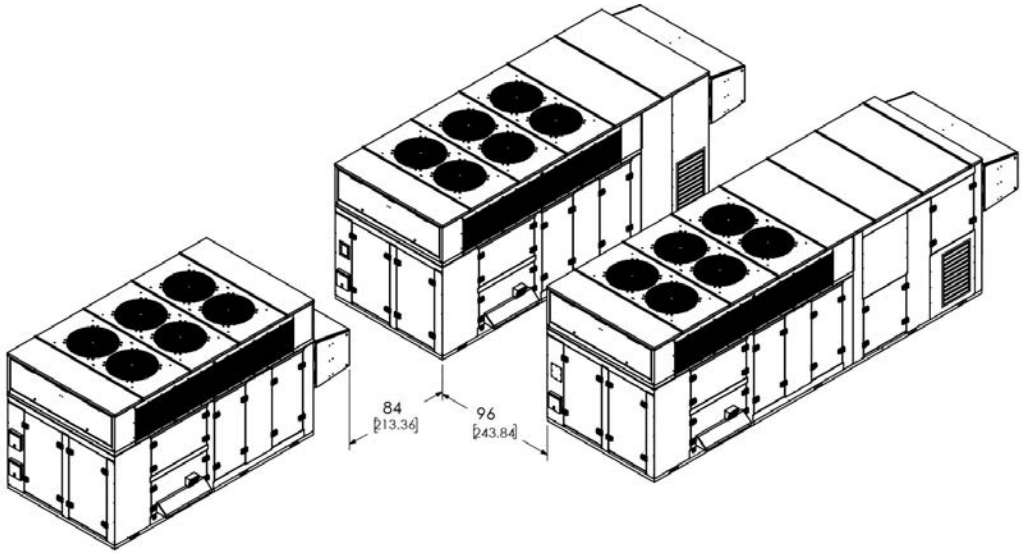
Note: *Minimum of 72 in. (182.9 cm) clearance is required above the condenser fans.*

Figure 43. Installation clearances for unit with ERV, in. (cm)



Note: *Minimum of 72 in. (182.9 cm) clearance is required above the condenser fans.*

Figure 44. Unit to unit clearance, in. (cm)



Curb Dimensions

Figure 45. Unit curb data for OANG cabinet with no powered exhaust or ERV, in. (cm)

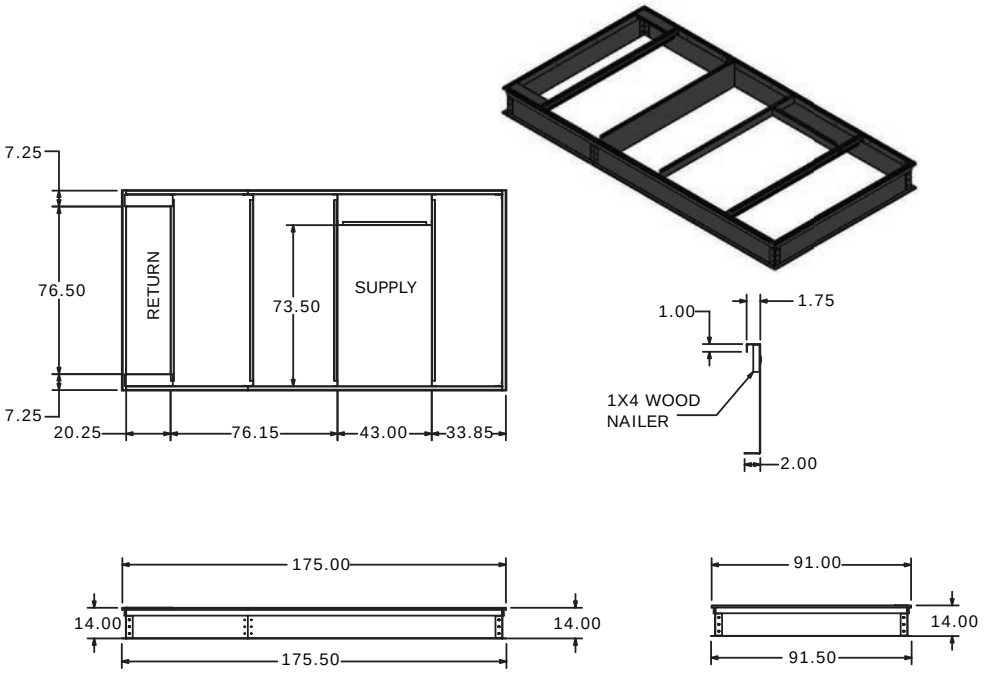


Figure 46. Unit curb data for OANG cabinet with powered exhaust but no ERV, in. (cm)

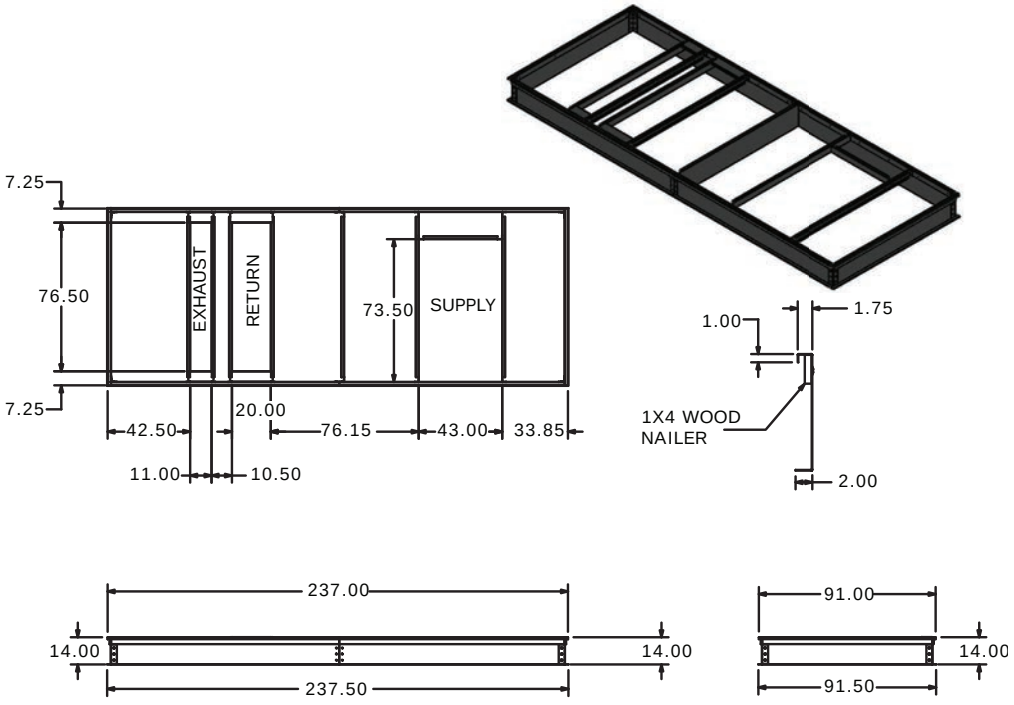
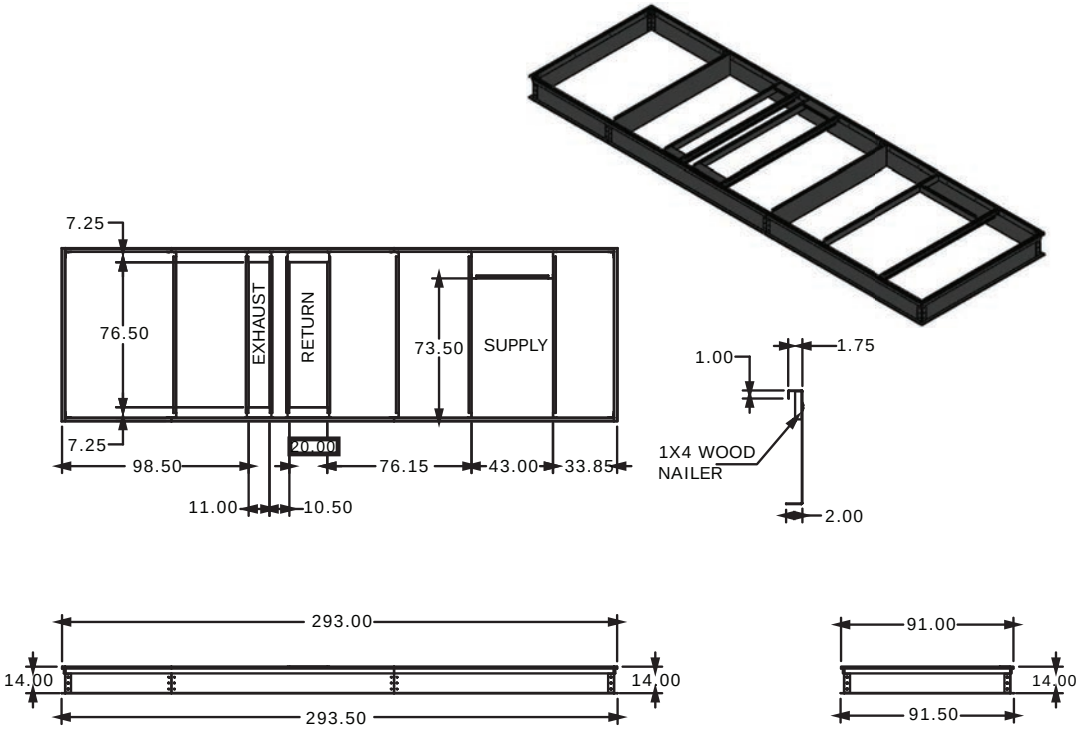
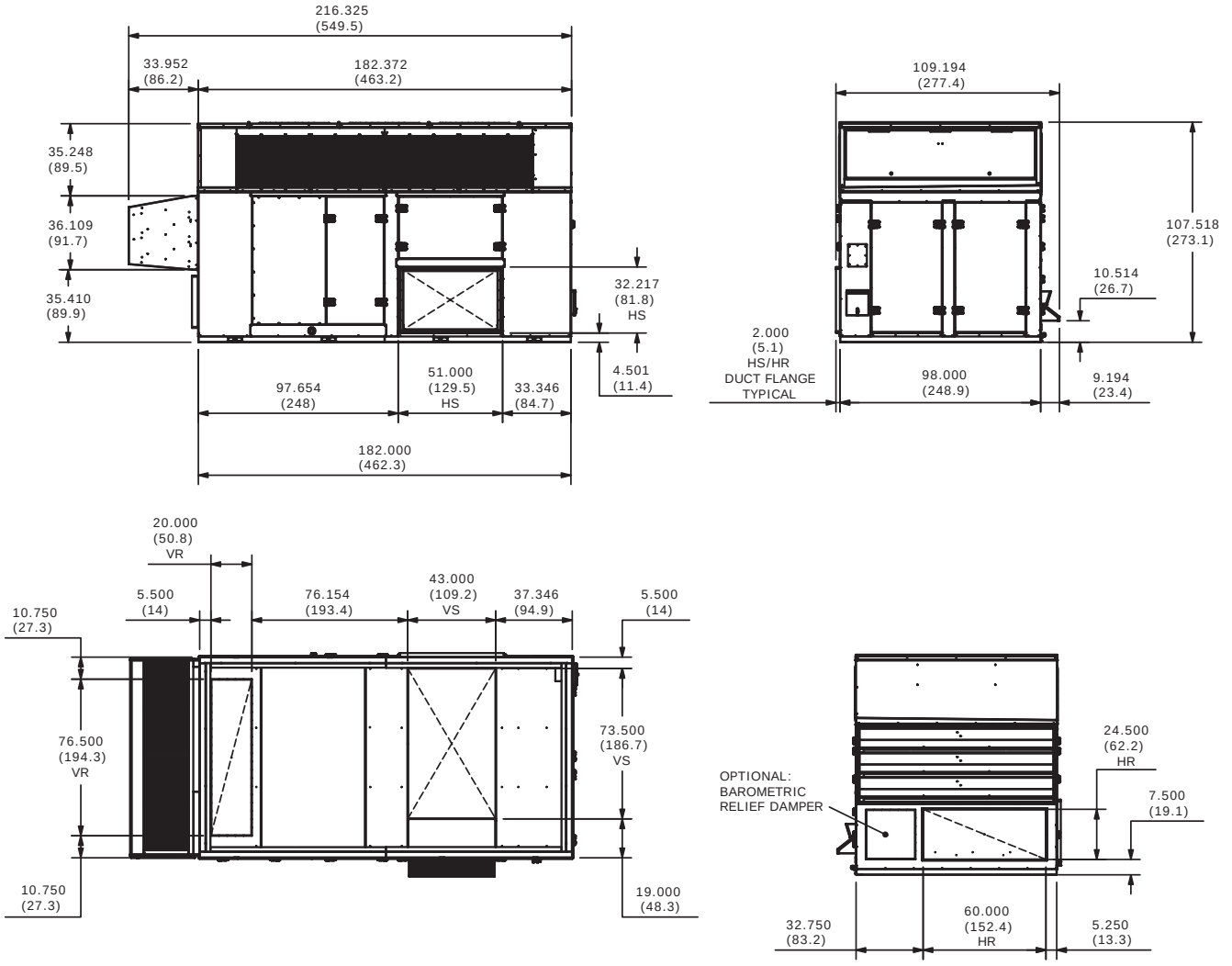


Figure 47. Unit curb data for OANG cabinet with ERV, in. (cm)



Dimensional Data

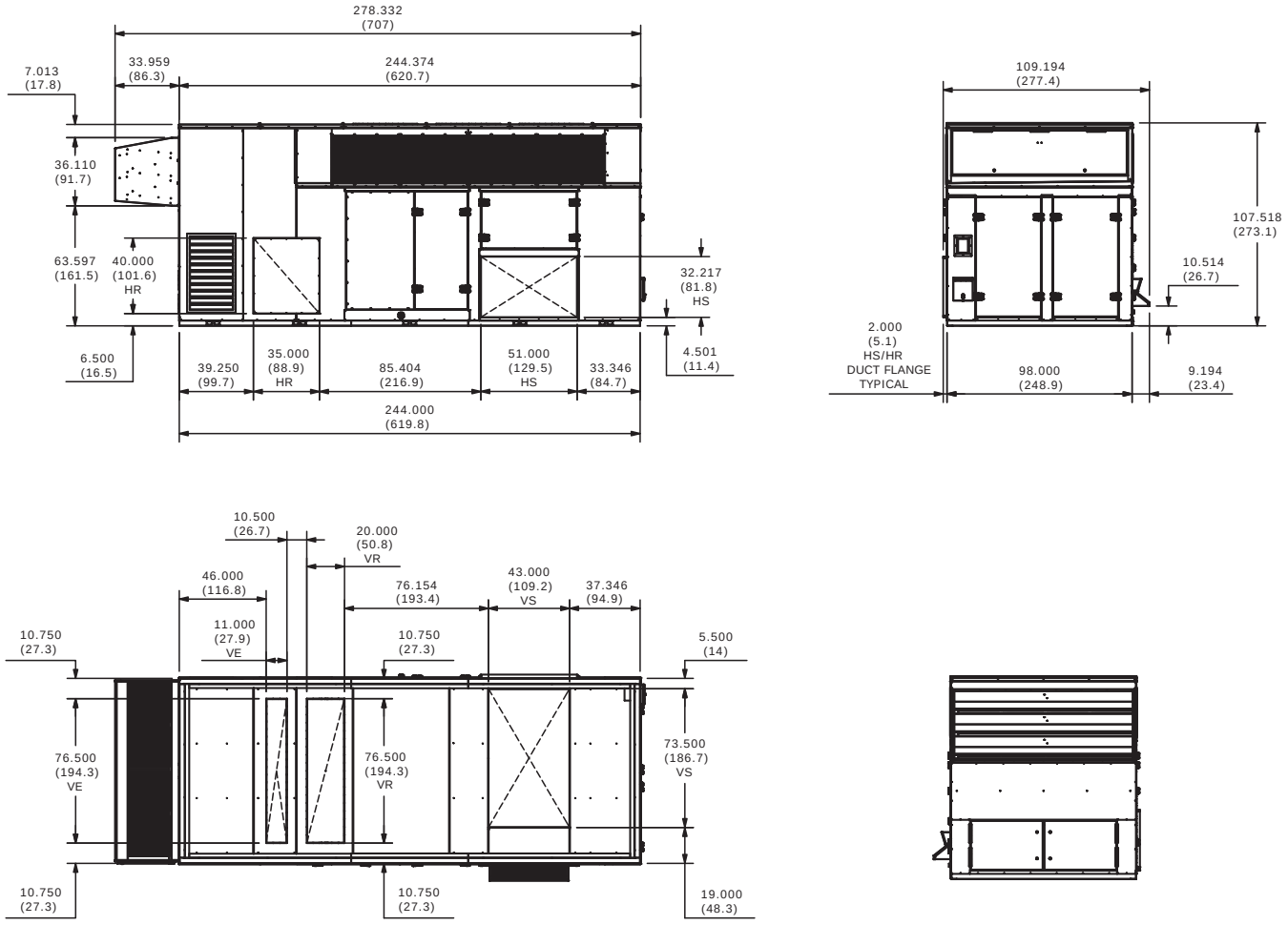
Figure 48. Unit dimensional data for OANG unit with no powered exhaust or ERV, in. (cm)



Notes:

- *Units with no cooling will have the same dimensions, less the condensing section.*
- *Units with chilled water cooling will have the same dimensions, less the condensing section, and with an 18 in. (45.7 cm) deep pipe cabinet added.*
- *Refer to project-specific unit submittals.*

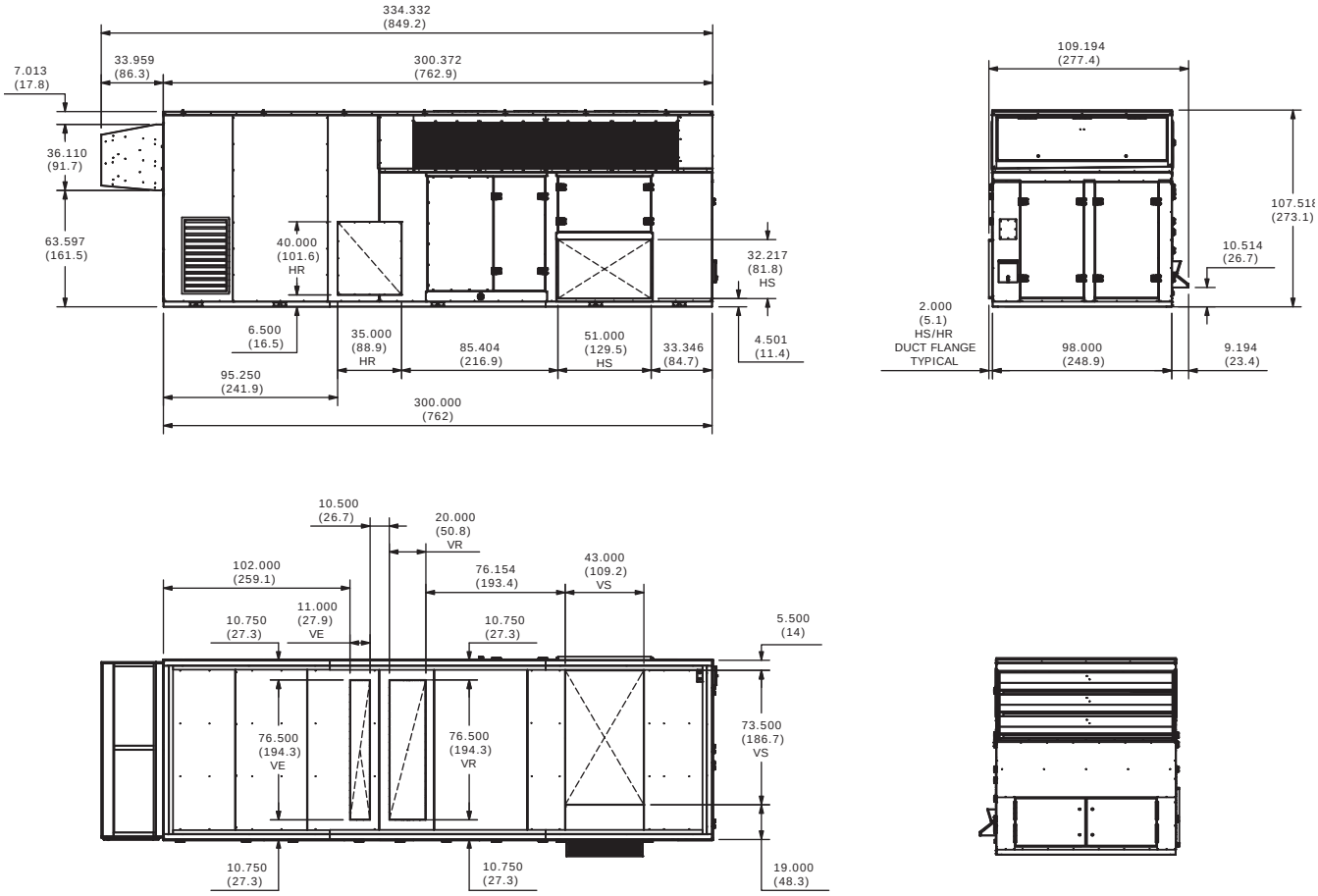
Figure 49. Unit dimensional data for OANG cabinet with powered exhaust but no ERV, in. (cm)



Notes:

- *Units with no cooling will have the same dimensions, less the condensing section.*
- *Units with chilled water cooling will have the same dimensions, less the condensing section, and with an 18 in. (45.7 cm) deep pipe cabinet added.*
- *Refer to project-specific unit submittals.*

Figure 50. Unit dimensional data for OANG cabinet with ERV, in. (cm)



Notes:

- *Units with no cooling will have the same dimensions, less the condensing section.*
- *Units with chilled water cooling will have the same dimensions, less the condensing section, and with an 18 in. (45.7 cm) deep pipe cabinet added.*
- *Refer to project-specific unit submittals.*

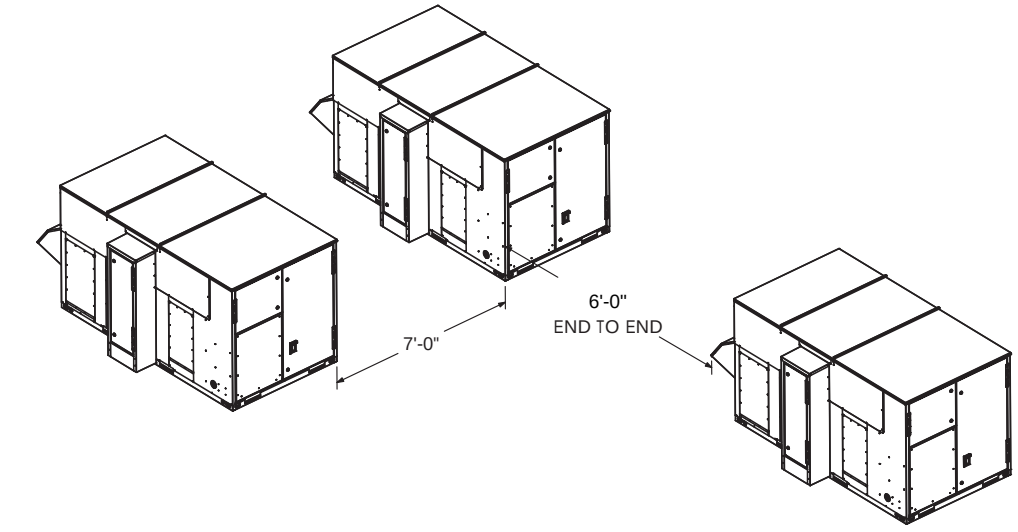
Outdoor WSHP Units

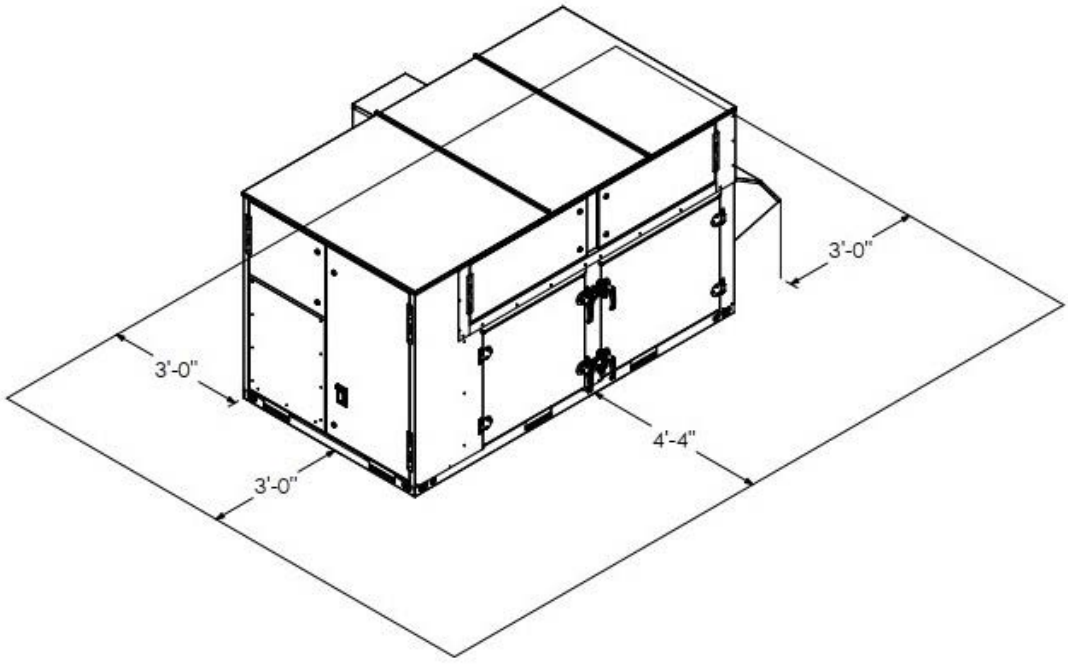
OABE Units

Unit Clearances

Note: *Minimum clearance above the unit is 72-inches.*

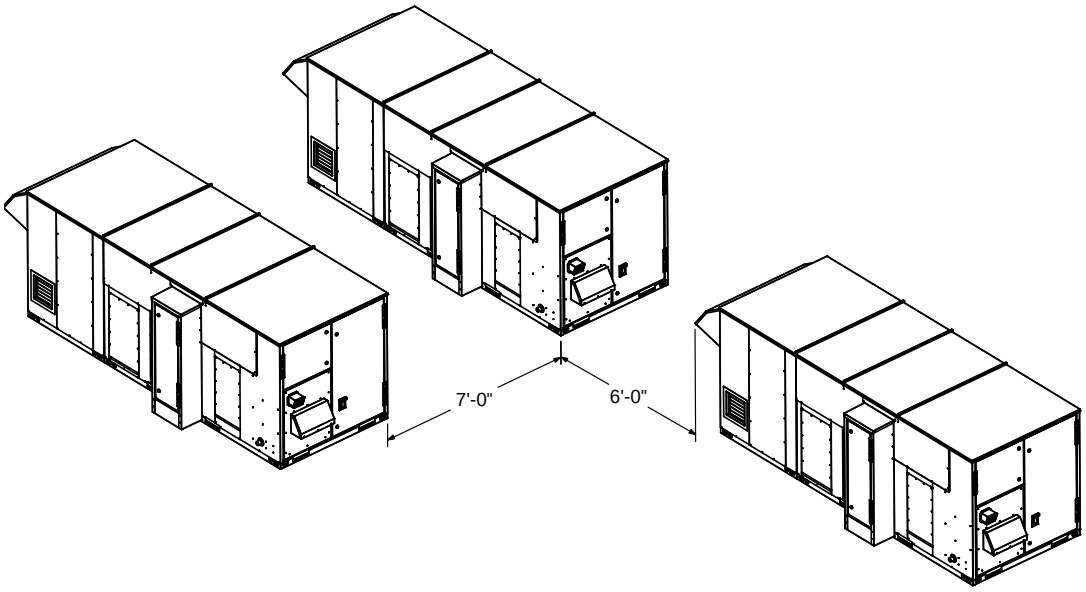
Figure 51. Typical installation clearances for OABE unit

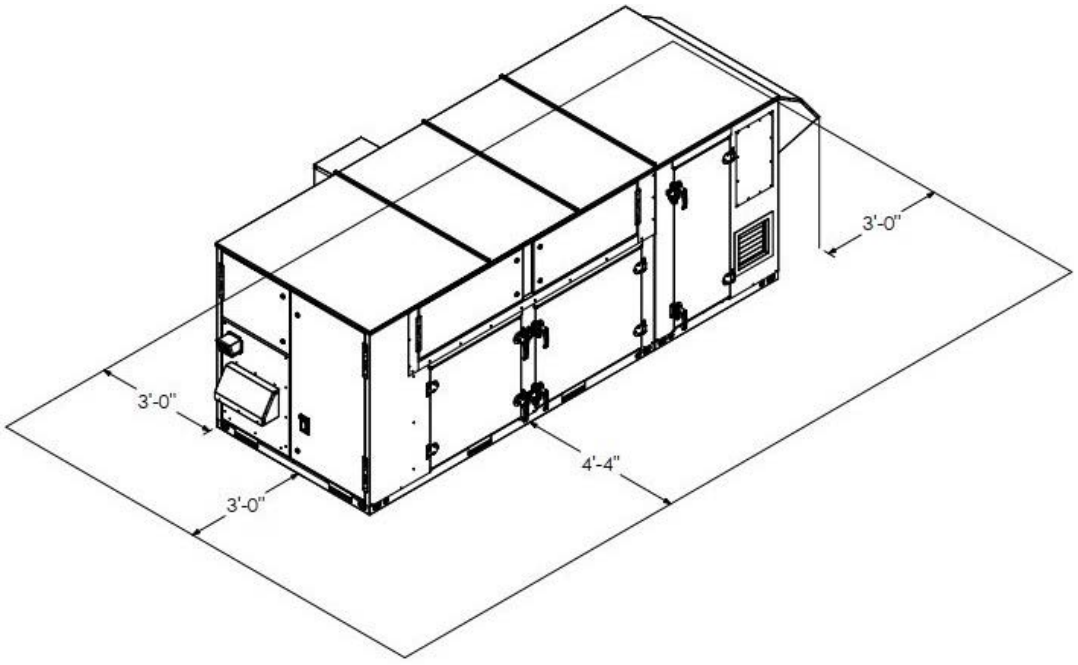




Note: *Minimum clearance above the unit is 72-inches.*

Figure 52. Typical installation clearances for OABE unit with auxiliary cabinet





Note: *Certain options require auxiliary cabinet. Refer to project-specific unit submittals.*

Curb Dimensions

Figure 53. Unit curb data for OABE 3 to 9 tons

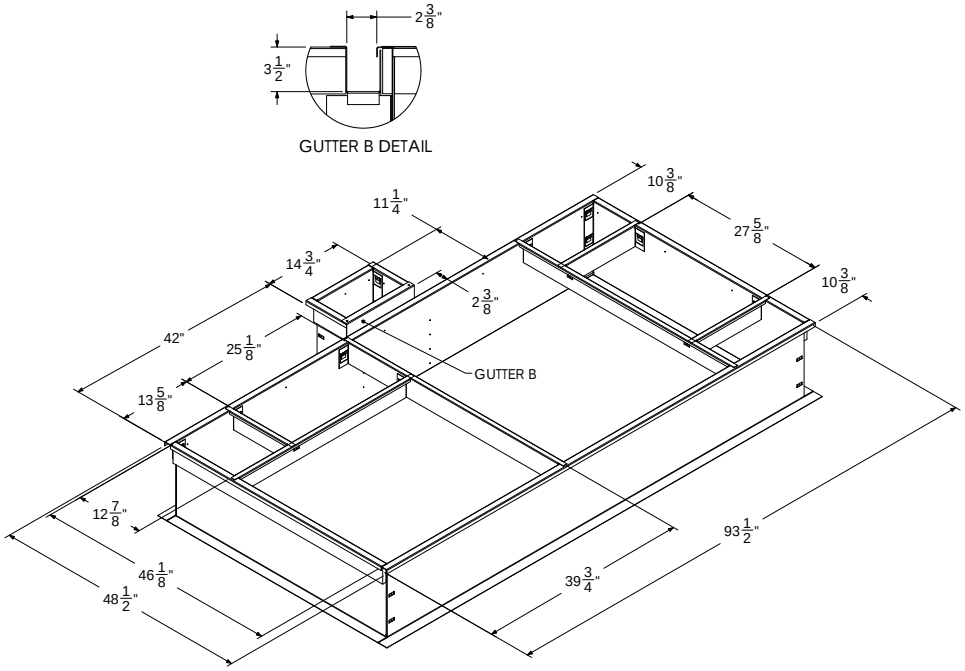
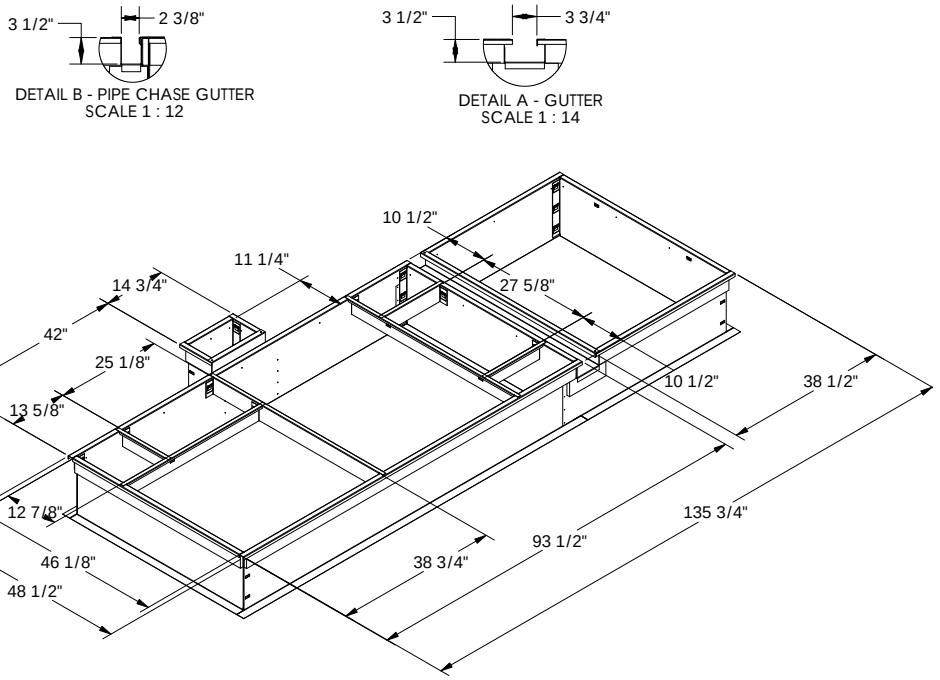


Figure 54. Unit curb data for OABE 3 to 9 tons with auxiliary cabinet



Note: *Certain options require auxiliary cabinet. Refer to project-specific unit submittals.*

Dimensional Data

Figure 55. Unit dimensional data for OABE 3 to 9 tons (dual dimensions, in. [cm])

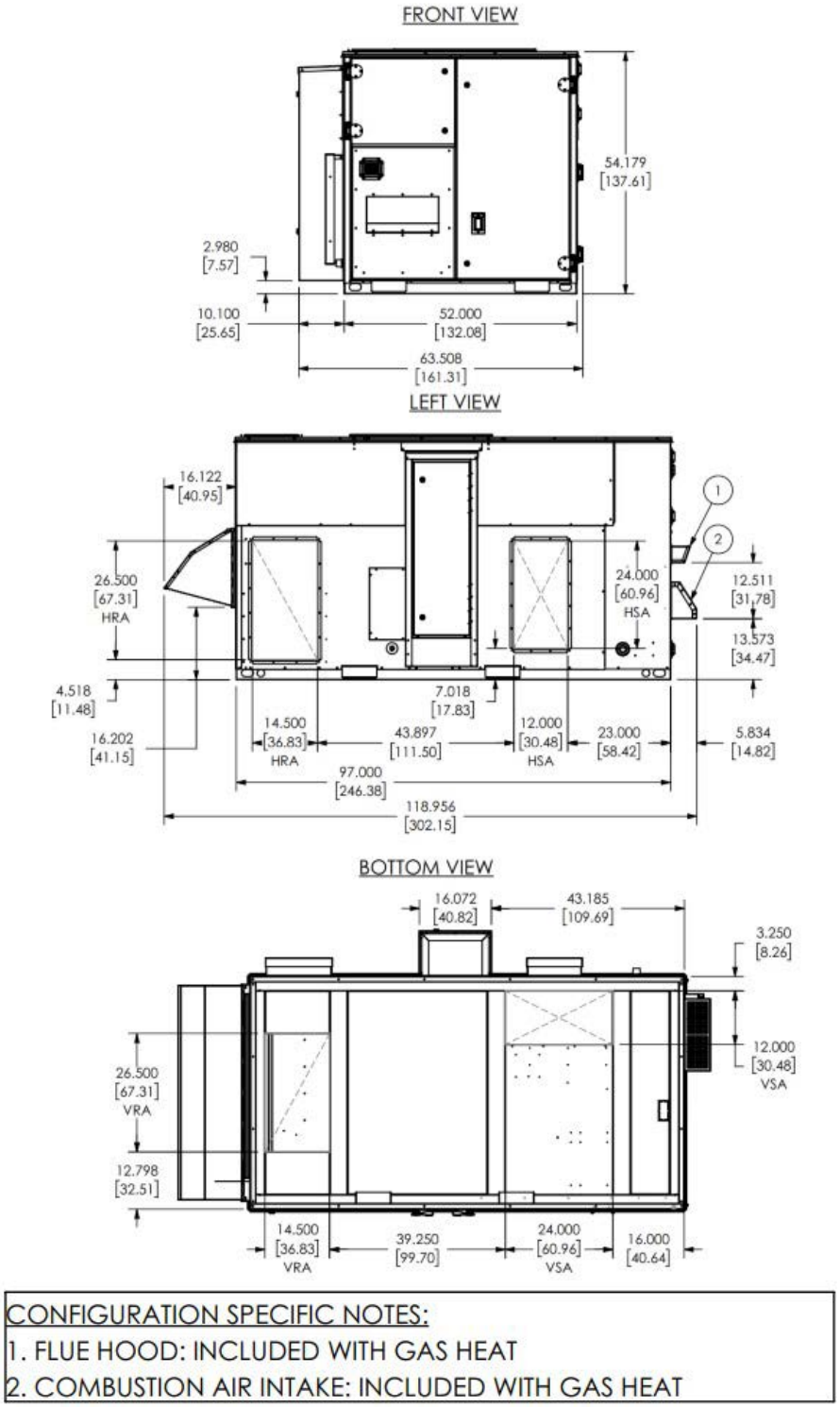
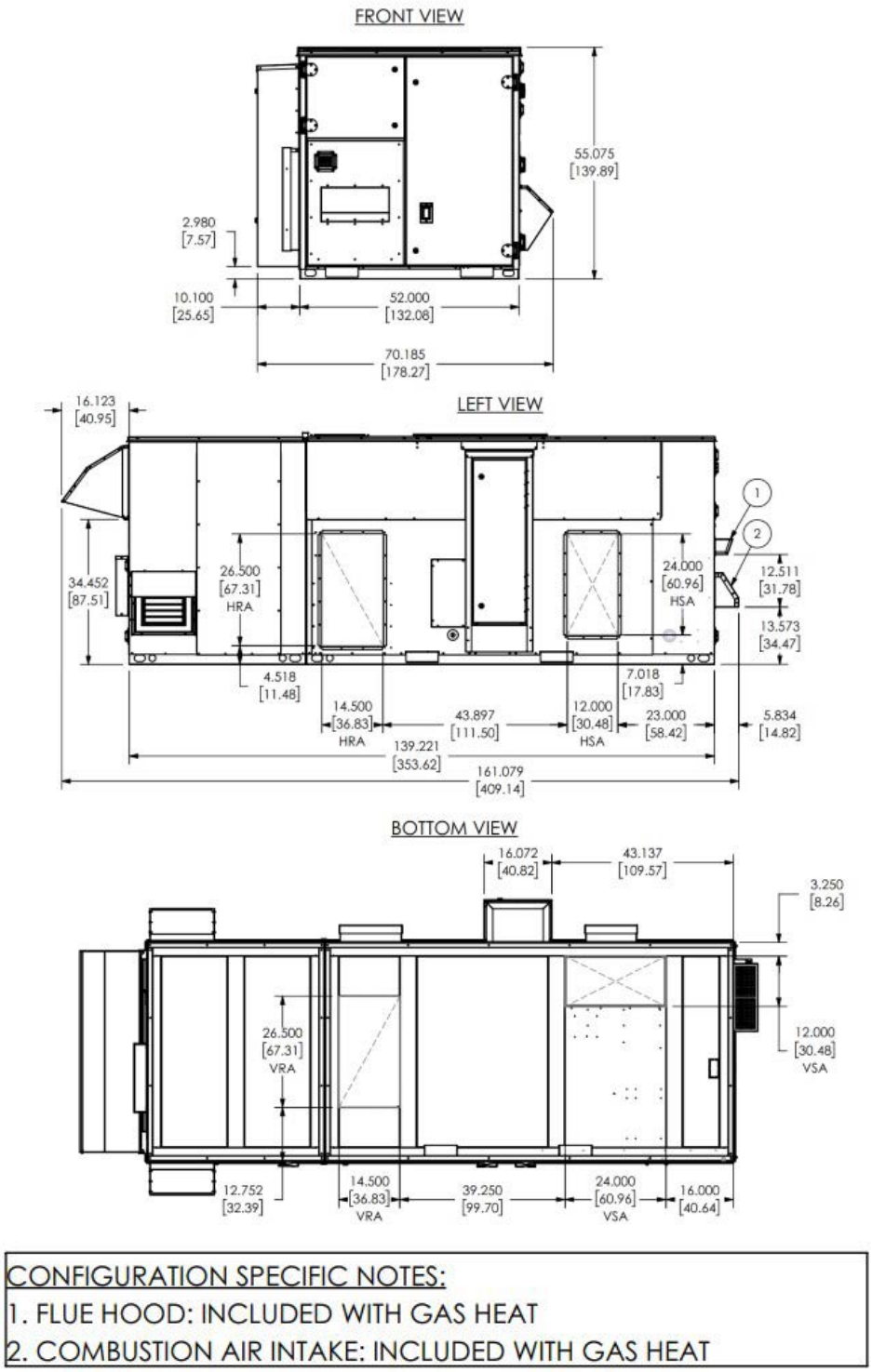


Figure 56. Unit dimensional data for OABE 3 to 9 tons with auxiliary cabinet (dual dimensions, in. [cm])



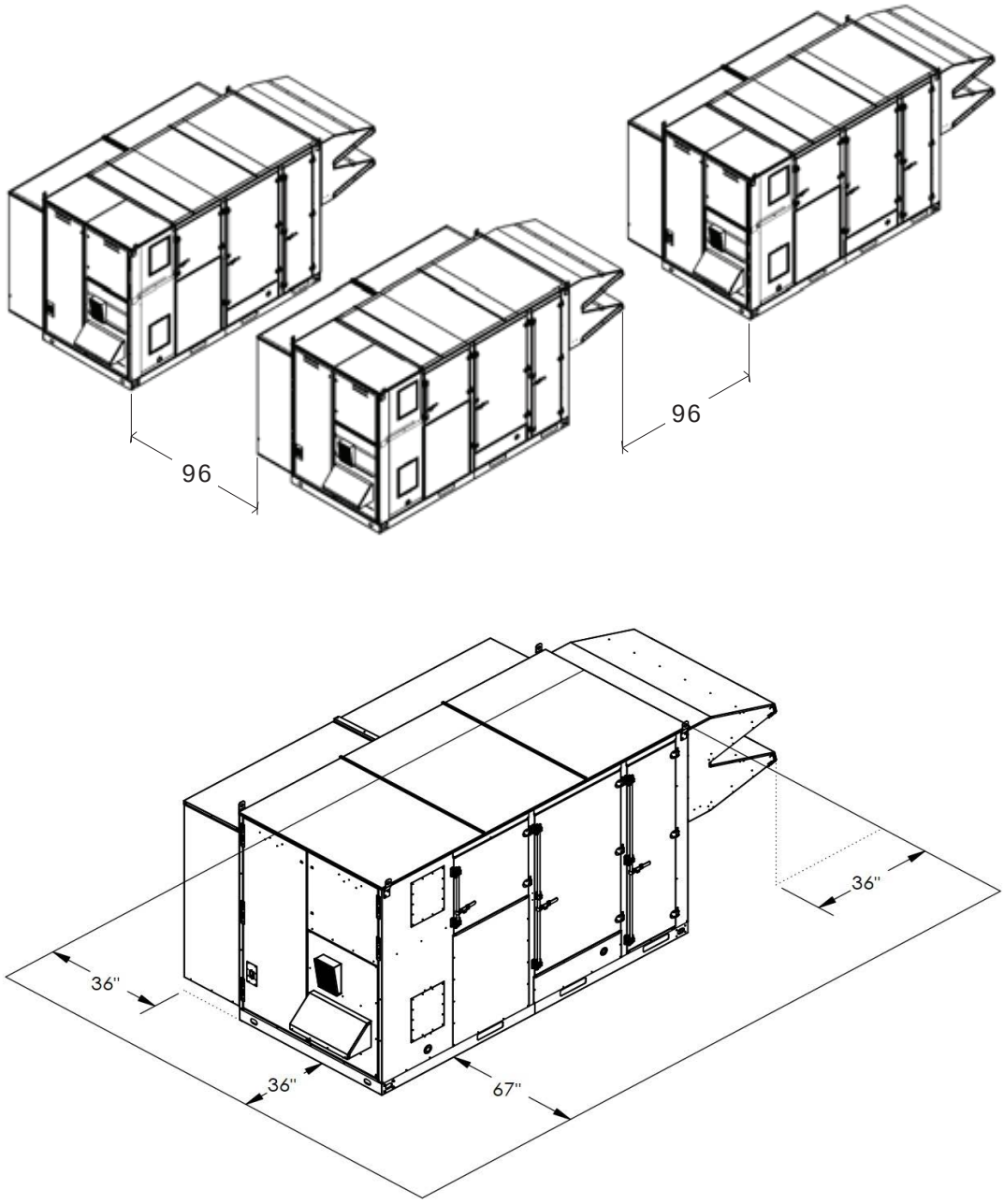
Note: *Certain options require auxiliary cabinet. Refer to project-specific unit submittals.*

OANE Units

Unit Clearances

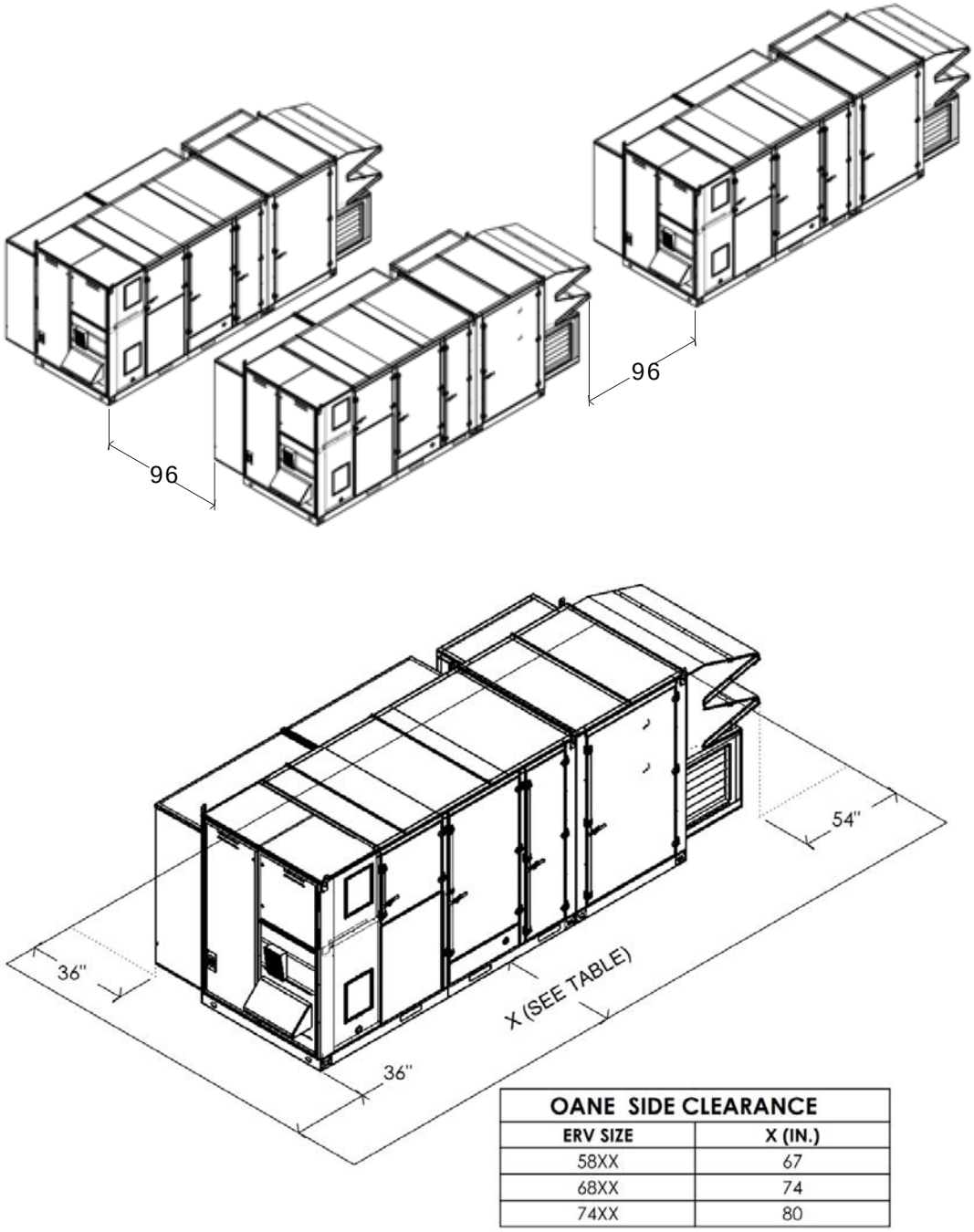
Note: *Minimum clearance above the unit is 72-inches.*

Figure 57. Typical installation clearances for OANE unit (in.)



Note: *Minimum clearance above the unit is 72-inches.*

Figure 58. Typical installation clearances for OANE unit with auxiliary cabinet (in.)



OANE SIDE CLEARANCE	
ERV SIZE	X (IN.)
58XX	67
68XX	74
74XX	80

Note: *Certain options require auxiliary cabinet. Refer to project-specific unit submittals.*

Curb Dimensions

Figure 59. Unit curb data for OANE 30 to 60 tons (in.)

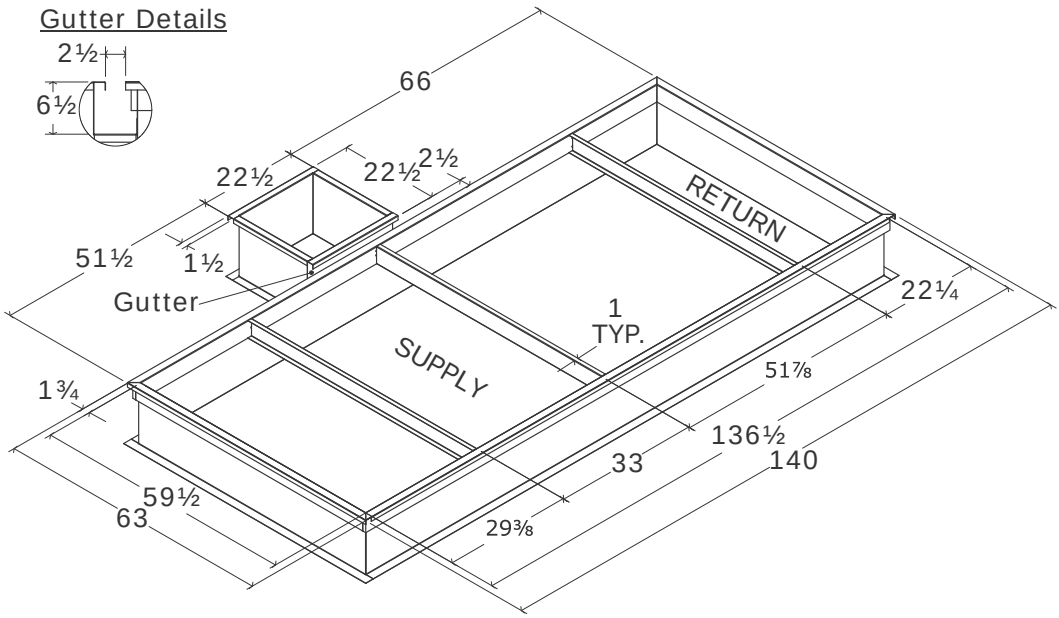
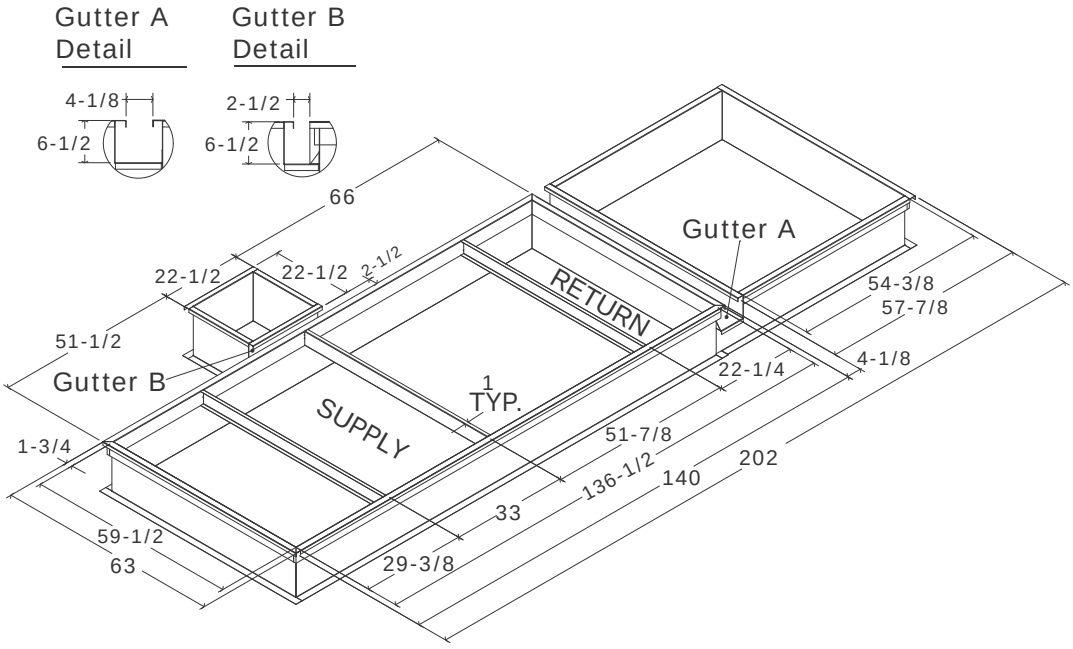


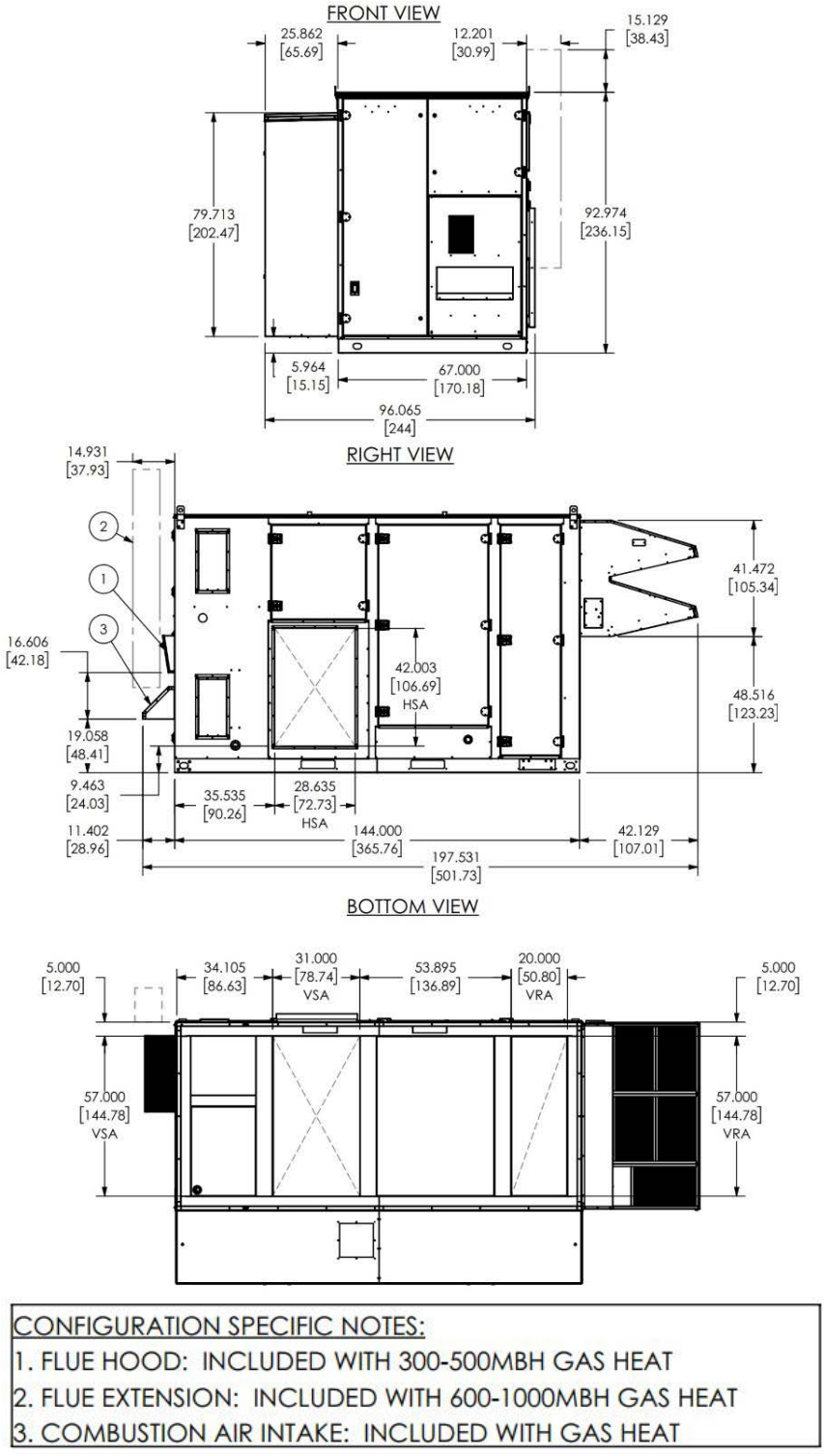
Figure 60. Unit curb data for OANE 30 to 60 tons with auxiliary cabinet (in.)



Note: *Certain options require auxiliary cabinet. Refer to project-specific unit submittals.*

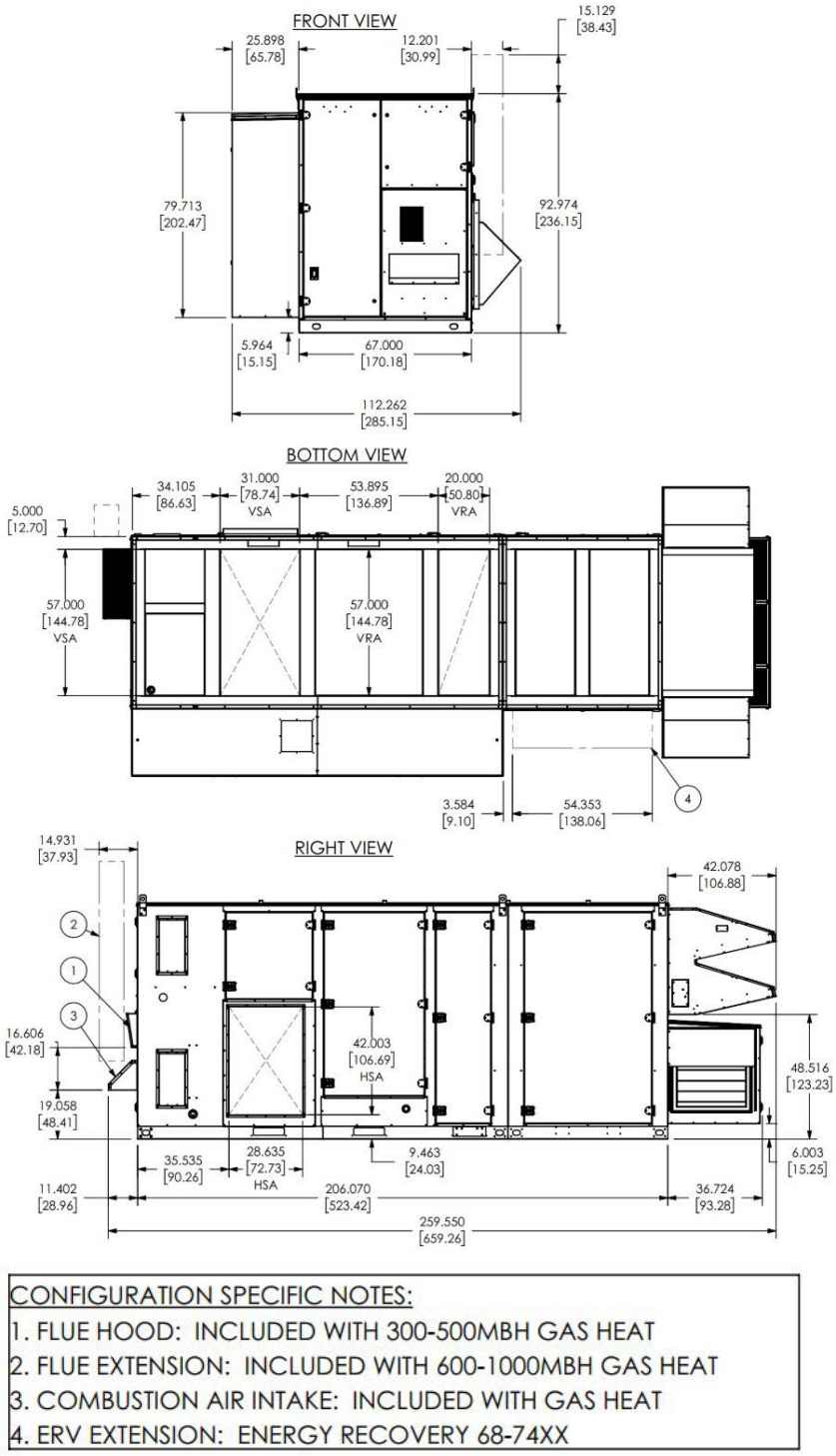
Dimensional Data

Figure 61. Unit dimensional data for OANE 30 to 60 tons (dual dimensions, in. [cm])



CONFIGURATION SPECIFIC NOTES:
1. FLUE HOOD: INCLUDED WITH 300-500MBH GAS HEAT
2. FLUE EXTENSION: INCLUDED WITH 600-1000MBH GAS HEAT
3. COMBUSTION AIR INTAKE: INCLUDED WITH GAS HEAT

Figure 62. Unit dimensional data for OANE 30 to 60 tons with auxiliary cabinet (dual dimensions, in. [cm])



Note: *Certain options require auxiliary cabinet. Refer to project-specific unit submittals.*

OADG Units

Dimensional Data

Figure 63. Unit dimensional data for OADG outdoor WSHP, in. (cm)

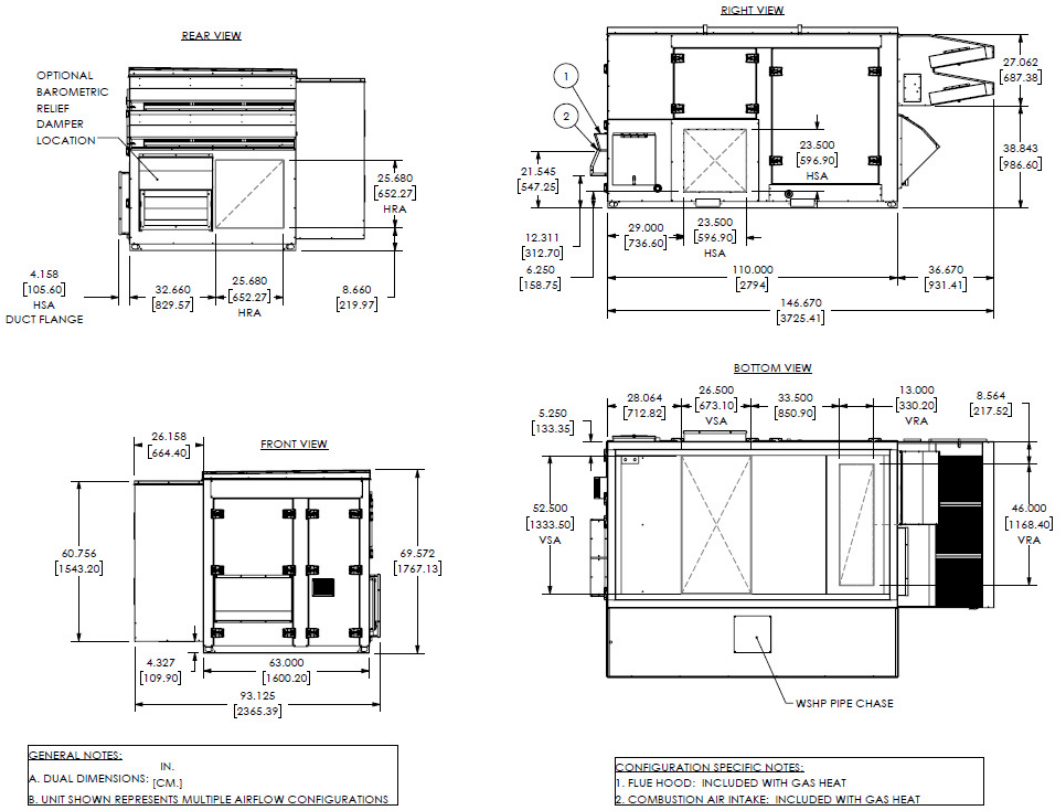


Figure 64. Unit dimensional data for OADG outdoor WSHP with Power Exhaust, in. (cm)

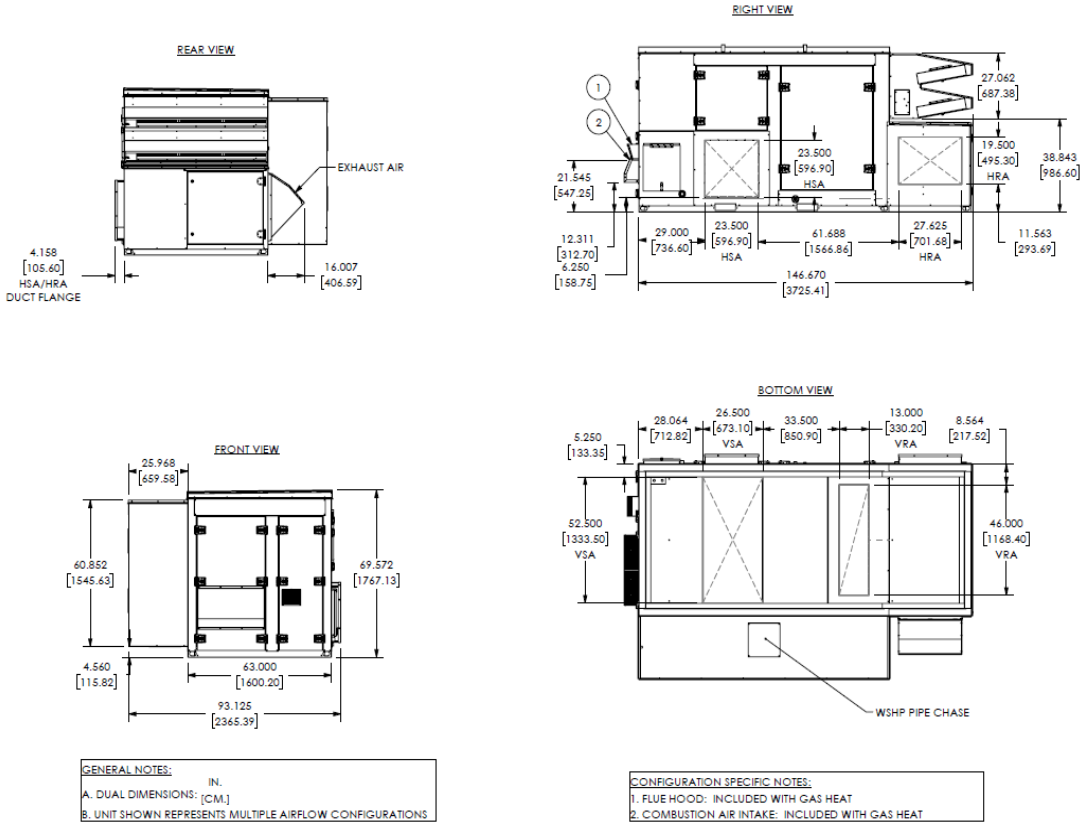
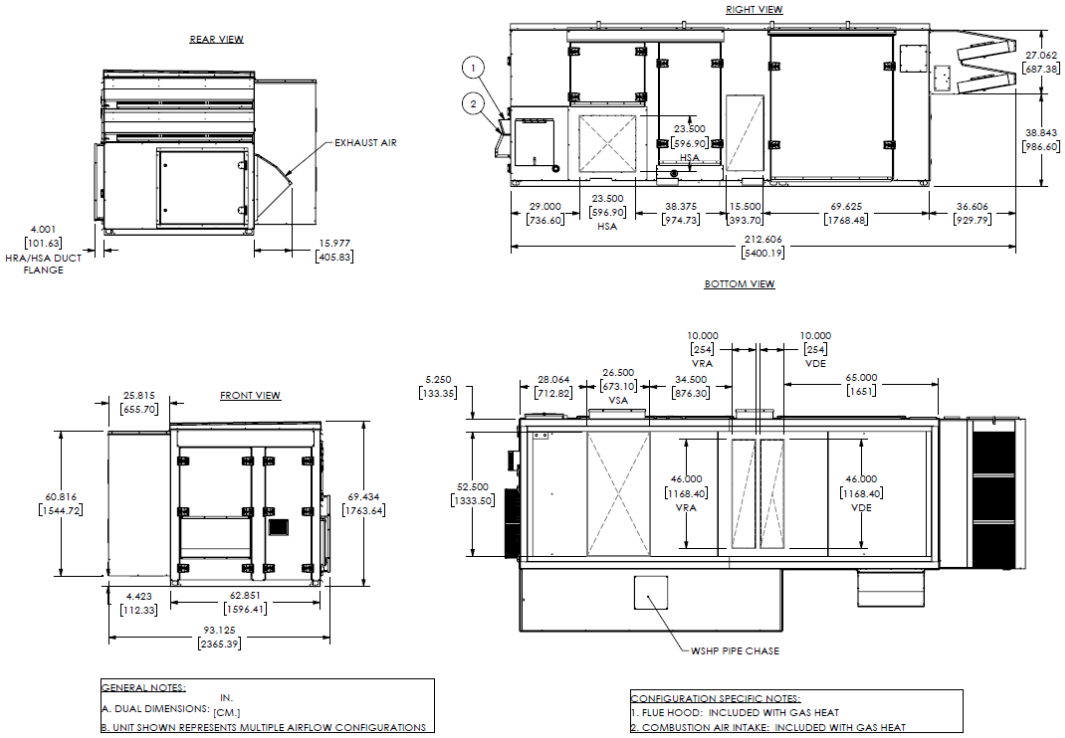


Figure 65. Unit dimensional data for OADG outdoor WSHP with ERV, in. (cm)



Indoor Water Source Heat Pump (WSHP) Units

OABF Units

Note: *Indoor units have the same clearances as outdoor units. Refer to (outdoor OABE unit clearances).*

Dimensional Data

Figure 66. Unit dimensional data for indoor OABF WSHP with horizontal supply and no return (dual dimensions, in. [cm])

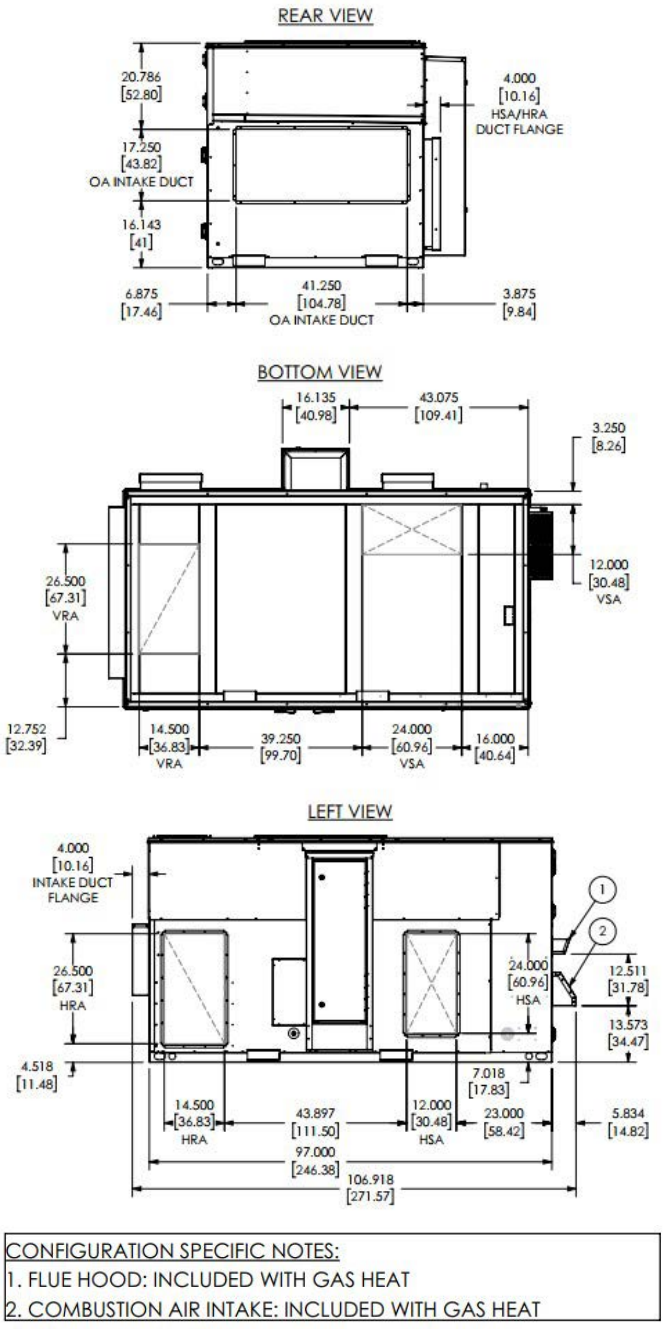
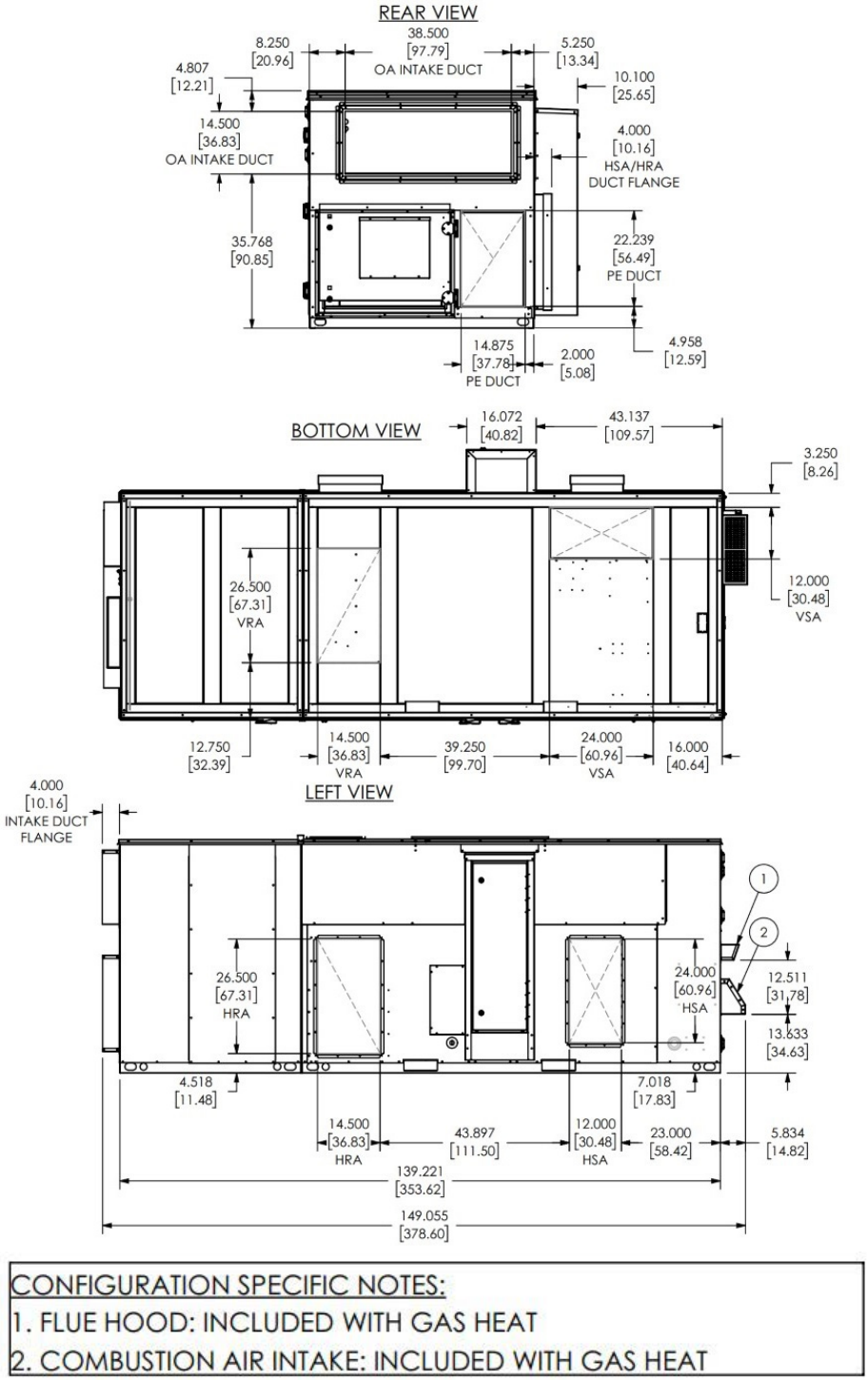


Figure 67. Unit dimensional data for indoor OABF WSHP and ERV or exhaust fan (dual dimensions, in. [cm])



OANF Units

Note: *Indoor units have the same clearances as outdoor units. Refer to (outdoor OANE unit clearances).*

Dimensional Data

Figure 68. Unit dimensional data for indoor OANF WSHP with horizontal supply and vertical/no return (dual dimensions, in. [cm])

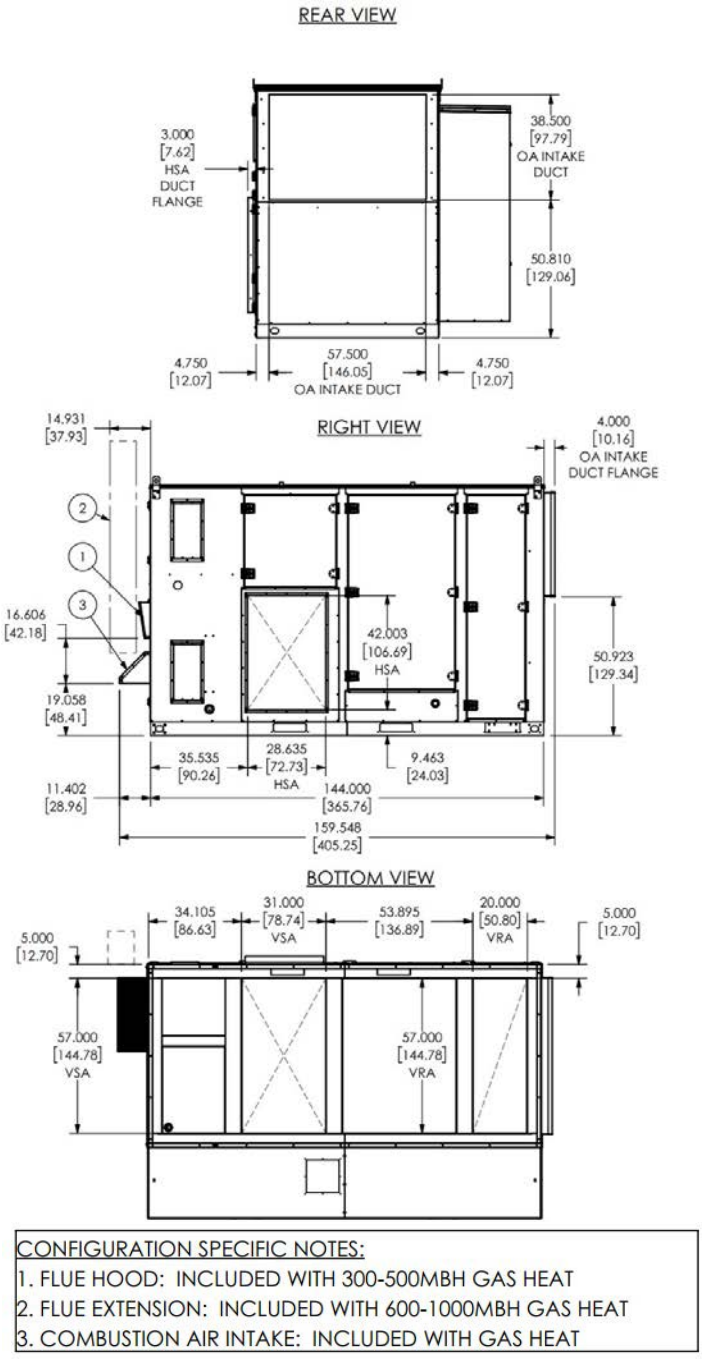


Figure 69. Unit dimensional data for indoor OANF WSHP with horizontal supply/return (no ERV) (dual dimensions, in. [cm])

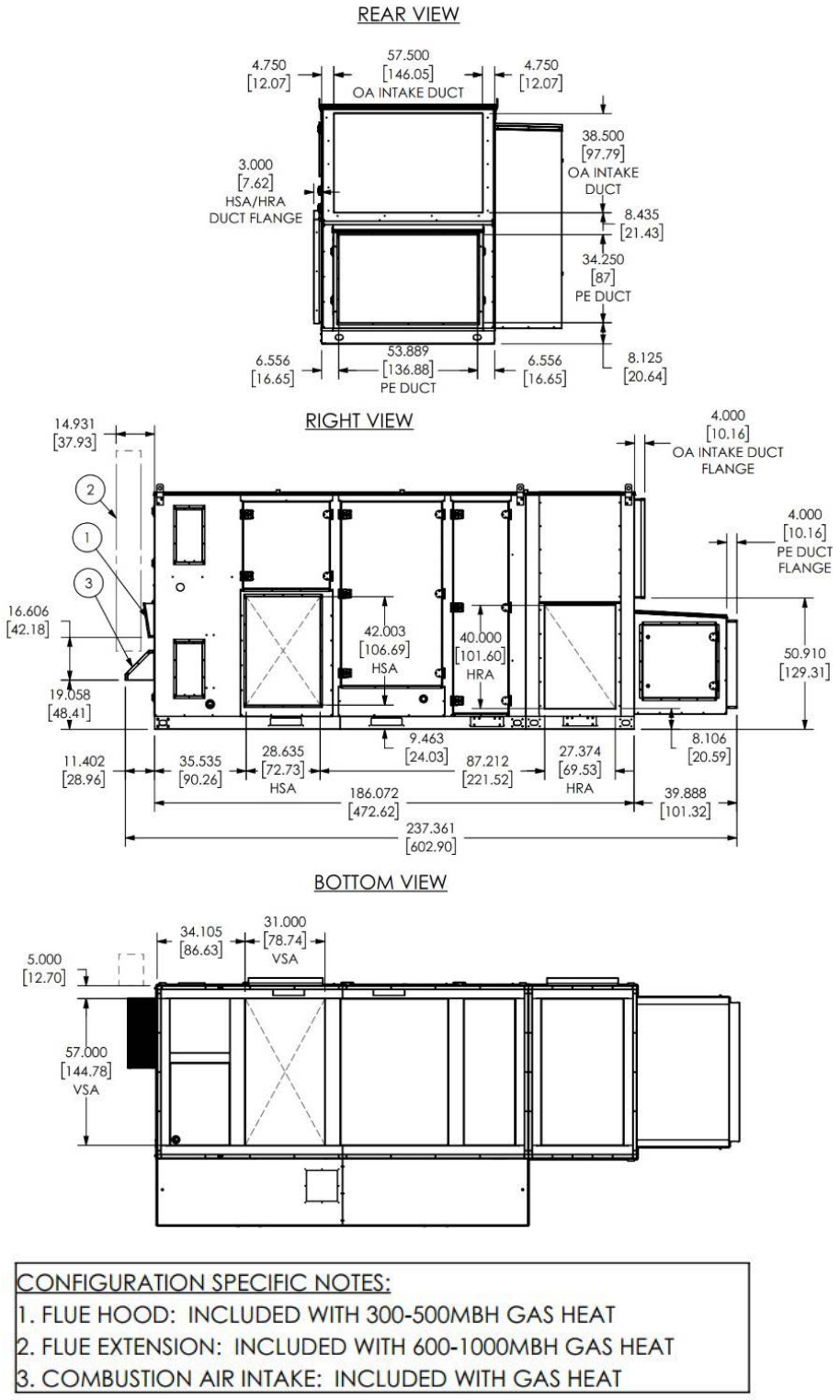
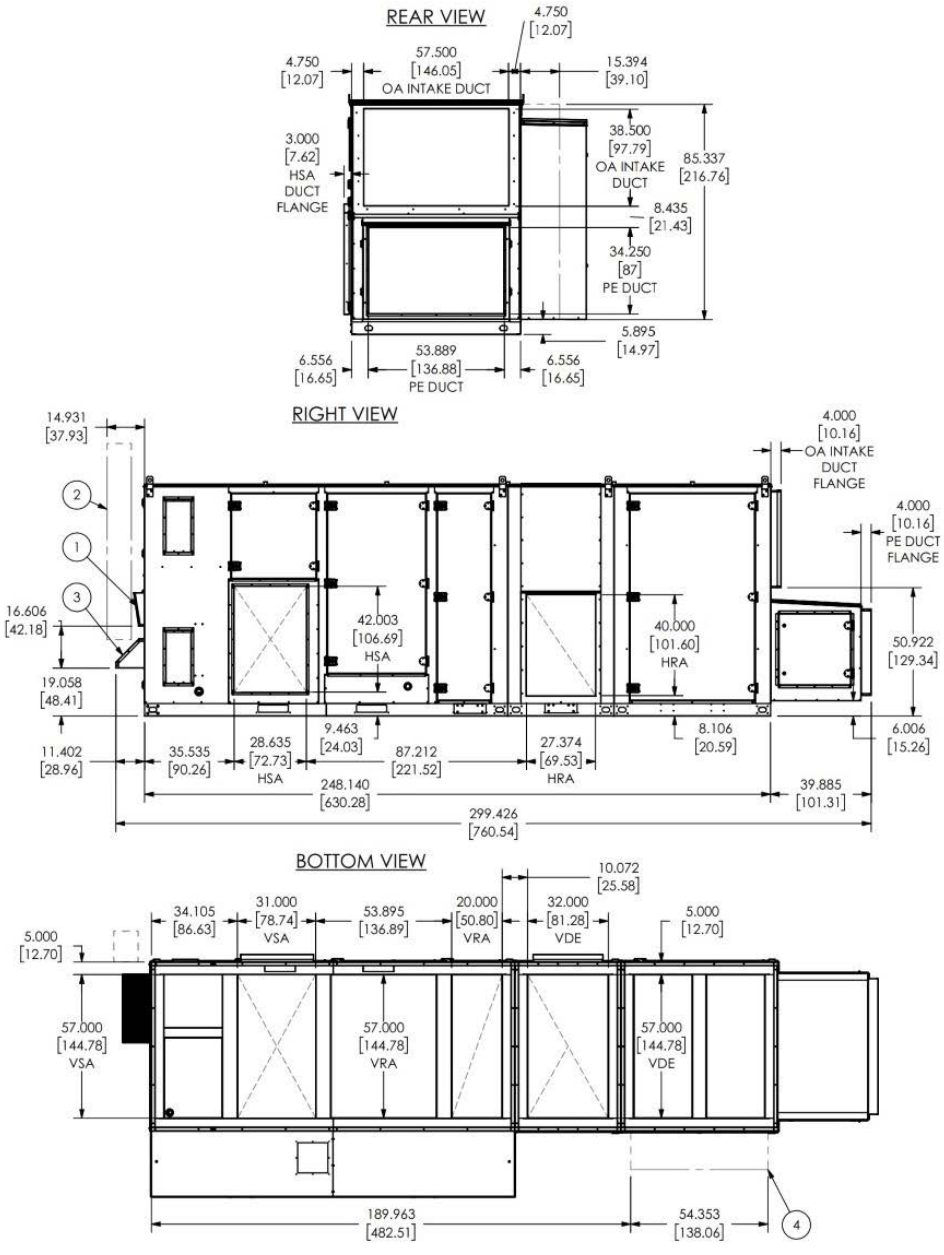


Figure 70. Unit dimensional data for indoor OANF WSHP with horizontal supply/return and ERV (dual dimensions, in. [cm])



CONFIGURATION SPECIFIC NOTES:

1. FLUE HOOD: INCLUDED WITH 300-500MBH GAS HEAT
2. FLUE EXTENSION: INCLUDED WITH 600-1000MBH GAS HEAT
3. COMBUSTION AIR INTAKE: INCLUDED WITH GAS HEAT
4. ERV EXTENSION: ENERGY RECOVERY 68-74XX

OADG Units

Dimensional Data

Figure 71. Unit dimensional data for OADG indoor WSHP, in. (cm)

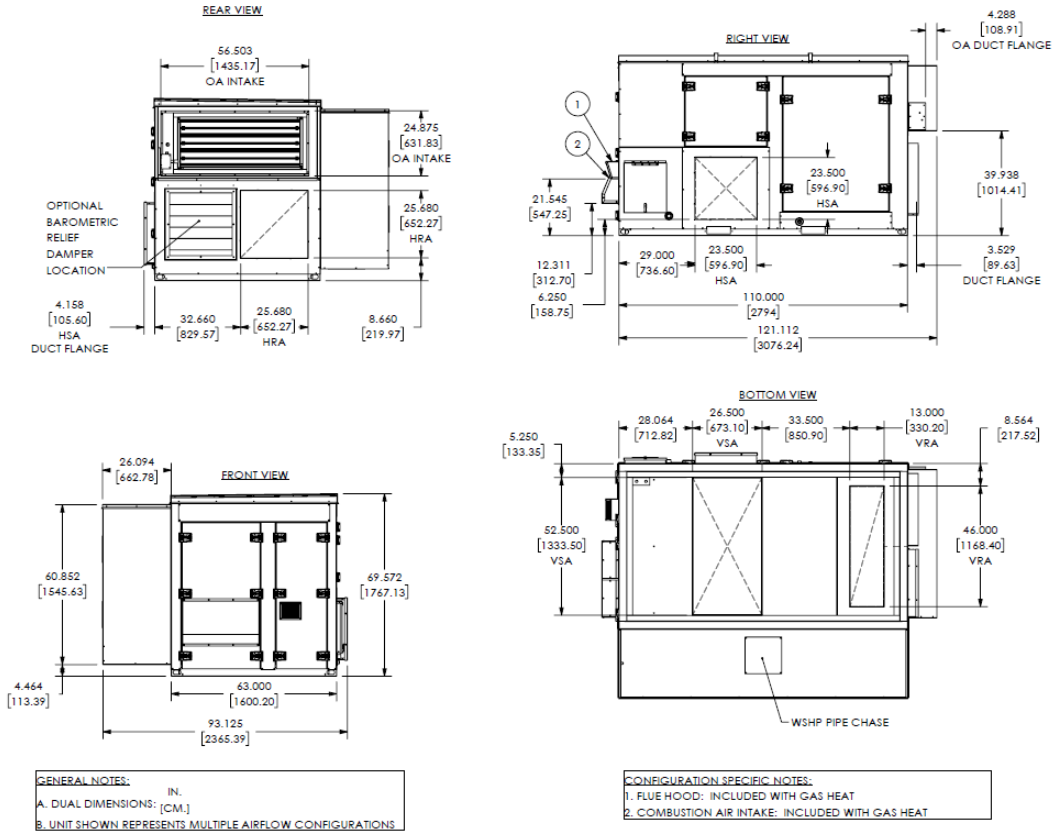


Figure 72. Unit dimensional data for OADG indoor WSHP with Power Exhaust, in. (cm)

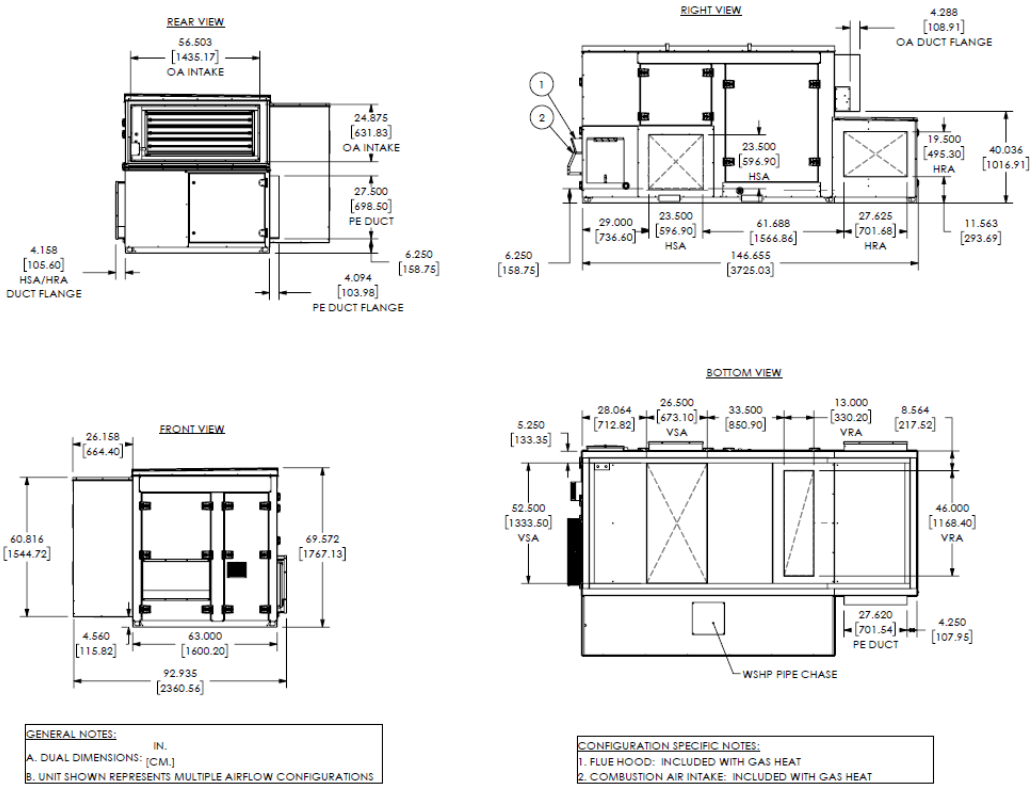
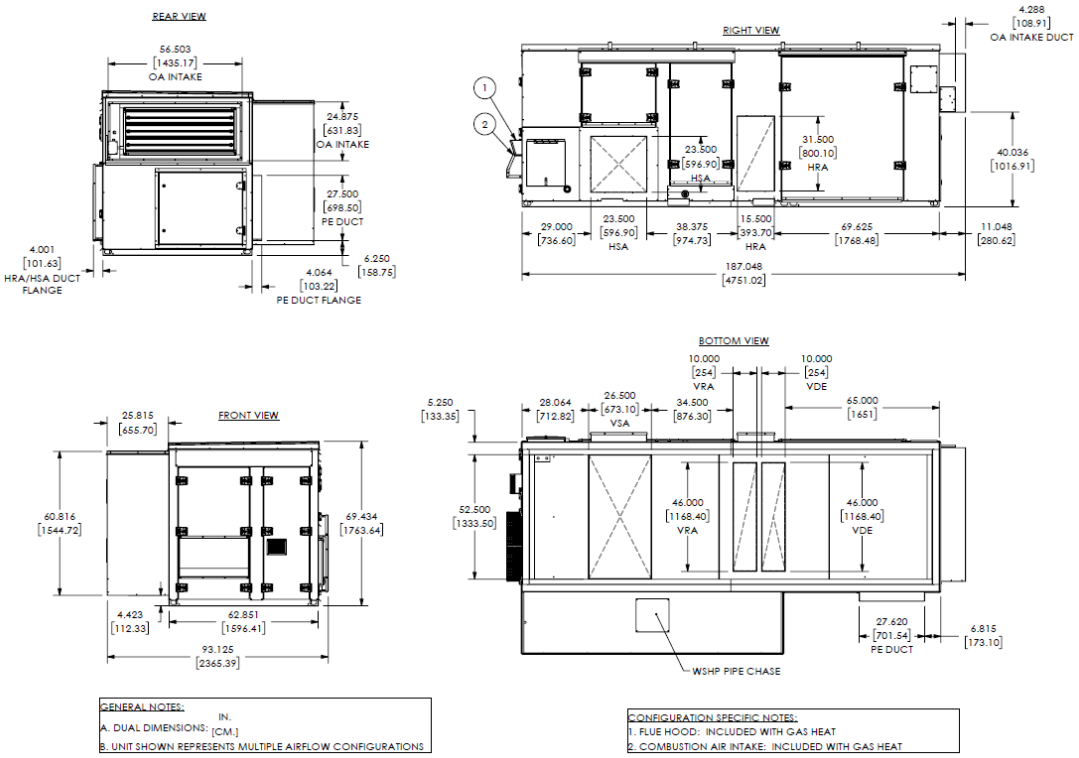
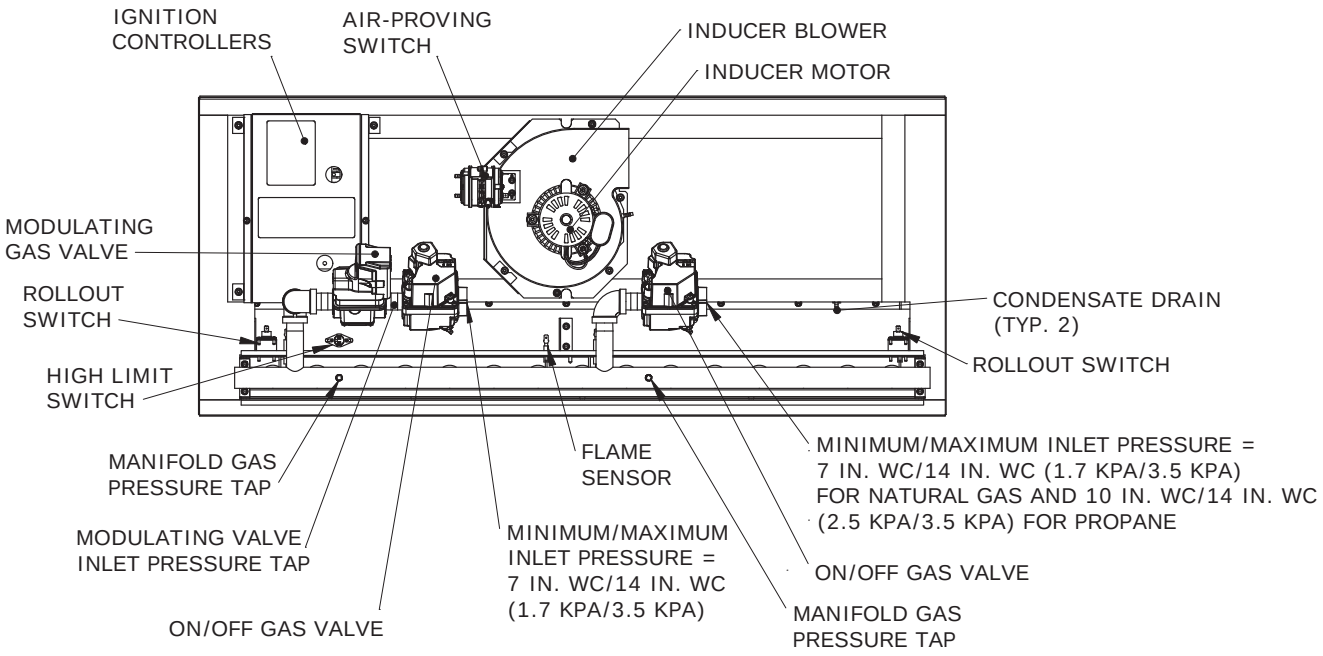


Figure 73. Unit dimensional data for OADG indoor WSHP with ERV, in. (cm)



Indirect Gas-fired Furnace Heater

Figure 74. Indirect gas-fired furnace heater and power



Utility Connections

Figure 75. OAB utility connections, in. (cm)

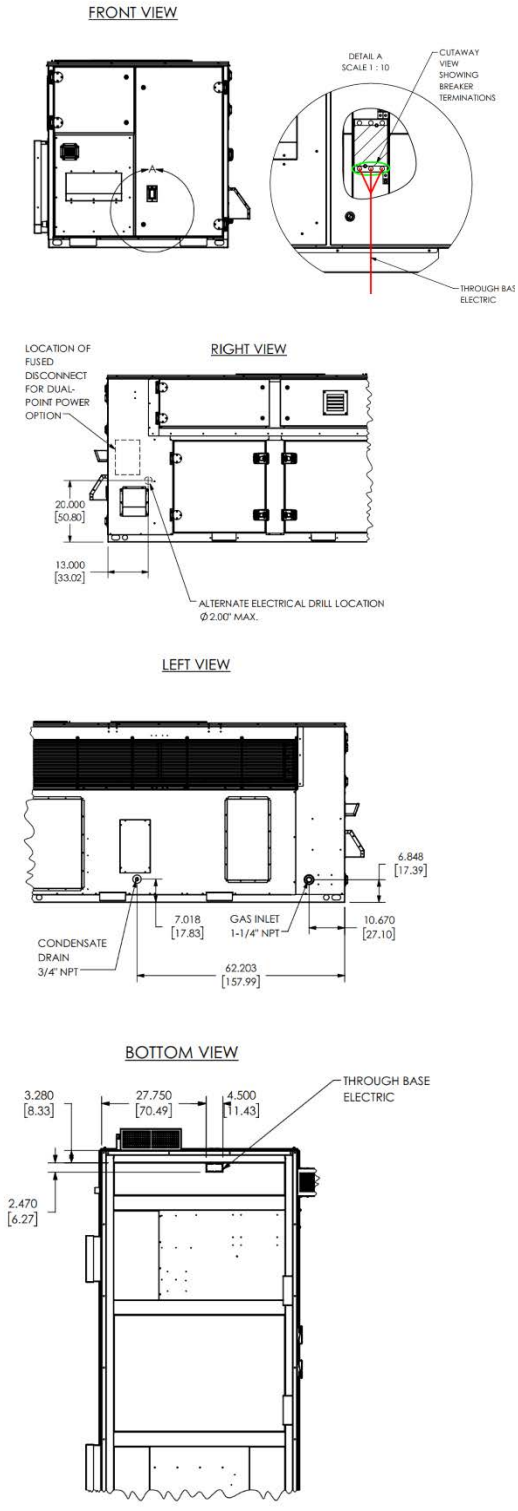


Figure 76. OAND utility connections, in. (cm)

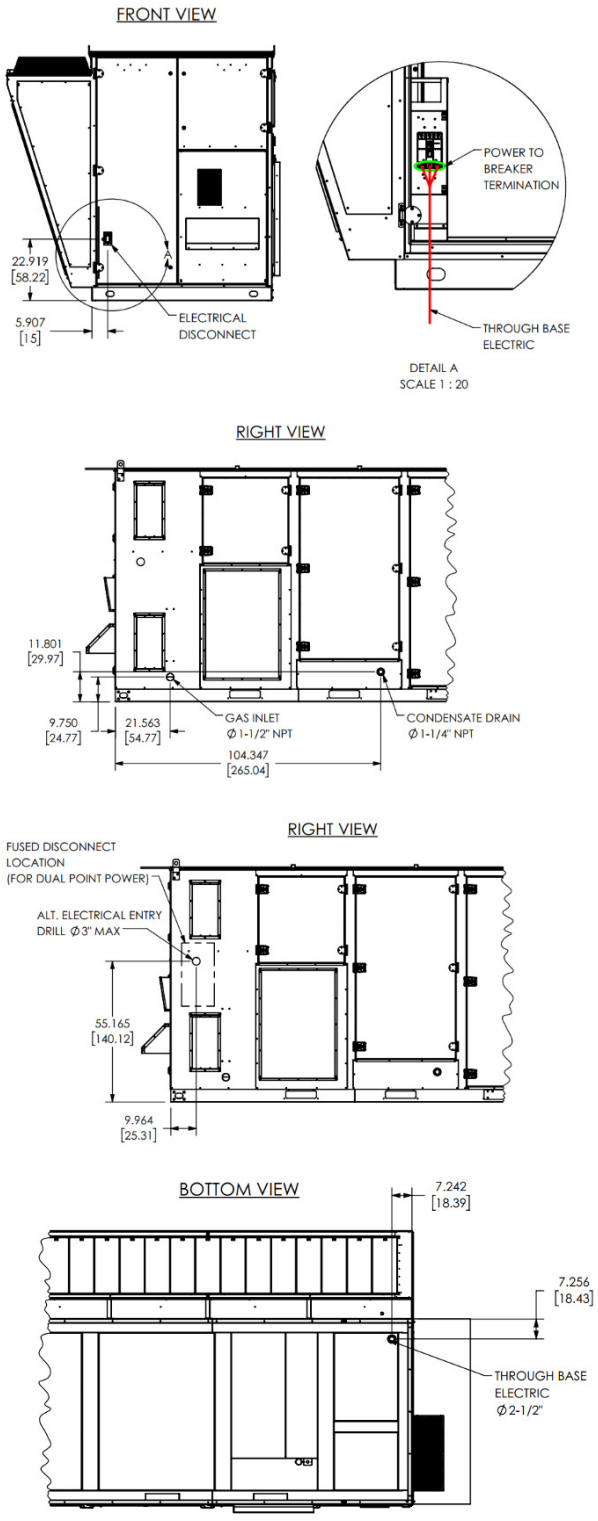


Figure 77. OADG utility connections, in. (cm)

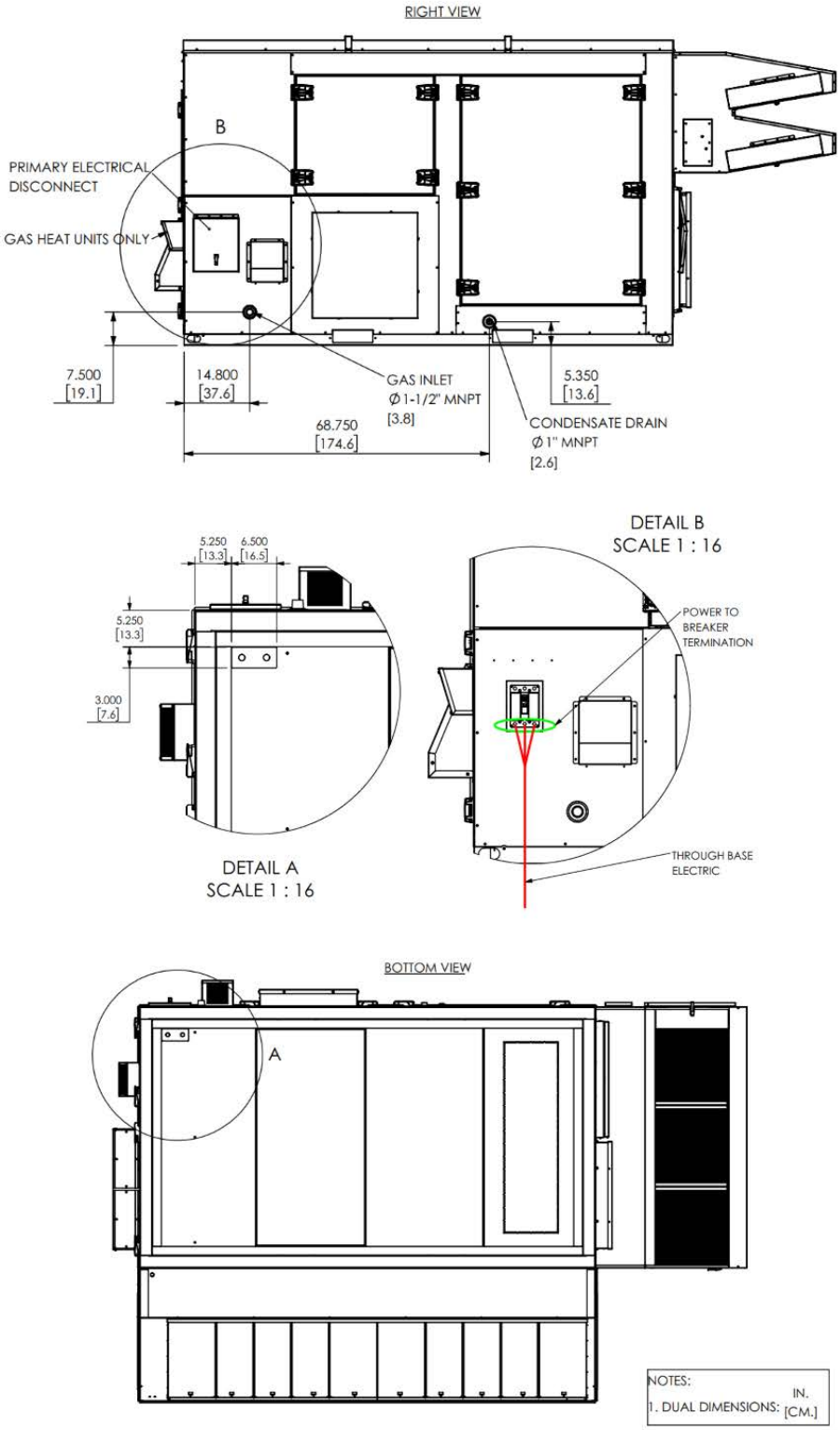
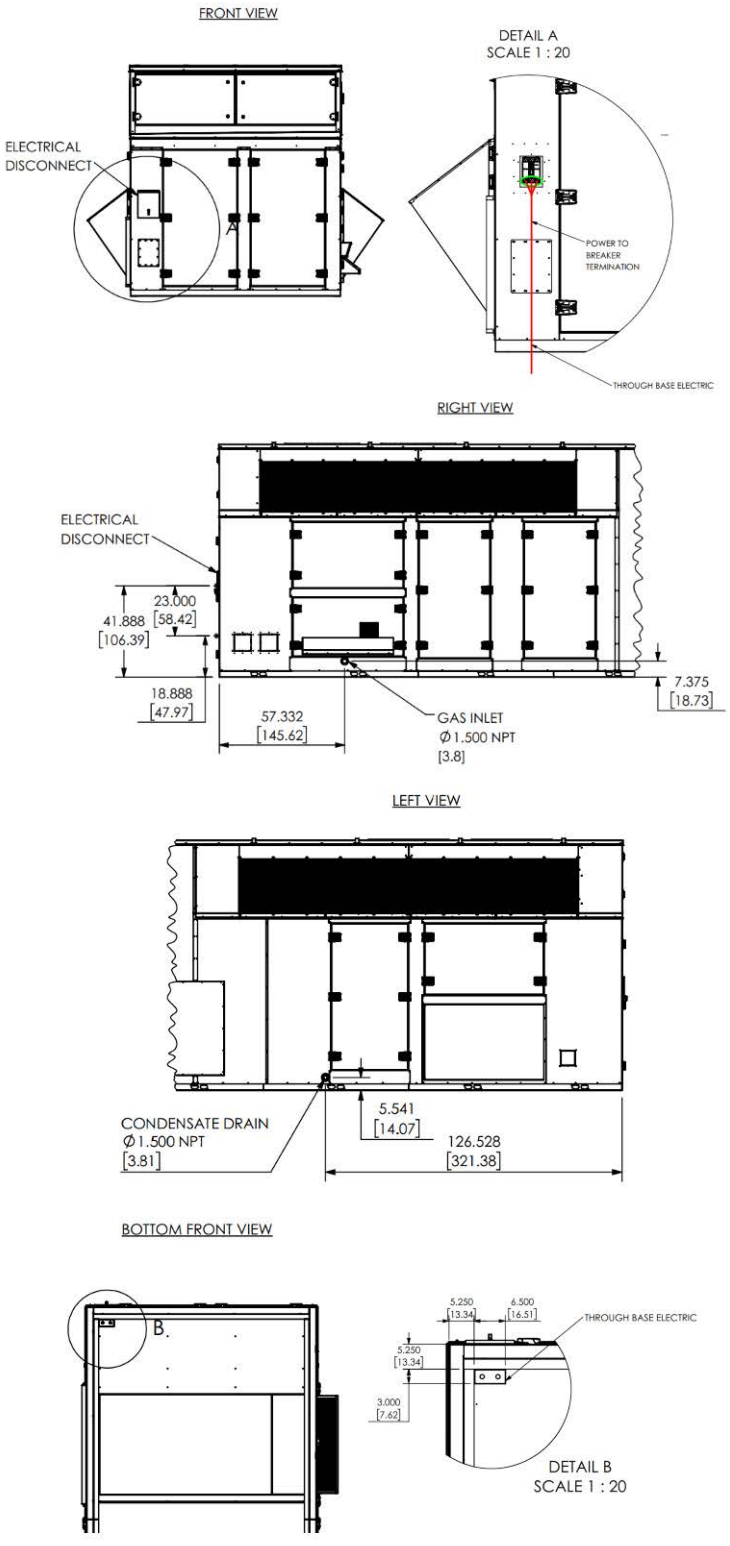


Figure 78. OANG utility connections, in. (cm)



Unit Weight and Rigging

Unit Weight

Table 16. Typical Unit Weights[a] - DX

Model Number	Without powered exhaust or ERV		With powered exhaust, without ERV		With ERV	
	Weight, lb (kg)		Weight, lb (kg)		Weight, lb (kg)	
	Min	Max	Min	Max	Min	Max
OAB*036 - OAB*108	1295 (587)	1806 (819)	1648 (748)	2422 (1099)	1780 (807)	2596 (1178)
OADG010 - OADG030	2319 (1052)	3985 (1808)	3080 (1397)	4807 (2180)	3515 (1594)	5344 (2424)
OAN*360 - OAN*720	5207 (2362)	7900 (3583)	6099 (2766)	8474 (3844)	7160 (3248)	9281 (4210)
OANG040 - OANG080	6560 (2976)	9618 (4363)	7667 (3478)	11394 (5168)	8876 (4026)	13070 (5928)

(a) Minimum and maximum weights vary widely due to the highly configurable nature of the product.

Table 17. Typical Unit Weights[a] - Heatpump

Model Number	Without powered exhaust or ERV		With powered exhaust, without ERV		With ERV	
	Weight, lb (kg)		Weight, lb (kg)		Weight, lb (kg)	
	Min	Max	Min	Max	Min	Max
OAB*036 - OAB*108	1212 (550)	1577 (715)	1565 (710)	1930 (875)	1697 (770)	2062 (935)
OADG010 - OADG030	2349 (1065)	3975 (1803)	2978 (1351)	4665 (2116)	3545 (1608)	5334 (2419)
OAN*360 - OAN*720	5081 (2305)	7014 (3181)	5559 (2522)	7492 (3398)	7667 (3478)	9581 (4346)

(a) Minimum and maximum weights vary widely due to the highly configurable nature of the product.

Rigging

For rigging details, refer to the unit specific submittal. Additional information provided in the *Horizon™ Outdoor Air Unit Horizon UC600 Controls Program Version 12.1 Installation, Operation, and Maintenance* (OAU-SVX008*-EN) manual for your specific product.

Mechanical Specifications

Horizon Outdoor Air Mechanical Specifications

General

- The supply and return openings shall be available as vertical or horizontal airflow. Cooling performance shall be rated in accordance with AHRI 920 testing procedures.
- All units shall be factory assembled, internally wired, fully charged with R-454B, and 100 percent run tested to check cooling operation, fan and blower rotation, and control sequence before leaving the factory.
- Wiring internal to the unit shall be colored and numbered for simplified identification.
- Units shall be ETL listed and labeled, classified in accordance with UL 60335-2-40/CSA C22.2 No.60335-2-40:22 and ANSI Z83.3/CSA 2.6.
- Canadian units shall be CSA Certified.

Casing

- Unit casing shall be constructed of zinc-coated, heavy gauge, galvanized steel.
- Exterior surfaces shall be cleaned, phosphatized, and finished with a weather-resistant baked enamel finish. Unit surface shall be tested 672 hours in a salt spray test in compliance with ASTM B117.
- Unit shall have a 2-inch thick Antimicrobial Insulation with an R-value of 13.
- All insulation edges shall be either captured or sealed.
- The unit base pan shall have no penetrations within the perimeter of the curb other than the raised downflow supply/return openings to provide an added water integrity precaution, if the condensate drain backs up.
- The top cover shall be one piece construction or, where seams exist, it shall be double-hemmed and gasket-sealed.
- The ribbed top adds extra strength and enhances water removal from unit top.

Drain Pan

- The drain pan is a single-walled assembly made of Type 430 stainless steel. It is sloped in two planes and is fully drainable.
- The coils are mounted above the drain pan to allow easy inspection and cleaning of the drain pan.

Refrigeration and Dehumidification Systems

Standard Scroll Compressors

- Standard scroll compressors are direct-drive, hermetic, scroll type compressors with centrifugal type oil pumps.
- Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of unit nameplate voltage.
- Internal overloads shall be provided with the scroll compressors.
- Each compressor has a crankcase heater to minimize the amount of liquid refrigerant present in the oil sump during off cycles.

Digital Scroll Compressors

- Digital scroll compressors are direct-drive, hermetic compressors with centrifugal type oil pumps.
- Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of unit nameplate voltage.
- Internal overloads shall be provided with the scroll compressors.
- Crankcase heaters shall be included.

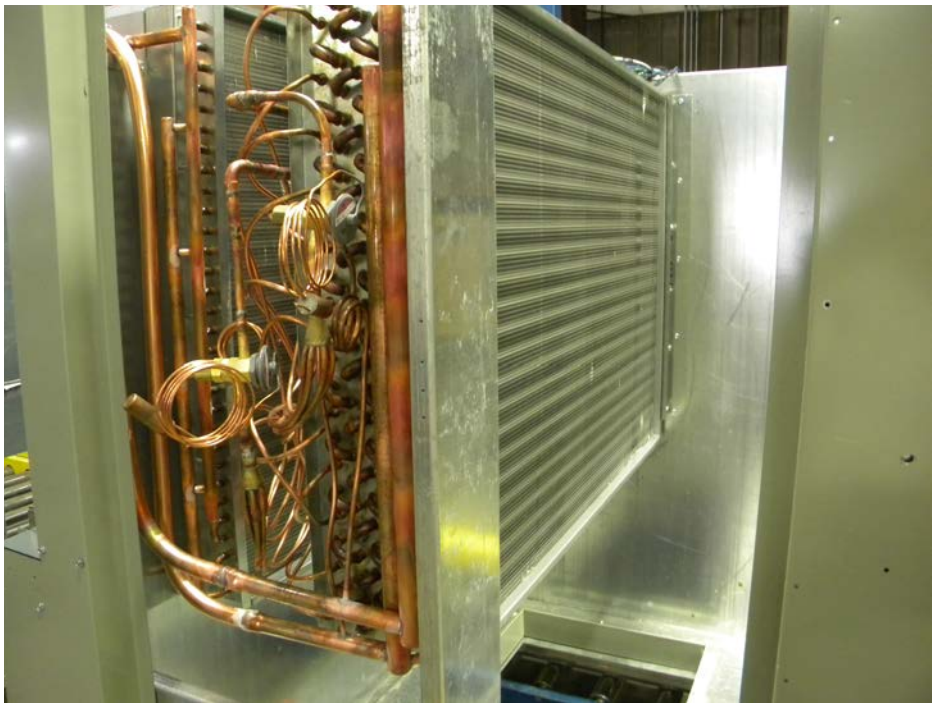
- Compressor shall be able to fully modulate from 20 percent to 100 percent.

Evaporator and Condenser Coils

Refer to Figure 79.

- Internally finned copper tubes mechanically bonded to a configured aluminum plate fin shall be standard.
- Coils shall be leak tested at the factory to ensure the pressure integrity.
- The evaporator coil and condenser coil shall be leak tested to 500 psig and pressure tested to 500 psig.
- The condenser coil shall have a fin design with slight gaps for ease of cleaning.
- Evaporator coil will have four or six interlaced rows for superior sensible and latent cooling.

Figure 79. Evaporator and reheat coil



Chilled Water Coils

- The chilled water coil is AHRI performance certified and shall bear the AHRI symbol.
- Tubes are to be mechanically expanded into fins (secondary surface) for maximum heat transfer and shall be 6 rows.
- Materials are to be 1/2-inch diameter x (0.020) wall thickness.
- Secondary surface (fins) shall be of the plate-fin design using aluminum with die-formed collars.
- Fin design is waffle in a staggered tube pattern to meet performance requirements. Collars will hold fin spacing at specified density, and cover the entire tube surface. Fins are to be free of oils and oxidation.
- The coil shall have MPT connections constructed of copper.
- The optional Cooney Freeze Block is designed to allow ice to form within the tubes, without restriction, by discharging a small amount of water into the drain pan.

- Each expansion header has a factory installed Cooney Freeze Block Valve that is both pressure and thermally activated.
- The valve will open when outside air below 35°F comes in contact with the header or return end of the coil, or when the internal pressure of the coil exceeds 300 psi.
- The valve will automatically reset and allow the coil to resume normal operation, when the pressure decreases, or when the temperature increases.

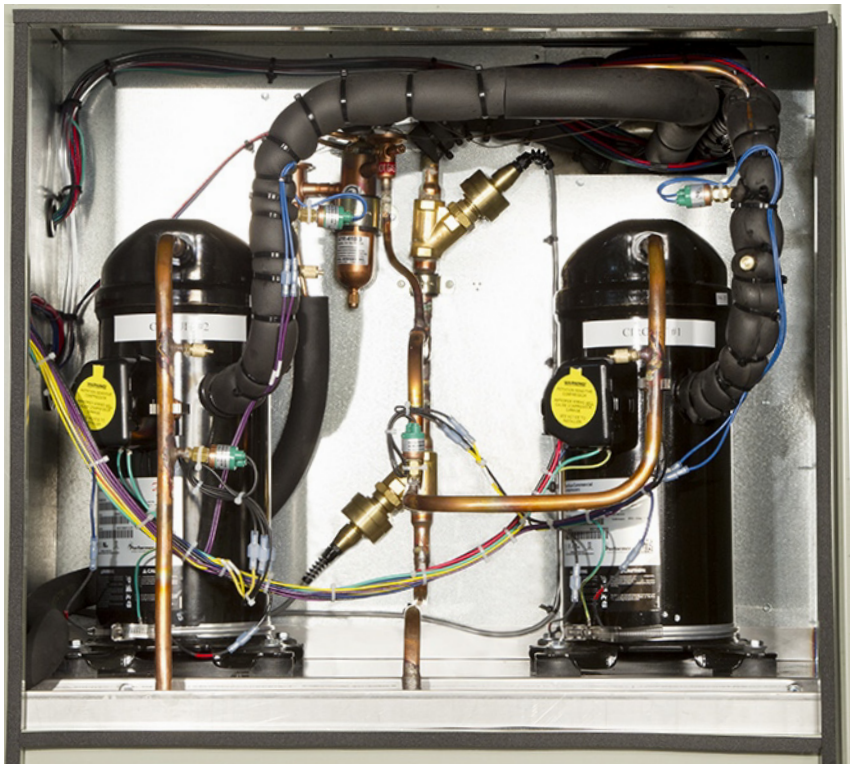
Condenser–Water Cooled (Copper/Steel or 90/10 CuNi Condenser Tubes)

- The condenser coils utilize a coaxial **tube in tube** design.
- Water flows through the inner tube while refrigerant flows in the annulus between the inner and outer tubes.
- The coils have a convoluted multi-lead inner tube which has increased heat transfer surface area per unit length yet still permits full flow of both water and refrigerant around its entire periphery for improved performance.
- Turbulence imparted by the convolutions to both the water and refrigerant flows further enhances the thermal performance, while inhibiting the accumulation of deposits on the surfaces.

Refrigerant Capacity Control

- Units with standard scroll compressors shall be equipped with Refrigerant Capacity Control (RCC) on the lead circuit to ensure proper modulation of cooling.
- The RCC uses mechanical means to monitor and inject hot gas into the suction side of the compressor, unloading the compressor in part load conditions.
- The RCC is factory-set at 114 psig, which will maintain evaporator coil temperature at 38°F.
- Units with eFlex™ variable speed scroll compressors are matched with a specially designed variable frequency drive that allows a modulating ratio of up to 4:1. This allows for unmatched control of leaving air temperatures to meet space loads.
- The eFlex compressors also include brushless permanent magnet motors designed to operate at higher efficiency resulting in significant part load energy savings. This makes units with eFlex technology the most efficient products in their class at part load.
- Units with digital scroll type compressors shall have direct-drive, hermetic compressors with centrifugal type oil pumps.
- Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of unit nameplate voltage.
- Internal overloads shall be provided with the scroll compressors.
- Crankcase heaters shall be included. Compressor shall be able to fully modulate from 20 percent to 100 percent.

Figure 80. Refrigerant capacity control



Total Energy Wheel (Composite)

- The rotating wheel heat exchanger is composed of a rotating cylinder in an insulated cassette frame complete with seals, drive motor, and drive belt.
- The total-energy recovery wheel is coated with silica gel desiccant permanently bonded by a patented and proprietary process without the use of binders or adhesives, which may degrade desiccant performance.
- The substrate is a lightweight polymer and will not degrade nor require additional coatings for application in marine or coastal environments.
- Coated segments are washable with detergent or alkaline coil cleaner and water.
- Desiccant will not dissolve nor deliquesce in the presence of water or high humidity.
- As the wheel rotates between the ventilation and exhaust air streams it picks up sensible and latent heat energy and releases it into the colder air stream. The driving force behind the exchange is the difference in temperatures between the opposing air streams which is also called the thermal gradient.
- Bypass dampers will be provided on both the outside and exhaust air paths.

Total Energy Wheel (Aluminum)

- The rotor media shall be lightweight and be made of aluminum. The rotor media shall be coated to prohibit corrosion; etched or oxidized surfaces are not acceptable.
- All surfaces must be coated with a non-migrating adsorbent layer of desiccant prior to being formed into the honeycomb media structure to confirm that all surfaces are coated and that adequate latent capacity is provided.
- The desiccant must be designed for the adsorption of water vapor.

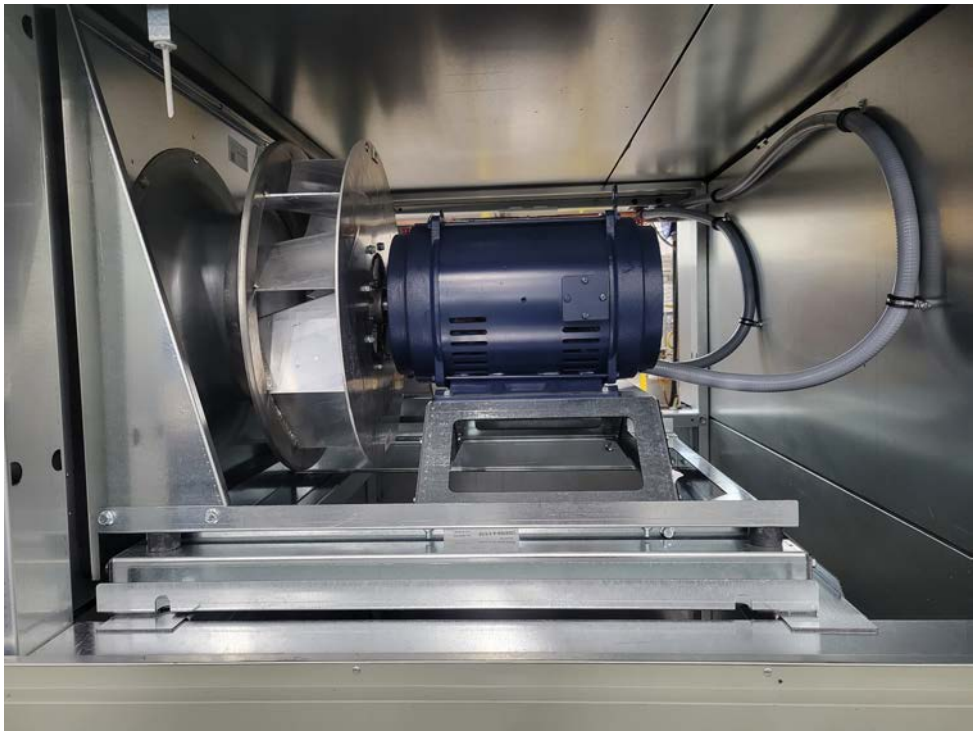
- The media shall be cleanable with low temperature steam, hot water or light detergent without degrading the latent recovery.
- Bypass dampers will be provided on both the outside and exhaust air paths.

Figure 81. Total-energy wheel module

Supply and Exhaust Fan and Motors

- Fan motor shall be direct drive type with factory installed Variable Frequency Drive (unless no controls option is selected, VFD to be provided by others).
- All motors shall be thermally protected. All indoor fan motors meet the U.S. Energy Policy Act of 2005 (EPACT).
- All fans shall be mounted on rubber vibration isolators, to reduce the transmission of noise. Refer to the Figure 82, p. 98.

Figure 82. Indoor fan and motor



Condenser Fan and Motors

- The outdoor fan shall be direct-drive, statically and dynamically balanced, draw-through in the vertical discharge position.
- The fan motor shall be permanently lubricated and shall have built-in thermal overload protection.

Dampers – Low Leak

The outside air damper has a unit-controlled actuator with parallel-blades. The blade construction is a 14-gage galvanized steel, roll-formed airfoil-type.

Electrical and Controls

Controls

- Unit is completely factory-wired with necessary controls and contactor pressure lugs for power wiring.
- Units will provide an external location for mounting fused disconnect device.
- Micro-processor controls are provided for all 24-volt control functions.
- The resident control algorithms will make all heating, cooling and/or ventilating decisions in response to electronic signals from sensors measuring outdoor temperature and humidity. The control algorithm maintains accurate temperature control, minimizes drift from setpoint, and provides better building comfort.
- A centralized micro-processor (RTRM) will provide anti-short cycle timing for a higher level of machine protection.
- Terminals are provided for a field installed dry contact or switch closure to put the unit in the Occupied or Unoccupied modes.

Options

Electric Heating Option

- Primary heat is supplied using Electric Resistance heaters. Heaters shall meet the requirements of the National Electrical Code and shall be listed by Underwriters Laboratories for zero clearance to combustible surfaces and for use with heat pumps and air conditioning equipment.
- Heating elements shall be open coil, 80 percent nickel, 20 percent chromium, Grade A resistance wire.
- Type C alloys containing iron or other alloys are not acceptable.
- Coils shall be machine crimped into stainless steel terminals extending at least 1-inch into the air stream and all terminal hardware shall be stainless steel.
- Coils shall be supported by ceramic bushings staked into supporting brackets.
- Brackets are not to be spaced more than 4-1/2-inch apart.
- Heater frames and terminal boxes shall be corrosion resistant steel. Unless otherwise indicated, the terminal box shall be NEMA 1 construction and shall be provided with a hinged, latching cover.
- Open coil heaters shall be furnished with an airflow switch, disconnecting contactors, fuses (if over 48 amps), control circuit transformer (with primary fusing on Class I circuits as required), built-in, snap acting, door interlock disconnect switch, and a disk type, load-carrying manual reset thermal cutous, factory wired in series with heater stages for secondary protection.
- Heat limiters or other fusible overtemperature devices are not acceptable.
- For modulating heaters, control will be SCR type. For staged heaters, 5kW capacity will be 2 stage and all heaters above 5kW will be 4 stage. Unit shall be suitable for use with Electric Resistance Heat.

Figure 83. ER Heater

Indirect Gas-Fired Heating Option

- Primary heat is supplied using indirect fired gas heating.
- The heating section shall have a progressive tubular heat exchanger design capable of draining internal condensate using stainless steel burners and Type 439 stainless steel tubes.
- External flue to be constructed of type 304 stainless steel.

- An induced draft combustion blower shall be used to pull the combustion products through the firing tubes. The heater shall use a direct spark ignition (DS) system.
- On initial call for heat, the combustion blower shall purge the heat exchanger for 20 seconds before ignition.
- After three unsuccessful ignition attempts, the entire heating system shall be locked out until manually reset at the unit.
- Units shall be comply with the California requirement for low NO_x emissions. Unit shall be suitable for use with natural gas or liquid propane (LP) gas.

Hydronic Heat Option

- A factory installed one, two, or three row hydronic heating coil will be provided downstream of the fan in the primary heat position.
- The unit controller provides a modulating output to control a field provided water valve and accepts a low temperature limit input signal.
- Openings in the unit side panels for piping must also be field constructed.

Hot Gas Reheat

This option shall consist of a modulating hot-gas reheat coil located on the leaving air side of the evaporator coil pre-piped and circuited with a low pressure switch. For detailed unit control and operational modes, refer to the Sequence of Operations in the *Horizon™ Outdoor Air Unit Horizon UC600 Controls Program Version 12.1 Installation, Operation, and Maintenance* (OAU-SVX008*-EN) for your specific product.

Return Air

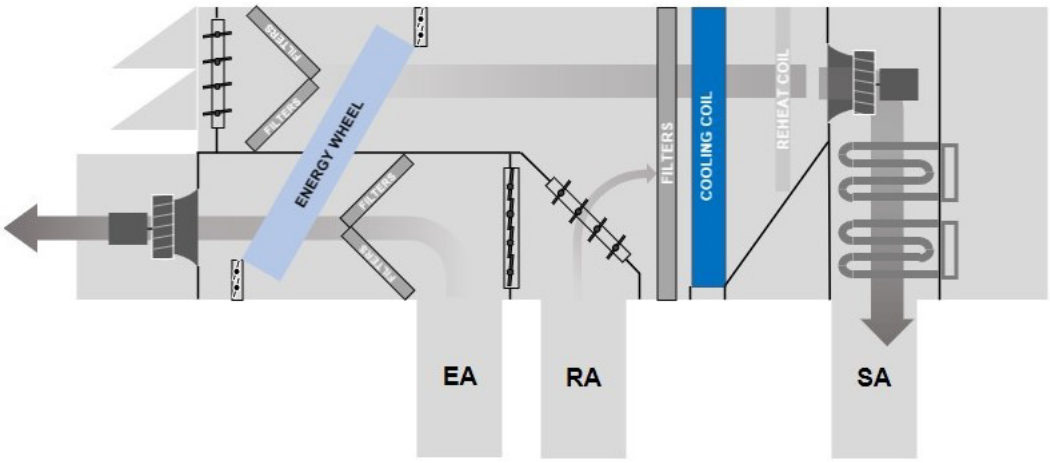
- Air returns vertically through the unit base or horizontally through the cabinet.
- Dampers are low-leak. Each damper has a unit-controlled actuator. Refer to Figure 84.
- Inputs are provided for unoccupied economizer control, based upon a comparison of the outside air stream to a dry bulb reference point.

Figure 84. Return air damper

Split Return/Exhaust

- Units equipped with dual air paths for the return and exhaust will have an additional function of the exhaust fan operation.
- During all operating conditions, the exhaust fan controls to a pressure differential across the damper between the two air paths to always have air leakage from the return into the exhaust. This confirms the exhaust air stream does not leak into the return air stream.
- If preferred, the damper between the two air paths can be set to a minimum position to allow a certain amount of return air to be exhausted during normal operation.
- During Economizer Mode, the damper between the two paths will open fully, the return air damper will close fully, and all of the air will be exhausted out of the unit.

Figure 85. Split return/exhaust air paths



Corrosive Environment Options

- Corrosive environment options include stainless steel interior walls with pre-painted exterior walls, stainless steel coil casing and eco-coated coils.
- Coil coating to be applied uniformly to all coils surface areas, ensuring complete coil encapsulation with no material bridging between fins.

Filters

- Adjustable 6-inch filter rack with options for 2-inch MERV-8, 2-inch MERV-13, and 4-inch MERV-14 installed just upstream of the evaporator coil.
- In addition, 2-inch aluminum mesh mist eliminators are located in the intake hood for OADG, OAN, and OANG; a bird screen is provided for OAB. Other options include 120 V UVC downstream of the evaporator coil, and 2-inch, 24 V electrostatic filters.

Filter Status Switch

- This option indicates when filters require cleaning or replacement. Based on ordered options, each unit can be equipped with up to three filter status switches.
- The filter status switch triggers an information-only diagnostic message on the human interface and will allow continued unit operation.

Non-Fused Disconnect Switch

- A 3-pole, molded case, disconnect switch with provisions for through-the-base electrical connections shall be installed.
- The disconnect switch will be installed in the unit in a water tight enclosure.
- Wiring will be provided from the switch to the unit high voltage terminal block.
- The switch will be UL/CSA agency recognized. The disconnect switch will be sized per NEC and UL guidelines but will not be used in place of unit overcurrent protection.

Convenience Outlet

- A powered 120 volt, 15 amp, 2 plug convenience outlet shall be factory installed.
- A service receptable disconnect shall be installed.
- The convenience outlet is powered from the line side of the disconnect or circuit breaker, and therefore will not be affected by the position of the disconnect or circuit breaker.

Figure 86. Convenience outlet

Roof Mounting Curb

- The roof mounting curb is fabricated of 14-gage galvanized steel with a nominal 2-inch x 2-inch nailer setup.
- The curb ships knocked down with a curb gasket. Curb height options are 14 or 24 inches.

Sound Attenuation Package

- The unit will be equipped with variable speed, ECM condenser fans with accessories and a compressor blanket to reduce sound and increase performance.
- When a unit is selected with the Sound Attenuation Package, it will also be equipped with head pressure control to allow the condenser fans to run as slow as possible while maintaining the performance of the unit.
- This option increases the overall height of the unit at the condenser section. Refer to the submittal for unit dimensional data when Sound Attenuation Package is selected.

Hail Guards

- Hail guards shall be installed on the outside of the condenser coil.
- The guards shall consist of perforated metal, of the same gauge and color as the unit itself.
- Airflow through the hail guards shall not be restricted due to location or size of the perforations.
- Guards shall be removable to accommodate coil cleaning.

Figure 87. Condenser hail guards

Supply/Exhaust Piezo Fan Rings

- Airflow monitoring measuring fan suction and cone pressure differential to calculate fan airflow.
- Airflow measurement will be accomplished through the use of piezo ring/tap technology installed in the supply/exhaust fan wheel area.

Outdoor Air Monitoring

The outdoor air monitoring system is a high quality programmable dual-output airflow/temperature measurement and control system with options for analog airflow, temperature, and alarm.

Supply/Return Smoke Detector

- Smoke detectors shall be factory provided photoelectric smoke detectors mounted in the supply/return air section.
- The detector will be wired for continuous power whenever the unit is energized. Upon detection of smoke, the detector will shut down all unit operations.
- Local codes may dictate the location of detectors.

Appendix

Horizon™ OAU Filter Guide

Table 18. OAB units

Evaporator				
Thickness	**MERV**	**Qty**	**Height**	**Width**
2 in.	8, 13	2	20	24
4 in.	14	2	20	24
Auxiliary Module				
Return Air				
Thickness	**MERV**	**Qty**	**Height**	**Width**
2 in.	8	4	20	24
Outside Air[a]				
Thickness	**MERV**	**Qty**	**Height**	**Width**
2 in.	8	4	20	24

(a) No filters will be provided on the outside air path of the auxiliary module if electric preheat is provided.

Table 19. OAN units

Evaporator				
Thickness	**MERV**	**Qty**	**Height**	**Width**
2 in.	8, 13	9	24	20
4 in.	14	9	24	20
Auxiliary Module (58XX ERV)				
Return Air				
Thickness	**MERV**	**Qty**	**Height**	**Width**
2 in.	8	6	18	20
Outside Air[a]				
Thickness	**MERV**	**Qty**	**Height**	**Width**
2 in.	8	6	18	20
Auxiliary Module (68XX / 74XX ERV)				
Return Air				
Thickness	**MERV**	**Qty**	**Height**	**Width**
2 in.	8	8	25	20
Outside Air[a]				
Thickness	**MERV**	**Qty**	**Height**	**Width**
2 in.	8	8	25	20
Inlet				
Thickness	**Material**	**Qty**	**Height**	**Width**
2 in.	Aluminum Mesh	10	16	25

(a) No filters will be provided on the outside air path of the auxiliary module if electric preheat is provided.

Table 20. OADG units

Evaporator				
Thickness, in. (cm)	**MERV**	**Qty**	**Height, in. (cm)**	**Width, in. (cm)**
2 (5.1)	8, 13	6	24 (63.5)	18 (45.7)
4 (10.2)	14	6	24 (63.5)	18 (45.7)
ERV Module				
Return Air				
Thickness, in. (cm)	**MERV**	**Qty**	**Height, in. (cm)**	**Width, in. (cm)**
2 (5.1)	8	6	20 (50.8)	20 (50.8)
Outside Air[(a)]				
Thickness, in. (cm)	**MERV**	**Qty**	**Height, in. (cm)**	**Width, in. (cm)**
2 (5.1)	8	6	20 (50.8)	20 (50.8)
Inlet Hood				
Thickness, in. (cm)	**Material**	**Qty**	**Height, in. (cm)**	**Width, in. (cm)**
2 (5.1)	Aluminum Mesh	6	20 (50.8)	20 (50.8)

(a) No filters will be provided on the outside air path of the ERV section if electric preheat is provided.

Table 21. OANG units

Evaporator (40 to 50 ton - 4 and 6 row coils; 55 to 80 ton - 6 row coils)				
Thickness, in. (cm)	**MERV**	**Qty**	**Height, in. (cm)**	**Width, in. (cm)**
2 (5.1)	8, 13	15	20 (50.8)	18 (45.7)
4 (10.2)	14	15	20 (50.8)	18 (45.7)
Evaporator (55 to 80 ton - 4 row coils)				
Thickness, in. (cm)	**MERV**	**Qty**	**Height, in. (cm)**	**Width, in. (cm)**
2 (5.1)	8, 13	12	20 (50.8)	25 (63.5)
4 (10.2)	14	12	20 (50.8)	25 (63.5
ERV Module				
Return Air				
Thickness, in. (cm)	**MERV**	**Qty**	**Height, in. (cm)**	**Width, in. (cm)**
2 (5.1)	8	15	24 (61.0)	18 (45.7)
Outside Air[(a)]				
Thickness, in. (cm)	**MERV**	**Qty**	**Height, in. (cm)**	**Width, in. (cm)**
2 (5.1)	8	15	24 (61.0)	18 (45.7)
Inlet Hood				
Thickness, in. (cm)	**Material**	**Qty**	**Height, in. (cm)**	**Width, in. (cm)**
2 (5.1)	Aluminum Mesh	12	24 (61.0)	24 (61.0)

(a) No filters will be provided on the outside air path of the ERV section if electric preheat is provided.

Notes

Trane - by Trane Technologies (NYSE: TT), a global climate innovator - creates comfortable, energy efficient indoor environments for commercial and residential applications. For more information, please visit trane.com or tranetechnologies.com.

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