

COM4T

HUMAN COMFORT

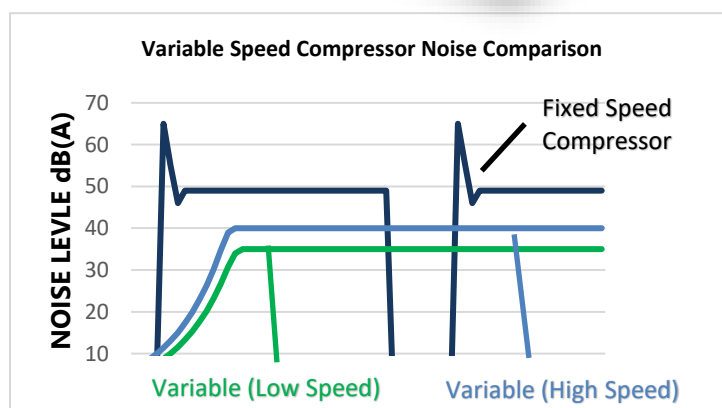
- Indoor and Outdoor Wall Mounted Packaged Units
- Designed for Human Comfort
- Inverter Driven Technology
- Variable Capacity
- Heat Pump

- Designed specifically for human comfort; the variable speed heat pump offers superior efficiency while operating at low sound levels.
- Features speed modulation based on real-time environment demand for cooling and heating, the variable speed system continuously adjusts to small temperature fluctuations offering excellent temperature stability.
- Designed for long term reliability with best in class components to minimize maintenance and repair costs throughout the product's operational life.



Infinite Step Variable Capacity Cooling and Heating

- Variable Frequency Drive (VFD) technology offers up to 17.8 IPLV; highest efficiency rating on the market for any single packaged vertical systems
- Soft Start feature slowly ramps up compressor speed and prevents noisy distractions from sudden compressor and fan turn on. Eliminates in-rush current and spike voltage at compressor start to reduce mechanical stress on components at every compressor turn on



Note: Exact noise level dependent on unit model

Feature Highlights

Variable Speed Compressor

Variable Frequency Drive technology allows the compressor to precisely match the internal load to minimize stress from ON/OFF transitions.

Indoor and Outdoor Configurations

Versatile installation configurations available for both outdoor wall mount and indoor floor mount models.

Variable Speed EC Fans

Quiet and efficient variable speed supply and condenser fans provide a highly favorable energy efficiency curve when compared to conventional fans.

Dual Layer Exterior Protection

Galvanized steel exterior coated with an additional layer of thermoset polymer provides two layers of protection against corrosion.

Fresh Air Intake Options

Commercial Room Ventilator (CRV), energy recovery ventilator (ERV), and blank-off plate offer different fresh air intake options to meet indoor air quality requirement as established by ANSI/ASHRAE Standard 62.1.

AIRSYS
Balance the Environment

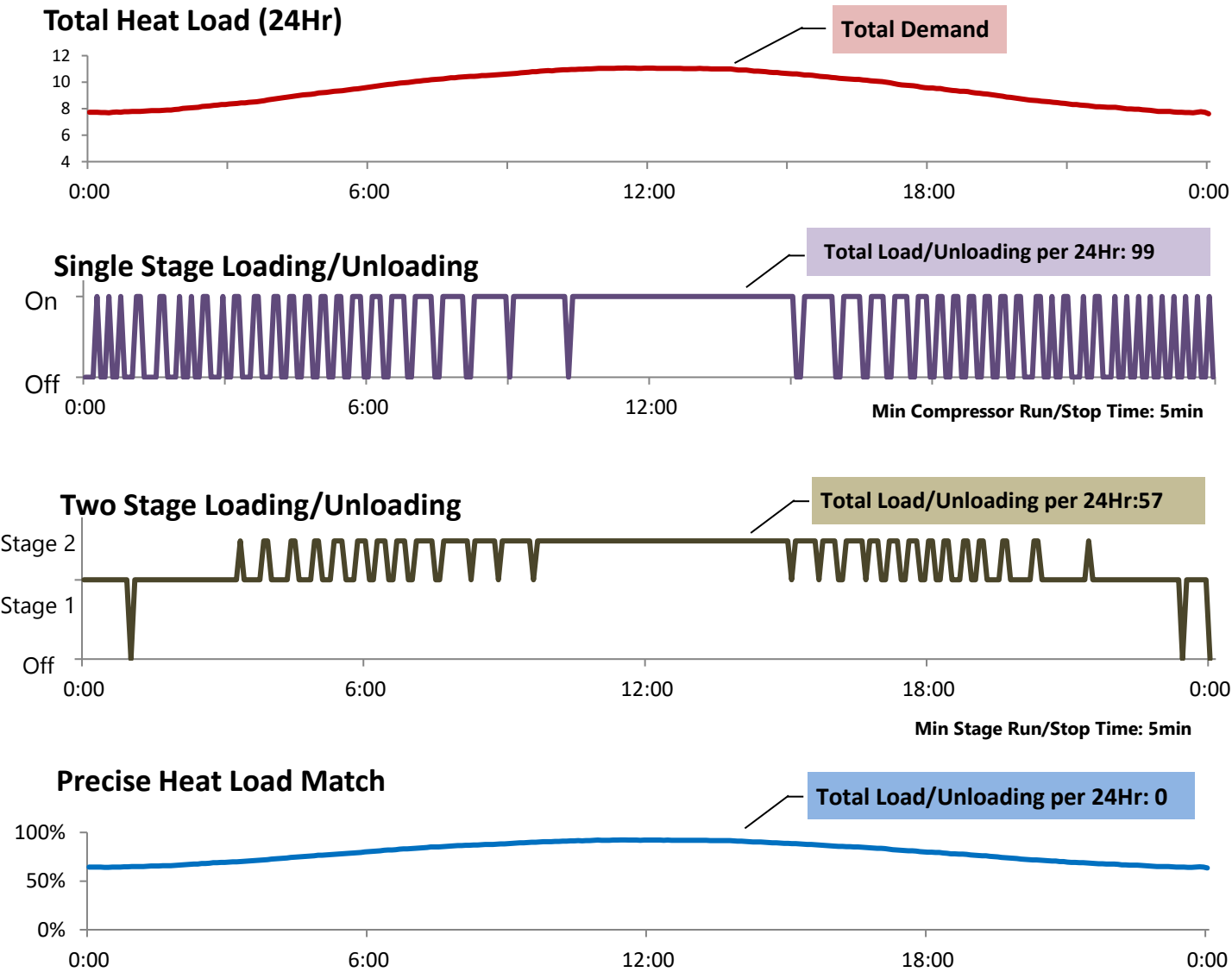


FEATURES

Precise Heat Load Match

Just like an airplane experiences most of its stress during takeoff and landing, the various cycles of cooling create most of the mechanical stress on the compressor. The turn on of a fixed compressor wears down contactors and the resulting inrush current wears down other electronics. Even for properly sized units and properly set minimum compressor run/stop timer, the loading and unloading can reach one hundred times a day which would be > 30,000+ times per year.

By precisely matching the heat load at all times, the variable speed units minimize sudden loading and unloading of the compressor, vastly extending the life and reliability of the entire cooling system.



FEATURES

Turbo Boost Mode

In some situations, such as increased load due to extreme high outdoor temperature, the heat load of the building may exceed the nominal cooling capacity of the HVAC system. When this happens, a Turbo Boost Mode can be engaged automatically to deliver up to 125% of the nominal cooling capacity at the expense of slightly lower efficiency.

Quiet Mode

Quiet Mode further reduces noise by 5-7 dBA by limiting the maximum frequency the compressor may run at. Maximum cooling capacity will be reduced by 15% and Turbo Boost will be disabled when quiet mode is enabled.

Soft Start

Instead of sudden and numerous starts and stops, the variable compressor will ramp up capacity at startup and continuously modulate capacity to match the load of the environment. Soft start has the following advantages:

- Minimize mechanical stress on compressor start up.
- Eliminate spike voltage and in-rush current on start up.
- Reduced noise from sudden compressor loading.



Auto Defrost

Frost can build up on the outdoor coil when the heat pump is operating in low temperatures. This can adversely affect the rate of heat transfer. If conditions are met, automatic defrost will be engaged to prevent frost buildup.

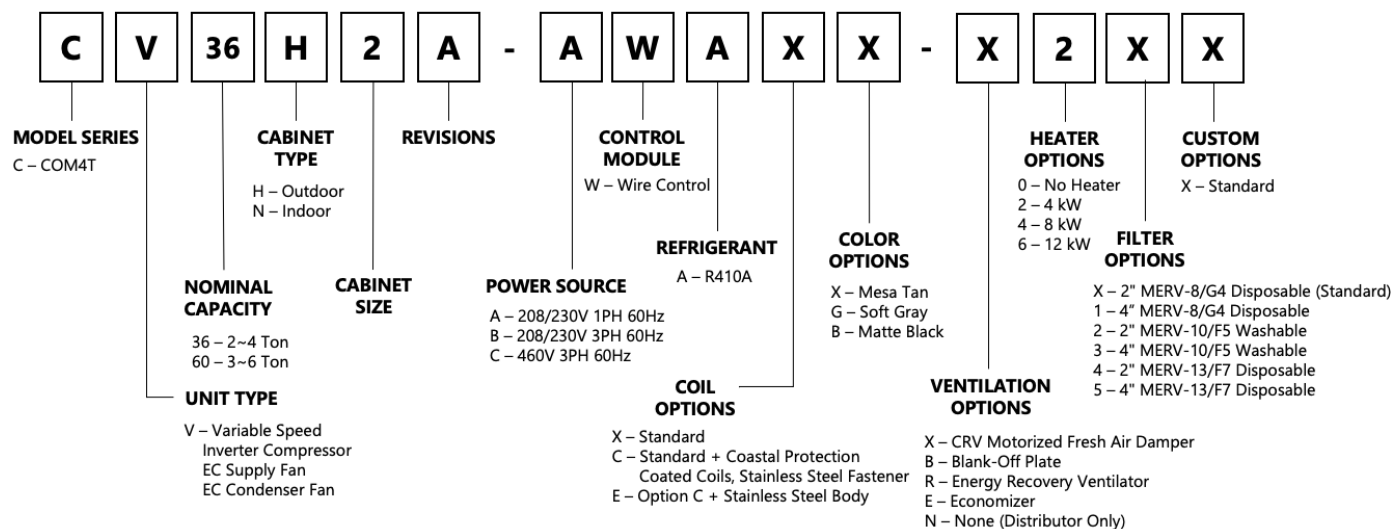
Electronic Expansion Valve (EEV)

The EEV allows the compressor to always run at the optimal condition, thus delivering superior energy consumption in a wide range of environmental conditions.

Low/High Pressure Protection

High and low pressure sensing protects the compressor and refrigeration circuit against loss of refrigerant charge, dirty filter, restricted outdoor coil, and low air flow. When repeatedly engaged, the HVAC automatically locks out mechanical cooling for 12 hours or until power is reset.

MODEL NUMBER NOMENCLATURE



CERTIFIED PERFORMANCE DATA (AHRI 390)

	Model	Nominal Tonnage	Nominal Cooling Capacity	EER	IPLV	Heat Pump Capacity	COP
Outdoor	CV36H2A	3 Ton Variable	35,100 BTU / 10.3 kW	11.2	17.8	34,200 BTU / 10.0 kW	3.3
	CV60H3A	5 Ton Variable	57,300 BTU / 16.8 kW	11.0	17.2	56,600 BTU / 16.6 kW	3.3
Indoor	CV36N3A	3 Ton Variable	35,100 BTU / 10.3 kW	11.2	17.8	34,200 BTU / 10.0 kW	3.3
	CV60N3A	5 Ton Variable	54,500 BTU / 16.0 kW	11.0	16.9	52,800 BTU / 15.5 kW	3.3

NOTE: All Capacities, EER, and IPLV certified to AHRI 390 testing standard.

VARIABLE SPEED COOLING DATA

Model	Return Temp. (DB/WB)	Min Total Capacity (kW/BTUH)	Max Total Capacity (kW/BTUH)	Min Sensible Capacity (kW/BTUH)	Max Sensible Capacity (kW/BTUH)
CV36H2A	80/67°F	5.8 / 19,800	12.4 / 42,300	4.6 / 15,700	8.6 / 29,300
	86/69°F	6.4 / 21,800	12.8 / 43,700	5.9 / 20,100	9.1 / 31,100
	95/72°F	7.1 / 24,200	13.4 / 45,700	6.6 / 22,500	10.6 / 36,200
CV60H3A	80/67°F	8.6 / 29,300	19.8 / 67,600	7.1 / 24,200	13.7 / 46,700
	86/69°F	9.4 / 32,100	20.5 / 69,900	8.5 / 29,000	14.5 / 49,500
	95/72°F	10.3 / 35,100	21.3 / 72,700	9.4 / 32,100	16.8 / 57,300
CV36N3A	80/67°F	5.6 / 19,100	12.2 / 41,600	4.5 / 15,400	8.5 / 29,000
	86/69°F	6.1 / 20,800	12.6 / 43,000	5.5 / 18,800	8.9 / 30,400
	95/72°F	6.7 / 22,900	13.1 / 44,700	6.2 / 21,200	10.3 / 35,100
CV60N3A	80/67°F	8.2 / 27,900	19.6 / 66,900	6.7 / 22,900	13.3 / 45,400
	86/69°F	8.9 / 30,400	20.3 / 69,300	7.9 / 26,900	14.1 / 48,100
	95/72°F	9.8 / 33,400	21.1 / 72,000	8.7 / 29,700	16.2 / 55,300

- All data given at 95°F outdoor temperature.
- For capacity rating at higher than 95°F outdoor temperature, de-rate capacity by 4% for every 5°F above 95°F, up to 120°F.
- For high altitude installation, de-rate capacity by 1% for every 1000ft above 1000ft.

VARIABLE SPEED HEATING DATA

		Outdoor Temperature				
Model	Capacity	50°F	40°F	30°F	20°F	10°F
CV36H2A	Max Speed	14kW / 47,900BTU	10.8kW / 37,000BTU	8.3kW / 28,400BTU	6.4kW / 21,800BTU	4.9kW / 16,600BTU
	Min Speed	5.8kW / 19,800BTU	4.5kW / 15,300BTU	3.5kW / 11,800BTU	2.6kW / 9,000BTU	2kW / 6,900BTU
CV60H3A	Max Speed	22.4kW / 76,500BTU	17.4kW / 59,200BTU	13.3kW / 45,400BTU	10.2kW / 34,900BTU	7.8kW / 26,600BTU
	Min Speed	9.3kW / 31,600BTU	7.2kW / 24,400BTU	5.5kW / 18,800BTU	4.2kW / 14,400BTU	3.2kW / 11,000BTU
CV36N3A	Max Speed	14kW / 47,900BTU	10.8kW / 37,000BTU	8.3kW / 28,400BTU	6.4kW / 21,800BTU	4.9kW / 16,600BTU
	Min Speed	5.8kW / 19,800BTU	4.5kW / 15,300BTU	3.5kW / 11,800BTU	2.6kW / 9,000BTU	2kW / 6,900BTU
CV60N3A	Max Speed	20.8kW / 71,100BTU	16.1kW / 55,000BTU	12.4kW / 42,200BTU	9.5kW / 32,400BTU	7.2kW / 24,700BTU
	Min Speed	8.6kW / 29,400BTU	6.7kW / 22,700BTU	5.1kW / 17,500BTU	3.9kW / 13,400BTU	3kW / 10,200BTU

- All Data given at 70°F indoor temperature.
- For high altitude installation, de-rate capacity by 1% for every 1,000ft above 1,000ft.

INDOOR NOISE DATA

Model	Low Speed Cool/Heat	Low Speed w/ Curb	High Speed Cool/Heat	High Speed w/ Curb
CV36H2A	37	36	40	39
CV60H3A	41	40	43	42
CV36N3A	40	N/A	43	N/A
CV60N3A	42	N/A	44	N/A

NOTE: Measured 5 ft. above floor, 10 ft. from HVAC. Standard airflow volume.

AIRFLOW RATINGS

CFM (Wet Coil/Dry Coil)				
Model	0.0 in. wc. (0Pa)	0.1 in. wc. (25Pa)	0.2 in. wc. (50Pa)	0.3 in. wc. (75Pa)
CV36H2A	1005 / 1030	950 / 980	900 / 940	845 / 895
CV60H3A	1650 / 1680	1590 / 1620	1540 / 1580	1470 / 1520
CV36N3A	1050 / 1075	1000 / 1030	950 / 990	895 / 945
CV60N3A	1600 / 1630	1540 / 1570	1490 / 1530	1420 / 1480

Dehumidification Mode Capacity

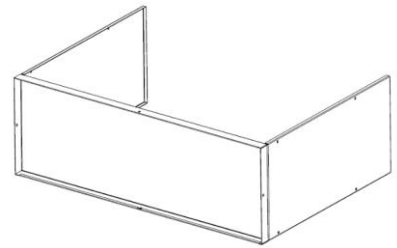
Return Temp. (DB/WB)	Capacity		CV36H2A		CV60H3A		CV36N3A		CV60N3A	
			Rated	Dehum.	Rated	Dehum.	Rated	Dehum.	Rated	Dehum.
80/67°F 51% RH	Total Capacity	BTUH	35,200	36,800	55,500	57,500	35,000	36,000	54,000	56,000
		kW	10.3	10.8	16.3	16.9	10.3	10.6	15.8	16.4
	Sensible Capacity	BTUH	25,200	23,800	41,000	37,400	25,400	23,400	39,000	36,200
		kW	7.4	7.0	12.0	11.0	7.4	6.9	11.4	10.6
	Latent Capacity	BTUH	10,000	13,000	14,500	20,100	9,600	12,600	15,000	19,800
		kW	2.9	3.8	4.2	5.9	2.8	3.7	4.4	5.8
	Dehum. Capacity	lb/h	9.5	12.3	13.6	18.9	9.0	11.9	14.1	18.7
		l/h	4.3	5.6	6.2	8.6	4.1	5.4	6.4	8.5
80/70°F 61% RH	Total Capacity	BTUH	39,000	41,000	61,000	62,000	38,600	40,500	60,000	60,500
		kW	11.4	12.0	17.9	18.2	11.3	11.9	17.6	17.7
	Sensible Capacity	BTUH	23,400	21,600	38,000	34,200	23,600	21,800	36,600	33,000
		kW	6.9	6.3	11.1	10	6.9	6.4	10.7	9.7
	Latent Capacity	BTUH	15,600	19,400	23,000	27,800	15,000	18,700	23,400	27,400
		kW	4.6	5.7	6.7	8.1	4.4	5.5	6.9	8.0
	Dehum. Capacity	lb/h	14.7	18.3	21.6	26.2	14.1	17.6	22.0	25.7
		l/h	6.7	8.3	9.8	11.9	6.4	8.0	10	11.7
80/73°F 72% RH	Total Capacity	BTUH	42,000	43,500	66,000	67,000	41,500	43,000	65,000	65,500
		kW	12.3	12.7	19.3	19.6	12.2	12.6	19.1	19.2
	Sensible Capacity	BTUH	19,200	18,200	32,600	30,200	19,400	18,400	32,200	29,000
		kW	5.6	5.3	9.6	8.9	5.7	5.4	9.4	8.5
	Latent Capacity	BTUH	22,800	25,300	33,400	36,800	22,100	24,600	32,800	36,500
		kW	6.7	7.4	9.8	10.8	6.5	7.2	9.6	10.7
	Dehum. Capacity	lb/h	21.6	23.8	31.5	34.5	20.9	23.1	30.8	34.3
		l/h	9.8	10.8	14.3	15.7	9.5	10.5	14.0	15.6
80/76°F 83% RH	Total Capacity	BTUH	44,500	46,500	70,000	71,000	44,000	46,000	68,500	69,000
		kW	13.0	13.6	20.5	20.8	12.9	13.5	20.1	20.2
	Sensible Capacity	BTUH	15,800	15,200	28,600	25,800	16,000	15,600	28,000	25,200
		kW	4.6	4.5	8.4	7.6	4.7	4.6	8.2	7.4
	Latent Capacity	BTUH	28,700	31,300	41,400	45,200	28,000	30,400	40,500	43,800
		kW	8.4	9.2	12.1	13.2	8.2	8.9	11.9	12.8
	Dehum. Capacity	lb/h	27.1	29.5	38.9	42.5	26.4	28.6	38.1	41.1
		l/h	12.3	13.4	17.7	19.3	12.0	13.0	17.3	18.7
80/79°F 96% RH	Total Capacity	BTUH	46,500	48,000	74,000	75,000	46,000	47,000	72,000	73,000
		kW	13.6	14.1	21.7	22.0	13.5	13.8	21.1	21.4
	Sensible Capacity	BTUH	12,800	12,000	23,600	21,000	12,600	11,800	22,800	20,000
		kW	3.8	3.5	6.9	6.2	3.7	3.5	6.7	5.9
	Latent Capacity	BTUH	33,700	36,000	50,400	54,000	33,400	35,200	49,200	53,000
		kW	9.9	10.6	14.8	15.8	9.8	10.3	14.4	15.5
	Dehum. Capacity	lb/h	31.7	33.9	47.5	50.8	31.5	33.2	46.4	49.9
		l/h	14.4	15.4	21.6	23.1	14.3	15.1	21.1	22.7

- All data given at 95°F outdoor temperature.

VENTILATION OPTIONS

Blank Off Plate

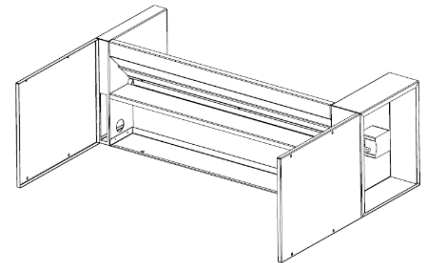
The blank-off plate prevents outside air from entering the building. All capacity, efficiency and cost of operation information is based upon the fresh air blank-off plate in place and is recommended for maximum energy efficiency



Commercial Room Ventilator (CRV)

The motorized Commercial Room Ventilator (CRV), allows fresh air from the outside to enter inside the building for improved indoor air quality (IAQ) for the occupants. Adjustable actuator position allows varying amounts of outside air to enter the building.

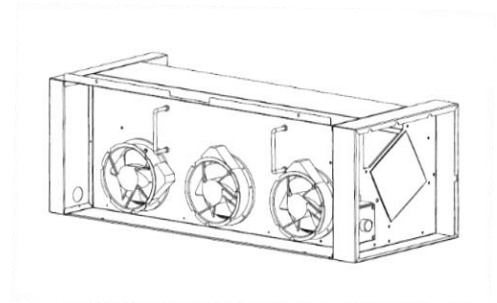
Fresh Air Flow (CFM)		
Damper Position	CV36	CV60
1	550	600
.8	450	550
.6	300	400
.4	180	250



Energy Recovery Ventilator

The energy recovery ventilator harvests energy contained in the exhaust air by bringing fresh air across the stationary cubic heat exchanger. The medium is designed to be pulled out easily for cleaning and replacement.

ERV characteristics		
Dial Position	CFM	Efficiency
6	450	54%
5	400	58%
4	350	62%
3	250	66%
2	220	70%

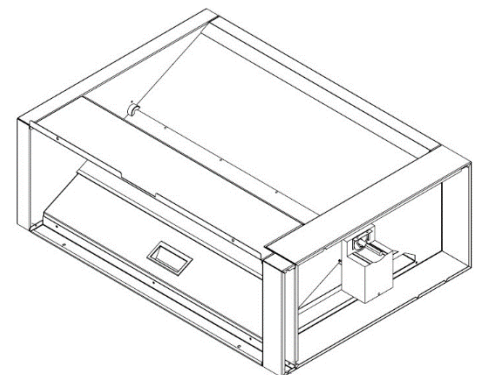


1. ERV is infinite step. If 375 CFM is desired, dial between 4 and 5
2. Moisture content and air temperature/pressure may affect efficiency. Actual efficiency may vary from 50% to 80%.

Economizer

The economizer uses outdoor air to provide cooling when the outdoor temperature is both cool and dry. Economizer capacity depend on the temperature difference between indoor and outdoor air; the colder the outdoor temperature the greater the capacity.

Economizer Capacity (BTU/hr)		
Temperature Difference	CV36	CV60
5F	5,000	7,300
10F	9,900	14,600
15F	14,800	21,800
20F	19,800	29,100



ENERGY RECOVERY VENTILATOR CAPACITY

Summer: Indoor Design Temperature 75/62°F DB/WB

	Ambient DB	110			100			90			80		
	Ambient WB	80	75	70	75	70	65	75	70	65	75	70	65
450CFM	Sensible Load	16500	16500	16500	10500	10500	10500	7100	7100	7100	2400	2400	2400
	Latent Load	14100	4100	0	9200	0	0	14400	5000	0	19900	10200	1800
	Heat Recovery	13400	10300	9100	8600	5800	5800	8400	5500	3900	7500	4500	1900
375CFM	Sensible Load	13800	13800	13800	8800	8800	8800	5900	5900	5900	2000	2000	2000
	Latent Load	11800	3400	0	7700	0	0	12000	4200	0	16600	8500	1500
	Heat Recovery	12000	9200	8000	7700	5100	5100	7500	4900	3400	6800	4100	1700
300CFM	Sensible Load	11000	11000	11000	7000	7000	7000	4700	4700	4700	1600	1600	1600
	Latent Load	9400	2700	0	6100	0	0	9600	3300	0	13300	6800	1200
	Heat Recovery	10300	7700	6700	6600	4300	4300	6500	4100	2900	6000	3600	1400
225CFM	Sensible Load	8300	8300	8300	5300	5300	5300	3600	3600	3600	1200	1200	1200
	Latent Load	7100	2100	0	4600	0	0	7200	2500	0	10000	5100	900
	Heat Recovery	8600	6400	5500	5500	3500	3500	5500	3500	2400	5200	3000	1200

Winter: Indoor Design Temperature 70°F

	Ambient DB	10	20	30	40	50	60
450CFM	Sensible Load	28400	23600	18900	14200	9500	4700
	Heat Recovery	15600	13000	10400	7800	5200	2600
375CFM	Sensible Load	23600	19700	15800	11800	7900	3900
	Heat Recovery	13700	11400	9200	6800	4600	2300
300CFM	Sensible Load	18900	15800	12600	9500	6300	3200
	Heat Recovery	11500	9600	7700	5800	3800	2000
225CFM	Sensible Load	14200	11800	9500	7100	4700	2400
	Heat Recovery	9400	7800	6300	4700	3100	1600

NOTE: All capacities given in BTU/hr.

Technical Details

Model	Compressor	Evaporator Fan		Condenser Fan		Electric Heater		Refrigerant	Outdoor Noise (2)	
	Running Current (A)	Current (A)	Air Volume (CFM) (3)	Current (A)	Air Volume (CFM)	kW	Current (A)	lbs.	Nominal	Low Speed
CV36H2A-A	11.3	0.5	1005	1.1	2820	4/8/12	18/35/53	9.5	44	41
CV60H3A-A	17.4	1.8	1650	2.4	4590	4/8/12	18/35/53	13.0	45	42
CV36N3A-A	11.3	0.5	1050	1.1	2820	4/8/12	18/35/53	9.1	41	38
CV60N3A-A	16.9	1.6	1600	1.9	4500	4/8/12	18/35/53	12.6	44	41

(1) All electric current values given at max capacity/speed

(2) Ambient Temperature = 95°F, 6.5ft away from unit in open space

(3) With standard pleated filter

Electrical Ratings

Model	Heater Size	Single Circuit		Dual Circuit #1		Dual Circuit #2	
		MCA	MFS	MCA	MFS	MCA	MFS
CV36H2A-A	0kW	16	25	--	--	--	--
	4kW	37	45	16	25	21	25
	8kW	59	70	16	25	43	45
	12kW	81	90	16	25	65	65
CV60H3A-A	0kW	27	40	-	-	-	-
	4kW	49	65	27	40	22	25
	8kW	70	85	27	40	43	45
	12kW	92	105	27	40	65	65
CV36N3A-A	0kW	16	25	--	--	--	--
	4kW	37	45	16	25	21	25
	8kW	59	70	16	25	43	50
	12kW	81	90	16	25	65	70
CV60N3A-A	0kW	TBD	TBD	--	--	--	--
	4kW	TBD	TBD	TBD	TBD	TBD	TBD
	8kW	TBD	TBD	TBD	TBD	TBD	TBD
	12kW	TBD	TBD	TBD	TBD	TBD	TBD

MCA = Minimum Circuit Ampacity (Wiring Amps) MFS = Maximum Fuse Size (HACR Breaker Size)

FIELD INSTALLED ACCESSORY PARTS LIST

Accessory	Model			
	CV36H2A	CV60H3A	CV36N3A	CV60N3A
Curb Adapter	2121008580	2121008580	N/A	N/A
Adapter Extension	2121008590	2121008590	N/A	N/A
4kW Heater Package	2121008460	2121008460	2121008460	2121008460
8kW Heater Package	2121008480	2121008480	2121008480	2121008480
12kW Heater Package	2121008500	2121008500	2121008500	2121008500
Blank Off Plate	2121008960	2121008960	N/A	N/A
Fresh Air Damper	2121008610	2121008610	N/A	N/A
Energy Recovery Ventilator	2121008570	2121008570	2121008700	2121008700
Economizer	2121008860	2121008860	N/A	N/A
Top Discharge Adapter	2121009330	2121009330	N/A	N/A

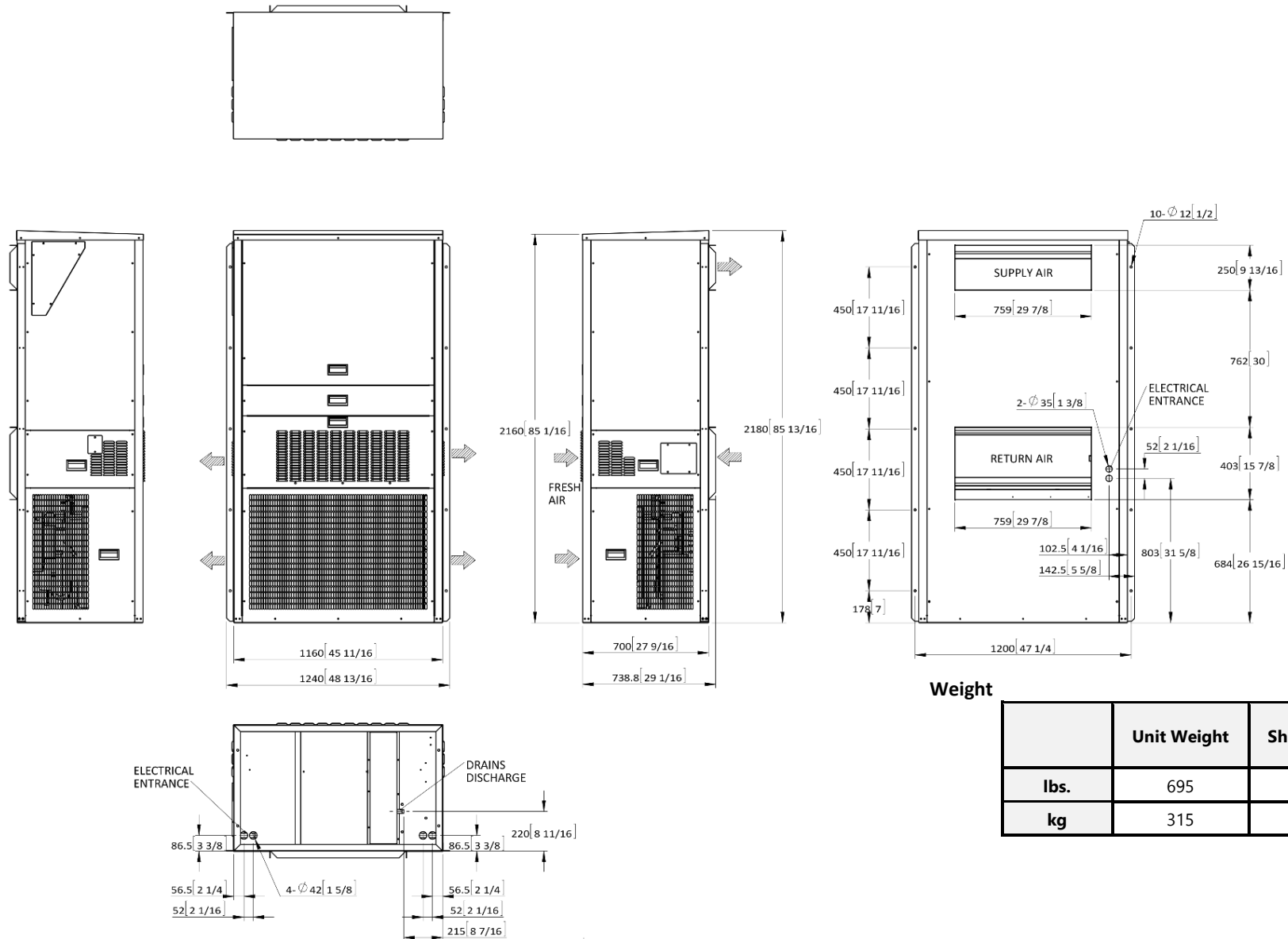
NOTE: For adapter dimensions, refer to mechanical drawing at the end of this document

FILTER SIZES

Model	Filter Quantity	Nominal Size (in)	Exact Size (in)
CV36H2A	2	20" x 25" x 2"	19-1/2 x 24-1/2 x 1-3/4
	2	20" x 25" x 4"	19-1/2 x 24-1/2 x 3-3/4
CV60H3A	2	20" x 25" x 2"	19-1/2 x 24-1/2 x 1-3/4
	2	20" x 25" x 4"	19-1/2 x 24-1/2 x 3-3/4
CV36N3A	2	20" x 25" x 2"	19-1/2 x 24-1/2 x 1-3/4
CV60N3A	2	20" x 25" x 2"	19-1/2 x 24-1/2 x 1-3/4

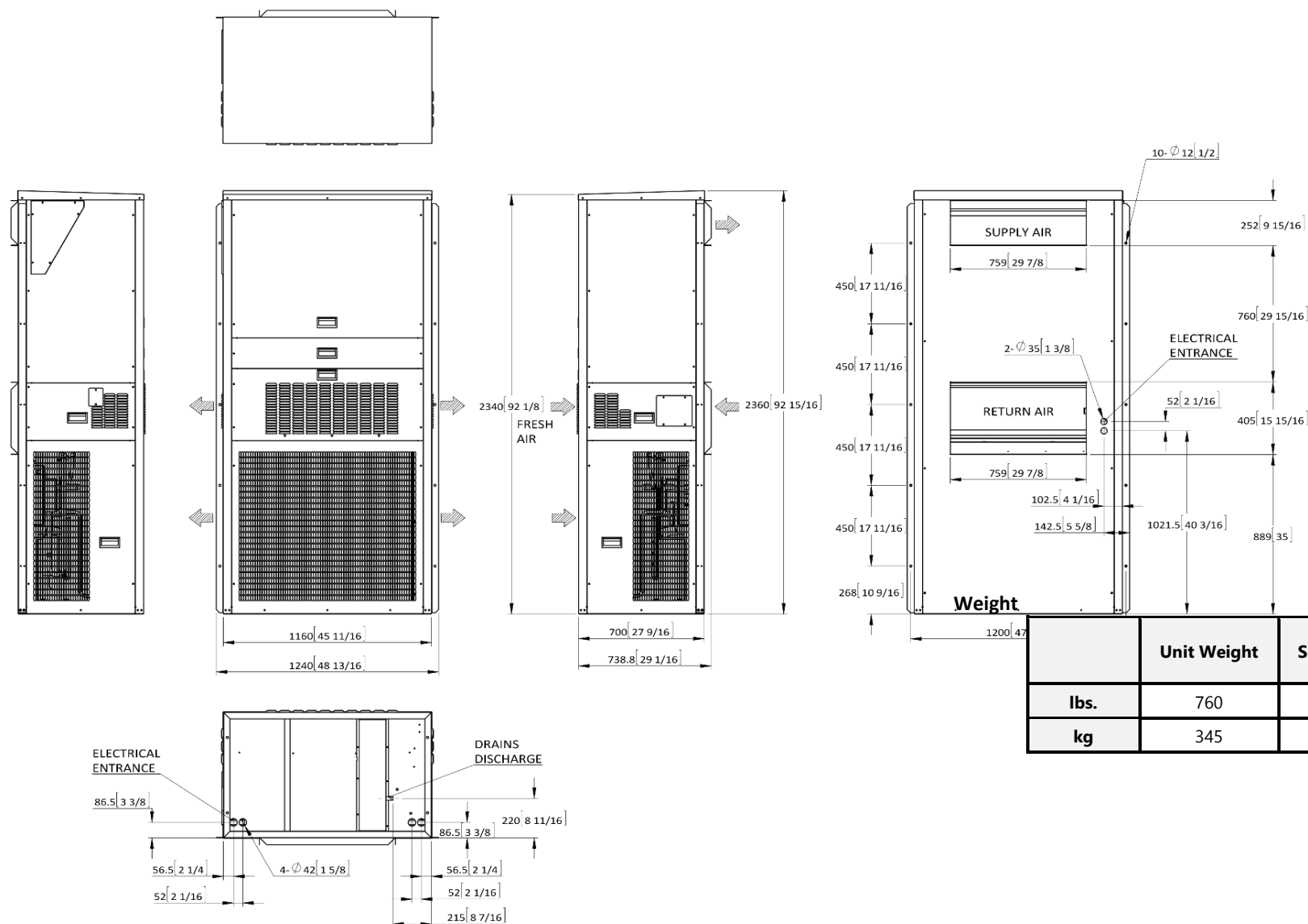
Unit Dimensions

Model: CV36H2A



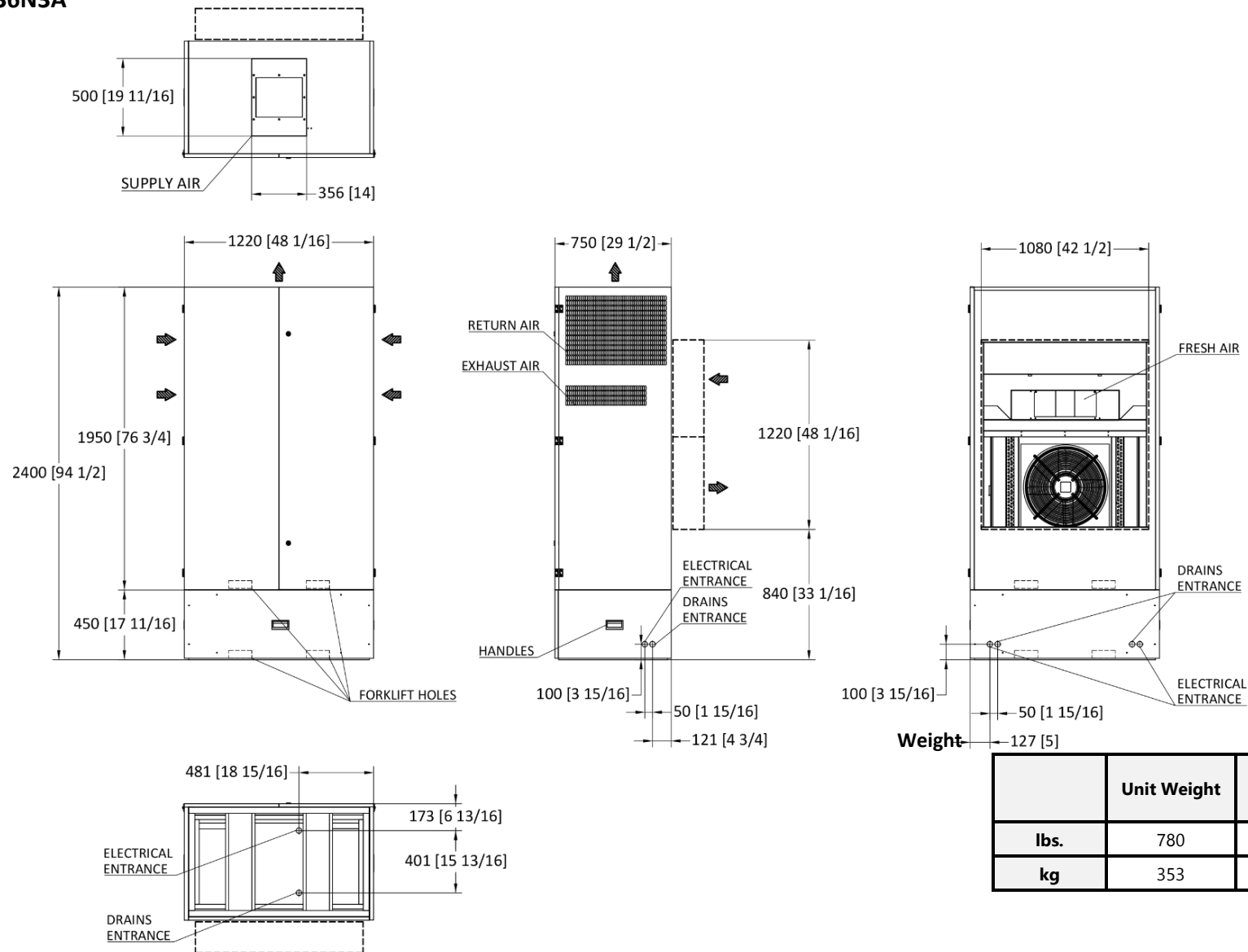
Unit Dimensions

Model: CV60H3A



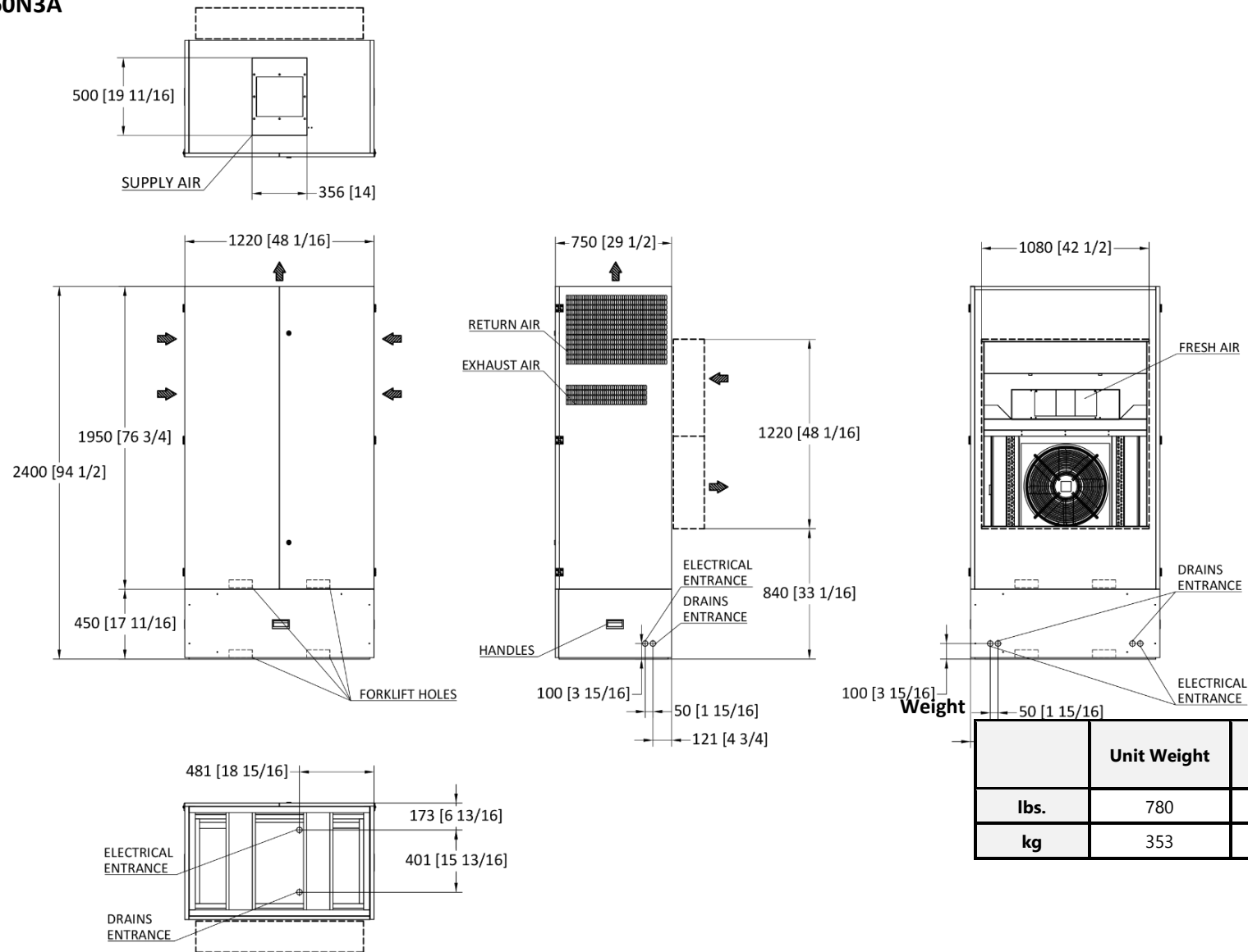
Unit Dimensions

Model: CV36N3A



Unit Dimensions

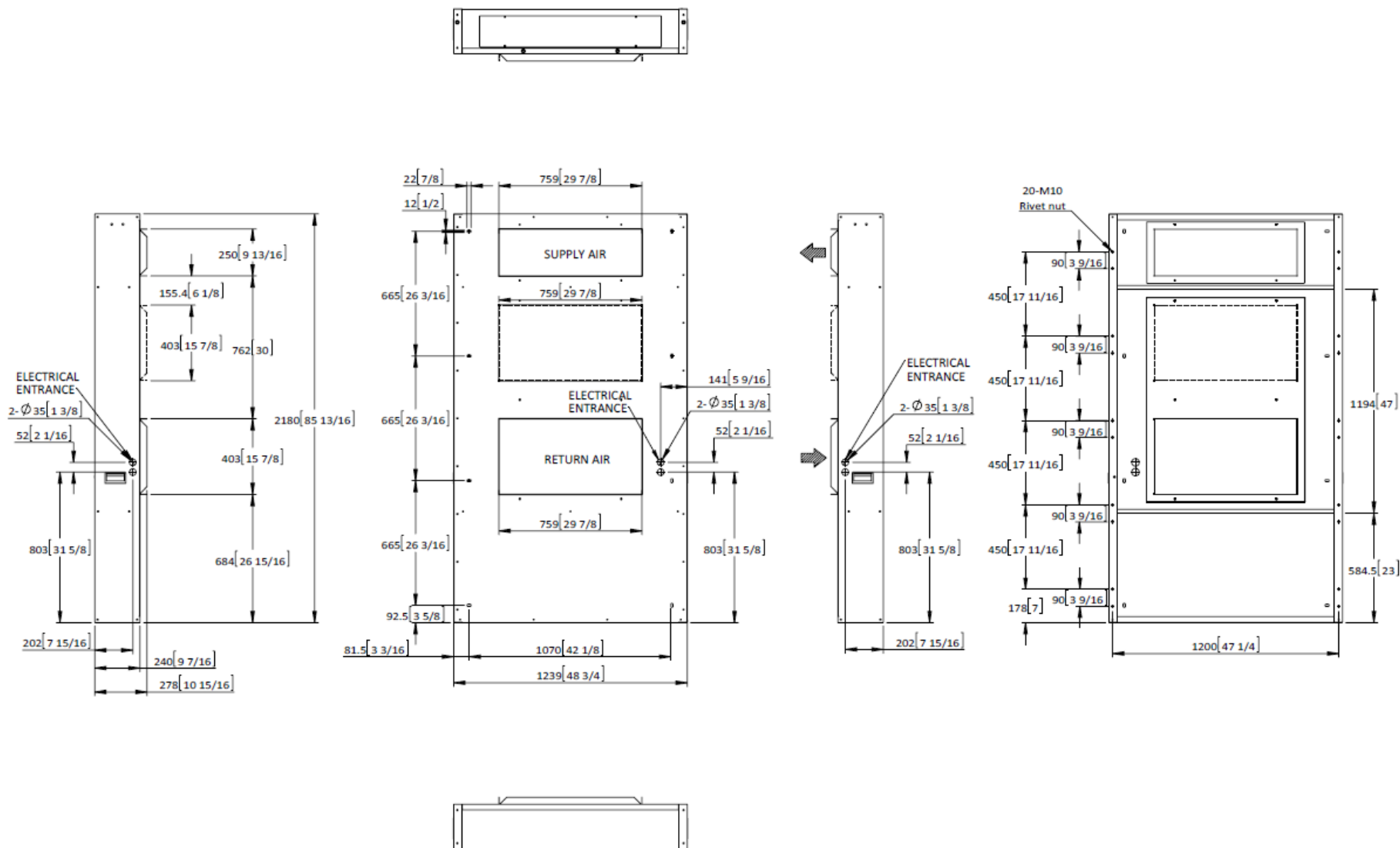
Model: CV60N3A



Weight

	Unit Weight	Ship Weight
lbs.	780	926
kg	353	420

Dimensions (Curb Adapter)



Dimensions (Extended Curb Adapter)

