MODINE®
Always Innovating. Always Improving.

Ductless Mini-Split Ceiling Cassette

Models SSD, SSH and SCW

8-105.10 • December, 2019

Modine is located in Racine, Wisconsin, and is one of the world's leading manufacturers of heat pump and air conditioning systems for schools. Our reputation for product excellence has been earned through innovative design, our use of the highest quality controls, engineering selections of component parts, and the highest quality manufacturing and assembly of all products.

State-of-the-art test facilities reflect Modine's commitment to the latest design and manufacturing technology to maintain leadership in the production of systems of unsurpassed quality and reliability.

In addition to creating a healthier and safer learning environment for our children, many of the features in Modine products are unique, and the range of systems available offer schools a variety of options.

Table of Contents

Model Nomenclature

1	2,3	4,5	6	7	8	9	10
PT	UC	MBH	SV	G	C	VC	F

1 - Product Type (PT)
S - Ceiling Cassette

2,3 - Unit Configuration (UC)
SD - DX Cooling
SH - HP Heating & Cooling
CW - Chilled Water

4,5 - Nominal Capacity (MBH)
08 - 8,000 Btu/Hr
12 - 12,000 Btu/Hr
18 - 18,000 Btu/Hr
20 - 20,000 Btu/Hr
24 - 24,000 Btu/Hr
30 - 30,000 Btu/Hr
33 - 33,000 Btu/Hr
36 - 36,000 Btu/Hr
42 - 42,000 Btu/Hr

6 - Supply Voltage (SV)
A - 115/60/1
B - 208/60/1
C - 230/60/1
H - 277/60/1
J - 110/50/1
K - 220/50/1

7 - Generation (G)
A - Current Design

8 - Control Code (CC)
C - Modine Controls System
E - Electro-Mechanical Controls
M - Microprocessor Controls

9 - Heating Option (HO)
N - None
A - Electric Heat
B - Hot Water Heating Coil

10 - Filtration (F)
A - 60-80% Arrestance (Standard)
B - MERV 10

Overview

The supplied product shall be a ceiling mounted ductless mini-split. The Modine Cassette units effectively make each area served an independent controlled temperature zone. Through thermostatic control of operations, conditions can be varied to suit diverse requirements or activities. Optional fresh air intakes are available to provide for ventilation and recirculation of room air.

Modine Cassettes are available in a choice of three models: DX cooling, heat pump, and chilled water cooling. Optional heating can be provided by factory installed electric heat or hot water modules, depending on model. This versatility eliminates compromising architecture or design. Important cost savings are often realized during building modernizations, as existing piping and/or wiring can frequently be reused.

Design techniques are incorporated in every Modine Cassette to reduce noise levels to an absolute minimum. These techniques include low blower speeds, rigid panel and cabinet construction, and sound-absorbent cabinet insulation.

For individual comfort, Modine Cassettes are available with electro-mechanical or micro-processor based controls. The micro-processor controller includes an infrared transmitter which enables room conditions to be maintained at a user defined setpoint. Modine Cassettes are also available with Carel microprocessor controls and network cards to allow units to be connected to a Building Management System.

General Description – Ceiling Cassette Unit

Digit 2,3: Unit Configuration (UC)

SD = DX Cooling
All direct expansion units include a factory installed thermal expansion valve and utilize large surface area evaporator coils ideally positioned to optimize heat transfer and airflow. Each evaporator is manufactured from refrigeration quality copper tubes with mechanically bonded aluminum fins.

SH = HP Heating & Cooling
All direct expansion units include a factory installed thermal expansion valve and utilize large surface area evaporator coils ideally positioned to optimize heat transfer and airflow. Each evaporator is manufactured from refrigeration quality copper tubes with mechanically bonded aluminum fins.

CW = Chilled Water
All chilled water units utilize large surface area coils positioned to optimize heat transfer and airflow. Each coil is manufactured from refrigeration quality copper tubes with mechanically bonded aluminum fins and are circuited from headers to ensure low water pressure drops.

Digit 4,5: Nominal Capacity (MBH)

08 = 8,000 Btu/Hr
12 = 12,000 Btu/Hr
18 = 18,000 Btu/Hr
20 = 20,000 Btu/Hr
24 = 24,000 Btu/Hr
30 = 30,000 Btu/Hr
33 = 33,000 Btu/Hr
36 = 36,000 Btu/Hr
42 = 42,000 Btu/Hr

Digit 6: Supply Voltage (SV)

A = 115/60/1
B = 208/60/1
C = 230/60/1
H = 277/60/1
J = 110/50/1
K = 220/50/1

Digit 8: Control Code (CC)

C = Modine Controls System
The unit shall be fitted with a programmable microprocessor controller designed to operate the unit according to pre-engineered control strategies. The Carel controller requires a wall sensor, wall stat or network interface card.

E = Electro-Mechanical Controls
The unit shall be factory wired with an electro-mechanical control system that includes the necessary relays and safety switches for proper unit operation. Terminal strip provide at the unit for the wiring of a 24V wall mounted thermostat required for unit operation.

The unit shall include terminals for remote start/stop of the unit. The unit is enabled when contact between the terminals is closed.

M = Microprocessor Controls
A custom designed microprocessor is fitted to the cassette to enable room conditions to be maintained at a user defined setpoint. Communication to the controller is by a hand held infrared transmitter.

The microprocessor monitors indoor coil temperature and return air temperature. The receiver contains a self diagnostic feature. When a low indoor coil temperature is detected the cooling action is stopped. If a sensor fails then an alarm is displayed on the fascia-mounted receiver.

The infrared transmitter is used to switch the unit ON/OFF, change temperature settings, fan speed, operating mode, and to toggle the motorized air sweep (where fitted). The microprocessor also has a built-in clock with a timer. The timer can be activated to provide ON/OFF unit operation. Note this is not a night set back or occupied/unoccupied control function.

Figure 4.1 - Microprocessor Remote

Digit 9: Heating Option (HO)

N = None

A = Electric Heat
Electric heating elements will be factory fitted to the unit. Elements are manufactured for maximum surface area and lower working temperature for improved reliability. Thermal cut out protection switches are fitted to the electric heat circuit to protect against overheating.

B = Hot Water Heating Coil
A hot water heating coil will be factory fitted (depending on unit size) in addition to the standard DX or chilled water coil to provide heating. The coil is manufactured from refrigeration quality copper tubes with mechanically bonded aluminum fins.

Digit 10: Filtration (F)

A = 60-80% Arrestance (Standard)
Wire framed filters are fitted. These are reusable and may be vacuum cleaned.

B = MERV 10
MERV 10, 1" thick, radial pleated disposable cotton and synthetic blend filters. Minimum Efficiency Reporting Value of MERV 10 per ASHRAE standard 52.2.

STANDARD FEATURES

Construction
Cases are manufactured from lightweight galvanized sheet steel with integral fan mounting rails for added strength. Fire resistant foam insulation is fitted internally to provide both thermal and acoustic insulation.

Fan
Backward curved centrifugal fans are statically and dynamically balanced for quiet operation. Fan impellers are made from either aluminum or fire retardant plastic for lightweight and corrosion resistant operation. Fans are driven by an enclosed multi-speed external rotor motor allowing good heat dissipation and an increased motor efficiency. Fans come complete with thermal overload protection and sealed-for-life lubricated bearings.

Condensate Pump
A condensate pump and check valve are fitted to carry condensate water out of the unit and stop water from flowing back into the condensate tray. The pump is fixed to a mounting bracket which can be withdrawn from the side of the chassis and incorporates an inspection hole to allow a visual check of the pump during operation. A float switch is fitted to stop the cooling action should the pump become blocked or fail.

Air Vanes
Air outlet vanes are designed to prevent condensation from forming. Vanes are manually adjustable on model sizes 08 and 12. The vanes on all other model sizes are driven by an electric motor. Motorized air vanes can be set to auto sweep or can be stopped in a fixed position. Polystyrene blanking pieces are supplied with Cassette packing so that up to two fascia discharge slots can be blanked off.

Alarm Status Relay
The unit shall include a relay for unit failure notification. In addition, a normally open contact is available for field connection.

UNIT MOUNTED OPTIONS

Hot Water Coil Freeze Protection
The unit shall be fitted with a freeze protection sensor to prevent freezing of the hot water coil assembly. When the sensor detects a freeze up condition it will force the flow control valve open and prevent the unit fan(s) from running.

Disconnect Switch
The unit shall be fitted with a power disconnect switch located on the control panel, sized for the full load amperage of the unit to enable the unit to be disconnected from the power supply prior to any maintenance.

LonWorks Card (Digit 8 = C: Modine Controls System)
The Carel microprocessor controller shall come equipped with a plug-in card allowing for complete compatibility with FT-10 LonWorks control system.

BACnet Card (Digit 8 = C: Modine Controls System)
The Carel microprocessor controller shall come equipped with a plug-in card allowing for complete compatibility with an MS/TP BACnet control system.

Time Clock Card (Digit 8 = C: Modine Controls System)
A time clock (card) shall be provided for "stand-alone" units where time functions, night and weekend setback, etc. are not transmitted from a building management system or remote central time clock. The time clock shall have a full 7-day schedule and calendar function incorporated. The 7-day schedule shall have two adjustable occupied/unoccupied periods per day. The calendar function shall allow 20 calendar periods (start date / stop date = 1 period).

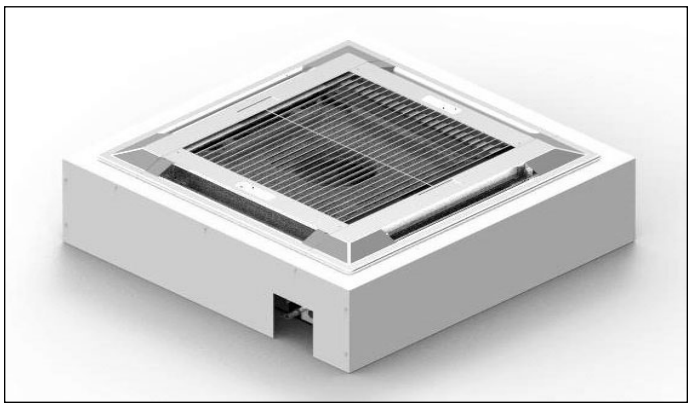
FIELD INSTALLED ACCESSORIES

Fresh Air Duct Collars
The Cassette chassis features two or three fresh air knockouts depending on model size. Any number can be removed to allow fresh air to enter the unit. A duct collar is available for fastening to the unit to allow connection of a 3" flexible duct. A replacement filter is included with fresh air duct collars to aid in balancing the amount of return air and fresh air delivered to the unit's coil.

Supply Air Duct Collars
A limited amount of conditioned air can be ducted from the unit by removing the branch duct knockouts (up to 2 per unit) and connecting flexible ducting. For model sizes 08 and 12, there are a total of three knockouts positioned on three of the unit sides (one per side). For all other model sizes, a total of four knockouts are available and are arranged in pairs along two of the unit sides (two per side). A duct collar is available to allow connection of a 5" or 6" (depending on units size) flexible duct to the Cassette.

On model sizes 08 and 12, it is recommended that only one of the three branch duct knockouts are utilized, due to the small capacity of the unit.

Figure 6.1 - Duct Shroud



Shroud
A sheet metal shroud is available to cover the unit housing when the unit is not mounted in a drop ceiling. Painted Sky White with hammertone finish.

Control Valves
For control of chilled water or hot water flow, a three-way, three-port diverting type valve or a two-way, two-port control valve is supplied loose for on site installation. Actuation is via a 24V signal from the unit's electrical panel.

- Modulating Control Valves
- Two Position Spring Return Control Valves
- Valve Packages: Two Position Spring Return Control Valves with Two Shut-Off Valves

On a four pipe system where two-way valves are specified, the chilled water valve will be a normally closed type. The hot water valve will be a normally open type. Where three-way valves are specified, the same type valve will be supplied for both coils and should be installed normally closed to the coil in the case of the chilled water coil and normally open to the coil in the case of the hot water coil.

On a two pipe changeover system where a two-way valve is specified, a normally open valve is supplied. Where a three-way valve is specified, this should be installed normally open to the coil. In both cases, a pipe mounted changeover thermostat is factory supplied and shipped loose for field installation. The changeover thermostat is used to monitor water supply temperature and allow action of the valve accordingly.

Low Ambient Kit (Use with Condensing Units)
Fan speed control for compressor operation down to 0°F outside temperature.

Table 7.1 - Cooling Performance - DX Cooling Only and Heat Pump Units

Model	Entering Air DB ºF @ 50% RH	Fan Speed					
		High		Medium		Low	
		Total Cooling BTU/h	Sensible Cooling BTU/h	Total Cooling BTU/h	Sensible Cooling BTU/h	Total Cooling BTU/h	Sensible Cooling BTU/h
SSD/SSH 18	72	16,500	14,400	16,300	13,900	15,800	13,100
	75	17,500	14,900	17,200	14,400	16,800	13,500
	80	19,200	15,600	18,900	15,100	18,500	14,200
SSD/SSH 24	72	20,000	16,800	19,600	16,100	19,300	15,600
	75	21,000	17,300	20,600	16,500	20,400	16,000
	80	23,000	18,000	22,600	17,200	22,200	16,700
SSD/SSH 30	72	27,600	25,000	27,000	23,600	26,400	22,200
	75	29,000	25,800	27,600	25,000	27,800	22,800
	80	31,400	27,000	31,000	25,400	30,200	23,800
SSD/SSH 36	72	33,400	28,400	33,000	27,600	32,200	26,200
	75	35,000	29,200	34,600	28,200	34,000	26,800
	80	38,200	30,400	37,800	29,400	37,000	27,800
SSD/SSH 42	72	37,800	31,600	37,200	30,200	36,800	29,400
	75	39,500	32,400	39,000	31,000	38,500	30,000
	80	42,500	33,400	42,000	32,000	41,500	31,000

① Cooling capacities are based on 95/75°F DB/WB Outdoor Ambient

Table 7.2 - Heating Performance - Heat Pump Units

Model	Entering Air DB ºF	Fan Speed		
		High	Medium	Low
		Total Heating (BTU/h)	Total Heating (BTU/h)	Total Heating (BTU/h)
SSH 18	50	19,100	18,900	18,600
	60	17,800	17,600	17,200
	70	16,400	16,200	16,000
SSH 24	50	24,400	24,000	23,800
	60	22,800	22,600	22,200
	70	21,400	21,000	20,800
SSH 30	50	30,400	30,200	29,800
	60	29,000	28,800	28,200
	70	27,400	27,200	26,800
SSH 36	50	35,800	35,600	35,000
	60	34,200	33,800	33,400
	70	32,400	32,000	31,600
SSH 42	50	39,500	39,000	39,000
	60	38,200	37,800	37,800
	70	37,200	36,800	36,600

① Heating capacities are based on 47/43°F DB/WB Outdoor Ambient

Table 7.3 - Performance - DX Cooling and Heat Pump Units

Model	Cooling BTU/h	SEER
SSD 18	21,500	14.0
SSD 24	25,400	14.0
SSD 30	34,800	14.0
SSD 36	41,800	14.0
SSD 42	45,500	14.0

Model	Cooling BTU/h	Heating BTU/h	SEER	HSPF
SSH 18	21,500	16,400	14.0	8.2
SSH 24	25,400	21,400	14.0	8.2
SSH 30	34,800	27,400	14.0	8.2
SSH 36	41,800	32,400	14.0	8.2
SSH 42	45,500	37,000	14.0	8.2

① Test conditions based on ANSI/AHRI Standard 210/240
② Cooling capacities are based on 80/67°F DB/WB Indoor Ambient 82/65°F DB/WB Outdoor Ambient
③ Heating capacities are based on 70/60°F DB/WB Indoor Ambient 47/43°F DB/WB Outdoor Ambient
④ All duties based on high fan speed

Table 8.1 - Cooling Performance - Chilled Water Units

Model	Filter	Entering Air DB °F @ 50% RH	Chilled Water Inlet / Outlet, °F							
			40/50°F				45/55°F			
			TC	SC	FLOW	PR DROP	TC	SC	FLOW	PR DROP
			BTUH	BTUH	GPM	PSI	BTUH	BTUH	GPM	PSI
SCW 08	STD.	72	5,900	4,900	1.2	2.9	4,100	3,900	0.8	1.5
		75	7,300	5,500	1.5	4.3	5,100	4,500	1.0	2.2
		80	9,900	6,500	2.0	7.4	7,800	5,500	1.6	4.8
	MERV 10	72	4,000	3,300	0.8	1.6	2,800	2,600	0.6	0.8
		75	5,000	3,700	1.0	2.3	3,500	3,100	0.7	1.2
		80	6,800	4,400	1.3	3.8	5,400	3,700	1.1	2.5
SCW 12	STD.	72	8,800	7,100	1.7	1.7	6,100	5,700	1.2	0.9
		75	10,900	8,000	2.2	2.5	7,600	6,600	1.5	1.3
		80	14,600	9,400	2.9	4.2	11,200	8,000	2.2	2.6
	MERV 10	72	5,300	4,300	1.1	0.7	3,700	3,400	0.7	0.3
		75	6,600	4,800	1.3	1.1	4,600	3,900	0.9	0.5
		80	8,900	5,700	1.8	1.8	6,800	4,800	1.4	1.1
SCW 18	STD.	72	14,200	11,700	2.8	1.5	10,000	9,500	2.0	0.8
		75	17,700	13,200	3.5	2.2	12,500	10,800	2.5	1.2
		80	23,900	15,600	4.8	3.7	18,200	13,200	3.6	2.3
	MERV 10	72	12,900	10,500	2.6	1.3	9,000	8,500	1.8	0.7
		75	16,000	11,900	3.2	1.8	11,300	9,800	2.3	1.0
		80	21,600	14,000	4.3	3.1	16,500	11,900	3.3	1.9
SCW 20	STD.	72	14,500	12,000	2.9	1.6	10,200	9,700	2.0	0.8
		75	18,100	13,500	3.6	2.3	12,800	11,100	2.5	1.2
		80	24,500	15,900	4.9	3.9	18,600	13,500	3.7	2.4
	MERV 10	72	12,900	10,500	2.6	1.3	9,000	8,500	1.8	0.7
		75	16,000	11,900	3.2	1.8	11,300	9,800	2.3	1.0
		80	21,600	14,000	4.3	3.1	16,500	11,900	3.3	1.9
SCW 33	STD.	72	24,400	19,400	4.9	3.1	17,200	15,800	3.4	1.6
		75	30,000	21,800	6.0	4.4	21,400	18,000	4.3	2.4
		80	40,300	25,800	8.0	7.4	31,100	21,900	6.2	4.6
	MERV 10	72	23,300	18,500	4.6	2.8	16,400	15,100	3.3	1.5
		75	28,700	20,800	5.7	4.1	20,500	17,100	4.1	2.2
		80	38,400	24,600	7.7	6.8	29,700	20,800	5.9	4.2
SCW 36	STD.	72	26,800	21,500	5.3	3.6	18,900	17,500	3.8	1.9
		75	33,100	24,100	6.6	5.2	23,500	19,900	4.7	2.8
		80	44,600	28,600	8.9	8.8	34,300	24,200	6.9	5.5
	MERV 10	72	23,300	18,500	4.6	2.8	16,400	15,100	3.3	1.5
		75	28,700	20,800	5.7	4.1	20,500	17,100	4.1	2.2
		80	38,400	24,600	7.7	6.8	29,700	20,800	5.9	4.2

① Test conditions based on ANSI/AHRI Standard 440
② TC = Total Cooling Capacity
③ SC = Sensible Cooling Capacity
④ All duties based on 208V/1Ph/60Hz supply voltage and high fan speed except where stated otherwise
⑤ Pressure drops are coil only, excluding valves

Table 9.1 - Heating Performance - Chilled Water Units with Optional Heating Coil

Model	Filter	Hot Water 180°F Inlet / 160°F Outlet								
		70°F Entering Air DB			60°F Entering Air DB			50°F Entering Air DB		
		Capacity (btuh)	PD (psi)	Flow (gpm)	Capacity (btuh)	PD (psi)	Flow (gpm)	Capacity (btuh)	PD (psi)	Flow (gpm)
SCW 08	STD.	17,100	2.8	1.7	18,900	3.3	1.9	20,600	3.8	2.0
	MERV 10	13,400	1.8	1.3	14,700	2.1	1.5	16,100	2.5	1.6
SCW 12	N/A	N/A			N/A			N/A		
SCW 18	STD.	27,300	1.1	2.7	30,000	1.3	3.0	32,800	1.5	3.3
	MERV 10	24,800	0.9	2.5	27,300	1.1	2.7	29,800	1.3	3.0
SCW 20	STD.	27,900	1.1	2.8	30,700	1.4	3.1	33,500	1.6	3.3
	MERV 10	24,800	0.9	2.5	27,300	1.1	2.7	29,800	1.3	3.0
SCW 33	STD.	41,200	1.4	4.1	45,300	1.7	4.5	49,400	2.0	4.9
	MERV 10	42,300	1.5	4.2	45,900	1.7	4.6	49,300	2.0	4.9
SCW 36	STD.	45,200	1.7	4.5	49,800	2.0	5.0	54,300	2.3	5.4
	MERV 10	42,300	1.5	4.2	45,900	1.7	4.6	49,300	2.0	4.9

① All duties based on 208V/1Ph/60Hz supply voltage and high fan speed except where stated otherwise
② Pressure drops are coil only, excluding valves

Table 9.2 - Heating Performance - Chilled Water Units with 2-Pipe Changeover

Model	Filter	Hot Water 180°F Inlet / 160°F Outlet								
		70°F Entering Air DB			60°F Entering Air DB			50°F Entering Air DB		
		Capacity (btuh)	PD (psi)	Flow (gpm)	Capacity (btuh)	PD (psi)	Flow (gpm)	Capacity (btuh)	PD (psi)	Flow (gpm)
SCW 08	STD.	21,000	6.3	2.1	23,100	7.5	2.3	25,100	8.8	2.5
	MERV 10	14,200	3.1	1.4	15,600	3.7	1.6	17,000	4.3	1.7
SCW 12	STD.	29,000	3.1	2.9	31,900	3.7	3.2	34,800	4.4	3.5
	MERV 10	17,400	1.2	1.7	19,100	1.5	1.9	20,800	1.7	2.1
SCW 18	STD.	55,100	3.6	5.5	60,400	4.2	6.0	65,600	4.9	6.5
	MERV 10	49,200	2.9	4.9	53,900	3.4	5.4	58,600	4.0	5.8
SCW 20	STD.	55,100	3.6	5.5	60,400	4.2	6.0	65,600	4.9	6.5
	MERV 10	49,200	2.9	4.9	53,900	3.4	5.4	58,600	4.0	5.8
SCW 33	STD.	80,500	5.5	8.0	88,200	6.4	8.8	95,900	7.5	9.5
	MERV 10	76,500	5.0	7.6	83,900	5.9	8.4	91,200	6.8	9.1
SCW 36	STD.	89,300	6.6	8.9	97,900	7.8	9.7	106,400	9.1	10.6
	MERV 10	76,500	5.0	7.6	83,900	5.9	8.4	91,200	6.8	9.1

① All duties based on 208V/1Ph/60Hz supply voltage and high fan speed except where stated otherwise
② Pressure drops are coil only, excluding valves

Table 10.1 - Heating Performance - DX Cooling and Heat Pump Units with Optional Heating Coil

Model	Entering Air DB ºF @ 50% RH	Hot Water 180ºF Inlet / 160ºF Outlet		
		Heating Capacity BTU/h	Flowrate GPM	Pressure Drop PSI
SSD/SSH 18	50	46,389	4.8	1.3
	60	42,598	4.4	1.1
	70	38,746	4.0	0.9
SSD/SSH 24	50	50,279	5.3	1.5
	60	46,153	4.8	1.2
	70	41,993	4.4	1.0
SSD/SSH 30	50	67,912	7.1	3.3
	60	62,277	6.5	2.8
	70	56,609	5.9	2.3
SSD/SSH 36	50	71,636	7.5	3.6
	60	65,640	6.9	3.1
	70	59,600	6.2	2.6
SSD/SSH 42	50	77,386	8.1	4.2
	60	70,803	7.4	3.5
	70	64,268	6.7	3.0

① All duties based on high fan speed except where stated otherwise
② Pressure drops are coil only, excluding valves

Figure 11.1 - Dimensions - Small Chassis: SCW08 and SCW12 (in inches)

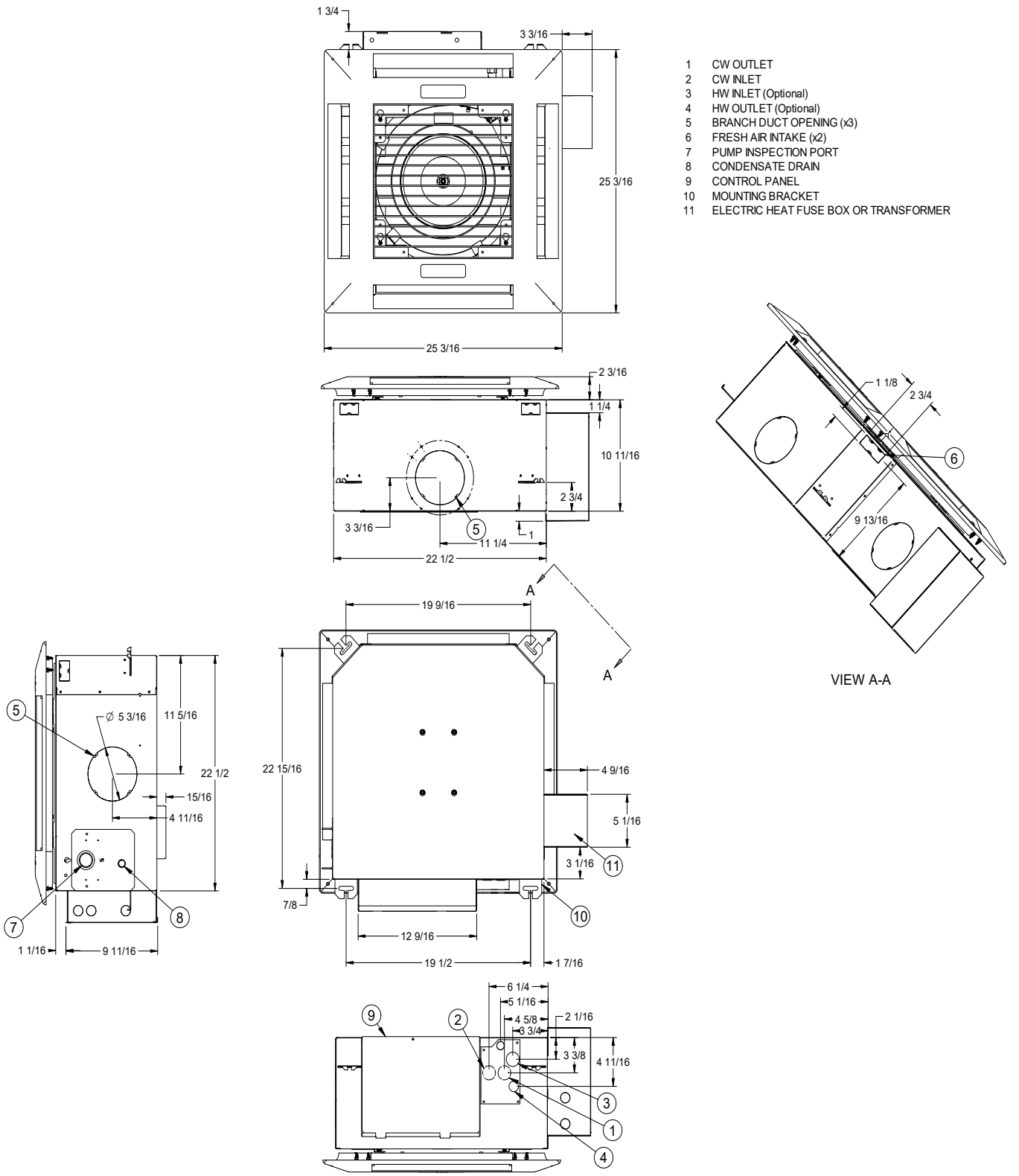


Figure 12.1 - Dimensions - Medium Chassis: SCW18 and SCW20 (in inches)

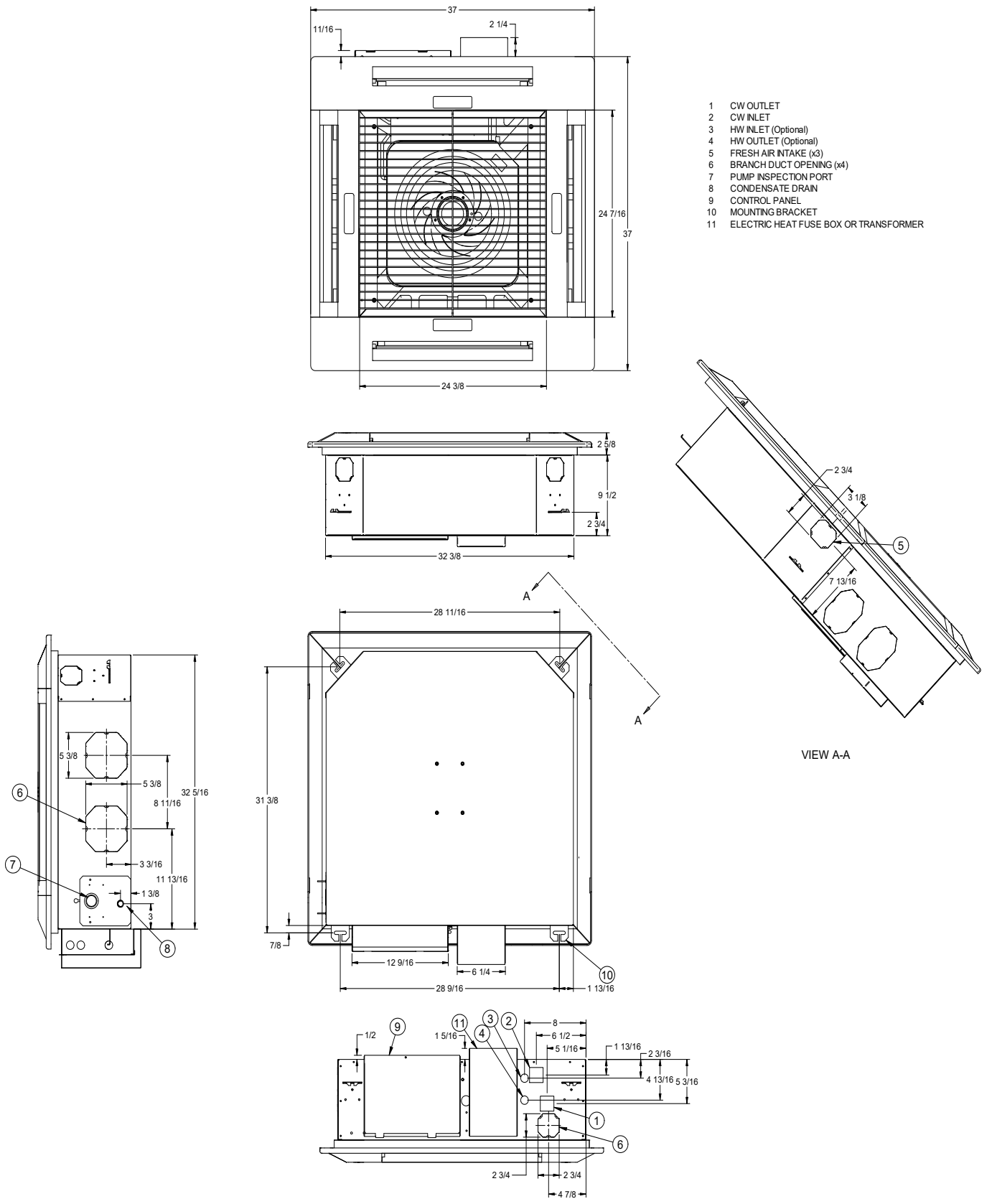


Figure 13.1 - Dimensions - Large Chassis: SCW33 and SCW36 (in inches)

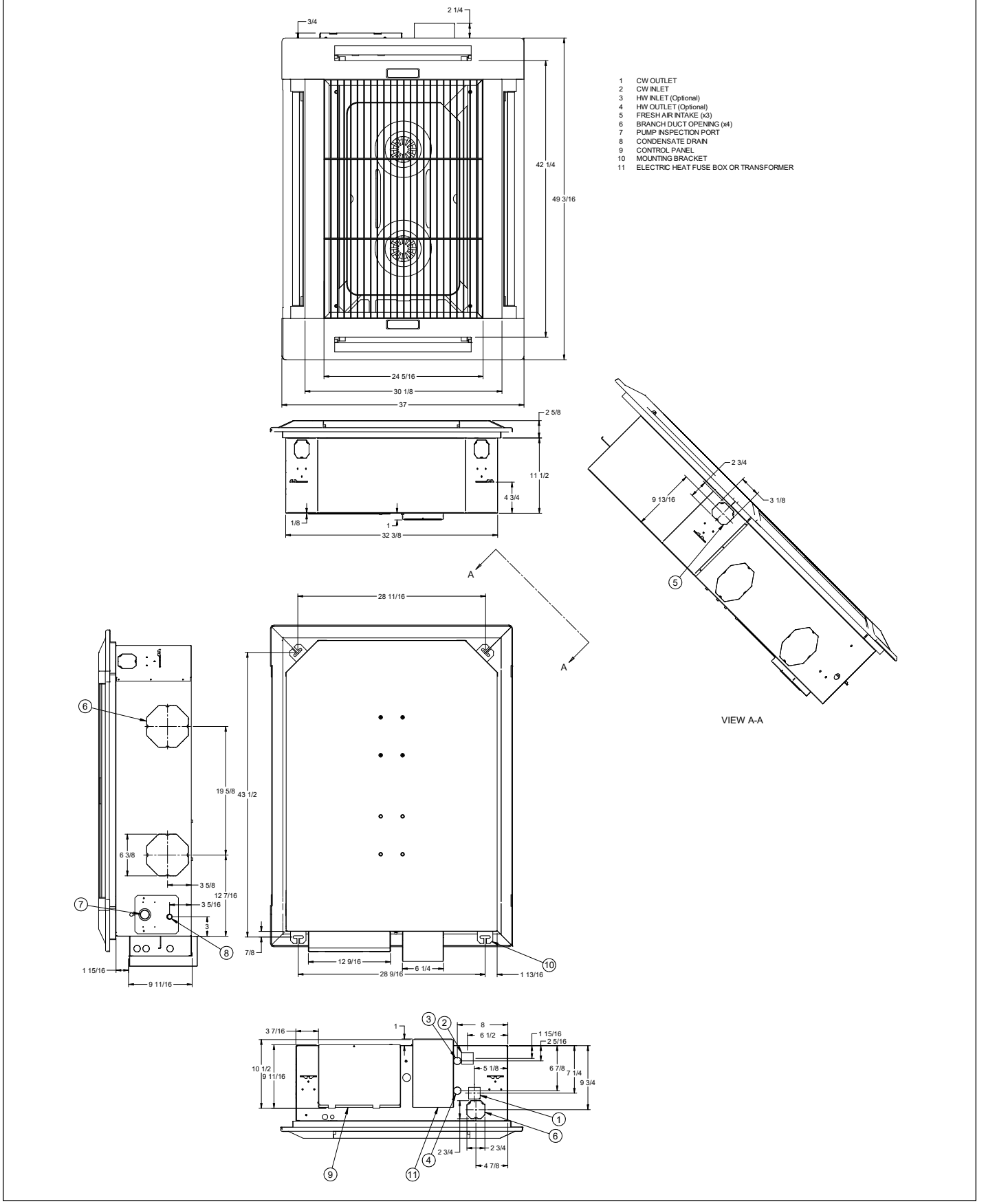


Figure 14.1 - Dimensions - Medium Chassis: SSD/SSH 18 and SSD/SSH 24 (in inches)

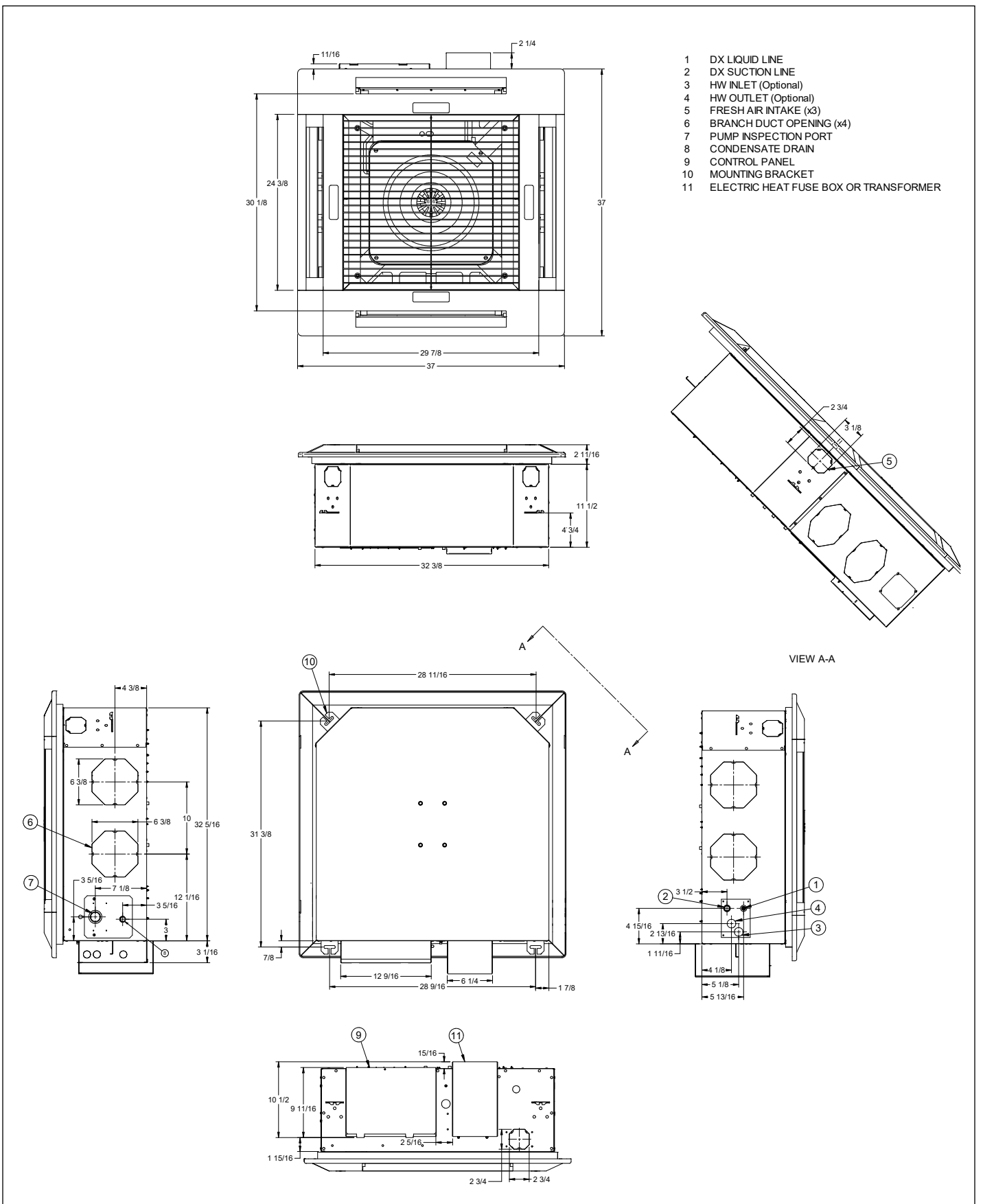


Figure 15.1 - Dimensions - Large Chassis: SSD/SSH 30, SSD/SSH 36 and SSD/SSH 42 (in inches)

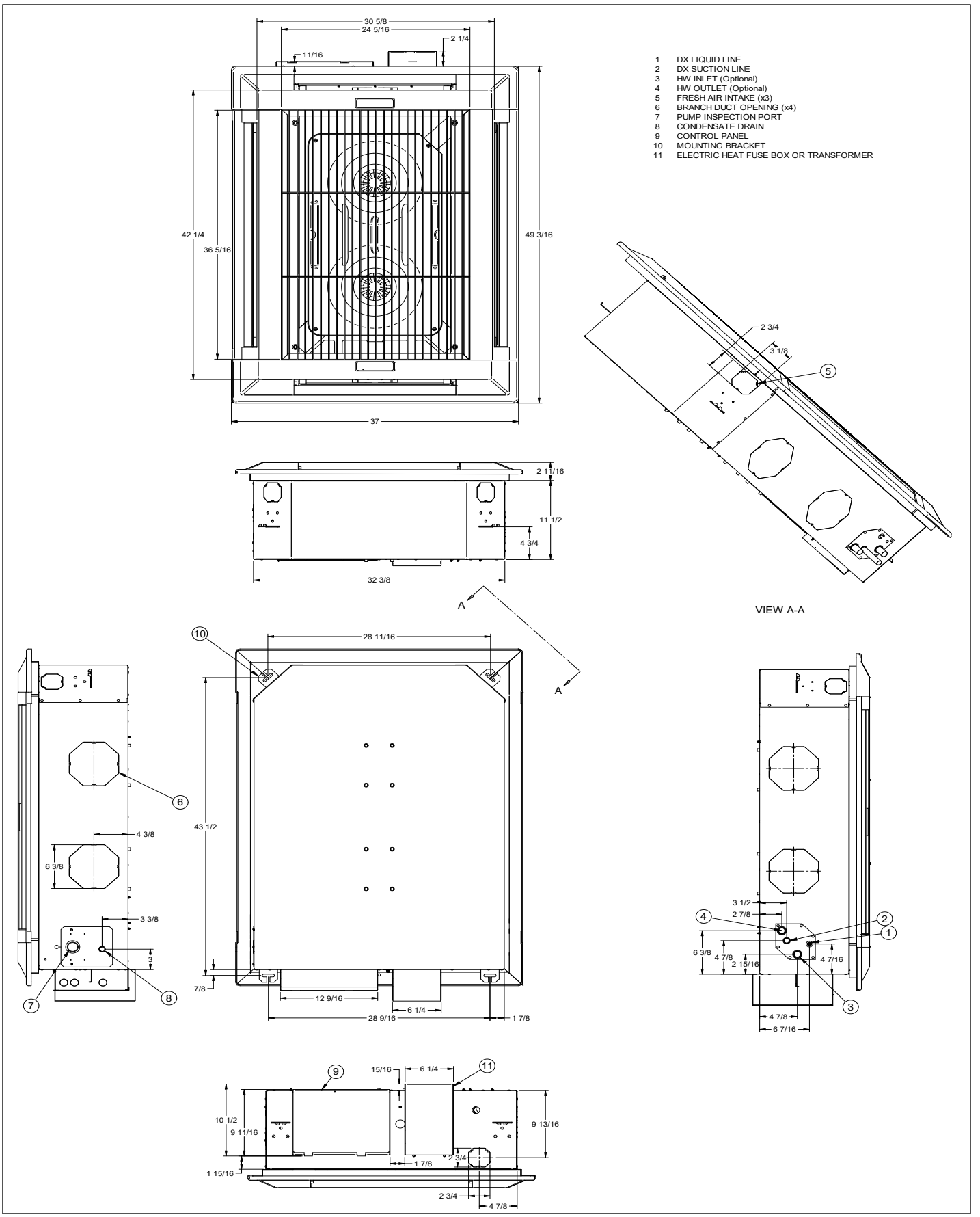


Figure 16.1 - Technical Data – DX Cooling Only and Heat Pump Units

		Units	SSD/SSH 18	SSD/SSH 24	SSD/SSH 30	SSD/SSH 36	SSD/SSH 42
Nominal Cooling Capacity ①		BTU/h	19200	23000	31400	38200	42500
Nominal Heating Capacity ②		BTU/h	16400	21400	27400	32400	37200
SEER ③			14	14	14	14	14
Construction							
Material: Fascia			High Impact Polystyrene				
Material: Chassis			Galvanized Steel				
Color: Fascia			Pearl Grey				
Evaporator							
Type			Finned Tube				
Quantity			1	1	1	1	1
Face Area		Ft²	4	4	5.2	5.2	5.2
Nominal Airflow	High	cfm	590	670	920	1000	1130
	Med	cfm	540	590	800	920	1000
	Low	cfm	465	540	680	800	920
Discharge			4-way	4-way	4-way	4-way	4-way
Fan							
Type			Centrifugal				
Quantity			1	1	2	2	2
Diameter		in	14	14	14	14	14
Horsepower (per fan)		HP	1/6	1/6	1/6	1/6	1/6
Refrigeration							
Number of Circuits			1	1	1	1	1
Refrigerant Type			R-410A	R-410A	R-410A	R-410A	R-410A
Weights							
Weight - Chassis		lb	66	66	97	97	97
Weight - Fascia		lb	18	18	21	21	21
Connections ④							
Suction		in	3/4	3/4	3/4	3/4	3/4
Liquid		in	3/8	3/8	3/8	3/8	3/8
Condensate (ID)		in	3/8	3/8	3/8	3/8	3/8
Filtration							
Type			Wire Framed Periframe				
Quantity			2	2	3	3	3
Size			12"x24"	12"x24"	12"x24"	12"x24"	12"x24"
Arrestance			80%	80%	80%	80%	80%
Condensate Pump							
Maximum Head		in	30	30	30	30	30
Nominal Flowrate		gpm	0.1	0.1	0.1	0.1	0.1
Options							
Electric Heating Capacity		kW	3	3	5	5	5
HW Heating Capacity ⑤		BTU/h	38,746	41,993	56,609	59,600	64,268
HW Coil Connection (OD)		in	1/8	1/8	1/8	1/8	1/8
Max Branch Duct Connections		(qty)	2	2	2	2	2
Branch Duct Diameter		in	5	5	6	6	6
Branch Duct Air Volume ⑥		cfm	115	130	180	200	220
Fresh Air Connections		(qty)	1-3	1-3	1-3	1-3	1-3
Fresh Air Duct Diameter		in	3	3	3	3	3
Fresh Air Volume ⑦		cfm	60	65	85	90	95

① Nominal cooling capacity based on 80/67°F DB/WB and 95/75ºF DB/WB ambient

② Nominal heating capacity based on 70/60°F DB/WB and 47/43°F DB/WB ambient.

③ Test conditions based on AHRI 210/240. SEER rating for Condensing Unit only.

④ Refrigerant line sizes should always match condensing unit connection sizes.

⑤ Nominal heating capacity based on 70/60°F DB/WB and water temperature of 180ºF inlet / 160ºF outlet.

⑥ Maximum air volume available through one branch duct 6' long, with Cassette fan(s) at high speed and corresponding fascia aperture closed.

⑦ Maximum fresh air through all knockouts connected to one 10' long duct with fan at high speed.

Figure 17.1 - Technical Data – Chilled Water Units

		Units	SCW 08	SCW 12	SCW 18	SCW 20	SCW 33	SCW 36
Nominal Cooling Capacity ①		BTU/h	7,800	11,200	18,200	18,600	31,100	34,300
Nominal Cooling Capacity ②		BTU/h	5,400	6,800	16,500	16,500	29,700	29,700
Construction								
Material: Fascia			High Impact Polystyrene					
Material: Chassis			Galvanized Steel					
Color: Fascia			Pearl Grey					
Chilled Water Coil								
Type			Finned Tube					
Quantity			1	1	1	1	1	1
Face Area		Ft²	1.8	1.8	2.8	2.8	5.2	5.2
Nominal Airflow ③	High	cfm	330 (200)	360 (200)	600 (520)	620 (520)	940 (880)	1080 (880)
	Med	cfm	300 (170)	330 (170)	540 (490)	600 (490)	850 (760)	940 (760)
	Low	cfm	260 (160)	300 (160)	460 (450)	540 (450)	740 (690)	850 (690)
Discharge			4-way	4-way	4-way	4-way	4-way	4-way
Unit water Volume		gal	0.29	0.29	0.45	0.45	0.79	0.79
Fan								
Type			Centrifugal					
Quantity			1	1	1	1	2	2
Diameter		in	12	12	15	15	14	14
Horsepower (per fan)		HP	1/6	1/6	1/6	1/6	1/6	1/6
Weights								
Weight - Chassis		lb	40	40	64	64	97	97
Weight - Fascia		lb	5	5	18	18	21	21
Connections								
Chilled Water Inlet		in	3/8	3/8	7/8	7/8	7/8	7/8
Chilled Water Outlet		in	3/8	3/8	7/8	7/8	7/8	7/8
Condensate (ID)		in	3/8	3/8	3/8	3/8	3/8	3/8
Filtration								
Type			Wire Framed Periframe					
Quantity			1	1	2	2	3	3
Size			14"x14"	14"x14"	12"x24"	12"x24"	12"x24"	12"x24"
Arrestance			80%	80%	80%	80%	80%	80%
Condensate Pump								
Maximum Head		in	30	30	30	30	30	30
Nominal Flowrate		gpm	0.1	0.1	0.1	0.1	0.1	0.1
Options								
Electric Heating Capacity		kW	1.5	1.5	3	3	5	5
HW Heating Capacity ④		BTU/h	17,100	N/A	27,300	27,900	41,200	45,200
HW Heating Capacity ⑤		BTU/h	13,400	N/A	24,800	24,800	42,300	42,300
HW Coil Connection (OD)		in	5/8	N/A	5/8	5/8	5/8	5/8
Max Branch Duct Connections		(qty)	2	2	2	2	2	2
Branch Duct Diameter		in	5	5	5	5	6	6
Ducted Air Volume ⑥		cfm	80	80	100	125	200	220
Fresh Air Connections		(qty)	1-2	1-2	1-3	1-3	1-3	1-3
Fresh Air Duct Diameter		in	3	3	3	3	3	3
Fresh Air Volume ⑦		cfm	40	40	60	65	90	95

① Nominal cooling capacity based on 80/67°F DB/WB, water temperature of 45ºF inlet / 55ºF outlet, 208V/1Ph/60Hz supply voltage, and Standard filters.
② Nominal cooling capacity based on 80/67°F DB/WB, water temperature of 45ºF inlet / 55ºF outlet, 208V/1Ph/60Hz supply voltage, and MERV 10 filters.
③ Nominal airflow based on 208V/1Ph/60Hz supply voltage and Standard (MERV10) filters.
④ Nominal heating capacity based on 70/60°F DB/WB, water temperature of 180ºF inlet / 160ºF outlet, 208V/1Ph/60Hz supply voltage, and Standard filters.
⑤ Nominal heating capacity based on 70/60°F DB/WB, water temperature of 180ºF inlet / 160ºF outlet, 208V/1Ph/60Hz supply voltage, and MERV10 filters.
⑥ Maximum air volume available through one branch duct 6' long, with Cassette fan(s) at high speed and corresponding fascia aperture closed.
⑦ Maximum fresh air through all knockouts connected to one 10' long duct with fan at high speed.

Figure 18.1 - Technical Data – Condensing Units for DX Cooling Only Units

		Cassette Unit				
		SSD 18	SSD 24	SSD 30	SSD 36	SSD 42
	Units	Condensing Unit Model				
		YCE18B	YCE24B	YCE30B	YCE36B	YCE42B
Performance						
Nominal System Cooling Capacity	BTU/h	18,000	24,000	30,000	36,000	42,000
Nominal System SEER		14	14	14	14	14
Construction		Cassis: Pre-Treated Galvanized Painted Steel, Color: Champagne				
Dimensions/Weights						
Height (includes Fan Guard)	in	33¼	30	30	36¼	33¼
Width	in	24	29¼	29¼	29¼	31¼
Depth	in	24	29¼	29¼	29¼	35¼
Weight	lb	140	155	155	180	215
Compressor						
Type		Recip	Recip	Recip	Recip	Recip
Crankcase Heater Fitted		No	No	No	No	No
Condenser Coil		Plate Fin, Microchannel				
Connections ①						
Suction	in	3/4	3/4	3/4	3/4	7/8
Liquid	in	3/8	3/8	3/8	3/8	3/8
Refrigerant Charge						
Condenser-factory charge	lbs-oz	3-14	3-12	4-3	4-14	5-2
Charge Per Foot of Pipework	oz	0.62	0.62	0.62	0.62	0.67

① Refrigerant line sizes should always match condensing unit connection sizes.

Figure 18.2 - Technical Data – Condensing Units for Heat Pump Units

		Cassette Unit				
		SSH 18	SSH 24	SSH 30	SSH 36	SSH 42
	Units	Condensing Unit Model				
		YHE18B	YHE24B	YHE30B	YHE36B	YHE42B
Performance						
Nominal System Cooling Capacity	BTU/h	18,000	24,000	30,000	36,000	42,000
Nominal System SEER		14	14	14	14	14
Construction		Cassis: Pre-Treated Galvanized Painted Steel, Color: Champagne				
Dimensions/Weights						
Height (includes Fan Guard)	in	33¼	36¼	39½	39½	39½
Width	in	29¼	29¼	31¾	31¾	31¾
Depth	in	29¼	29¼	35¼	35¼	35¼
Weight	lb	120	131	176	230	230
Compressor						
Type		Scroll	Scroll	Scroll	Recip	Recip
Crankcase Heater Fitted		No	No	No	No	Yes
Condenser Coil		Round Tube Plate Fin				
Connections ①						
Suction	in	3/4	3/4	3/4	3/4	7/8
Liquid	in	3/8	3/8	3/8	3/8	3/8
Refrigerant Charge						
Condenser-factory charge	lbs-oz	5-11	6-7	7-15	12-4	12-7
Charge Required-Per Foot of Pipework	oz	0.62	0.62	0.62	0.62	0.67

① Refrigerant line sizes should always match condensing unit connection sizes.

Figure 19.1 - Electrical Data – Ceiling Cassettes

Nominal Capacity (Digit 4,5)	Supply Voltage (Digit 6)	Performance (With Electric Heat)			Performance (No Electric Heat)		
		FLA	MCA	Recommended Fuse Size	FLA	MCA	Recommended Fuse Size
08 and 12 Small Chassis	A: 115/60/1	-	-	-	0.70	0.88	15
	J: 110/50/1						
	B: 208/60/1	6.25	7.81	15	0.35	0.44	15
	C: 230/60/1	6.87	8.59	15			
	K: 220/50/1	6.59	8.24	15			
	H: 277/60/1	-	-	-	0.29	0.36	15
18, 20 and 24 Medium Chassis	A: 115/60/1	-	-	-	1.10	1.38	15
	J: 110/50/1						
	B: 208/60/1	12.35	15.44	20	0.55	0.69	15
	C: 230/60/1	13.59	16.99	20			
	K: 220/50/1	13.03	16.29	20			
	H: 277/60/1	-	-	-	0.46	0.58	15
30, 33, 36 and 42 Large Chassis	A: 115/60/1	-	-	-	1.92	2.40	15
	J: 110/50/1						
	B: 208/60/1	20.68	25.85	30	0.96	1.20	15
	C: 230/60/1	22.76	28.45	30			
	K: 220/50/1	21.81	27.26	30			
	H: 277/60/1	-	-	-	0.80	1.00	15

Figure 19.2 - Electrical Data – Condensing Units for DX and Heat Pump Units

	Cassette Unit - SSD					Cassette Unit - SSH				
	18	24	30	36	42	18	24	30	36	42
	Condensing Unit Model YCE					Condensing Unit Model YHE				
	18	24	30	36	42	18	24	30	36	42
Standard Data										
Power Supply	208-230V/1Ph/60Hz					208-230V/1Ph/60Hz				
MCA	10.2	11.6	14.2	18.9	21.5	12	15.4	18.1	19.7	25.5
Maximum Overcurrent Device Amps ①	15	20	20	30	35	20	25	30	30	40
Minimum Overcurrent Device Amps ②	15	15	15	20	25	15	20	20	20	30
Compressor										
Rated Load Amps (RLA)	7.7	8.6	10.7	14.1	16.2	9	11.7	13.4	14.7	19.4
Locked Rotor Amps (LRA)	45	45	57	78	88	56.3	61.6	72.5	78	88
Condenser Fan										
Rated Load Amps (RLA)	0.64	0.8	0.8	1.3	1.3	0.8	0.8	1.3	1.3	1.3
Rated Horsepower	1/12	1/8	1/8	1/4	1/4	1/8	1/8	1/4	1/4	1/4

① Dual element fuses or HACR circuit breaker. Maximum allowable overcurrent protection.

② Dual element fuses or HACR circuit breaker. Minimum recommended overcurrent protection.

Figure 20.1 - Sound Data – Ceiling Cassette Units

		Sound Pressure Frequency Spectrum, dB ①							SPL,
Model Number	Fan Speed	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dBA (1)
SCW2/8	High	37	37	33	29	21	14	10	29
	Med	34	34	30	24	15	12	10	26
	Low	31	29	25	17	8	10	8	22
SCW2/12	High	42	41	38	35	28	21	12	35
	Med	38	39	36	32	24	16	10	32
	Low	37	37	33	29	21	14	10	29
SSD/SSH 18 SCW 18	High	41	45	38	40	33	25	17	43
	Med	39	41	35	36	27	19	16	39
	Low	38	40	34	34	25	18	16	38
SSD/SSH 24 SCW 20	High	43	47	40	43	37	29	19	46
	Med	41	45	38	40	33	25	17	43
	Low	39	41	35	36	27	19	16	39
SSD/SSH 30 SCW 33	High	51	49	46	42	34	22	19	48
	Med	50	46	43	38	28	18	17	44
	Low	49	44	41	36	25	17	16	42
SSD/SSH 36 SSD/SSH 42 SCW 36	High	54	54	50	46	41	27	24	52
	Med	51	49	46	42	34	22	19	48
	Low	50	47	44	39	31	19	18	45

① SPL is the overall Sound Pressure Level measured at a distance of 5 ft below the fascia in free field, dry coil conditions, referenced to 2 x 10^{5}Pa

Figure 20.2 - Sound Data – Condensing Units for DX Cooling Only and Heat Pump Units

		Octave Band Sound Power Level (db re. 1-pW)									
Model Number	Mode	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dBA	SQI
YCE18B22S	Cooling	69.7	66.7	65.5	65.2	69.8	65.1	63.1	60.6	73.0	19.2
YCE24B22S		68.7	74.0	68.6	72.9	70.5	67.3	63.8	60.7	74.0	19.1
YCE30B22S		68.8	67.4	64.8	69.1	69.7	63.1	57.3	53.6	74.0	19.1
YCE36B22S		71.7	72.4	69.4	71.0	70.3	63.4	60.2	55.3	74.0	19.0
YCE42B22S		71.5	74.9	67.1	70.6	67.0	63.2	58.7	56.6	74.0	19.2
YCE48B21S		68.6	76.8	71.4	71.4	70.9	63.8	60.9	58.7	75.0	19.0
YCE60B21S		72.9	73.3	71.3	74.3	70.7	66.5	64.5	64.4	76.0	19.2
YHE18B21S	Cooling	69.3	72.8	66.8	69.1	66.7	63.6	59.3	59.7	72.0	19.1
YHE24B21S		70.0	70.1	67.6	70.0	67.3	63.5	60.7	56.8	72.0	19.1
YHE30B21S		68.0	70.6	68.3	70.0	68.9	65.5	64.7	61.1	74.0	19.0
YHE35B21S		67.9	72.6	68.3	70.5	68.0	63.6	59.7	56.5	72.0	19.2
YHE36B21H		68.4	70.2	68.8	68.9	69.0	65.0	63.3	60.2	73.0	19.1
YHE42B21H		56.0	71.2	68.1	70.0	65.9	65.5	58.8	54.9	75.0	19.0
YHE48B21S		58.0	70.7	64.1	68.3	66.1	61.7	57.9	56.0	75.0	19.0
YHE60B21S		69.1	71.6	68.9	71.3	70.2	65.5	61.5	58.4	74.0	19.0
YHE18B21S	Heating	69.9	73.1	68.0	69.3	66.1	63.6	59.2	58.0	72.0	19.0
YHE24B21S		69.7	69.7	66.7	71.2	66.9	63.2	60.3	56.5	72.0	19.0
YHE30B21S		70.3	74.6	70.5	71.9	68.9	66.0	60.4	58.7	74.0	19.2
YHE35B21S		64.3	73.7	67.7	73.6	68.0	63.4	60.2	61.1	73.0	19.1
YHE36B21H		69.3	70.0	70.8	71.3	70.8	67.1	62.5	61.3	75.0	19.0
YHE42B21H		58.0	75.1	72.2	67.1	62.4	60.7	55.3	52.3	75.0	19.0
YHE48B21S		61.2	69.6	65.8	68.1	65.5	60.3	55.2	52.4	74.0	19.0
YHE60B21S		72.6	73.4	70.8	71.9	69.0	67.2	65.4	65.5	75.0	19.1

① Rated in accordance with AHRI Standard 270.

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Up Flow Condenser - Model: YCE18 through YCE42, Model: YHE18 through YHE42

Standard Features

- Quality Condenser Coils - The coil is constructed of aluminum microchannel tubing and enhanced aluminum fins for increased efficiency and corrosion protection.
- Protected Compressor - The compressor is internally protected against high pressure, temperature, and externally by a factory installed high pressure switch. This is accomplished by simultaneous operation of high pressure relief valve and a temperature sensor which protects the compressor if undesirable operating conditions occur. A liquid line filter-drier further protects the compressor.
- Hard Start Kit - Provides increased starting torque for areas with low voltage.
- Durable Finish - The cabinet is made of pre-painted steel. The pre-treated galvanized steel provides a better paint to steel bond, which resists corrosion and rust creep. Special primer formulas and matted-textured finish ensure less fading when exposed to sunlight.
- Lower Installed Cost - Installation time and costs are reduced by easy power and control wiring connections. Available in sweat connect models only. The unit contains enough refrigerant for matching indoor coils and 15 feet of interconnecting piping. The small base dimension means less space is required on the ground or roof.
- Top Dicharge - The warm air from the top mounted fan is blown up and away from the structure and any landscaping. This allows compact location on multi-unit applications.
- Low Operating Sound Level – The upward air flow carries the normal operating noise away from the living area. The rigid top panel effectively isolates any motor sound. Isolator mounted compressor and rippled fins of the condenser coil muffle the normal fan motor and compressor operating sounds.
- Low Maintenance – Long life permanently lubricated motor-bearings need no annual servicing.
- Easy Service Access – Fully exposed refrigerant connections and a single panel covering the electrical controls makes for easy servicing of the unit.
- Secured Service Valves – Secured re-usable service valves are provided on both the liquid and vapor sweat connections for ease of evacuating and charging.
- UL and CSA Listed – Approved for outdoor application.

Field Installed Accessories (Model YCE only)

- Low Ambient Kit – Fan Cycle Kit for operation down to 0°F outside temperature.

Table 22.1 - YCE Condensing Unit Dimensions

Dimension (in.)	Condensing Unit Model				
	YCE18	YCE24	YCE30	YCE36	YCE42
A = Height	30	26-3/4	26-3/4	30	36-1/4
B = Depth	24	29-1/4	29-1/4	29-1/4	29-1/4
C = Width	24	29-1/4	29-1/4	29-1/4	29-1/4

Table 22.2 - YHE Condensing Unit Dimensions

Dimension (in.)	Condensing Unit Model				
	YHE18	YHE24	YHE30	YHE36	YHE42
A = Height	33-1/4	36-1/4	39-1/2	39-1/2	39-1/2
B = Depth	29-1/4	29-1/4	35-1/4	35-1/4	35-1/4
C = Width	29-1/4	29-1/4	31-3/4	31-3/4	31-3/4

Figure 22.1 - Outdoor Condensing Unit

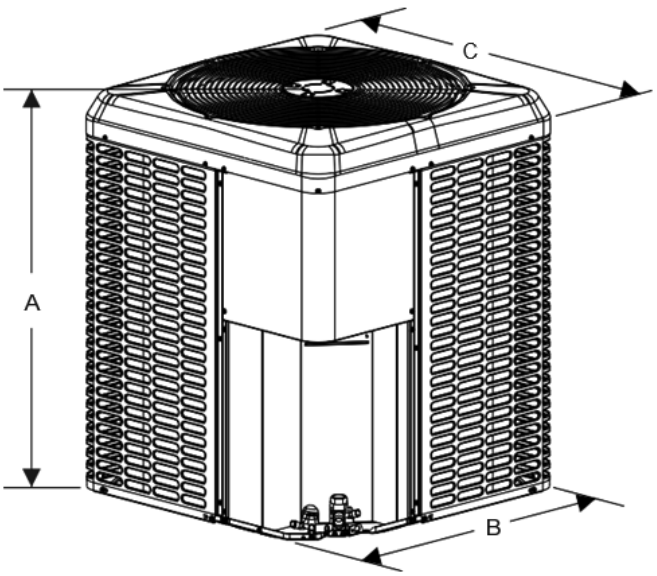

Table 23.1 - Technical, Electrical & Sound Data - Outdoor Condensing Unit

	Units	Condenser Model (YCE / YHE)				
		18	24	30	36	42
Performance						
Nominal System Cooling Capacity	BTU/h	18,000	24,000	30,000	36,000	42,000
Nominal System SEER		14	14	14	14	14
Construction						
Material: Chassis		Pre-Treated Galvanized Painted Steel				
Color		Champagne				
Weights						
Weight	lb	125 / 120	135 / 131	140 / 176	145 / 230	185 / 230
Compressor						
Type		Recip	Recip	Recip	Recip	Recip
Crankcase Heater Fitted		No	No	No	No	No
Condenser						
Coil Construction		Plate Fin Microchannel	Plate Fin Microchannel	Plate Fin Microchannel	Plate Fin Microchannel	Plate Fin Microchannel
Connections ①						
Suction	in	3/4	3/4	3/4	3/4	7/8
Liquid	in	3/8	3/8	3/8	3/8	3/8
Refrigerant Charge						
Condenser-factory charge	lbs-oz	3-8 / 5-11	3-12 / 6-7	3-14 / 7-15	4-1 / 12-4	4-12 / 12-7
Charge Required-Per Foot of Pipework	oz	0.62	0.62	0.62	0.62	0.67
Electrical Data						
Power Supply		208-230V/1Ph/60Hz				
MCA	A	12.7 / 12.0	14.8 / 15.4	18.4 / 18.1	19.6 / 19.7	25.3 / 25.5
Maximum Overcurrent Device Amps ②	A	20 / 20	25 / 25	30 / 30	30 / 20	40 / 40
Minimum Overcurrent Device Amps ③	A	15 / 15	15 / 20	20 / 20	20 / 20	30 / 30
Compressor						
Rated Load Amps (RLA)	A	9.7 / 9.0	11.2 / 11.7	14.1 / 13.4	14.7 / 14.7	19.2 / 19.4
Locked Rotor Amps (LRA)	A	46.0 / 56.3	60.8 / 61.6	73.0 / 75.5	75.0 / 78.0	123.9 / 88.0
Condenser Fan						
Rated Load Amps (RLA)	A	0.64 / 0.80	0.80 / 0.80	0.80 / 1.30	1.30 / 1.30	1.30 / 1.30
Rated Horsepower	HP	1/12 / 1/8	1/8 / 1/8	1/8 / 1/4	1/4 / 1/4	1/4 / 1/4
Sound Data						
Sound Power Rating ④	dBA	73.0 / 72.0	74.0 / 72.0	74.0 / 74.0	74.0 / 73.0	74.0 / 75.0

① Refrigerant line sizes should always match condensing unit connection sizes.
② Dual element fuses or HACR circuit breakers. Maximum allowable overcurrent protection.
③ Dual element fuses or HACR circuit breakers. Minimum recommended overcurrent protection.
④ Rated in accordance with AHRI Standard 270.

Products from Modine are designed to provide indoor air-comfort and ventilation solutions for residential, commercial, institutional and industrial applications. Whatever your heating, ventilating and air conditioning requirements, Modine has the product to satisfy your needs, including:

HVAC

- Unit Heaters:
  - Gas
  - Hydronic
  - Electric
  - Oil
- Ceiling Cassettes
- Duct Furnaces
- Hydronic Cabinet Unit Heaters, Fin Tube, Convectors
- Infrared Heaters
- Make-up Air Systems
- Unit Ventilators

Ventilation

- Packaged Rooftop Ventilation

School Products

- Vertical Packaged Classroom HVAC:
  - DX Cooling/Heat Pump
  - Water/Ground Source Heat Pump
  - Horizontal/Vertical Unit Ventilators

Specific catalogs are available for each product. Catalogs 75-136 and 75-137 provide details on all Modine HVAC equipment.

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