

Ductless Mini-Split Ceiling Cassette Models SSD, SSH and SCW



Ceiling Cassette

INTRODUCTION

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.

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Model Nomenclature

1	2,3	4,5	6	7	8	9	10
PT	UC	мвн	sv	G	С	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

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Overview

The supplied product shall be a ceiling mounted ductless minisplit. 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 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 preengineered 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.

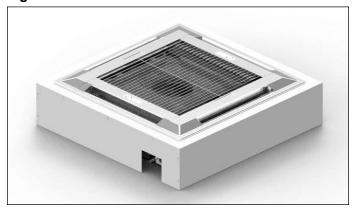
Supply Air Duct Collars

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.

8-105.10 5

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, threeport 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

		Fan Speed								
Model	Entering Air DB	Н	igh	Me	dium	L	ow			
Wiodei	°F @ 50% RH	Total Cooling	Sensible Cooling	Total Cooling	Sensible Cooling	Total Cooling	Sensible Cooling			
		BTU/h	BTU/h	BTU/h	BTU/h	BTU/h	BTU/h			
	72	16,500	14,400	16,300	13,900	15,800	13,100			
SSD/SSH 18	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			
	72	27,600	25,000	27,000	23,600	26,400	22,200			
SSD/SSH 30	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			
	72	33,400	28,400	33,000	27,600	32,200	26,200			
SSD/SSH 36	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			
-	72	37,800	31,600	37,200	30,200	36,800	29,400			
SSD/SSH 42	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

			Fan Speed		
Model	Entering Air DB °F	High	Medium	Low	
	00 1	Total Heating (BTU/h)	Total Heating (BTU/h)	Total Heating (BTU/h)	
	50	19,100	18,900	18,600	
SSH 18	60	17,800	17,600	17,200	
	70	16,400	16,200	16,000	
	50	24,400	24,000	23,800	
SSH 24	60	22,800	22,600	22,200	
	70	21,400	21,000	20,800	
	50	30,400	30,200	29,800	
SSH 30	60	29,000	28,800	28,200	
	70	27,400	27,200	26,800	
	50	35,800	35,600	35,000	
SSH 36	60	34,200	33,800	33,400	
	70	32,400	32,000	31,600	
	50	39,500	39,000	39,000	
SSH 42	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

[©] 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

All duties based on high fan speed

Table 8.1 - Cooling Performance - Chilled Water Units

				Chilled Water Inlet / Outlet, °F									
Madal	F:14a	Entering Air DB °F @		40/5	50°F			45/5	55°F				
Model	Filter	50% RH	TC	sc	FLOW	PR DROP	TC	sc	FLOW	PR DROP			
			втин	втин	GPM	PSI	втин	втин	GPM	PSI			
		72	5,900	4,900	1.2	2.9	4,100	3,900	0.8	1.5			
	STD.	75	7,300	5,500	1.5	4.3	5,100	4,500	1.0	2.2			
COW 00		80	9,900	6,500	2.0	7.4	7,800	5,500	1.6	4.8			
SCW 08		72	4,000	3,300	0.8	1.6	2,800	2,600	0.6	0.8			
	MERV 10	75	5,000	3,700	1.0	2.3	3,500	3,100	0.7	1.2			
	10	80	6,800	4,400	1.3	3.8	5,400	3,700	1.1	2.5			
		72	8,800	7,100	1.7	1.7	6,100	5,700	1.2	0.9			
	STD.	75	10,900	8,000	2.2	2.5	7,600	6,600	1.5	1.3			
0011/40		80	14,600	9,400	2.9	4.2	11,200	8,000	2.2	2.6			
SCW 12		72	5,300	4,300	1.1	0.7	3,700	3,400	0.7	0.3			
	MERV 10	75	6,600	4,800	1.3	1.1	4,600	3,900	0.9	0.5			
	'0	80	8,900	5,700	1.8	1.8	6,800	4,800	1.4	1.1			
		72	14,200	11,700	2.8	1.5	10,000	9,500	2.0	0.8			
	STD.	75	17,700	13,200	3.5	2.2	12,500	10,800	2.5	1.2			
SCW 18		80	23,900	15,600	4.8	3.7	18,200	13,200	3.6	2.3			
3CW 10		72	12,900	10,500	2.6	1.3	9,000	8,500	1.8	0.7			
	MERV 10	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			
		72	14,500	12,000	2.9	1.6	10,200	9,700	2.0	0.8			
	STD.	75	18,100	13,500	3.6	2.3	12,800	11,100	2.5	1.2			
SCW 20		80	24,500	15,900	4.9	3.9	18,600	13,500	3.7	2.4			
3CVV 20		72	12,900	10,500	2.6	1.3	9,000	8,500	1.8	0.7			
	MERV 10	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			
		72	24,400	19,400	4.9	3.1	17,200	15,800	3.4	1.6			
	STD.	75	30,000	21,800	6.0	4.4	21,400	18,000	4.3	2.4			
SCW 33		80	40,300	25,800	8.0	7.4	31,100	21,900	6.2	4.6			
3CVV 33	MEDV	72	23,300	18,500	4.6	2.8	16,400	15,100	3.3	1.5			
	MERV 10	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			
		72	26,800	21,500	5.3	3.6	18,900	17,500	3.8	1.9			
	STD.	75	33,100	24,100	6.6	5.2	23,500	19,900	4.7	2.8			
SCW 36		80	44,600	28,600	8.9	8.8	34,300	24,200	6.9	5.5			
30 44 30	MEDY	72	23,300	18,500	4.6	2.8	16,400	15,100	3.3	1.5			
	MERV 10	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

TC = Total Cooling Capacity
 SC = Sensible Cooling Capacity
 All duties based on 208V/1Ph/60Hz supply voltage and high fan speed except where stated otherwise
 Pressure drops are coil only, excluding valves

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

		Hot Water 180°F Inlet / 160°F Outlet									
Model	Filter	70°F Entering Air DB			60°F	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	
3CW 08	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	
3CW 16	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	
3CW 20	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	
SCW 33	MERV 10	42,300	1.5	4.2	45,900	1.7	4.6	49,300	2.0	4.9	
CCM 26	STD.	45,200	1.7	4.5	49,800	2.0	5.0	54,300	2.3	5.4	
SCW 36	MERV 10	42,300	1.5	4.2	45,900	1.7	4.6	49,300	2.0	4.9	

 $[\]textcircled{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

		Hot Water 180°F Inlet / 160°F Outlet										
Model	Filter	70°F Entering Air DB			60°F	60°F Entering Air DB			50°F Entering Air DB			
	1 11101	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		
3CW 08	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		
SCVV 12	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		
SCW 18	MERV 10	49,200	2.9	4.9	53,900	3.4	5.4	58,600	4.0	5.8		
0014/00	STD.	55,100	3.6	5.5	60,400	4.2	6.0	65,600	4.9	6.5		
SCW 20	MERV 10	49,200	2.9	4.9	53,900	3.4	5.4	58,600	4.0	5.8		
00W 22	STD.	80,500	5.5	8.0	88,200	6.4	8.8	95,900	7.5	9.5		
SCW 33	MERV 10	76,500	5.0	7.6	83,900	5.9	8.4	91,200	6.8	9.1		
SCW 26	STD.	89,300	6.6	8.9	97,900	7.8	9.7	106,400	9.1	10.6		
SCW 36	MERV 10	76,500	5.0	7.6	83,900	5.9	8.4	91,200	6.8	9.1		

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

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

		Hot Water 180°F Inlet / 160°F Outlet						
Model	Entering Air DB °F @ 50% RH	Heating Capacity	Flowrate	Pressure Drop				
	22 . @ 00%	BTU/h	GPM	PSI				
	50	46,389	4.8	1.3				
SSD/SSH 18	60	42,598	4.4	1.1				
	70	38,746	4.0	0.9				
	50	50,279	5.3	1.5				
SSD/SSH 24	60	46,153 4.8		1.2				
	70	41,993	4.4	1.0				
	50	67,912	7.1	3.3				
SSD/SSH 30	60	62,277	6.5	2.8				
	70	56,609	5.9	2.3				
	50	71,636	7.5	3.6				
SSD/SSH 36	60	65,640	6.9	3.1				
	70	59,600	6.2	2.6				
	50	77,386	8.1	4.2				
SSD/SSH 42	60	70,803	7.4	3.5				
	70	64,268	6.7	3.0				

 $^{{\}mathbin{\oplus}}$ All duties based on high fan speed except where stated otherwise ${\mathbin{\otimes}}$ Pressure drops are coil only, excluding valves

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

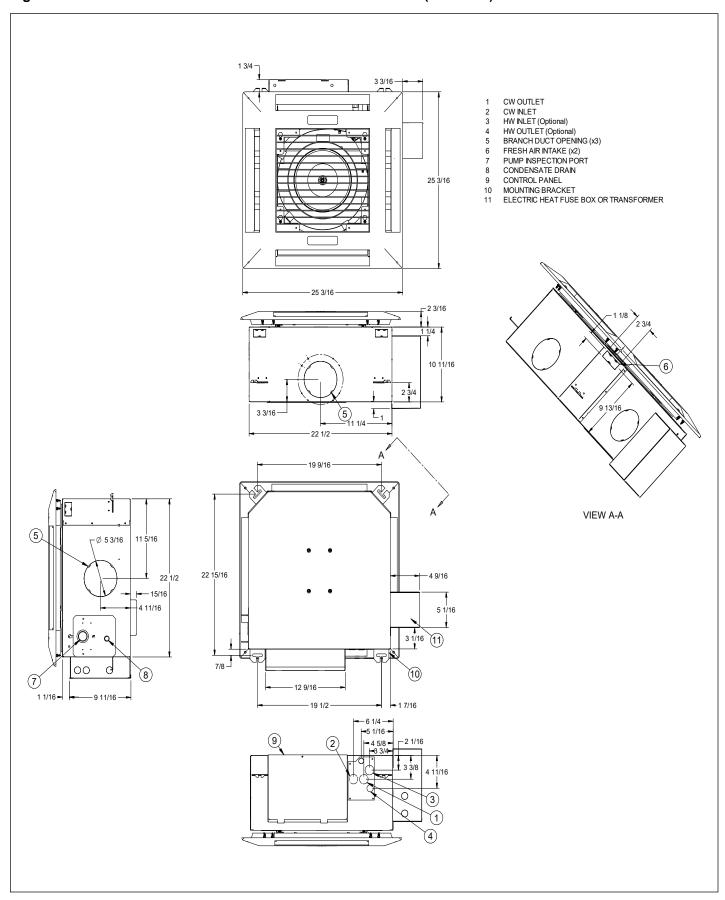


Figure 12.1 - Dimensions - Medium Chassis: SCW18 and SCW20 (in inches)

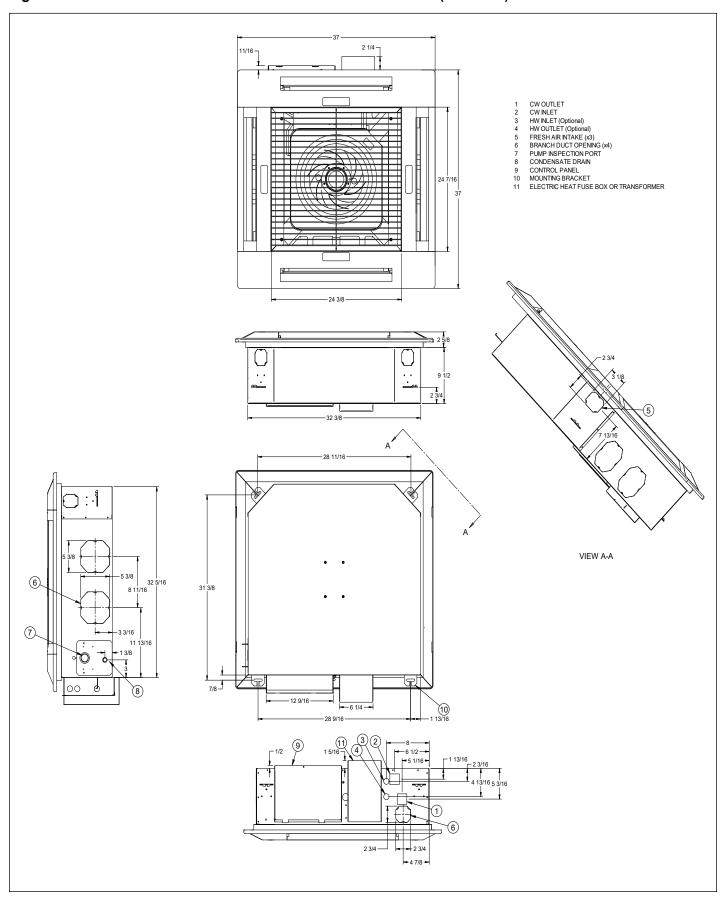


Figure 13.1 - Dimensions - Large Chassis: SCW33 and SCW36 (in inches)

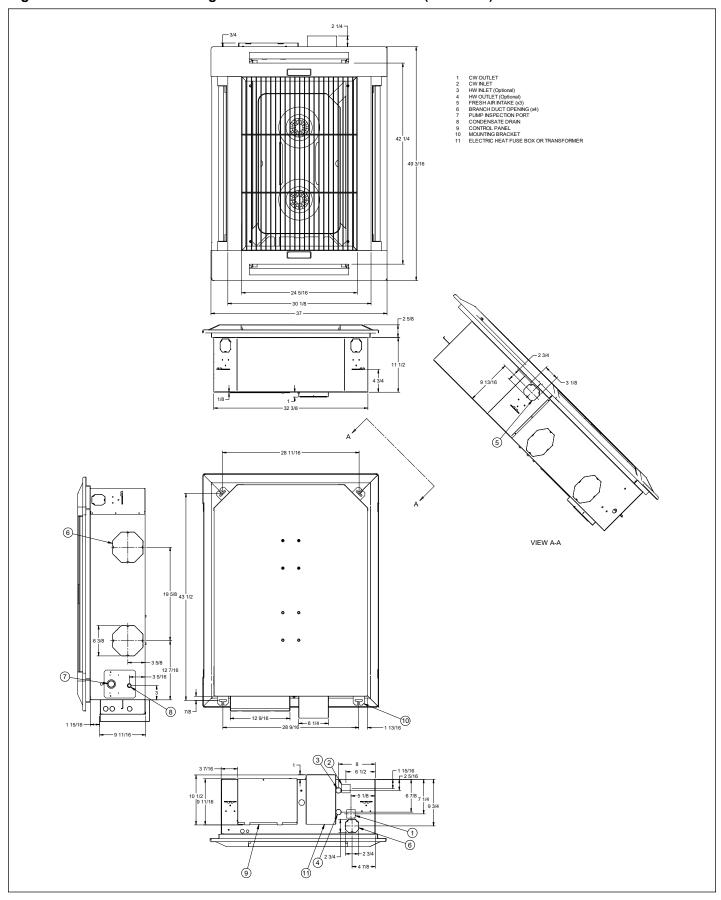
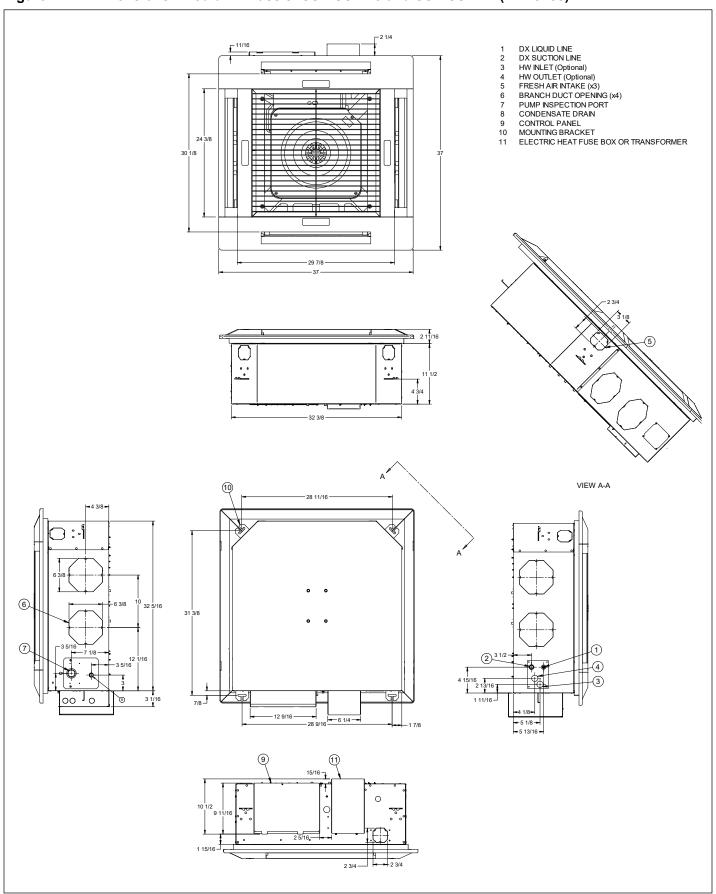


Figure 14.1 - Dimensions - Medium Chassis: SSD/SSH 18 and SSD/SSH 24 (in inches)



DX LIQUID LINE
DX SUCTION LINE
HW INLET (Optional)
HW OUTLET (Optional)
FRESH AIR INTAKE (x3)
BRANCH DUCT OPENING (x4)
PUMP INSPECTION PORT
CONDENSATE DRAIN
CONTROL PANEL
MOUNTING BRACKET
ELECTRIC HEAT FUSE BOX OR TRANSFORMER VIEW A-A 10)::[}·: {

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	h Impact Polystyr	ene			
Material: Chassis			23000 31400 38200 42500 21400 27400 32400 37200					
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		-	-	-	-	-		
Туре				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								
Туре			Wir	e Framed Perifra	ime			
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					
Max Branch Duct Connections	(qty)	2	2					
Branch Duct Diameter	in	5						
Branch Duct Air Volume ®	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		
	•		OF DRAVE embient			00		

 $^{\ \, \}textcircled{1}$ Nominal cooling capacity based on 80/67°F DB/WB and 95/75°F DB/WB ambient

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[@] 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.

Refrigerant line sizes should always match condensing unit connection sizes.

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

② 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			i	·	<u> </u>		·
Material: Fascia				High Impact	Polystyrene		
Material: Chassis					ed Steel		
Color: Fascia				Pearl	Grey		
Chilled Water Coil					-		
Туре				Finned	d 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							
Туре				Centr	ifugal		
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							
Туре					d 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 ⊕	BTU/h	17,100	N/A	27,300	27,900	41,200	45,200
HW Heating Capacity ®	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 ®	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 45°F inlet / 55°F outlet, 208V/1Ph/60Hz supply voltage, and Standard filters.

② Nominal cooling capacity based on 80/67°F DB/WB, water temperature of 45°F inlet / 55°F outlet, 208V/1Ph/60Hz supply voltage, and MERV 10 filters.

③ Nominal airflow based on 208V/1Ph/60Hz supply voltage and Standard (MERV10) filters.

Nominal heating capacity based on 70/60°F DB/WB, water temperature of 180°F inlet / 160°F outlet, 208V/1Ph/60Hz supply voltage, and Standard filters.

[©] Nominal heating capacity based on 70/60°F DB/WB, water temperature of 180°F inlet / 160°F outlet, 208V/1Ph/60Hz supply voltage, and MERV10 filters.

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

 $[\]ensuremath{\mathfrak{D}}$ 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				
	Heite	Condensing Unit Model								
	Units	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		Ca	ssis: Pre-Treated Ga	alvanized Painted St	teel, Color: Champa	igne				
Dimensions/Weights										
Height (includes Fan Guard)	in	331/4	30	30	361⁄4	331/4				
Width	in	24	291/4	291/4	291/4	311/4				
Depth	in	24	291/4	291/4	291/4	351/4				
Weight	lb	140	155	155	180	215				
Compressor										
Туре		Recip	Recip	Recip	Recip	Recip				
Crankcase Heater Fitted		No	No	No	No	No				
Condenser Coil			Р	late Fin, Microchann	nel					
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				

 $[\]ensuremath{\mathbb{D}}$ 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							
	Heita	Condensing Unit Model							
	Units	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		Cas	sis: Pre-Treated Ga	alvanized Painted St	teel, Color: Champ	agne			
Dimensions/Weights									
Height (includes Fan Guard)	in	331/4	361⁄4	39½	39½	39½			
Width	in	291/4	291/4	31¾	31¾	31¾			
Depth	in	291/4	291/4	351/4	35¼	351/4			
Weight	lb	120	131	176	230	230			
Compressor									
Туре		Scroll	Scroll	Scroll	Recip	Recip			
Crankcase Heater Fitted		No	No	No	No	Yes			
Condenser Coil			F	Round Tube Plate Fi	n				
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			

 $[\]ensuremath{\mathbb{O}}$ Refrigerant line sizes should always match condensing unit connection sizes.

Figure 19.1 - Electrical Data - Ceiling Cassettes

		Perfe	ormance (Wit	th Electric Heat)	Performance (No Electric Heat)			
Nominal Capacity (Digit 4,5)	Supply Voltage (Digit 6)	FLA	MCA	Recommended Fuse Size	FLA	MCA	Recommended Fuse Size	
	A: 115/60/1				0.70	0.00	45	
	J: 110/50/1] -	-	-	0.70	0.88	15	
08 and 12	B: 208/60/1	6.25	7.81	15				
Small Chassis	C: 230/60/1	6.87	8.59	15	0.35	0.44	15	
	K: 220/50/1	6.59	8.24	15				
	H: 277/60/1	-	-	-	0.29	0.36	15	
	A: 115/60/1				4.40	4.00	45	
	J: 110/50/1	1 -	-	-	1.10	1.38	15	
18, 20 and 24	B: 208/60/1	12.35	15.44	20		0.69		
Medium Chassis	C: 230/60/1	13.59	16.99	20	0.55		15	
	K: 220/50/1	13.03	16.29	20				
	H: 277/60/1	-	-	-	0.46	0.58	15	
	A: 115/60/1				4.00	2.40	45	
	J: 110/50/1] -	-	-	1.92	2.40	15	
30, 33, 36 and 42	B: 208/60/1	20.68	25.85	30				
Large Chassis	C: 230/60/1	22.76	28.45	30	0.96	1.20	15	
	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

J		- 5 -					_			
	Cassette Unit - SSD					Cassette Unit - SSH				
	18	24	30	36	42	18	24	30	36	42
		Condens	ing Unit M	odel YCE	•		Condens	ing Unit M	odel YHE	•
	18	24	30	36	42	18	24	30	36	42
Standard Data										
Power Supply		208-	230V/1Ph/	60Hz			208-	230V/1Ph/	60Hz	
мса	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

 $^{@ \ \, \}text{Dual element fuses or HACR circuit breaker. Minimum recommended overcurrent protection}.$

Figure 20.1 - Sound Data - Ceiling Cassette Units

			Sound Pressure Frequency Spectrum, dB ①								
Model Number	Fan Speed	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	dBA (1)		
	High	37	37	33	29	21	14	10	29		
SCW2/8	Med	34	34	30	24	15	12	10	26		
	Low	31	29	25	17	8	10	8	22		
	High	42	41	38	35	28	21	12	35		
SCW2/12	Med	38	39	36	32	24	16	10	32		
	Low	37	37	33	29	21	14	10	29		
000/001140	High	41	45	38	40	33	25	17	43		
SSD/SSH 18 SCW 18	Med	39	41	35	36	27	19	16	39		
30VV 10	Low	38	40	34	34	25	18	16	38		
000/001104	High	43	47	40	43	37	29	19	46		
SSD/SSH 24 SCW 20	Med	41	45	38	40	33	25	17	43		
3CVV 20	Low	39	41	35	36	27	19	16	39		
000/001100	High	51	49	46	42	34	22	19	48		
SSD/SSH 30 SCW 33	Med	50	46	43	38	28	18	17	44		
3000 33	Low	49	44	41	36	25	17	16	42		
SSD/SSH 36	High	54	54	50	46	41	27	24	52		
SSD/SSH 42	Med	51	49	46	42	34	22	19	48		
SCW 36	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 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		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	БС	68.8	67.4	64.8	69.1	69.7	63.1	57.3	53.6	74.0	19.1	
YCE36B22S	Cooling	71.7	72.4	69.4	71.0	70.3	63.4	60.2	55.3	74.0	19.0	
YCE42B22S	ŏ	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		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	ling	67.9	72.6	68.3	70.5	68.0	63.6	59.7	56.5	72.0	19.2	
YHE36B21H	Cooling	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		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	ting	64.3	73.7	67.7	73.6	68.0	63.4	60.2	61.1	73.0	19.1	
YHE36B21H	Heating	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	Condensing Unit Model								
(in.)	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		Condensing Unit Model								
(in.)	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

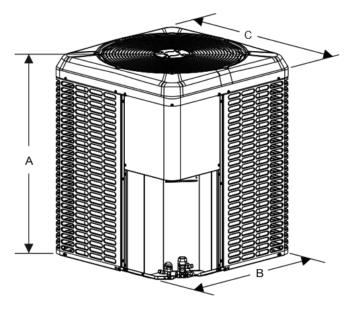


Table 23.1 - Technical, Electrical & Sound Data - Outdoor Condensing Unit

		Condenser Model (YCE / YHE)						
	Units	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-Treate	ed Galvanized Pa	inted Steel			
Color				Champagne				
Weights								
Weight	lb	125 / 120	135 / 131	140 / 176	145 / 230	185 / 230		
Compressor								
Туре		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			2	08-230V/1Ph/60F	łz			
MCA	Α	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	Α	20 / 20	25 / 25	30 / 30	30 / 20	40 / 40		
Minimum Overcurrent Device Amps ③	А	15 / 15	15 / 20	20 / 20	20 / 20	30 / 30		
Compressor								
Rated Load Amps (RLA)	А	9.7 / 9.0	11.2 / 11.7	14.1 / 13.4	14.7 / 14.7	19.2 / 19.4		
Locked Rotor Amps (LRA)	Α	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)	А	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		

 $^{\\ \ \, \}mathbb{O} \ \ \, \text{Refrigerant line sizes should always match condensing unit connection sizes}.$

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:

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- Unit Ventilators

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 - Water/Ground Source Heat Pump
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