



MODINE CSD Ceiling Cassette Ductless Mini-Split and Chilled Water Instruction Manual

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Ceiling Cassette
Ductless Mini-Split and Chilled Water
Technical Manual



Models CSD, CSH and CCW



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Overview

The ceiling mounted 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 outside air for ventilation into the space.

Cassettes are available in a choice of three models: DX cooling, heat pump, or chilled water cooling. Optional heating can be provided as electric heat or hot water, depending on the 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 Airedale by Modine Cassette to reduce noise levels to a minimum. These techniques include low blower speeds, rigid panel and cabinet construction, and sound-absorbent cabinet insulation.

For individual comfort, Cassettes are available with electromechanical or micro-processor based controls.

The microprocessor controller includes an infrared transmitter which enables room conditions to be maintained at a user defined setpoint.

The Cassettes are also available with Carrel microprocessor controls and network cards to allow units to be connected to a Building Management System.



The Modine Breeze® AccuSpec is the fastest way to generate performance data based on actual job conditions. The Breeze® AccuSpec program is a web-based sizing and selection program. The program provides a series of step-by-step questions that allow for the easy configuration of Airedale by Modine products. After a model has been configured, the program can generate Submittal Schedules, Submittal Data (including performance and dimensional drawings), and Specifications.

MODEL IDENTIFICATION

Model Nomenclature

1	2,3	4,5	6	7	8	9	10	11	12	13
PT	UC	MBH	SV	G	C	HO	FL	FP	PO	CC

1 – Product Type (PT)

C – Ceiling Cassette

2,3 – Unit Configuration (UC)

SD – DX Cooling

SH – HP Heating and 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 – 115V/60Hz/1ph
B – 208V/60Hz/1ph
C – 230V/60Hz/1ph
H – 277V/60Hz/1ph
J – 110V/50Hz/1ph
K – 220V/50Hz/1ph
7 – Generation (G)
A – Current Design

8 – Control Code (C)

C – Modine Controls System
E – Electro-Mechanical Controls
M – Microprocessor Controls (Infrared Remote Control)

9 – Heating Option (HO)

N – None
A – Electric Heat
B – Hot Water Heating Coil – 4-pipe
C – Hot Water Heating – 2 Pipe (Uses CW Coil)
10 – Filters (FL)
A – 60-80% Arrestance (Standard)
B – MERV 10
11 – Heat Freeze Protection (FP)
N – None
F – Hot Water Coil Freeze Protection
12 – Power Option (PO)
N – None
D – Cassette Power Disconnect Switch

13 – Control Communication Option (CC)

N – None
B – BACnet IP Compatible Network Card
M – BACnet MS/TP Compatible Network Card

STANDARD FEATURES**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 Carrel 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 – 4 Pipe

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.

C = Hot Water Heating – 2 Pipe (Uses CW Coil)

A common chilled water/hot water coil for 2 pipe systems will provide cooling or heating, depending on mode of operation.

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.

Digit 11: Heat Freeze Protection (FP)

N = None

F = 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 conditions that can result in a freeze condition, it will open the flow control valve and prevent the unit fan(s) from running.

Digit 12: Power Option (PO)

N = None

D = Cassette Power 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.

Digit 13: Control Communication Option (CC)

N = None

B = BACnet IP Compatible Network Card

The Carrel microprocessor controller shall come equipped with a plug-in card allowing for complete compatibility with a BACnet IP building management system.

M = BACnet MS/TP Compatible Network Card

The Carrel microprocessor controller shall come equipped with a plug-in card allowing for complete compatibility with a BACnet MS/TP building management system.

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.

ACCESSORIES – FIELD INSTALLED

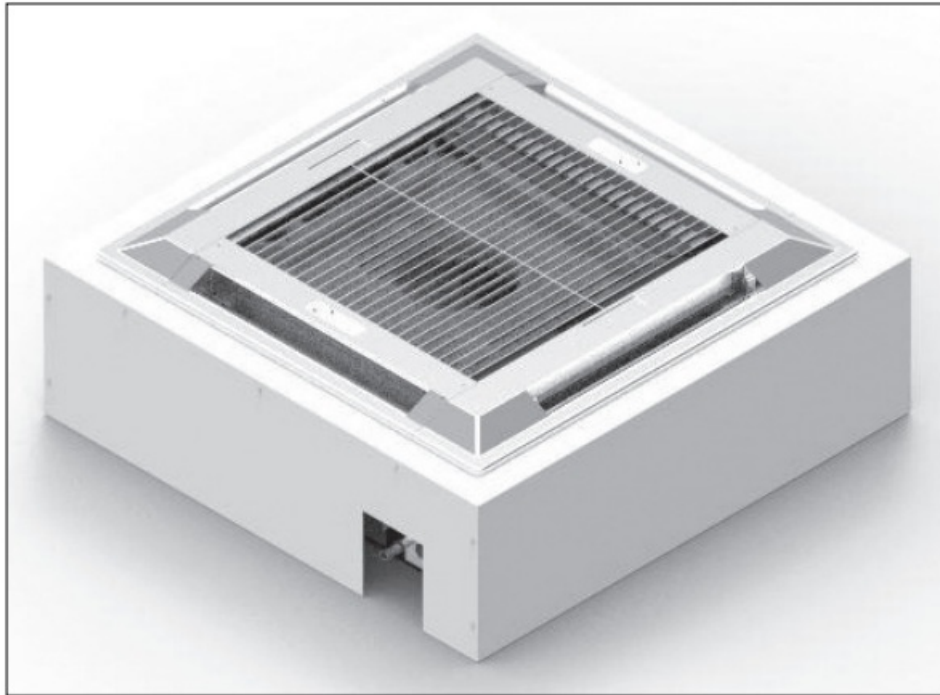
FIELD INSTALLED ACCESSORIES

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. 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 hammer tone finish.

Figure 6.1 – Duct Shroud



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.

- Two Position Spring Return Control Valves
- Two Position Spring Return Control Valves with Two Shut Off Valves (package)

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. Condensing Unit (for DX or Heat Pump units) Refer to Breeze submittal for details.

Low Ambient Kit (Use with Condensing Units)

Fan speed control for compressor operation down to 0°F outside temperature.

PERFORMANCE DATA

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

Model	Entering Air DB °F @ 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
	72	16,500	14,400	16,300	13,900	15,800	13,100
CSD/CSH 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
	72	20,000	16,800	19,600	16,100	19,300	15,600
CSD/CSH 24	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
CSD/CSH 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
CSD/CSH 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
CSD/CSH 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

Table 7.2 – Heating Performance – Heat Pump Units

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

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 DR OP	TC	SC	FLOW	PR DR OP
			BTUH	BTUH	GPM	PSI	BTUH	BTUH	GPM	PSI
CCW 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	,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

CW 12	STD.	72 75 80	8,800 10,900 14,600	7,100 8,000 9,400	1.7 2.2 2.9	1.7 2.5 4.2	6,100 7,600 11,200	5,700 6,600 8,000	1.2 1.5 2.2	0.9 1.3 2.6
	MERV 10	72 75 80	5,300 6,600 8,900	4,300 4,800 5,700	1.1 1.3 1.8	0.7 1.1 1.8	3,700 4,600 6,800	3,400 3,900 4,800	0.7 0.9 1.4	0.3 0.5 1.1
CW 18	STD.	72 75 80	14,200 17,700 23,900	11,700 13,200 15,600	2.8 3.5 4.8	1.5 2.2 3.7	10,000 12,500 18,200	9,500 10,800 13,200	2.0 2.5 3.6	0.8 1.2 2.3
	MERV 10	72 75 80	12,900 16,000 21,600	10,500 11,900 14,000	2.6 3.2 4.3	1.3 1.8 3.1	9,000 11,300 16,500	8,500 9,800 11,900	1.8 2.3 3.3	0.7 1.0 1.9
CCW 20	STD.	72 75 80	14,500 18,100 24,500	12,000 13,500 15,900	2.9 3.6 4.9	1.6 2.3 3.9	10,200 12,800 18,600	9,700 11,100 13,500	2.0 2.5 3.7	0.8 1.2 2.4
	MERV 10	72 75 80	12,900 16,000 21,600	10,500 11,900 14,000	2.6 3.2 4.3	1.3 1.8 3.1	9,000 11,300 16,500	8,500 9,800 11,900	1.8 2.3 3.3	0.7 1.0 1.9
CCW 33	STD.	72 75 80	24,400 30,000 40,300	19,400 21,800 25,800	4.9 6.0 8.0	3.1 4.4 7.4	17,200 21,400 31,100	15,800 18,000 21,900	3.4 4.3 6.2	1.6 2.4 4.6
	MERV 10	72 75 80	23,300 28,700 38,400	18,500 20,800 24,600	4.6 5.7 7.7	2.8 4.1 6.8	16,400 20,500 29,700	15,100 17,100 20,800	3.3 4.1 5.9	1.5 2.2 4.2
CCW 36	STD.	72 75 80	26,800 33,100 44,600	21,500 24,100 28,600	5.3 6.6 8.9	3.6 5.2 8.8	18,900 23,500 34,300	17,500 19,900 24,200	3.8 4.7 6.9	1.9 2.8 5.5
	MERV 10	72 75 80	23,300 28,700 38,400	18,500 20,800 24,600	4.6 5.7 7.7	2.8 4.1 6.8	16,400 20,500 29,700	15,100 17,100 20,800	3.3 4.1 5.9	1.5 2.2 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)
CCW 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
CCW 12	N/A	N/A			N/A			N/A		
CCW 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
CCW 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
CCW 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
CCW 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

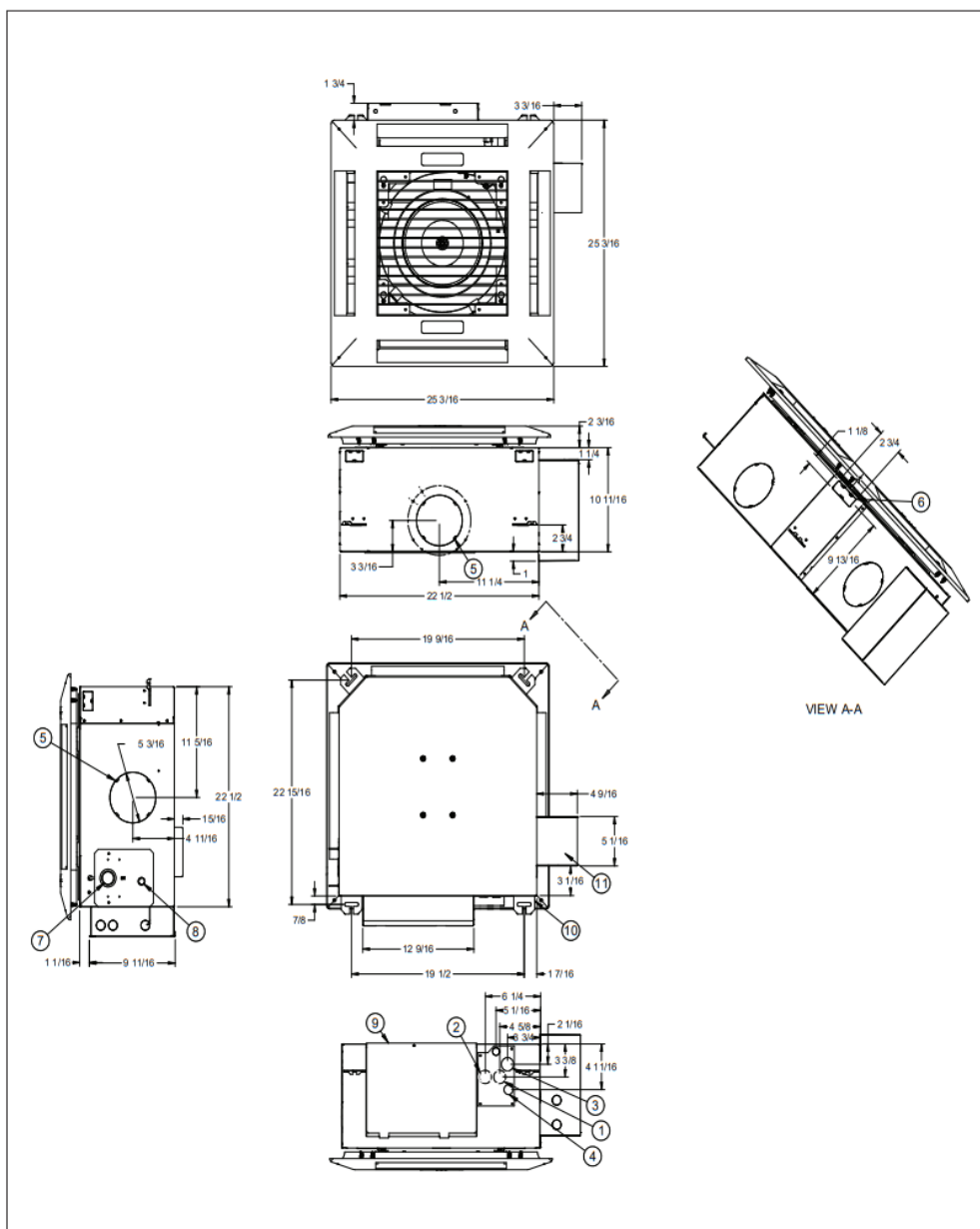
Table 9.2 – Heating Performance – Chilled Water Units with 2-Pipe Changeover

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

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

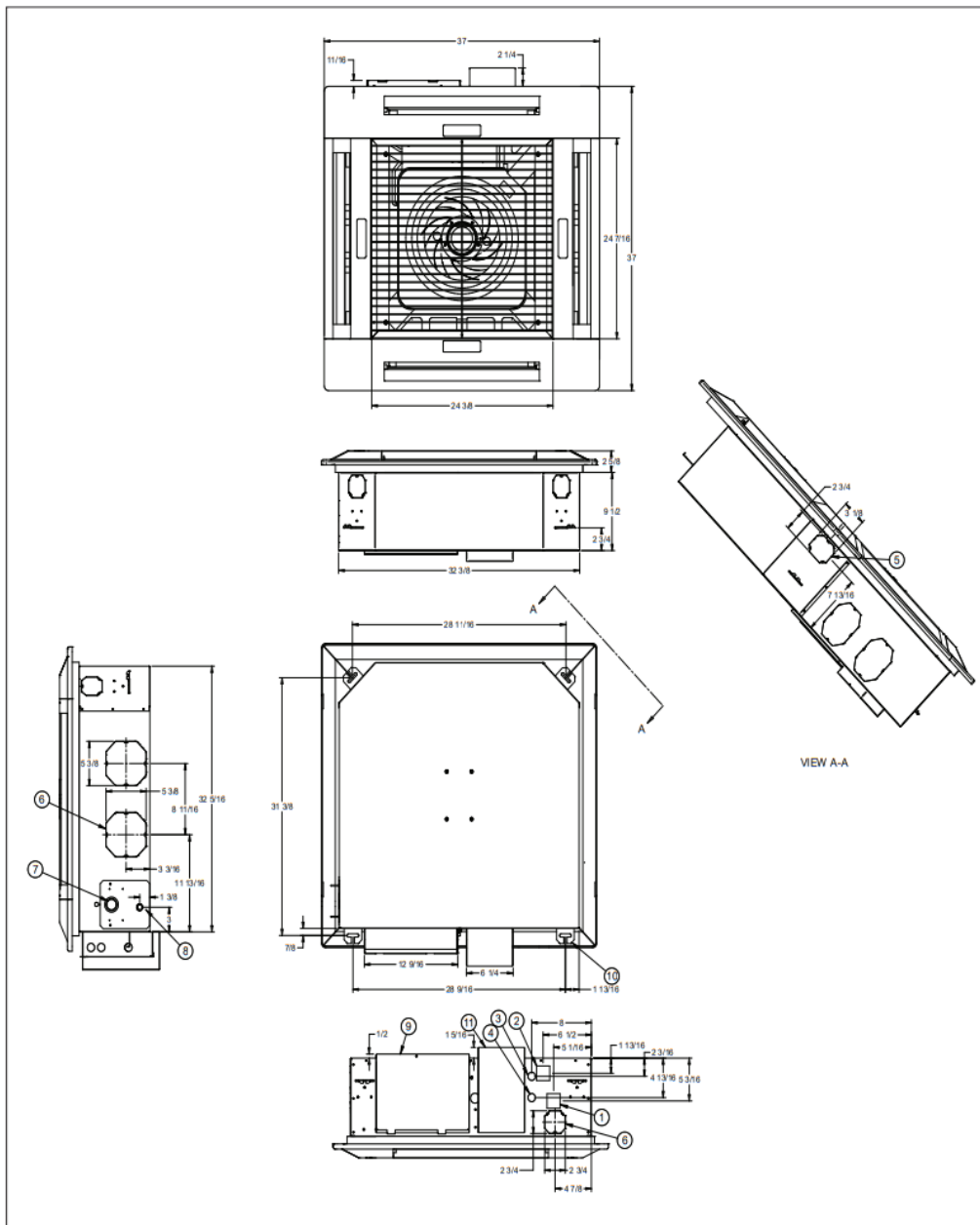
UNIT DIMENSIONAL DATA

Figure 11.1 – Dimensions – Small Chassis: CCW08 and CCW12 (in inches)

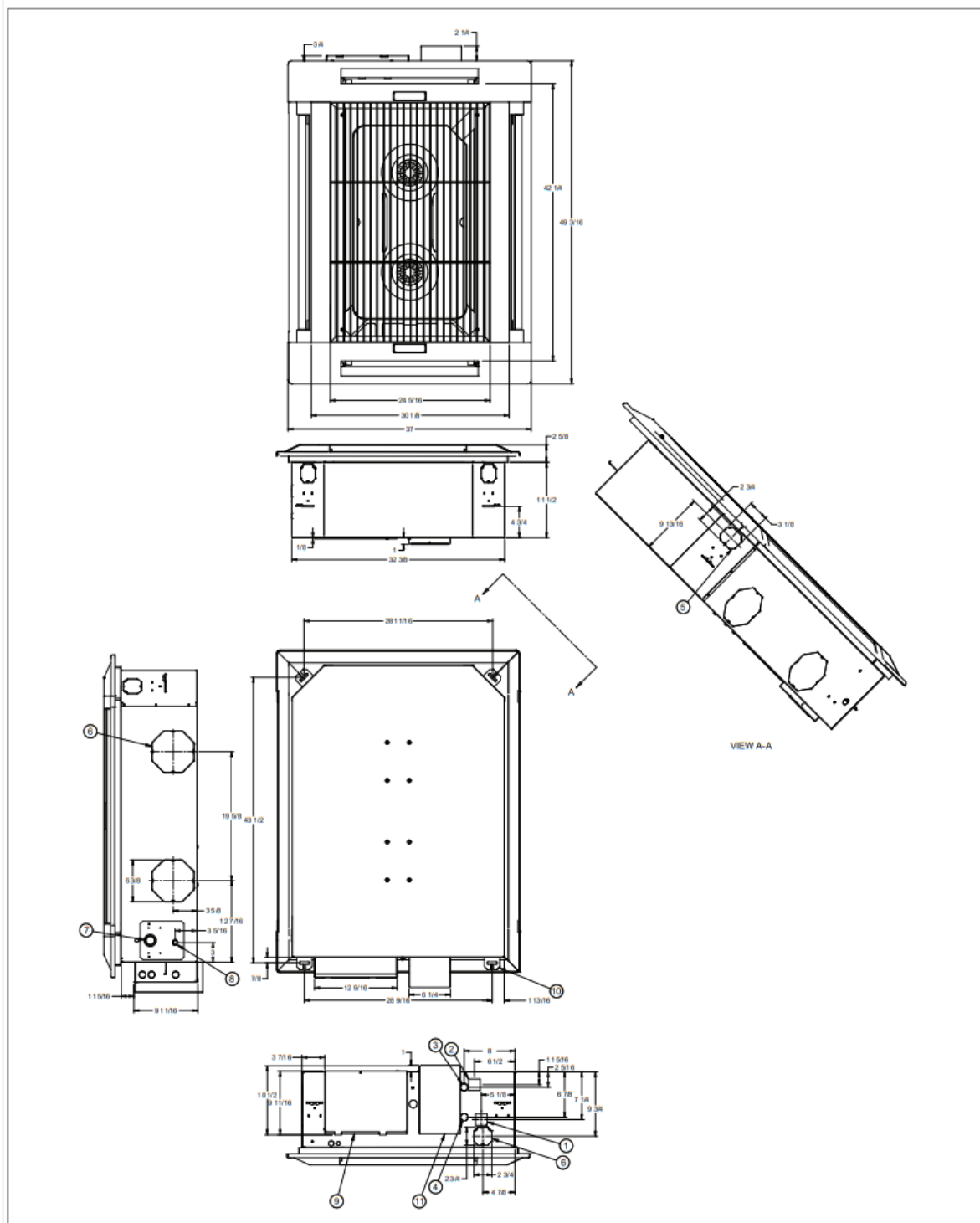


1. CW OUTLET
2. CW INLET
3. HW INLET (Optional)
4. HW OUTLET (Optional)
5. BRANCH DUCT OPENING (x3)
6. FRESH AIR INTAKE (x2)
7. PUMP INSPECTION PORT
8. CONDENSATE DRAIN
9. CONTROL PANEL
10. MOUNTING BRACKET
11. ELECTRIC HEAT FUSE BOX OR TRANSFORMER

Figure 12.1 – Dimensions – Medium Chassis: CCW18 and CCW20 (in inches)

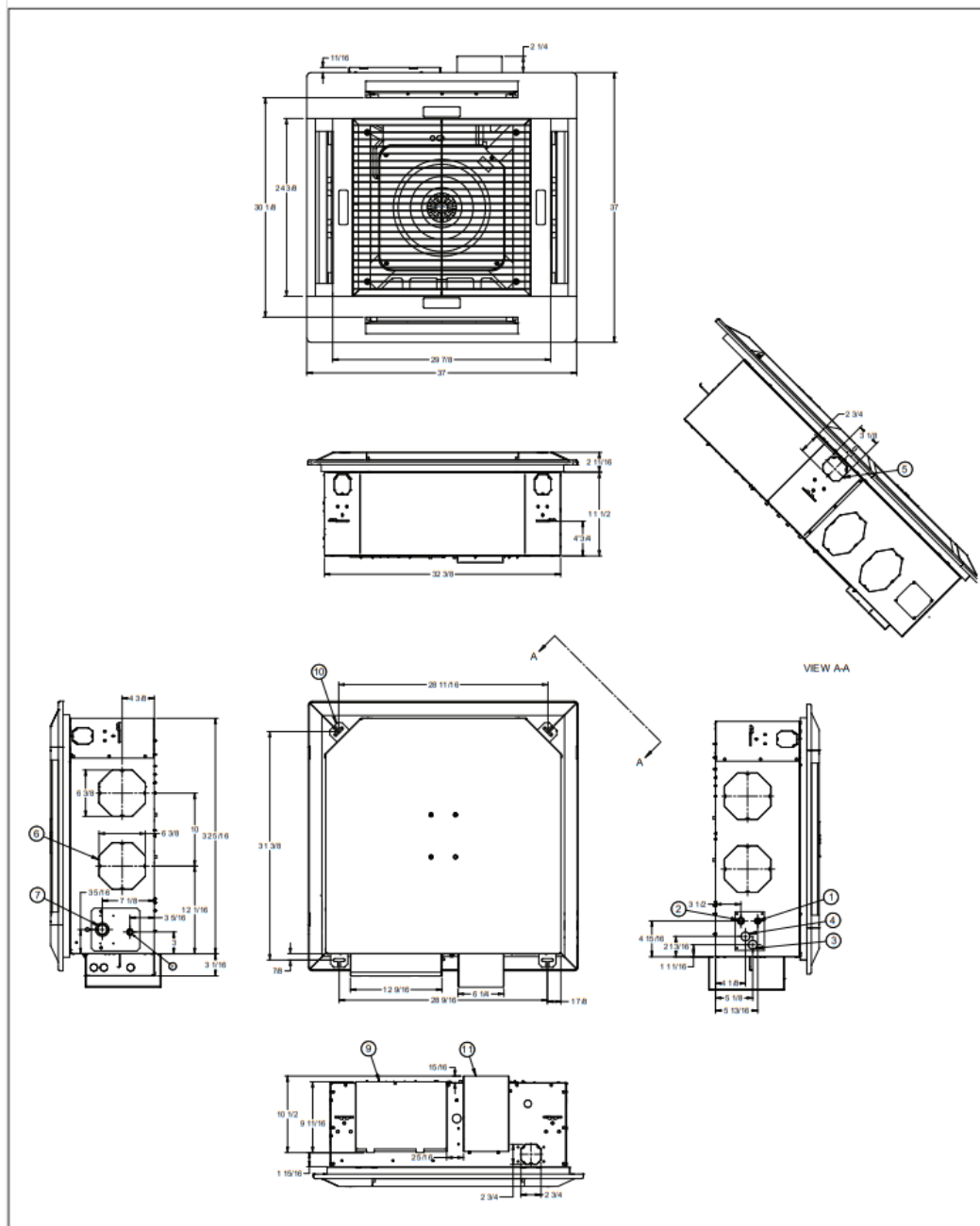


1. CW OUTLET
2. CW INLET
3. HW INLET (Optional)
4. HW OUTLET (Optional)
5. FRESH AIR INTAKE (x3)
6. BRANCH DUCT OPENING (x4)
7. PUMP INSPECTION PORT
8. CONDENSATE DRAIN
9. CONTROL PANEL
10. MOUNTING BRACKET
11. ELECTRIC HEAT FUSE BOX OR TRANSFORMER



1. CW OUTLET
2. CW INLET
3. HW INLET (Optional)
4. HW OUTLET (Optional)
5. FRESH AIR INTAKE (x3)
6. BRANCH DUCT OPENING (x4)
7. PUMP INSPECTION PORT
8. CONDENSATE DRAIN
9. CONTROL PANEL
10. MOUNTING BRACKET
11. ELECTRIC HEAT FUSE BOX OR TRANSFORMER

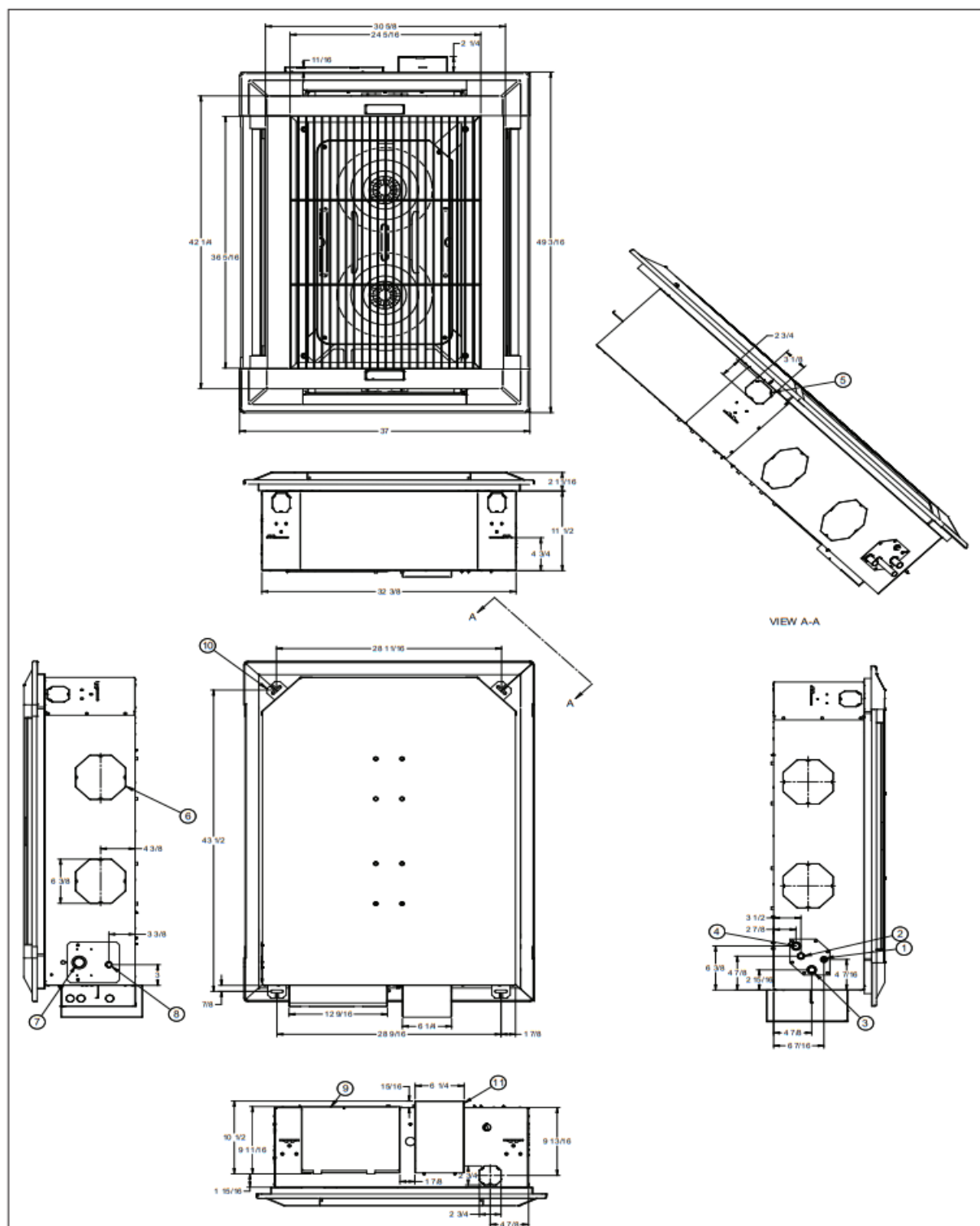
Figure 14.1 – Dimensions – Medium Chassis: CSD/CSH 18 and CSD/CSH 24 (in inches)



1. DX LIQUID LINE
2. DX SUCTION LINE
3. HW INLET (Optional)
4. HW OUTLET (Optional)
5. FRESH AIR INTAKE (x3)
6. BRANCH DUCT OPENING (x4)
7. PUMP INSPECTION PORT
8. CONDENSATE DRAIN
9. CONTROL PANEL
10. MOUNTING BRACKET

ELECTRIC HEAT FUSE BOX OR TRANSFORMER

Figure 15.1 – Dimensions – Large Chassis: CSD/CSH 30, CSD/CSH 36 and CSD/CSH 42 (in inches)



1. DX LIQUID LINE
2. DX SUCTION LINE
3. HW INLET (Optional)
4. HW OUTLET (Optional)
5. FRESH AIR INTAKE (x3)
6. BRANCH DUCT OPENING (x4)
7. PUMP INSPECTION PORT
8. CONDENSATE DRAIN
9. CONTROL PANEL
10. MOUNTING BRACKET
11. ELECTRIC HEAT FUSE BOX OR TRANSFORMER

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

			Model Digit 2,3 + Model Size				
DESCRIPTION		UNIT S	SD/SH 18	SD/SH 24	SD/SH 30	SD/SH 36	SD/SH 42
CONSTRUCTION	Material: Fascia		High Impact Polystyrene (Pearl Grey color), UL94 VO Fire Rating				
	Material: Chassis		Galvanized Steel				
EVAPORATOR	Type		Finned Tube				
	Quantity		1				
	Face Area	ft2	4.0		5.2		
	Nominal Airflow – H/M/L	CFM	590 / 540 / 465	670 / 590 / 540	920 / 800 / 680	1000 / 920 / 800	1130 / 1000 / 920
	Discharge		4-Way				
FAN	Type		Centrifugal				
	Quantity		1		2		
	Diameter	in	14.0				
	Horsepower (per fan)	HP	1/6				
REFRIGERATION	Number of Circuits		1				
	Refrigerant Type		R-410A				
WEIGHTS	Weight – Chassis	lbs	66		97		
	Weight – Fascia		18		21		
CONNECTIONS	Suction (1)	in	0.75				
	Liquid (1)		0.375				
	Condensate (ID)		0.375				

FILTRATION	Type		Washable Polyester Foam (Standard)				
	Size	in	11.6 x 23.2 x 0.2				
	Type		MERV 10				
	Nominal Size	in	12.0 x 25.0 x 1.0				
	Quantity		2		3		
CONDENSATE PUMP	Maximum Head	in	30				
	Nominal Flowrate	gpm	0.1				
OPTIONS	Electric Heating Capacity	kW	3.0		5.0		
	Max Supply Air Branch Duct Connections	qty	2				
	Supply Air Branch Duct Diameter	in	5.0		6.0		
	Ducted Supply Air Volume (2)	CFM	115	130	180	200	220
	Fresh Air Connections	qty	3				
	Fresh Air Duct Diameter	in	3.0				
	Fresh Air Volume (3)	CFM	60	65	85	90	95

1. Refrigerant line sizes should always match condensing unit connection sizes.
2. Maximum air volume available through one branch duct 6' long, with Cassette fan(s) at high speed and corresponding fascia aperture closed.
3. Maximum fresh air through all knockouts connected to one 10' long duct with fan at high speed. Fresh air volume will depend on duct configuration, fan speed, and filter type.
4. For electrical data, please refer to the submittal data in Breeze AccuSpec

.Figure 17.1 – Technical Data – Chilled Water Units

	Model Digit 2,3 + Model Size
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DESCRIPTION		UNI TS	CW08	CW12	CW18	CW20	CW33	CW36
CONSTRUC TION	Material: Fascia		High Impact Polystyrene (Pearl Grey color), UL94 VO Fire Rating					
	Material: Chassis		Galvanized Steel					
CHILLED W ATER COIL	Type		Finned Tube					
	Quantity		1					
	Face Area	ft2	1.8		2.8		5.2	
	Nominal Airflow – Stand ard – H/M/L	CF M	330/300 /260	360/330/ 300	600/540/ 460	620/600/ 540	940/850/ 740	1080/94 0/850
	Nominal Airflow – MERV 10 – H/M/L	CF M	200 / 170 / 160		520 / 490 / 450		880 / 760 / 690	
	Discharge		4-Way					
	Unit Water Volume	gal	0.29		0.45		0.79	
	Maximum Inlet Water Pr essure	psi	125					
FAN	Type		Centrifugal					
	Quantity		1				2	
	Diameter	in	12.0		15.0		14.0	
	Horsepower (per fan)	HP	1/8		1/6			
WEIGHTS	Weight – Chassis	lbs	40		64		97	
	Weight – Fascia		5		18		21	
CONNECTI ONS	Chilled Water Inlet	in	0.625		0.875			
	Chilled Water Outlet		0.625		0.875			
	Condensate (ID)		0.375					
	Type		Washable Polyester Foam (Standard)					

FILTRATION	Size	in	14.5 x 13.5 x 0.2	11.6 x 23.2 x 0.2			
	Type		MERV 10				
	Size	in	13.0 x 13.0 x 1.0	12.0 x 25.0 x 1.0			
	Quantity		1	2		3	
CONDENSATE PUMP	Maximum Head	in	30.0				
	Nominal Flowrate	GP M	0.1				
OPTIONS	Electric Heating Capacity	kW	1.5	3.0		5.0	
	Max Supply Air Branch Duct Connections	qty	2				
	Supply Air Branch Duct Diameter	in	5.0			6.0	
	Ducted Supply Air Volume (1)	CF M	80	100	125	200	220
	Fresh Air Connections	qty	2	3			
	Fresh Air Duct Diameter	in	3.0				
	Fresh Air Volume (2)	CF M	40	60	65	90	95

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Ceiling Cassette



Modine Manufacturing Company
1500 De Keven Avenue
Racine, Wisconsin 53403-2552
Phone: 1.866.823.1631

www.modinehvac.com

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Documents / Resources

	<p>MODINE CSD Ceiling Cassette Ductless Mini-Split and Chilled Water [pdf] Instruction Manual</p> <p>CSD, CSH, CCW, CSD Ceiling Cassette Ductless Mini-Split and Chilled Water, Ceiling Cassette Ductless Mini-Split and Chilled Water, Cassette Ductless Mini-Split and Chilled Water, Ductless Mini-Split and Chilled Water, Mini-Split and Chilled Water, Chilled Water, Water</p>
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References

- [Modine HVAC - Find Your Comfort Level](#)

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