



AIR 8-504.9

5H1015480001

September, 2018

**AIREDALE**

**INSTALLATION AND SERVICE MANUAL**  
The SLIMLINE PERFORMER Ceiling Cassette  
Models CSD, CSH and CCW



**! WARNING**

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death, and could cause exposure to substances which have been determined by various state agencies to cause cancer, birth defects or other reproductive harm. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

**IMPORTANT**

1. The use of this manual is specifically intended for a qualified installation and service agency. A qualified installation and service agency must perform all installation and service of these appliances.
2. CSD and CSH units contain the refrigerant R-410A. Review the R-410A Material Safety Data Sheet (MSDS) for hazards and first aid measures.
3. Refrigerant charging should only be carried out by an EPA-certified air conditioning contractor.

**! WARNING**

This unit contains R-410A high pressure refrigerant. Hazards exist that could result in personal injury or death. Installation, maintenance, and service must only be performed by an HVAC technician qualified in R-410A refrigerant and using proper tools and equipment. Due to much higher pressure of R-410A refrigerant, DO NOT USE service equipment or tools designed for refrigerants other than R410A.

**Inspection upon Arrival**

1. Inspect unit upon arrival. In case of damage, report immediately to transportation company and your local factory sales representative.
2. Check serial plate on unit to verify that the power supply meets available electric power at the point of installation.
3. Inspect unit received for conformance with description of product ordered (including specifications where applicable).

# SPECIAL PRECAUTIONS

## SPECIAL PRECAUTIONS

THE INSTALLATION AND MAINTENANCE INSTRUCTIONS IN THIS MANUAL MUST BE FOLLOWED TO PROVIDE SAFE, EFFICIENT, AND TROUBLE-FREE OPERATION. IN ADDITION, PARTICULAR CARE MUST BE EXERCISED REGARDING THE SPECIAL PRECAUTIONS LISTED BELOW. FAILURE TO PROPERLY ADDRESS THESE CRITICAL AREAS COULD RESULT IN PROPERTY DAMAGE OR LOSS, PERSONAL INJURY, OR DEATH. THESE INSTRUCTIONS ARE SUBJECT TO ANY MORE RESTRICTIVE LOCAL OR NATIONAL CODES.

### HAZARD INTENSITY LEVELS

1. **DANGER:** Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.
2. **WARNING:** Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.
3. **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.
4. **IMPORTANT:** Indicates a situation which, if not avoided, MAY result in a potential safety concern.

## DANGER

Appliances must not be installed where they may be exposed to potentially explosive or flammable atmosphere.

## WARNING

1. Disconnect power supply before making wiring connections to prevent electrical shock and equipment damage.
2. All appliances must be wired strictly in accordance with the wiring diagram furnished with the appliance. Any wiring different from the wiring diagram could result in a hazard to persons and property.
3. Any original factory wiring that requires replacement must be replaced with wiring material having a temperature rating of at least 105°C.
4. Ensure that the supply voltage to the appliance, as indicated on the serial plate, is not 5% greater than rated voltage.
5. When servicing or repairing of this equipment, use only factory-approved service replacement parts. A complete replacement parts list may be obtained by contacting Modine Manufacturing Company. Refer to the rating plate on the appliance for complete appliance model number, serial number and company address. Any substitution of parts or controls not approved by the factory will be at the owner's risk.

## CAUTION

1. CSD and CSH units contain the refrigerant R-410A. Review the R-410A Material Safety Data Sheet (MSDS) for hazards and first aid measures.
2. Refrigerant charging should only be carried out by an EPA-certified air conditioning contractor.

## CAUTION

1. Ensure that the supply voltage to the appliance, as indicated on the serial plate, is not 5% less than the rated voltage.
2. Units not approved for use in potable water systems.
3. Hot water supplied to the hot water heating option must not exceed 200°F temperature or 125 PSIG pressure.
4. Do not overcharge the refrigeration system. This can lead to elevated compressor discharge pressure and possibly flooding to the compressor with liquid.
5. Do not attempt to reuse any mechanical or electrical component which has been wet. Such component must be replaced.

## IMPORTANT

1. Make sure the ceiling grid is supported separately from the appliance. The ceiling must not be supported by any part of the appliance, fascia or any associated wiring or pipe work.
2. Start-up and adjustment procedures should be performed by a qualified service agency.
3. All refrigeration checks must be made by a qualified R-410A refrigeration technician.
4. Do not release refrigerant to the atmosphere. When adding or removing refrigerant, all national, state/province and local laws must be followed.
5. To check most of the Possible Remedies in the troubleshooting guide listed in Tables 23.1 through 26.1, refer to the applicable sections of the manual.

### Table of Contents

Inspection on Arrival	1
Special Precautions	2
Hazard Intensity Levels	2
SI (Metric) Conversion Factors	3
Unit Location	3-4
Installation	4-7
Start-Up Procedure	7-8
Sequence of Operation	8
Microprocessor Controls Operation	9-10
Start-Up Sheet - Example	11
Dimensions	12-16
Technical Data: CSD and CSH	17
Technical Data: CCW Units	18
Exploded Unit Drawing & Parts List: CCW 08 & 12	19
Exploded Unit Drawing & Parts List: CSD/CSH/CCW 18 - 42	20
Maintenance – Indoor Unit	21
Troubleshooting – Indoor Unit	22-25
Replacement Parts	25
Model Nomenclature	25
Serial Plate Example	25

# UNIT LOCATION

**Table 3.1  
SI (Metric) Conversion Factors**

To Convert	Multiply By	To Obtain	To Convert	Multiply By	To Obtain
"W.C.	0.249	kPa	feet	0.305	m
°F	(°F-32) x 5/9	°C	Gal/hr	0.00379	m <sup>3</sup> /hr
BTU	1.06	kJ	Gal/hr	3.79	l/hr
BTU/ft <sup>3</sup>	37.3	kJ/m <sup>3</sup>	gallons	3.79	l
BTU/hr	0.000293	kW	Horsepower	746	W
CFH (ft <sup>3</sup> /hr)	0.000472	m <sup>3</sup> /min	inches	25.4	mm
CFH (ft <sup>3</sup> /hr)	0.0000787	m <sup>3</sup> /s	pound	0.454	kg
CFM (ft <sup>3</sup> /min)	0.0283	m <sup>3</sup> /min	psig	6.89	kPa
CFM (ft <sup>3</sup> /min)	0.000472	m <sup>3</sup> /s	psig	27.7	"W.C.

## UNIT LOCATION

### ⚠ DANGER

Appliances must not be installed where they may be exposed to potentially explosive or flammable atmosphere.

### Unpacking

Remove the banding straps and lift the cardboard lid. Remove the fascia, packed in bubble wrap, and polystyrene packing pieces to expose the unit.

When removing the unit chassis from the box, the four corner brackets should be utilized for lifting. In order to protect the fascia from dirt and damage, it should be returned to the box until it is ready to be installed.

### Blank Off Pieces

When branch ducting is to be used, polystyrene pieces for blanking off fascia openings are included with the fascia packing. Up to two opposing sides may be blanked off. See Installation – Duct Collars.

### Positioning

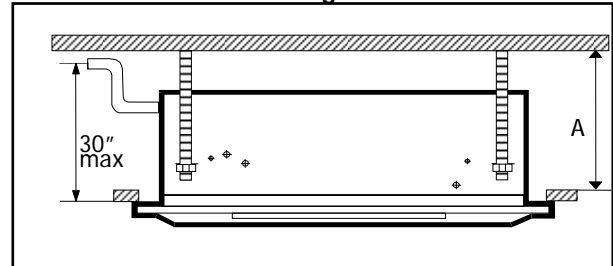
Before any installation work commences, the condensing unit location (where applicable), pipe work sizes and routes should be designed in accordance with good refrigeration practice.

The unit installation position should be selected with the following points in mind:

1. The appliance must be installed on a structure that is suitable to support the total weight of the appliance, piping, refrigerant and condensate.
2. Piping, electrical panel and condensate pump access panel should be readily accessible for maintenance purposes. A clearance of 2 feet is recommended around the electrical panel and condensate pump access panel.
3. The unit should not be positioned less than 5 ft. from a wall or similar obstruction, or in a position where the discharge air could blow directly on to the thermostat.
4. The unit should not be positioned directly above any obstructions.
5. The unit must be installed square and level.
6. The condensate drain should have sufficient downward slope (1" in 100") in any horizontal run between unit and drain. Maximum condensate pump lift is 30".

7. There should be sufficient room above the false ceiling for installing the unit. Minimum distance as shown in Figure 3.1 and Table 3.2.
8. In case of high humidity, clogged or damaged condensate piping, incorrect installation or faulty condensate pump, water may drip from the unit. Do not install the appliance where dripping water can cause damage.

**Figure 3.1  
Minimum Distance to Ceiling**



**Table 3.2  
Minimum Distance to Ceiling**

Models	A
CCW 08 & 12	12 <sup>3</sup> / <sub>4</sub> "
CCW 18 & 20	11 <sup>1</sup> / <sub>2</sub> "
CCW 33, 36 & CSD/CSH 18 - 42	13 <sup>1</sup> / <sub>2</sub> "

### Ceiling Opening Sizes

An opening in the false ceiling will then have to be cut to the size shown in Table 3.3.

**Table 3.3  
Ceiling Opening Sizes**

Models	L x W
CCW 08 & 12	23" x 23"
CSD/CSH/CCW 18, 20 & 24	34" x 34"
CSD/CSH/CCW 30, 33, 36 & 42	46" x 34"

# UNIT LOCATION / INSTALLATION

A cardboard template for ceiling cut-out and rod positions is included with the unit.

## Positioning Electro-Mechanical Thermostat

In addition to positioning the unit correctly, it is very important to locate the wall mounted thermostat in the optimum position to ensure good temperature control. Therefore the installation should be selected with the following points in mind:

1. Position the thermostat approximately 48 inches above floor level.
2. Do not position thermostat where it can be directly affected by the unit's discharge air stream.
3. Avoid external walls and drafts from windows and doors.
4. Avoid positioning near shelves and curtains as these restrict air movement.
5. Avoid heat sources e.g. direct sunlight, heaters, dimmer switches and other electrical devices.

## INSTALLATION

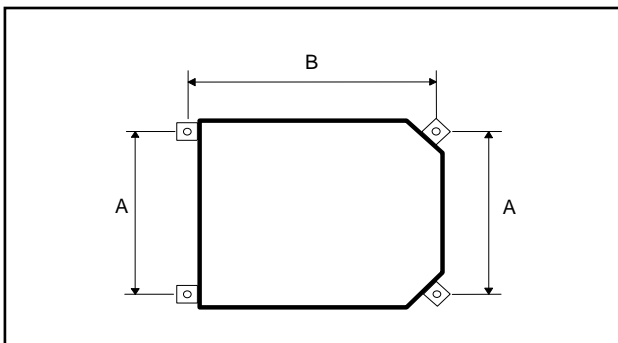
### IMPORTANT

Make sure the ceiling grid is supported separately from the appliance. The ceiling must not be supported by any part of the appliance, fascia or any associated wiring or pipe work.

## Hanger Bolts

The hanger bolts can now be installed (use 3/8" all thread rod) at the centers shown in Figure 4.1 and Table 4.1.

**Figure 4.1**  
Hanger Bolt Mounting Dimensions



**Table 4.1**  
Hanger Bolt Mounting Dimensions

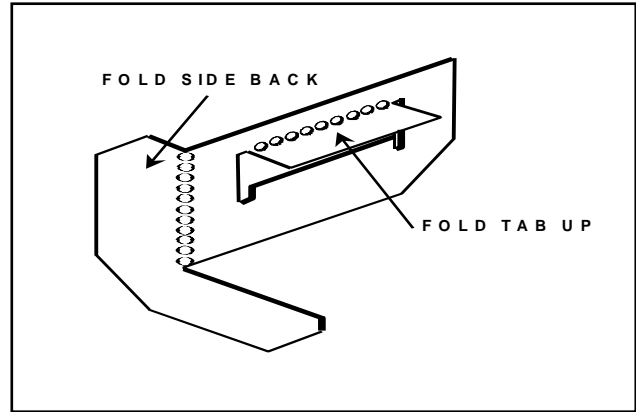
Models	A	B
CCW 08 & 12	19½"	23"
CSD/CSH/CCW 18, 20 & 24	28½"	31½"
CSD/CSH/CCW 30, 33, 36 & 42	28½"	43½"

Check the strength of the unit mounting hanger bolts. Refer to Tables 15.1 and 18.1 for unit weights.

## Installation Guide

An installation guide is included in the Airedale Owner Information packet provided with the unit. Prepare the installation guide by folding the flat metal piece, by hand, along the perforations as shown in Figure 4.2.

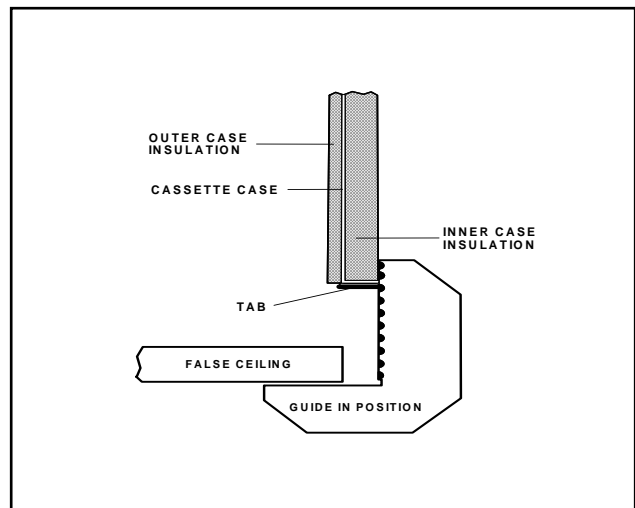
**Figure 4.2**  
Installation Guide Setup



The unit can now be lifted onto the hanging rods and leveled at the correct distance from the ceiling with the aid of the installation guide.

1. Hold the tab on the installation guide against the bottom of the cassette case with the guide pointing away from the cassette. See Figure 4.3.
2. Adjust the height of the cassette until the guide is level with the bottom of the false ceiling.

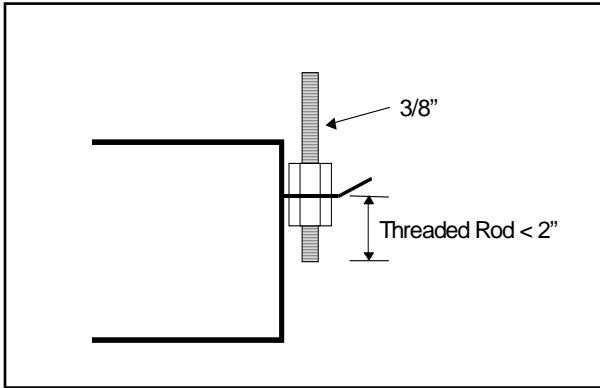
**Figure 4.3**  
Installation Guide Position



3. Secure the unit in position with locknuts and washers on both sides of the unit bracket. Ensure the threaded rod does not protrude more than 2" below the mounting bracket as shown in Figure 5.1.

# INSTALLATION

**Figure 5.1**  
**Threaded Rod Dimension**



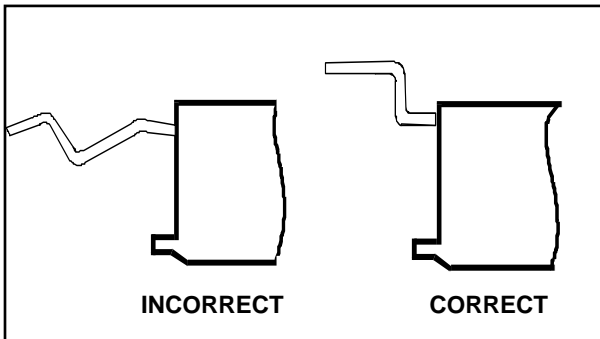
## Condensate Piping

The unit is supplied with a 3/8" ID flexible hose for connection to copper or plastic drain piping.

When installing the unit the following points should be remembered:

1. Maximum pump lift is 30".
2. The highest point in the condensate piping should be as close to the unit as possible. See Figure 5.2.

**Figure 5.2**  
**Condensate Piping**



3. Condensate piping should slope downwards in the direction of water flow with a minimum gradient of 1" in 100". There must not be any uphill gradients other than in the first 30" of piping from the unit.
4. When multiple units are connected to a common condensate drain, ensure the drain is large enough to cope with the volume of condensate from all units. It is also recommended to have an air vent in the condensate piping to prevent any air locks.
5. Condensate piping must not be installed where it may be exposed to freezing temperatures.

## Duct Collars

Branch duct and fresh air duct collars can be attached to the unit chassis by following the steps below:

1. Up to 2 branch ducts can be attached per unit.
2. Refer to the relevant dimensional drawing on pages 10 to 14 to become familiarized with knock-out hole locations.
3. The insulation is pre-cut to aid location and removal of the relevant section. Rub hand across surface of insulation to reveal exact location of knock-out.

4. Remove the metal knockout from the chassis.
5. Attach the duct collar to the chassis using self tapping screws.
6. Replace washable filter with the pleated filter provided with fresh air duct collar kit.

Note: See Figures 12.1, 13.1, 14.1, 15.1 and 16.1 for Branch Duct and Fresh Air Duct locations and dimensions.

## Piping Installation – CSD and CSH Units

### ⚠ CAUTION

1. CSD and CSH units contain the refrigerant R-410A. Review the R-410A Material Safety Data Sheet (MSDS) for hazards and first aid measures.
2. Refrigerant charging should only be carried out by an EPA-certified air conditioning contractor.

Note: R-410A refrigerant is the only approved refrigerant for this system.

The unit should be piped up in accordance with good refrigeration and/or plumbing practices.

The outdoor condensing unit must be connected to the indoor unit coil using field supplied refrigerant grade (ACR) copper tubing that is internally clean and dry. Units should be installed only with the tubing sizes for the approved system combination as specified in Tables 16.1 and 17.1.

Condensing units are factory charged with refrigerant for a matching indoor coil plus 15 feet of field supplied lines.

See the installation and maintenance manual provided with the condensing unit for installation, evacuation and system charge information.

On models with Modine controls, install the factory provided Outdoor Air Sensor outside, or in the fresh air supply duct upstream from the unit - near outside air intake - to ensure accurate readings of outdoor air temperature. Wire extension and a plug are included.

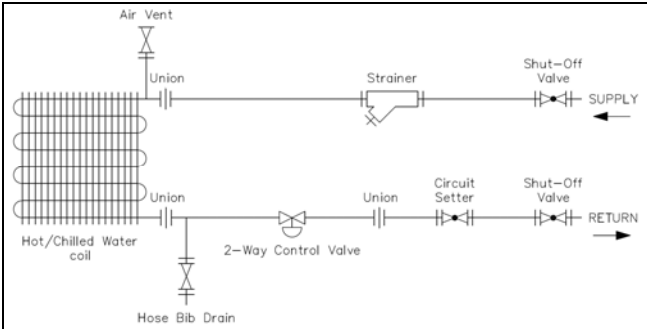
## Piping Installation – Hot/Chilled Water Coils

1. Branch piping to and from the unit should include swing joints to allow for expansion and contraction of the piping without placing a strain on the unit coil.
2. Install pipe unions and shut-off valves in lines to and from each coil to allow maintenance or replacement of unit without shutting down and draining entire system. See Figure 6.1.
3. Include a circuit setter in return line for water flow regulation.
4. A drain valve (hose bib) should also be provided for each coil line to allow removal of water from the coil if located in an area subject to freezing.
5. It is advisable to use a pipe line strainer before each coil.
6. Provide adequate pipe hangers, supports, or anchors to secure the piping system independently of the unit.

# INSTALLATION

7. On 2-pipe systems with Modine or microprocessor controls, install the factory provided Changeover Sensor on the main supply water line upstream from the unit where water maintains flow to ensure accurate readings of water temperature. Wire extension and a plug are included.
8. On models with Modine controls, install the factory provided Outdoor Air Sensor outside, or in the fresh air supply duct upstream from the unit - near outside air intake - to ensure accurate readings of outdoor air temperature. Wire extension and a plug are included.

**Figure 6.1**  
**Hot/Chilled Water Coil Piping Installation**



## Piping Insulation

Refrigerant, chilled water and condensate pipes should be insulated right up to the unit chassis to prevent condensation which can damage the ceiling and objects located below the piping. Chilled water valves must also be insulated to prevent sweating.

## Wiring

### ⚠ WARNING

1. Disconnect power supply before making wiring connections to prevent electrical shock and equipment damage.
2. All appliances must be wired strictly in accordance with the wiring diagram furnished with the appliance. Any wiring different from the wiring diagram could result in a hazard to persons and property.
3. Any original factory wiring that requires replacement must be replaced with wiring material having a temperature rating of at least 105°C.
4. Ensure that the supply voltage to the appliance, as indicated on the serial plate, is not 5% greater than rated voltage.

### ⚠ CAUTION

Ensure that the supply voltage to the appliance, as indicated on the serial plate, is not 5% less than the rated voltage.

Installation of wiring must conform with local building codes, or in the absence of local codes, with the National Electric Code ANSI/NFPA 70 – Latest Edition. Unit must be electrically grounded in conformance to this code. In Canada, wiring must comply with CSA C22.1, Electrical Code.

Electric wiring must be sized to carry the full load amp draw of the motor, starter and any controls that are used with the unit.

This equipment in its standard form is designed for an electrical supply of 208-230V, 1Ph, 60Hz. When connection to a 115V, 1Ph, 60Hz supply is necessary, a factory mounted step up transformer must be fitted to the unit.

Any damage to or failure of units caused by incorrect wiring of the units is not covered by warranty.

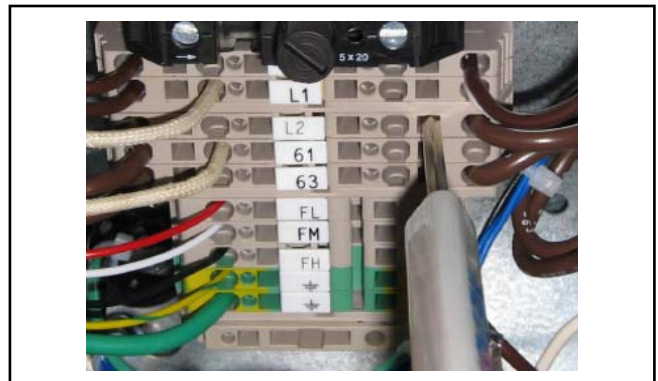
Once the refrigeration pipe work is complete, the electrical supply can be connected by routing the cable through the appropriate casing hole and connecting the supply and ground cables to the unit's power terminals. A plastic sleeve is provided inside the control panel. Low voltage control wiring must run through the plastic sleeve on the inside of the control panel.

## Terminal Strip Connections

The terminal strip connections are designed to clamp down on the wires. To properly connect the wires to the terminal strip:

1. Push a small flat head screwdriver into the square hole on the terminal. Press firmly until the screwdriver hits the back stop and opens the terminal. See Figure 6.2.
2. Remove approximately 3/8" of insulation from the end of the wire and push the stripped wire into the oval hole in the terminal.
3. Remove the screwdriver. Pull on the wire to make sure that it is securely clamped in the terminal.
4. Make sure that the terminal clamp is in contact with bare wire (insulation removed).

**Figure 6.2**  
**Terminal Strip**



## Fascia Assembly

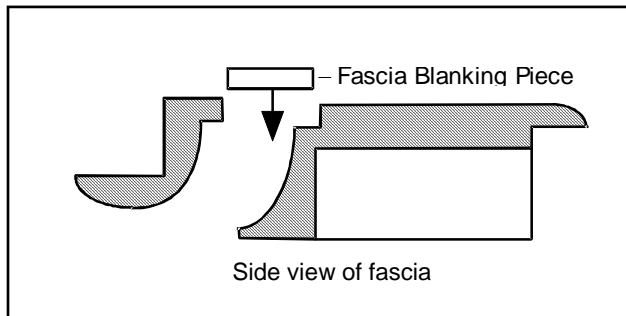
Once the services have been connected, the four (4) fascia mounting bolts can be unscrewed approximately 1" from the condensate tray support channels.

# INSTALLATION/START-UP PROCEDURE

The fascia can now be unpacked for fitting to the unit chassis. Ensure the black fir tree fasteners holding the fascia polystyrene are pushed in firmly in case of transit vibration. If a fascia aperture needs blanking off, then take one of the polystyrene blanking pieces and push it into the recess in the polystyrene fascia insulation. See Figure 7.1. Install the fascia by removing the inlet grilles and filters, locating the four fascia mounting bolts on the chassis through the four keyhole brackets on the fascia and then sliding the fascia sideways until it locks into position.

Note: Up to two non-adjacent sides can be blanked off.

**Figure 7.1**  
**Fascia Blanking Piece**



Note: Make sure the foam insulating strip profile on the fascia matches the square and angled corners of the unit housing.

Before tightening the fascia to the unit, connect the two halves of the vane motor's plug and socket connection (medium and large size units).

On microprocessor controlled units, ensure that the display panel cable is routed to the electrical panel and securely fastened to its connector on the microprocessor circuit board. (Refer to the unit's electrical wiring schematic). Take care to ensure that the connector is connected in the proper orientation and that the wires are not routed such that they may become trapped, cut, broken or chafed.

The fascia can now be tightened up to the unit chassis until a good seal is obtained between fascia and chassis.

Note: Do not over tighten the bolts. To do so may cause damage to the fascia.

With filters in place, the inlet grilles can now be fitted to the fascia to complete the installation.

## START-UP PROCEDURE

### IMPORTANT

Start-up and adjustment procedures should be performed by a qualified service agency.

See start-up sheet example - Figure 11.1

## Pre-Start Checks

Once installation is complete it is important that the following pre-start checks are made:

1. All piping is complete and insulated where necessary.
2. All fans are able to rotate freely.
3. The unit and interconnecting piping have been evacuated correctly and the condensing unit service valves are open (CSD and CSH units only).
4. All electrical connections (both power and control) are properly terminated.
5. All condensate drains are installed correctly.
6. The power supply is of the correct voltage and frequency.
7. The units are properly grounded in accordance with current electrical codes.
8. For microprocessor controlled units, check that the display panel cable is properly connected to the microprocessor main circuit board and that the jumper links are correctly set (refer to unit wiring schematic). If the links are set incorrectly, remove main power supply before making any changes.
9. For microprocessor controlled units, check that the batteries are installed in infrared/pendant transmitter.

## CSD and CSH Units – Control Circuit Checks

Note: See the installation and maintenance manual provided with the condensing unit for start-up information.

1. Ensure that the condensing unit start-up procedure has been carried out, as detailed in the condensing unit installation and maintenance manual.
2. The compressor should be isolated by removing the connection at the Y1 terminal on the indoor unit. Main power can now be applied to the indoor and outdoor units. A system electrical check can now be carried out.
3. Switch on the indoor unit via the wall mounted thermostat and check that the fan cycles correctly. - Note, in some models there is a 2 minute fan run on time to remove residual heat from the unit, if the unit is switched off during the heating mode.
4. On medium and large size units, check that the motorized vane sweep functions correctly by toggling the function on or off via the toggle switch on the side of the electrical panel (electro-mechanical units).
5. Check the operation of the condensate pump by pouring 7-8 ounces of water down the pump outlet, switch the unit on, select cooling mode and the lowest possible temperature set point then observe the water being pumped from the unit.
6. Where fitted, check the operation of the hot water valve or the electrical heat elements by switching the system to the heating mode and selecting the highest possible temperature set point.
7. The compressor signal Y1 (disconnected from the indoor unit in step 1) can now be re-connected and main power applied to the system.

Note: The 24V power for the indoor unit control circuit is supplied from a unit factory-installed transformer. When the indoor and outdoor units are supplied from separate main supplies, care must be taken to ensure that the outdoor unit is isolated whenever the indoor unit power is removed. Failure to do so may result in freeze ups and other damage to the unit.

# START-UP PROCEDURE/SEQUENCE OF OPERATIONS

## Chilled Water Unit – Control Circuit Checks

A thorough pipe work check and pressure test should be performed before the unit controls are set up

1. Isolate the unit from the chilled water supply. A system electrical check can now be carried out.
2. Switch on the indoor unit via the infrared/pendant transmitter or wall mounted thermostat and check that the fan cycles correctly. - Note, in some models there is a 2 minute fan run on time to remove residual heat from the unit, if the unit is switched off during the heating mode.
3. On models with microprocessor controls, check that the High, Medium and Low fan speeds are operating correctly by changing the fan speed via the transmitter.
4. On medium and large size units, check that the motorized vane sweep functions correctly by toggling the function on or off, either via the transmitter (micro units) or via the toggle switch on the side of the electrical panel lid (electro-mechanical units).
5. On micro controlled units, should it be required, check that the built-in timer function is programmed and operating correctly. When the timer is activated, the yellow LED on the fascia display panel should be lit.
6. Check the operation of the condensate pump by pouring 7-8 ounces of water down the pump outlet, switch the unit on, select cooling mode and the lowest possible temperature set point then observe the water being pumped from the unit.
7. Check the operation of the chilled water valve by switching the system to the cooling mode and forcing a call for cooling.
8. Where fitted, check the operation of the hot water valve or the electrical heat elements by switching the system to the heating mode and forcing a call for heat.
9. Allow chilled water to enter the unit and vent air from the unit by opening the 1/4" air bleed. Re-tighten the bleed screw once all air has been removed.
10. Repeat steps 1-4 above for all units in the same system.

The units are now ready for the system balance to be performed.

## Sequence of Operation

### DIGIT 8=E: ELECTRO-MECHANICAL CONTROLS

A 24V signal from the thermostat to terminal G supplies power the blower motor(s), condensate pump and vane motor (if equipped). A toggle switch on the control box can be used to switch the oscillating vanes on or off. The condensate pump will run continuously, as long as the blower is energized. A call for heating, at terminal W, or cooling, at terminal Y, will energize the water valve actuator and allow water to flow through the cassette coil. When the call for heating or cooling is satisfied the valve will close. If the temperature drops below the set-point of the coil freeze stat, the water valve with automatically open to circulate water through the coil.

If the condensate float switch detects a high level of water in the condensate tray, the switch will open, activate the condensate pump and disable the heating/cooling signal until the water level drops down to normal.

### DIGIT 8 = M: MICRO-PROCESSOR CONTROLS

#### INDOOR FAN OPERATION

The indoor fan will run continuously at the most recently set speed or will alter the speed according to the room temperature conditions when set to Auto. The indoor fan will continue to run until the unit is turned off by the user or via a pre-set time setting. When the unit is turned off during heating, the indoor fan will continue to run for approximately two minutes, this helps to dissipate residual heat from the electric heaters. In SLEEP mode the fan will cycle with a call for heating or cooling.

#### TEMPERATURE CONTROL

The controller will switch heating or cooling loads in order to maintain the temperature setpoint. The dead band is programmed to 4°F. Under normal operation, cooling or heating will be activated at the limits of the dead band and will continue to operate until setpoint is achieved. The temperature setpoint can be adjusted between 58 and 90°F in 2°F increments.

#### POWER FAILURE

The controller will auto restart in its previous mode of operation after a power failure. When power is restored the controller will revert to its last operating mode, e.g. if the controller was turned on before power fail, after power is restored the controller will automatically turn on. Alternatively if the controller was turned off before power fail after power is restored the controller will remain off.

#### ALARMS

- Return Air Sensor Failure
- Condensate High Level
- Indoor Coil Under Temperature (If freeze stat is on unit)

#### Setting Jumper Links

Jumper Links are located on the Microprocessor Controller PCB to offer different control features and their functionality is listed below:

Jumper Links	Short	Open
JMP1	In heat or cool modes, fan operates in auto mode	In cool mode, fan runs continuously. In heat mode fan runs on demand.
JMP2	"4-Pipe" Configuration Cool output connected to cooling device. Heat output connected to heating device.	"2-Pipe" Configuration Cooling and heating signals sent from cool output
JMP3	N/A	N/A

Jumper link settings must be made with the power turned off. Jumper link 1 will be factory set to ON, jumper link 2 will be factory set to suit the type of unit. Jumper link 3 will be factory set to OPEN.



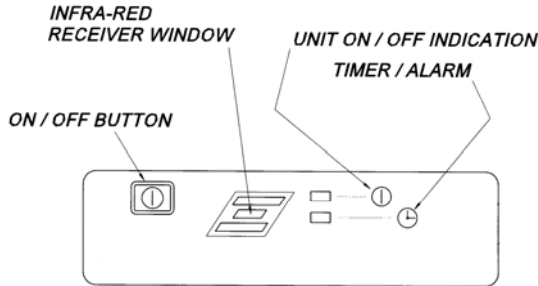
# MICROPROCESSOR OPERATION

## Micro-Processor Controls Operation

### Receiver

The IR receiver is an extension of the control board and is located on the fascia of the unit, connected by means of a 7 pin plug and socket.

**Figure 9.1**  
**Unit Mounted Receiver**



The microprocessor controller has a built-in diagnostics feature so that in the event of an alarm, the nature of the fault can be determined. The yellow timer/alarm LED flashes on the fascia in a pre-determined frequency depending on the fault. These are identified below:

LED NAME	LED State	System State
"On"	ON	ON
"On"	OFF	OFF
"Timer"	Blinking	a. Timer ON b. Power returned after break while Timer was active
"Timer" & "On"	Blinking synchronous	a. Fault "F1" indication – error with unit mounted return air sensor. b. Fault on T4,0 input (input was opened more than 10 seconds) - Condensate High Level - Freeze stat alarm

### Transmitter




#### On/Off

Press the ON/SEND button to activate the cassette unit and/or updating information.



#### Fan Speeds

Press the FAN button to switch between fan speeds:

- High Speed 
- Medium Speed 
- Low Speed 
- Auto Speed **A**



Press the ON/SEND button to send information to the cassette unit.

### Modes

Press the MODE button to switch between:

- Cool 
  - Heat 
  - Auto Change-over 
  - Fan Only 
- 
- The diagram shows the mode selection area of the remote transmitter with buttons for 'Off', '+', 'Fan', 'Mode', and 'On/Send'.

Press the ON/SEND button to send information to the cassette unit.

**Figure 9.2**  
**Remote Transmitter**



# MICROPROCESSOR OPERATION

## Transmitter (continued)

### Temperature Set-Point

Adjust the desired temperature using the (+) or (-) buttons.



Press the ON/SEND button to send information to the cassette unit.

### Real Time Clock and Day

Press the SELECT button - CLOCK SET will flash.



Press the (+) or (-) buttons - the hour will flash. Adjust the hours using the (+) or (-) buttons.



Press the SELECT button again - minutes will flash. Adjust the minutes using the (+) or (-) buttons.



Press the SELECT again to return to normal display mode. Press the ON/SEND button to send information to the cassette unit.

## Timer

**IMPORTANT:** If no button is pressed for 10 seconds the display will return to normal display mode.

### START TIME:

Press the SELECT button twice - PROGRAM & START (flashing) will appear on display.



Press the (+) or (-) buttons - the hour will flash. Adjust the hours using the (+) or (-) buttons.



Press the SELECT button again - minutes will flash. Adjust the minutes using the (+) or (-) buttons.



### STOP TIME:

Press the SELECT button twice - PROGRAM & STOP (flashing) will appear on display.



Press the (+) or (-) buttons - the hour will flash. Adjust the hours using the (+) or (-) buttons.



Press the SELECT button again - minutes will flash. Adjust the minutes using the (+) or (-) buttons.



Press the SELECT button - the TIMER will blink. Select TIMER ON (black icon) or OFF (white icon) using the (+) or (-) buttons.



Press the ON/SEND button to send information to the cassette unit.

**IMPORTANT:** when the Timer is active, and there is power failure to the cassette unit the display will show "ON" flashing.

## Batteries Replacement

When the batteries are low, the display of the remote control will dim. If the batteries will not be replaced the display will turn off completely.

1. Pull the batteries cover down to reveal the batteries.
2. Remove the old batteries.
3. Wait for 10 minutes before installing the new batteries.
4. Install two new AAA batteries - Pay attention to the polarity.
5. Return the batteries cover to place.

**IMPORTANT:** The remote control will not operate unless at least 10 minutes pass between removing the old batteries and installing the new ones.

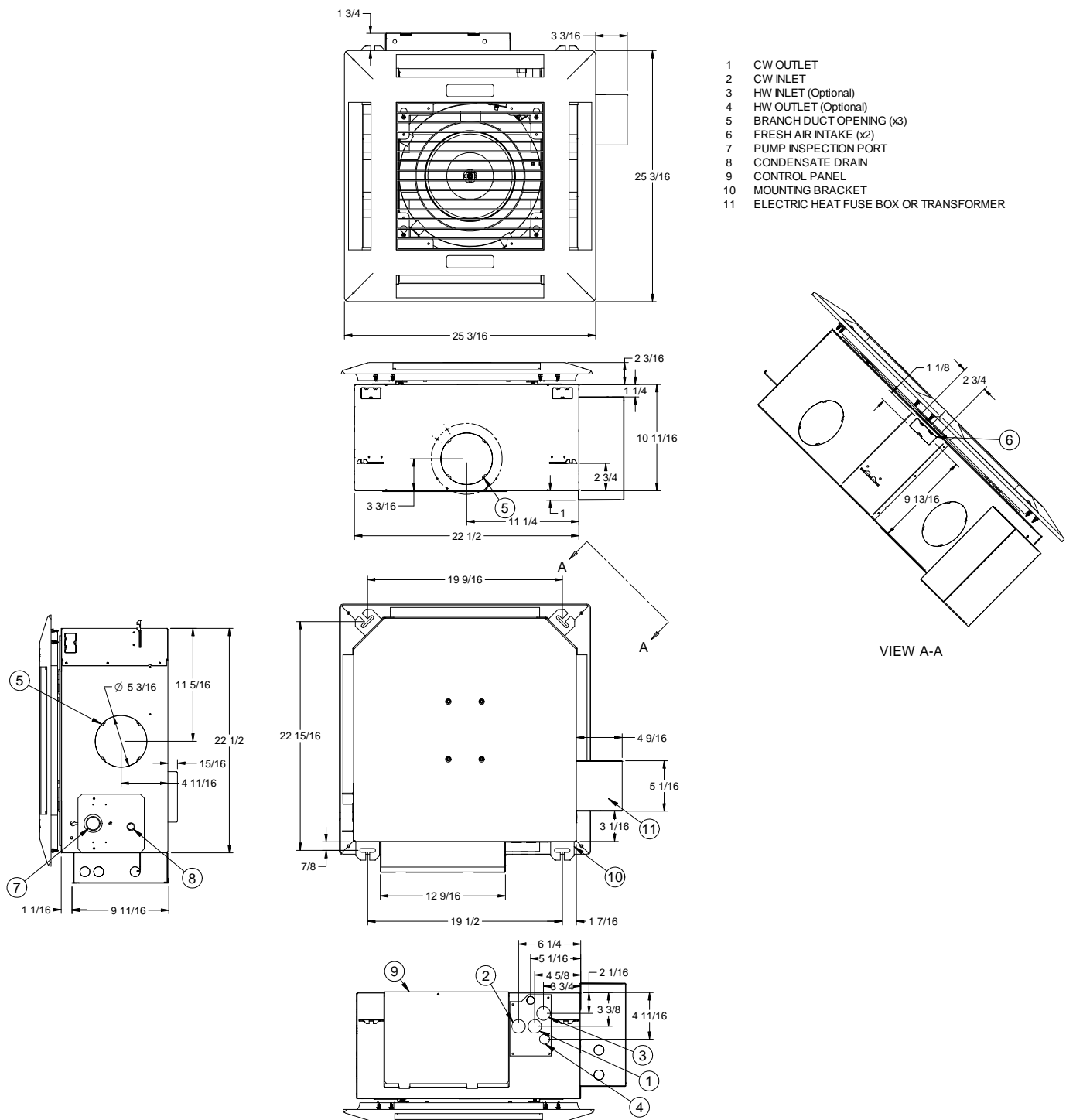
# START UP SHEET – EXAMPLE

Figure 11.1  
Start Up Sheet – EXAMPLE

<b>Cassette Start up Sheet</b>										
This Document should be returned to your supplier within 30 days of start up to validate warranty										
Date	<input type="text"/>	Job Reference	<input type="text"/>				TAG ID	<input type="text"/>		
Technician	<input type="text"/>		Unit Model	<input type="text"/>			Room ID	<input type="text"/>		
Drawing #	<input type="text"/>		Serial Number	<input type="text"/>						
Sales Rep	<input type="text"/>		Installer	<input type="text"/>						
<b><u>Pre-Start up Check List</u></b>										
Unit Satisfactory	Comments:		<input type="text"/>							
Dry Nitrogen Pressure Test	Initial Test Pressure		<input type="text"/>			Psig				
	Final Test Pressure		<input type="text"/>			Psig				
	Test Duration		<input type="text"/>			Mins				
PCB Jumpers links set.	<u>J1</u>	On	Off	<u>J2</u>	On	Off	<u>J3</u>	On	Off	<input type="text"/>
All Electrical Connections Tight	(Indoor / Outdoor / Thermostat)		<input type="text"/>			<input type="text"/>		<input type="text"/>		
<b><u>Indoor Unit Check List</u></b>										
Supply Voltage	Primary	<input type="text"/>	Secondary	<input type="text"/>	Low Volt	<input type="text"/>				
Unit Level	<input type="text"/>									
Unit Cycled On / Off	<input type="text"/>									
Fan Speeds Correct	(Microprocessor only)		<input type="text"/>							
Vane Sweep Operates	(Medium and Large Cassettes only)		<input type="text"/>							
Condensate Float Switch Operates	(High water level in sump disables cooling signal)		<input type="text"/>							
Condensate Pump ejects test water	(10 fl oz)		<input type="text"/>							
Condensate Drain Installed Correctly	(Maximum Pump Lift, 30 Inch)		<input type="text"/>							
Timer Functions Set	(Microprocessor only)		<input type="text"/>							
Supply Air Knockouts used	5" or 6" Knockouts (Qty 1 – 4)		<input type="text"/>							
Fresh Air Knockouts used	3" Knockouts (Qty 1 – 3)		<input type="text"/>							
Freeze Stat Tested	Auto Reset (Out 35°F in 55°F)		<input type="text"/>							
Set Points	Mode	<input type="text"/>	Fan Speed	<input type="text"/>	Temp	<input type="text"/>				
<b><u>Outdoor Unit Check List</u></b>										
Brand	<input type="text"/>	Model	<input type="text"/>	Serial Number	<input type="text"/>					
Supply Voltage	Primary		<input type="text"/>	Secondary	<input type="text"/>					
Suction Pressure	<input type="text"/>									Psig
Liquid Pressure	<input type="text"/>									Psig
Superheat @ Compressor	<input type="text"/>									°F
Outdoor Air Temperature (Air on coil)	<input type="text"/>									°F
Indoor Air Temperature	<input type="text"/>									°F
Low Ambient Kit Fitted	<input type="text"/>									
Hard Start Kit Fitted	<input type="text"/>									
Crankcase Heater Fitted	<input type="text"/>									
<b>Technicians / Customer Notes</b>										
<input type="text"/>										

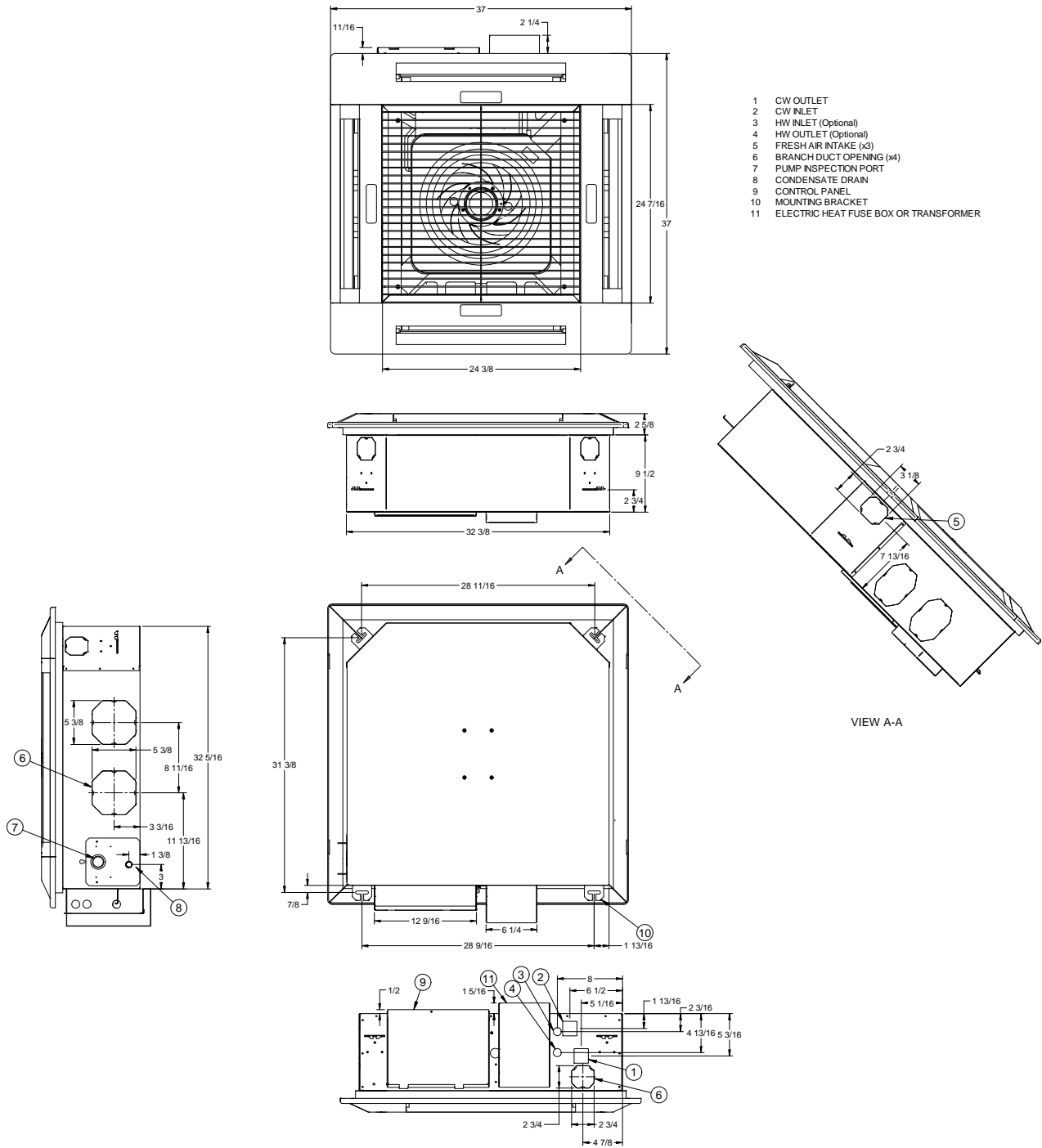
# DIMENSIONS – SMALL CHASSIS

Figure 12.1  
Dimensions – Small Chassis: CCW 08 and CCW 12



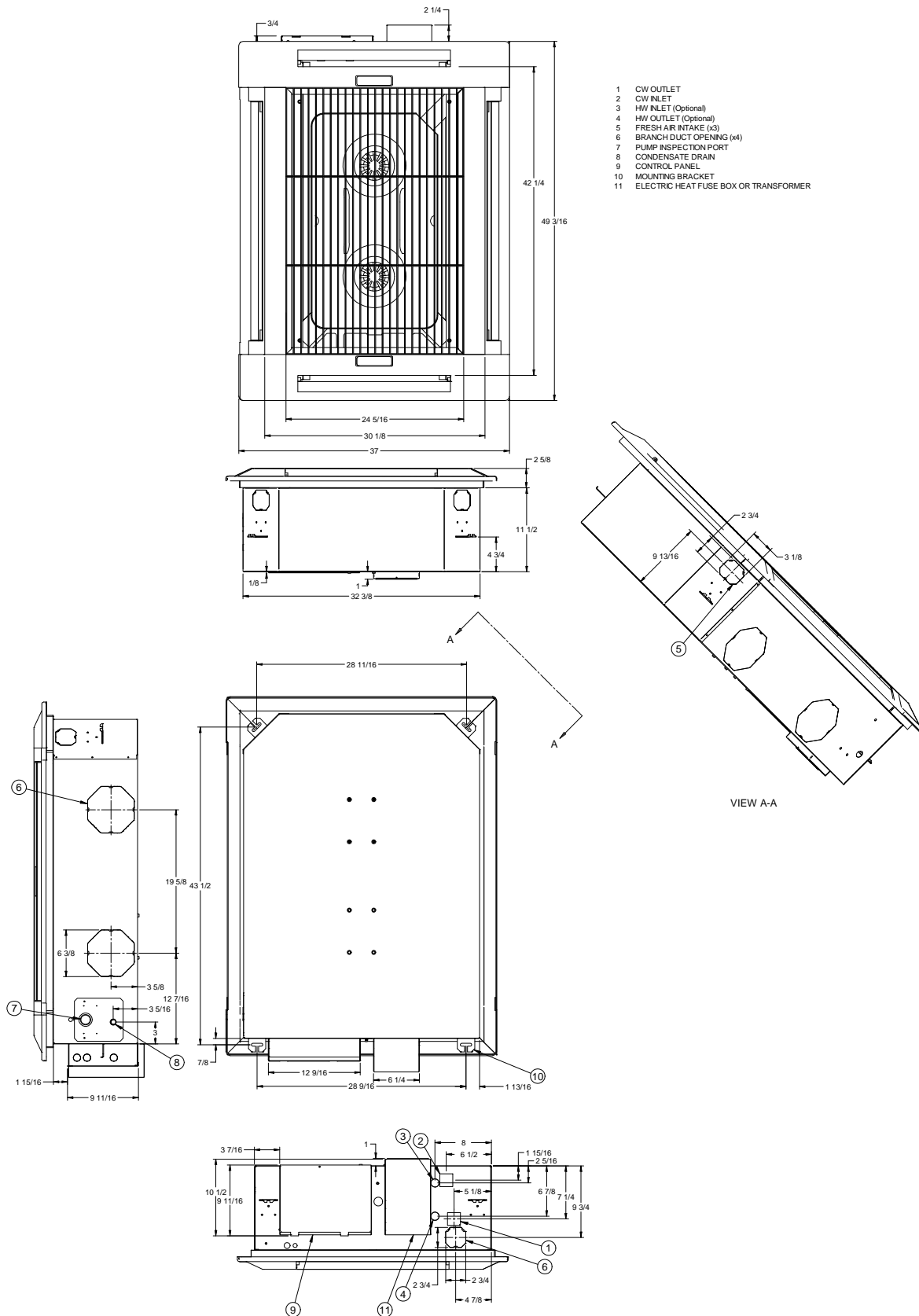
# DIMENSIONS – MEDIUM CHASSIS

Figure 13.1  
Dimensions – Medium Chassis: CCW 18 and CCW 20



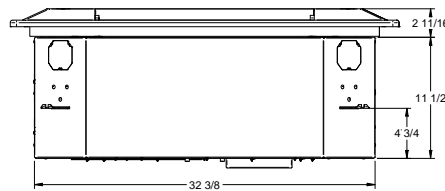
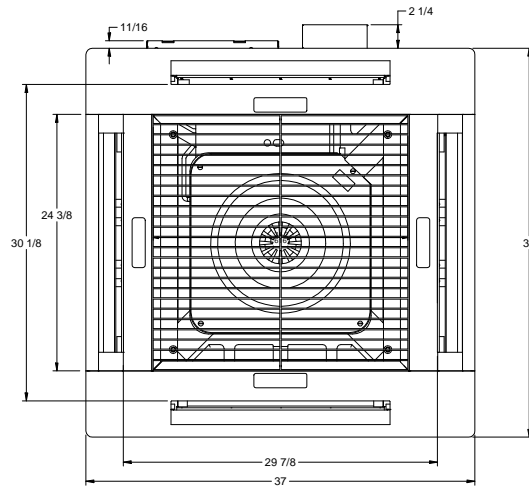
# DIMENSIONS – LARGE CHASSIS

Figure 14.1  
Dimensions – Large Chassis: CCW 33 and CCW 36

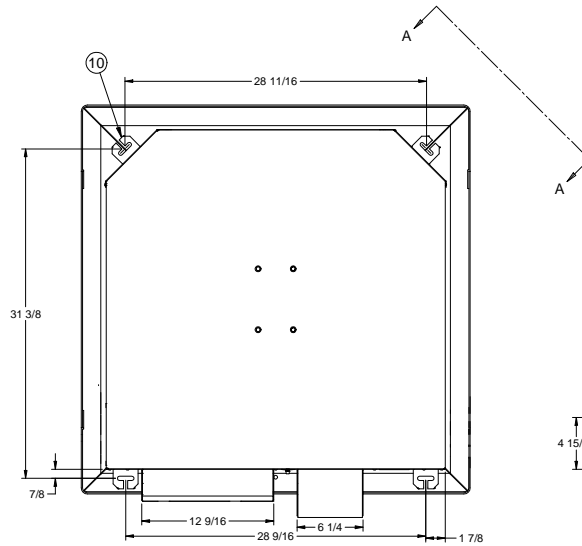
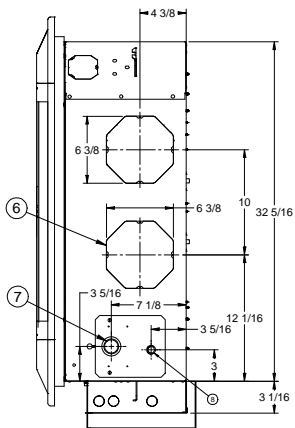
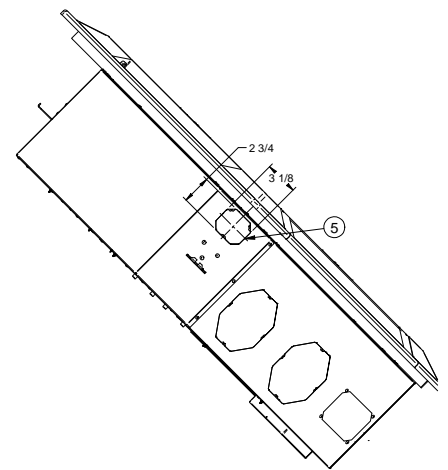


# DIMENSIONS – MEDIUM CHASSIS

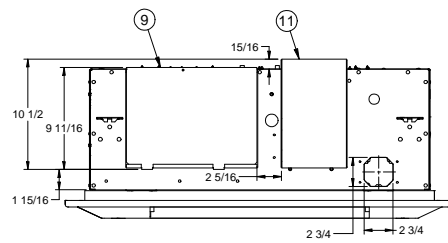
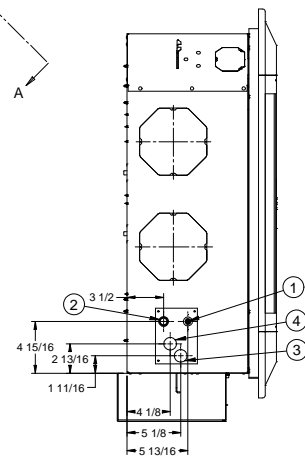
Figure 15.1  
Dimensions – Medium Chassis: CSD/CSH 18 and CSD/CSH 24



- 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

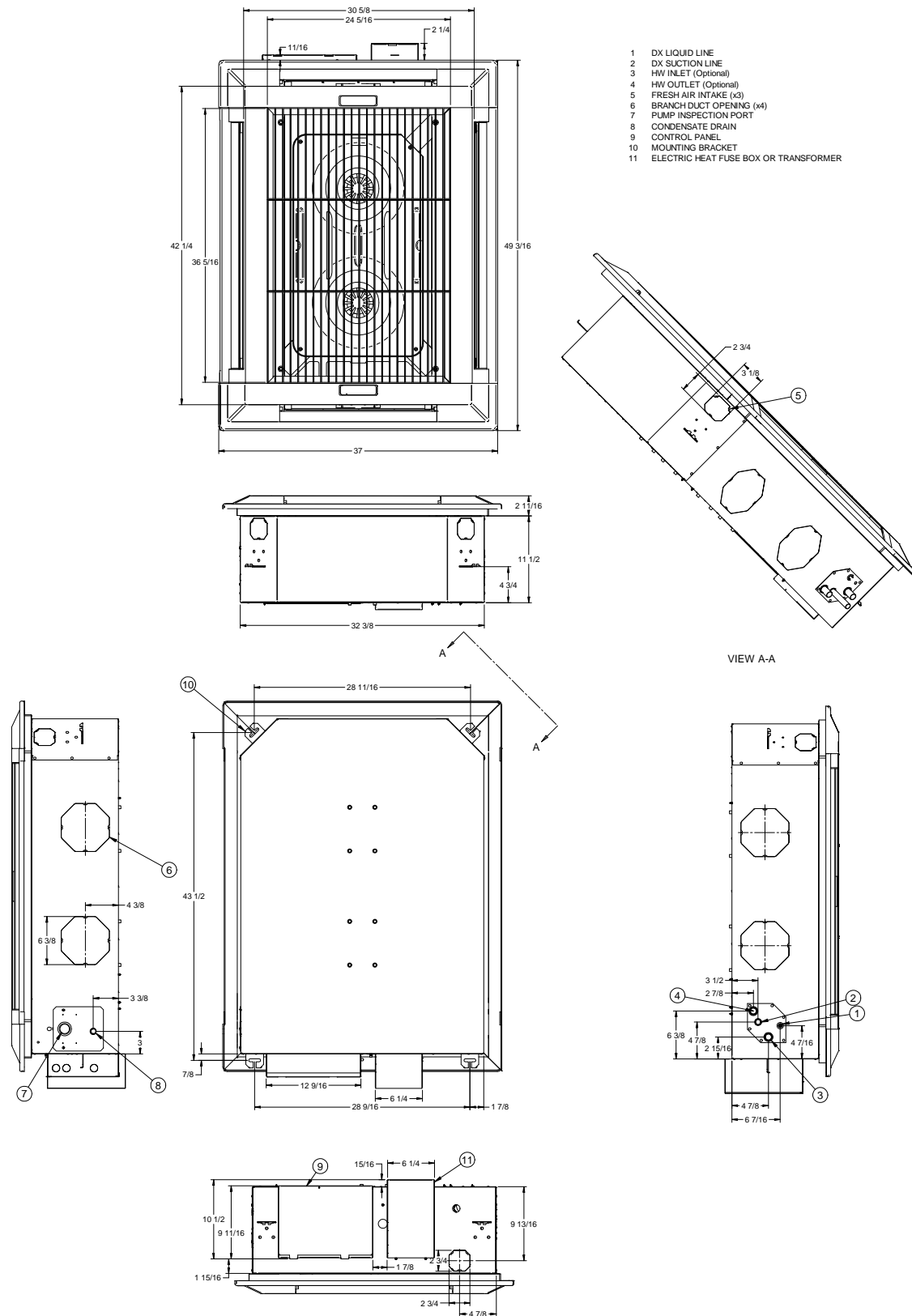


VIEW A-A



# DIMENSIONS – LARGE CHASSIS

Figure 16.1  
 Dimensions – Large Chassis: CSD/CSH 30, CSD/CSH 36 and CSD/CSH 42





# TECHNICAL DATA – DX COOLING ONLY AND HEAT PUMP UNITS

**Table 17.1**  
**Technical Data – DX Cooling Only and Heat Pump Units**

	Units	CSD/CSH 18	CSD/CSH 24	CSD/CSH 30	CSD/CSH 36	CSD/CSH 42
Nominal Cooling Capacity (1)	BTU/h	19200	23000	31400	38200	42500
Nominal Heating Capacity (2)	BTU/h	16400	21400	27400	32400	37200
<b>Construction</b> Material: Fascia Material: Chassis Color: Fascia Fire rating		High Impact Polystyrene Galvanized Steel Pearl Grey UL94 VO				
<b>Evaporator</b> Type Quantity Face Area Nominal Airflow Discharge		<b>Finned Tube</b>				
		1	1	1	1	1
	Ft²	4.0	4.0	5.2	5.2	5.2
	High Med Low	cfm	cfm	cfm	cfm	cfm
		590	670	920	1000	1130
		540	590	800	920	1000
		465	540	680	800	920
		4-way	4-way	4-way	4-way	4-way
<b>Fan</b> Type Quantity Diameter Horsepower (per fan)		<b>Centrifugal</b>				
		1	1	2	2	2
	in	14	14	14	14	14
	HP	1/6	1/6	1/6	1/6	1/6
<b>Refrigeration</b> Number of Circuits Refrigerant Type		1	1	1	1	1
		R-410A	R-410A	R-410A	R-410A	R-410A
<b>Weights</b> Weight - Chassis Weight - Fascia	lb	66	66	97	97	97
	lb	18	18	21	21	21
<b>Connections (4)</b> Suction Liquid Condensate (ID)	in	3/4	3/4	3/4	3/4	3/4
	in	3/8	3/8	3/8	3/8	3/8
	in	3/8	3/8	3/8	3/8	3/8
<b>Filtration</b> Type Quantity Arrestance		<b>Wire Framed Periframe (Standard)</b>				
		2	2	3	3	3
		80%	80%	80%	80%	80%
<b>Condensate Pump</b> Maximum Head Nominal Flowrate	in	30	30	30	30	30
	gpm	0.1	0.1	0.1	0.1	0.1
<b>Options</b> Electric Heating Capacity HW Heating Capacity (5) HW Coil Connection (OD) Max Branch Duct Connections Branch Duct Diameter Branch Duct Air Volume (6) Fresh Air Connections Fresh Air Duct Diameter Fresh Air Volume (7)	kW BTU/h in (qty) in cfm (qty) in cfm	3.0 38,746 7/8 2 5 115 1-3 3 60	3.0 41,993 7/8 2 5 130 1-3 3 65	5.0 56,609 7/8 2 6 180 1-3 3 85	5.0 59,600 7/8 2 6 200 1-3 3 90	5.0 64,268 7/8 2 6 220 1-3 3 95

(1) Nominal cooling capacity based on 80/67°F DB/WB and 95/75°F 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 ARI 210/240.

(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 180°F inlet / 160°F 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.

# TECHNICAL DATA – CHILLED WATER UNITS

**Table 18.1**  
**Technical Data – Chilled Water Units**

	Units	CCW08	CCW12	CCW 18	CCW 20	CCW 33	CCW 36
<b>Nominal Cooling Capacity (1)</b>	BTU/h	7,800	11,200	18,200	18,600	31,100	34,300
<b>Nominal Cooling Capacity (2)</b>	BTU/h	5,400	6,800	16,500	16,500	29,700	29,700
<b>Construction</b> Material: Fascia Material: Chassis Color: Fascia Fire rating		High Impact Polystyrene Galvanized Steel Pearl Grey UL94 VO					
<b>Chilled Water Coil</b> 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 Med Low	cfm 330 (200)	cfm 360 (200)	cfm 600 (520)	cfm 620 (520)	cfm 940 (880)	cfm 1080 (880)
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
<b>Fan</b> Type		Centrifugal					
Quantity		1	1	1	1	2	2
Diameter	in	12	12	15	15	14	14
Horsepower (per fan)	HP	1/8	1/8	1/6	1/6	1/6	1/6
<b>Weights</b> Weight - Chassis Weight - Fascia	lb lb	40 5	40 5	64 18	64 18	97 21	97 21
<b>Connections</b> Chilled Water Inlet Chilled Water Outlet Condensate (ID)	in in in	5/8 5/8 3/8	5/8 5/8 3/8	7/8 7/8 3/8	7/8 7/8 3/8	7/8 7/8 3/8	7/8 7/8 3/8
<b>Filtration</b> Type		Wire Framed Periframe (Standard)					
Quantity		1	1	2	2	3	3
Arrestance		80%	80%	80%	80%	80%	80%
<b>Condensate Pump</b> Maximum Head Nominal Flowrate	in gpm	30 0.1	30 0.1	30 0.1	30 0.1	30 0.1	30 0.1
<b>Options</b> Electric Heating Capacity HW Heating Capacity (4) HW Heating Capacity (5) HW Coil Connection (OD) Max Branch Duct Connections Branch Duct Diameter Ducted Air Volume (6) Fresh Air Connections Fresh Air Duct Diameter Fresh Air Volume (7)	kW BTU/h BTU/h in (qty) in cfm (qty) in cfm	1.5 17,100 13,400 5/8 2 5 80 1-2 3 40	1.5 N/A N/A N/A 2 5 80 1-2 3 40	3.0 27,300 24,800 5/8 2 5 100 1-3 3 60	3.0 27,900 24,800 5/8 2 5 125 1-3 3 65	5.0 41,200 42,300 5/8 2 6 200 1-3 3 90	5.0 45,200 42,300 5/8 2 6 220 1-3 3 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 MERV10 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 180°F inlet / 160°F outlet, 208V/1Ph/60Hz supply voltage, and Standard filters.

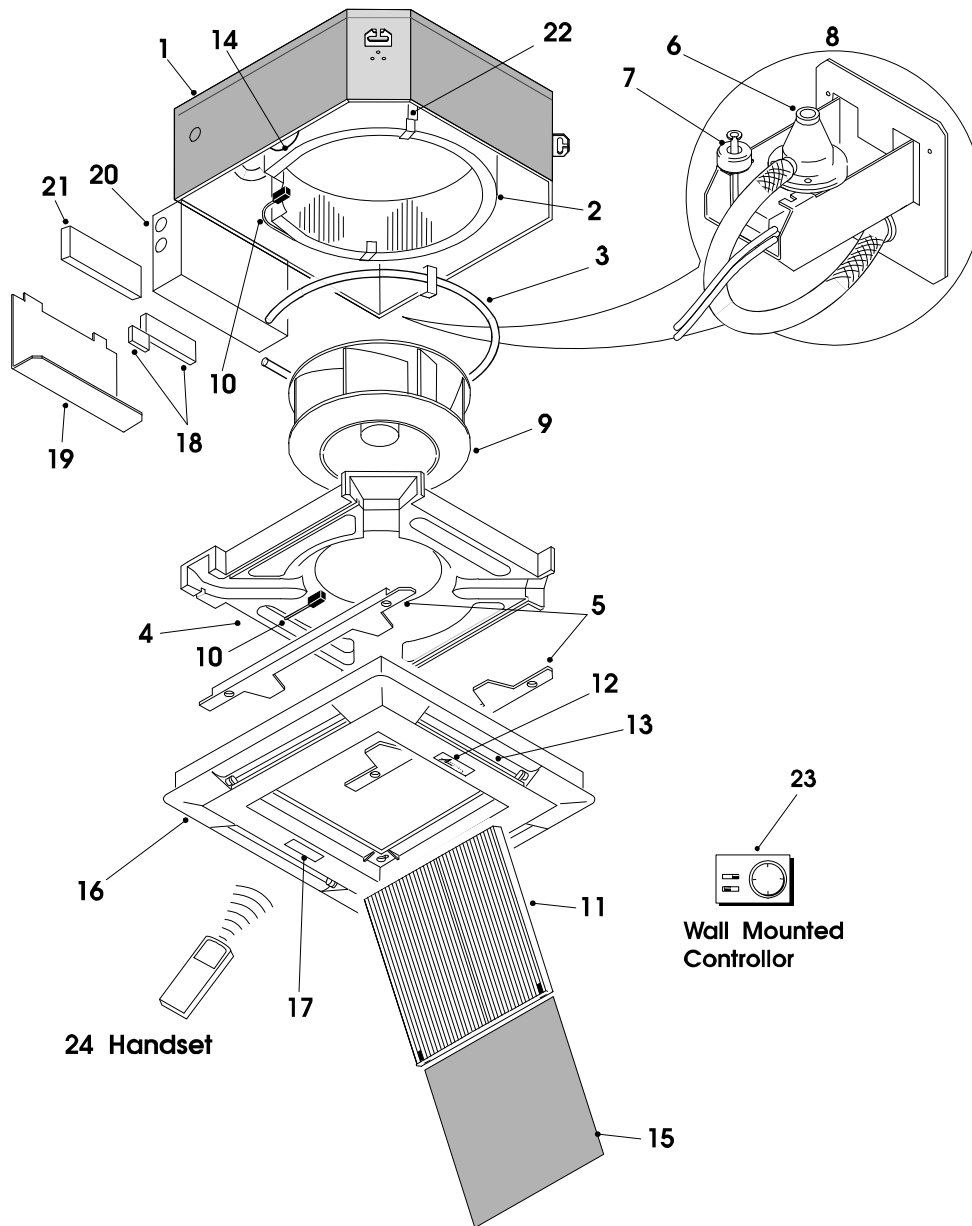
(5) Nominal heating capacity based on 70/60°F DB/WB, water temperature of 180°F inlet / 160°F outlet, 208V/1Ph/60Hz supply voltage, and MERV10 filters.

(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.

# EXPLODED UNIT DRAWING & PARTS LIST – CSD2/12, CCW2/8 & CCW2/12

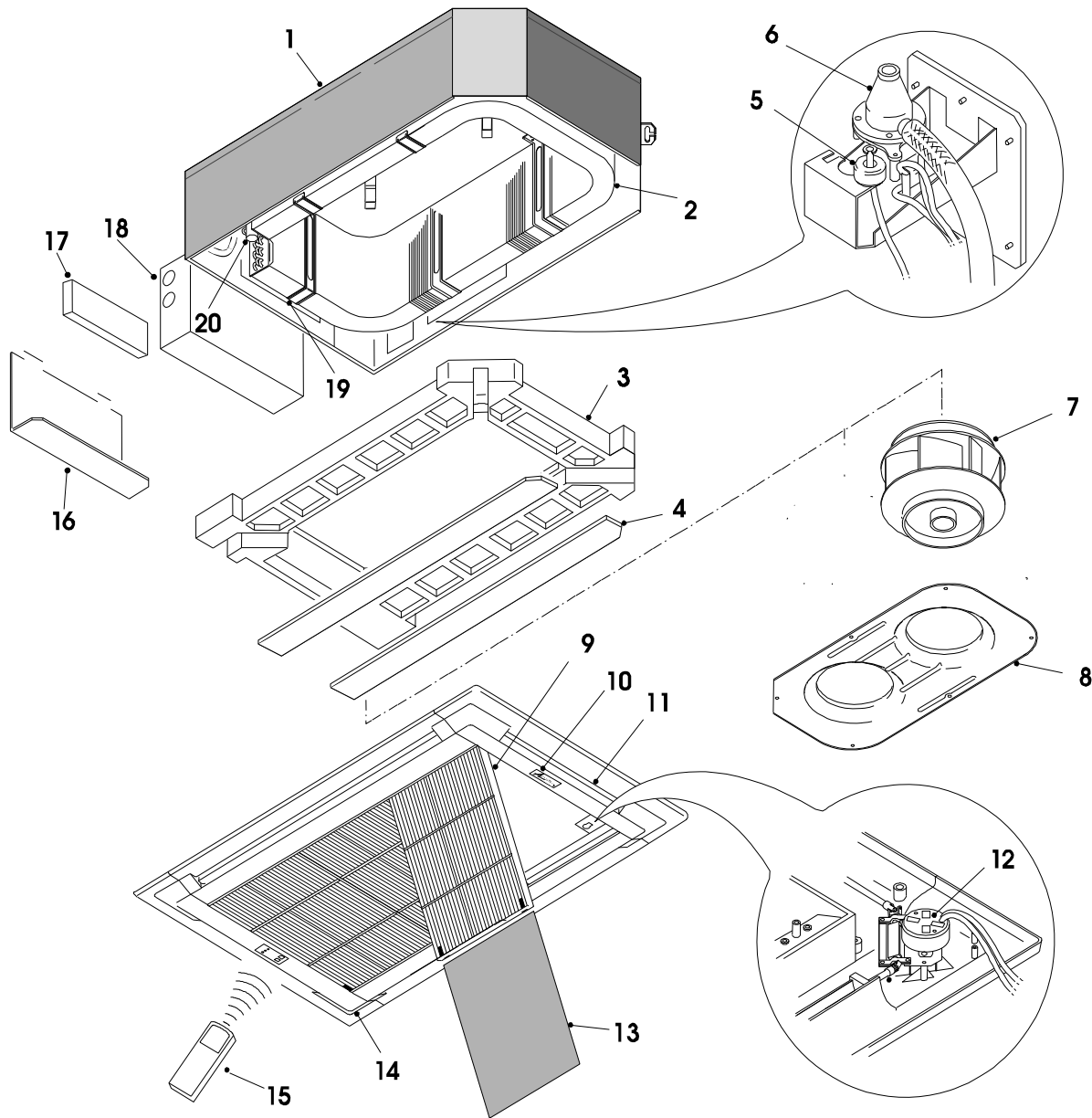
Figure 19.1  
Exploded Unit Drawing & Parts List – CCW 08 & 12



- |   |   |    |  |    |  |
|---|---|----|--|----|--|
| 1 | Cassette Chassis                          | 9  | Fan/Motor Assembly   | 17 | Receiver (Microprocessor Only)                                     |
| 2 | Chilled Water Coil                        | 10 | Coil/Return Air Sensors (Microprocessor Only)                  | 18 | Terminal Rail, Relays & Timer (Micro & Electro-Mechanical Version) |
| 3 | Electric Heater Element Assembly          | 11 | Grille   | 19 | Control Box Lid  |
| 4 | Condensate Tray                           | 12 | Airedale Label   | 20 | Control Box  |
| 5 | Condensate Tray Supports (2)              | 13 | Air Deflector Vanes (4)  | 21 | PCB Controller (Microprocessor Only)                               |
| 6 | Condensate Pump                           | 14 | Freeze Protection Thermostat (Electro-Mechanical version only) | 22 | Coil Support Brackets  |
| 7 | High Level Switch                         | 15 | Filter   | 23 | Wall Mounted Controller (Electro-Mechanical Only)                  |
| 8 | Condensate Pump Assembly (Shown Inverted) | 16 | Fascia Assembly  | 24 | Remote Handset (Microprocessor Only)                               |

# EXPLODED UNIT DRAWING & PARTS LIST – CSD/CSH/CCW 18 - 42

Figure 20.1  
Exploded Unit Drawing & Parts List – CSD/CSH/CCW 18 - 42



- |     |                                    |     |                     |
|-----|------------------------------------|-----|---------------------|
| 1.  | Cassette Chassis                   | 11. | Vane                |
| 2.  | Evaporator Coil                    | 12. | Vane Motor Assembly |
| 3.  | Condensate Tray                    | 13. | Filter              |
| 4.  | Condensate Tray Support            | 14. | Fascia              |
| 5.  | High Level Switch (Shown Inverted) | 15. | Remote Handset      |
| 6.  | Condensate Pump (Shown Inverted)   | 16. | Control Box Lid     |
| 7.  | Fan & Motor Assembly               | 17. | Control Box PCB     |
| 8.  | Fan Inlet Ring                     | 18. | Control Box         |
| 9.  | Grille                             | 19. | Coil Bracket        |
| 10. | Infrared Receiver                  | 20. | Expansion Valve     |

# MAINTENANCE – INDOOR UNIT/DISASSEMBLY PROCEDURE

## MAINTENANCE – INDOOR UNIT

### WARNING

When servicing or repairing of this equipment, use only factory-approved service replacement parts. Refer to the rating plate on the appliance for complete appliance model number, serial number and company address. Any substitution of parts or controls not approved by the factory will be at the owner's risk.

### CAUTION

Do not attempt to reuse any mechanical or electrical controllers which have been wet. Replace defective controller.

### IMPORTANT

To check most of the Possible Remedies in the troubleshooting guide listed in Tables 23.1 through 26.1, refer to the applicable sections of the manual.

#### Maintenance Schedule

Every THREE (3) MONTHS

1. Check the air filter condition. Clean if necessary (see Filter Removal and Cleaning, below).

Every SIX (6) MONTHS

1. Same as three (3) months, PLUS
2. Clean condensate tray with biocide suitable for polystyrene.
3. Clean fascia.

Every TWELVE (12) MONTHS

1. Same as six (6) months, PLUS
2. Check all electrical connections for security.
3. Check condensate pump operation.
4. Check the heating and cooling action, to ensure proper operation.

#### Filter Removal and Cleaning

1. Disconnect power.
2. Unclip the catches along the edge of each grille and allow them to hang from the fascia by the molded plastic hinges located along the opposite edge.
3. If desired, the grilles can be removed from the fascia completely.
4. The filter can now be easily slid out of the small plastic retaining clips on the back of each grille.
5. Gently vacuum clean the filters on a medium vacuum power.
6. When cleaned, the filters can be replaced by reversing steps 2 to 4.

#### Recommended Spares

One complete set of air filters.

## DISASSEMBLY PROCEDURE

Disconnect power supply before disassembly to prevent electrical shock and injury from moving parts.

#### Fan Removal

1. Unclip the grille catches and remove the grille(s) from the fascia.
2. a. *For model sizes 08, & 12 only*, remove the fascia by loosening the four fascia mounting bolts and then slide the fascia horizontally until it releases from the chassis. Drain the condensate tray by removing the small black rubber drain plug, catching the condensate (if any) in a suitable container. Remove the self tapping screws securing the two insulated metal condensate tray support channels and pull the channels away from the condensate tray. Pull the condensate tray downwards away from the chassis.
2. b. *For model sizes 18 to 42 only*, remove the M6 screws from the black plastic inlet ring and pull the inlet ring downwards from the condensate tray.
3. Remove the electrical panel lid and disconnect the fan connections from within the electrical panel.
4. Rotate the fan by hand until two M6 nuts are visible through the fan mounting access holes. Remove the two nuts.
5. Rotate the fan 90° until the remaining two nuts are visible and remove while supporting the fan to prevent it from falling. The fan can now be dropped down from the unit.

#### Condensate Tray Removal

1. Unclip the grille catches and remove the grille(s) from the fascia.
2. Remove the fascia by loosening the fascia mounting bolts and then slide the fascia horizontally until it releases from the chassis. If the unit is microprocessor controlled, remove the display panel cable from within the electrical panel before removing the fascia.
3. Drain the condensate tray by removing the small black rubber drain plug, catching any condensate in a suitable container.
4. Remove the self tapping screws securing the two insulated metal condensate tray support channels and pull the channels away from the condensate tray. Pull the condensate tray, complete with inlet ring (inlet ring on model sizes 18 to 42 only) downwards away from the chassis.

#### Condensate Pump Removal

1. Disconnect the condensate pump and float switch wires from inside the electrical panel.
2. Unscrew the three M4 screws holding the pump inspection plate in place and pull the pump and mounting bracket away from the chassis while feeding the pump wires between condensate tray and insulation.

# TROUBLESHOOTING – INDOOR UNIT

**Table 22.1**  
**Troubleshooting – Indoor Unit**

<b>TROUBLE</b>	<b>POSSIBLE CAUSE</b>	<b>POSSIBLE REMEDY</b>
<b>Two LED flashing</b> <i>(Microprocessor units only)</i>	Faulty float switch. <i>(Connected to micro terminals 'T4')</i>	See section "Condensate High Level"
	Fan thermal trip. <i>(Connected to micro terminals 'T4')</i>	See section "Fans Will Not Run"
	Freeze stat alarm. <i>(Connected to micro terminals 'T4')</i>	See section "Coil Freeze"
	Return air sensor failure. <i>(Connected to micro terminals 'T1')</i>	Use the unit wiring schematic to isolate the return air sensor and measure the resistance. Sensor is 50K@72°F type. Check and replace if necessary.
<b>Unit Will Not Operate</b>	No power mains power.	Check power supply to the unit. For micro units, check power to the micro and check the on-board micro fuse.
	No 24V control circuit power.	Check the 24V feed from the control transformer. If not present, check transformer windings – replace if necessary.
	Control circuit disabled by unit protection device.	In some models, particularly electro-mechanical units, some protection devices (such as freeze-stats, fan trips, etc) are wired in line with the 24V control circuit feed to cause the unit to shut down in an alarm condition. Use the unit's wiring schematic to identify these devices and investigate accordingly.
	Infrared receiver failure. <i>(micro units only)</i>	If the green LED is lit or flashing, receiver is OK. If there are no LEDs lit and the unit will not respond to the transmitter, press the On/Off button on the fascia display panel. If the unit responds to the On/Off button receiver is OK. Check transmitter.
	Transmitter failure. <i>(micro units only)</i>	Try new batteries first. If no response press On/Off button on unit fascia. If the unit responds to the On/Off button transmitter is faulty.
Microprocessor failure. <i>(micro units only)</i>	The microprocessor is the least likely component to be at fault. Investigate <i>all</i> other possibilities in every section of this troubleshooting guide first. Replace the micro only after all other avenues of investigation are exhausted.	
<b>Fans Will Not Run</b>	Loose wire.	Check all fan wire connections. Use unit's electrical schematic to verify that fan is wired correctly.
	Faulty fan capacitor.	Check fan capacitors, replace if necessary.
	Faulty fan motor.	Check fan motor protector for open circuit, replace if necessary.
	Fan thermal trip	Motor temperature limits exceeded. Check fan motor protector for open circuit, replace if necessary.
	Faulty PC Board.	On electro-mechanical units check for a signal at "G" terminal. On micro units check for steady green light on display panel.

# TROUBLESHOOTING – INDOOR UNIT

**Table 23.1**  
**Troubleshooting – Indoor Unit**

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
<b>No Cooling</b>	<p>Incorrect MODE setting.  <i>(micro units only)</i></p> <p>Set point too high.</p> <p>Compressor protection delay.  <i>(Electro-mechanical DX units only)</i></p> <p>Dirty or blocked air filter.</p> <p>High condensate level trip.</p> <p>Indoor coil temperature too low.</p> <p>Sensor failure.  <i>(micro units only)</i></p> <p>Outdoor unit tripped.</p> <p>Faulty valve actuator.  <i>(Chilled water units only)</i></p>	<p>Check that the transmitter MODE is set to Cooling or Auto Mode.</p> <p>Check the set point on the transmitter or wall mounted thermostat and adjust if necessary.</p> <p>Wait for ten minutes and then re-check if cooling is operating.</p> <p>See section “Coil Freeze”.</p> <p>Drain the condensate tray and investigate. See section “Condensate High Level”</p> <p>Check refrigerant charge by measuring operating pressures. Check filters condition. <i>(See page 22 for filter removal and cleaning instructions)</i></p> <p>If any of the sensors are faulty the microprocessor will disable the cooling operation.</p> <p>Check outdoor unit - refer to outdoor unit troubleshooting section.</p> <p>Check cooling signal present at actuator. Check actuator by manually opening the valve. Replace actuator if necessary.</p>
<b>Water Leaking From Unit</b> <i>(see also “Condensate High Level”)</i>	<p>Condensate plug loose or missing.</p> <p>Unit installed unevenly.</p> <p>Condensate drain piping installed incorrectly.</p> <p>Blocked/kinked condensate pipe.</p> <p>Condensate pump blocked or failed.</p> <p>Float switch failure.</p>	<p>Check that the rubber condensate plug is securely fitted to the underside of the unit’s polystyrene drip tray. On some models this is located underneath the fascia support rails on the pump side of the unit.</p> <p>With fascia removed, ensure that the unit chassis is level (at the face) both front to back and left to right, to ensure correct condensate flow.</p> <p>Check that the site installed condensate gravity drain slopes ‘downhill’ away from the unit. <i>(See page 5 of this manual for installation guide)</i></p> <p>Check condensate piping for blocks/kinks, clear as necessary. Check for a water tight connection between the condensate outlet and the site installed condensate gravity drain.</p> <p>Clear any blockages and ensure that power is being applied to the pump. If the pump still does not run, replace the pump.</p> <p>Check that the float switch operates correctly and is properly positioned. Float switch is normally closed, opens on rise of water level.</p>

# TROUBLESHOOTING – INDOOR UNIT

Table 24.1  
Troubleshooting – Indoor Unit

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
<b>Condensate High Level</b> <i>(micro units: LED's will flash)</i>	Maximum pump lift exceeded.	Check that the condensate pump head is no greater than 30". <i>(See page 5 of this manual for installation guide)</i>
	Blocked/kinked condensate pipe.	See section "Water Leaking From Unit".
	Condensate pump blocked or failed.	See section "Water Leaking From Unit".
	Coil freeze up.	A coil freeze condition may have caused excessive condensate to collect in the drip tray. See section "Coil Freeze".
<b>Coil Freeze</b>	Cooling coil freeze protection thermostat tripped. <i>(Auto-reset when freeze cleared)</i>	Freeze stat is normally closed, opens during freeze. Where fitted, the stat will disable the cooling action (sometimes the entire system) during coil freeze conditions. Use the unit's wiring schematic to investigate.
	Dirty or blocked air filter.	Clean / replace filters as necessary. <i>(See page 22 for filter removal and cleaning instructions)</i>
	System head pressure set too low.	Check condensing pressure, installation of low ambient kit may be required.
	Loss of refrigerant.	Check system for refrigerant leaks and repair before re-charging.
<b>No Heating (Hot Water)</b>	Incorrect MODE setting. <i>(micro units only)</i>	Check that the transmitter MODE is set to Heat or Auto Mode.
	Set point too low.	Check the set point on the transmitter or wall mounted thermostat and adjust if necessary.
	Blocked or dirty filters causing low airflow.	Check filters condition. <i>(See page 22 for filter removal and cleaning instructions)</i>
	No hot water / pumps failed.	Check hot water source and supply to unit.
	Faulty valve / actuator.	Check actuator by manually opening and closing valve, replace if faulty.
Faulty heater relay.	Check signals to relay and check action of relay contacts. Replace relay or PCB if necessary.	
<b>No Heating (Electric Heat)</b>	Incorrect MODE setting. <i>(micro units only)</i>	Check that the transmitter MODE is set to Heat or Auto Mode.
	Set point too low.	Check the set point on the transmitter or wall mounted thermostat and adjust if necessary.
	Overheat cut out tripped. <i>(See also section "Electric Overheat")</i>	Investigate cause of over heat condition. <ul style="list-style-type: none"> <li>• Possible low airflow, check filter condition. <i>(See page 22 for filter removal and cleaning instructions)</i></li> <li>• Possible fan failure. Check fans. <i>(See section "Fans Will Not Run")</i></li> </ul> Remove power from unit and reset manual overheat cut-out by rubbing. DO NOT PRESS. Consult Factory for instruction if necessary.
	Heater element failed.	Investigate and replace if necessary.
	Faulty heater relay.	Check signals to relay and check action of relay contacts. Replace relay or PCB if necessary.



# TROUBLESHOOTING/REPLACEMENT PARTS MODEL NUMBER DESIGNATION/SERIAL PLATE

**Table 25.1**  
**Troubleshooting – Indoor Unit (Continued)**

TROUBLE	
<b>ELECTRIC OVERHEAT</b>	<p>The electric heat circuit contains one automatic reset and one manual reset overheat cut-out protection switch for each electric heat element fitted to the unit. The cut-outs are wired in line with the main power flowing in each element and operate as described below.</p> <ol style="list-style-type: none"> <li><b>1. Auto Cut-out</b> – if the auto cut-out trips, the electric heat is temporarily disabled until the unit temperature falls and causes the overheat cut-out to automatically reset.</li> <li><b>2. Manual Cut-out</b> – if the manual cut-out trips, the electric heat is disabled until the unit temperature falls and the overheat cut-out is manually reset. It will typically take five minutes for the unit temperature to fall sufficiently to allow the cut-out to be reset. The cut-out should only be reset by a qualified and competent electrician and with the mains power switched off. Ensure the elements have cooled sufficiently.</li> </ol>

## REPLACEMENT PARTS

For ease of identification when ordering replacement parts or contacting the factory about your unit, please quote the unit type and unit serial number. This information can be found on the serial plate attached to your unit. See Figure 26.2.

When a component part fails, a replacement part should be obtained through our Parts Department. If the part is considered to be under warranty, the following details are required to process this requirement:


1. Full description of part required, including Unit's part number, if known.
2. The original equipment serial number.
3. An appropriate purchase order number.

**Figure 25.1**  
**Model Number Designations**

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

<b>1 - Product Type (PT)</b>	<b>6 - Supply Voltage (SV)</b>
C - Airedale Cassette	A - 115/60/1
	B - 208/60/1
<b>2,3 - Unit Configuration (UC)</b>	C - 230/60/1
SD - DX Cooling	H - 277/60/1
SH - HP Heating & Cooling	J - 110/50/1
CW - Building Water	K - 220/50/1
<b>4,5 - Nominal Capacity (MBH)</b>	<b>7 - Generation (G)</b>
08 - 8,000 Btu/Hr	A - Current Design
12 - 12,000 Btu/Hr	
18 - 18,000 Btu/Hr	<b>8 - Control (C)</b>
20 - 20,000 Btu/Hr	C - Modine Controls System
24 - 24,000 Btu/Hr	E - Electro-Mechanical Controls
30 - 30,000 Btu/Hr	M - Microprocessor Controls
33 - 33,000 Btu/Hr	
36 - 36,000 Btu/Hr	<b>9 - Heating Option (HO)</b>
42 - 42,000 Btu/Hr	N - None
	A - Electric Heat
	B - Hot Water Heating Coil
	<b>10 - Filtration (F)</b>
	A - 60-80% Arrestance (Standard)
	B - MERV 10

**Figure 25.2**  
**Serial Plate EXAMPLE**

<b>AIREDALE</b>			Modine Manufacturing Co. 1500 DeKoven Avenue Racine, WI 53403-2552 1-800-828-4328		
<b>CEILING CASSETTE UNIT</b> MADE IN U.S.A.					
MODEL NUMBER / NUMERO DE MODELE <b>CCW20BACNB</b>			HOT WATER COIL: MAX TEMP PRESSURE <b>200 F 125 PSIG</b>		
SERIAL NUMBER / NUMERO DE SERIE <b>555555S2215-5561</b>			DESIGN PRESSURE:  PSIG		
WIRING DIAGRAM <b>5H103842-1301</b>			REFRIGERANT TYPE: n/a		
VOLTS / PHASE / HZ <b>208V/1Ph/60Hz</b>			FACTORY CHARGE: 0 LB. FIELD CHARGE:		
BLOWER MOTOR      QTY <b>0.55 FLA, 1/6 HP, 1</b>			ELECTRIC HEAT <b>n/a kW, n/a</b>		
ELECTRICAL RATINGS					
FLA <b>0.6A</b>		MCA <b>0.7A</b>		MOP <b>15.0A</b>	
MAXIMUM EXTERNAL STATIC PRESSURE			0.1 INWC		
PRESSION STATIQUE EXTERIEUR MAXIMUM			PO. CD'E		
CLEARANCE TO COMBUSTIBLE MATERIAL			0 INWC		
DÉGAGEMENT DE MATIÈRES COMBUSTIBLES			PO		
MAXIMUM DISCHARGE TEMPERATURE			125 F		
TEMPÉRATURE DE DÉPART MAXIMUM					
			ETL LISTED <b>CONFORMS TO ANSI/UL STD 1995 CERTIFIED TO Intertek CAN/CSA STD C22.2 NO. 236</b> 3087217		
5H101556B, REV. F					

(This page left blank intentionally)

(This page left blank intentionally)

# COMMERCIAL WARRANTY

Seller warrants its products to be free from defects in material and workmanship, EXCLUSIVE, HOWEVER, of failures attributable to the use of materials substituted under emergency conditions for materials normally employed. This warranty covers replacement of any parts furnished from the factory of Seller, but does not cover labor of any kind and materials not furnished by Seller, or any charges for any such labor or materials, whether such labor, materials or charges thereon are due to replacement of parts, adjustments, repairs, or any other work done. This warranty does not apply to any equipment which shall have been repaired or altered outside the factory of Seller in any way so as, in the judgment of Seller, to affect its stability, nor which has been subjected to misuse, negligence, or operating conditions in excess of those for which such equipment was designed. This warranty does not cover the effects of physical or chemical properties of water or steam or other liquids or gases used in the equipment. BUYER AGREES THAT SELLER'S WARRANTY OF ITS PRODUCTS TO BE FREE FROM DEFECT IN MATERIAL AND WORKMANSHIP, AS LIMITED HEREIN, SHALL BE IN LIEU OF AND EXCLUSIVE OF ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, WHETHER ARISING FROM LAW, COURSE OF DEALING, USAGE OF TRADE, OR OTHERWISE, **THERE ARE NO OTHER WARRANTIES, INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE, WHICH EXTEND BEYOND THE PRODUCT DESCRIPTION CONFIRMED BY BUYER AND SELLER AS OF THE DATE OF FINAL AGREEMENT.**

This warranty is void if the input to the product exceeds the rated input as indicated on the product serial plate by more than 5% on gas-fired and oil-fired units, or if the product in the judgment of SELLER has been installed in a corrosive atmosphere, or subjected to corrosive fluids or gases, been subjected to misuse, negligence, accident, excessive thermal shock, excessive humidity, physical damage, impact, abrasion, unauthorized alterations, or operation contrary to SELLER'S printed instructions, or if the serial number has been altered, defaced or removed.

BUYER'S REMEDY FOR BREACH OF WARRANTY, EXCLUSIVE OF ALL OTHER REMEDIES PROVIDED BY LAW, IS LIMITED TO REPAIR OR REPLACEMENT AT THE FACTORY OF SELLER, ANY COMPONENT WHICH SHALL, WITHIN THE APPLICABLE WARRANTY PERIOD

DEFINED HEREIN AND UPON PRIOR WRITTEN APPROVAL, BE RETURNED TO SELLER WITH TRANSPORTATION CHARGES PREPAID AND WHICH THE EXAMINATION OF SELLER SHALL DISCLOSE TO HAVE BEEN DEFECTIVE; EXCEPT THAT WHEN THE PRODUCT IS TO BE USED BY BUYER AS A COMPONENT PART OF EQUIPMENT MANUFACTURED BY BUYER, BUYER'S REMEDY FOR BREACH, AS LIMITED HEREIN, SHALL BE LIMITED TO ONE YEAR FROM DATE OF SHIPMENT FROM SELLER. FOR GAS-FIRED PRODUCTS INSTALLED IN HIGH HUMIDITY APPLICATIONS AND UTILIZING STAINLESS STEEL HEAT EXCHANGERS, BUYER'S REMEDY FOR BREACH, AS LIMITED HEREIN, SHALL BE LIMITED TO TEN YEARS FROM DATE OF SHIPMENT FROM SELLER.

These warranties are issued only to the original owner-user and cannot be transferred or assigned. No provision is made in these warranties for any labor allowance or field labor participation. Seller will not honor any expenses incurred in its behalf with regard to repairs to any of Seller's products. No credit shall be issued for any defective part returned without proper written authorization (including, but not limited to, model number, serial number, date of failure, etc.) and freight prepaid.

### OPTIONAL SUPPLEMENTAL WARRANTY

Provided a supplemental warranty has been purchased, Seller extends the warranty herein for an additional four (4) years on certain compressors. Provided a supplemental warranty has been purchased, Seller extends the warranty herein for an additional four (4) years or nine (9) years on certain heat exchangers.

### EXCLUSION OF CONSUMABLES & CONDITIONS BEYOND SELLER'S CONTROL

The above referenced warranty shall not be applicable to any of the following items: refrigerant gas, belts, filters, fuses and other items consumed or worn out by normal wear and tear or conditions beyond Seller's control, including (without limitation as to generality) polluted or contaminated or foreign matter contained in the air or water utilized for heat exchanger (condenser) cooling or if the failure of the part is caused by improper air or water supply, or improper or incorrect sizing of power supply.

<b>Component</b> Applicable Models	<b>"APPLICABLE WARRANTY PERIOD"</b>
<b>Heat Exchangers</b> Gas-Fired Units except PSH/BSH	TEN YEARS FROM DATE OF FIRST BENEFICIAL USE BY BUYER OR ANY OTHER USER, WITHIN TEN YEARS FROM DATE OF RESALE BY BUYER OR ANY OTHER USER, WITHIN TEN YEARS FROM DATE OF RESALE BY BUYER IN ANY UNCHANGED CONDITION, OR WITHIN ONE HUNDRED TWENTY-SIX MONTHS FROM DATE OF SHIPMENT FROM SELLER, WHICHEVER OCCURS FIRST
<b>Heat Exchangers</b> Low Intensity Infrared Units  <b>Compressors</b> Condensing Units for Cassettes	FIVE YEARS FROM DATE OF FIRST BENEFICIAL USE BY BUYER OR ANY OTHER USER, WITHIN FIVE YEARS FROM DATE OF RESALE BY BUYER OR ANY OTHER USER, WITHIN FIVE YEARS FROM DATE OF RESALE BY BUYER IN ANY UNCHANGED CONDITION, OR WITHIN SIXTY-SIX MONTHS FROM DATE OF SHIPMENT FROM SELLER, WHICHEVER OCCURS FIRST
<b>Burners</b> Low Intensity Infrared Units  <b>Other</b> Components excluding Heat Exchangers, Coils, Condensers, Burners, Sheet Metal	TWO YEARS FROM DATE OF FIRST BENEFICIAL USE BY BUYER OR ANY OTHER USER, WITHIN TWO YEARS FROM DATE OF RESALE BY BUYER IN ANY UNCHANGED CONDITION, OR WITHIN THIRTY MONTHS FROM DATE OF SHIPMENT FROM SELLER, WHICHEVER OCCURS FIRST
<b>Heat Exchangers/Coils</b> Indoor and Outdoor Duct Furnaces and System Units, PSH/BSH, Steam/Hot Water Units, Oil-Fired Units, Electric Units, Cassettes, Vertical Unit Ventilators, Geothermal Units  <b>Compressors</b> Vertical Unit Ventilators, Geothermal Units  <b>Burners</b> High Intensity Infrared Units  <b>Sheet Metal Parts</b> All Products	ONE YEAR FROM DATE OF FIRST BENEFICIAL USE BY BUYER OR ANY OTHER USER, WITHIN ONE YEAR FROM DATE OF RESALE BY BUYER IN ANY UNCHANGED CONDITION, OR WITHIN EIGHTEEN MONTHS FROM DATE OF SHIPMENT FROM SELLER, WHICHEVER OCCURS FIRST

Modine Manufacturing Company has a continuous product improvement program, and therefore reserves the right to change design and specifications without notice.

**Modine Manufacturing Company**  
1500 DeKoven Avenue  
Racine, WI 53403  
Phone: 1.866.823.1631 (toll free)  
www.modinehvac.com/schoolsystems