

SAFETY INSTRUCTIONS

WARNING

1. Improper installation may cause property damage or injury. Installation, service, and maintenance must be performed by a qualified service technician.
2. 120 Volts may cause serious injury from electric shock. Disconnect electrical power before starting installation or servicing. Leave power disconnected until installation/service is completed.
3. Sharp edges may cause serious injury from cuts. Use care when cutting plenum openings and handling ductwork.
4. Dropping may cause personal injury or equipment damage. Use a hand cart, dolly, or two people to transport dehumidifier.

CAUTION

1. Read all instructions before beginning installation.
2. Do not use in pool applications. Pool chemicals can damage the dehumidifier.
3. Do not use solvents or cleaners on or near the circuit board. Chemicals can damage circuit board components.
4. Wait 24 hours before running if the unit has not been shipped or stored in the upright position.

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READ AND SAVE THESE INSTRUCTIONS

OVERVIEW

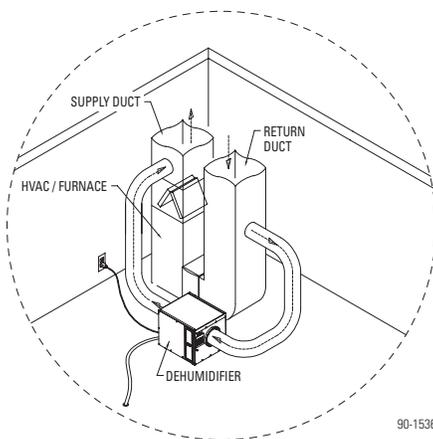
The Aprilaire® Dehumidifier is designed to control humidity inside the whole home. The dehumidifier uses a dew point calculation to control the humidity based on the dryness setting on the dehumidifier control. An optional Model 76 Control, Model 8910 Home Comfort Control™, or other third-party control can be used in place of the onboard control.

Do not use a dehumidifier to prevent window condensation in the winter. Indoor humidity levels must typically get lower than what dehumidifiers can achieve during cold winter months. Use ventilation to lower indoor humidity levels in the winter.

The dehumidifier has a built in feature to allow air cycling or ventilation. Air cycling allows activation of the HVAC fan to cycle air throughout the home for airflow balance and comfort. Ventilation brings fresh air into the home and is designed to meet ASHRAE 62.2 Standard for Ventilation.

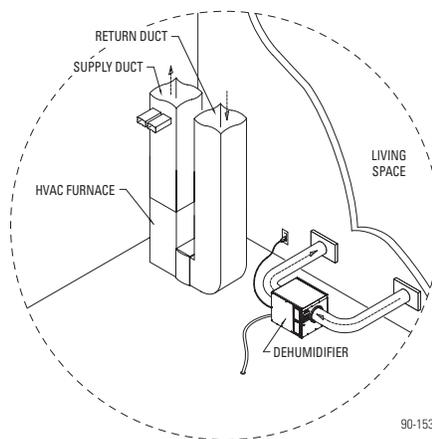
There are three main installation options, Single Zone – Ducted to HVAC System, Single Zone – Not Ducted to HVAC System, Two Zone – Primary and Secondary Zoned.

SINGLE ZONE – DUCTED TO HVAC SYSTEM, see page 7



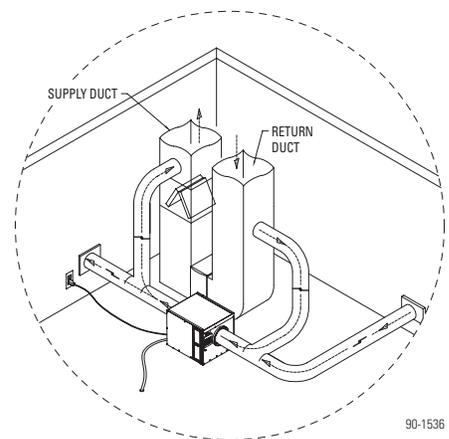
In a Single Zone – Ducted to HVAC System installation, the dehumidifier works in conjunction with the HVAC system, offering the optimum solution for year-round, whole-home control. This installation is typically in basement or attic locations. In a typical setup, air is pulled from the return duct, dehumidified, and returned to the return or supply duct. Alternate duct configurations are possible.

SINGLE ZONE – NOT DUCTED TO HVAC SYSTEM, see page 9



In a Single Zone – Not Ducted to HVAC System installation, the dehumidifier is not ducted to the HVAC system and is used to dehumidify a specific area. This installation is typically in basements or crawl spaces, with the dehumidifier ducted to the area requiring dehumidification.

TWO ZONE – PRIMARY AND SECONDARY ZONED, see page 11



In a Two Zone – Primary and Secondary Zoned installation, the dehumidifier controls humidity in two zones. The dehumidifier will dehumidify the primary zone as the first priority, switching to the secondary zone after the primary zone dehumidification need has been met.

SPECIFICATIONS

Dimensions: 20-3/4"W x 24"L x 20-5/8"H
Adjustable feet allow for 22-5/8" total height

Weight: 1750A – 93 lbs.
1770A – 100 lbs.

Capacity: 1750A – 90 pints per day @ 275 CFM
1770A – 135 pints per day @ 500 CFM
AHAM DH-1-2003 80°F, 60%RH conditions

Power: 1750A – 115 VAC, 8 A, 15 A circuit
1770A – 115 VAC, 14 A, 20 A circuit
Unit equipped with 8 ft. grounded power cord

Operating Conditions:
Dehumidification: 50°F–105°F, 40°F dew point minimum
Ambient/Ventilation: 40°F–140°F, 0%–95% RH (non-condensing)

Filter: MERV 8, washable

Compressor Minimum Off Time: 3 minutes
Compressor Minimum On Time: 3 minutes

Airflow:

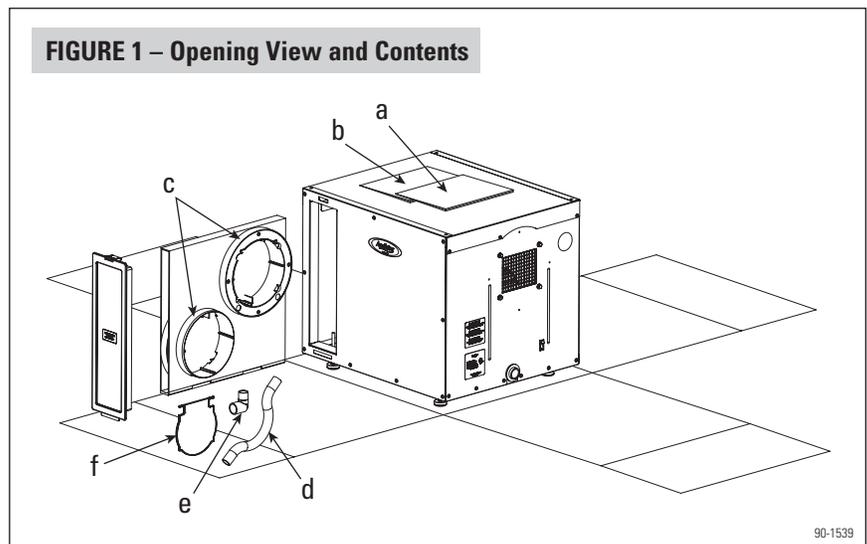
1750A	
External Static Pressure	Airflow
0.0 "w.c.	380 CFM
0.4 "w.c.	310 CFM
0.6 "w.c.	250 CFM

1770A	
External Static Pressure	Airflow
0.0 "w.c.	580 CFM
0.6 "w.c.	530 CFM
0.9 "w.c.	500 CFM

UNPACKING AND CONTENTS

Do not tip unit to remove from carton.

1. Open carton completely by cutting each corner from top to bottom.
2. Remove all cardboard inner pack.
3. See **Figure 1** for opening view and contents.
 - a. Installation Instructions
 - b. Owner's Manual
 - c. Duct Collars, 2
 - d. Drain Trap
 - e. 90° PVC Elbow
 - f. Backflow Damper



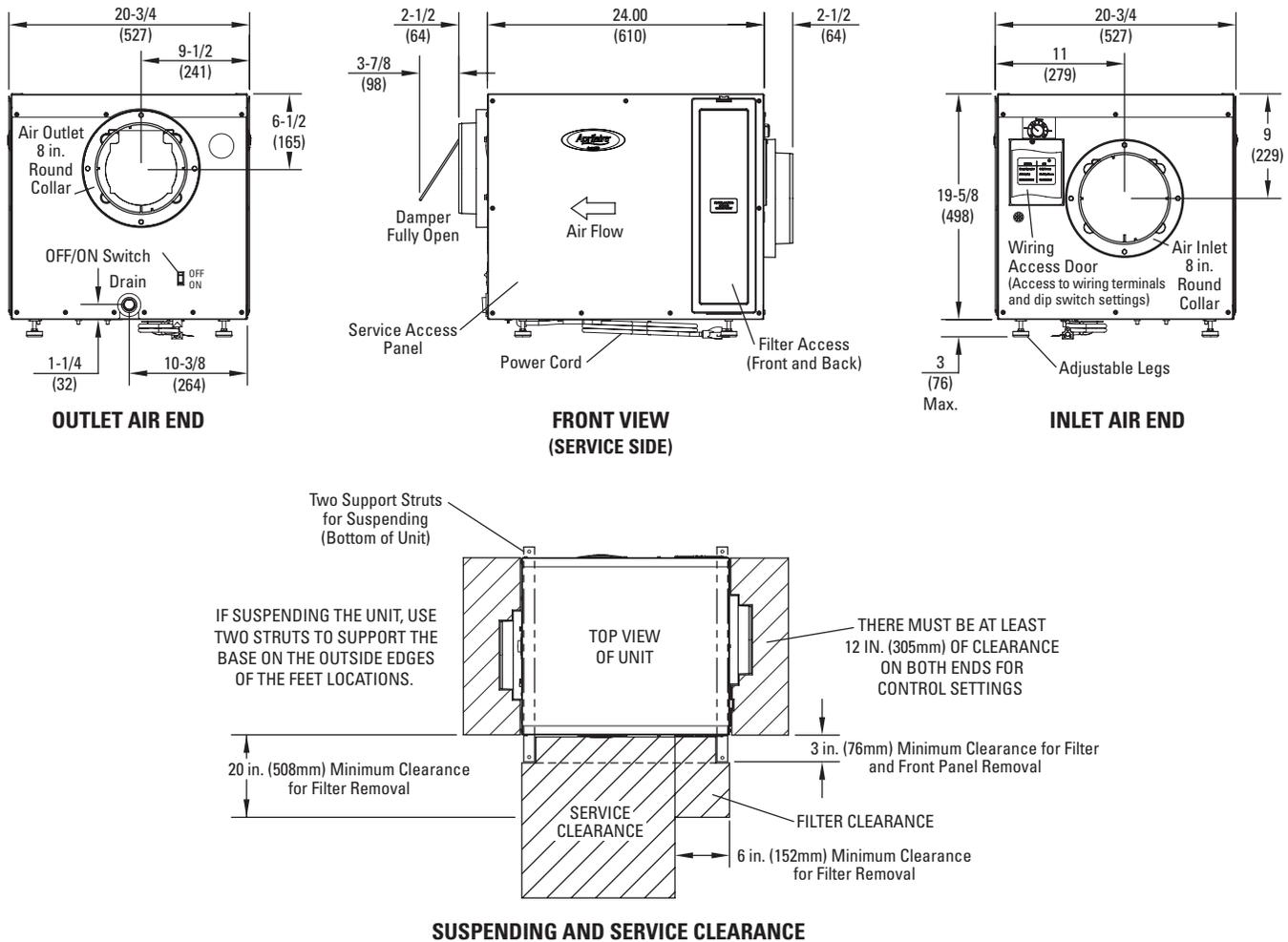
LOCATION CONSIDERATIONS

- 1. Install Unit Indoors:** Do not expose to elements.
- 2. Drain Accessibility:** A condensate pump may be required if a drain is not located in the installation area.
- 3. Power:** Outlet within 8 ft. of unit.
- 4. Filter Access:** Allow for 20" minimum of clearance on one side of unit for removal of filter (see **Figure 2**).
- 5. Inlet:** Allow for 12" of clearance to access control and control door/wiring access (see **Figure 2**).
- 6. Service Access:** Allow clearance to remove side panel and gain access for service.

TABLE 1 – Location Notes

Requirement	Application Location			
	Attic	Garage	Basement	Crawl Space
All ductwork must be insulated and sealed.	✓	✓		✓
Drain pan with overflow protection placed under unit.	✓			

FIGURE 2 – Dimensions and Location Considerations



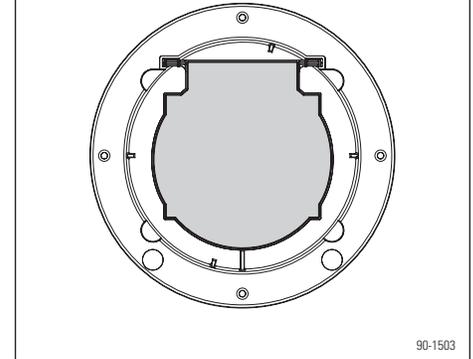
MECHANICAL INSTALLATION

DUCT COLLARS & BACKFLOW DAMPER

The backflow damper installs on the outlet side of the dehumidifier, using features molded into the duct collar.

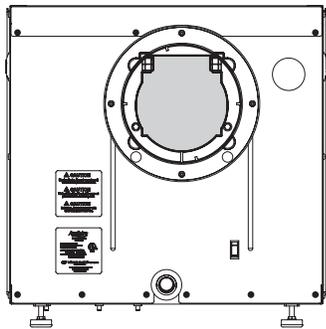
1. Remove the duct collars and backflow damper from the inner pack.
2. Place the backflow damper in the collar with the damper pivot shaft resting in the slot in the collar (see **Figure 3**).
3. Position the collar and damper with damper pivot shaft up and install on the outlet panel using four #8 x 1" field supplied sheet metal screws (see **Figure 4**). The collar should sit flush on the outlet panel and secure the backflow damper.
4. Verify that the damper swings freely by lifting up on the damper and allowing it to swing closed.
5. Make sure there are no bends in the ductwork coming off the outlet for a minimum of 4". This will ensure that the ductwork will not interfere with backflow damper function (see **Figure 5**).

FIGURE 3 – Install Damper in Collar



90-1503

FIGURE 4 – Install Collar with Damper on Outlet

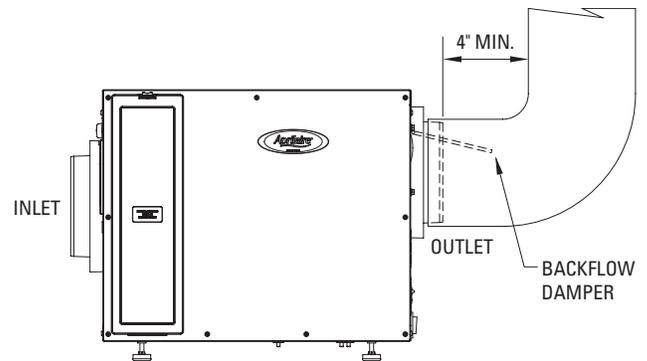


CAUTION

Only install damper on outlet. Dehumidifier will not function if damper is installed on inlet.

90-1503

FIGURE 5 – Minimum Ductwork Bend Distance



90-1503

GENERAL DUCTWORK RECOMMENDATIONS

TABLE 2 – Maximum Duct Lengths

	1750A	1770A
CFM	250	500
External Static Pressure	0.6" w.c.	0.9" w.c.
Amount of Ducting	8" dia., 70 ft.	10" dia., 350 ft.

Notes:

1. Duct length totals include both inlet and outlet sides.
2. Elbows, turns, and the static pressure of the HVAC equipment will affect the airflow through the dehumidifier.
3. Maximum duct length recommendation assumes 0.2" w.c. pressure increase due to filter loading. Maintenance of filter is important to maintain airflow.
4. Ductwork to be installed in accordance with SMACNA Standards.
5. Duct size recommendations based on maximum velocity of 900 FPM inside of duct.

- When ducted to the HVAC supply, the outlet from the dehumidifier must be located at least 6" downstream of the cooling coil to prevent outlet air from pulling moisture from the coil.
- To minimize sound from air movement and vibration, install 5 feet minimum of flex duct on the inlet and outlet of the dehumidifier.
- Use the least amount of ductwork possible. UL approved, insulated duct is recommended for all connections.
- Use insulated duct for ventilation.

MECHANICAL INSTALLATION (CONTINUED)

DRAIN

1. Adjust feet of dehumidifier to allow a 2-1/2" minimum clearance for drain trap. See **Figure 6**. Use the 90° elbow if necessary for clearance restrictions. See **Figure 7**.
2. Use PVC primer and cement for drain assembly to the dehumidifier drain outlet.
3. Complete assembly by piping the 3/4" PVC trap to a drain or condensate pump. Make sure the drain line has a constant downward slope and is not kinked.
4. To prime the drain trap and to verify the drain line is not blocked, slowly pour a pint of water into the dehumidifier drip pan located below the coil.

CAUTION

1. Drain trap must be primed with water before use.
2. A condensate pan with a float switch is required in attic installations.

FIGURE 6 – Drain Trap

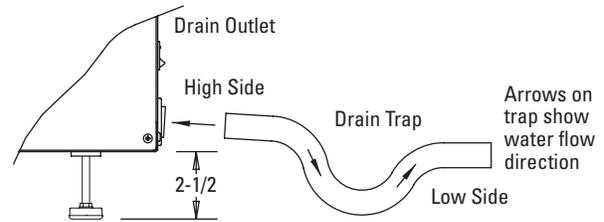
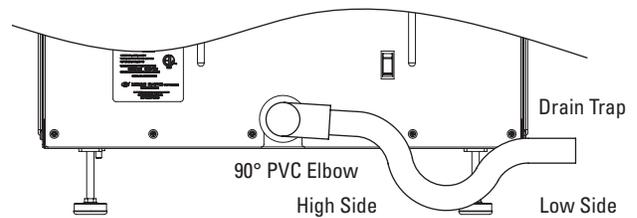


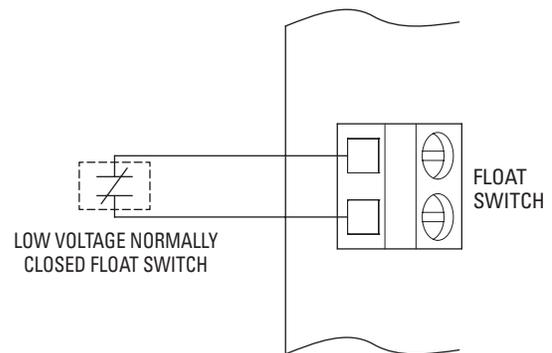
FIGURE 7 – Drain Trap with 90° Elbow



FLOAT SWITCH

If the dehumidifier is installed in an attic or another location requiring leak protection, the unit should be placed in a condensate pan with a normally closed, condensate overflow safety switch (float switch). Remove the jumper from the float switch terminals on the control board and wire the float switch to the terminals. See **Figure 8**.

FIGURE 8 – Float Switch Wiring

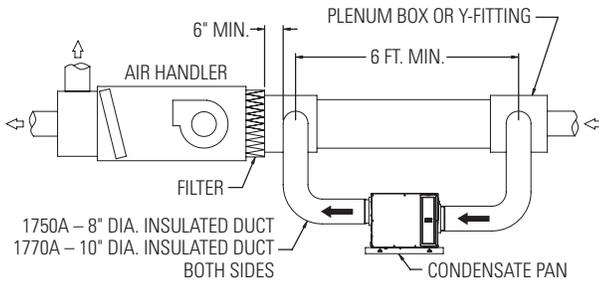


SINGLE ZONE – DUCTED TO HVAC SYSTEM INSTALLATION (CONTINUED)

ATTIC DUCTING

The **Preferred Installation** (see **Figure 11**) ensures warm, dehumidified air is thoroughly mixed with HVAC system air before being discharged into the living space. If adequate space exists between the supply plenum and the first branch, allowing for proper mixing with the HVAC system air, the dehumidifier discharge may be ducted to the supply side. The **Alternate Installation** (see **Figure 12**) minimizes re-evaporation of moisture off the cooling coil.

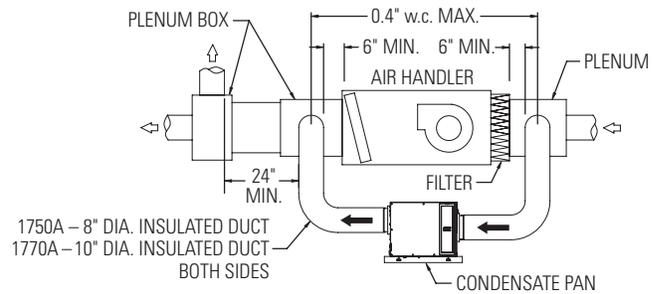
FIGURE 11 – Single Zone – Ducted to HVAC System, Preferred Attic Installation



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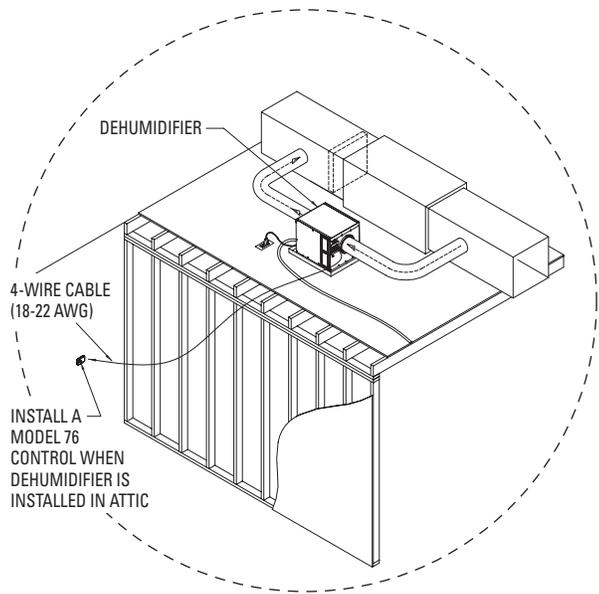
Dip Switch Note: HVAC fan must be activated during dehumidification.

FIGURE 12 – Single Zone – Ducted to HVAC System, Alternate Attic Installation



90-1618-4

FIGURE 13 – Attic Installation with External Control



90-1618-8

Attic Installation Notes:

- The dehumidifier must be installed in a secondary condensate pan with a float switch.
- A Model 76 Control mounted in the living space is recommended (see **Figure 13**).
- Vibration isolators placed under the dehumidifier feet are recommended when the dehumidifier is installed on ceiling joists.

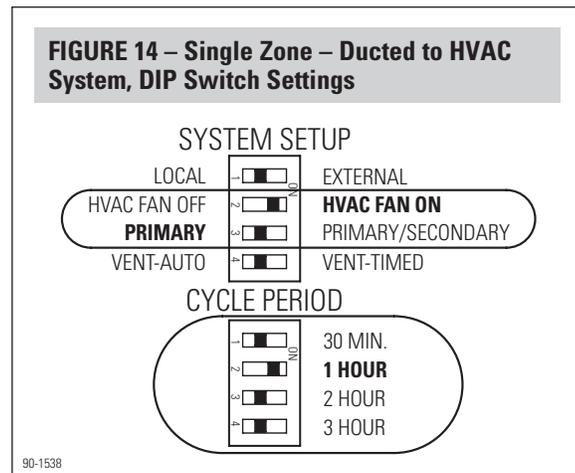
Wiring & Sequence of Operation Notes:

- If wiring to a Model 76 Control, see MODEL 76 EXTERNAL CONTROL section on page 19.
- If wiring to a Model 8910 Home Comfort Control™ or other Third-Party Control, see MODEL 8910 HOME COMFORT CONTROL™ OR THIRD-PARTY CONTROL section on page 21.

SINGLE ZONE – DUCTED TO HVAC SYSTEM INSTALLATION (CONTINUED)

DIP SWITCH CONFIGURATION

- **HVAC FAN ON:** Activating the HVAC fan during dehumidification is recommended because it offers better circulation and balancing of indoor air conditions. Running the HVAC fan during dehumidification does not affect moisture removal efficiency. If the switch is put in the HVAC FAN OFF position, air is pulled through the unit, dehumidified, and circulated solely by the dehumidifier blower.
- **CYCLE PERIOD:** This determines how frequently the dehumidifier will sample the air to check the humidity level. Set to 1 hour and adjust as needed.
- For Ventilation switch settings, see VENTILATION section beginning on page 14.
- For Local/External switch setting, see MODEL 76 EXTERNAL CONTROL on page 19 or MODEL 8910 HOME COMFORT CONTROL™ OR THIRD-PARTY CONTROL on page 21.



SEQUENCE OF OPERATION (Refer to pages 19-21 for sequence with alternate controls.)

- Sampling will occur at the end of each Cycle Period. At the onset of sampling, the dehumidifier damper output turns on, the dehumidifier blower turns on, and the green Status LED flashes.
- After three minutes, the dew point of the incoming air is measured and compared to the setting on the control knob. If the dew point of the incoming air is above the setting, the compressor turns on and the green Status LED switches to solid illumination. If the dew point is below the setting, the dehumidifier damper output turns off and the dehumidifier blower turns off along with the green Status LED.
- The dew point of the incoming air is continuously monitored during compressor operation. When the dew point of the incoming air falls below the setting on the control knob, the dehumidifier damper output turns off and the dehumidifier compressor and blower turn off along with the green Status LED.

SINGLE ZONE – NOT DUCTED TO HVAC SYSTEM INSTALLATION

In this installation the dehumidifier is not ducted to the HVAC system and is used to dehumidify a specific area. This installation is typically used in basements or crawl spaces. The dehumidifier can remain non-ducted, however, to achieve specified performance it is recommended that the dehumidifier be ducted to the area requiring dehumidification. When ducted, grilles should be installed on the inlet and outlet to increase the pressure drop across the unit. 10 feet is the recommended distance between inlet and outlet grilles.

For spaces that can be hard to access, like crawl spaces or basements, the Model 76 Control can be installed as a remote control. See page 20 for the MODEL 76 REMOTE CONTROL application.

Required Components

Duct Work
Grilles with 8" dia. duct collars – 1750A
Grilles with 10" dia. duct collars – 1770A

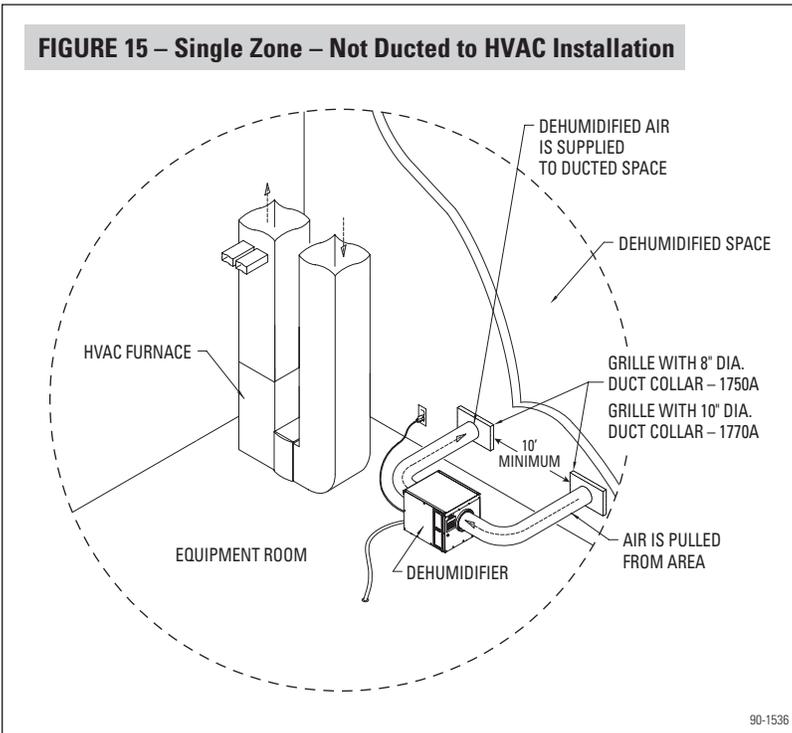
Optional Components

Condensate Pan & Normally Closed Float Switch
Grilles
Model 76 Control
Model 8910 Home Comfort Control™
Third-Party Control

SINGLE ZONE – NOT DUCTED TO HVAC SYSTEM INSTALLATION (CONTINUED)

DUCTING & WIRING

FIGURE 15 – Single Zone – Not Ducted to HVAC Installation



Wiring Notes:

- If using the on-board dehumidifier control, no additional wiring is required.
- If wiring to a Model 76 Control, where the control will be mounted in the space being dehumidified, see MODEL 76 EXTERNAL CONTROL section on page 19.
- If wiring to a Model 76 Control, where the control will be located somewhere other than the space being dehumidified, see MODEL 76 REMOTE CONTROL section on page 20.
- If wiring to a Model 8910 Home Comfort Control™ or Third-Party Control, see MODEL 8910 HOME COMFORT CONTROL™ OR THIRD-PARTY CONTROL section on page 21.

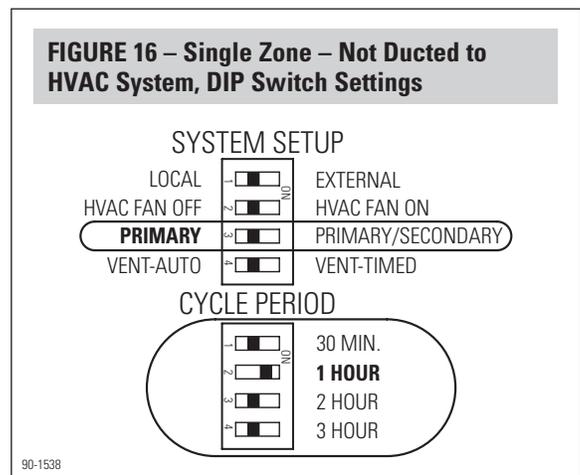
Ducting Notes:

- If dehumidifying a location that is noise sensitive, install multiple registers to reduce air velocity.
- Airflow is approximately 500 CFM for the 1770A, and 275 CFM for the 1750A.

DIP SWITCH CONFIGURATION

- **CYCLE PERIOD:** This determines how frequently the dehumidifier will sample the air to check the humidity level. Set to 1 hour and adjust as needed.
- For Ventilation switch settings, see VENTILATION section beginning on page 14.
- Leave the LOCAL/EXTERNAL switch in the LOCAL position if using the dehumidifier's onboard control. If installing a separate control, see MODEL 76 EXTERNAL CONTROL on page 19, MODEL 76 REMOTE CONTROL on page 20, or MODEL 8910 HOME COMFORT CONTROL™ OR THIRD-PARTY CONTROL on page 21.

FIGURE 16 – Single Zone – Not Ducted to HVAC System, DIP Switch Settings



SEQUENCE OF OPERATION (Refer to pages 19-21 for sequence with alternate controls.)

- Sampling will occur at the end of the Cycle Period. At the onset of sampling, the dehumidifier damper output turns on, the dehumidifier blower turns on, and the green Status LED flashes.
- After three minutes, the dew point of the incoming air is measured and compared to the setting on the control knob. If the dew point of the incoming air is above the setting, the compressor turns on and the green Status LED switches to solid illumination. If the dew point is below the setting, the dehumidifier damper output turns off and the dehumidifier blower turns off along with the green Status LED.
- The dew point of the incoming air is continuously monitored during compressor operation. When the dew point of the incoming air falls below the setting on the control knob, the dehumidifier damper output turns off and the dehumidifier compressor and blower turn off along with the green Status LED.

TWO ZONE – PRIMARY AND SECONDARY ZONED INSTALLATION

In this installation the dehumidifier controls the humidity in two separate zones, Primary and Secondary. The dehumidifier will dehumidify the Primary Zone as the first priority, and will switch to the Secondary Zone after the dehumidification needs of the Primary Zone have been satisfied. The dryness level set on the dehumidifier control knob will be the setting for both zones. If a Model 76 Control, Model 8910 Home Comfort Control, or Third-Party Control (external control) is installed, the dehumidifier will control to both the control knob and external control setting. If an external control is used, it must be installed in the Primary Zone. Common examples of Two Zone installations include the whole-home as the Primary Zone and the basement as the Secondary Zone, or the basement as the Primary Zone and the whole-home as the Secondary Zone. **IMPORTANT: Normally Closed dampers must be installed in the ducts serving the Primary Zone and Normally Open dampers installed in the ducts serving the Secondary Zone.**

Required Components

Duct Work
 18 – 22 AWG Wire
 Grilles
 2 – Aprilaire Model 6508, 8" Normally Closed Damper
 2 – Aprilaire Model 6608, 8" Normally Open Damper
 24 VAC Transformer (40VA min.) for Dampers

NOTE: 4522 Basement Kit includes 2 – 6508 Dampers, 2 – 6608 Dampers and a 24 VAC Transformer.

Optional Components

Condensate Pan & Normally Closed Float Switch
 Model 76 Control
 Model 8910 Home Comfort Control™
 Third-Party Control

DUCTING

FIGURE 17a – Two Zone Installation, Whole-Home as Primary Zone

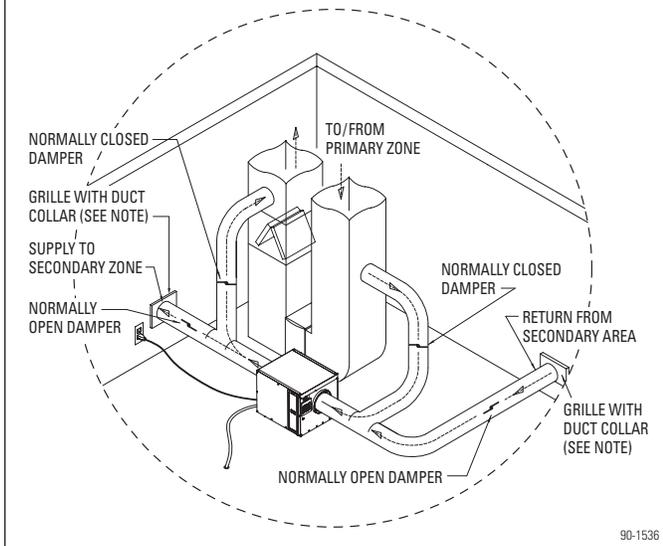
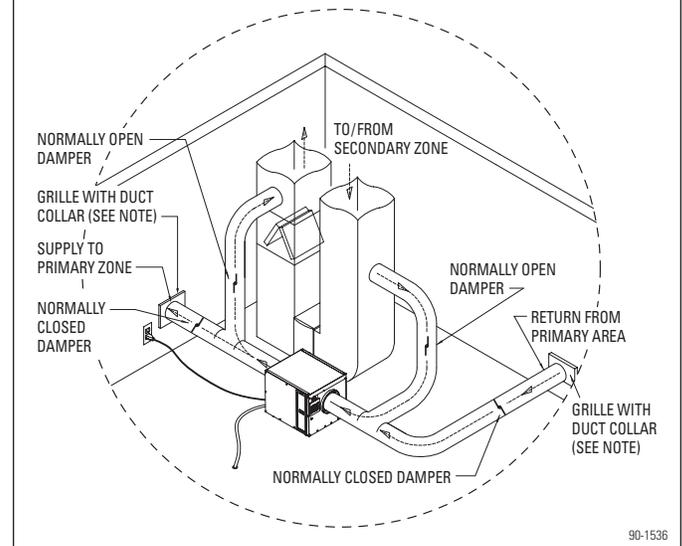


FIGURE 17b – Two Zone Installation, Basement as Primary Zone

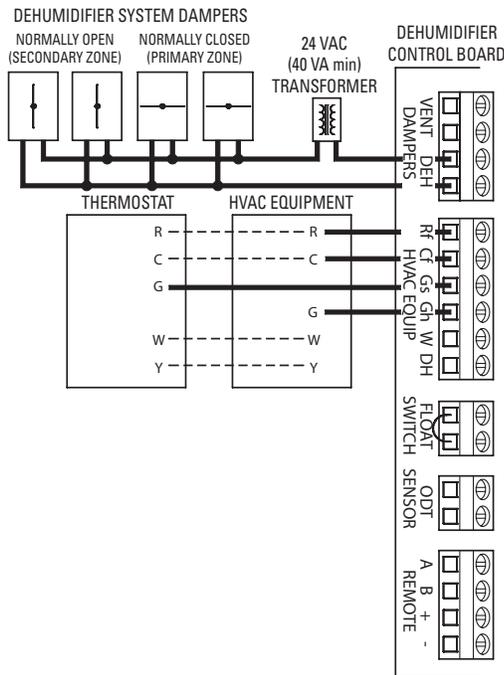


Ducting Note: The 1770A delivers approximately 500 CFM and the 1750A delivers approximately 275 CFM. Size ductwork and install multiple branches and grilles as needed to reduce airflow velocities to acceptable levels for the application.

TWO ZONE – PRIMARY AND SECONDARY ZONED INSTALLATION (CONTINUED)

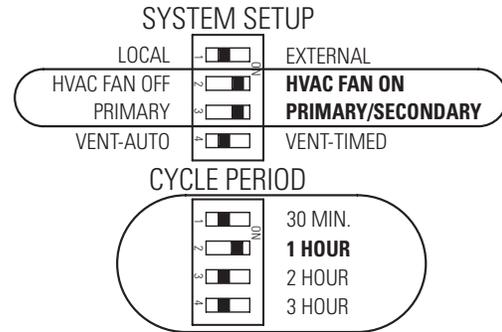
WIRING & DIP SWITCH CONFIGURATION

FIGURE 18 – Two Zone Wiring



90-1537

FIGURE 19 – Two Zone DIP Switch Settings



90-1538

- **HVAC FAN ON:** In the HVAC ON position, the HVAC fan will be turned on only when dehumidifying the Primary Zone. Activating the HVAC fan during dehumidification provides better circulation and balancing of indoor air conditions but does not affect moisture removal efficiency. During Secondary Zone dehumidification, the HVAC fan will not be turned on regardless of the switch position. If the switch is put in the HVAC FAN OFF position, air is pulled through the unit, dehumidified, and circulated solely by the dehumidifier blower.
- **CYCLE PERIOD:** This determines how frequently the dehumidifier will sample the air to check the humidity level. Set to 1 hour and adjust as needed.
- For Ventilation switch settings, see VENTILATION section beginning on page 14.
- **LOCAL/EXTERNAL:** If using a Model 76 External Control, Model 8910 Home Comfort Control™, or other Third-Party Control, place the switch in the EXTERNAL position. If not using an external control, leave the switch in the LOCAL position. **IMPORTANT: The external control must be installed in the Primary Zone.** See page 19 for Model 76 External Control wiring or page 21 for Model 8910 Home Comfort Control™ or Third-Party Control wiring.

TWO ZONE – PRIMARY AND SECONDARY ZONED INSTALLATION (CONTINUED)

SEQUENCE OF OPERATION

- The Primary Zone takes priority during dehumidifier operation. Primary Zone sampling occurs at the end of each Cycle Period and Secondary Zone sampling occurs at the beginning of each Cycle Period. If the dehumidifier is actively dehumidifying the Primary Zone at the beginning of the Cycle Period, Secondary Zone sampling will not occur during that Cycle Period. Primary Zone sampling will also override a Secondary Zone dehumidification demand.
- If a Model 76, Model 8910 Home Comfort Control™, or other Third-Party Control is installed in the Primary Zone, dehumidification of the Primary Zone will occur on-demand. Secondary Zone sampling will occur at the beginning of each Cycle Period unless actively dehumidifying the Primary Zone. A Primary Zone demand will override a Secondary Zone demand.
- At the onset of Primary Zone sampling, the dehumidifier damper output turns on, the dehumidifier blower turns on, and the green Status LED flashes. After three minutes, the dew point of the incoming air is measured and compared to the setting on the control knob. If the dew point of the incoming air is above the setting, the compressor turns on and the green Status LED switches to solid illumination. If the dew point is below the setting, the dehumidifier damper output turns off and the green Status LED begins flashing as the dehumidifier begins Secondary Zone sampling. After three minutes of Secondary Zone sampling, the dew point of the incoming air is measured and compared to the setting on the control knob. If the dew point of the incoming air is above the setting, the compressor turns on and the green Status LED switches to solid illumination. If the dew point is below the setting, the dehumidifier blower turns off along with the green Status LED. (See page 19, MODEL 76 EXTERNAL CONTROL for Primary Zone dehumidification sequence when a Model 76 is installed.)
- The dew point of the incoming air is continuously monitored during compressor operation. When the dew point of the incoming air falls below the setting on the control knob, the dehumidifier damper output turns off and the dehumidifier compressor and blower turn off along with the green Status LED.
- After the dehumidifier blower has turned off, one minute must elapse before it can be turned on again (i.e., following a Whole-Home sampling). If one minute has not elapsed, the Status LED will flash and the dehumidifier blower will turn on after one minute.

VENTILATION OR AIR CYCLING

The dehumidifier has outputs available to open a normally closed damper, introducing outdoor air through an outdoor air intake duct. See **Figure 20a** for standard ventilation ducting.

The dehumidifier can be used to pre-condition the ventilation air, removing moisture before it is delivered to the home. This feature is only available in single zone installations and when using the onboard control (no External or Remote Control). See **Figure 20b** for pre-conditioned ventilation ducting. In this configuration balancing dampers are used to ensure that the desired ventilation airflow is brought into the home. **Note: The dip switches must be set for Local and Primary in this configuration.**

Ventilation is controlled by the Cycle Period switches, Cycle Time potentiometer, and Vent-Auto/Vent-Timed switches. If the ventilation damper is not installed, the dehumidifier will function in Air Cycling mode, activating the HVAC blower to cycle air through the home based on the Cycle Period and Cycle Time.

Required Components

Aprilaire Model 6506, 6" Normally Closed Damper
 24 VAC Transformer (10VA min.) for Ventilation Damper
 6" Insulated Duct and Fittings
 18-22 AWG Wire
 Intake Hood

Optional Component

8052 Outdoor Temperature Sensor

DUCTING & WIRING

FIGURE 20a – Whole-Home with Ventilation

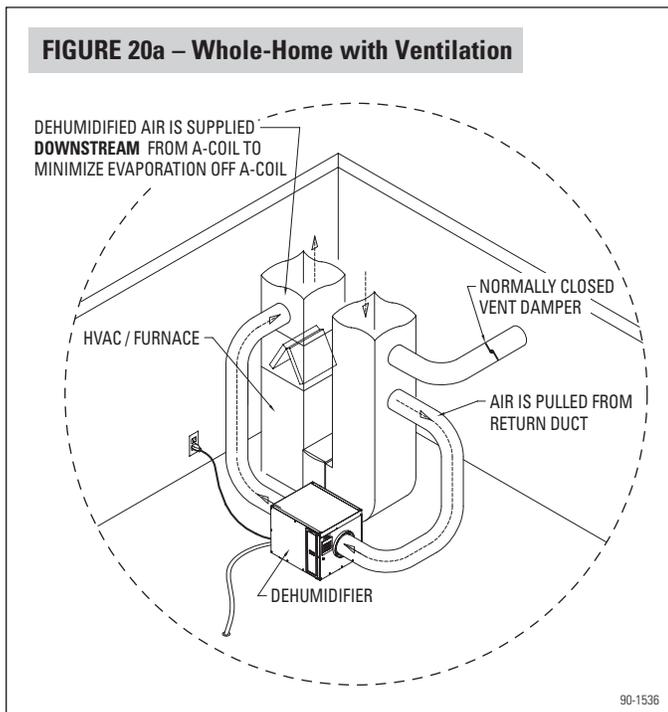
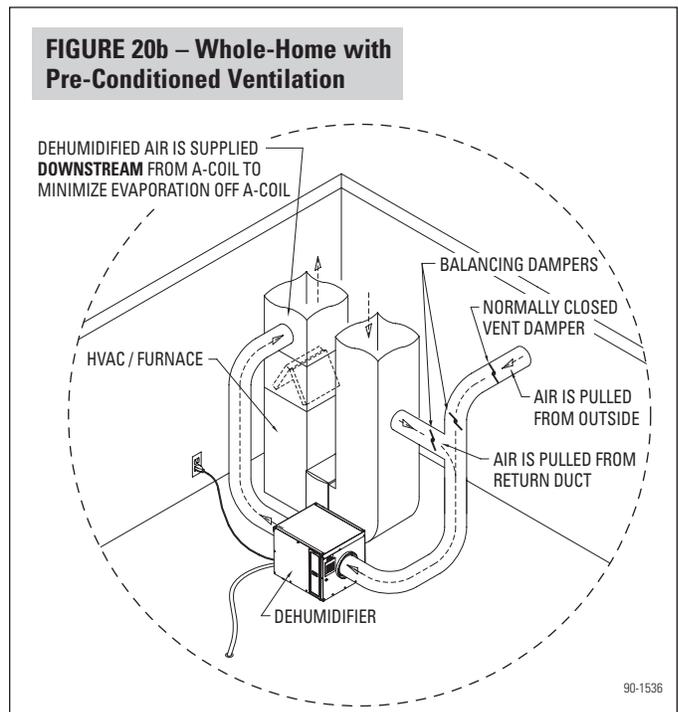


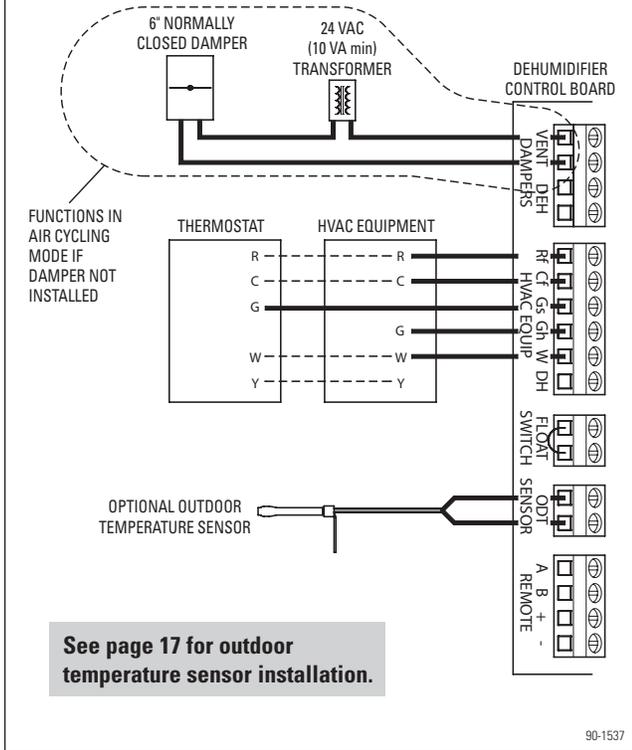
FIGURE 20b – Whole-Home with Pre-Conditioned Ventilation



Ducting Note: Direct ducting the ventilation intake duct to the dehumidifier inlet duct is acceptable if the incoming temperature of the mixed air will be greater than 40°F and less than 140°F.

VENTILATION OR AIR CYCLING (CONTINUED)

FIGURE 21 – Ventilation Wiring



DETERMINE VENTILATION REQUIREMENTS

CALCULATING AIRFLOW REQUIREMENT

1. The MINIMUM ventilation requirement is calculated using ASHRAE 62.2.

$$\text{ASHRAE Airflow in CFM} = [\text{House Area in Sq. Ft.} \times 0.01] + [(\text{Number of Bedrooms} + 1) \times 7.5]$$

Notes: Use 'Number of Bedrooms +1' or the 'Number of Occupants', whichever is larger.

2. **Table 3** shows calculated airflow values to the nearest 5 CFM.
3. Record the Required CFM. _____

TABLE 3 – CFM Required

House Sq. Ft.	Number of Bedrooms				
	2	3	4	5	6
1000	35	40	50		
1500	40	45	55	60	70
2000	45	50	60	65	75
2500	50	55	65	70	80
3000	55	60	70	75	85
3500			75	80	90

VENTILATION OR AIR CYCLING (CONTINUED)

DETERMINE FRESH AIR DELIVERY RATE

1. Measure the negative static pressure of the return system at the location where the outdoor air duct enters the return duct.
2. See **Table 4** for estimated inlet airflow in CFM, based on duct type, length, and available negative pressure. Use an airflow measuring device for a more accurate airflow delivery rate.
3. Record the Delivered CFM. _____

TABLE 4 – CFM Delivered												
Duct Length	Negative Static Pressure ("w.c.) as Measured for Return Duct or Plenum											
	0.05		0.1		0.15		0.2		0.25		0.3	
	Flex	Pipe	Flex	Pipe	Flex	Pipe	Flex	Pipe	Flex	Pipe	Flex	Pipe
10 ft.	60	65	85	90	105	110	120	125	135	140	150	160
20 ft.	55	60	80	85	100	105	115	120	130	135	140	150
30 ft.	50	55	75	80	95	100	110	115	125	130	130	140

Note: For the table above, 6" flex duct is laid loose with two, wide 90° bends and a fully opened damper. Rigid pipe values are based on 6" duct, two 90° elbows, and a fully open damper. In both cases, the air intake is through a metal vent hood with inlet screen. Airflow may need to be adjusted up or down for variations in duct work.

DETERMINE CYCLE TIME

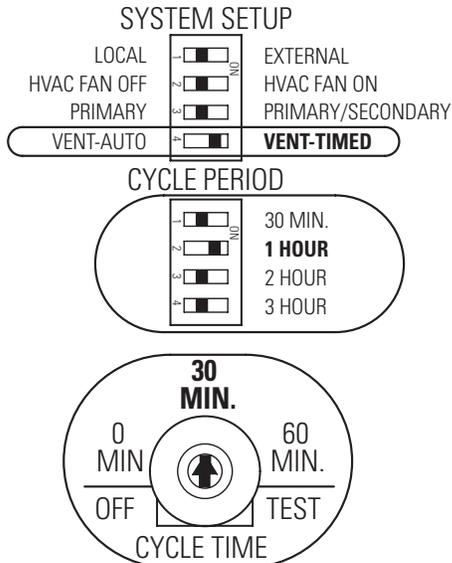
1. Use the Required CFM and Delivered CFM from the above steps to determine the Cycle Time from **Table 5**.
2. The values are listed for a 1 hour Cycle Period. For a 2 hour Cycle Period, set the Cycle Time to twice the values listed in **Table 5**.
3. The values highlighted in gray cannot be set due to the maximum 60 minute Cycle Time. A second ventilation device (i.e., bigger duct or second duct) will be required to meet ventilation needs.

TABLE 5 – Cycle Time Setting (minutes) for Airflow Delivered vs. Airflow Required for 1 hour Cycle									
CFM Delivered	CFM Required								
	20	30	40	50	60	70	80	90	100
60	20	30	40	50	60	70	80	90	100
80	15	25	30	40	45	55	60	70	75
100	15	20	25	30	35	40	50	55	60
120	10	15	20	25	30	35	40	45	50
140	10	15	15	20	25	30	35	40	45
160	10	10	15	20	25	25	30	35	40

VENTILATION OR AIR CYCLING (CONTINUED)

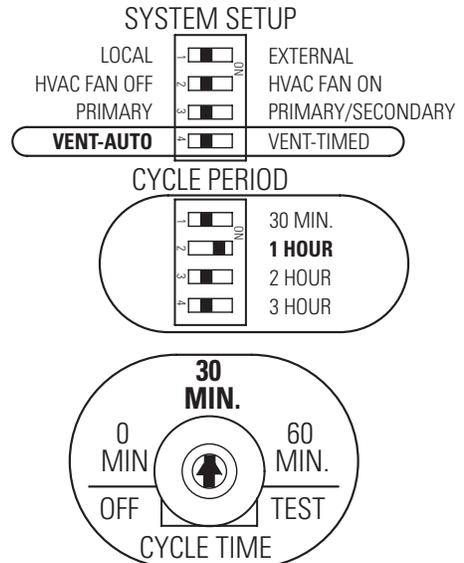
SETTING DIP SWITCHES & CYCLE TIME TO MEET VENTILATION REQUIREMENTS

FIGURE 22 – VENT-TIMED DIP Switch Settings



90-1538

FIGURE 23 – VENT-AUTO DIP Switch Settings



90-1538

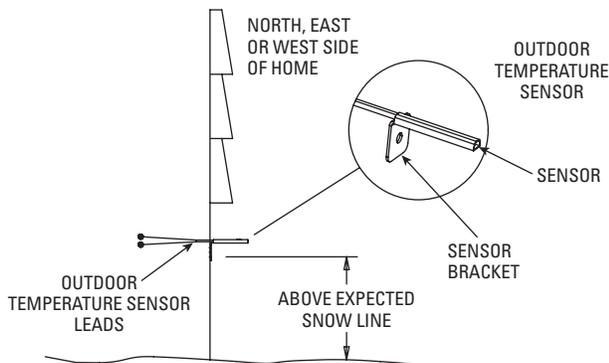
Switch Notes:

- Setting the Cycle Time \geq Cycle Period will result in constant ventilation.
 - Setting the Cycle Time to OFF will disable ventilation.
1. Set VENT-AUTO and VENT-TIMED switch. VENT-AUTO restricts ventilation based on outdoor temperature (incoming air conditions) and VENT-TIMED allows ventilation regardless of outdoor air conditions. The VENT-AUTO configuration requires the installation of the Model 8052 outdoor temperature sensor (ODT).
 2. Set the Cycle Period by moving the 1/2, 1, 2, or 3 hour switch to the ON position. The Cycle Period is the time over which a ventilation cycle will occur. The default position is 1 hour.
 3. Set the Cycle Time, determined in **Table 5**, by rotating the potentiometer between 0 minutes and 60 minutes. The Cycle Time determines how long during each Cycle Period ventilation will occur. Once the ventilation time requirement is met, ventilation will not occur until the next cycle period.

OUTDOOR TEMPERATURE SENSOR INSTALLATION

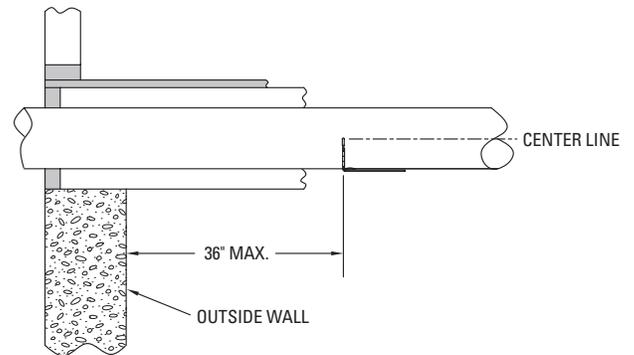
The ODT should be installed outside in a shaded location (see **Figure 24**), or in the outside intake ventilation duct (see **Figure 25**).

FIGURE 24 – ODT Mounted Outside



B2202617-D

FIGURE 25 – ODT Mounted in Intake Duct



B2202617-E

VENTILATION OR AIR CYCLING (CONTINUED)

SEQUENCE OF OPERATION

VENT-TIMED, HVAC INITIATES VENTILATION

- The ventilation damper will open whenever there is an HVAC fan (Gs) or heat (W) call, and will stay open until the Cycle Time (during the Cycle Period) has been met.
- When the HVAC heat or fan call has ended or when the ventilation time requirement has been met, the ventilation damper will close.
- Two minutes must elapse following the end of a HVAC fan or heat call before the dehumidifier can initiate a ventilation cycle.

VENT-TIMED, DEHUMIDIFIER INITIATES VENTILATION

- When the amount of time remaining in the Cycle Period is equal to the amount of time needed to satisfy the Cycle Time, the HVAC fan turns on and the ventilation damper opens.
- When the ventilation time requirement has been met, the HVAC fan turns off and the ventilation damper closes.
- To prevent short cycling the fan, a ventilation cycle will not start unless there are at least 2 minutes remaining in the Cycle Period.

DEHUMIDIFICATION DURING VENTILATION

When installed in a Single Zone application **and** there is **no** External or Remote Control, the dehumidifier can be used to pre-condition the ventilation air.

- The dehumidifier damper output and dehumidifier blower turn on whenever ventilation is active.
- The dew point of the air is measured 3 minutes after the dehumidifier blower is turned on and every 15 seconds while the blower is running.
- If the dew point of the air is above the setting on the control knob, the compressor turns on and the green Status LED switches to solid illumination.
- When the dew point of the air falls below the control knob set point, the compressor turns off and the Status LED flashes.

VENT-AUTO

Ventilation in the Vent-Auto configuration is functionally the same as Vent-Timed operation, with the exception of the temperature limits applied to the incoming air.

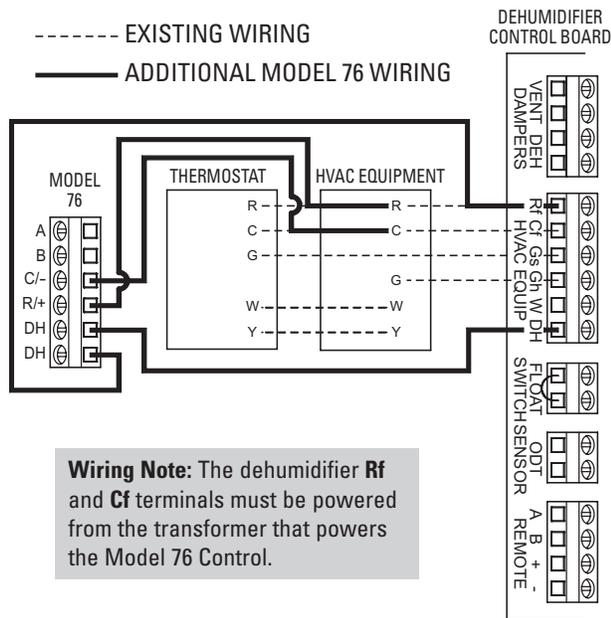
- If the incoming air temperature is greater than or equal to 100°F, the ventilation damper closes. If the temperature drops to 95°F or lower during the same ventilation cycle, the ventilation damper will open.
- If the incoming air temperature is less than or equal to 0°F, the ventilation damper closes. If the temperature increases to 5°F or higher during the same ventilation cycle **and** the ventilation cycle was initiated by a HVAC heat (W) call, the ventilation damper will open.
- If the air temperature is less than or equal to 20°F and above 0°F, the ventilation damper will close unless a HVAC heat (W) call initiates the ventilation cycle. If the air temperature drops to 0°F or below during the same ventilation cycle, the ventilation damper closes. If the temperature rises to 25°F or higher during the same ventilation cycle, the ventilation damper will open.

MODEL 76 EXTERNAL CONTROL

When used as an external control, the Model 76 acts like a dehumidistat and will turn the dehumidifier on and off when the relative humidity goes above or below the setting. **The Model 76 must be installed in the space that is being served by the dehumidifier.** One example of this would be to install the Model 76 in the home's living space and wire it to the dehumidifier which is located in the basement and is ducted to the HVAC system. The Model 76 will override the dehumidifier control sensors and on-board control knob setting. Refer to the Model 76 Installation Instructions for location, mounting, and operating instructions. The dehumidifier control knob can only be used to initiate Test Mode when a Model 76 is connected.

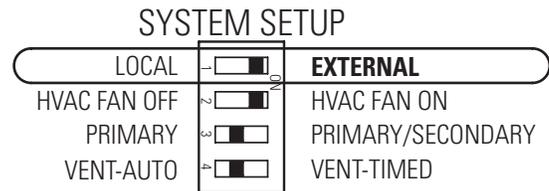
WIRING & DIP SWITCH CONFIGURATION

FIGURE 26 – Model 76 External Control Wiring



90-1537

FIGURE 27 – Model 76 External Control DIP Switch Configuration



90-1538

SEQUENCE OF OPERATION

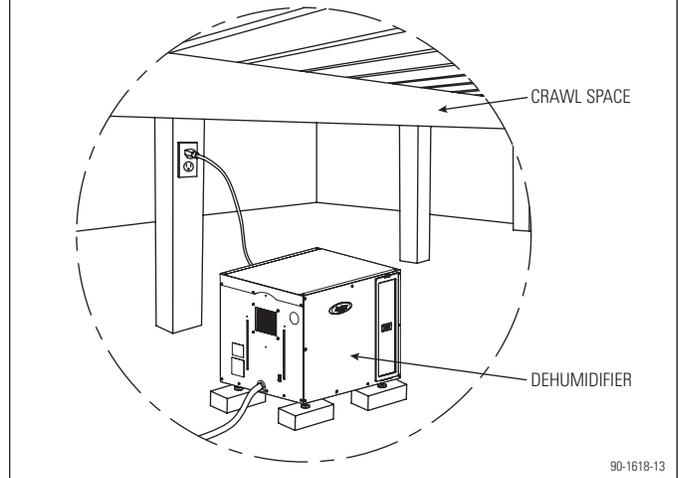
Whole-Home

- When the measured humidity is greater than the humidity setting on the Model 76, **ON** blinks on the LCD display, the dehumidifier damper output turns on, the dehumidifier blower turns on, and the green Status LED on the dehumidifier flashes.
- Three seconds after the dehumidifier blower turns on, the compressor turns on and the green Status LED switches to solid illumination.
- When the measured humidity falls 3% below the setting on the Model 76, the LCD displays a solid **ON**, the dehumidifier damper output turns off and the dehumidifier compressor and blower turn off along with the green Status LED.

MODEL 76 REMOTE CONTROL FOR CRAWL SPACES

When used as a remote control, the Model 76 can be installed in any convenient location within the living space while the dehumidifier is installed in an inconvenient or difficult to access area that is going to be dehumidified, such as a crawl space, sealed attic, or basement (if getting to the basement is inconvenient or difficult for the owner). The dryness level is set on the Model 76 control and communicated to the dehumidifier, which then dehumidifies the area to that setting. The dehumidifier communicates the measured humidity level (%RH) in the space where it is located to the Model 76 Control, where it is displayed. The dehumidifier can be turned on and off using the ON/OFF buttons of the Model 76 Control. Refer to the Model 76 Installation Instructions for mounting and operating instructions. The dehumidifier control knob can only be used to initiate Test Mode when a Model 76 is connected.

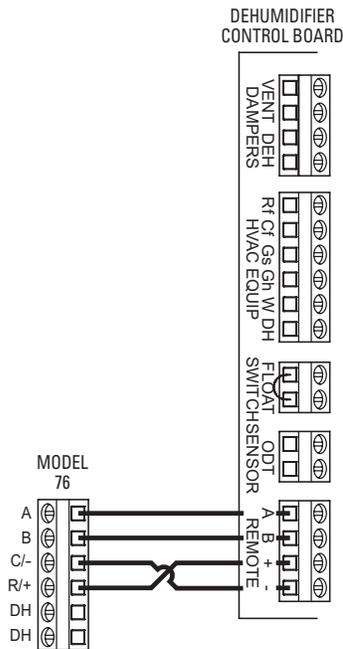
FIGURE 28 – Crawl Space Installation



90-1618-13

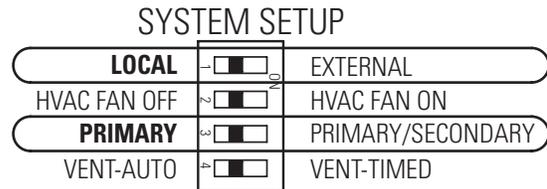
WIRING & DIP SWITCH CONFIGURATION

FIGURE 29 – Model 76 Remote Control Wiring



90-1537

FIGURE 30 – Model 76 Remote Control DIP Switch Configuration



90-1538

SEQUENCE OF OPERATION

- Once during every Cycle Period (set on the dip switches in the dehumidifier) the dehumidifier blower and dehumidifier damper output will turn on and sample the air in the area served by the dehumidifier. Sampling will also occur whenever the dryness level setting is raised at the Model 76 Control. The green Status LED on the dehumidifier will flash during sampling.
- After three minutes, the dew point of the air is measured and compared to the dryness level set on the Model 76 Control. If the dew point of the air is above the setting, the compressor turns on and ON will flash on the Model 76 Control.
- The dew point of the air is continuously monitored during compressor operation. When the dew point of the air falls below the setting, the dehumidifier compressor and blower will turn off and ON will stop flashing on the Model 76 Control.

MODEL 8910 HOME COMFORT CONTROL™ OR THIRD-PARTY CONTROL

When used as an external control, the Model 8910 Home Comfort Control™ or other third-party control acts like a dehumidistat and will turn the dehumidifier on and off when the relative humidity goes above or below the setting. **The Model 8910 Home Comfort Control™ or other Third-Party Control must be installed in the space that is being served by the dehumidifier.** One example of this would be to install the Model 8910 Home Comfort Control™ in the home's living space and wire it to the dehumidifier which is located in the basement and is ducted to the HVAC system. The Model 8910 Home Comfort Control™ or other third-party control will override the dehumidifier control sensors and on-board control knob setting. Refer to the Model 8910 Home Comfort Control™ or other third-party control Installation Instructions for location, mounting, and operating instructions. The dehumidifier control knob can only be used to initiate Test Mode when a Model 8910 Home Comfort Control™ or other third-party control is connected.

WIRING & DIP SWITCH CONFIGURATION

FIGURE 31 – Model 8910 Home Comfort Control™ Wiring

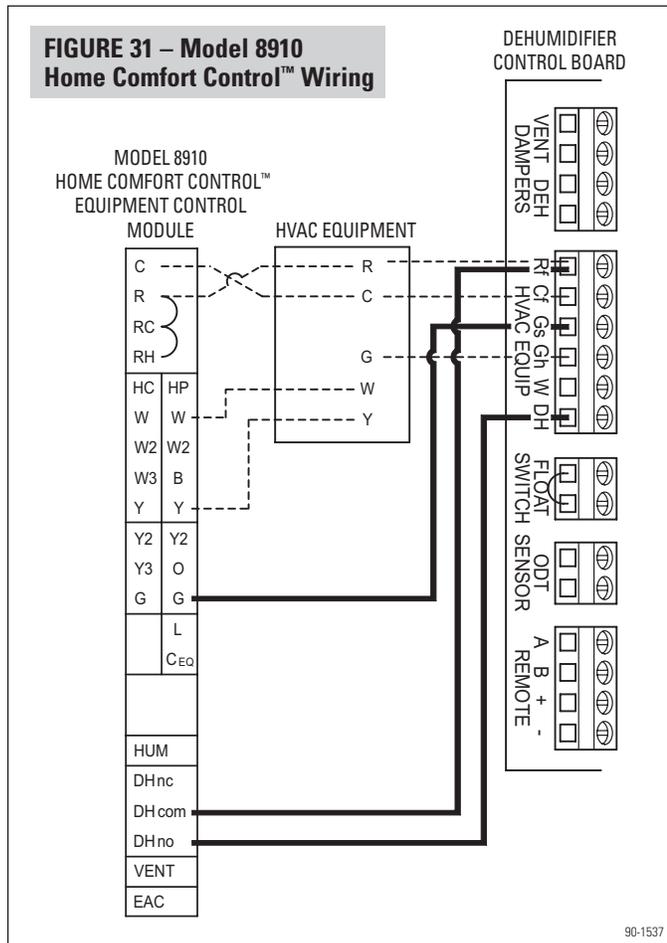
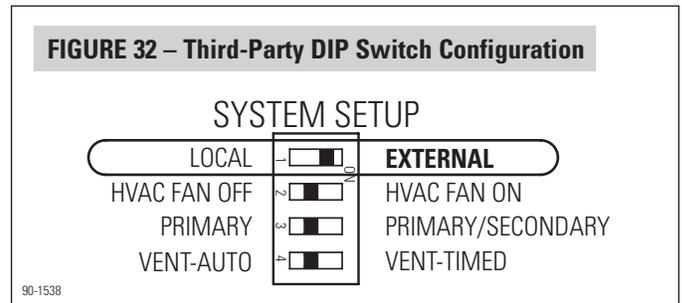


FIGURE 32 – Third-Party DIP Switch Configuration



Wiring Notes:

- DEH output(s) on control must be normally open.

IMPORTANT: The dehumidifier Rf and Cf terminals must be powered from the transformer that powers the Model 8910 Home Comfort Control™ or third-party control.

Third-Party Control with 2 Dehumidifier Connections

1. Connect one thermostat dehumidifier terminal to the Rf terminal on the dehumidifier control board.
2. Connect the other thermostat dehumidifier terminal to the DH terminal on the dehumidifier control board.

Third-Party Control with 1 Dehumidifier Connection

Connect the thermostat dehumidifier terminal to the DH terminal on the dehumidifier control board.

SEQUENCE OF OPERATION

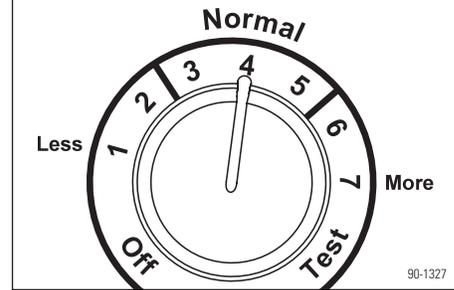
- When the measured humidity is greater than the humidity setting on the Model 8910 Home Comfort Control™ or other Third-Party Control, the dehumidifier damper output turns on, the dehumidifier blower turns on, and the green Status LED on the dehumidifier flashes.
- Three seconds after the dehumidifier blower turns on, the compressor turns on and the green Status LED switches to solid illumination.
- When the measured humidity falls below the setting on the Model 8910 Home Comfort Control™ or other Third-Party Control, the dehumidifier damper output turns off and the dehumidifier blower and compressor turn off along with the green Status LED.

SYSTEM CHECKOUT

DEHUMIDIFICATION

1. Check the wiring to the HVAC equipment and any accessories if applicable.
2. Plug unit in and turn on/off switch to ON.
3. Wait 5 seconds then rotate the main control knob clockwise to the TEST position.
4. If set up correctly, the dehumidifier blower will turn on and the dehumidifier damper output will turn on. After 3 minutes the dehumidifier compressor will turn on. The blower and compressor will remain on for 1 minute in TEST mode. After 1 minute has elapsed, the dehumidifier blower and compressor will turn off and the dehumidifier damper output will turn off.
5. The Status LED will blink red and green alternately if the control knob has been left in TEST after the compressor has turned off.

FIGURE 33 – Control Knob Setpoint



ADJUSTING DEHUMIDIFIER SETTING

1. Use the control knob on the unit to set the desired dryness level.
 - Based on indoor temperature, use **Table 6** to determine the control knob setting to achieve the desired humidity level.
 - For most installations, start with a setting in the NORMAL range. See **Figure 33**.
 - Moving the knob clockwise towards MORE will increase dehumidifier run time, allowing for lower humidity levels.
 - Moving the knob counterclockwise towards LESS will decrease dehumidifier run time, allowing for higher humidity levels.
2. Reference the Installation Instructions for the Model 76 Control, Model 8910 Home Comfort Control™, or Third-Party Control for setting adjustments.

TABLE 6 – %RH (± 5%) Based on Control Knob Setting & Indoor Temperature

Control Knob Setting & Dew Point	Indoor Temperature			
	65°F	70°F	75°F	80°F
1 – Less, 65°F DP		84%	71%	60%
2 – 60°F DP	86%	73%	61%	52%
3 – Normal, 56°F DP	74%	63%	53%	45%
4 – Normal, 52°F DP	64%	54%	45%	39%
5 – Normal, 48°F DP	55%	46%	39%	33%
6 – 44°F DP	47%	39%	33%	28%
7 – More, 40°F DP	40%	34%	28%	24%

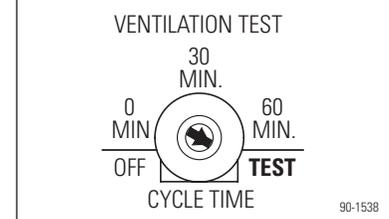
EXAMPLE: At an indoor temperature of **75°F** and a control knob setting of **3 (56°F DP)**, the dehumidifier will work to achieve a **53%** humidity level.

- The %RH values are ± 5% and are to be used as a **GUIDE ONLY** for initial set-up.
- Indoor temperature is measured at the inlet to the dehumidifier.

VENTILATION

1. Verify 24 VAC is applied in series with the normally-closed damper and connected to the VENT DAMPER terminals on the dehumidifier control board.
2. Remove the wiring access door and rotate the CYCLE TIME potentiometer clockwise to the TEST position. See **Figure 34**.
3. If set up properly, the HVAC blower will turn on and the ventilation damper will open. The HVAC blower will remain on and the ventilation damper will remain open for 1 minute or until the dial is turned out of the TEST position. **DO NOT leave CYCLE TIME set to TEST.** If the HVAC blower fails to turn on or the damper fails to open, refer to the Troubleshooting Guide.

FIGURE 34 – Ventilation Test



TROUBLESHOOTING

Technical Support is available Monday through Friday, 7:00 a.m. to 5:00 p.m. CST, at (800) 334-6011. Use the guides on the following pages to identify and correct system faults. Contact Technical Support before replacing the unit or components and for additional troubleshooting.

LED CODES

The dehumidifier control board uses the Status LED to communicate current status or a fault code. Faults can be either critical or non-critical. When a critical fault is detected, the red LED will flash the fault code and all outputs will immediately turn off. A critical fault can be cleared by repairing the fault **and** cycling power or turning the control knob to OFF. When a non-critical fault is detected, the red LED will flash the fault code and the dehumidifier will revert to limited operation. A non-critical fault will be cleared when the fault is repaired. Cycling power is not required to revert back to full operation.

TABLE 7 – Green LED Codes

Activity	Status
Solid ON	Compressor ON
Blinking 1 sec. ON & 1 sec. OFF	Sampling
Blinking 1/2 sec. ON & 1/2 sec. OFF	Defrosting
Alternating Green & Red	Control knob was left in Test Mode

TABLE 8 – Red LED Codes

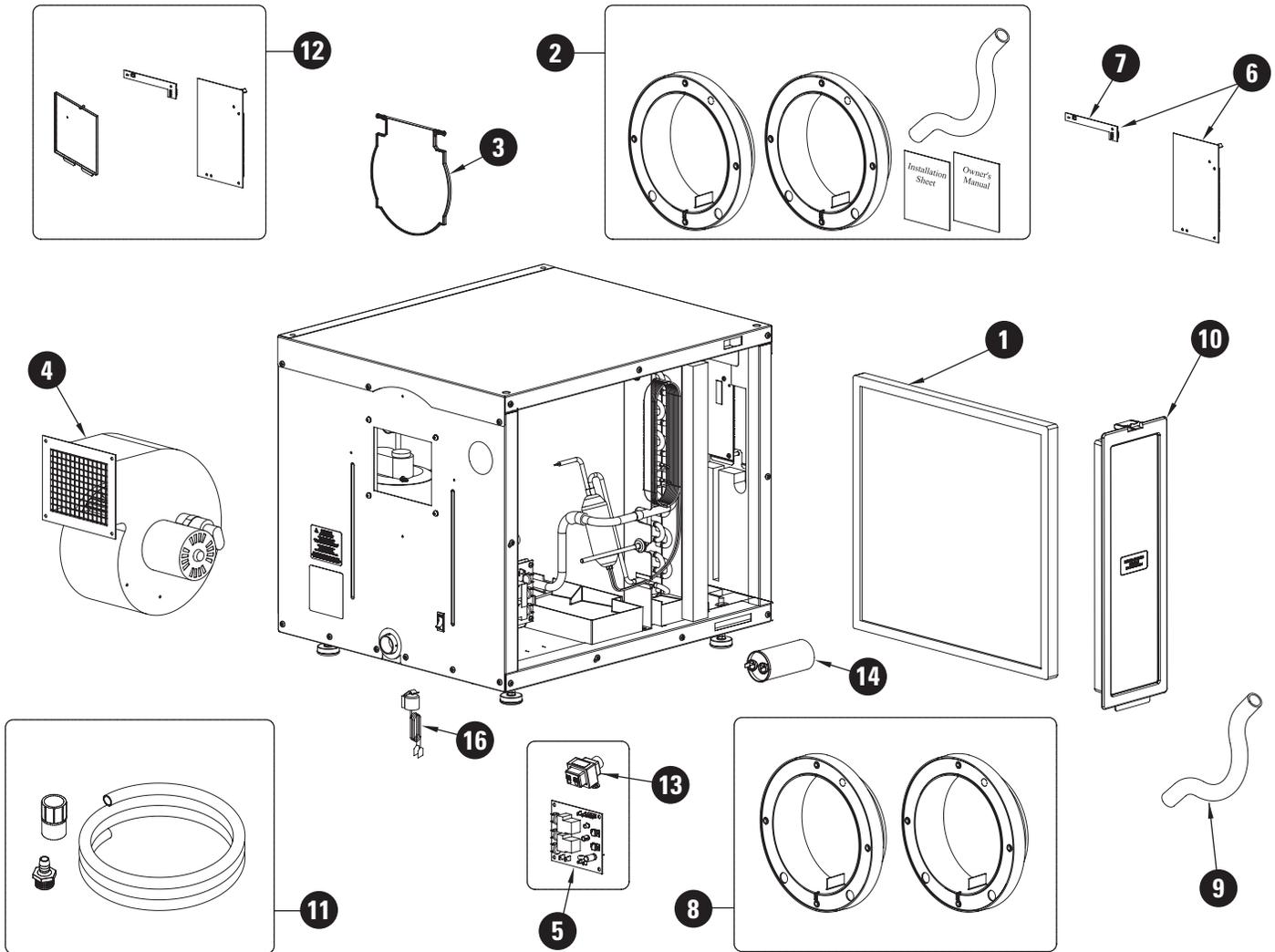
Number of Blinks	Fault Type	Failure Mode	Failure Condition	Action
1	Critical	Internal RH sensor fault.	RH sensor non-existent, erratic or reads out of 0% –100% range.	<ol style="list-style-type: none"> 1. Check connection between sensor board and control board. 2. If connection okay, replace sensor board, Part No. 4752.
2	Critical	Internal temperature sensor fault.	Temperature sensor non-existent, erratic or reads out of -20°F –150°F range.	<ol style="list-style-type: none"> 1. Check connection between sensor board and control board. 2. If connection okay, replace sensor board, Part No. 4752.
3	Critical	Model 76 Remote Control fault.	Model 76 Remote Control not communicating with dehumidifier.	<ol style="list-style-type: none"> 1. Check connections between Model 76 and dehumidifier control board. 2. If connections are correct and secure, turn off the dehumidifier and remove the Model 76. Use a short section of 4-wire cable to reconnect the Model 76 to the control board. Turn the dehumidifier back on and increase the dryness level setting on the Model 76. If the dehumidifier turns on, the problem is with the wiring between the dehumidifier and control. 3. If the dehumidifier does not turn on, call Technical Support.
4	Critical	Insufficient capacity.	After 20 minutes of compressor operation, the frost sensor temperature is not at least 5°F below the inlet air temperature.	<ol style="list-style-type: none"> 1. Check the frost sensor connection at the control board. 2. Remove the side panel (when facing side of unit, on/off switch will be on left) and verify the temperature sensor is not damaged, is fully inserted in the sensor well, and the well is filled with thermal paste. 3. If the sensor is not damaged and positioned correctly, contact Technical Support.
5	Non-Critical	Inlet air temperature out of range.	Internal temperature sensor reads out of 50°F –105°F range for compressor operation. NOTE: If compressor is on when fault condition occurs, the compressor will turn off. If the compressor is not on when the fault condition occurs, there is no fault.	<ol style="list-style-type: none"> 1. Circulate air through the unit by setting the Cycle Period to 1 hour and Cycle Time to 60 minutes. After a minimum of 10 minutes, cycle power to the dehumidifier. 2. If fault persists, call Technical Support.
6	Critical	Frost sensor failure.	Frost temperature sensor non-existent, erratic or reads out of -20°F –150°F range.	<ol style="list-style-type: none"> 1. Check the frost sensor connection at the control board. 2. Remove the side panel (when facing side of unit, on/off switch will be on left) and verify the temperature sensor is not damaged, is fully inserted in the sensor well, and the well is filled with thermal paste. 3. If the fault persists, contact Technical Support.
7	Non-Critical	Float switch open.	Open circuit between float switch inputs.	<ol style="list-style-type: none"> 1. Empty the condensate pan. 2. Check the float switch connection at the control board. 3. If not using float switch, verify jumper is between float switch terminals on dehumidifier control board. 4. If the problem persists, replace the float switch.

TROUBLESHOOTING (CONTINUED)

TABLE 9 – Troubleshooting Guide

Symptom	Possible Reason	Troubleshooting Procedure													
Dehumidifier does not turn on/run.	No power to unit.	<ul style="list-style-type: none"> • Check that the dehumidifier is plugged in. • Check that the power switch on the dehumidifier is ON. • Check that control knob is set to a dryness level number. • Check that the circuit breaker has not tripped. The 1750A requires approximately 8 amps and the 1770A requires approximately 14 amps. 													
Dehumidifier blower is running but little or no airflow.	Pressure drop across dehumidifier is higher than 0.8" w.c. (1750A) or 1.5" w.c. (1770A).	<ul style="list-style-type: none"> • Check dehumidifier air filter and wash or replace. • Check for blocked duct work and clear. • Verify that the backflow damper is installed in the outlet duct collar and not the inlet duct collar. • Check if back flow damper is blocked or stuck and remove obstruction. 													
Dehumidifier blower is running but compressor is not.	Float switch open.	<ul style="list-style-type: none"> • If float switch installed, check connections at control board and empty condensate pan. • If no float switch installed, check that the jumper is installed at the float switch terminals on control board. 													
	Coil frosting.	<ul style="list-style-type: none"> • Lack of, or reduced airflow. Check/clean filter and check for blocked duct work. • Inlet air conditions below 60°F. Use the control knob to turn down the dryness setting. 													
The dehumidifier damper does not open in TEST Mode.	Incorrect damper wiring or bad connection.	<ul style="list-style-type: none"> • Verify wiring between dampers and 24 VAC transformer. • If wired for Primary/Secondary operation, verify that 24 VAC transformer is 40 VA minimum. • Check all wiring connections between dampers and control board. 													
HVAC fan does not turn on when CYCLE TIME potentiometer is turned to TEST.	No power to HVAC equipment.	<ul style="list-style-type: none"> • Verify there is power to the HVAC equipment. 													
	No power to dehumidifier.	<ul style="list-style-type: none"> • Check the voltage across the R & C terminals on the dehumidifier control board. Voltage should be 18 VAC – 30 VAC. 													
	Incorrect wiring.	<ul style="list-style-type: none"> • Verify wiring and connections between the thermostat, HVAC, and dehumidifier. 													
HVAC fan operates continuously after control knob is moved out of TEST.	HVAC call or constant fan.	<ul style="list-style-type: none"> • HVAC equipment is making a call. • The HVAC fan is set to constant ON. 													
	Dehumidifier air cycling/ventilation set to constant ON.	<ul style="list-style-type: none"> • If the Cycle Time is equal to or greater than the Cycle Period, HVAC fan operation will be continuous. • Reduce the Cycle Time if constant fan is not desired. 													
The ventilation damper does not open when the HVAC fan is active.	Cycle time met.	<ul style="list-style-type: none"> • The damper will not open if the Cycle Time has already been met. 													
	ODT error or inlet air out of temperature range.	<ul style="list-style-type: none"> • Check that the ODT is wired correctly to dehumidifier control board and connections are secure. • Check that ODT is installed in the outdoor air intake according to set-up in Ventilation Section starting on page 14. • Remove the ODT leads from the dehumidifier control board and check the resistance. Compare the reading with the table at right. <table border="1" data-bbox="1107 1268 1446 1530"> <thead> <tr> <th>Outdoor Temperature</th> <th>Resistance</th> </tr> </thead> <tbody> <tr> <td>0°F</td> <td>84,500 OHMS</td> </tr> <tr> <td>20°F</td> <td>46,000 OHMS</td> </tr> <tr> <td>40°F</td> <td>26,000 OHMS</td> </tr> <tr> <td>60°F</td> <td>15,500 OHMS</td> </tr> <tr> <td>80°F</td> <td>9,500 OHMS</td> </tr> <tr> <td>100°F</td> <td>6,000 OHMS</td> </tr> </tbody> </table>	Outdoor Temperature	Resistance	0°F	84,500 OHMS	20°F	46,000 OHMS	40°F	26,000 OHMS	60°F	15,500 OHMS	80°F	9,500 OHMS	100°F
Outdoor Temperature	Resistance														
0°F	84,500 OHMS														
20°F	46,000 OHMS														
40°F	26,000 OHMS														
60°F	15,500 OHMS														
80°F	9,500 OHMS														
100°F	6,000 OHMS														
Dehumidifier is not draining properly.	Drain line or drain trap blocked.	<ul style="list-style-type: none"> • Check that the drain trap is installed correctly. • Check the drain trap and drain line for blockage by slowly pouring one pint of water into the dehumidifier drip pan located below the coil. • Check drain line for continuous downward slope. 													
The HVAC fan turns on unexpectedly.	Sampling or air cycling.	<ul style="list-style-type: none"> • Dehumidifier will turn on HVAC fan during sampling and as needed to meet air cycling or ventilation requirements as determined by the Cycle Period and Cycle Time. 													
Dehumidifier is producing hot air.	Normal function.	<ul style="list-style-type: none"> • Air is reheated across the condenser coil, resulting in a temperature rise between inlet and outlet. 													

SERVICE PARTS



No.	Part Description	Qty/Ctn	Part No.
1	Filter	1	4510
2	Drain Trap/Collars	1	4843
3	Backflow Damper	1	4918
4	Blower/Motor Assembly, 1710A/1750A	1	4515
	Blower/Motor Assembly, 1770A	1	4646
5	Power Supply Board	1	5260
6	Control Board Kit (includes control board and sensor board)	1	4518
7	Sensor Board	1	4752
8	Duct Collars	2	4751
9	Drain Trap and PVC Elbow	1	4842
10	Filter Door	1	4861
11	Condensate Drain Hose Assembly (included with Model 1710A only)	1	4863
12	LED Control Board Kit (includes control board, sensor board, and LED control door)	1	4864

No.	Part Description	Qty/Ctn	Part No.
13	10 VA Transformer	1	5262
14A	Capacitor, 60MF, 1770A	1	5255
14B	Capacitor, 55MF, 1710A/1750A	1	4922
16	High Temperature Cutout Switch	1	4924
Other Parts			
	Zoned Installation Kit (2-NO 8" Damper, 2-NC 8" Damper, Transformer)	1	4522
	Low Profile Condensate Pump with 20' condensate hose	1	4856
	Living Space Duct Kit (25' of 8" insulated flex duct with 2 quick install grilles)	1	4857
	External Dehumidifier Control	1	76
	Indoor Air Quality System (Equipment Control Module & User Interface Module)	1	8910



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