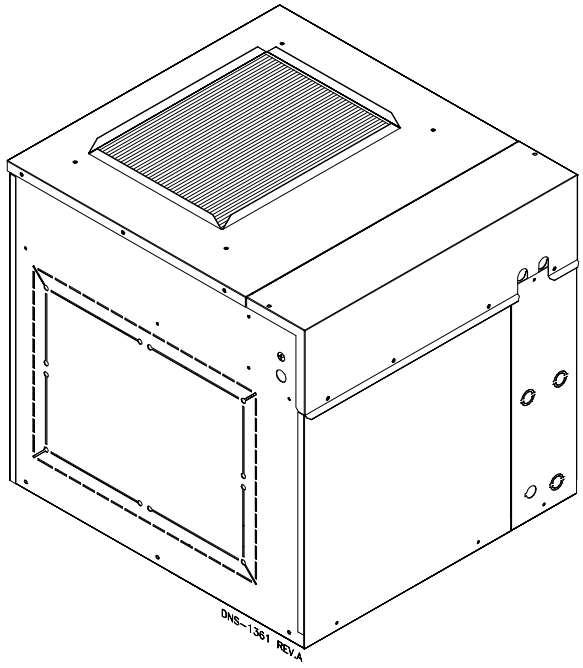
DCAH Series

Installation Instructions and Homeowner's Manual

HEATING & AIR CONDITIONNING UNIT

Models:

DCAH-36-2
DCAHV-36-2
DCAH-55-3
DCAHV-55-3



C US

Manufactured by:

Dettson Industries Inc

3400, Industrial Boulevard
Sherbrooke, Qc, Canada, J1L 1V8

www.dettson.ca

Attention
Do not tamper with the unit or its controls. Call a qualified service technician.

INSTALLER / SERVICE TECHNICIAN :

Use the information in this manual for the installation / servicing of the furnace and keep the document near the unit for future reference.

HOMEOWNER :

Please keep this manual near the furnace for future reference.

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1.0 SAFETY CONSIDERATIONS

1.1 SAFETY INFORMATION ; DANGER, WARNING AND CAUTION

Understand these signal words: **DANGER**, **WARNING** and **CAUTION**. These words are used with the safety-alert symbol. You will find them in this manual in the following formats:

DANGER

DANGER identifies the most serious hazards which will result in severe personal injury or death.

WARNING

WARNING signifies hazards which could result in personal injury or death.

CAUTION

CAUTION is used to identify unsafe practices which may result in minor personal injury or product and property damage.

1.2 IMPORTANT INFORMATIONS

WARNING

Non-observance of the safety regulations outlined in this manual will potentially lead to consequences resulting in death, serious bodily injury and/or property damage.

a. **It is the homeowner's responsibility to engage a qualified technician for the installation and subsequent servicing of this unit;**

b. **Do not use this unit if any part of it was under water. Call a qualified service technician immediately to assess the damage and to replace all critical parts that were in contact with water;**

c. **Do not store gasoline or any other flammable substances, such as paper, carton, etc. near the unit;**

d. **Never block or otherwise obstruct the filter and/or return air openings;**

e. **Ask the technician installing your unit to show and explain to you the following items:**

   I. **The main disconnect switch;**

   II. **The water shut-off valves;**

   III. **The air filter and how to change it (check monthly and clean or replace if necessary).**

f. **Before calling for service, be sure to have the information page of your manual close by in order to be able to provide the contractor with the required information, such as the model and serial numbers of the unit.**

WARNING

Installations and repairs performed by unqualified persons can result in hazards to them and to others. Installations must conform to local codes or, in the absence of same, to codes of the country having jurisdiction.

The information contained in this manual is intended for use by a qualified technician, familiar with safety procedures and who is equipped with the proper tools and test instruments.

Failure to carefully read and follow all instructions in this manual can result in death, bodily injury and/or property damage.

WARNING

Electrical shock hazard.

Failure to disconnect main switch may result in personal injury or death.
Turn off all power before servicing.

WARNING

Hot water can scald.

The hot water used by this unit can scald. Wait for the unit to cool down before servicing.

1.3 DANGER OF FREEZING

CAUTION

If your unit is shut down during the cold weather season, water pipes may freeze, burst and cause serious water damage. Turn off the water supply and bleed the pipes.

If the unit is left unattended during the cold weather season, take the following precautions**:**

a. Close the main water valve in the house and purge the pipes if possible. Open all the faucets in the house;

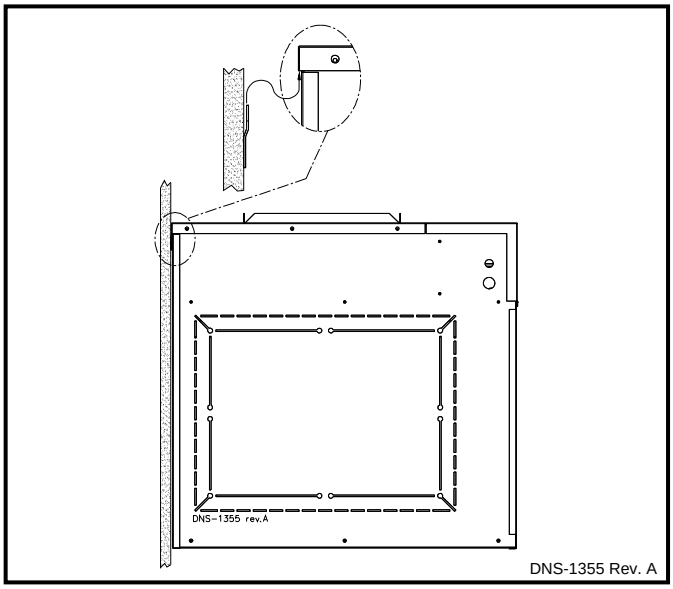
b. Ask someone to frequently check the house during the cold weather season to make sure that there is sufficient heat to prevent the pipes from freezing. Tell this person to call an emergency number if required.

2.0 INSTALLATION

This unit uses hot water from a water heater or a boiler to heat the ambient air of a house. It may also have a cooling coil connected to an outdoor cooling unit.

This unit is designed to be installed in a vertical, upflow position either hung on a wall with the provided support (see figure 1) or set on a platform within an equipment closet.

Figure 1 : Installation on wall



If the unit is installed in a humid location, condensation may occur and cause damage. For these installations, the unit should be completely insulated with 1'' thick fibreglass with the vapour barrier on the outside.

While designed to operate quietly when properly installed, several steps should be taken to insure this. Use of isolation pads when mounting unit, flexible duct collars for discharge and use of acoustical duct liners are all good installation practices that promote quiet operation.

⚠ CAUTION

Unit must not be operated during building construction due to excessive airborne dust and debris.

The unit must not be operated under any circumstances without an air filter in place. Dirt will clog the coils and the efficiency of the unit will be drastically affected.

2.1 LOCATION

⚠ CAUTION

The unit must be installed in a level position.

Non-observance of these instructions will potentially result in unit and/or property damage.

⚠ CAUTION

This unit is not watertight and is not designed for outdoor installation. It must be installed in such a manner as to protect its electrical components from water. Outdoor installation will lead to a hazardous electrical condition and to premature failure of the equipment.

This unit has a 0'' minimum clearance to combustible materials rating from all cabinet surfaces. The discharge plenum and duct also carry 0'' safety clearance.

The unit should be installed with a clearance of 30'' from the front of the unit for service. Space should be allowed for filter, pump and electrical compartment access.

2.2 DUCTWORK

The discharge plenum shall be fixed to the exterior of the outlet flange. A flexible duct collar is recommended for a better noise control.

The return duct can be fixed on the right hand or the left hand side of the unit. Cut-off the pre-perced face and the insulation of the desired side. Bend flanged out 90 degres. In order to maximize the airflow of the return duct, it is recommended to completely cover with aluminium tape the pre-perced holes of the unused side and all other places where air can infiltrate the unit.

2.3 HEATING COIL

The heating coil is already installed in the unit. The recirculating pump with its one way valve is integrated to the unit as well. Braze water inlet and outlet as shown on figure 1. Install shut-off valves on hot water supply and water return for servicing the unit.. Install a drainage valve on the water return as shown on figure 2. Verify that all welds are leak free.

When the unit is not used for more than 6 hours, the electronic card activates the pump for 60 seconds. This insure a regular water flow inside the heating coil.

⚠ CAUTION

When brazing, it is recommended to have a fire extinguisher nearby.

In order to prevent any damage, use a heat screen or wet rag when brazing nearby the cabinet or other heat sensitive components.

Do not bend or force the water inlet/outlet of the heating coil. This may cause leakage when water pressure is applied.

2.4 COOLING COIL

The cooling coil may be installed on the right hand or left hand side of the cabinet. The cooling coil is factory set for right hand side installation.

To set the cooling coil on the left hand side:

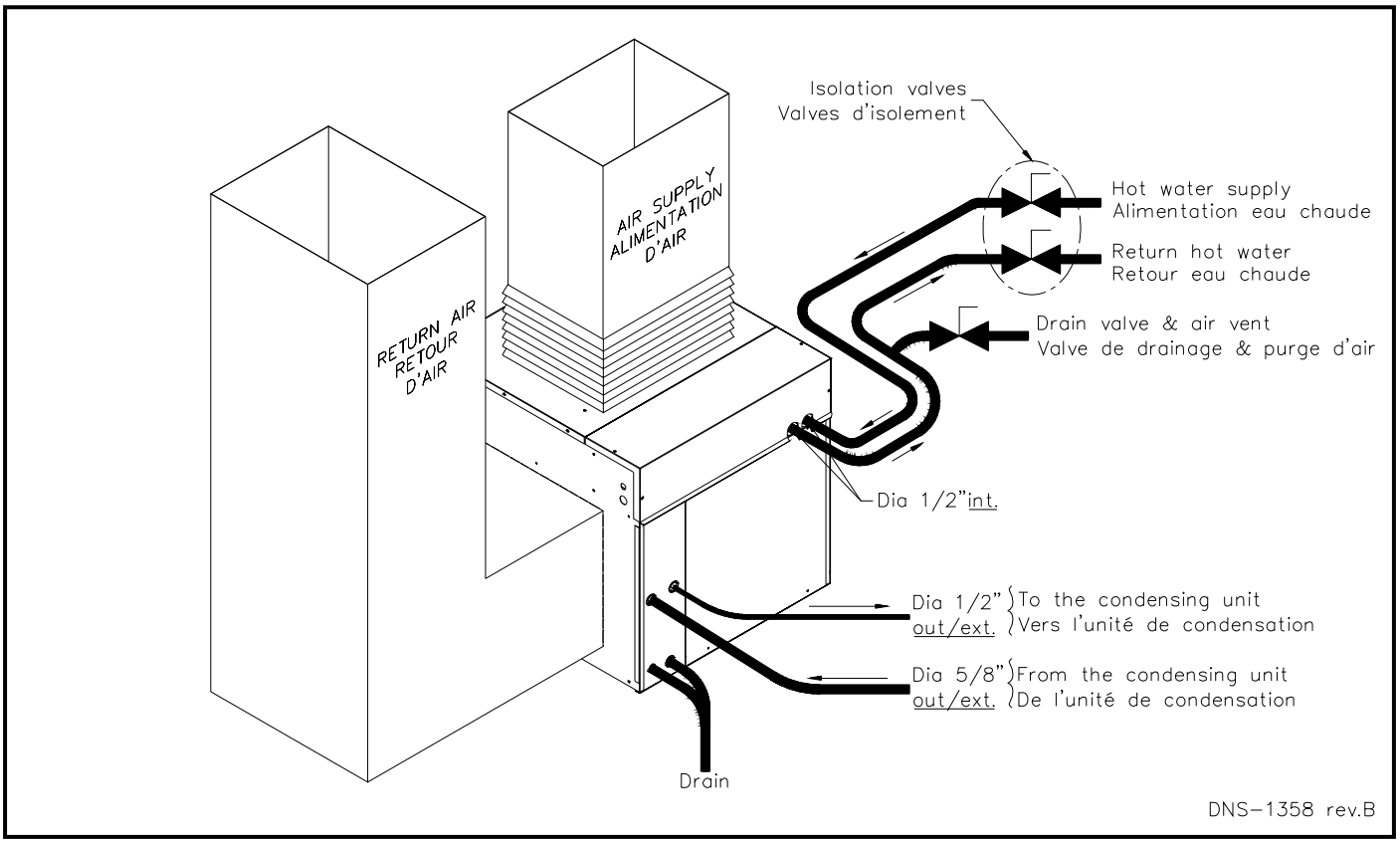
1- Unscrew 4 screws of the drain pan and 4 screws of the top channel. Screw back the top channel in place of the drain pan and the drain pan in place of the top channel. Rotate the coil to be seated on the drain pan again and slide it inside the cabinet, on the left side;

2- Unscrew the blower lock screw, on the blower rail, slide out the blower, reverse it, slide it back and rescrew the lock screw.

The cooling coil must be seated on the Styrofoam block to prevent condensation.

The connections to the outdoor unit are to the front of the unit.

Figure 2 : Water piping installation – heating coil



The main and secondary drain pipe connections are to the front of the unit. Before putting the unit in service, verify the drain pan to be free of any debris. Verify the drains are not clogged.

2.5 ELECTRICAL SYSTEM

The appliance must be installed in accordance with the current ANSI/NFPA 70 National Electrical Code, CSA C22.1 Canadian Electrical Code Part 1 and/or local codes.

⚠ CAUTION

The exterior of the unit must have an uninterrupted ground to minimize the risk of bodily harm, if ever an electrical problem develops. A green ground screw is supplied with the control box for that purpose.

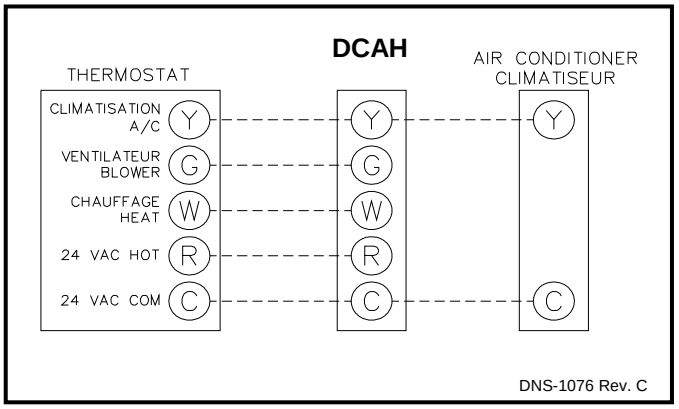
Only copper wire may be used for the 115V circuit on this unit. If wires need to be changed, the replacements must have the same temperature resistance as the originals.

Refer to the nameplate for information on voltage and amperage of this unit.

2.6 INSTALLATION OF THE THERMOSTAT

A thermostat must be installed to control the temperature of the area to be heated. Follow the instructions supplied with the thermostat. Also refer to the wiring diagrams provided with the air conditioning unit. The connections must be made as indicated on the following diagrams (Figures 3, 4 and 5) and the wiring diagrams (Figures 10 and 11)

Figure 3 : Thermostat wiring, heating and cooling – 3 speeds PSC motor



Variable speed models (ECM) Thermostat Field Connections

- Dh — Dh is used if additional latent capacity control is required (see Dehumidification Capability in the Accessories section for more detail). NOTE: the J1 jumper should already be removed from the factory.
- R — R signal is 24V hot to thermostat.
- W1 — W1 signal controls heat from the thermostat.
- W2 — W2 signal from a two-stage thermostat. This unit is not intended for two-stage heating. If a two-stage heating thermostat is used, connect the W2 but **do not remove J2 jumper.**
- Y1 — Connection for the low speed compressor operation.

Y/Y2 Connection for the Y signal or high speed (Y2) signal from the thermostat.

G Connection for the G (fan) signal is energized from the thermostat, 'HUM2' and AUX2' terminals are energized when G energized.

O Connection for the 'O' signal from the thermostat.

C Connection for the C terminal to the thermostat (24V common) also common to SEC1, HUM1, AUX1.

Figure 4 : Thermostat wiring, single stage A/C – Variable speed ECM motor

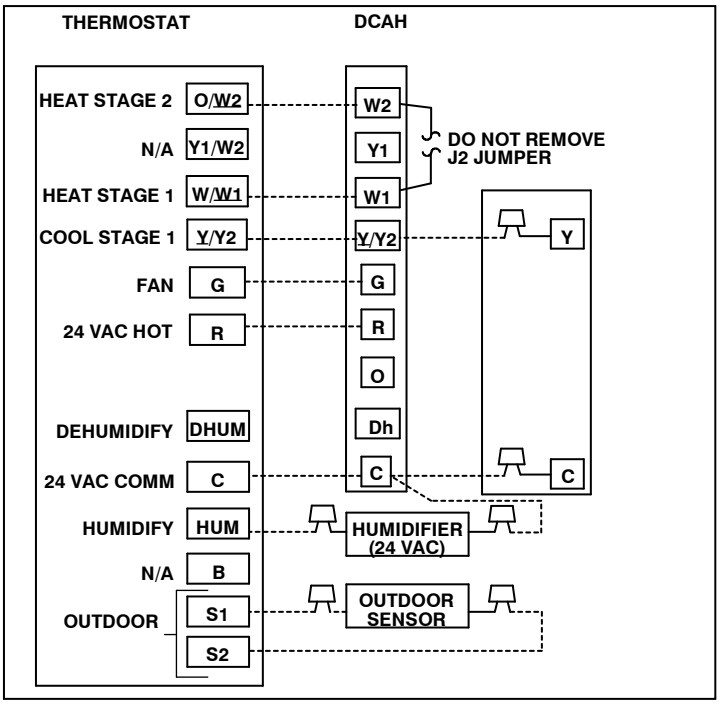
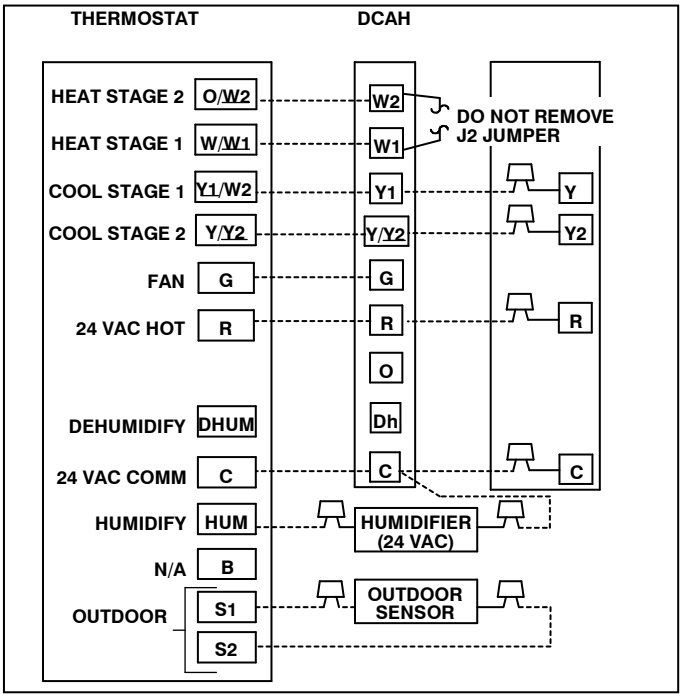


Figure 5 : Thermostat wiring, two-stage A/C – Variable speed ECM motor

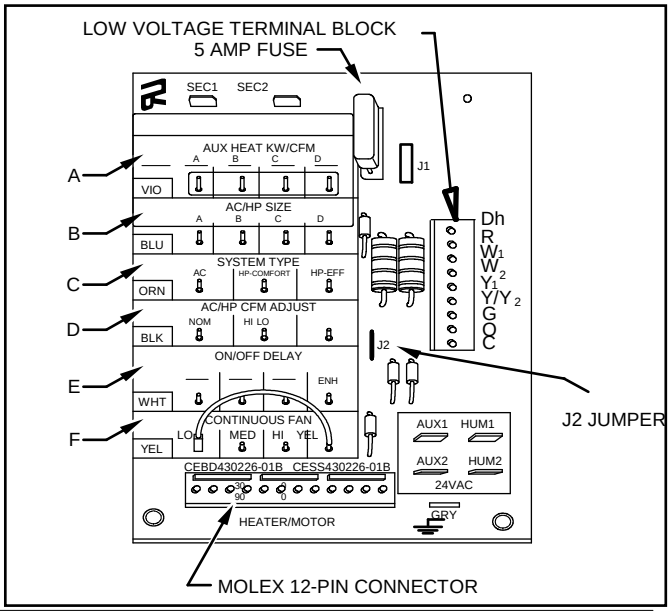


2.7 SUPPLY AIR ADJUSTMENTS AND OTHER BLOWER SETTINGS

Fan Control Board taps are used by the installer to configure a system. The ECM motor uses the selected taps to modify its operation to a pre-programmed table of airflows (Refer to Table 2). Airflows are based on system size or mode of operation and those airflows are modified in response to thermostat inputs.

The DCAHV must be configured to operate properly with system components with which it is installed. To successfully configure a basic system move the 6 select wires to the pins which match the components used or desired operation. (Refer to Figure 6 below)

Figure 6 : Fan Control Board



2.7.1 HEAT CFM ADJUSTMENT (VIOLET WIRE)

The heating mode airflow can be adjusted for desired air temperature rise or desired water temperature delta T. Note that a condensing boiler requires low return water temperature and a non-condensing boiler requires a higher return water temperature.

Move the Violet wire to the proper A, B, C, D pin selection. Refer to Table 2 for airflow data.

2.7.2 OUTDOOR UNIT SIZE (BLUE WIRE)

Select the outdoor unit system size (TON) by using the Blue wire (refer to Table 2).
The installer needs to properly select the outdoor unit size to ensure proper airflow delivery of the DCAHV. This selection affects all operational modes (airflow) with the exception of heat modes.
Move the Blue wire to the proper A, B, C, D pin selection. The outdoor unit size corresponding directly to each pin letter is listed in Table 2.

2.7.3 SYSTEM TYPE (ORANGE WIRE)

The DCAHV operates only with «AC» selection. Do not move the orange wire in order to get the proper airflow for cooling. Identified «SYSTEM TYPE» on the control card.

In «AC» mode, the Air Conditioner provides approximately 400 CFM per ton for greater efficiency and humidity control with the AC/HP CFM ADJUST set to the nominal (NOM) tap. To achieve more or less than 400 CFM per ton, move tap to (HI) or (LO) position respectively. Refer to Table 2 for exact CFM setting.

The factory setting is AC

2.7.4 AC/HP CFM ADJUST (BLACK WIRE)

Select Medium, Low, or High Airflow

To provide airflow at rates described above, the AC/HP ADJUST select is factory set to the nominal (NOM) tap. The adjust selections HI/LO will regulate airflow supplied for all operational modes.

HI provides 15% airflow over nominal in heating and ventilation modes and 10% over nominal in all other modes. Lo provides 15% airflow below nominal in heating and ventilation modes and 10% below nominal in all other modes.

Adjust selection options are provided to adjust airflow supplied to meet individual installation needs for such thins as noise, comfort, and humidity removal. (Refer to Figures 6 and 11 and Table 2)

2.7.5 ON/OFF DELAY (WHITE WIRE)

Select desired time delay profile

NOTE: Delay selections are active in heating mode only. Cooling mode have a 90 seconds OFF delay at 100% airflow and zero (0) ON delay programmed into the ECM motor that cannot be overridden.

Four (4) motor operation delay profiles are provided to customize and enhance system operation. (Refer to Figures 6 and 11 and Table 2)

Selection options are:

First tap: 30 seconds ON delay at 13% airflow and No OFF delay (factory setting).

Second tap: 45 seconds ON delay at 13% airflow and No OFF delay (factory setting).

Third tap: 60 seconds ON delay at 13% airflow and No OFF delay (factory setting).

Fourth tap: 90 seconds ON delay at 13% airflow and No OFF delay (factory setting).

2.7.6 CONTINUOUS FAN (YELLOW WIRE)

NOTE: If installed with a two-stage outdoor unit, do not select HI speed continuous fan. If HI is selected, low stage compression will also run HI fan speed possibly resulting in insufficient dehumidification.

Select desired fan speed when thermostat is set on continuous fan by using the yellow jumper wire. (Refer to Figures 6 and 11 and Table 2)

1. **LO speed** – factory setting, 50% cooling mode airflow.
2. **MED speed** – move connector to MED, 80% cooling mode airflow.
3. **HI speed** – move connector to HI, 100% cooling mode airflow.

2.7.7 LOW-VOLTAGE CIRCUIT

Fusing and Reference

The low-voltage circuit is fused by a board-mounted 5-amp automotive fuse placed in series with the transformer SEC2 and the R circuit. The C circuit of the transformer is referenced to chassis ground through a printed circuit run at SEC1 connected to metal standoff marked with ground symbol.

2.8 INSTALLATION OF ACCESSORIES

⚠ WARNING

Electrical shock hazard.

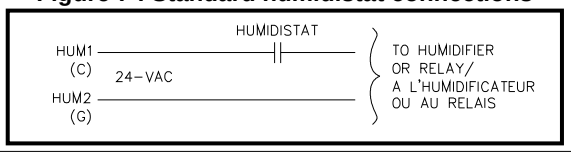
Turn OFF electrical power at the fuse box or service panel before making any electrical connections and ensure a proper ground connection is made before connecting line voltage.

Failure to do so can result in death or bodily injury.

2.8.1 HUMIDIFIER AND HUMIDISTAT CONNECTION

Fan Control Board terminals HUM1 and HUM2 are provided for direct connections to the low-voltage control of a humidifier through a standard humidistat (refer to Figure 7).

Figure 7 : Standard humidistat connections

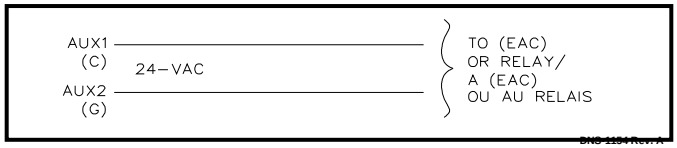


These terminals are energized with 24 VAC when G thermostat signal is present.

2.8.2 ELECTRONIC AIR CLEANER (EAC) CONNECTIONS

Fan Control Board terminals AUX1 and AUX2 are provided for direct connections to the low-voltage control of an electronic air cleaner. These terminals are energized with 24 VAC when G thermostat signal is present (refer to Figure 8).

Figure 8 : Electronic air cleaner connections



2.8.3 DEHUMIDIFY CAPABILITY WITH STANDARD HUMIDISTAT CONNECTION

Latent capacities for systems using this unit are better than average systems. If increased latent capacity is an application requirement, the field wiring provides a connection terminal (DH) for use of a standard humidistat. The unit control will detect the humidistat contact opening on increasing humidity and reduce its airflow to approximately 80% of nominal cooling mode airflow. This reduction will increase the system latent capacity until the humidity falls to a level which causes the humidistat contact to close its contacts.

3.0 OPERATION

3.1 START-UP

Before starting up the unit, be sure to check that the following items are in compliance:

1. The main electrical power is conform to the information on the nameplate;
2. The unit is properly grounded;
3. With main power disconnected, verify that the blower wheel is well fixed on the motor shaft and the wheel turns freely;
4. Verify all coils, valves and piping are leak free and insulated if required;
5. Insure all air in the hot water loop is vented to prevent premature pump failure;
6. **Make sure all panels are installed. A safety switch prevent the start-up of the blower if the blower door is not installed;**
7. **The air filter is installed on the return duct and in proper direction;**
8. **All dirt and debris are removed.**

3.2 HEATING START-UP :

1. Fill the water heater. Open a hot water faucet to vent all air in the water heater. Close faucet when all air is vented.
2. Start the water heater and set the temperature to 140F.
3. Close inlet water shut-off valve to the heating coil. Open the return water shut-off valve. Open the drain / vent valve. When all air is vented, close return water shut-off valve and reopen the inlet water shut-off valve. Redo this procedure until all air has been vented out the heating coil. Close drain / vent valve. Open both shut-off valves.
4. Set the room thermostat in heating mode and adjust temperature above ambient temperature. If the pump is in function but there's no circulation, open the drain / vent valve until all air is completely vented.
5. The water heater temperature shall be readjusted as near to 140F until the temperature has stabilized.

3.3 OPERATING SEQUENCE – VARIABLE SPEED ECM MOTOR

The blower motor is a true variable speed motor designed to deliver constant CFM. Constant CFM is valid for systems with total external static pressure between 0.1 and 0.7 inches water column.

3.3.1 CONTINUOUS FAN

- Thermostat closes circuit R to G.
- Blower runs at continuous fan airflow.

3.3.2 COOLING MODE – SINGLE STAGE

- If indoor temperature is above temperature set point and humidity is below humidity set point, thermostat closes circuits R to G, R to Y/Y2 and R to O.

NOTE: For single stage systems, do not use the Y1 terminal.

- Unit delivers single stage cooling airflow.

3.3.3 COOLING MODE – TWO STAGE

- First stage (low) cooling: Thermostat closes circuits R to G, R to O, and R to Y1.
- Unit delivers low stage cooling airflow.
- Second stage (high) cooling: Thermostat closes circuits R to G, R to O, R to Y1 and R to Y/Y2.
- Unit delivers high stage cooling airflow.

3.3.4 COOLING MODE – DEHUMIDIFICATION

NOTE: Remove jumper « J1 » on board to activate this function. (Refer to Figures 6 and 11)

- If indoor temperature is above temperature set point and humidity is above humidity set point, thermostat closes circuits R to G, R to Y/Y2 and R to O and humidistat opens circuit R to DH.
- The unit delivers airflow which is approximately 80% of the nominal cooling airflow to increase the latent capacity of the system.

3.3.5 HEATING MODE

- Thermostat closes circuit R to W1 or W2.
- Unit delivers the selected heat airflow.
- Unit delivers high stage heating airflow (100% of nominal electric heating airflow) and maximum heating capacity is powered starting the heating elements in sequence with a delay of 8 seconds between each.

4.0 MAINTENANCE

WARNING

Electrical shock hazard.

Turn OFF power to the unit before any disassembly or servicing.

Failure to do so can result in death, bodily injury and/or property damage.

Frequent maintenance will prevent premature failure and inconveniences. A qualified technician shall regularly inspect the system.

To maintain reliability and optimal performance of this unit, perform an annual complete verification of the system. Do not attempt to repair the unit or its controls. Call a qualified technician.

To order a replacement part, specify the model and serial number of your appliance.

4.1 BLOWER AND MOTOR

The blower and motor should be cleaned annually. Verify that the wheel turns freely. Verify electrical connection on the motor.

4.2 HEATING AND COOLING COILS

Inspect and clean the coils annually or more frequently as necessary.

4.3 FILTER

The air filter must be cleaned or replaced every month or more frequently in severe conditions. Always replace with same type of filter.

4.4 DRAINS

At the beginning of the summer, verify main and secondary drains for blockage. Verify regularly throughout the season.

5.0 UNIT INFORMATIONS

Model: _____ Serial number: _____

Installation date: _____

Tel. Number (day): _____ Evening: _____

Name and address of technician: _____

6.0 TECHNICAL DATA

Table 1 : Technical specifications

ELECTRICAL DATA								
	ELECTRICAL SUPPLY				AMPERAGE			
MODEL DCAH	VOLTS	PHASE	HERTZ	HP MOTOR (115V)	MOTOR	PUMP	CIRCUIT AMPACITY	BREAKER SIZE
36-2	115	1	60	1/3	5,0	0,75	7,2	15
V-36-2	115	1	60	1/2	7,7	0,75	10,6	15
55-3	115	1	60	1/2	6,5	0,75	9,1	15

DCAH-36-2 Airflow vs static pressure - 3 speeds PSC motor

		Static Pressure							
Speed	Coil(s)	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80
Low	Heating	1000	975	960	895	875	840	770	650
	Heating & Cooling	945	920	860	805	770	725	610	525
Medium	Heating	1095	1070	1035	985	940	890	820	740
	Heating & Cooling	1050	960	945	920	860	800	730	580
High	Heating	1160	1155	1100	1000	990	935	880	785
	Heating & Cooling	1105	1060	980	950	865	820	730	595

DCAH-55-3 Airflow vs static pressure - 3 speeds PSC motor

		Static Pressure							
Speed	Coil(s)	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80
Low	Heating	1095	1090	1080	1065	1050	1020	980	915
	Heating & Cooling	1020	1090	1065	1040	1005	965	905	745
Medium	Heating	1365	1350	1335	1300	1260	1210	1155	1085
	Heating & Cooling	1345	1305	1260	1210	1155	1095	1030	915
High	Heating	1595	1555	1515	1460	1410	1355	1295	1210
	Heating & Cooling	1445	1410	1365	1310	1260	1180	1115	1020

HEATING PERFORMANCES *		
MODEL DCAH	CFM NOMINAL	BTU/H @ 140F WATER INLET
36-2	600	30 100
	700	32 600
	800	34 300
	900	37 500
	1000	39 600
	1100	41 300

HEATING PERFORMANCES *		
MODEL DCAH	CFM NOMINAL	BTU/H @ 140F WATER INLET
55-3	900	44 500
	1000	49 000
	1100	50 400
	1200	52 200
	1300	53 900
	1400	56 400

* Water flow: 3 GPM; Air return: 70F

Table 2 : Airflow tables for DCAHV-36-2 & DCAHV-55-3 – Variable speed ECM motor

HEATING MODE 24 VAC (R) input on W1 and/or W2 only			DELAY PROFILES FOR HEATING MODE		
HEAT KW/CFM Adjustment VIOLET wire position	CFM 24 VAC on W1 and/or W2		ON / OFF DELAY Adjustment WHITE wire position	ON-Delay Time - % CFM	OFF-Delay Time
	36	55			
A	1200	1300	1st tap	30 sec. - 13%	0 sec.
B	1000	1200	2nd tap	45 sec. - 13%	0 sec.
C	800	1100	3rd tap	60 sec. - 13%	0 sec.
D	600	900	4th tap	90 sec. - 13%	0 sec.

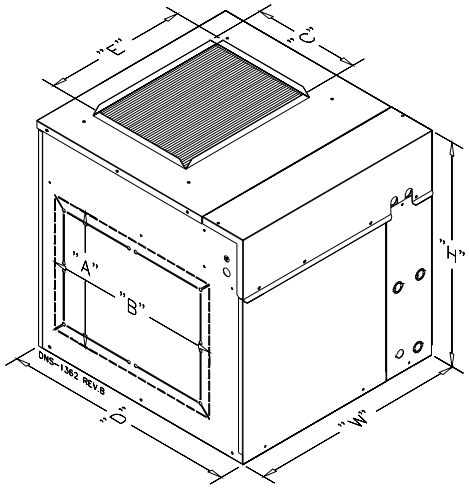
COOLING MODE (WITH AC SELECTED **) 24 VAC (R) input on G, Y/Y2 and O (for cooling)								
AC / HP SIZE Adjustment BLUE wire position	A/C size (TONS)		CFM * AC/HP CFM ADJUST BLACK wire position = (NOM)		CFM * AC/HP CFM ADJUST BLACK wire position = (LO)		CFM * AC/HP CFM ADJUST BLACK wire position = (HI)	
	36	55	36	55	36	55	36	55
A	2.5	3.5	1100	1400	990	1260	1200	1400
B	2.0	3.0	800	1200	720	1080	880	1320
C	1.5	2.5	600	1000	540	900	660	1100
D	1.0	2.0	400	800	360	720	440	880

* In cooling - Dehumidification mode (with jumper **J1** removed), with no 24 VAC input to DH, the CFMs are reduced by 10%.
* The CFMs shown are reduced by 20% if there is 24 VAC input to Y1 only (Y/Y2 not powered)
** SYSTEM TYPE selected to AC corresponds to 400 CFM/TON

CONTINUOUS FAN 24 VAC (R) input on G only								
AC / HP SIZE Selection BLUE wire position	A/C size (TONS)		CFM * CONTINUOUS FAN YELLOW wire position = (LO)		CFM * CONTINUOUS FAN YELLOW wire position = (MED)		CFM * CONTINUOUS FAN YELLOW wire position = (HI)	
	36	55	36	55	36	55	36	55
A	2.5	3.5	700	890	825	1050	950	1205
B	2.0	3.0	510	765	600	900	690	1035
C	1.5	2.5	380	635	450	750	515	860
D	1.0	2.0	255	475	300	560	345	645

* CFMs when AC/HP CFM ADJUST at NOM position. CFMs 15% lower or higher if AC/HP CFM ADJUST at LO or HI position.

Figure 9 : Unit Dimensions



MODEL DCAH	'H''	'W"	'D''	'A"	'B''	'C"	'E''	Unit Weight	Shipping Weight	Unit w/ Cooling Coil
36-2	25	24 3/8	26 1/2	15	20	12	16	119 lb	124 lb	138 lb
55-3	29	28 3/8	31 1/2	19	23	20	20	154 lb	160 lb	185 lb

Figure 10 : Electrical Diagram – 3 speeds PSC motor

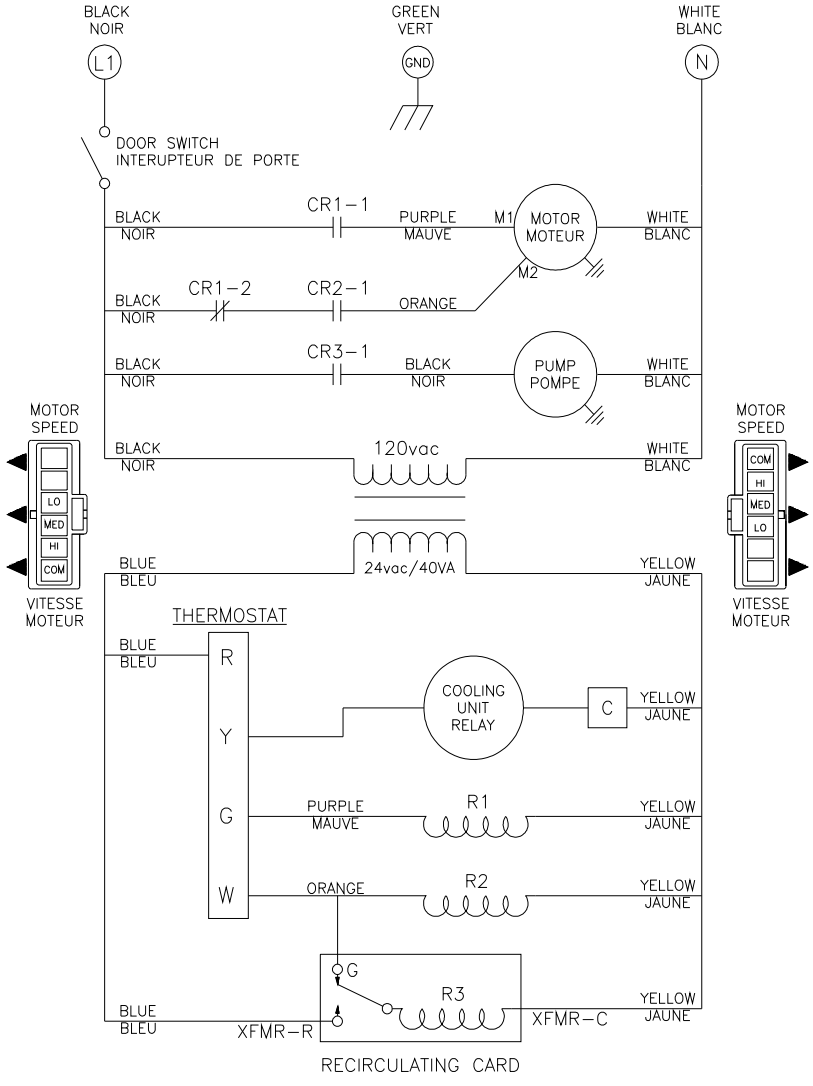


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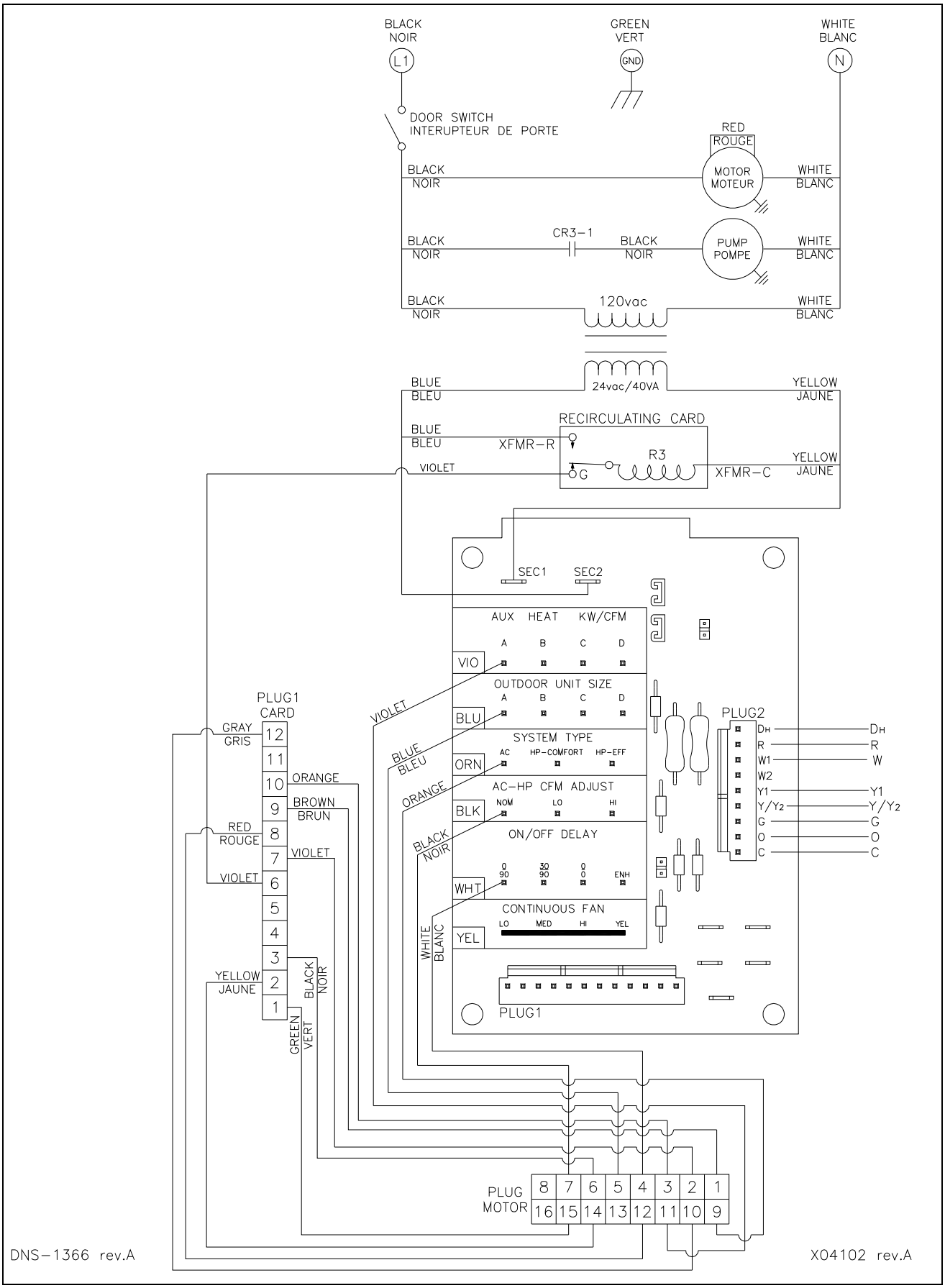
Figure 11 : Electrical Diagram – Variable speed ECM motor



7.0 REPLACEMENT PARTS

Figure 12 : Parts list, 3 speeds PSC motor

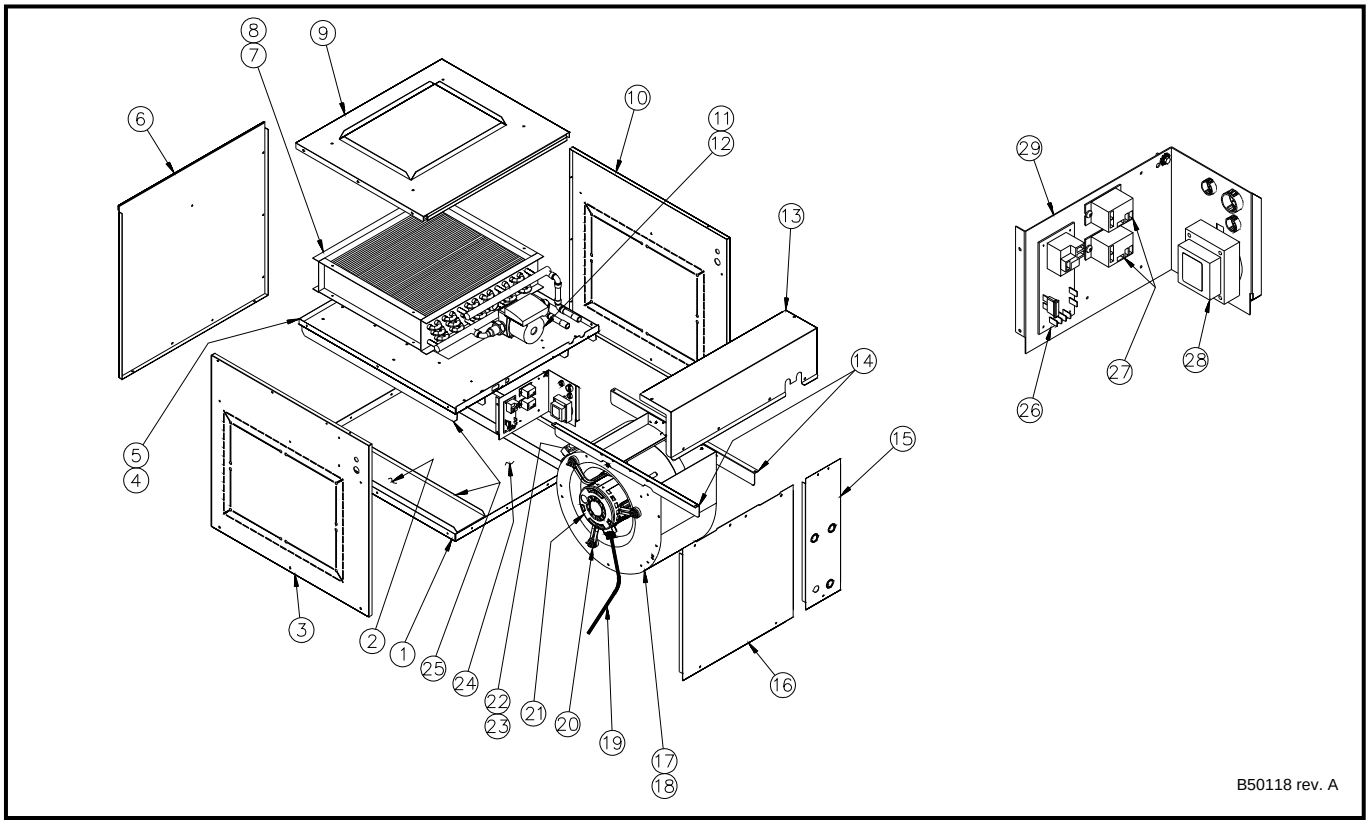


Table 3 : Parts list, 3 speeds PSC motor

ITEM	DCAH-36-2	DCAH-55-3	DESCRIPTION	COMMENTS
1	B03927	B04014	FLOOR ASSEMBLY	Includes guides, insulation, styrofoam block
2	B03955	B03955-02	STYROFOAM BLOCK	
3	B03923-02	B04010-02	LEFT HAND SIDE PANEL ASSEMBLY	Includes pannel, insulation
4	B03944	B04028	BLOWER SEPARATOR	
5	B03949	B04032	SEPARATOR RAILS	
6	B03924	B04011	REAR PANEL ASSEMBLY	Includes pannel, insulation
7	B03964	B04037	HEATING COIL ASSEMBLY	
8	B03934	B04019	PUMP COIL ASSEMBLY	Includes pump, kit 1/2 fitting, oulet tube assembly
9	B04038	B04012	TOP PANEL ASSEMBLY	Includes pannel, insulation
10	B03923-01	B04010-01	RIGHT HAND SIDE PANEL ASSEMBLY	Includes pannel, insulation
11	G12F009	G12F009	CIRCULATOR PUMP	
12	G12F010	G12F010	KIT 1/2 FITTING	Includes seals, one-way valve and nuts
13	B04039	B04013	ELECTRIC PANEL ASSEMBLY	Includes pannel, insulation
14	B03948	B04031	BLOWER RAILS	
15	B03929	B04016	COOLING COIL PANEL ASSEMBLY	Includes pannel, insulation
16	B03928	B04015	DOOR ASSEMBLY	Includes pannel, insulation
17	B03936-01	B03936-02	REPLACEMENT BLOWER ASSEMBLY	Icludes blower, motor assembly, capacitor
18	B03937-01	B03937-02	BLOWER ASSEMBLY	Includes frame, wheel and labels
19	B03956	B03956	ELECTRICAL KIT, BLOWER / PUMP	
20	B01888-01	B01888-01	MOTOR SUPPORT ASSEMBLY	Includes legs, band and harware
21a	B01890-02	B01890-04	MOTOR ASSEMBLY	Includes legs and band
21b	L06G016	L06H013	MOTOR	1/3 HP (DCAH-36-2) 1/2 HP (DCAH-55-3)
22	B01024	B01024	CAPACITOR SUPPORT	
23	L01I003	L01I003	CAPACITOR 10 MF	
24	B02293-35	B02293-40	FLOOR INSULATION	
25	B03942	B04030	UP / DOWN GUIDES	
26	R99G011	R99G011	ELECTRONIC CARD - PUMP 60 SEC / 6H	
27	L01H009	L01H009	RELAY SPDT 24 VAC	
28	L01F011	L01F011	TRANSFORMER 120-24V	
29	B03947	B03947	ELECTRICAL ENCLOSURE	
ACCESSORIES				
	DCAH-36-2-CC	DCAH-55-3-CC	COOLING COIL	B03918 (DCAH-36-2) / B04020 (DCAH-55-3)
	DCAH-36-2-HWC	DCAH-55-3-HWC	HEATING COIL	B03919 (DCAH-36-2) / B03968 (DCAH-55-3)

Figure 13 : Parts list, Variable speed ECM motor

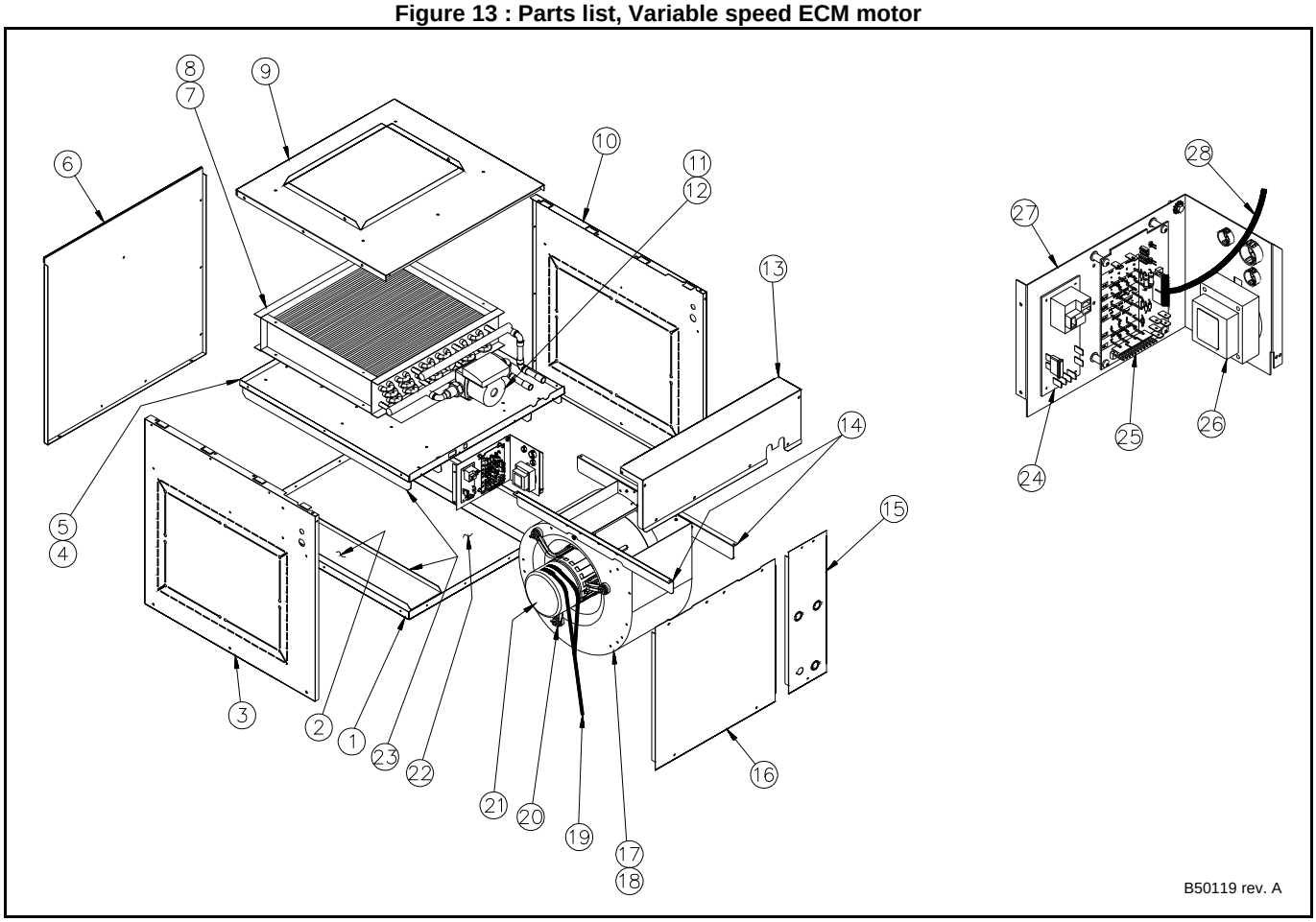


Table 4 : Parts list, Variable speed ECM motor

ITEM	DCAHV-36-2	DCAHV-55-3	DESCRIPTION	COMMENTS
1	B03927	B04014	FLOOR ASSEMBLY	Includes guides, insulation, styrofoam block
2	B03955	B03955-02	STYROFOAM BLOCK	
3	B03923-02	B04010-02	LEFT HAND SIDE PANEL ASSEMBLY	Includes pannel, insulation
4	B03944-01	B04028-01	BLOWER SEPARATOR	
5	B03949	B04032	SEPARATOR RAILS	
6	B03924	B04011	REAR PANEL ASSEMBLY	Includes pannel, insulation
7	B03964	B04037	HEATING COIL ASSEMBLY	
8	B03934	B04019	PUMP COIL ASSEMBLY	Includes pump, kit 1/2 fitting, oulet tube assembly
9	B04038	B04012	TOP PANEL ASSEMBLY	Includes pannel, insulation
10	B03923-01	B04010-01	RIGHT HAND SIDE PANEL ASSEMBLY	Includes pannel, insulation
11	G12F009	G12F009	CIRCULATOR PUMP	
12	G12F010	G12F010	KIT 1/2 FITTING	Includes seals, one-way valve and nuts
13	B04039	B04013	ELECTRIC PANEL ASSEMBLY	Includes pannel, insulation
14	B03948	B04031	BLOWER RAILS	
15	B03929	B04016	COOLING COIL PANEL ASSEMBLY	Includes pannel, insulation
16	B03928	B04015	DOOR ASSEMBLY	Includes pannel, insulation
17	B04144-01	B04144-02	REPLACEMENT BLOWER ASSEMBLY	Icludes blower and motor assembly
18	B03937-03	B03937-04	BLOWER ASSEMBLY	Includes frame, wheel and labels
19	B04139	B04139	ELECTRICAL KIT, BLOWER / PUMP	
20	B01888-01	B01888-01	MOTOR SUPPORT ASSEMBLY	Includes legs, band and harware
21	B03811-10	B03811-11	MOTOR 1/2 HP ECM PROGRAMMED	Motor programmed without legs
22	B02293-35	B02293-40	FLOOR INSULATION	
23	B03942	B04030	UP / DOWN GUIDES	
24	R99G011	R99G011	ELECTRONIC CARD - PUMP 60 SEC / 6H	
25a	R99G009	R99G009	ELECTRONIC CARD - CONTROL	
25b	L01G010	L01G010	5 AMPS FUSE FOR ELECTRONIC CARD	
26	L01F011	L01F011	TRANSFORMER 120-24V	
27	B03947	B03947	ELECTRICAL ENCLOSURE	
28	B04138	B04138	ELECTRICAL KIT (LOW VOLTAGE)	
ACCESSORIES				
	DCAHV-36-2-CC	DCAHV-55-3-CC	COOLING COIL	B03918 (DCAH-36-2) / B04020 (DCAH-55-3)
	DCAHV-36-2-HWC	DCAHV-55-3-HWC	HEATING COIL	B03919 (DCAH-36-2) / B03968 (DCAH-55-3)

8.0 WARRANTY POLICY

General Warranty

Dettson Industries inc., subject to the limitations described in this Equipment Warranty Policy Certificate, warrants that each and every appliance produced by Dettson Industries inc. is, under normal operating conditions, free of defect in material and workmanship for a specific period of time from the date of original installation (as described in the "Summary of Warranty Programs" section below).

This warranty covers the appliance only and does not include labour costs, freight costs or other indirect expenses related to routine maintenance or the replacement of parts. If a part fails during the applicable warranty period, Dettson Industries inc. will provide, at its sole discretion, a new or remanufactured part to replace the defective part at no charge. Alternatively, and at its sole discretion, Dettson Industries inc. will allow a credit in the amount of the then factory price for a new equivalent part toward the retail purchase price of a new Dettson Industries inc. product.

Summary of Warranty Programs

PRODUCT	PARTS	COIL
AIR CONDITIONING UNIT		
DCAH-36 DCAH-55	**5 years**	**Warranty 2 years from the manufacturing date or 18 months from the installation date**

A) Consumable Items: **This warranty does not apply to materials which must be replaced in the course of routine maintenance.**

B) Corrosive Atmosphere: **The operation of the unit in the presence of corrosive elements such as acids, chlorine, fluorine or other damaging chemicals voids this warranty. The warranty will not be applicable for unit if the coil is subject to corrosion produced by the presence of air or oxygen in water coming from new incoming water, inadequate design of the system or the use of plastic piping without oxygen barrier.**

C) External Factors: **This warranty does not apply to damages to the product caused by misuse, failure to provide proper maintenance, accidents, Acts of God or inadequate electrical supply.**

D) Unauthorized Alteration: **Unauthorized alteration or repair of the appliance affecting product reliability or performance voids this warranty.**

E) Installation by a qualified person: **The product must be installed by a qualified fitter in accordance with Dettson Industries inc. installation instructions, applicable local and national codes, the industry standards and those of professional organizations such as the Heating, Refrigeration and Air Conditioning Institute of Canada and the Air Conditioning Contractors of America. Failure to do so voids this warranty.**

F) Unauthorized Installation of Accessory Equipment: **Dettson Industries inc. authorizes the application of accessory equipment which will operate in conjunction with its products provided that the following conditions are met:**

i.) **The function or performance of the Dettson Industries inc. appliance is not altered.**

ii.) **The accessory is installed in accordance with its manufacturer's installation instructions.**

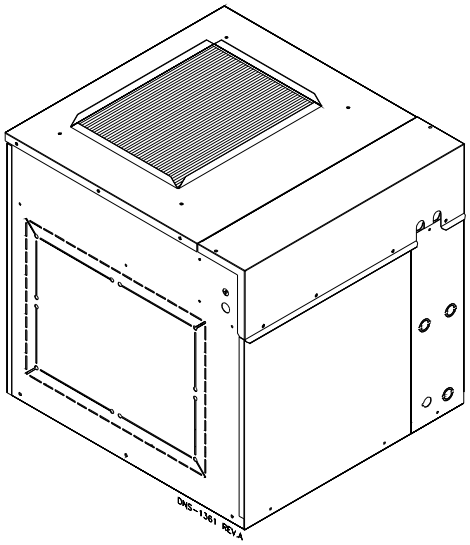
iii.) **The environment in which the appliance is supposed to operate is not modified.**

iv.) **Furnaces cannot be installed with a one hundred per cent (100%) outdoors return air.**

G) Lost or Stolen Products: **This warranty does not apply to products reported as lost or stolen.**

H) Original Installation Site: **This warranty does not apply to products no longer at the site of original installation.**

I) Improper Application: **This warranty does not include damages caused by improper matching or misuse of the product or its components.**



Limitations

This warranty does not cover defects or damages on equipment without serial number or whose serial number has been erased or modified.

Consequential Damages

Dettson Industries inc. shall not be responsible for any consequential damages caused by any defect in the product.

Exclusive Warranty

The warranty provided by Dettson Industries inc. is exclusive; all other representations, warranties or conditions, expressed, implied or statutory, required by law or otherwise, are hereby excluded.

Beginning of the Warranty Period

If the original sales invoice cannot be provided to establish the date of original installation, it is determined that the warranty comes into effect ninety (90) days after the product was shipped from the manufacturing plant.

Replacement Parts Warranties

All replacement parts obtained directly from Dettson Industries inc. and used for routine maintenance of Dettson Industries inc. products are warranted for a period of twelve (12) months from the date of repair. Dettson Industries inc. reserves the right to require proof of repair before granting any credit. Replacement parts are shipped at the expense of the consumer. Should we request that the defective parts or components be shipped back for further investigation, a return authorization number will be issued and return freight arrangements will be specified by Dettson Industries inc.

Warranty Execution

Dettson Industries inc. shall not be liable for any default or delay in execution of this warranty caused by any contingency beyond our control, including wars, government restrictions or restraints, strikes, fires, floods or short or reduced supplies of raw material.

Dettson Industries Inc., 3400, Industrial Boul., Sherbrooke, (Quebec) J1L 1V8