

Installation Instructions and Homeowner's Manual

SUPREME

Fournaise électrique Electric Furnace

COMFORT & ADVANTAGE

(PSC MOTOR)

MULTI POSITION



INSTALLER / SERVICE TECHNICIAN:

USE THE INFORMATION IN THIS MANUAL FOR THE INSTALLATION AND 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.

Models:

Comfort

SUPXX-C120D12

SUPXX-C240D12

SUPXX-C120D20

SUPXX-C240D20

Advantage

SUPXX-A120D12

SUPXX-A240D12

SUPXX-A120D20

SUPXX-A240D20



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

Manufactured by :
Industries Dettson inc.

Sherbrooke, Québec - Canada

www.dettson.ca

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1-SAFETY

1.1- DANGER, WARNING AND CAUTION

The words **DANGER**, **WARNING** and **CAUTION** are used to identify the levels of seriousness of certain hazards. It is important that you understand their meaning. You will notice these words in the manual as follows:



DANGER

Immediate hazards which **WILL** result in death or serious bodily and/or material damage.



WARNING

Hazards or unsafe practices which **CAN** result in death or serious bodily and /or material damage.



CAUTION

Hazards or unsafe practices which **CAN** result in minor bodily and /or material damage.

1.2- IMPORTANT INFORMATION



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.



WARNING

Installation 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.

- It is the homeowner's responsibility to engage a qualified technician for the installation and subsequent servicing of this furnace;
- Do not use this furnace 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;
- Do not store gasoline or any other flammable substances, such as paper and carton, near the furnace;

- Never block or otherwise obstruct the filter and/or return air openings;
- Ask the technician installing your furnace to show and explain to you the following items:
 - The main disconnect switch or circuit breaker;
 - The air filter and how to change it (check monthly and clean or replace if necessary);
- Before calling for service, be sure to have the information of section 5 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 furnace.

IMPORTANT: All local and national code requirements governing the installation of central electric heating equipment, wiring and the flue connection **MUST** be followed. Some of the codes that may apply are:

ANSI/NFPA 70: National Electrical Code

CSA C22.1 or CSA C22.10: Canadian Electrical Code

Only the latest issues of these codes may be used, and are available from either:

The National Fire Protection Agency

1 Batterymarch Park

Quincy, MA 02269

or

The Canadian Standards Association

178 Rexdale Blvd.

Rexdale, Ontario M9W 1R3

1.3- DANGER OF FREEZING



CAUTION

If your furnace 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 heater is left unattended during the cold weather season, take the following precautions:

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

This furnace is a true multi-position unit, in that it will function in an upflow, downflow or horizontal configuration to the left or the right. Only a few modifications are required during installation to change from one position to another. The unit is shipped in the upflow configuration and instructions as to how to change to the other positions are included in this manual.

The unit requires a 120/240 - 208 VAC power supply to the control panel, thermostat hook-up as shown on the wiring diagram.

2.1- POSITIONING THE FURNACE



WARNING

Fire and explosion hazard.

The furnace must be installed in a level position, never where it will slope toward the front.

Do not store or use gasoline or any other flammable substances near the furnace.

Non-observance of these instructions will potentially result in death, bodily injury and/or property damage.



CAUTION

This furnace 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.

If the furnace is installed in a basement or on a dirt floor, in a crawl space for example, it is recommended to install the unit on a cement base 2.5 cm to 5.0 cm (1" to 2") thick.

In addition, the heater should also be located close to the center of the air distribution system.

2.2- CLEARANCES TO COMBUSTIBLE MATERIAL

2.2.1- Heating unit

The furnace is approved for zero clearance to combustible material regardless of the heating capacity.

2.2.2- Supply air ducts

Ducts can be installed with a zero clearance to combustible material.

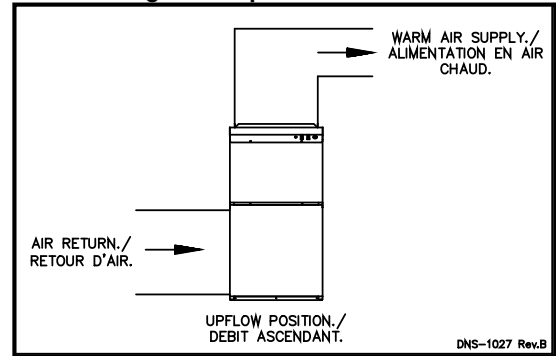
2.3- CONFIGURATIONS

This furnace requires suitable ductwork.

2.3.1- Upflow installation

The return duct may be installed to the back, the bottom, on the left side or on the right side of the unit. The supply duct shall be installed on the top of the unit. Care should be taken not to damage the wires inside, while cutting the opening. It is also recommended to install the blower door before handling or moving the unit. Refer to Figure 1 for additional details.

Figure 1: Upflow installation

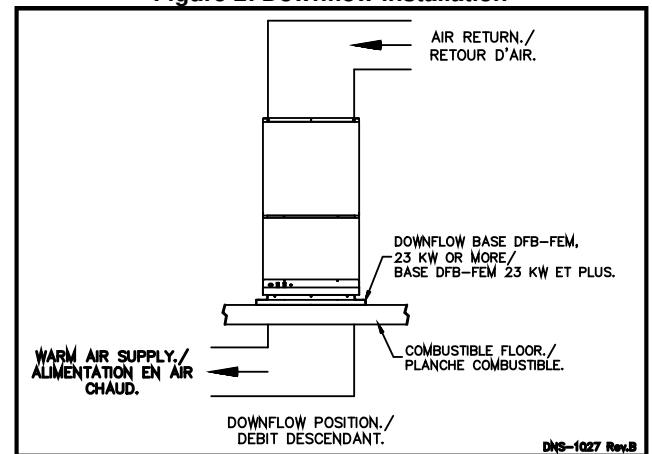


2.3.2- Downflow installation

The return duct may be installed to the back, on the left side, on the right side or under the unit. The supply duct shall be installed on the top of the unit.

When the furnace is installed in the downflow position on a combustible floor. The downflow base DFB-SUP can be used. Refer to Figure 2 and the installation instructions provided with the base.

Figure 2: Downflow installation

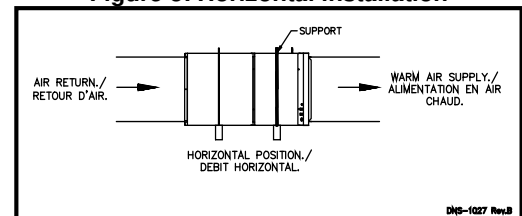


2.3.3- Horizontal installation

The return duct may be installed to the back, on the left side, on the right side or under the unit. The supply duct shall be installed on the top of the unit.

When the furnace is installed in the horizontal position, either suspended or on a combustible floor with a choice of right or left discharge, the clearances from combustible material must be adhered to. Refer to Figure 3 for additional details.

Figure 3: Horizontal installation



2.4- ELECTRICAL SYSTEM

The SUPREME furnace is completely pre-wired and all field wiring must be connected to the terminal blocks on the unit. It requires

120/240 - 208 voltage. Models using a 120V motor require a 3-wire power supply plus an uninterrupted ground.



WARNING

Risk of fire.

The conductor sizing must conform to the last edition of the local or national codes.

Failure to follow this rule can result in death, bodily injury and/or property damage.

Power supply to the unit can be done using copper or aluminum wires. The wire size must be decided in accordance to unit power consumption, the over current protection type and capacity, the wire type and length, and the environment where the unit is installed. If an aluminum wire is used, other precautions must be taken to insure the conformity of the installation. In all cases, all the factors affecting the wire gauge must be considered and the installation codes followed.

The exterior of the unit must have an uninterrupted ground to minimize the risk of bodily harm. A ground terminal is supplied with the control box for that purpose. A connector is supplied on the ground terminal to ground an added accessory.

In the event that wires inside the unit require replacement, these must be copper wires only with same temperature rating and sizes as originals.

2.4.1- Conversion from two to one supply wires for model over 27kW



WARNING

Risk of fire.

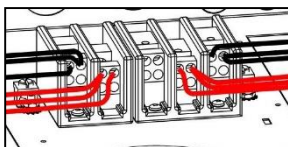
When using one terminal block on models over 27kW, the installation must be performed with copper wire ONLY in order to comply with the Canadian electrical code. The usage of an aluminum or copper wire is acceptable on models 25kW and lower.

Move all wires from the two pole terminal to the three pole terminal following the corresponding colors as shown in Figure 4.

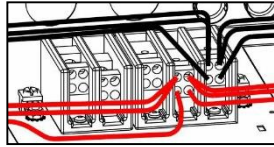
The breaker and the supply conductors must be sized by adding the ampacities of the two terminals indicated on the nameplate. Refer to the electrical diagram Figure 12.

Figure 4 : Conversion from two to one supply wires

Before



After



2.5- 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. Some thermostats need to connect the C terminal on the furnace and thermostat. Install the thermostat on an interior wall in a location where it will not be subject to direct sunlight, lamps, air diffusers, fireplaces, etc. Seal openings in walls to avoid air currents that may influence the operation of the thermostat. Also refer to the wiring diagrams provided with the heating/air conditioning unit. The connections must be made as indicated on Figure 5 to Figure 9. Refer to electrical diagrams (Figure 12 and Figure 13).

Figure 5: 1-stage thermostat, electric heating only

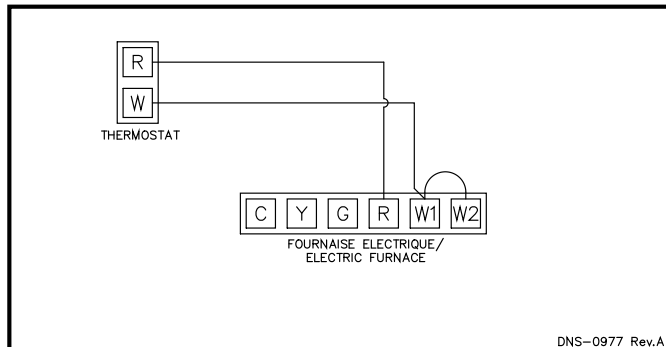


Figure 6: 2-stage thermostat, electric heating only

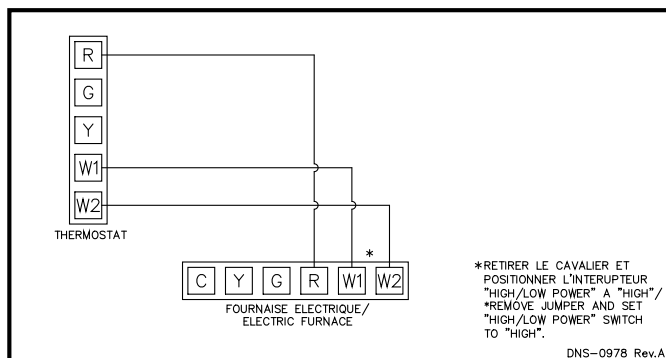


Figure 7: 1-stage thermostat with outdoor control for 2-stage function, electric heating only

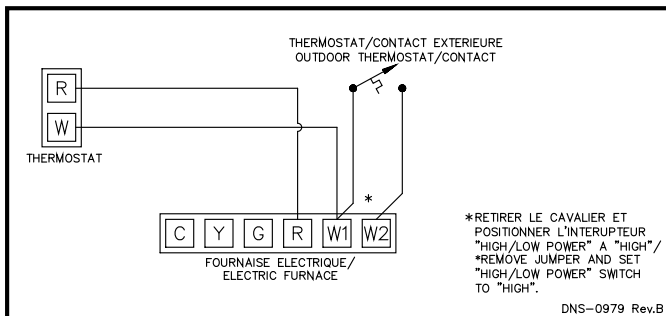


Figure 8: 1-stage thermostat, electric heat and cooling application

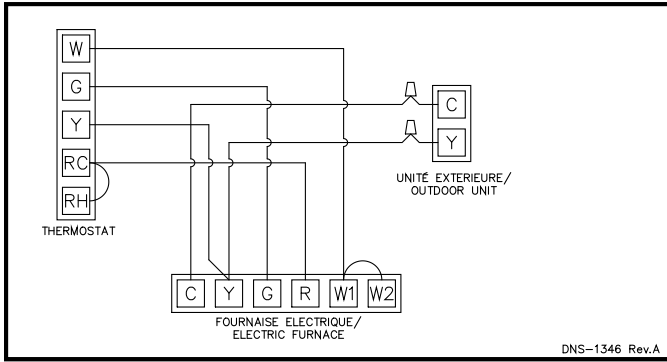
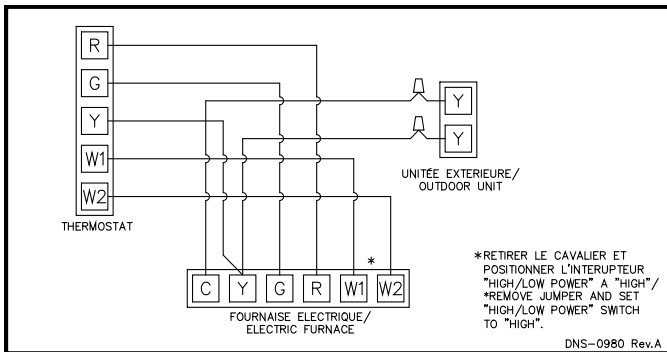


Figure 9: 2-stage thermostat, electric heating and air conditioning



2.5.1- Anticipator adjustment (if required) on thermostat equipped with heat anticipator adjustment

Some thermostats are equipped with a heat anticipator that must be adjusted according to the instructions supplied. This is to ensure that the heating mode is comfortable and economical.

Generally speaking, on a single stage thermostat, a reading of the current must be taken with an ammeter as follows:

1. Move the anticipator to its highest setting, rendering it ineffective.
2. Remove the wire from the W1 terminal and connect an ammeter between the terminal and the wire.
3. Call for heat by raising the set point on the thermostat and allow the furnace to run for 3 to 4 minutes to reach its peak output.
4. Once the current has stabilized, a reading should be taken and the anticipator adjusted to that value. If longer heating cycles are desired, the anticipator can be set to a higher value

2.5.2- Air ducts

The ducts must be sized such a way as to accommodate the specified airflow and the available static pressure. Refer to the applicable local and/or national installation codes.

Insulate the ducts that lead through non-heated areas. Use flexible supply and return air connectors to avoid the transmission of vibration. To make the unit run even quieter, the installer should:

- a. Use two elbows between each outlet and the supply and return air plenum;
- b. Cover the vertical sections of the supply and return air duct with soundproofing material;
- c. Use baffles in short radius elbows;
- d. Use flexible hangers to suspend the ducts.

A heat pump or an air conditioner can be added to this furnace, in either the supply or return air duct. Carefully follow the instructions provided with these appliances to ensure proper installation and hook-up to the electric furnace. Refrigerant and drainage pipes must in no way hinder access to the furnace panels.

2.6- SUPPLY AIR ADJUSTMENTS

The supply air must be adjusted based on heating/air conditioning output and the static pressure of the duct system. For the desired airflow, refer to Table 1, as well as Table 3 and Table 4 for the airflow based on static pressure.

For the adjustment of the airflow on heating mode, to obtain the temperature rise described in the technical specification table (Table 2), the red wire must be positioned on the terminal corresponding to the LOW, MED-LOW, MED-HIGH or HIGH blower speed.

For the adjustment of the airflow on air-cooling mode, to obtain a sufficient airflow (350 to 450 CFM per Ton), the blue wire must be positioned on the terminal corresponding to the LOW, MED-LOW, MED-HIGH or HIGH blower speed.

Blower speeds are adjusted in factory for 0.5 inch static pressure.

Table 1: Supply air adjustment on cooling mode

MOTOR HP	COOLING CAPACITY (0.5 " w.c.)	BLOWER SPEED (Motor 120V)	BLOWER SPEED (Motor 240V)
1/3	1.5	LOW	LOW
	2.0	MED-LOW	LOW
	2.5	MED-HIGH	MED
	3.0	HIGH	HIGH
1.0	2.5	LOW	LOW
	3.0	MED-LOW	MED-LOW
	3.5	MED-LOW	MED-HIGH
	4.0	MED-HIGH	MED-HIGH
	5.0	HIGH	HIGH

If heating and air-cooling speeds are the same, the red wire and the blue wire can be connected on the same terminal on the motor.

2.7- INSTALLATION OF ACCESSORIES



WARNING

Electrical shock hazard.

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

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

2.7.1- Humidifier and electronic air cleaner

This unit is equipped with a 120 VAC terminal for the connection of accessories up to a maximum of 2 amps. A humidifier and an electronic air cleaner can be wired to terminals L1 and N of the unit. Refer to the wiring diagrams in this manual (Figure 12 and Figure 13). A field supplied 120/24 VAC transformer can be installed for accessories using 24 VAC. A separate power source must be used if the accessories draw more than 2 amps.

Some accessories require control relays. A location has been set aside in the unit for the installation of relays: a 24 VAC (part number L01H009). In addition, a 24 VAC relay can be wired between terminals W1 and C to be activated during a call for heat. Refer to the wiring diagrams for the location of the relay RACC on the control panel.

2.7.2- Use of a heat pump

When using a heat pump, a thermostat with dial fuel option or a fossil fuel kit is required that prevents the operation of the electric elements and the heat pump at the same time. Refer to the instructions provided with the thermostat or the "Fossil Fuel kit" for the proper wiring of the furnace and the heat pump.

The simultaneous operation of the electric elements and the heat pump will cause overheating of either unit. The safety controls of the appliances will shut down the elements or heat pump, since they are not designed to function in this fashion.

3- OPERATION

3.1- START-UP

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

1. The electrical installation and ventilation;
2. The blower access door is in place and the blower rail locking screws are well tightened;
3. The blower speed adjustments for heating and air conditioning are appropriate and according to the specifications in this manual;
4. The thermostat of the room is in heating mode and is set higher than the ambient temperature.
5. The breakers on front panel are set on the "ON" position

To start the unit, turn the main electrical switch on.

3.2- USE OF MANUAL FURNACE CONTROLS

When there is a demand for heat, the pilot light (L-1) comes on. Refer to the wiring diagram.

When the "HI/LO" switch is put into the "LO" position, it will shut down approximately half the elements.

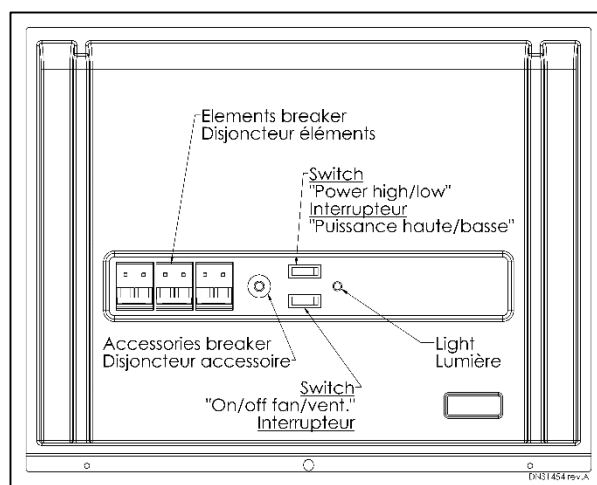
However, it is important to put the switch back to the "HI" position during the winter months to ensure adequate heating.

Also, this switch must remain in the "HI" position when a 2-stage or outdoor thermostat is used to control the electric elements of the second stage. Refer to the diagram in Section 2.5-.

The "ON/OFF VENT/FAN" switch engages the blower in the continuous speed mode. This will filter the air and provide for better air distribution in the building.

The 15 A circuit breaker is there to protect the motor and the control circuit conductors. If the unit does not function, press the circuit breaker button to see if it may have disengaged due to a power surge. If the breaker has to be pressed again, the unit must be checked by a qualified service technician.

Figure 10 : Advantage furnace controls



3.3- OPERATING SEQUENCE

3.3.1- Heating mode

1. The thermostat closes the R-W1 circuit (24 VAC), thereby activating the blower relay and the sequencer board. The board will then activate all the first stage relays with a delay of 3 seconds between each element. The motor relay will be activated, which will start the blower on the first stage heating speed.
2. The thermostat closes the R-W2 circuit (24 VAC), thereby activating the blower relay and the sequencer board. The board will then activate all the first and second stage relays with a delay of 3 seconds between each element. The motor relay will be activated, which will start the blower on the second stage heating speed.
3. The deactivation of either mode will result in the deactivation of the corresponding relays with a delay of 0.5 second between each element.

3.3.2- Cooling mode

1. The thermostat closes the R-G circuit, thereby activating the 24 VAC relay. The blower starts up to cooling speed.
2. The thermostat closes the R-Y contact, thereby activating the compressor relay of the air conditioner.

3.3.3- Continuous fan speed

The blower will also start up to cooling speed by way of the "Fan" switch on the thermostat.

3.4- AIRFLOW VERIFICATION

Verify the airflow by taking readings of the following points, while the elements are in heating mode:

- a. Total amperage of all the heating elements;
- b. Voltage at the furnace;
- c. Supply air temperature. The point of the reading must not be affected by radiant heat from the elements;
- d. Return air temperature.

From these readings, one can arrive at an approximate calculation of the average airflow. To do that, the following formula should be used:

$$\text{Liter/s} = \frac{0.82 \times \text{amps.} \times \text{volts}}{\text{Diff. temperature } ^\circ\text{C}}$$

$$\text{CFM} = \frac{3.1 \times \text{amps.} \times \text{volts}}{\text{Diff. temperature } ^\circ\text{F}}$$

3.4.1- Supply Air Temperature Rise Test

1. Operate the unit at maximum power for at least 10 minutes;
2. Measure the air temperature in the return air plenum;
3. Measure the air temperature in the largest trunk coming off the supply air plenum, just outside the range of radiant heat from the heat exchanger. 0.3 m (12") from the plenum of the main take-off is usually sufficient;
4. Calculate the temperature rise by subtracting the return air temperature from the supply air temperature.

If the temperature rise exceeds the temperature specified in Table 2, change to the next higher blower speed tap, until the temperature rise falls to the target or below. If the excessive temperature rise cannot be reduced by increasing fan speed, investigate for ductwork obstructions or dirty and improper air filter.



CAUTION

It is important to check the airflow and to ascertain that the unit does not operate above the temperatures specified in the Technical Specifications (Table 2). This is particularly important if a cooling coil or a heat pump has been installed in the ducts.

Hi-Limit thermal protectors should never need to engage during the normal functioning of the appliance. They are strictly designed to engage during the improper functioning of the blower or when the filter was improperly maintained.

3.4.2- High limit verification

After operating the furnace for at least 15 minutes, restrict the return air supply by blocking the filters or the return air register and allow the furnace to shut off on High Limit. The electric heaters must deactivate themselves before the warm air temperature exceeds 200°F (93°C). Remove the obstruction and the elements should restart after a few minutes.

4- MAINTENANCE



WARNING

Electrical shock hazard.

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

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

Preventive maintenance is the best way to avoid unnecessary expense and inconvenience. Have your heating system inspected by a qualified service technician at regular intervals. Do not attempt to repair the furnace or its controls. Call a qualified service technician.

Before calling for repair service, check the following points:

1. Check fuses or the circuit breakers;
2. Check if the 15 A circuit breaker on the furnace is disengaged;
3. Set the thermostat higher than room temperature. If the unit does not start up, cut the power and call a qualified service technician.

When calling for service or ordering a replacement part, specify the model and serial number of your appliance.

4.1- AIR FILTER

The filter supplied with the unit is disposable and should be replaced twice a year. The presence of animal hair, dust, etc. may necessitate more frequent changes. Dirty filters have an adverse effect on the performance of the central heating system.

4.2- MOTOR LUBRICATION

Do not lubricate the blower motor, since it is permanently lubricated.

5-FURNACE INFORMATION

Model: _____ Serial number: _____

Furnace installation date: _____

Service telephone # - Day: _____ Night: _____

Dealer name and address: _____

START-UP RESULTS

Voltage: _____

Total current consumed by the elements: _____

Supply air temperature: _____

Return air temperature: _____

Supply air duct static pressure: _____

Return air duct static pressure: _____

Total pressure: _____

Calculated air flow: _____

Current consumed by the blower motor: _____

Current consumed by the accessories: _____

Table 2: Technical specifications

RATINGS AND PERFORMANCE		SUPxx-x120D12 1/3 HP / 120V Motor						SUPxx-x120D20 1 HP / 120V Motor				
Capacity	10	15	18	20	23	25	20	23	25	27	30	
Power, total @ 240V / 208V (Kw)	10 / 7.5	15 / 11.3	18 / 13.5	20 / 15	23 / 17.3	25 / 18.8	20 / 15	23 / 17.3	25 / 18.8	27 / 20.3	30 / 22.5	
Power, first stage @ 240V / 208V (Kw)	5 / 3.8	10 / 7.5	9 / 6.8	10 / 7.5	13 / 9.8	15 / 11.3	10 / 7.5	13 / 9.8	15 / 11.3	15 / 11.3	15 / 11.3	
Net capacity@ 240V (BTU/h) @ 208V	34,120 25,628	51,180 38,442	61,420 46,130	68,240 51,256	78,480 58,944	85,300 64,070	68,240 51,256	78,480 58,944	85,300 64,070	92,124 69,195	102,360 76,884	
Temperature rise range @ 240V (°F) ¹	40-60	50-70	60-80	60-80	60-80	70-85	45-65	55-75	45-65	50-70	55-75	
ELECTRICAL SYSTEM												
Volts - Hertz - Phase	3 wires 120-240/208 - 60 - 1											
Electrical element #1 @ 240V / 208V (Kw)	5 / 3.7	5 / 3.7	4 / 3.1	5 / 3.7	4 / 3.1	5 / 3.7	5 / 3.7	4 / 3.1	5 / 3.7	5 / 3.7	5 / 3.7	
Electrical element #2 @ 240V / 208V (Kw)	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	
Electrical element #3 @ 240V / 208V (Kw)		5 / 3.7	4 / 3.1	5 / 3.7	4 / 3.1	5 / 3.7	5 / 3.7	4 / 3.1	5 / 3.7	5 / 3.7	5 / 3.7	
Electrical element #4 @ 240V / 208V (Kw)			5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	4 / 3.1	5 / 3.7	
Electrical element #5 @ 240V / 208V (Kw)					5 / 3.7	5 / 3.7		5 / 3.7	5 / 3.7	4 / 3.1	5 / 3.7	
Electrical element #6 @ 240V / 208V (Kw)										4 / 3.1	5 / 3.7	
Blower motor Consumption @ 240V / 208V (Amp. Max.)	6.8 / 5.9	6.8 / 5.9	6.8 / 5.9	6.8 / 5.9	6.8 / 5.9	6.8 / 5.9	11.5 / 9.9	11.5 / 9.9	11.5 / 9.9	11.5 / 9.9	11.5 / 9.9	
Heating Elements Consumption @ 240V / 208V (Amp)	41.4 / 35.9	62.1 / 53.8	75.8 / 65.7	82.8 / 71.8	96.5 / 83.6	103.5 / 89.7	82.8 / 71.8	96.5 / 83.6	103.5 / 89.7	113.6 / 98.5	124.3 / 107.7	
Total Consumption @ 240V / 208V (Amp)	48.3 / 41.8	69.0 / 59.7	82.6 / 71.5	89.7 / 77.7	103.3 / 89.5	110.4 / 95.6	94.3 / 81.7	107.9 / 93.5	115.0 / 99.6	125.1 / 108.4	135.7 / 117.6	
Ampacity - Terminal block #1 @ 240V / 208V ²	59.3 / 51.7	83.9 / 73.0	100.0 / 87.0	108.5 / 94.3	124.7 / 108.3	133.1 / 115.6	114.0 / 99.1	130.2 / 113.1	138.6 / 120.4	60.6 / 52.8	64.8 / 56.4	
Ampacity - Terminal block #2 @ 240V / 208V ²	-	-	-	-	-	-	-	-	-	90.0 / 78.0	98.4 / 85.2	
Breaker size - Terminal block #1 @ 240V / 208V ²	60 / 60	90 / 80	100 / 90	125 / 100	125 / 125	150 / 125	125 / 100	150 / 125	150 / 125	70 / 60	70 / 60	
Breaker size - Terminal block #2 @ 240V / 208V ²	-	-	-	-	-	-	-	-	-	90 / 80	100 / 90	
BLOWER DATA (factory adjusted for a static pressure of 0.5" W.C.)												
Blower speed at 1st stage	LOW	LOW	LOW	LOW	LOW	MED-LOW	LOW	LOW	LOW	LOW	LOW	
Blower speed at 0.50" W.C. stat. press.	LOW	MED-LOW	MED-LOW	MED-HIGH	MED-HIGH	MED-HIGH	LOW	LOW	MED-LOW	MED-LOW	MED-LOW	
Blower speed at 0.20" W.C. stat. press.	LOW	MED-LOW	MED-LOW	MED-LOW	MED-HIGH	MED-HIGH	LOW	LOW	MED-LOW	MED-LOW	MED-LOW	
Motor (HP) / number of speeds	1/3 HP / 4 speeds						1 HP / 4 speeds					
Nominal blower size (diam. X width)	12 x 8						12 x 9					
GENERAL INFORMATION												
Overall dim. (width x depth x height)	22" x 22" x 36.5"											
Supply	20" x 20"											
Return	18" x 18"											
Filter quantity and size	(1) 20" x 20"											
Shipping weight	48 Kg / 105 lbs											
Maximum cooling capacity	3 tons						5 tons					
RATINGS AND PERFORMANCE		SUPxx-x240D12 1/3 HP / 240V Motor						SUPxx-x240D20 1 HP / 240V Motor				
Capacity	10	15	18	20	23	25	20	23	25	27	30	
Power, total @ 240V / 208V (Kw)	10 / 7.5	15 / 11.3	18 / 13.5	20 / 15	23 / 17.3	25 / 18.8	20 / 15	23 / 17.3	25 / 18.8	27 / 20.3	30 / 22.5	
Power, first stage @ 240V / 208V (Kw)	5 / 3.8	10 / 7.5	9 / 6.8	10 / 7.5	13 / 9.8	15 / 11.3	10 / 7.5	13 / 9.8	15 / 11.3	15 / 11.3	15 / 11.3	
Net capacity@ 240V (BTU/h) @ 208V	34,120 25,628	51,180 38,442	61,420 46,130	68,240 51,256	78,480 58,944	85,300 64,070	68,240 51,256	78,480 58,944	85,300 64,070	92,124 69,195	102,360 76,884	
Temperature rise range @ 240V (°F) ¹	25-45	45-60	55-75	60-80	60-80	60-80	55-75	50-70	50-70	55-75	60-80	
ELECTRICAL SYSTEM												
Volts - Hertz - Phase	2 wires 240/208 - 60 - 1											
Electrical element #1 @ 240V / 208V (Kw)	5 / 3.7	5 / 3.7	4 / 3.1	5 / 3.7	4 / 3.1	5 / 3.7	5 / 3.7	4 / 3.1	5 / 3.7	5 / 3.7	5 / 3.7	
Electrical element #2 @ 240V / 208V (Kw)	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	
Electrical element #3 @ 240V / 208V (Kw)		5 / 3.7	4 / 3.1	5 / 3.7	4 / 3.1	5 / 3.7	5 / 3.7	4 / 3.1	5 / 3.7	5 / 3.7	5 / 3.7	
Electrical element #4 @ 240V / 208V (Kw)			5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	5 / 3.7	4 / 3.1	5 / 3.7	
Electrical element #5 @ 240V / 208V (Kw)					5 / 3.7	5 / 3.7		5 / 3.7	5 / 3.7	4 / 3.1	5 / 3.7	
Electrical element #6 @ 240V / 208V (Kw)										4 / 3.1	5 / 3.7	
Blower motor Consumption @ 240V / 208V (Amp. Max.)	2.6 / 2.3	2.6 / 2.3	2.6 / 2.3	2.6 / 2.3	2.6 / 2.3	2.6 / 2.3	5.9 / 5.1	5.9 / 5.1	5.9 / 5.1	5.9 / 5.1	5.9 / 5.1	
Heating Elements Consumption @ 240V / 208V (Amp)	41.4 / 35.9	62.1 / 53.8	75.8 / 65.7	82.8 / 71.8	96.5 / 83.6	103.5 / 89.7	82.8 / 71.8	96.5 / 83.6	103.5 / 89.7	113.6 / 98.5	124.3 / 107.7	
Total Consumption @ 240V / 208V (Amp)	44.0 / 38.2	64.7 / 56.1	78.4 / 68.0	85.4 / 74.1	99.1 / 85.9	106.1 / 92.0	88.7 / 76.9	102.4 / 88.7	109.4 / 94.8	119.5 / 103.6	130.2 / 112.8	
Ampacity - Terminal block #1 @ 240V / 208V ²	54.3 / 47.3	78.9 / 68.6	95.1 / 82.7	103.5 / 90.0	119.7 / 104.0	128.1 / 111.3	107.4 / 93.3	123.5 / 107.3	132.0 / 114.6	54.0 / 47.0	58.2 / 50.7	
Ampacity - Terminal block #2 @ 240V / 208V ²	-	-	-	-	-	-	-	-	-	90.0 / 78.0	98.4 / 85.2	
Breaker size - Terminal block #1 @ 240V / 208V ²	60 / 50	80 / 70	100 / 90	125 / 90	125 / 125	150 / 125	125 / 100	125 / 125	150 / 125	60 / 50	60 / 60	
Breaker size - Terminal block #2 @ 240V / 208V ²	-	-	-	-	-	-	-	-	-	90 / 80	100 / 90	
BLOWER DATA (factory adjusted for a static pressure of 0.5" W.C.)												
Blower speed at 1st stage	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	
Blower speed at 0.50" W.C. stat. press.	LOW	LOW	LOW	LOW	LOW	MED	MED	LOW	MED-LOW	MED-LOW	MED-LOW	
Blower speed at 0.20" W.C. stat. press.	LOW	LOW	LOW	LOW	LOW	MED	MED	LOW	MED-LOW	MED-LOW	MED-LOW	
Motor (HP) / number of speeds	1/3 HP / 3 speeds						1 HP / 4 speeds					
Nominal blower size (diam. X width)	12 x 8						12 x 9					
GENERAL INFORMATION												
Overall dim. (width x depth x height)	22" x 22" x 36.5"											
Supply	20" x 20"											
Return	18" x 18"											
Filter quantity and size	(1) 20" x 20"											
Shipping weight	48 Kg / 105 lbs											
Maximum cooling capacity	3 tons						5 tons					

1) Select a blower speed that will generate the specified temperature rise.

2) Calculated on the basis of standard C22.2-236.

Table 3: Airflow (CFM) - SUPREME with 1/3HP motor

SUPREME equipped with a 1/3 HP / 120V blower motor

Blower speed	External static pressure (inche of W.C.)						
	0,2	0,3	0,4	0,5	0,6	0,7	0,8
LOW	660	635	615	595	580	565	540
MED-LOW	840	815	800	775	750	715	670
MED-HIGH	1 025	1 010	995	975	945	900	860
HIGH	1 260	1 240	1 200	1 150	1 110	1 055	975

SUPREME equipped with a 1/3 HP / 240V blower motor

Blower speed	External static pressure (inche of W.C.)						
	0,2	0,3	0,4	0,5	0,6	0,7	0,8
LOW	660	635	615	595	580	565	540
MED	840	815	800	775	750	715	670
HIGH	1 260	1 240	1 200	1 150	1 110	1 055	975

Airflow values in cubic feet per minute (CFM) rounded to the nearest 5 CFM
Data taken with air filter in place.

Table 4: Airflow (CFM) - SUPREME with 1HP motor

SUPREME equipped with a 1 HP / 120V blower motor

Blower speed	External static pressure (inche of W.C.)						
	0,2	0,3	0,4	0,5	0,6	0,7	0,8
LOW	1 110	1 090	1 085	1 080	1 070	1 050	1 005
MED-LOW	1 455	1 430	1 410	1 400	1 380	1 355	1 320
MED-HIGH	1 865	1 830	1 800	1 740	1 705	1 665	1 605
HIGH	2 055	2 045	2 030	2 010	1 980	1 880	1 800

SUPREME equipped with a 1 HP / 240V blower motor

Blower speed	External static pressure (inche of W.C.)						
	0,2	0,3	0,4	0,5	0,6	0,7	0,8
LOW	1 030	1 030	1 030	970	950	935	900
MED-LOW	1 380	1 350	1 310	1 275	1 250	1 225	1 175
MED-HIGH	1 785	1 735	1 730	1 725	1 650	1 610	1 515
HIGH	2 230	2 199	2 110	2 030	1 900	1 815	1 730

Airflow values in cubic feet per minute (CFM) rounded to the nearest 5 CFM
Data taken with air filter in place.

Figure 11 : Furnace dimensions

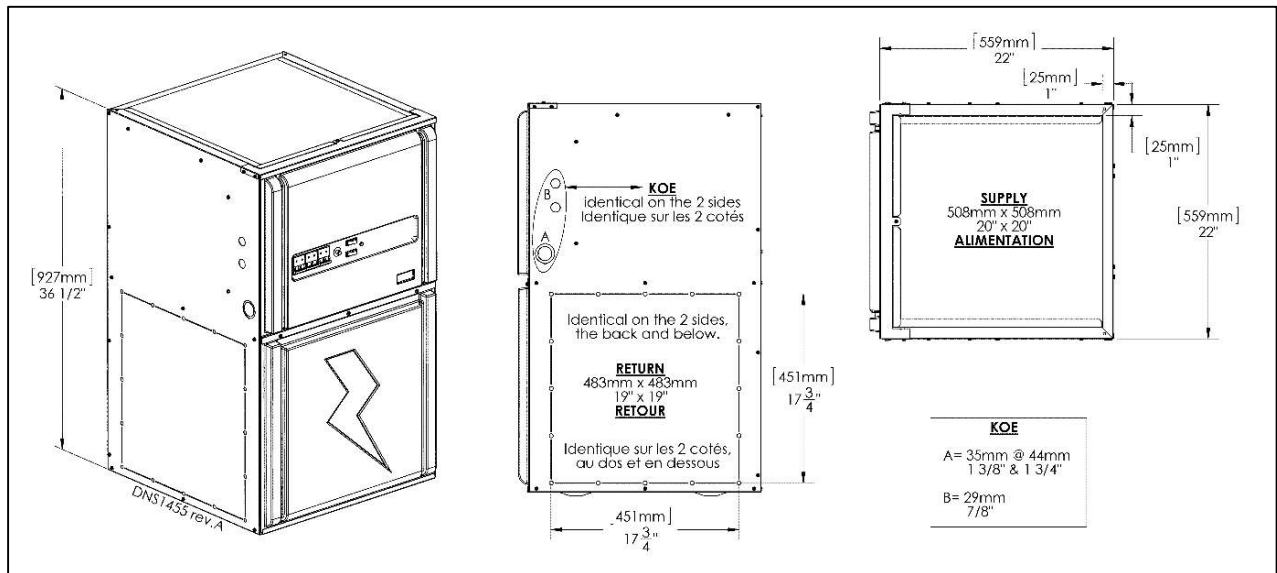


Figure 12 : Electrical diagram, SUPREME Comfort PSC

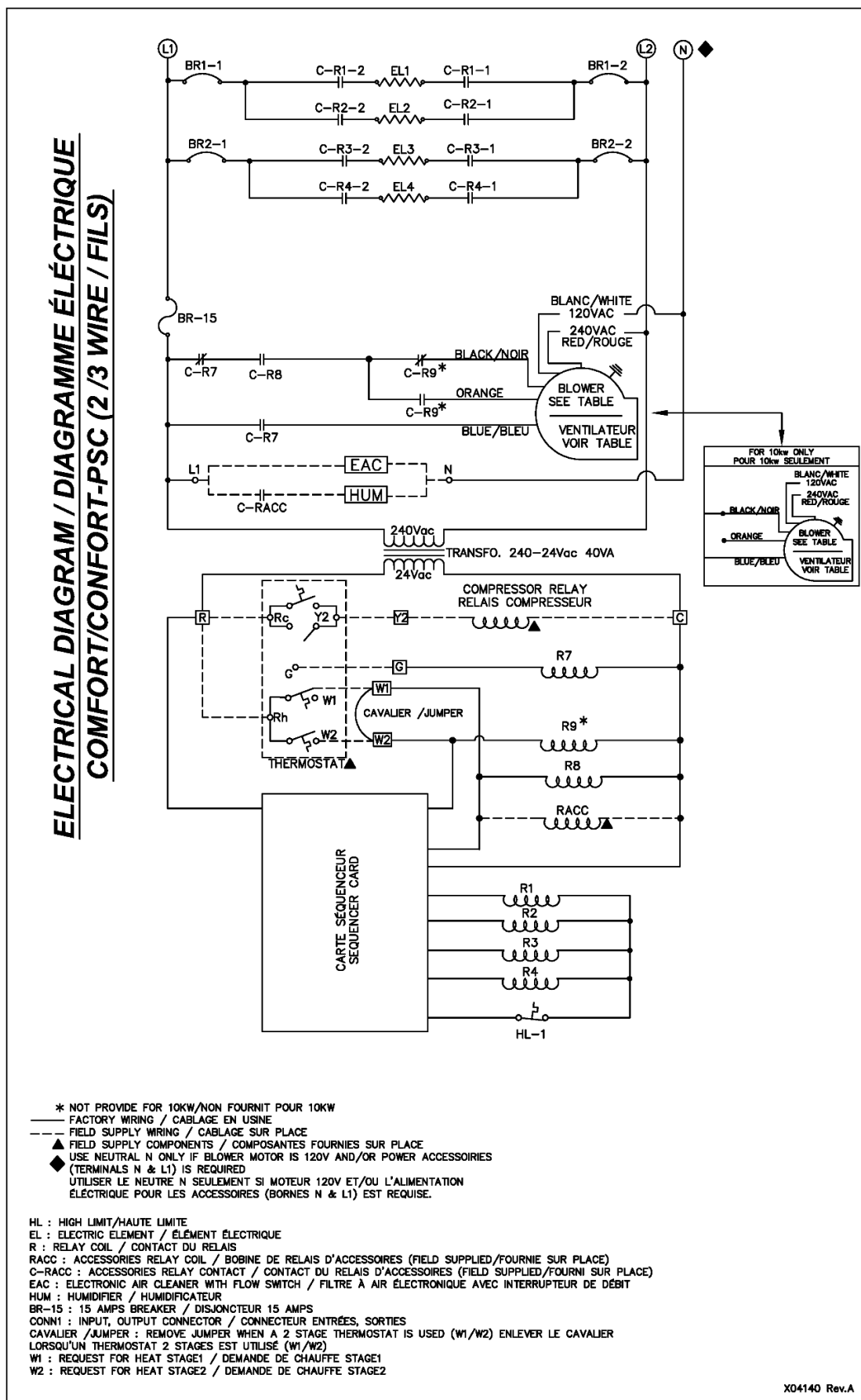
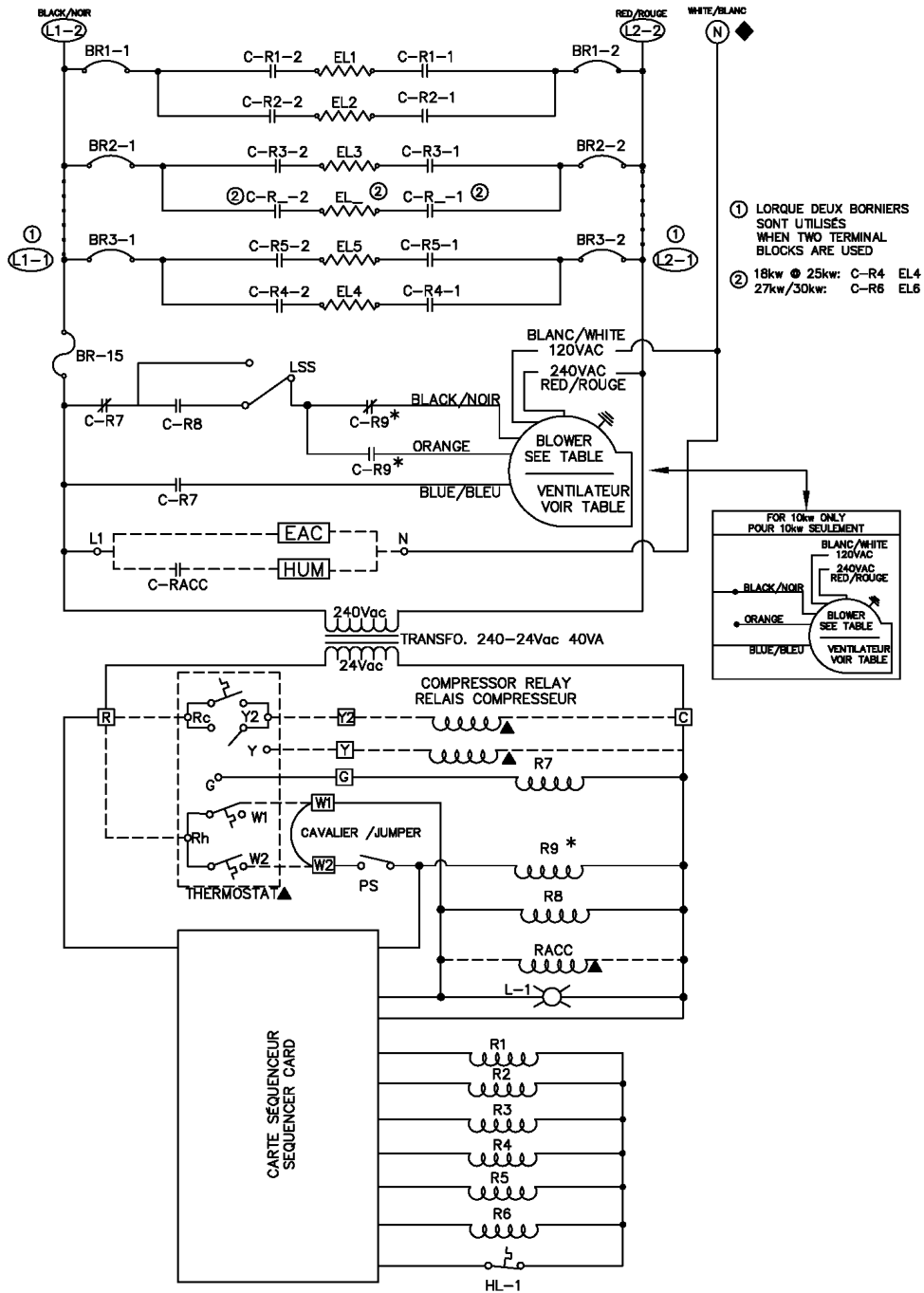


Figure 13 : Electrical diagram, SUPREME Advantage PSC

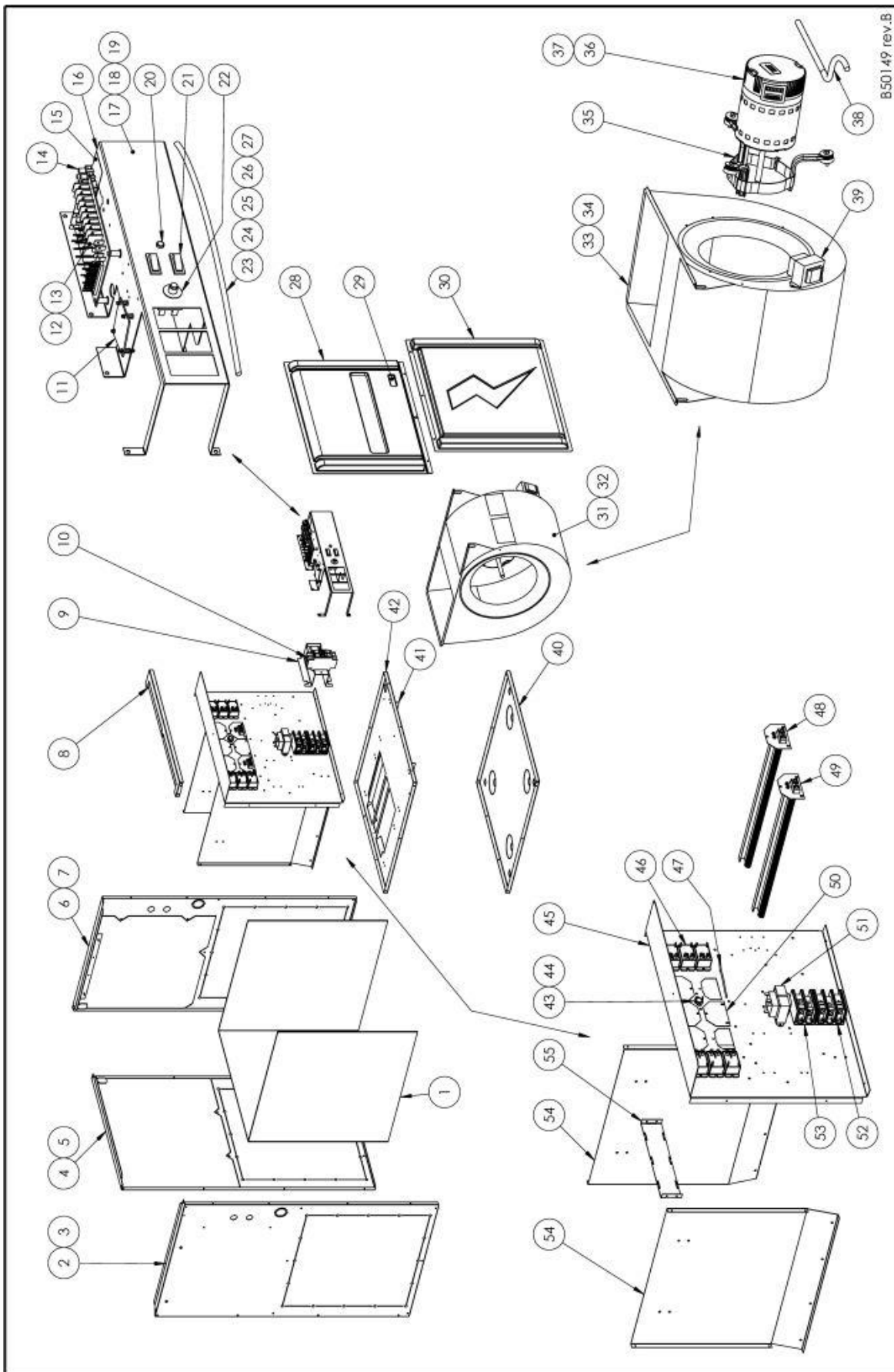
**ELECTRICAL DIAGRAM / DIAGRAMME ÉLECTRIQUE
ADVANTAGE/AVANTAGE-PSC (2 / 3 WIRE / FILS)**



- NOT PROVIDE FOR 10KW/NON FOURNIT POUR 10KW
— FACTORY WIRING / CABLAGE EN USINE
- - - FIELD SUPPLY WIRING / CABLAGE SUR PLACE
▲ FIELD SUPPLY COMPONENTS / COMPOSANTES FOURNIES SUR PLACE
◆ USE NEUTRAL N ONLY IF BLOWER MOTOR IS 120V AND/OR ACCESSORIES (TERMINALS N & L1) IS REQUIRED
UTILISER LE NEUTRE N SEULEMENT SI MOTEUR 120V ET/OU L'ALIMENTATION ÉLECTRIQUE POUR ACCESSOIRES (BORNES N & L1) EST REQUISE
- HL : HIGH LIMIT/HAUTE LIMITE
EL : ELECTRIC ELEMENT / ÉLÉMENT ÉLECTRIQUE
R : RELAY COIL / CONTACT DU RELAIS
RACC : ACCESSORIES RELAY COIL / BOBINE DE RELAIS D'ACCESSOIRES (FIELD SUPPLIED/FOURNIE SUR PLACE)
C-RACC : ACCESSORIES RELAY CONTACT / CONTACT DU RELAIS D'ACCESSOIRES (FIELD SUPPLIED/FOURNI SUR PLACE)
LSS : LOW SPEED BLOWER SWITCH / INTERRUPTEUR BASSE VITESSE DU VENTILATEUR
EAC : ELECTRONIC AIR CLEANER WITH FLOW SWITCH / FILTRE À AIR ÉLECTRONIQUE AVEC INTERRUPTEUR DE DÉBIT
HUM : HUMIDIFIER / HUMIDIFICATEUR
PS : HIGH/LOW POWER SWITCH / INTERRUPTEUR HAUTE/BASSE PUISSANCE
L-1 : HEAT DEMAND LIGHT / LUMIÈRE DEMANDE DE CHAUFFAGE
BR-15 : 15 AMPS BREAKER / DISJONCTEUR 15 AMPS
CONN1 : INPUT, OUTPUT CONNECTOR / CONNECTEUR ENTRÉES, SORTIES
CAVALIER / JUMPER : REMOVE JUMPER WHEN A 2 STAGE THERMOSTAT IS USED (W1/W2) ENLEVER LE CAVALIER LORSQU'UN THERMOSTAT 2 STAGES EST UTILISÉ (W1/W2)
W1 : REQUEST FOR HEAT STAGE1 / DEMANDE DE CHAUFFE STAGE1
W2 : REQUEST FOR HEAT STAGE2 / DEMANDE DE CHAUFFE STAGE2

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Figure 14: Parts list, SUPREME Comfort PSC



B501.49 rev.B

Table 5: Parts list, SUPREME Comfort PSC

#	Item	Description	Comments
1	B04342	Acoustic insulation	
2	B04343-03	Left side panel assembly	Left panel and item 3 included
3	B04340-02	Left side panel insulation	
4	B04344-01	Back panel assembly	
5	B04341	Top back panel insulation	
6	B04343-01	Right side panel assembly	Right panel and item 7 included
7	B04340-01	Right side panel insulation	
8	B04302-02	Top front panel	
9	L01J006	Breaker 60 A	
10	B04310	Breakers support	
11	B04368	Sequencer card assembly	Card and plastic pins
12	B04311	Components support	
13	L01J001	Breaker 15 A	
14	B04000-03	Modified 12 positions terminal	
15	X02330	Label "Terminal Supreme C/A"	
16	B04288	Electrical sequencer kit	Supreme 18/20 kW
17	B04289	Electrical sequencer kit	Supreme 15 kW
18	B04290	Electrical sequencer kit	Supreme 10 kW
19	B04365	Door assembly	
20	B04356-01	Blower assembly 1/3hp (120V-PSC)	Supreme 10/15/18/20 kW
21	B04356-02	Blower assembly 1/3hp (240V-PSC)	Supreme 10/15/18/20 kW
22	B04356-03	Blower assembly 1hp (120V-PSC)	Supreme 20 kW
23	B04356-04	Blower assembly 1hp (240V-PSC)	Supreme 20 kW
24	Z01I036	Blower 112-9R	Supreme 20 kW
25	Z01I035	Blower 112-8R	Supreme 10/15/18/20 kW
26	B01889	Motor support band and legs	
27	L06K004	Motor 1hp (120v-PSC)	Supreme 20/ kW
28	L06K005	Motor 1hp (240v-PSC)	Supreme 20 kW
29	L06G007	Motor 1/3hp (120v-PSC)	Supreme 10/15/18/20 kW
30	L06G015	Motor 1/3hp (240v-PSC)	Supreme 10/15/18/20 kW
31	B04287	Electrical blower kit	
32	L01I001	Capacitor 5 uF	Supreme (120 PSC) 10/15/18/20 kW
33	L01I003	Capacitor 10 uF	Supreme (240 PSC) 10/15/18/20 kW
34	L01I005	Capacitor 15 uF	Supreme (120 PSC-1 hp) 20 kW
35	B01024	Capacitor support	
36	B04303	Floor	
37	B04309	Fan slide	
38	B04304	Fan separator	
39	R02N028	Hi-limit 125+/-5.5C	
40	B04308	Hi-limit deflector	
41	B04305	Front separator	
42	L01H030	Relay DPST 22 VDC	
43	B04369	Electrical power kit	Supreme 10 @ 20kW
44	L01H009	Relay 24 VAC	
45	B04351-02	Element assembly	5 kW
46	B04351-01	Element assembly	4 kW
47	B04315-01	Element plate	
48	L01F010	Transformer 208/240/24	
49	L99F007	Terminal bloc 600V/175A (1423570)	
50	B04359	Blower grill	
51	B04306	Deflector	
52	B04307	Element support	
Accessories			
DFB-SUP	Downflow base	(ref: B03310-03)	

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Figure 15: Parts list, SUPREME Advantage PSC

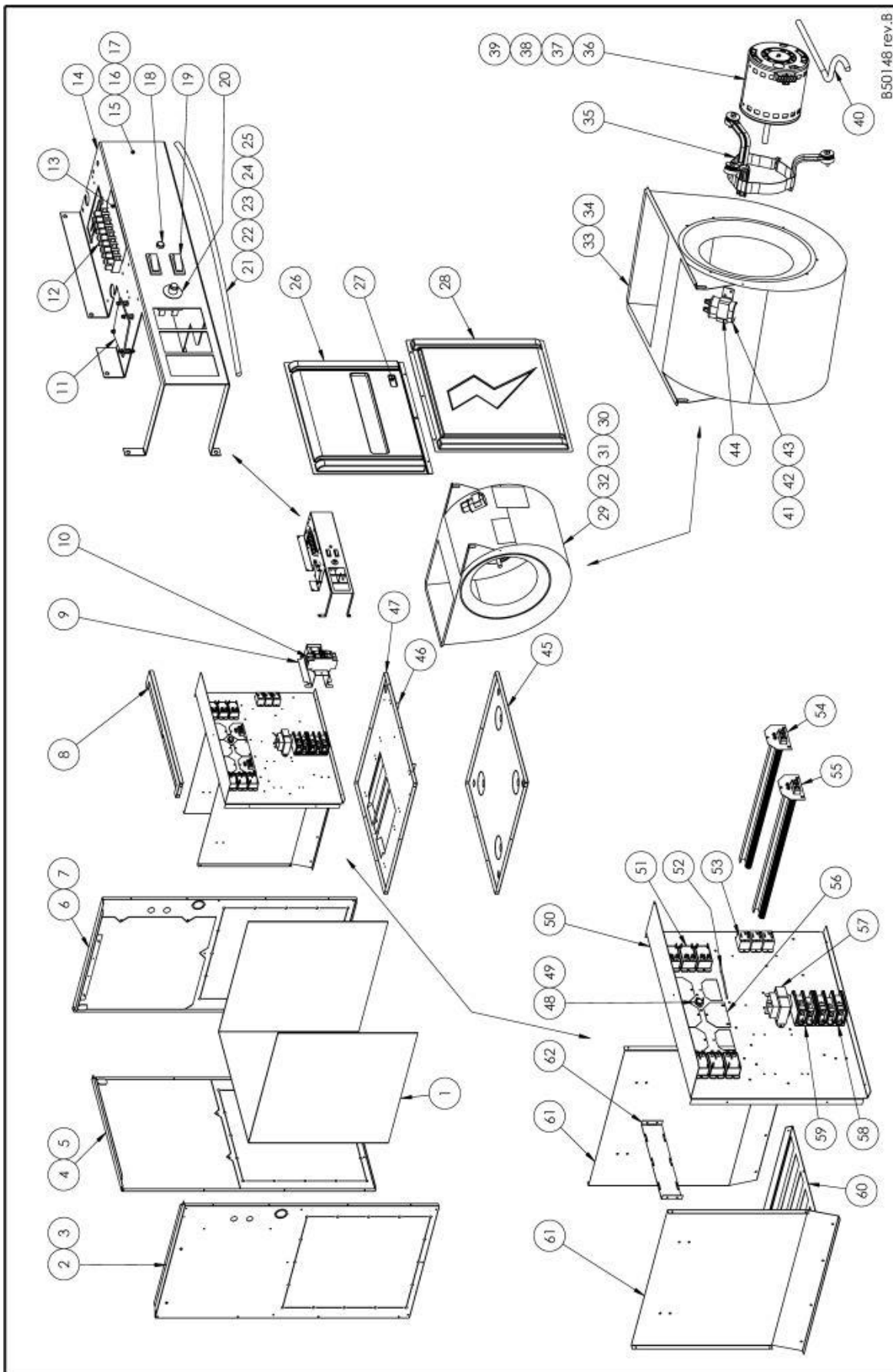


Table 6: Parts list, SUPREME Advantage PSC

#	Item	Description	Comments
1	B04342	Acoustic insulation	
2	B04343-04	Left side panel assembly	Left panel and item 3 included
3	B04340-02	Left side panel insulation	
4	B04344-02	Back panel assembly	
5	B04341	Top back panel insulation	
6	B04343-02	Right side panel assembly	Right panel and 7 included
7	B04340-01	Right side panel insulated	
8	B04302-01	Top front panel	
9	B04312	Breakers support	
10	L01J006	Breaker 60 A	
11	B04368	Sequencer card assembly	Card and plastic pins
12	B04000-03	Modified 12 positions terminal	
13	X02330	Label "Terminal Supreme C/A"	
14	B04421	Components support	
15	X50060	Cosmetic "Supreme A" 3 breaker	
16	X50059	Cosmetic "Supreme A" 2 breaker	Supreme 15/18/20kw
17	X50058	Cosmetic "Supreme A" 1 breaker	Supreme 10kw
18	L01L006	Indicator light	
19	L07F015	Switch SPDT	
20	L01J001	Breaker 15 A	
21	B04293	Electrical sequencer kit	Supreme 27/30kw
22	B04294	Electrical sequencer kit	Supreme 23/25kw
23	B04295	Electrical sequencer kit	Supreme 18/20kw
24	B04296	Electrical sequencer kit	Supreme 15kw
25	B04297	Electrical sequencer kit	Supreme 10kw
26	B04275	Plastic top door	
27	X50042	Label logo Dettson	
28	B04349	Bottom door assembly	
29	B04356-03	Blower assembly 1hp (120v-PSC)	Supreme 20/23/25/27/30 kw
30	B04356-01	Blower assembly 1/3hp (120v-PSC)	Supreme 10/15/18/20/23/25 kw
31	B04356-02	Blower assembly 1/3hp (240v-PSC)	Supreme 10/15/18/20/23/25 kw
32	B04356-04	Blower assembly 1hp (240v-PSC)	Supreme 20/23/25/27/30 kw
33	Z01I036	Blower 112-9R	Supreme 20/23/25/27/30 kw
34	Z01I035	Blower 112-8R	Suprême 10/15/18/20/23/25 kw
35	B01889	Motor support band and legs	
36	L06K004	Motor 1hp (120v-PSC)	Supreme 20/23/25/27/30 kw
37	L06K005	Motor 1hp (240v-PSC)	Supreme 20/23/25/27/30 kw
38	L06G007	Motor 1/3hp (120v-PSC)	Supreme 10/15/18/20/23/25 kw
39	L06G015	Motor 1/3hp (240v-PSC)	Supreme 10/15/18/20/23/25 kw
40	B04287	Electrical blower kit	
41	L01I001	Capacitor 5 uF	Supreme (120 PSC) 10 @ 25 kw
42	L01I003	Capacitor 10 uF	Supreme (240 PSC) 10 @ 25 kw
43	L01I005	Capacitor 15 uF	Supreme (120 PSC - 1 hp) 20 @ 30 kw
44	B01024	Capacitor support	
45	B04303	Floor	
46	B04309	Fan slide	
47	B04304	Fan separator	
48	R02N028	Hi-limit 125+/-5.5C	
49	B04308	Hi-limit deflector	
50	B04305	Front separator	
51	L01H030	Relay DPST 22 VDC	
52	B04369	Electrical power kit	
53	L01H009	Relay 24 VAC	
54	B04351-02	Element assembly	5kw
55	B04351-01	Element assembly	4kw
56	B04315-01	Element plate	
57	L01F010	Transformer 208/240/24	
58	L99F007	Terminal bloc 600V/175A (1423570)	3 positions
59	L99F008	Terminal bloc 600V/175A (1422570)	2 positions (27 & 30 kW only)
60	B04359	Blower grill	
61	B04306	Deflector	
62	B04307	Element support	
Accessories			
DFB-SUP	Downflow base	(ref: B03310-03)	

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