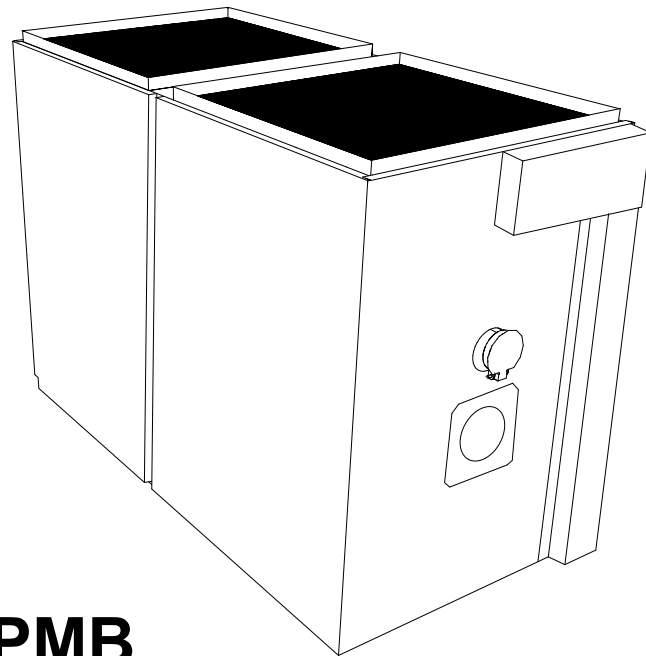


**Dettson**

**AMT Series**

# Installation Instructions and Homeowner's Manual

## WARM AIR FURNACE OIL FIRED - UPFLOW



Models:

**AMT300B34-SM1PMB  
OLR210F19C**



Manufactured by:

**Dettson Industries Inc**

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

[www.dettson.ca](http://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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# PART 1 INSTALLATION

## SAFETY CONSIDERATIONS

INSTALLATION OF OIL FIRED HEATING UNITS SHALL BE IN STRICT ACCORDANCE WITH THE REGULATIONS OF THE AUTHORITIES HAVING JURISDICTION. IN CANADA THE CSA B139 AND IN THE UNITED STATES THE NFPA NO.31-1992 INSTALLATION CODES FOR OIL BURNING EQUIPMENT APPLY.

DO NOT OPERATE FURNACE IN A CORROSIVE ATMOSPHERE CONTAINING CHLORINE, FLUORINE OR ANY OTHER DAMAGING CHEMICALS.

DO NOT STORE OR USE GASOLINE, OR OTHER FLAMMABLE VAPOURS AND LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

## 1.1) SAFETY LABELING AND WARNING SIGNS 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 injury.

### WARNING

Hazards or unsafe practices which **CAN** result in death or injury.

### CAUTION

Hazards or unsafe practices which **CAN** result in personal injury, product or property damage.

## 1.2) SAFE INSTALLATION REQUIREMENTS

### WARNING

Installation or repairs performed by unqualified persons can result in hazards to them and others. The installation **MUST** conform to local codes or, in the absence same, to codes of the country having jurisdiction.

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

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

### WARNING

#### Fire hazard

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

If the furnace is not installed level, oil will drain into the furnace vestibule and create a fire hazard, instead of being directed into the combustion chamber.

**NOTE:** It is the personal responsibility and obligation of the customer to contact a qualified installer to ensure that the installation conforms to governing local and/or national codes and ordinances.

- This furnace is NOT approved for installation in mobile homes, trailers or recreational vehicles;
- Do **NOT** use this furnace as a construction heater or to heat a building under construction;
- There must be a sufficient supply of fresh air for combustion as well as ventilation in the area where the furnace is located;
- Use only the type of fuel oil approved for this furnace (see **Rating Plate** on unit). Overfiring will result in failure of heat exchanger and cause dangerous operating conditions;
- Visually check all oil line joints for signs of leakage;
- Connect furnace to the chimney;
- The points in Part 2 "Operation" are vital to the proper and safe operation of the heating system. Take the time to ensure that all steps were followed;
- Follow the rules of the NFPA Pamphlet No.31 (in the USA) and CSA B-139 (in Canada) or local codes for placing and installing the oil storage tank;
- Follow a regular service and maintenance schedule for efficient and safe operation;
- Before servicing, allow furnace to cool. Always shut off electricity and fuel to furnace when servicing. This will prevent electrical shock or burns;

- k. Seal supply and return air ducts;
- l. The vent system **MUST** be checked to determine that it is the correct type and size;
- m. Install correct filter type and size;
- n. Unit **MUST** be installed so electrical components are protected from direct contact with water.

### 1.2.1) Safety Rules

Your unit is built to provide many years of safe and dependable service providing it is properly installed and maintained. However, abuse and/or improper use can shorten the life of the unit and create hazards for you, the owner.

- a. The U.S. Consumer Product Safety Commission recommends that users of oil-burning appliances install carbon monoxide detectors. There can be various sources of carbon monoxide in a building or dwelling. The sources could be gas-fired clothes dryers, gas cooking stoves, water heaters, furnaces, gas-fired fireplaces, wood fireplaces, and several other items. Carbon monoxide can cause serious bodily injury and/or death. Therefore, to help alert people to potentially dangerous carbon monoxide levels, you should have carbon monoxide detectors listed by a nationally recognized agency (e.g. Underwriters Laboratories or International Approval Services) installed and maintained in the building or dwelling (see Note below).
- b. There can be numerous sources of fire or smoke in a building or dwelling. Fire or smoke can cause serious bodily injury, death, and/or property damage. Therefore, in order to alert people to potentially dangerous fire or smoke, you should have fire and smoke detectors listed by Underwriters Laboratories installed and maintained in the building or dwelling (see Note below).

**NOTE:** The manufacturer of your furnace does not test any detectors and makes no representations regarding any brand or type of detector.

#### CAUTION

Ensure that the area around the combustion air intake terminal is free of snow, ice and debris.

### 1.2.2) Freezing temperatures and your building

 **WARNING**

**Freezing temperature warning.**

**Turn off water supply.**

**If your heater remains shut off during cold weather the water pipes could freeze and burst, resulting in serious water damage.**

Your unit is equipped with safety devices that may keep it from operating if sensors detect abnormal conditions such as clogged exhaust flues.

If the structure is unattended during cold weather you should take these precautions:

- a. Turn off main water supply into the structure and drain the water lines if possible. Open faucets in appropriate areas;
- b. Have someone check the structure frequently during cold weather to make sure it is warm enough to prevent pipes from freezing. Contact a qualified service agency, if required.

### 1.2.3) Installation regulations

All local and national code requirements governing the installation of oil burning equipment, wiring and flue connections **MUST** be followed. Some of the codes that may be applicable are:

CSA B139	INSTALLATION CODE FOR OIL BURNING EQUIPMENT
NFPA 31	INSTALLATION OF OIL BURNING EQUIPMENT
ANSI/NFPA 90B	WARM AIR HEATING AND AIR CONDITIONING SYSTEMS
ANSI/NFPA 70	NATIONAL ELECTRICAL CODE
CSA C22.1	CANADIAN ELECTRICAL CODE

Only the latest issues of the above codes should be used.

### 1.3) POSITIONING THE FURNACE

The unit must be installed in a location where the ambient and return air temperatures are over 15°C (60°F).

#### CAUTION

Carefully check your furnace upon delivery for any evidence of damage that may have occurred during shipping and handling. Any claims for damages or lost parts must be made with the Transport Company.

This furnace is approved for reduced clearances to combustible construction. Therefore, it may be installed in a closet or similar enclosure. In any case, the unit must always be installed level.

In a basement, or when installed on the floor, as in a crawlspace, it is recommended that the unit be installed on a concrete pad that is 25.4 to 50.8 mm (1" to 2") thick.

The required minimum clearances for this furnace are specified in Table 1.

**TABLE 1**  
**Minimum clearances – combustion materials**

LOCATION	APPLICATION	CLEARANCE (combustible materials)
Sides	Left or right	0.15 m (6") *
	Other side left or right	25.4 mm (1")
Back	Furnace	0.15 m (6") *
Top	Furnace or plenum	25.4 mm (1")
	Horizontal warm air duct within 6 feet of furnace	25.4 mm (1")
Bottom	Furnace (combustible floor)	∅
Flue pipe	Horizontally or below flue pipe	0.23 m (9")
	Vertically above flue pipe	0.23 m (9")
Front	From burner	0.61 m (24")

\* In these cases, 0.61 m (24") of access space is recommended for maintenance.

The furnace should be positioned as closely as possible to the chimney to keep vent connections short and direct. It should also be as close as possible to the centre of the air distribution system.

### CAUTION

Do **NOT** operate furnace in a corrosive atmosphere containing chlorine, fluorine or any other damaging chemicals. Refer to Part 1, Section 5.2.

### WARNING

**Electrical shock hazard.**

**This furnace is not watertight and is not designed for outdoor installation. This furnace shall be installed in such a manner as to protect the electrical components from water.**

**Outdoor installation would lead to a hazardous electrical condition and potentially cause bodily injury and/or death, property damage, premature furnace failure.**

#### 1.4) VENTING

### WARNING

**Poisonous carbon monoxide gas, fire and explosion hazard.**

**Read and follow all instructions in this section.**

**Failure to properly vent this furnace can cause bodily injury and/or death, property damage.**

### CAUTION

When the furnace (chimney installation) is vented together with other combustion appliances such as a water heater, the allowable venting materials (L-Vent etc.) for use with those appliances must be investigated.

### WARNING

**Poisonous carbon monoxide gas hazard**

**Never install a hand operated damper in the vent pipe. However, any Underwriters Laboratories listed electrically operated automatic type vent damper may be installed if desired. Be sure to follow the instructions provided with the vent damper. Read and follow all instructions in this section.**

**Failure to properly vent this furnace or other appliances can result in personal injury and/or death, property damage.**

The furnace must be vented to the outside, in accordance with local codes and other authorities having jurisdiction.

OIL FIRED APPLIANCES SHALL BE CONNECTED TO FLUES HAVING SUFFICIENT DRAFT AT ALL TIMES TO ENSURE SAFE AND PROPER OPERATION OF THE APPLIANCE.

For additional venting information refer to ANSI/NFPA 211 Chimneys, Fireplaces, Vents and Solid Fuel Burning Appliances and/or CSA B139 Installation Code.

This furnace is certified for use with a Type "L" vent (maximum flue gas temperature 302°C (575°F)). The flue pipe clearance knockout at the front top or side panel should be removed. Install the flue elbow so that it exits the furnace cabinet through that opening.

#### Pre-installation vent system inspection

Before installing this furnace, it is highly recommended that any existing vent system be completely inspected.

This inspection should include the following:

- Inspection for any deterioration in the chimney or vent. If deterioration is discovered, the chimney must be repaired or the vent must be replaced;
- Inspection to ascertain that the vent system is clear and free of obstructions. Any blockages must be removed before installing this furnace;
- Cleaning the chimney or vent if previously used for venting a solid fuel burning appliance or fireplace;
- Confirming that all unused chimney or vent connections are properly sealed;
- Verification that the chimney is properly lined and sized per the applicable codes (refer to list of codes on page 4).

## Masonry Chimney

This furnace can be vented into an existing masonry chimney. However, it must not be vented into a chimney servicing a solid fuel-burning appliance. Before venting this furnace into a chimney, the chimney must be checked for deterioration and repaired if necessary. The chimney must be properly lined and sized per local or national codes.

If the furnace is vented into a common chimney, the chimney must be of sufficient area to accommodate the total flue products of all appliances vented into the chimney.

The following requirements are provided for a safe venting system:

- a. Ensure that the chimney flue is clear of any dirt or debris;
- b. Ensure that the chimney is not servicing an open fireplace;
- c. Never reduce the pipe size below the outlet size of the furnace;
- d. All pipes should be supported using the proper clamps and/or straps. These supports should be at least every 1.2 m (4');
- e. All horizontal runs of pipe should have at least a 20 mm per 1 m (1/4" per foot) upward slope;
- f. All runs of pipe should be as short as possible with as few turns as possible;
- g. Seams should be tightly joined and checked for leaks;
- h. The flue pipe must not extend into the chimney but be flush with the inside wall;
- i. The chimney must extend 0.9 m (3') above the highest point where it passes through a roof of a building and at least 0.6 m (2') higher than any portion of a building within a horizontal distance of 3.0 m (10'). It shall also be extended at least 1.5 m (5') above the highest connected equipment flue collar;
- j. Check local codes for any variances.

## Factory Built Chimneys

This furnace may be used with an approved, factory built chimney. Refer to chimney manufacturer's instructions for proper installation.

## 1.5) COMBUSTION AIR



### WARNING

**Poisonous carbon monoxide gas hazard.**

**Comply with ANSI/NFPA (in U.S.) or CSA (in Canada) standards for the installation of Oil Burning Equipment and applicable provisions of local building codes to provide combustion and ventilation air.**

**Failure to provide adequate combustion and ventilation air can result in personal injury and/or death.**

### 1.5.1) General

Oil furnaces must have an adequate supply of combustion air. It is common practice to assume that older homes have sufficient infiltration to accommodate the combustion air requirement for the furnace. However, home improvements such as new windows, doors, and weather stripping have drastically reduced the volume of air infiltration into the home.

Home air exhausters are common. Bathroom and kitchen fans, power vented clothes dryers, and water heaters all tend to create negative pressure in the home. Should this occur, the chimney becomes less and less effective and can easily downdraft.

Heat recovery ventilation (HRV) systems are gaining in popularity. HRVs are not designed to supply combustion air. If not properly balanced, a serious negative pressure condition could develop in the dwelling.

## 1.5.2) Contaminated Combustion Air

Installations in certain areas or types of structures will increase the exposure to chemicals or Halogens, which may harm the furnace. These instances will require that only outside air be used for combustion.

The following areas or types of structures may contain or be exposed to the substances listed below. The installation must be carefully evaluated as it may be necessary to provide outside air for combustion.

- a. Commercial buildings;
- b. Buildings with indoor pools;
- c. Furnaces installed near chemical storage areas.

Exposure to these substances:

- a. Permanent wave chemicals for hair;
- b. Chlorinated waxes and cleaners;
- c. Chlorine based swimming pool chemicals;
- d. Water softening chemicals;
- e. De-icing salts or chemicals;
- f. Carbon tetrachloride;
- g. Halogen type refrigerants;
- h. Cleaning solvents (such as perchloroethylene);
- i. Printing inks, paint removers, varnishes, etc. ;
- j. Hydrochloric acid;
- k. Solvent based glues;
- l. Antistatic fabric softeners for clothes dryers;
- m. Acid based masonry cleaning materials.

## 1.6) OIL TANKS AND LINES

Check your local codes for the installation of the tank and accessories.

A manual shut-off valve and an oil filter shall be installed in sequence from tank to burner. Be sure that the oil line is clean before connecting to the burner. The oil line should be protected to eliminate any possible damage. Installations where the fuel oil tank is below the burner level must employ a two pipe fuel supply system with an appropriate fuel pump. For more than an 2.4 m (8') rise use a 2 stage pump and for more than a 4.9 m (16') rise use an auxiliary pump.

Follow the pump instructions to determine the size of tubing you need in relation to the rise, or the horizontal distance.

Inspect the entire oil distribution system for leaks at the beginning of each heating season.

## 1.7) BURNER INSTALLATION

### Mounting the burner

1. The warm air furnace burner mounting plate has a 4-bolt configuration;
2. Position the mounting gasket between the mounting flange and the appliance burner mounting plate. Line up the holes in the mounting flange with the studs on the appliance mounting plate and securely bolt in place.

### After the burner is mounted

1. Remove drawer assembly;
2. Install nozzle (see specifications);
3. Confirm electrode settings;
4. Make the electrical connections;
5. Complete oil line connections.

### CAUTION

**NEVER** use the "interrupted ignition" function if a Honeywell R7184 series combustion relay is installed on the burner.

### CAUTION

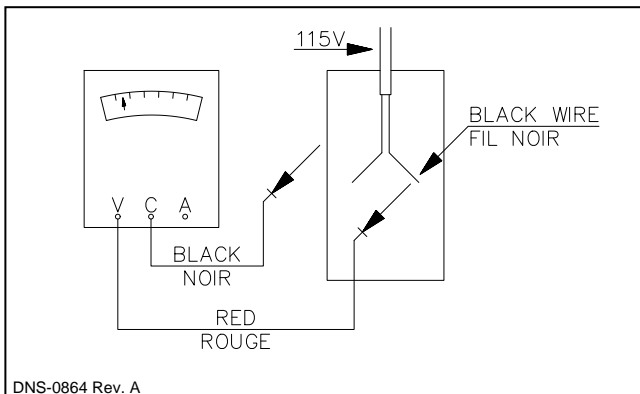
Do not fire the burner until you have checked the following:

### Checking the polarity

Oil burners used on furnaces have solid state control systems which make them sensitive to the proper connection of the hot and neutral power lines. The controls will be damaged if the 2 wires are reversed.

1. Set your voltmeter to line voltage;
2. Place one prong on your grounded electric entry box and one prong on the black wire;
3. Read the voltage;
4. If the voltage is zero, check the white wire. If line voltage shows, reverse the 115-volt leads entering the furnace junction box (see Figure 1);
5. If you do not have a voltmeter, use a pilot light.

FIGURE 1



DNS-0864 Rev. A

### Checking the nozzle

The burner is equipped with the appropriate nozzle. However, if another size nozzle is required, use the manufacturer's nozzle data concerning spray angle, as shown in Table 2. Note that all nozzle sizes are based on a pump pressure of 100 psi.

Always select nozzle sizes by working back from the actual desired flow rate at operating pressure, and not by the nozzle marking.

### Checking air and turbulator settings

Before starting the burner for the first time, adjust the air and turbulator settings to those listed in Table 2. Once the burner becomes operational, final adjustments will be necessary.

### Checking the fuel supply system

Fuel Specifications:

**NOTE:** Use No.1 or No.2 Heating Oil (ASTM D396) or in Canada, use No.1 or No.2 Furnace Oil.

Before starting the burner be sure the fuel tank is filled with clean oil.

### IMPORTANT

When using nozzle sizes of less than 0.75 USGPH, the Installation Code for oil burning equipment requires the installation of a 10 micron (or less) filter in the fuel oil line. These instructions must be followed in order for the lifetime heat exchanger warranty to remain intact.



### WARNING

**Fire and explosion hazard.**

**Use only approved heating type oil in this furnace. DO NOT USE waste oil, used motor oil, gasoline or kerosene.**

**Use of these will result in death, personal injury and/or property damage.**

**NOTE:** You may notice a slight odour the first time your furnace is operated. This will soon disappear. It is only the oil used on certain parts during manufacturing.

### 1.8) BLOCKED VENT SHUT-OFF (BVSO) FOR CHIMNEY VENTING

This device is designed to detect the insufficient evacuation of combustion gases in the event of a vent blockage. In such a case the thermal switch will shut down the oil burner. The device will then need to be re-armed MANUALLY.

Refer to the wiring diagrams and the detailed instructions supplied with the BVSO for the installation and wiring procedures. The length of wires supplied with the unit is such that the safety device must be installed between the flue outlet of the appliance and the draft regulator, as indicated in the instructions.

It is further imperative that the BVSO be maintained annually. Refer to the instructions supplied with the device for more details.

### CAUTION

A positive pressure venting system (Sealed Combustion System or Direct Vent) **MUST NOT** use the BVSO. Follow the instructions supplied with the venting system.

## 1.9) INSTALLING ACCESSORIES



### WARNING

#### Electrical shock hazard.

Turn OFF electric 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 could result in bodily injury and/or death, property damage.

### 1.9.1) Air conditioning

An air conditioning coil may be installed on the supply air side only. Notwithstanding the evaporator coil manufacturer's instructions, a minimum clearance of 0.13 m (5") must be allowed between the bottom of the coil drain pan, and the top of the heat exchanger.

The wiring shown in Figure 4.1 is an example of a furnace where the output is the same for heating and cooling. In a case where the blower speed must be different, use the blue wire.

### 1.9.2) Ductwork and Filter

#### Installation

Design and install the air distribution system to comply with Air Conditioning Contractors of America manuals or other approved methods that conform to local codes and good trade practices.

### CAUTION

When ducting supplies air to a space other than where the furnace is located, the return-air ducts must be sealed and also be directed to the space other than where the furnace is located. Incorrect ductwork termination and lack of sealing will create a hazardous condition which can lead to bodily harm.

Install air conditioning cooling coil (evaporator) downstream from the supply air plenum of the furnace. If a separate evaporator and blower unit is used, install appropriate sealing dampers for air flow control. Cold air from the evaporator coil going through the furnace could cause condensation and shorten furnace life.

### CAUTION

Dampers (purchased locally) MUST be automatic.



### WARNING

#### Poisonous carbon monoxide gas hazard.

Do NOT draw return air from inside a closet or utility room. Return air duct MUST be sealed to furnace casing.

Failure to properly seal ducts can result in death, personal injury and/or property damage.



### WARNING

#### Poisonous carbon monoxide gas hazard.

Install evaporator coil on the supply side of the furnace ducting.

Evaporator coil installed in return side ducting can cause condensation to form inside heat exchanger, resulting in heat exchanger failure. This could result in death, personal injury and/or property damage.



## PART 2 OPERATION

### 2.1) SEQUENCE OF OPERATION

#### 2.1.1) Sequence of operation - Beckett AFG,Riello 40-F

1. Normally open contact (T-T) on primary relay closed when thermostat calls for heat;
2. AFG burner: The motor starts and spark is established. The pump pressure builds and the oil supply mechanism opens, admitting fuel to the nozzle;  
R40-F burner: Burner motor starts. The burner motor fan pre-purges the combustion chamber and vent for 10 seconds, establishing the combustion air pattern. During this time the solenoid valve holding coil pressure is approximately 100 psig. The solenoid valve opens, allowing oil to flow through the nozzle. At the same time, the burner motor ignition coil produces a spark;
3. Spark ignites oil droplets;
4. Cad cell senses flame and burner continues to fire. Ignition transformer ceases sparking (R40-F);
5. After Fan-Limit control heats up to the factory set point, the circulating air blower and electronic air cleaner starts;
6. The circulating air blower and burner motor remain on until the thermostat is satisfied (AFG). The ignition transformer continues to spark (AFG). The solenoid valve remains open (R40-F);  
Thermostat is satisfied;
7. Primary relay contacts open, solenoid valve closes (R40-F), burner motor shuts down. The ignition transformer ceases sparking (AFG);
8. The Fan-Limit control bi-metal cools down to the factory set point of 32°C (90°F). At that point the circulating air blower stops.

### 2.2) CHECKS AND ADJUSTMENTS

#### 2.2.1) General

During initial start-up and subsequent yearly maintenance calls, the furnace must be thoroughly tested.

#### IMPORTANT

The burner must be put into operation for 5 to 10 minutes before any test readings are taken. For new installations, set up the burner to the settings (see Table 2), before firing. These are rough adjustments but they will ensure that the burner will start and run smoke-free in advance of fine tuning.

Open the oil bleed port screw and start the burner. Allow the oil to drain into a container for at least 10 seconds. Slowly close and tighten the bleed screw. The oil should flow absolutely free of white streaks or air bubbles to indicate that no air is being drawn into the suction side of the oil piping and pump. Fire the burner. Adjust the oil pressure as indicated in Table 2.

#### 2.2.2) Restart after burner failure

1. Set thermostat lower than the room temperature;
2. Press the reset button on the burner primary control (relay);
3. Set thermostat higher than the room temperature;
4. If the burner motor does not start or ignition fails, turn off the disconnect switch and CALL A QUALIFIED SERVICE TECHNICIAN.

#### CAUTION

Do not attempt to start the burner when excess oil has accumulated, when the furnace is full of vapour, or when the combustion chamber is very hot.

#### 2.2.3) Smoke / CO<sub>2</sub> test

1. Pierce a test hole in the smoke pipe near the furnace breach. Insert the smoke test instrument probe into the hole;
2. Starting with a zero smoke reading, gradually reduce the burner air setting until just a trace of smoke results (#1 on Bacharach scale);
3. Take a CO<sub>2</sub> sample at the same test location where the smoke sample was taken. Note the CO<sub>2</sub> reading associated with the #1 smoke condition;
4. Adjust the burner air setting to obtain a CO<sub>2</sub> reading 1% lower than the reading associated with the #1 smoke;
5. This method of adjusting the CO<sub>2</sub> will allow adequate excess air to ensure that the burner will burn clean for the entire heating season.

#### 2.2.4) Supply air temperature rise test

1. Operate the burner for at least 10 minutes;
2. Measure the temperature of the air in the return air plenum;
3. Measure the temperature of the air in the largest trunk coming off the supply air plenum, just outside the range of radiant heat coming off the heat exchanger; 0.3 m (12") from the plenum on the main take-off is usually sufficient;
4. The temperature rise is calculated by subtracting the return air temperature from the supply air temperature;
5. 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 this temperature or below. If the excessive temperature rise cannot be reduced by increasing fan speed, investigate for ductwork restriction(s), dirty or improper air filter, or overfiring caused by excessive pump pressure, or improper nozzle sizing.

#### 2.2.5) Vent temperature test

1. Place a thermometer in the test hole located in the breach pipe;
2. The vent temperature should be between 204 to 302°C (400 and 575°F). If not, check for improper air temperature rise, pump pressure, nozzle size, or for a badly sooted heat exchanger.

### 2.2.6 Fan-Limit adjustment

Modification of the «FAN ON» and «HI» limit settings on the Fan-Limit can cause malfunctioning of the furnace and result in premature wear of the heat exchanger.

#### **CAUTION**

Modification of the factory set limits will void the warranty.

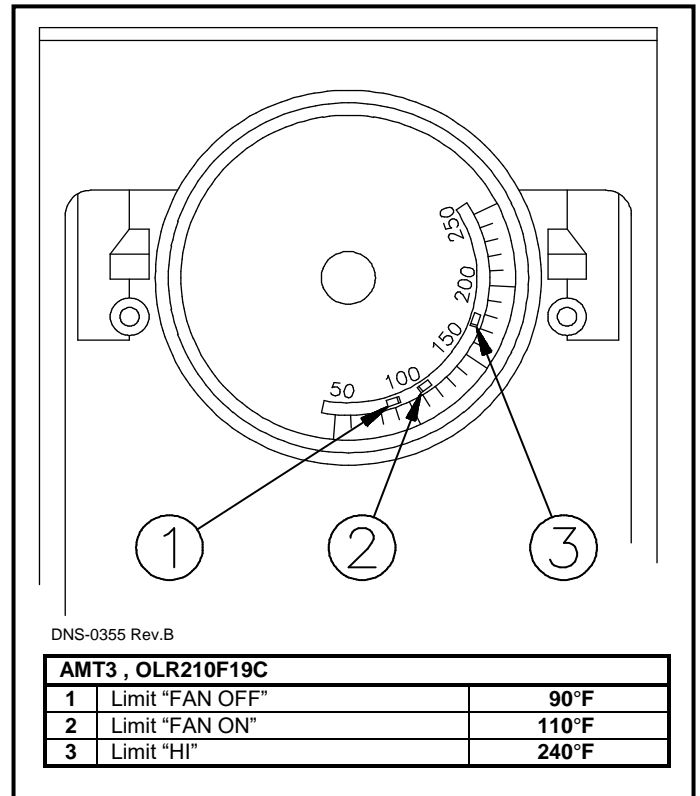
### 2.2.7 BVSO Performance test

The purpose of the following test is to check that the electrical outlet on the furnace, designated to the BVSO, is functional.

1. Start up the burner ;
2. Remove the three-pole plug from the BVSO outlet on the furnace ;
3. The burner must shut-off immediately, while the blower continues to run to the end of the cool-down cycle.

If the test is not in line with the above, call a QUALIFIED SERVICE TECHNICIAN.

FIGURE 2



## PART 3 MAINTENANCE

### 3.1) GENERAL

#### Preventive Maintenance

Preventive maintenance is the best way to avoid unnecessary expense and inconvenience. Have your heating system and burner inspected at regular intervals by a qualified service technician.

After each annual inspection a complete combustion test must be performed, in order to maintain optimum performance and reliability.



### WARNING

**Electrical shock hazard.**

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

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

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

**Before calling for service, check the following:**

- Check the oil tank gauge and check if the valve is open;
- Check the fuse or circuit breaker;
- Check if the shut-off switch is "ON";
- Reset the thermostat above room temperature;
- If ignition does not occur turn off the disconnect switch and call a qualified service technician.

**When ordering replacement parts, specify the complete furnace model number and serial number.**

#### 3.1.1) Heat exchanger cleaning

Ordinarily, it is not necessary to clean the heat exchanger or flue pipe every year, but it is advisable to have your oil burner serviceman check the unit before each heating season to determine whether cleaning or replacement of parts is necessary.

If cleaning is necessary, the following steps should be performed:

- Turn "OFF" all utilities upstream of the furnace;
- Disconnect the flue pipe;
- Remove the flue collar panel located at the rear part of the warm air furnace;
- Remove the radiator baffles;
- Disconnect the oil line and remove the oil burner from the furnace;
- Clean the secondary tubes, and the primary cylinder with a stiff brush and vacuum cleaner;
- The heat exchanger and combustion chamber should be inspected to determine if replacement is required before re-assembling the unit;
- After cleaning, replace the radiator baffles, flue collar plate and oil burner;
- Readjust burner for proper operation.

Soot will have collected in the first sections of the heat exchanger, only if the burner was started after the combustion chamber was flooded with fuel oil, or if the burner has been operating in a severely contaminated condition.

#### 3.1.2) Burner drawer assembly

Remove the drawer assembly. Clean all foreign matter from the retention head and electrodes. In the case of a Beckett AFG burner, the burner will have to be removed to check the retention head.

#### 3.1.3) Nozzle

Replace the nozzle with the one specified in Table 2.

#### 3.1.4) Oil filters

##### Tank filter

The tank filter should be replaced as required.

##### Secondary filter

The 10 micron (or less) filter cartridges should be replaced annually.

#### 3.1.5) Air filters

Air filters are the disposable type. Disposable filters should be replaced at least once a year. Dusty conditions, presence of animal hair etc. may require more frequent filter changes. Dirty filters will impact on furnace efficiency and increase oil consumption.

#### 3.1.6) Motor lubrication

Do NOT lubricate the oil burner motor or the direct drive blower motor as they are permanently lubricated.

#### 3.1.7) Blocked Vent Shut Off (BVSO) Cleaning

For continued safe operation, the Blocked Vent Shut-Off System (BVSO) is required to be inspected and maintained annually by a qualified agency.

- Disconnect the power to the appliance.
- Remove the two screws holding on the BVSO assembly cover.
- Remove the cover.
- Remove the two screws holding the thermal switch to the assembly base.
- Without removing the electrical wires, remove the thermal switch and remove any build-up from the thermal switch surface.

### CAUTION

**Do not dent or scratch the surface of the thermal switch. If the thermal switch is damaged, replacement is required.**

- Clear and remove any build-up or obstruction inside the heat transfer tube.
- Re-mount the thermal switch to the assembly base.
- Re-attach the assembly cover with the screws removed in step 2.
- Re-establish power to the appliance.

## PART 4 INFORMATION

Model: \_\_\_\_\_ Serial number: \_\_\_\_\_

Furnace installation date: \_\_\_\_\_

Service telephone # - Day: \_\_\_\_\_ Night: \_\_\_\_\_

Dealer name and address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### START-UP TEST RESULTS

Nozzle: \_\_\_\_\_ Pressure: \_\_\_\_\_ lb/psi

Burner adjustments:      Primary air      \_\_\_\_\_

   Fine air      \_\_\_\_\_

   Drawer Assembly      \_\_\_\_\_

CO<sub>2</sub>: \_\_\_\_\_ %      Smoke scale: \_\_\_\_\_ (Bacharach)

Gross stack temperature: \_\_\_\_\_ ° F

Ambient temperature: \_\_\_\_\_ ° F

Chimney draft: \_\_\_\_\_ " W.C."

Overfire draft: \_\_\_\_\_ " W.C."

Test performed by: \_\_\_\_\_

**TABLE 2**  
**Technical specifications, AMT300B34-SM1PMB/ OLR210F19C**

<b>RATING AND PERFORMANCE</b>				
Firing rate (USGPH)		1.20	1.35	1.50
Input (BTU/h)		168 000	189 000	210 000
Maximum heating temperature rise		18 - 29°C (65 - 85°F)		
<b>BECKETT BURNER (3450 RPM)</b>		<b>AFG-F6 (TUBE INSERTION 2 7/8")</b>		
Low firing rate baffle / Static disc, model		NOT APPLICABLE / 2 3/4 #3383		
AHRI model #	AMT/OLR	168-BF	189-BF	210-BF
Heating capacity (BTU/h)		138 000	154 000	170 000
Nozzle (Delavan)		1.00 - 80B	1.10 - 80B	1.25 - 80B
Pump pressure (PSIG)		145	150	145
Combustion air adjustment (band / shutter)		1/3	1/5	1/7
AFUE % (From CSA B212 standard and Canadian regulation)**		85.5%	84.9%	84.6%
AFUE % (From ASHRAE 103 standard and US regulation)**		84.0%	83.9%	83.1%
<b>RIELLO BURNER ; MODEL 40</b>		<b>F5 (TUBE INSERTION 3 9/16")</b>		
AHRI model #	AMT/OLR	168-RF	189-RF	210-RF
Heating capacity (BTU/h)		140 000	155 000	171 000
Nozzle (Delavan)		1.00-70W	1.10 - 70W	1.25 - 70W
Pump pressure (PSIG)		145	150	145
Combustion air adjustment (turbulator / damper)		2.5/2	4/2	4/4
AFUE % (From CSA B212 standard and Canadian regulation)**		86.7%	85.4%	84.6%
AFUE % (From ASHRAE 103 standard and US regulation)**		85.4%	83.9%	83.3%
<b>ELECTRICAL SYSTEM</b>				
Volts - Hertz - Phase		115 - 60 - 1		
Operating voltage range		104 - 132		
Electrical load (Amps)		15.7		
Minimum ampacity for wiring sizing		18.1		
Max. fuse size (Amps)		20.0		
<b>BLOWER DATA</b>				
Blower speed at 0.25" W.C. static pressure		MED-HIGH	HIGH	HIGH
Blower speed at 0.50" W.C. static pressure		HIGH	HIGH	N/A
Motor		3/4 HP - 4 speeds		
Blower size		12" x 10 DD (tight housing)		
Filter quantity and size		(2) 16" x 20"		
<b>GENERAL DATA</b>				
Overall W x L x H less burner		21.25" x 54.75" x 36.125"		
Shipping weight		242 lb		
Supply air duct W x L		20" x 24"		
Return air duct W x L .		20" x 22"		
Maximum cooling capacity		5 tons		

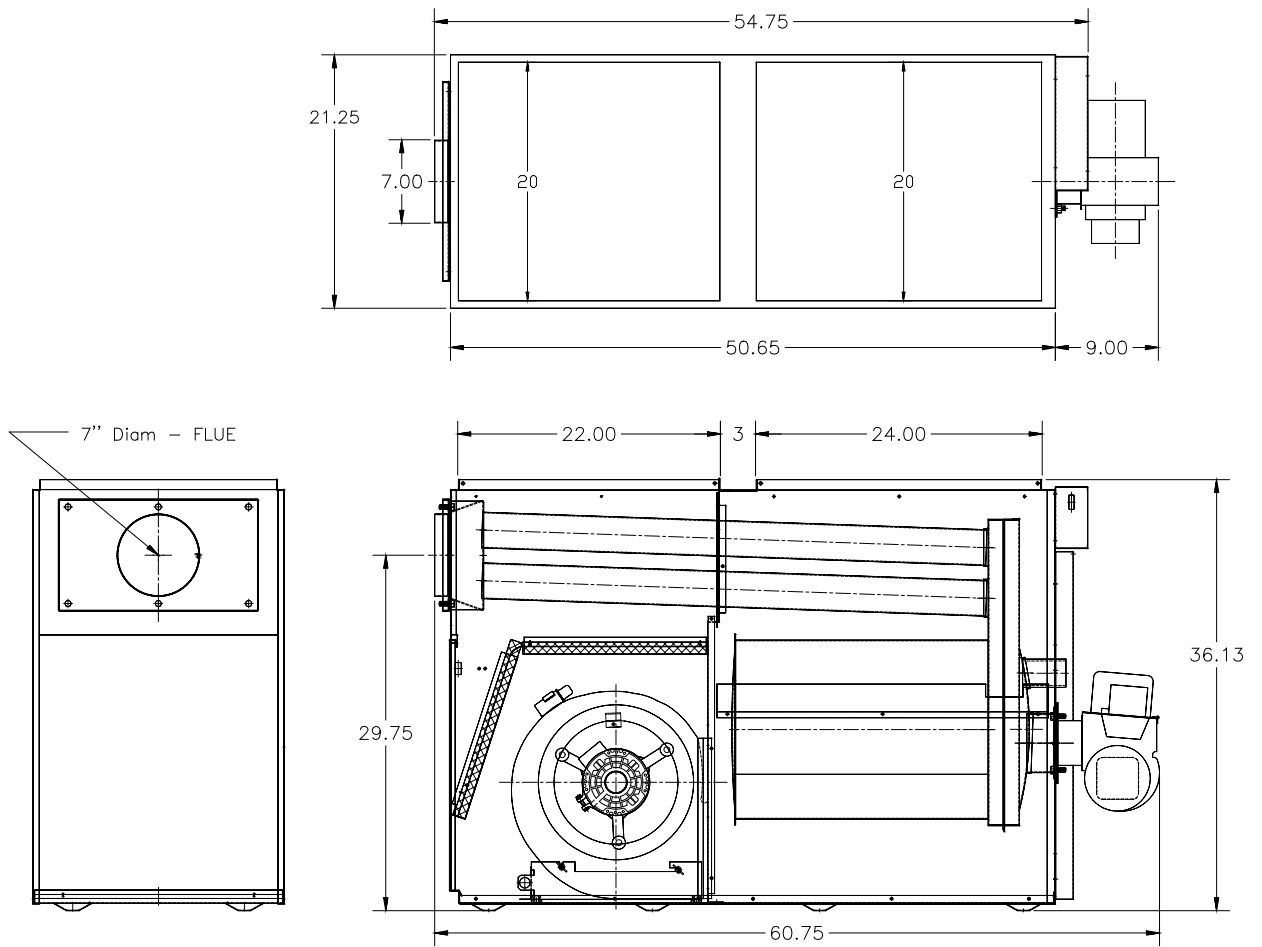
\*\* AFUE values established after minimum 20 hours of operation

**TABLE 2.1**  
**Air delivery - CFM air filter**

<b>SPEED</b>	<b>AMT300B34-SM1PMA / OLR210F19A</b>	
	<b>EXTERNAL STATIC PRESSURE WITH AIR FILTER</b>	
	<b>0.25"</b>	<b>0.5"</b>
<b>MED-HI</b>	1950	N/A
<b>HIGH</b>	2050	1900

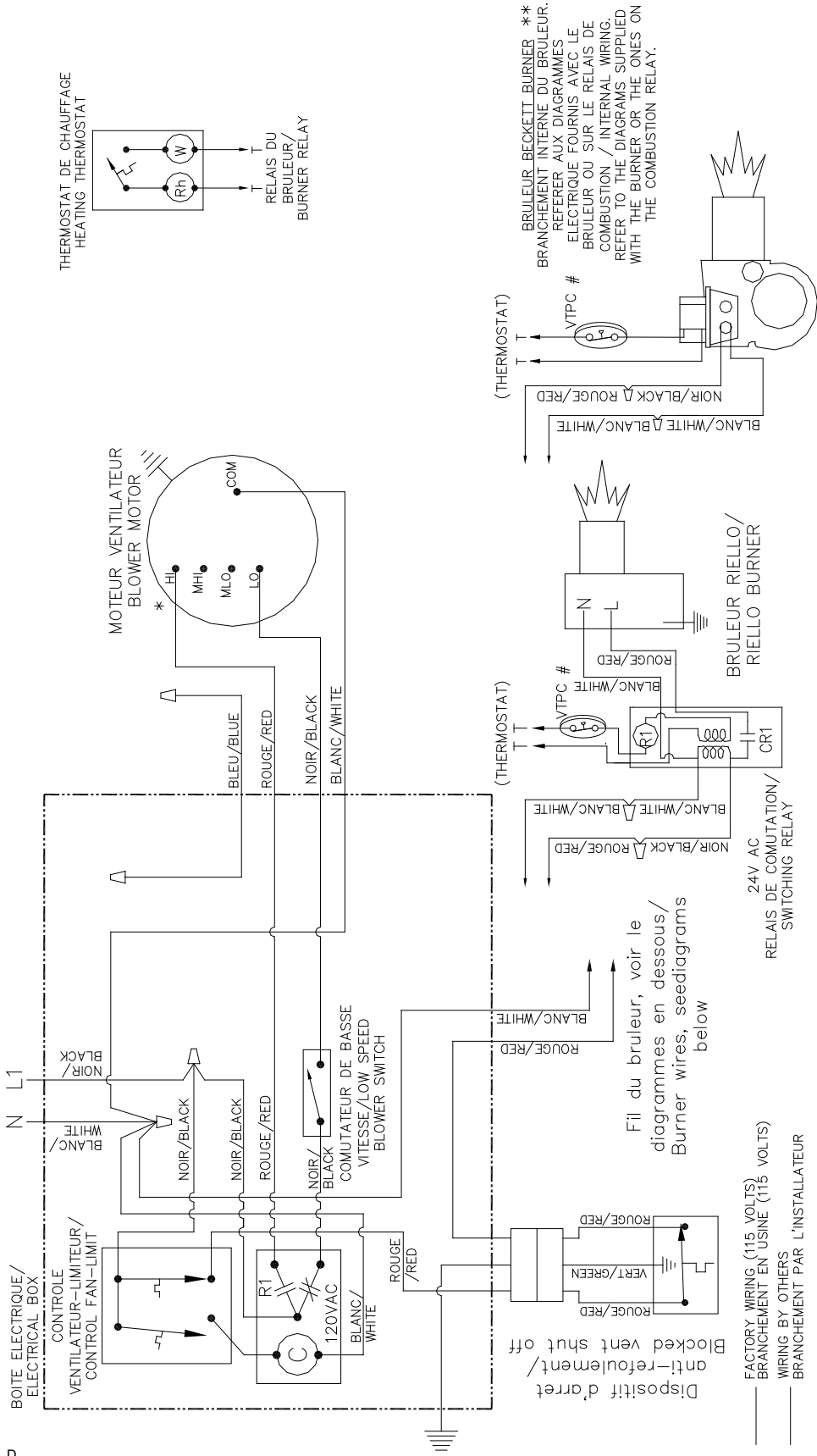
FIGURE 3

Model: AMT300B34-SM1PMB / OLR210F19C



DNS-0805 Rev. C

**FIGURE 4**  
**Wiring diagram, AMT300B34-SM1PMB / OLR210F19C heating only**



THERMOSTAT DE CHAUFFAGE  
 HEATING THERMOSTAT

RELAIS DU  
 BRULEUR/  
 BURNER RELAY

MOTEUR VENTILATEUR  
 BLOWER MOTOR

BOITE ELECTRIQUE/  
 ELECTRICAL BOX

VENTILATEUR-LIMITEUR/  
 CONTROL FAN-LIMIT

120VAC

COMUTATEUR DE BASSE  
 VITESSE/LOW SPEED  
 BLOWER SWITCH

ROUGE/RED

BLANC/WHITE

VERT/GREEN

ROUGE/RED

BLANC/WHITE

ROUGE/RED

BLANC/WHITE

ROUGE/RED

BLANC/WHITE

ROUGE/RED

BLANC/WHITE

ROUGE/RED

BLANC/WHITE

ROUGE/RED

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BLANC/WHITE

ROUGE/RED

BLANC/WHITE

ROUGE/RED

BLANC/WHITE

ROUGE/RED

BLANC/WHITE

ROUGE/RED

BLANC/WHITE

Dispositif d'arrêt  
 anti-refoulement/  
 Blocked vent shut off

Fil du brûleur, voir le  
 diagrammes en dessous/  
 Burner wires, see diagrams  
 below

FACTORY WIRING (115 VOLTS)  
 BRANCHEMENT EN USINE (115 VOLTS)  
 WIRING BY OTHERS  
 BRANCHEMENT PAR L'INSTALLATEUR

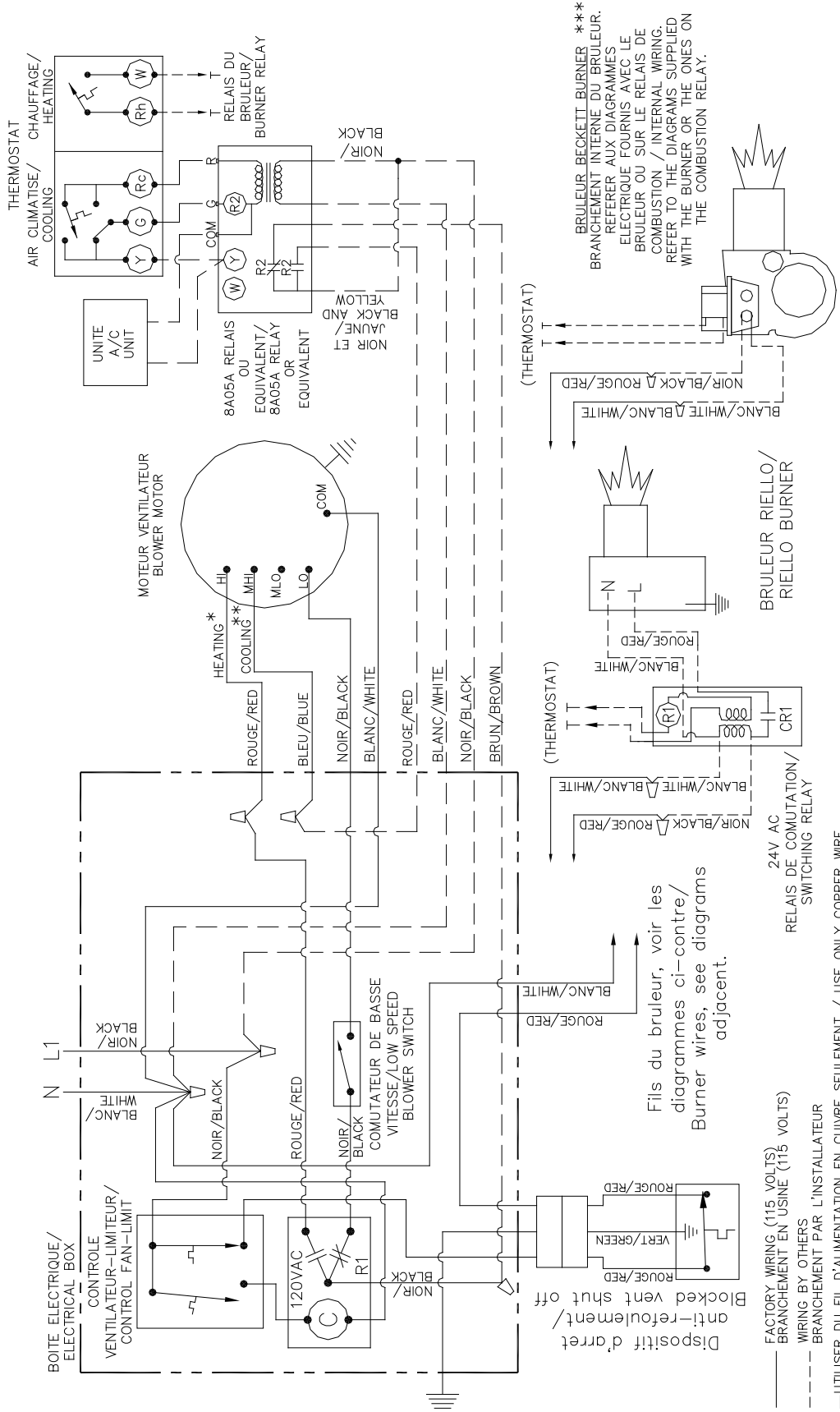
—UTILISER DU FIL D'ALIMENTATION EN CUIVRE SEULEMENT / USE ONLY COPPER WIRE.

\* BRANCHEMENT DE LA VITESSE DE CHAUFFAGE (FIL ROUGE) PEUT DIFFERER SELON LA SELECTION OPTIMALE DEFINIE PAR UN TECHNICIEN QUALIFIE. /  
 HEATING SPEED WIRING (RED) MAY BE CHANGED BASED ON AN OPTIMAL SETTING ESTABLISHED BY A QUALIFIED TECHNICIAN.

NE JAMAIS UTILISER LA FONCTION D'ALLUMAGE IGNITION INTERROMPU. / NEVER USE THE INTERRUPTED IGNITION FUNCTION.  
 # (VTPC) INTERRUPTEUR DE L'EVACUATION MURAL, CONNECTION ELECTRIQUE OBLIGATOIRE POUR L'EVACUATION DIRECT MURALE SEULEMENT. /  
 VENT TERMINAL PRESSURE CONTROL ELECTRICAL CONNECTION MANDATORY.(DIRECT VENT APPLICATION ONLY).

BRULEUR BECKETT BURNER \*\*  
 BRANCHEMENT INTERNE DU BRULEUR.  
 REFERER AUX DIAGRAMMES  
 ELECTRIQUE FOURNIS AVEC LE  
 BRULEUR OU SUR LE RELAIS DE  
 COMBUSTION / INTERNAL WIRING.  
 REFER TO THE DIAGRAMS SUPPLIED  
 WITH THE BURNER OR THE ONES ON  
 THE COMBUSTION RELAY.

FIGURE 4.1  
Wiring diagram, AMT300B34-SM1PMB / OLR210F19C heating and cooling option



Dispositif d'arrêt anti-refoulement/ Blocked vent shut off

Fils du brûleur, voir les diagrammes ci-contre/ Burner wires, see diagrams adjacent.

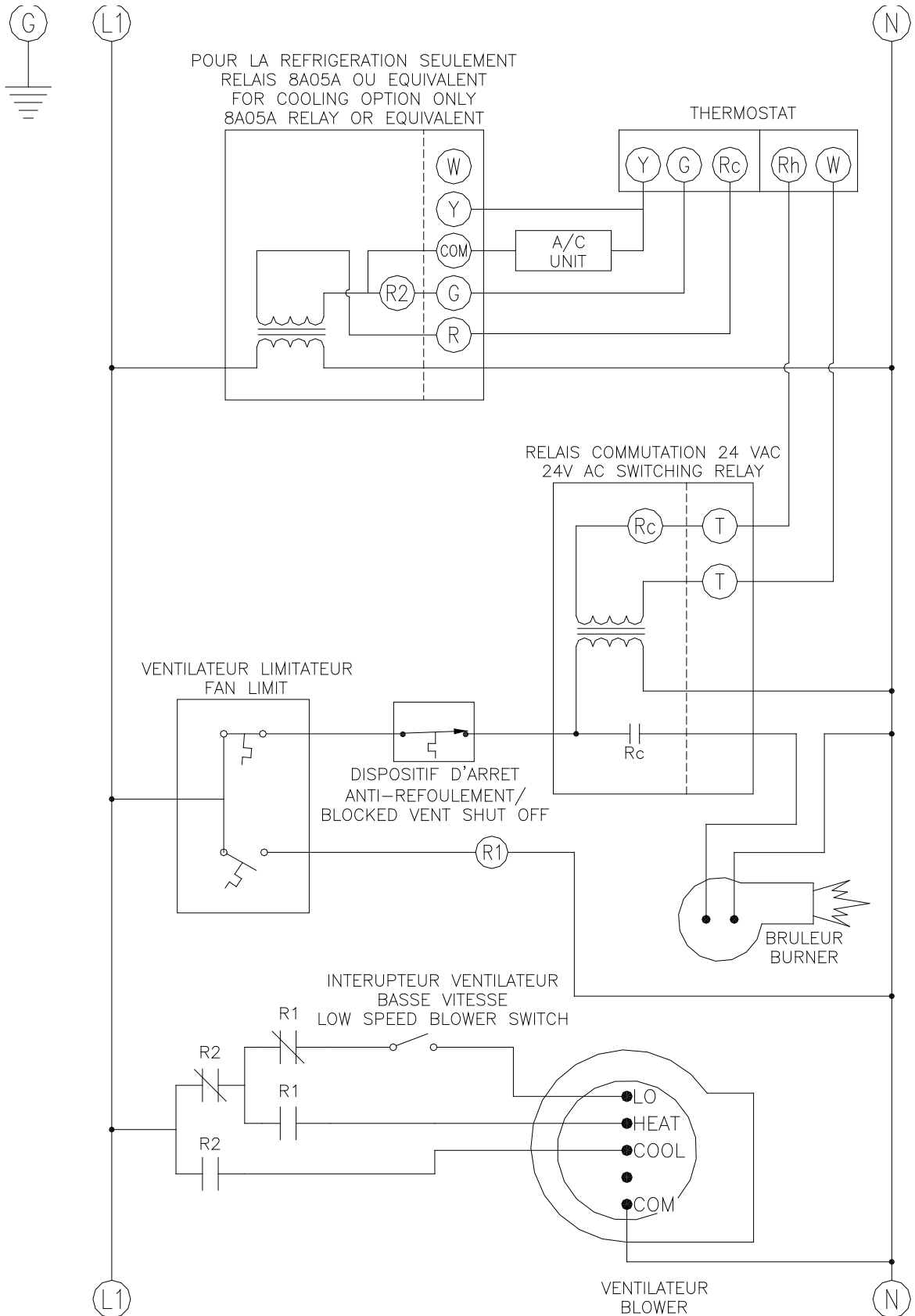
BRULEUR BECKETT BRÛLEUR \*\*\*  
BRANCHEMENT INTERNE DU BRÛLEUR.  
REFERER AUX DIAGRAMMES  
ELECTRIQUE FOURNIS AVEC LE  
BRÛLEUR OU SUR LE RELAIS DE  
COMBUSTION / INTERNAL WIRING.  
REFER TO THE DIAGRAMS SUPPLIED  
WITH THE BURNER OR THE ONES ON  
THE COMBUSTION RELAY.

BRÛLEUR RIELLO/  
RIELLO BURNER

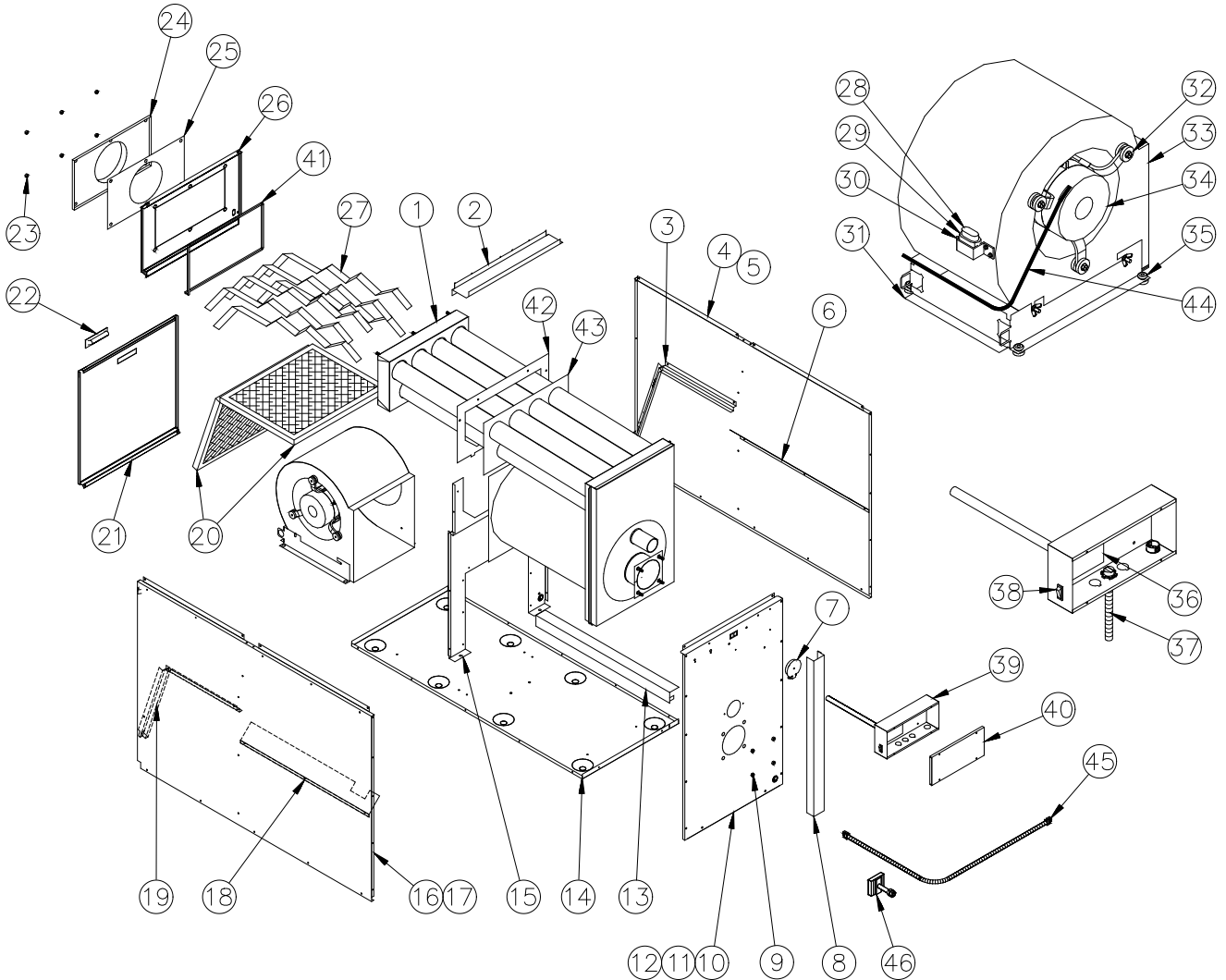
- FACTORY WIRING (115 VOLTS)  
BRANCHEMENT EN USINE (115 VOLTS)
- - - WIRING BY OTHERS  
BRANCHEMENT PAR L'INSTALLATEUR
- UTILISER DU FIL D'ALIMENTATION EN CUIVRE SEULEMENT / USE ONLY COPPER WIRE.
- \* BRANCHEMENT DE LA VITESSE DE CHAUFFAGE PEUT DIFFERER SELON LA SELECTION OPTIMALE DEFINIE PAR UN TECHNICIEN QUALIFIE. / HEATING SPEED WIRING MIGHT BE CHANGE IF A OPTIMUM SETTING IS IDENTIFY BY A QUALIFIED TECHNICIAN.
- \*\* BRANCHEMENT DE LA VITESSE DE CLIMATISATION PEUT ETRE A LA MEME VITESSE QUE LE CHAUFFAGE / COOLING SPEED WIRING CAN BE AT THE SAME SETTING AS HEATING.
- NE JAMAIS UTILISER LA FONCTION D'ALLUMAGE INTERROMPU. / NEVER USED THE INTERRUPTED IGNITION FONCTION.



**FIGURE 4.2**  
**Ladder diagram, AMT300B34-SM1PMB / OLR210F19C**



**PARTS LIST**  
**Model : AMT300B34-SM1PMB / OLR210F19C**



B50044B

ITEM	PART #	DESCRIPTION	ITEM	PART #	DESCRIPTION
1	B02740	Complete heat exchanger	26	B03349-01	Rear top panel
2	B02748	Top divider	27	B00711	Flue baffle; 6x for complete kit
3	B03352-01	Filter support	28	L99Z007	Rubber cap, oval
4	B03189-01	Right side panel	29	L01I005	Capacitor 15 MF
5	B01766-01	Right side panel insulation	30	B01024	Capacitor support
6	B02746-01	Lateral baffle	31	B01756	Blower support
7	B02111	Observation door assembly	32	B01889	Belly band assembly
8	B02751	Corner conduit	33A	B03720-05	Blower support, 120-10TDD
9	F07F011	Hexagon nut 3/8-16NC zinc	33B	Z01L003	Blower wheel 120-10DD
10	B02754-01	Front panel assembly	33C	B01406-02	Blower assembly replacement
11	B02756	Front panel insulation	34A	L06I004	Motor, 3/4HP, DD
12	B01014	Gasket, observation door	34B	B01891-01	Motor support assembly
13	B01763	Wire channel	35	Z01F006	Rubber grommet
14	B01769-02	Floor assembly	36	R02I009	Fan-Limit control, 11 1/2"
15	B02781	Bottom divider assembly	37	B03351	Electrical kit, burner
16	B03189-02	Left side panel	38	L07F003	Rocker switch, SPST
17	B01766-02	Left side panel insulation	39	B02757	Electrical box
18	B02746-02	Lateral baffle	40	B02782-04	Electrical box cover
19	B01761-02	Filter support	41	J06L002	Seal strip (25' roll)
20	Z04F010	Paper filter 16 x 20 x 1	42	B02745	Divider plate
21	B03201-02	Rear door assembly	43	B02739	Gasket, top divider
22	Z99F050	Recessed handle, black	44	B00524-02	Electrical kit
23	F07O001	Hexagon nut 3/8-16NC brass	45	B03118-01	Electrical kit, BVSO Ext.
24	B02753	Smoke box assembly	46	Z06G001	Blocked Vent Shut-Off, BVSO-225-A
25	B02738	Gasket, smoke box			