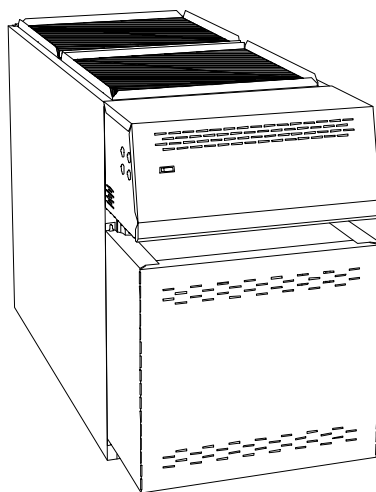
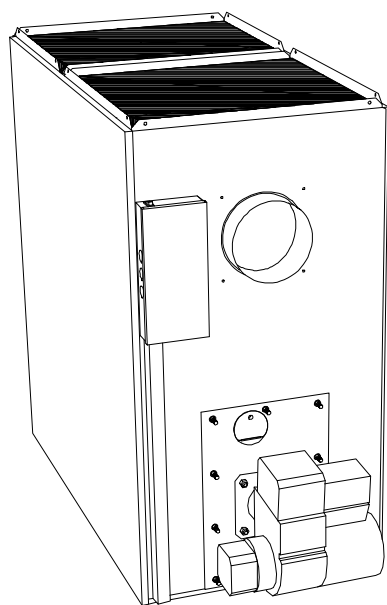
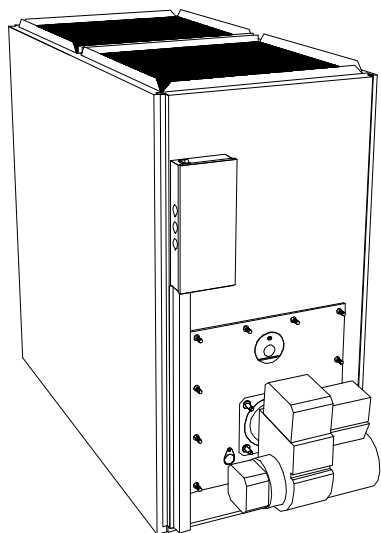


Installation instructions and homeowners manual



UPFLOW WARM AIR FURNACE

Save these instructions for future reference.

Models:

FLO115DABR-A
LBO125DABR13-B
LBO145DABR12-B
LBO145DABR34-B
MBO115DABR-B
MBOV115DABR-B
MBOV115DABRU-B
MBOV115DBU-C
OLF140C12A
OLR182A16A

Manufactured by:

International Comfort Products

(Division of U.T.C. Canada)

3400 Blvd Industriel Sherbrooke PQ Canada

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

PART 1 INSTALLATION

SAFETY CONSIDERATIONS

INSTALLATION OF OIL FIRED HEATING UNITS SHALL BE IN ACCORDANCE WITH THE REGULATION OF AUTHORITIES HAVING JURISDICTION, IN CANADA THE CSA B139 OR IN UNITED STATES THE NFPA NO.31-1992 INSTALLATION CODE FOR OIL BURNING EQUIPMENT.

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) SAFETY LABELLING AND SIGNAL WORDS

1.1) Danger, Warning and Caution:

The signal words **DANGER**, **WARNING** and **CAUTION** are used to identify levels of hazard seriousness. The signal word **DANGER** is only used in product labels to signify an immediate hazard. The signal words **WARNING** and **CAUTION** will be used on product labels and throughout this manual and other manuals that may apply to the product.

1.2) Signal Words:

DANGER – Immediate hazards which WILL result in death or serious injury.

WARNING – Hazards or unsafe practices which COULD result in death or injury.

CAUTION – Hazards or unsafe practices which COULD result in personal injury or product or property damage.

1.3) Signal Words in Manuals:

The signal word **WARNING** is used throughout this manual in the following manner:

WARNING

The signal word **CAUTION** is used throughout this manual in the following manner:

CAUTION

2) SAFE INSTALLATION REQUIREMENTS

WARNING

Installation or repairs made by unqualified persons can result in hazards to you and others. Installation **MUST** conform with codes or, in the absence of local codes, with 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 furnace malfunction, property damage, personal injury and/or death.

WARNING

Fire hazard

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

If the furnace were installed in that position, oil could drain into the furnace vestibule and create a fire hazard, instead of draining properly 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 is adequate and conforms to governing codes and ordinances.

- This furnace is NOT approved for installation in mobile homes, trailers or recreation vehicles.
- You must have a sufficient supply of fresh air for combustion and ventilation to the area in which the furnace is located.
- Do **NOT** use this furnace as a construction heater or to heat a building that is under construction.
- 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 operation.
- Visually check all oil line joints for signs of wetness, which would indicate a leak.
- 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 be sure they are all done.
- Follow the rules of the NFPA Pamphlet No.31 (for USA) and B-139 (for Canada) or local codes for locating and installing the oil storage tank.
- Follow a regular service and maintenance schedule for efficient and safe operation.

- j. 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.

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 of potentially dangerous carbon monoxide levels, you should have carbon monoxide detectors listed by a nationally recognised agency (e.g. Underwriters Laboratories or International Approval Services) installed and maintained in the building or dwelling (see Note).
- 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 of 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

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

CAUTION

Do not use any commercially available soot remover. This furnace has fiber type refractory combustion chamber. Normal servicing of this unit does not require cleanings of the combustion chamber. Use extreme care if for any reason you have to work in the area of the combustion chamber.

2.2) Freezing Temperature and Your Structure:



WARNING

Freeze warning.

Turn off water system.

If your unit 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 will be 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. Suggest they call a qualified service agency, if required.

2.3) Installation regulation:

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 C22.2 No3	CANADIAN ELECTRICAL CODE

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

3) LOCATING THE FURNACE

CAUTION

Check carefully 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 and in any case, the unit should 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 1" to 2" thick.

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

The furnace should be located as close as possible to the chimney to keep vent connections short and direct. The furnace should also be located as near as possible to the center 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 to premature furnace failure, property damage, bodily injury or death.

TABLE #1
Minimum clearances – combustion materials (in)

LOCATION	APPLICATION	In
Sides	Furnace	1"
	Supply plenum within 6 ft of furnace	1"
Back	Furnace	18"
Top	Furnace or plenum	1"
	Horizontal warm air duct within 6 ft of furnace	1"
Bottom	Furnace (combustible floor)	0"
Flue pipe	Horizontally or below flue pipe	9"
	Vertically above flue pipe	9"
Front	From burner	24"

4) VENTING



WARNING

Poison carbon monoxide gas, fire and explosion hazard.

Read and follow all instructions in this section.

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

CAUTION

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

The oil furnaces are certified for use with L-vent, A-vent, tile-lined and metal-liner-tile-lined chimneys. The appliance may be installed in a chimney of the proper size and adequate chimney base temperature as specified in the Installation Code. The relevant excerpt from the code is found in this section - Use it as a guide when local or national codes do not exist.

Flue pipe sizing:

The following table is an excerpt from the installation code and indicates permitted flue sizes and minimum base temperatures for circular flues in chimney with thermal resistance less than R6 (6 ft² •hr •°F / Btu).

Where a new appliance, burner, or chimney is installed, chimney vent sizes and maximum flue-gas temperatures (measured at the chimney connector with the barometric damper shut, after 5 minutes of operation) shall comply with the table #2.



WARNING

Poison 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 instructions provided with vent damper. Read and follow all instructions in this section.

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

NOTES: Thermal resistance values for typical chimneys are as follows:

R2 (2 ft ² •hr •°F / Btu):	clay-lined masonry, A-vent
R3 (3 ft ² •hr •°F / Btu):	metal liner in clay-lined Masonry
R6 (6 ft ² •hr •°F / Btu):	metal or clay-lined masonry with R4.5 (4.5 ft ² •hr •°F / Btu) insulation between liner and masonry (e.g. 2 in. of expanded mica or 1 3/8 in. of high density glass fibreboard.)

Applying the Table:

If a furnace with 0.60 USGPH nozzle is to be connected to a 20 ft. tall clay-lined masonry chimney, the thermal resistance of this chimney type is R2, which is less than R6. The actual firing rate at 156 psig is $1.25 \times .60 = .75$. Therefore this table shall apply as:

The minimum size permitted shall be 4 in. inside diameter.


The maximum size permitted shall be 5 in. inside diameter.

The minimum base temperature shall be about 320°F.

TABLE # 2

Total input rating of all connected appliances			Flue inside diameter (in)		Minimum base temperature (°F) for chimney height (ft) of :			
kW	kBtu/h	USGPH	Min.	Max.	11	20	28	36
21	70	0.50	3	5	300	400	535	725
27	91	0.65	3	5	275	340	430	535
31	105	0.75	4	5	260	320	380	475
36	119	0.85	4	5	250	300	355	430
41	140	1.00	4	6	225	300	365	430
51	175	1.25	4	6	240	275	320	365

5) AIR FOR COMBUSTION

**WARNING**

Poison carbon monoxide gas hazard.

Comply with ANSI/NFPA (in U.S.) or CSA (in Canada) standard for the installation of Oil Burning Equipment and applicable provision 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.

evaluated carefully as it may be necessary to provide outside air for combustion.

- Commercial building.
- Building with indoor pools.
- Furnaces installed near chemical storage areas.

Exposure to these substances:

- Permanent wave solutions for hair.
- Chlorinated waxes and cleaners.
- Chlorine based swimming pool chemicals.
- Water softening chemicals.
- De-icing salts or chemicals.
- Carbon tetrachloride.
- Halogen type refrigerants.
- Cleaning solvent (such as perchloroethylene).
- Printing inks, paint removers, varnishes, etc..
- Hydrochloric acid.
- Solvent cements and glues.
- Antistatic fabric softeners for clothes dryers.
- Masonry acid washing materials.

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 dramatically reduced the volume of air leakage into the home.

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

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

5.2) Contaminated Combustion Air :

Installation 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 for combustion.

The following areas or types of structures may contain or have exposure to the substances listed below. The installation must be

5.3) Ducted outdoor combustion air:

Outdoor combustion air kit – chimney venting:

The following kit has been certified for use on the appliance. The component kits contain an important safety feature, namely a vacuum relief valve, or VRV. During normal operation the burner aspirates outdoor air. If the intake terminal ever becomes partially blocked or fully blocked from ice or snow etc., the VRV will open to allow a proportion of air from the dwelling to enter the burner thus maintaining proper combustion. Once the blockage is removed, the VRV will close and the burner will draw all air from the outdoors again:

CAS-2B Components (except air duct) for the Beckett AFG burner. The kit includes the intake terminal, vacuum relief valve (VRV) and special air boot connection with integral air adjustment means for the AFG burner. The CAS-2B can be used with 4" galvanised air duct or with 4" flexible aluminium air duct. It is recommended that the metallic air ducting material should be insulated from the air intake up to 5 feet from the burner to avoid condensation on the outside of the intake pipe.

CAD-1 Air duct kit consists of 25 feet of insulated UL/ULC Listed Class 1 air duct, and two 4" steel band clamps. The duct incorporates a corrugated flexible aluminium core, surrounded by fibreglass insulation covered with a vinyl vapour barrier.

CAUTION

The CAS-2B does not turn the furnace installation into a direct vent system. Therefore the building structure must provide for adequate combustion air to be delivered at the vacuum relief valve. The burner will need to draw combustion air from the VRV's surroundings if the intake ever becomes blocked. Therefore non-direct vent installation codes must be followed.

Comprehensive installation instructions are provided with the kit.

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 follow 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 having the fuel oil tank below the burner level must employ a two pipe fuel supply system with an appropriate fuel pump (more than 8' lift use 2 stage pump and more than 16' an auxiliary pump).

➔ At the beginning of each heating season or each year, verify the complete oil distribution system for oil leak.

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

7) BURNER INSTALLATION

Mounting the burner:

- The warm air furnace burner mounting plate has a four bolts configuration.
- 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:

- Remove drawer assembly or air tube combination
- Install nozzle (see specifications)
- Confirm electrode settings
- Make the electrical connections
- Complete oil line connections

CAUTION

Do not turn on the burner until you have checked the polarity

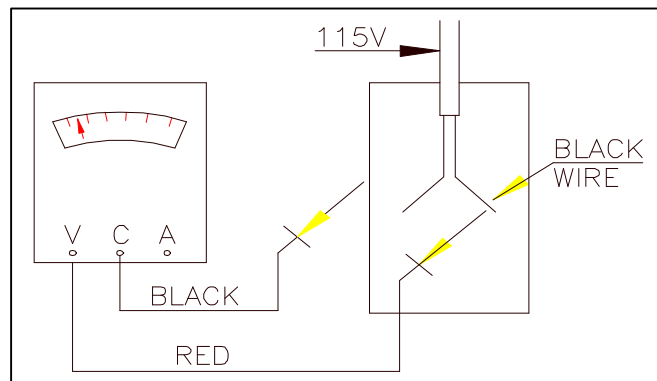
Checking the polarity:

The oil burners used on the furnaces have solid state control systems which makes them sensitive to the proper connections of the hot and neutral power lines. The controls will be damaged if the two lines are reversed.

- Set your voltmeter to line voltage.
- Place one prong on your grounded electric entry box and one prong on the black wire.
- Read the voltage.

- If the voltage is zero, check the white wire. If line voltage shows. Reverse the 115-volt leads entering the furnace junction box.

FIGURE # 1



Nozzles:

The burners are provided with the highest capacity USGPH nozzle installed. If another size nozzle, or replacement nozzle is required, use the nozzle spray angle, type and manufacturer recommended in Table #3.1 to 3.5. Note that all nozzle-marked 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.

Air and turbulator settings:

Before starting the burner for the first time, adjust the air and turbulator settings to those listed in the Table #3.1 to #3.5. Once the burner becomes operational, final adjustment will be necessary.

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 adequately filled with clean oil.

IMPORTANT

When using nozzle sizes of less than .75 USGPH, the Installation Code for oil burning equipment requires the installation of a 10 micron (or less) filter in the fuel oil line. ICP requires that this practice be followed in order to keep the lifetime heat exchanger warranty 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 odor the first time your furnace is operated. This will soon disappear. It is only the oil used on the parts during manufacturing.

8) INSTALLING ACCESSORIES



WARNING

Electrical shock hazard.

Turn OFF electric power at 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 property damage, bodily injury or death.

8.1) Electronic air cleaner (E.A.C.):

Wire leads are provided to direct 115 volts @ 0.5 Amp maximum to an electronic air cleaner (EAC). Power will be available to the E.A.C when E.A.C switch is on or during heating speed blower operation. Wire the electronic air cleaner as indicated in the wiring diagram (figures # 4.1, # 4.2 and # 4.3).

8.2) Humidifier:

Terminals are provided to direct 115 volts @ 1.0 Amp maximum to the transformer powering the humidifier. The humidifier will be energised anytime the blower is operating on the "Heating Speed". Wire the 115-volts power as indicated in figures # 4.1, # 4.2 and # 4.3.

8.3) Air conditioning:

An air conditioning coil may be installed on the supply airside only. Also, notwithstanding the evaporator coil manufacturer's instructions, a minimum of 6 inches clearance must be allowed between the bottom of the coil drain pan, and the top of the heat exchanger. Wire the thermostat and condensing unit contactor as indicated in the wiring diagram (figures # 4.1, # 4.2 and # 4.3).

8.4) Ductwork and Filter:

Installation:

Design and install 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.

When furnace supply ducts carry air outside furnace area, seal return air duct to furnace casing and terminate duct outside furnace space.

Install air conditioning cooling coil (evaporator) on downstream side (in the supply air plenum) or furnace.

If separate evaporator and blower unit is used, install good 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

Poison 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 duct can result in death, personal injury and/or property damage.



WARNING

Poison 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

1) SEQUENCE OF OPERATION

1.1) Sequence of operation - Beckett AFG, Riello 40-F and Aero F-FAC:

1. Normally open contact (T-T) on primary relay closed when thermostat calls for heat.
2. AFG and F-FAC burner: The motor starts and spark is established. The pump pressure builds and the poppet valve opens admitting fuel to the nozzle. Pressure builds and poppet valve opens, allowing oil to flow through nozzle.

40F: 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 will be approximately 100 psig. Solenoid valve opens, allowing oil to flow through nozzle. At the same time, the burner motor's ignition coil produces spark.
3. Spark ignites oil droplets.
4. Cad cell senses flame and burner continues to fire. Ignition transformer ceases sparking (Riello 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).
7. Thermostat is satisfied.
8. Primary relay contacts open, solenoid valve closes (R40-F), burner fan motor shuts down. The ignition transformer ceases sparking (AFG).
9. The fan-limit control BI-metal cools down to the factory set point of 90 degrees Fahrenheit, the circulating air blower and the electronic air cleaner turns off.

2) CHECKS AND ADJUSTMENTS

2.1) General:

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

IMPORTANT

The burner must be put in operation for at least 10 minutes before any test readings are taken. For new installations, set up the burner to the settings (see table # 3.1 to # 3.5), before firing. These are rough adjustments but they will ensure that the burner will start and run smoke-free in advance of the fine adjustments being made.

Open the oil bleed port screw and start the burner. Allow the oil to flush into a portable container for at least 10 seconds. Slowly close the

bleed screw - the oil should flow absolutely free of white streaks or bubbles to indicate that no air is being drawn into the suction side of the oil piping and pump. Tighten the bleed screw and the burner will fire. Adjust the oil pressure as indicated in Table # 3.1 to # 3.5.

2.2) Restart if Burner Should Stop:

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 YOUR SERVICEMAN

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.

2.3) Combustion chamber curing:

Some moisture and binders remain in the ceramic combustion chambers after fabrication. It is important to clear the chamber of these residues before testing. If you smoke test before curing, the instrument may become damaged. To cure the chamber, run the unit for 3 consecutive cycles, with 3 minutes of elapsed time in between each cycle. Each burn cycle should be 3 minutes duration. The exhaust will have a pungent odor and produce a white cloud of steam.

2.4) Perform the smoke / CO₂ test:

1. Pierce a test hole in the smoke pipe near the furnace breech. Insert the smoke test instrument probe into the open hole.
2. Starting with a zero smoke reading, gradually reduce the burner air setting until just a trace (#1 on Bacharach Scale) of smoke results.
3. Take a CO₂ sample at the same test location where the smoke sample was taken. Note the CO₂ reading associated with the #1 smoke condition.
4. Adjust the burner air setting to obtain a CO₂ reading 1% lower than the reading associated with the #1 smoke.
5. This method of adjusting the CO₂ will allow adequate excess air to ensure that the burner will burn clean for the entire heating season.

2.5) Perform the 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 "out of the line of sight" of the radiation coming off the heat exchanger; 12" away from the plenum on the main take-off usually satisfies this objective.

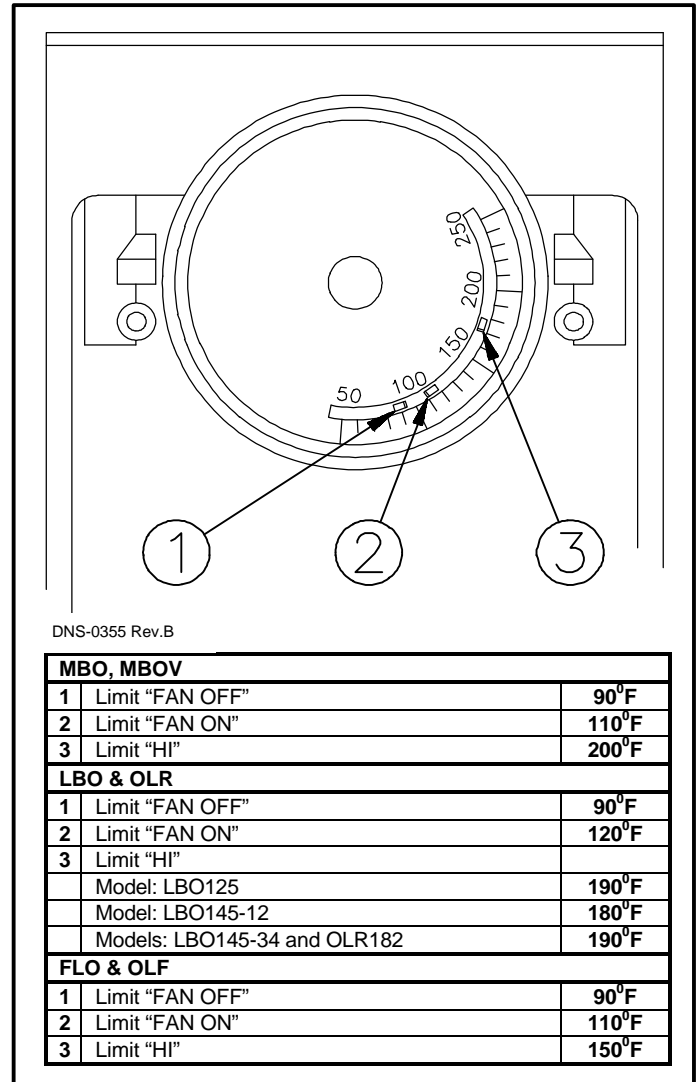
4. The temperature rise is calculated by subtracting the return air temperature from the supply air temperature.
5. If the temperature rise exceeds the temperature specified in table # 3.1 to # 3.5, change to the next higher blower speed tap until the temperature rise falls to at this temperature or 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.

2.6) Vent temperature test:

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

2.7) Fan limit adjustment:

FIGURE # 2



PART 3 MAINTENANCE

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 man.

After inspection, a complete combustion test must be performed after each annual service of the unit 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 property damage, bodily injury and/or death.

Do not tamper with the unit or controls. Call your service technician.

Before calling for service, check the following.

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

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

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:

1. Turn "OFF" all utilities upstream of the furnace.
2. Disconnect the flue pipe.
3. Remove the flue collar panel located in the rear part of the warm air furnace.
4. Remove the radiator baffle.
5. Disconnect the oil line and remove the oil burner from the furnace.
6. Clean the secondary tubes, and the primary cylinder with stiff brush and vacuum cleaner.
7. Before reassemble, the heat exchanger and combustion chamber should be inspected to determine if replacement is required.
8. After cleaning, replace the radiator baffle, flue collar plate and oil burner.
9. Readjust burner for proper operation.

Soot will have collected in the first sections of the heat exchangers 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 fouled condition.

1.2) Refractory fire pot:

Remove the burner and check the fire pot.

IMPORTANT

Use extreme care if cleaning of the pot is required. After firing, the pot becomes very fragile. Do not use any commercially available soot remover. This furnace has a fiber type refractory combustion chamber. Normal servicing of this unit does not require cleaning of the combustion chamber.

IMPORTANT

Do not vacuum the ceramic chambers—they are easily damaged.

If the pot is damaged, it must be replaced. A damaged pot could lead to premature heat exchanger failure. Cracking of the fire pot is normal, however, replace the pot if the cracks have propagated more than 2/3 the way through the wall thickness. The average wall thickness of the firepot is 3/4".

Flooding of the fire pot:

Flooding can occur when the oil primary control has been reset a number of times in a no-heat situation. Each time oil is fired into the pot and does not ignite, it is absorbed in the pot. Even if the burner is removed and the pot is felt for wetness, it is difficult to assess the degree of oil absorption by the pot.

There is only one way to properly service a flooded fire pot, and that is to change it.

CAUTION

If you observe the red warning light on the burner, push once **ONLY** to try and restart. If the burner will not start, phone your authorised service agent. Do not press the button again.

1.3) Burner drawer assembly:

Remove the drawer assembly. Clean all foreign matter from the retention head and electrodes. If a Beckett AFG burner has been installed, the burner will have to be removed to check the retention head and to check for proper "Z" dimension with the Beckett "T" gauge supplied with every burner. Check for any sign of oil boiling out of the nozzle and caulking - the solenoid valve could be leaking (if applicable).

1.4) Nozzle:

Replace the nozzle with the one specified in table # 3.1 to # 3.5.

1.5) Oil filter:

Tank filter:

The tank filter should be replaced as required.

Secondary filter:

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

1.6) Air filters:

Air filters are the disposable types. The disposable filters should be replaced on at least an annual basis. Dusty conditions, presence of animal hair etc. may demand much more frequent filter changes. Dirty filters will impact furnace efficiency and increase oil consumption.

1.7) Motor lubrication:

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

1.8) CAS-2B combustion air kit :

If used, check the CAS-2B combustion air kit for proper operation. Check to see that the inlet screen is not plugged. Block the air inlet completely and ensure that a zero smoke reading results. If a zero smoke reading is not obtained, set up the burner as indicated on table # 3.1 to # 3.5.

Gradually block off the intake. The CO₂ should increase by a maximum of 0.5 percentage points at the fully blocked condition. If not, check that the VRV gate is pivoting freely and that the pivot rod is in a

horizontal position. Also, check that the counterweight has been properly adjusted in accordance with the CAS-2B installation instructions.

PART 4 INFORMATION

Model : _____ Serial number: _____

Date of installation of the furnace : _____

Service telephones - day : _____ Night : _____

Dealer's name and address : _____

RESULT OF START-UP TEST

Nozzle: _____ Pressure : _____ lbpsi

Burner adjustments : Primary air _____

Fine air _____

Draw Assembly _____

CO₂ : _____ % Smoke scale : _____ (Bacharach)

Gross stack temperature: _____ ° F

Ambiant temperature: _____ ° F

Chimney draft: _____ " C.E.

Overfire draft : _____ " C.E.

Test made by : _____

TABLE # 3.1

Technical specifications, MBO115DABR-B, MBOV115DABR-B, MBOV115DABRU-B & MBOV115DBU-C

RATING AND PERFORMANCE				
Firing rate USGPH	0.65	0.75	0.85	0.90
Input (BTU/h)	91 000	105 000	119 000	126 000
Heating capacity (BTU/h)	74 000	85 000	97 000	103 000
Maximum heating temperature rise (degr.F)	55 - 85 Degr.F			
BURNER BECKETT (3450 RPM)	AFG-F3 (TUBE INSERTION 5 3/16")			
Low firing rate baffle	YES			
Static disc, model	2 3/4 #3383			
Nozzle - 100 PSIG pump pressure (Delavan)	0.65 - 70W	0.75 - 70W	0.85 - 70W	
Combustion air adjustment (band / shutter)	0 / 4	0 / 6	0 / 7	
RIELLO BURNER; MODEL 40	F3 (TUBE INSERTION 5 1/4")			
Nozzle (Delavan)	0.50 - 60W	0.60 - 60W		0.75 - 60W
Pump pressure (PSIG)	165	155		145
Combustion air adjustment (turbulator / damper)	0 / 2.25	1 / 2.75		2 / 3.75
AERO BURNER (1725 RPM)	FAFC-2 (TUBE INSERTION 5 3/8")			
Nozzle - 100 PSIG pump pressure (Delavan)	0.65 - 70W	0.75 - 70W	0.85 - 70W	
ELECTRICAL SYSTEM				
Volts - Hertz - Phase	115 - 60 - 1			
Operating voltage range	104 - 132			
Rated current (Amp.)	11.4			
Minimum ampacity for wiring sizing	12.8			
Max. fuse size (Amps)	15			
BLOWER DATA				
Blower speed at 0.4" W.C. static pressure	MED-LO	MED-HI	HIGH	HIGH
Blower speed at 0.2" W.C. static pressure	MED-LO	MED-HI	HIGH	HIGH
Motor (HP) / number of speeds	1/3 HP / 4 speeds			
Blower wheel size (in.)	10 X 10			
Filter quantity and size	(1) 20 X 20			

TABLE # 4.1

Air delivery - CFM air filter

SPEED	MBO115DABR-B, MBOV115DABR-B, MBOV115DABRU-B & MBOV115DBU-C	
	EXTERNAL STATIC PRESSURE WITH AIR FILTER	
	0.2	0.4
MED-LO	1300	1150
MED-HI	1350	1225
HIGH	1400	1250

TABLE # 3.2
Technical specifications, LBO125DABR13-B (BECKETT, RIELLO AND AERO BURNER)

RATING AND PERFORMANCE				
Firing rate USGPH	0.75	0.85	1.00	1.10
Input (BTU/h)	105 000	119 000	140 000	154 000
Heating capacity (BTU/h)	84 525	95 795	112 700	123 970
Maximum heating temperature rise (degr.F)	55 - 85 Degr.F			
BURNER BECKETT (3450 RPM)	AFG-F3 (TUBE INSERTION 5 3/16")			
Low firing rate baffle	YES			
Static disc, model	2 3/4 #3383			
Nozzle - 100 PSIG pump pressure (Delavan)	0.75 - 70W	0.85 - 70W	1.00 -70W	1.10 - 70W
Combustion air adjustment (band / shutter)	1 / 1	1 / 4	2 / 2	3 / 3
RIELLO BURNER; MODEL 40	F3 (Tube insertion 5 1/4")		F5 (Tube insertion 5 1/4")	
Nozzle (Delavan)	0.60 - 60W	0.75 - 60W	0.85 - 60W	0.85 - 60W
Pump pressure (PSIG)	155	130	140	170
Combustion air adjustment (turbulator / damper)	2 / 3.25	2.5 / 4	2 / 2.5	3 / 2.5
AERO BURNER (1725 RPM)	FAFC-2 (TUBE INSERTION 5 3/8")			
Nozzle - 100 PSIG pump pressure (Delavan)	0.75 - 70W	0.85 - 70W	1.00 - 70W	1.10 - 70W
ELECTRICAL SYSTEM				
Volts - Hertz - Phase	115 - 60 - 1			
Operating voltage range	104 - 132			
Rated current (Amp.)	11.4			
Minimum ampacity for wiring sizing	12.8			
Max. fuse size (Amps)	15			
BLOWER DATA				
Blower speed at 0.4" W.C. static pressure	MED-LO	MED-HI	HIGH	N / A
Blower speed at 0.2" W.C. static pressure	MED-LO	MED-HI	HIGH	HIGH
Motor (HP) / number of speeds	1/3 HP / 4 speeds			
Blower wheel size (in.)	10 X 10			
Filter quantity and size	(2) 15 X 20			

TABLE # 4.2
Air delivery - CFM with air filter

SPEED	LBO125DABR13-B	
	EXTERNAL STATIC PRESSURE WITH AIR FILTER	
	0.2	0.4
MED-LO	1175	1000
MED-HI	1250	1200
HIGH	1375	1300

TABLE # 3.3

Technical specifications, LBO145DABR12-B (BECKETT, RIELLO AND AERO BURNER)

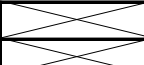
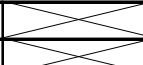


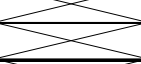
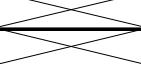
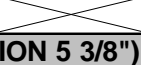
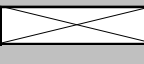

RATING AND PERFORMANCE					
Firing rate USGPH	1.00	1.10	1.20	1.25	1.30
Input (BTU/h)	140 000	154 000	168 000	175 000	182 000
Heating capacity (BTU/h)	112 700	123 970	135 240	140 875	146 510
Maximum heating temperature rise (degr.F)	55 - 85 Degr.F.				
BURNER BECKETT (3450 RPM)	AFG-F3 (TUBE INSERTION 5 3/16")				
Low firing rate baffle	YES				
Static disc, model	2 3/4 #3383				
Nozzle - 100 PSIG pump pressure (Delavan)	1.00 - 70W	1.10 - 70W		1.25 - 70W	
Combustion air adjustment (band / shutter)	2 / 3	2 / 6		6 / 6	
RIELLO BURNER; MODEL 40	F5 (TUBE INSERTION 5 1/4")				
Nozzle (Delavan)	0.85 - 60W	0.85 - 60W	1.00 - 60W		1.10 - 60W
Pump pressure (PSIG)	140	170	145		140
Combustion air adjustment (turbulator / damper)	2 / 2.25	2.5 / 2.75	3 / 2.75		3.5 / 2.75
AERO BURNER (1725 RPM)	FAFC-3 (TUBE INSERTION 5 3/8")				
Nozzle - 100 PSIG pump pressure (Delavan)	1.00 - 70W	1.10 - 70W		1.25 - 70W	
ELECTRICAL SYSTEM					
Volts - Hertz - Phase	115 - 60 - 1				
Operating voltage range	104 - 132				
Rated current (Amp.)	14.7				
Minimum ampacity for wiring sizing	16.8				
Max. fuse size (Amps)	20				
BLOWER DATA					
Blower speed at 0.4" W.C. static pressure	MED-HI	HIGH	N/A	N/A	N/A
Blower speed at 0.2" W.C. static pressure	MED-HI	MED-HI	HIGH	HIGH	HIGH
Motor (HP) / number of speeds	1/2 HP / 4 speeds				
Blower wheel size (in.)	12 X 9				
Filter quantity and size	(2) 15 X 20				

TABLE # 4.3

Air delivery - CFM with air filter

SPEED	LBO145DABR12-B	
	EXTERNAL STATIC PRESSURE WITH AIR FILTER	
	0.2	0.4
MED-LO	1100	1025
MED-HI	1400	1375
HIGH	1775	1675

TABLE # 3.4

Technical specifications, LBO145DABR34-B and OLR182A16A (BECKETT, RIELLO AND AERO BURNER)

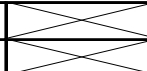
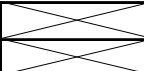

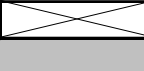


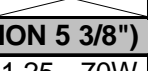
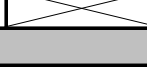
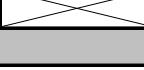
RATING AND PERFORMANCE					
Firing rate USGPH	1.00	1.10	1.20	1.25	1.30
Input (BTU/h)	140 000	154 000	168 000	175 000	182 000
Heating capacity (BTU/h)	112 700	123 970	135 240	140 875	146 510
Maximum heating temperature rise (degr.F)	55 - 85 Degr.F.				
BURNER BECKETT (3450 RPM)	AFG-F3 (TUBE INSERTION 5 3/16")				
Low firing rate baffle	YES				
Static disc, model	2 3/4 #3383				
Nozzle - 100 PSIG pump pressure (Delavan)	1.00 - 70W	1.10 - 70W		1.25 - 70W	
Combustion air adjustment (band / shutter)	2 / 3	2 / 6		6 / 6	
RIELLO BURNER; MODEL 40	F5 (TUBE INSERTION 5 1/4")				
Nozzle (Delavan)	0.85 - 60W	0.85 - 60W	1.00 - 60W		1.10 - 60W
Pump pressure (PSIG)	140	170	145		140
Combustion air adjustment (turbulator / damper)	2.5 / 2.5	3 / 2.75	3 / 3		3.5 / 3.25
AERO BURNER (1725 RPM)	FAFC-3 (TUBE INSERTION 5 3/8")				
Nozzle - 100 PSIG pump pressure (Delavan)	1.00 - 70W	1.10 - 70W		1.25 - 70W	
ELECTRICAL SYSTEM					
Volts - Hertz - Phase	115 - 60 - 1				
Operating voltage range	104 - 132				
Rated current (Amp.)	16.4				
Minimum ampacity for wiring sizing	19.1				
Max. fuse size (Amps)	20				
BLOWER DATA					
Blower speed at 0.4" W.C. static pressure	MED-LO	MED-HI	HIGH	HIGH	HIGH
Blower speed at 0.2" W.C. static pressure	MED-LO	MED-HI	MED-HI	HIGH	HIGH
Motor (HP) / number of speeds	3/4 HP / 4 speeds				
Blower wheel size (in.)	12 X 9				
Filter quantity and size	(2) 15 X 20				

TABLE # 4.4

Air delivery - CFM with air filter

SPEED	LBO145DABR34-B & OLR182A16A	
	EXTERNAL STATIC PRESSURE WITH AIR FILTER	
	0.2	0.4
MED-LO	1725	1600
MED-HI	1850	1725
HIGH	1975	1850

TABLE # 3.5

Technical specifications, FLO115DABR-A and OLF140C12A (BECKETT, RIELLO AND AERO BURNER)

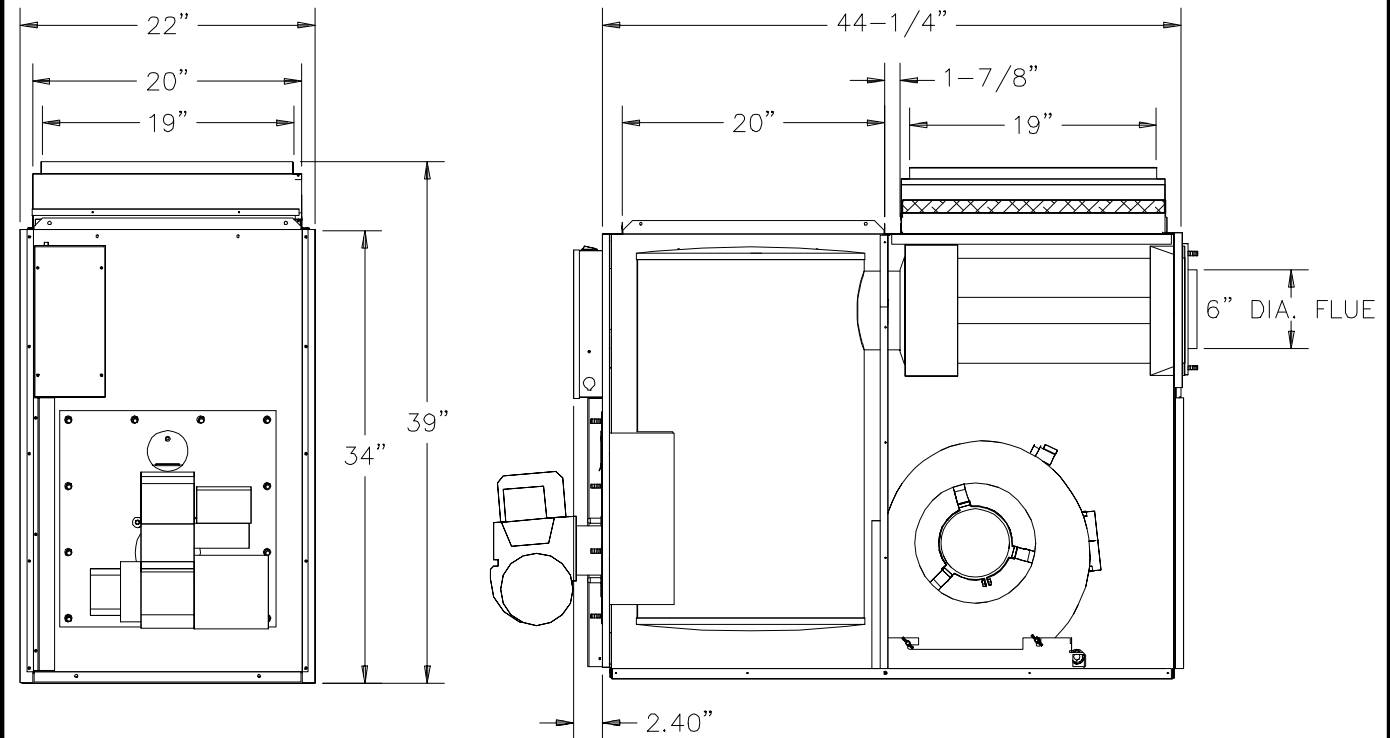
RATING AND PERFORMANCE			
Firing rate USGPH	0.75	0.85	1.00
Input (BTU/h)	105 000	119 000	140 000
Heating capacity (BTU/h)	85 000	97 000	114 000
Maximum heating temperature rise (degr.F)	55 - 85 Degr.F		
BURNER BECKETT (3450 RPM)	AFG-F3 (TUBE INSERTION 5 3/16")		
Low firing rate baffle	YES		
Static disc, model	2 3/4 #3383		
Nozzle - 100 PSIG pump pressure (Delavan)	0.75 - 70W	0.85 - 70W	1.00 - 70W
Combustion air adjustment (band / shutter)	0 / 5	0 / 7	1 / 5
RIELLO BURNER; MODEL 40	F3 (TUBE INSERTION 5 1/4")		
Nozzle (Delavan)	0.60 - 60W	0.75 - 060W	0.85 - 60W
Pump pressure (PSIG)	155	130	140
Combustion air adjustment (turbulator / damper)	1.5 / 2.75	2.5 / 3.25	3 / 4.25
AERO BURNER (1725 RPM)	FAFC-2 (TUBE INSERTION 5 3/8")		
Nozzle - 100 PSIG pump pressure (Delavan)	0.75 - 70W	0.85 - 70W	1.00 - 70W
ELECTRICAL SYSTEM			
Volts - Hertz - Phase	115 - 60 - 1		
Operating voltage range	104 - 132		
Rated current (Amp.)	14.7		
Minimum ampacity for wiring sizing	16.8		
Max. fuse size (Amps)	20		
BLOWER DATA			
Blower speed at 0.4" W.C. static pressure	MED-LO	MED-HI	HIGH
Blower speed at 0.2" W.C. static pressure	MED-LO	MED-HI	HIGH
Motor (HP) / number of speeds	1/2 HP / 4 speeds		
Blower wheel size (in.)	10 X 10		
Filter quantity and size	(1) 10 X 20 & (1) 20 X 20		

TABLE # 4.5

Air delivery - CFM with air filter

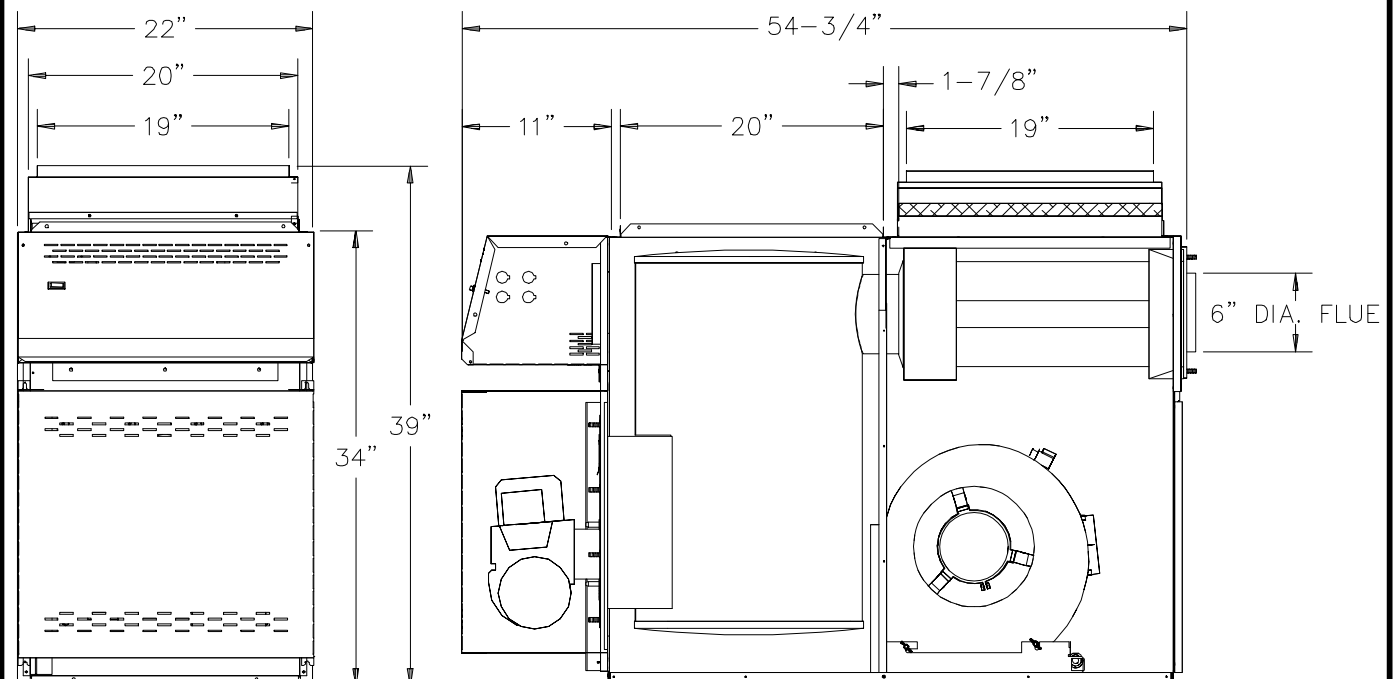
SPEED	FLO115DABR-A & OLF140C12A	
	EXTERNAL STATIC PRESSURE WITH AIR FILTER	
	0.2	0.4
MED-LO	1225	1075
MED-HI	1450	1275
HIGH	1550	1375

FIGURE # 3.1
Model: MBO115DABR-B



DNS-0590 Rev. D

FIGURE # 3.2
Models: MBOV115DABR-B, MBOV115DABRU-B & MBOV115DBU-C



DNS-0596 Rev. D

FIGURE # 3.3

Models : LBO125DABR13-B, LBO145DABR12-B, LBO145DABR34-B & OLR182A16A

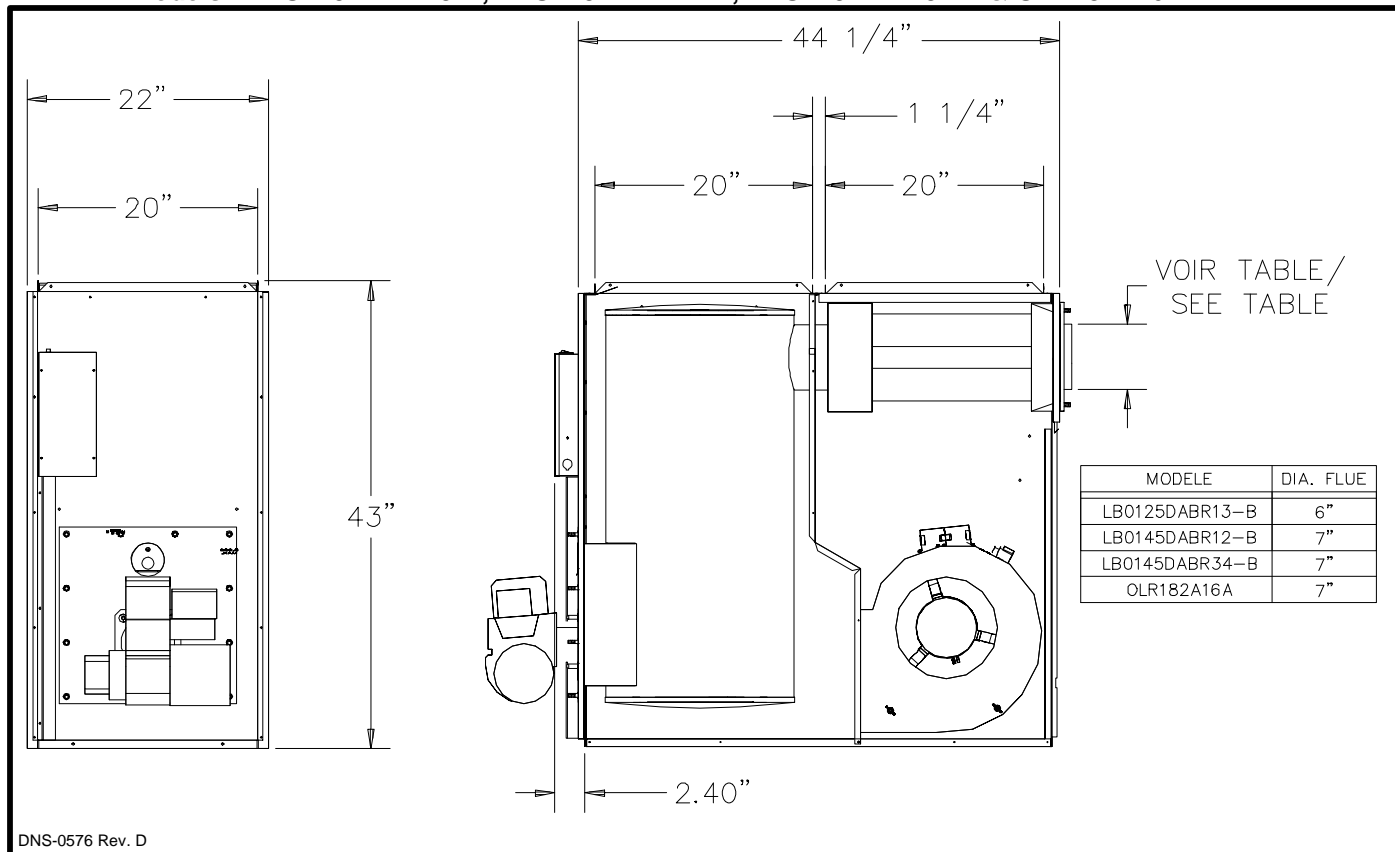


FIGURE # 3.4

Model : FLO115DABR-A & OLF140C12A

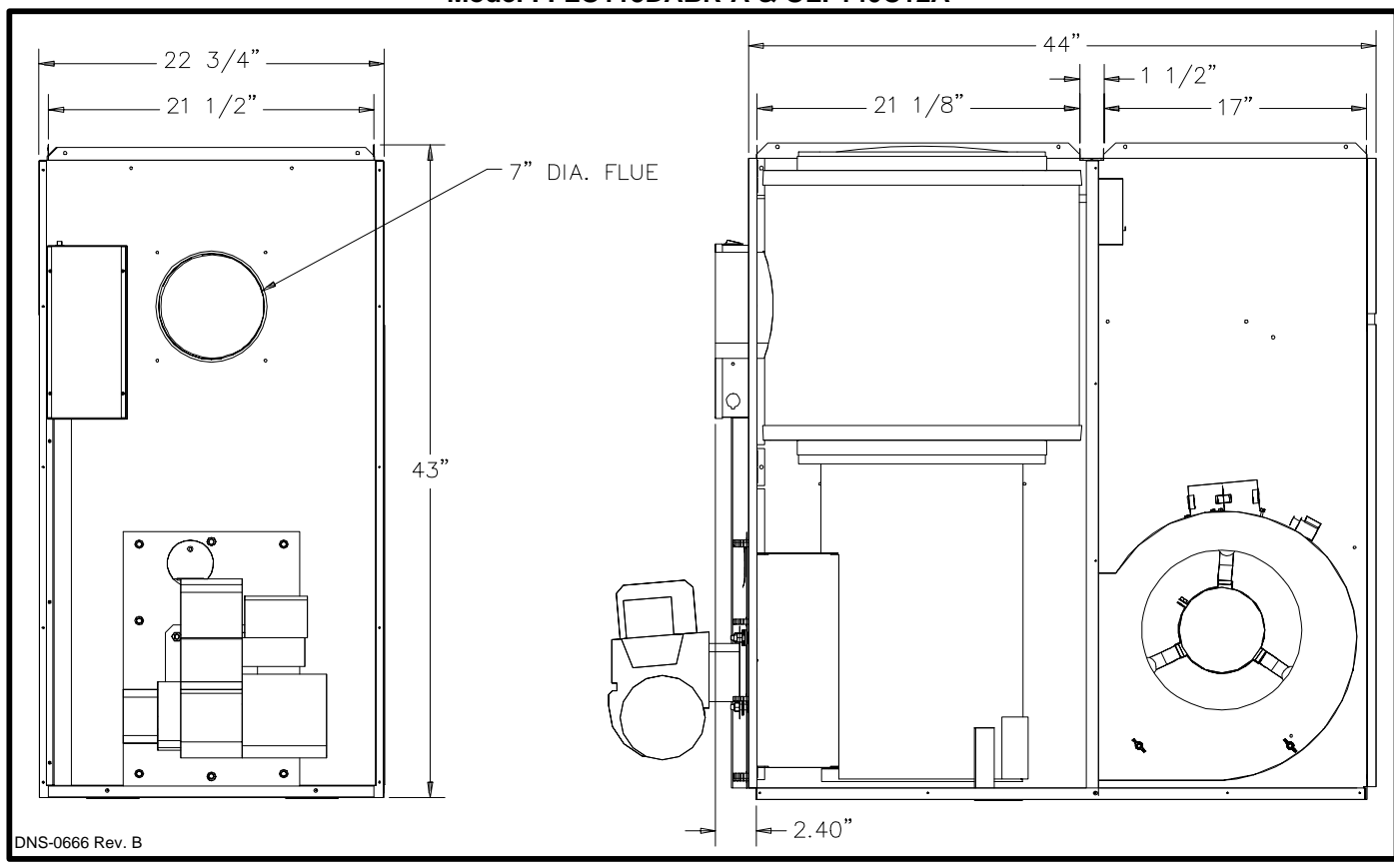


FIGURE # 4.1
Wiring diagram, MBO115DABR-B, MBOV115DABR-B, LBO125DABR13-B,
LBO145DABR12-B, LBO145DABR34-B & OLR182A16A

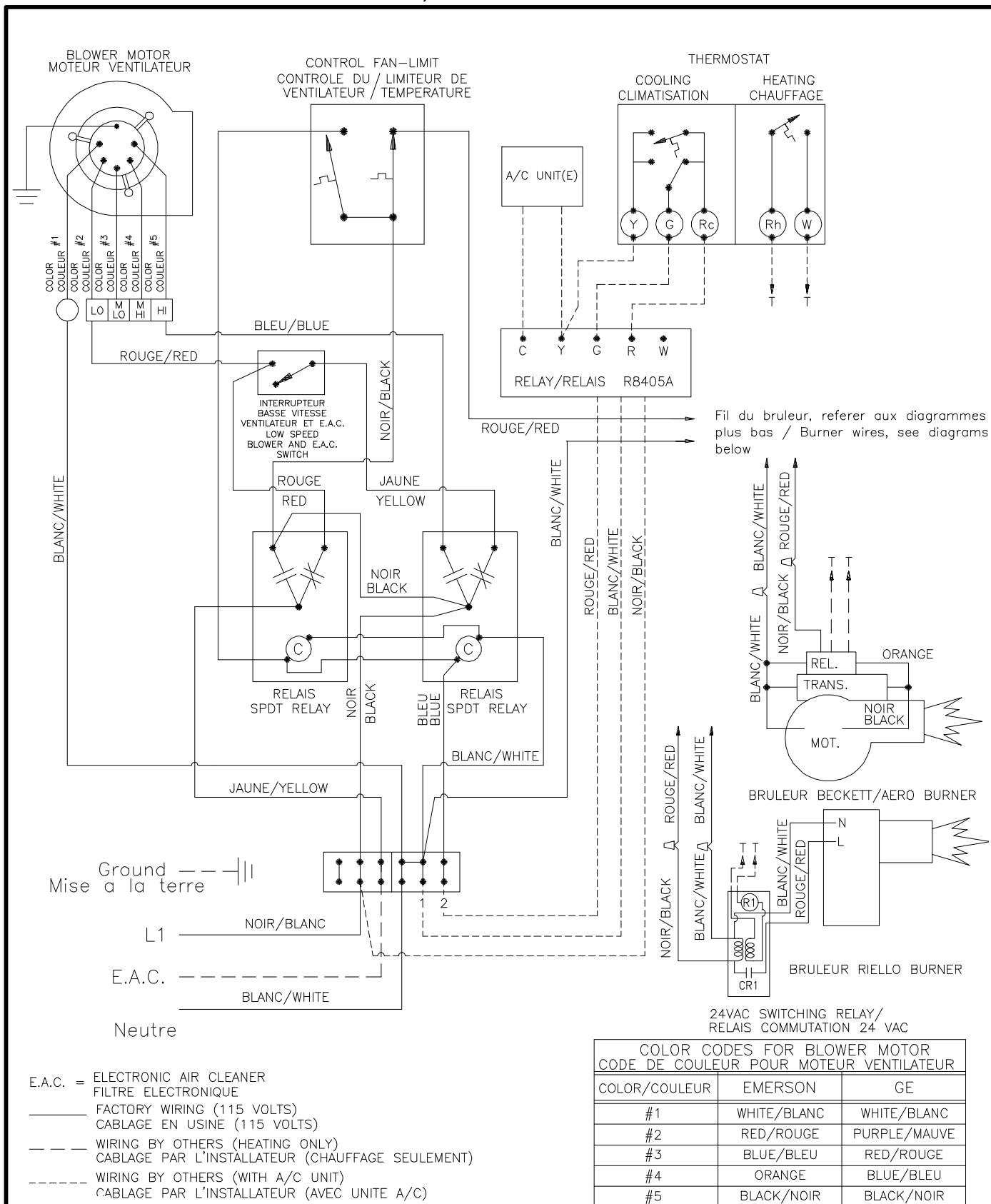
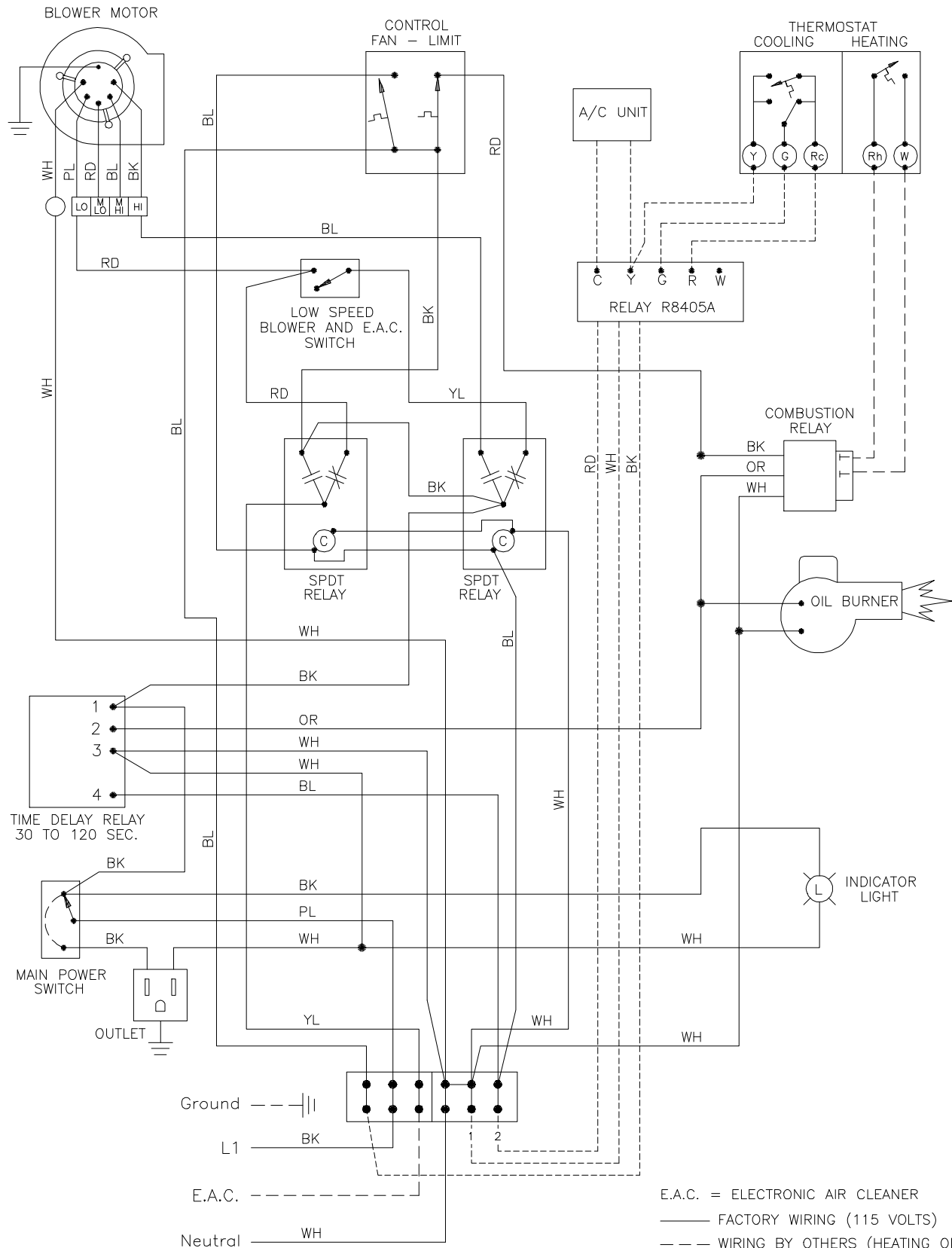
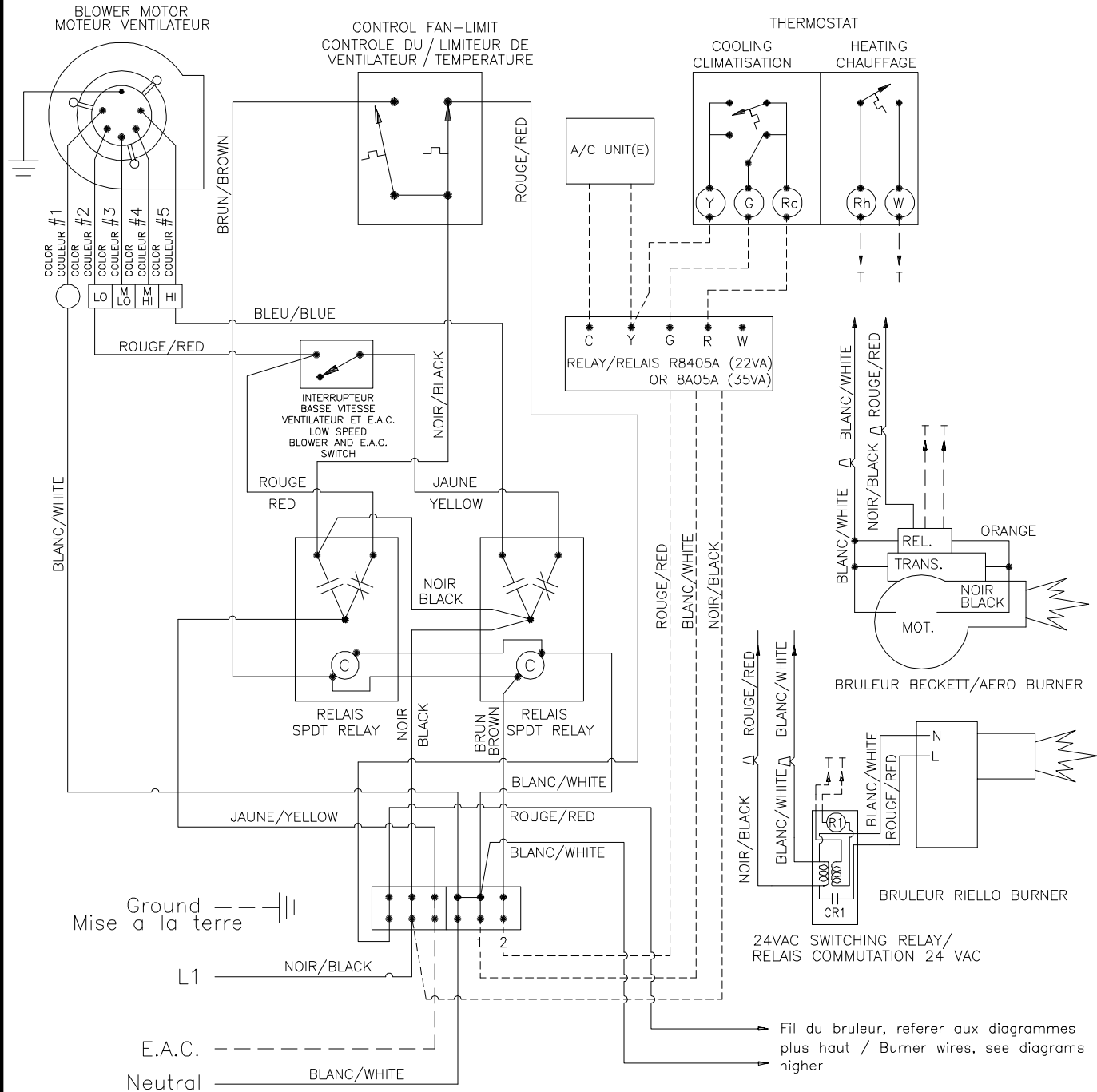


FIGURE # 4.2
Wiring diagram, MBOV115DABRU-B & MBOV115DBU-C



→ **FIGURE # 4.3**
Wiring diagram, FLO115DABR-A & OLF140C12A



E.A.C. = ELECTRONIC AIR CLEANER
 FILTRE ELECTRONIQUE

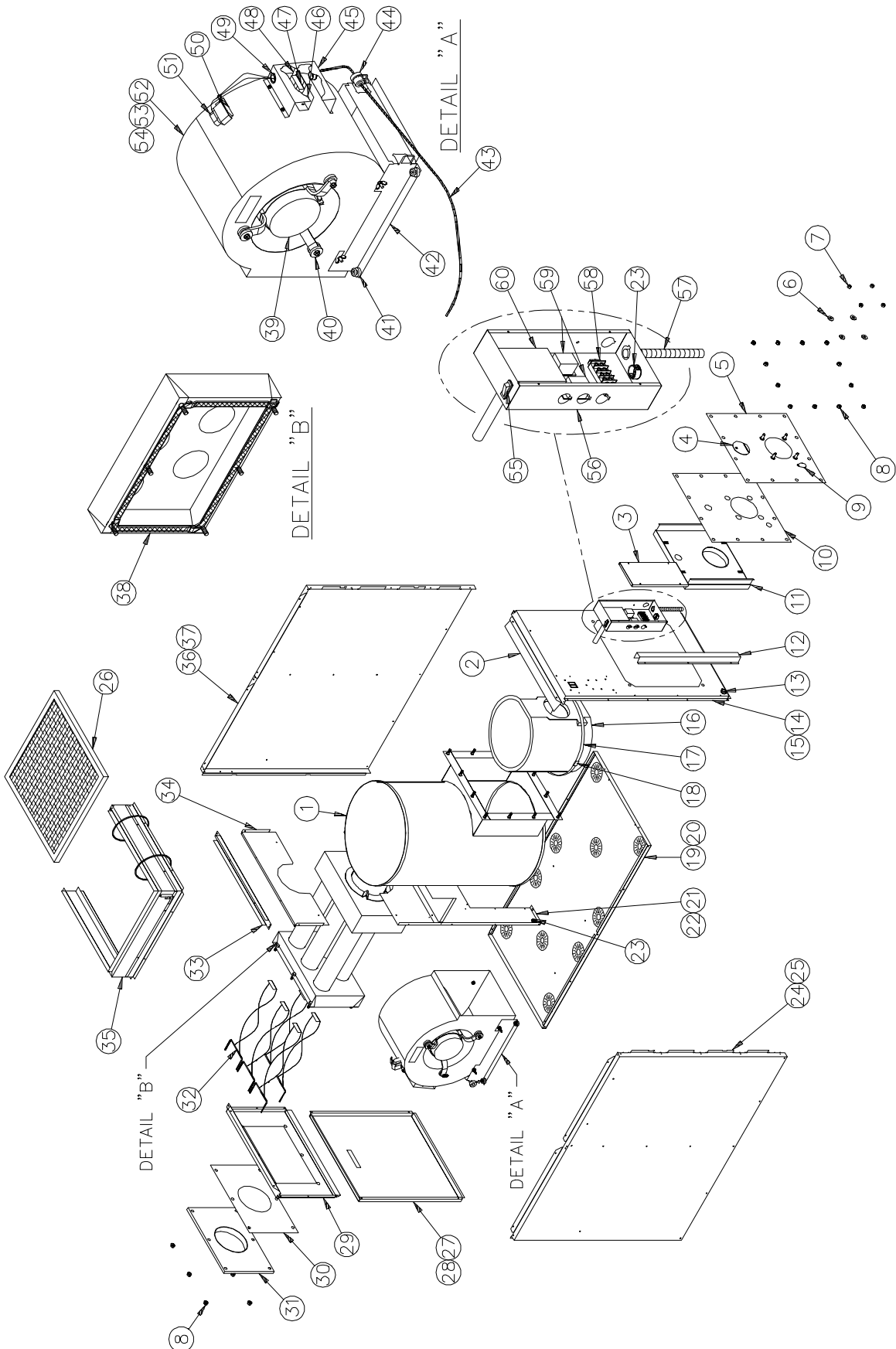
————— FACTORY WIRING (115 VOLTS)
 CABLAGE EN USINE (115 VOLTS)

— — — — — WIRING BY OTHERS (HEATING ONLY)
 CABLAGE PAR L'INSTALLATEUR (CHAUFFAGE SEULEMENT)

----- WIRING BY OTHERS (WITH A/C UNIT)
 CABLAGE PAR L'INSTALLATEUR (AVEC UNITE A/C)

COLOR CODES FOR BLOWER MOTOR CODE DE COULEUR POUR MOTEUR VENTILATEUR		
COLOR/COULEUR	EMERSON	GE
#1	WHITE/BLANC	WHITE/BLANC
#2	RED/ROUGE	PURPLE/MAUVE
#3	BLUE/BLEU	RED/ROUGE
#4	ORANGE	BLUE/BLEU
#5	BLACK/NOIR	BLACK/NOIR

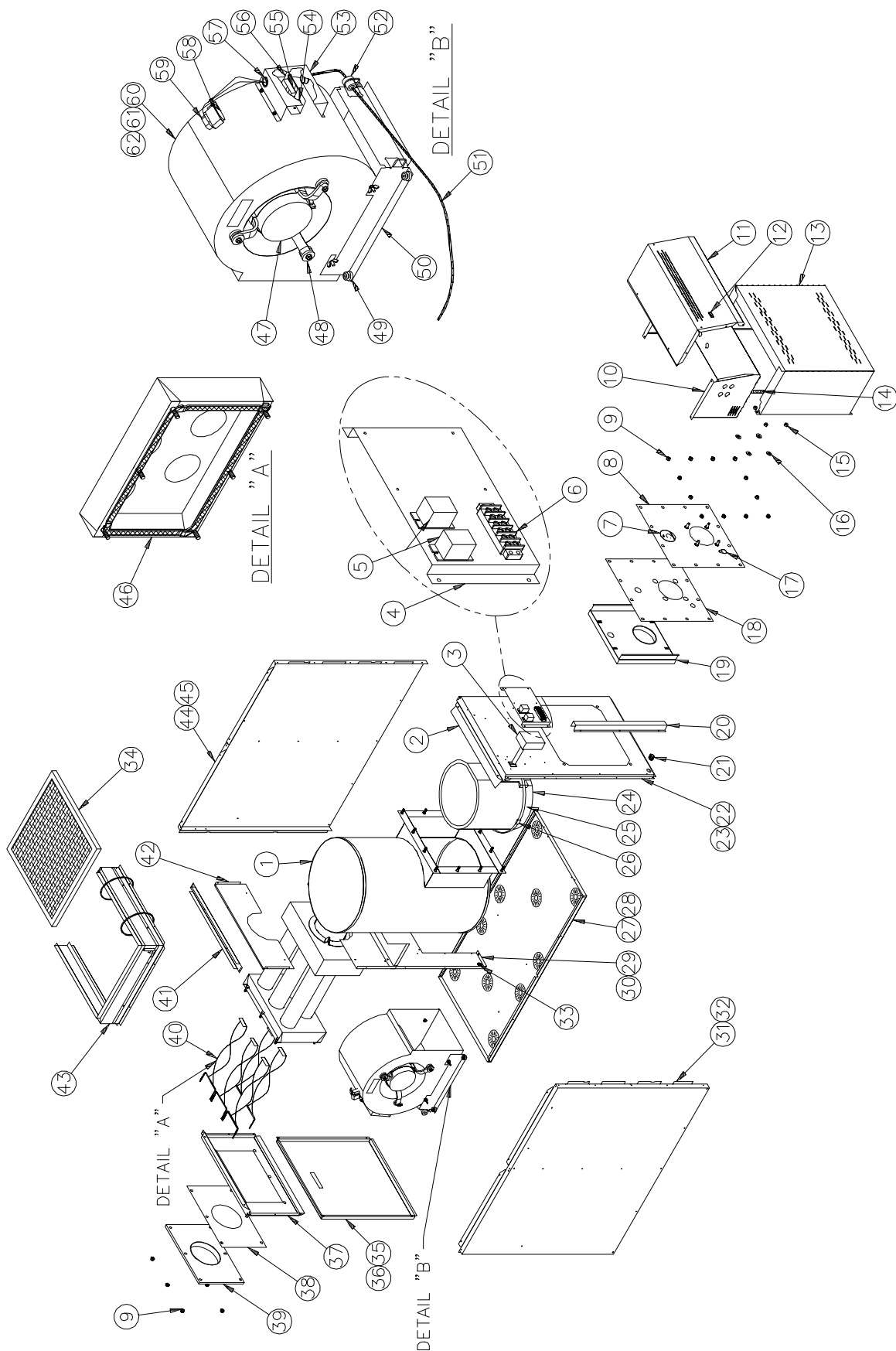
PART LIST
Model : MBO115DABR-B



PART LIST
Model : MBO115DABR-B

ITEM	DESCRIPTION	NUMBER	COMMENTS
1	Complete heat exchanger	B40119-01	Item 16 included and item 38 not included
2	Top baffle	B40067	
3	Electrical box cover ass'y	B40110	Wiring diagram label included
4	Observation door	B00403	
5	Burner panel ass'y	B40048	Items 4 & 9 included
6	Washer 3/8" AA zinc	F06F005	Quantity required per unit: 4
7	Hexagonal nut 3/8-16NC brass	F07F024	Quantity required per unit: 4
8	Hexagonal flange nut 3/8-16NC brass	F07O001	Quantity required per unit: 18
9	Air supply door	B40120	
10	Gasket, burner panel	B40030	
11	Heat shield ass'y	B40099	Insulation included
12	Corner conduit	B40070-02	
13	Strain reliefs bushing SR-34-2	L04I005	
14	Front panel ass'y	B40130-01	Item 15 included
15	Front panel insulation	B40126	
16	Combustion chamber	B40160	
17	Combustion chamber strap	Z05F008	
18	Combustion chamber strap seal	Z05F009	
19	Floor ass'y	B40129	Item 20 included
20	Floor insulation	B01526-78	
21	Divison panel ass'y	B40133	Central support, rear baffle and item 22 included
22	Sealing strip	B01291-02	Quantity required per unit: 3
23	Bushing 7/8" UB-875	L04G001	
24	Left side panel ass'y	B40131-02	Items 25 & 35 included
25	Left side panel insulation	B40125-02	
26	20 X 20 X 1 paper filter	Z04F004	
27	Blower door ass'y	B40132	Item 28 included
28	Door handle	Z99F050	
29	Top rear panel	B40049	
30	Gasket, smoke outlet	B40032	
31	Smoke outlet ass'y	B40046	
32	Baffle ass'y	B40054-01	Quantity required per unit: 5
33	Plenum divider	B40043	
34	Top division panel	B40076	
35	Filter rack assembly	B40410	
36	Right side panel ass'y	B40131-01	Items 35 & 37 included
37	Right side panel insulation	B40125-01	
38	Gasket, extruded 1/2" X 1/8" x 25'	J06L001	
39	1/3 HP direct drive motor	L06G011	
40	Motor mount ass'y	B01888	Legs, band and screws included
41	Rubber grommet # 19	Z01F006	Quantity required per unit: 4
42	Blower support bracket	B01756	
43	Blower electrical kit	B40081	
44	Strain reliefs bushing SR-9P-2	L04I010	
45	Terminal strip cover	B40059	Item 49 not included
46	Terminal plug-in .250	L03J005	
47	Terminal block 4 positions	L99F003	
48	Terminal strip support	B40074	
49	Bushing 7/8" OCB-875	L04G013	Quantity required per unit: 2
50	Capacitor holder	B01024	
51	10 MF capacitor	L01I003	
52	Blower ass'y	B40135-01	Items 39 to 54 included
53	Blower 10 X 10	Z01I001	Housing and wheel included
54	Blower wheel 10 X 10	Z01L004	
55	Rocker switch SPST	L07F003	
56	Electrical box	B40066	Box only
57	Burner electrical kit	B40080	
58	Terminal strip, 6 positions	A00294	
59	Relay SPDT 120VAC	L01H011	
60	Fan limit control	R02I006	

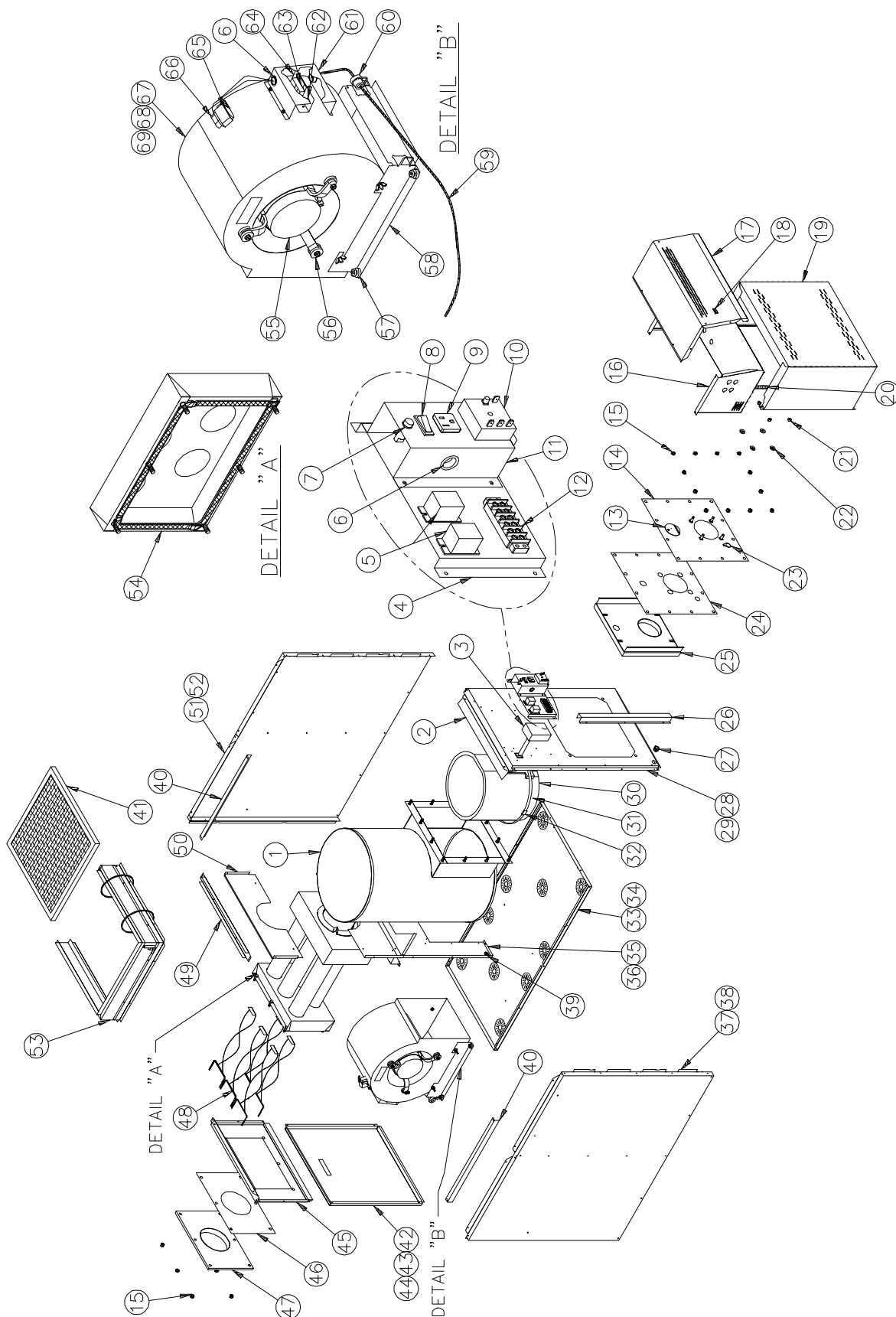
PART LIST
Model : MBOV115DABR-B



PART LIST
Model : MBOV115DABR-B

ITEM	DESCRIPTION	NUMBER	COMMENTS
1	Complete heat exchanger	B40119-01	Item 24 included and item 46 not included
2	Top baffle	B40067	
3	Fan limit control	R02I006	
4	Composant panel	B40137	Items 5 & 6 not included
5	Relay SPDT 120VAC	L01H011	Quantity required per unit: 2
6	Terminal strip, 6 positions	A00294	
7	Observation door	B00403	
8	Burner panel ass'y	B40048	Items 7 & 14 included
9	Hexagonal flange nut 3/8-16NC brass	F07O001	Quantity required per unit: 18
10	Electrical box ass'y	B40144-01	Item 14 not included
11	Electrical cover ass'y	B40145-01	Item 12 not included, labels included
12	Rocker switch	L07F003	
13	Vestibule burner ass'y	B40148	
14	Burner electrical kit	B40080	
15	Hexagonal nut 3/8-16NC brass	F07F024	Quantity required per unit: 4
16	Washer 3/8" AA zinc	F06F005	Quantity required per unit: 4
17	Air supply door	B40120	
18	Gasket, burner panel	B40030	
19	Heat shield ass'y	B40099	Insulation included
20	Corner conduit	B40070-02	
21	Strain reliefs bushing SR-34-2	L04I005	
22	Front panel ass'y	B40130-01	Item 23 included
23	Front panel insulation	B40126	
24	Combustion chamber	B40160	
25	Combustion chamber strap	Z05F008	
26	Combustion chamber strap seal	Z05F009	
27	Floor ass'y	B40129	Item 28 included
28	Floor insulation	B01526-78	
29	Divison panel ass'y	B40133	Central support, rear baffle and item 30 included
30	Sealing strip	B01291-02	Quantity required per unit: 3
31	Left side panel ass'y	B40131-02	Item 32 & 43 included
32	Left side panel insulation	B40125-02	
33	Bushing 7/8" UB-875	L04G001	
34	20 X 20 X 1 paper filter	Z04F004	
35	Blower door ass'y	B40132	Item 36 included
36	Door handle	Z99F050	
37	Top rear panel	B40049	
38	Gasket, smoke outlet	B40032	
39	Smoke outlet ass'y	B40046	
40	Baffle ass'y	B40054-01	Quantity required per unit: 5
41	Plenum divider	B40043	
42	Top division panel	B40076	
43	Filter rack assembly	B40410	
44	Right side panel ass'y	B40131-01	Item 43 & 45 included
45	Right side panel insulation	B40125-01	
46	Gasket, extruded 1/2" X 1/8" x 25'	J06L001	
47	1/3 HP direct drive motor	L06G011	
48	Motor mount ass'y	B01888	Legs, band and screws included
49	Rubber grommet # 19	Z01F006	Quantity required per unit: 4
50	Blower support bracket	B01756	
51	Blower electrical kit	B40081	
52	Strain reliefs bushing SR-9P-2	L04I010	
53	Terminal strip cover	B40059	Item 57 not included
54	Terminal plug-in .250	L03J005	
55	Terminal block 4 positions	L99F003	
56	Terminal strip support	B40074	
57	Bushing 7/8" OCB-875	L04G013	Quantity required per unit: 2
58	Capacitor holder	B01024	
59	10 MF capacitor	L01I003	
60	Blower ass'y	B40135-01	Items 47 to 62 included
61	Blower 10 X 10	Z01I001	Housing and wheel included
62	Blower wheel 10 X 10	Z01L004	

PART LIST
Models : MBOV115DABRU-B & MBOV115DBU-C

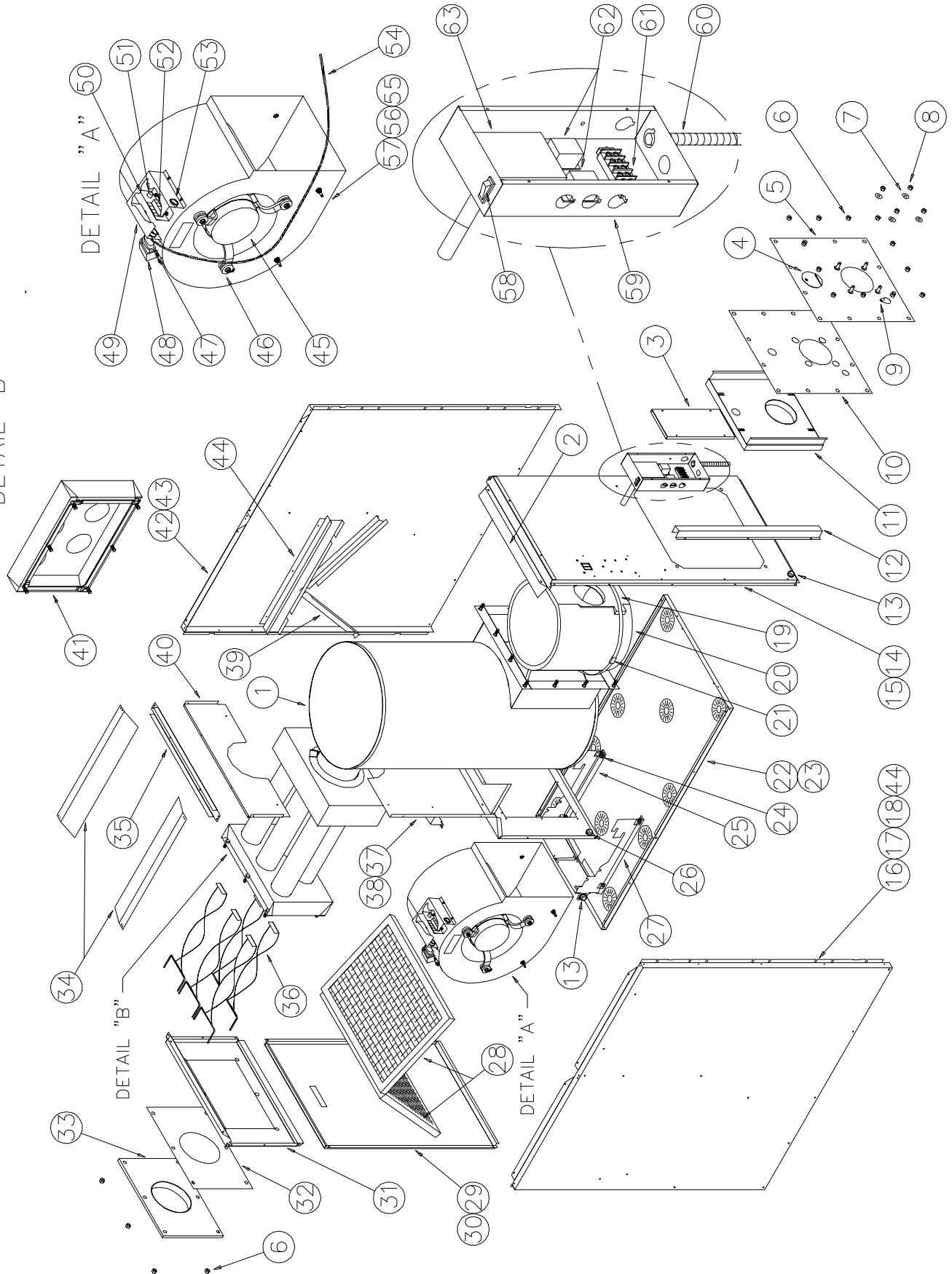


PART LIST
Models : MBOV115DABRU-B & MBOV115DBU-C

ITEM	DESCRIPTION	NUMBER	COMMENTS
1	Complete heat exchanger	B40119-01	Item 30 included and item 54 not included
2	Top baffle	B40067	
3	Fan limit control	R02I006	
4	Composant panel	B40137	Items 5 and 12 not included
5	Relay SPDT 120VAC	L01H011	Quantity required per unit: 2
6	Bushing 7/8" OCB-875	L04G013	Quantity required per unit: 3
7	Witness light	L01L003	
8	Rocker switch SPDT	L07F015	
9	Simple electrical plug 120V	L05H003	
10	Time delay relay	L01H020	
11	Electrical support	B40138	Items 6 to 10 not included
12	Terminal strip, 6 positions	A00294	
13	Observation door	B00403	
14	Burner panel ass'y	B40048	Items 13 and 23 included
15	Hexagonal flange nut 3/8-16NC brass	F07O001	Quantity required per unit: 18
16	Electrical box ass'y	B40144-01	Item 20 not included
17	Electrical cover ass'y	B40145-01	Item 18 not included, labels included
18	Rocker switch	L07F003	
19	Vestibule burner ass'y	B40148	
20	Burner electrical kit	B40080	
21	Hexagonal nut 3/8-16NC brass	F07F024	Quantity required per unit: 4
22	Washer 3/8" AA zinc	F06F005	Quantity required per unit: 4
23	Air supply door	B40120	
24	Gasket, burner panel	B40030	
25	Heat shield ass'y	B40099	Insulation included
26	Corner conduit	B40070-02	
27	Strain reliefs bushing SR-34-2	L04I005	
28	Front panel ass'y	B40130-01	Item 29 included
29	Front panel insulation	B40126	
30	Combustion chamber	B40160	
31	Combustion chamber strap	Z05F008	
32	Combustion chamber strap seal	Z05F009	
33	Floor ass'y	B40129	Item 34 included
34	Floor insulation	B01526-78	
35	Divison panel ass'y	B40133	Central support, rear baffle and item 36 included
36	Sealing strip	B01291-02	Quantity required per unit: 3
37	Left side panel ass'y	B40168-02	Items 38 and 53 included
38	Left side panel insulation	B40167-02	
39	Bushing 7/8" UB-875	L04G001	
40	Insulation support	B40169	Quantity required per unit: 2
41	20 X 20 X 1 paper filter	Z04F004	
42	Blower door ass'y	B40166	Item 43 included
43	Door handle	Z99F050	Quantity required per unit: 2
44	Blower door insulation	B40165	
45	Top rear panel	B40049	
46	Gasket, smoke outlet	B40032	
47	Smoke outlet ass'y	B40046	
48	Baffle ass'y	B40054-01	Quantity required per unit: 5
49	Plenum divider	B40043	
50	Top division panel	B40076	
51	Right side panel ass'y	B40168-01	Items 52 and 53 included
52	Right side panel insulation	B40167-01	
53	Filter rack assembly	B40410	
54	Gasket, extruded 1/2" X 1/8" x 25'	J06L001	
55	1/3 HP direct drive motor	L06G011	
56	Motor mount ass'y	B01888	Legs, band and screws included
57	Rubber grommet # 19	Z01F006	Quantity required per unit: 4
58	Blower support bracket	B01756	
59	Blower electrical kit	B40081	
60	Strain reliefs bushing SR-9P-2	L04I010	
61	Terminal strip cover	B40059	Item 6 not included
62	Terminal plug-in .250	L03J005	
63	Terminal block 4 positions	L99F003	
64	Terminal strip support	B40074	
65	Capacitor holder	B01024	
66	10 MF capacitor	L01I003	
67	Blower ass'y	B40135-01	Items 55 to 69 included
68	Blower 10 X 10	Z01I001	Housing and wheel included
69	Blower wheel 10 X 10	Z01L004	

PART LIST
Model : LBO125DABR13-B

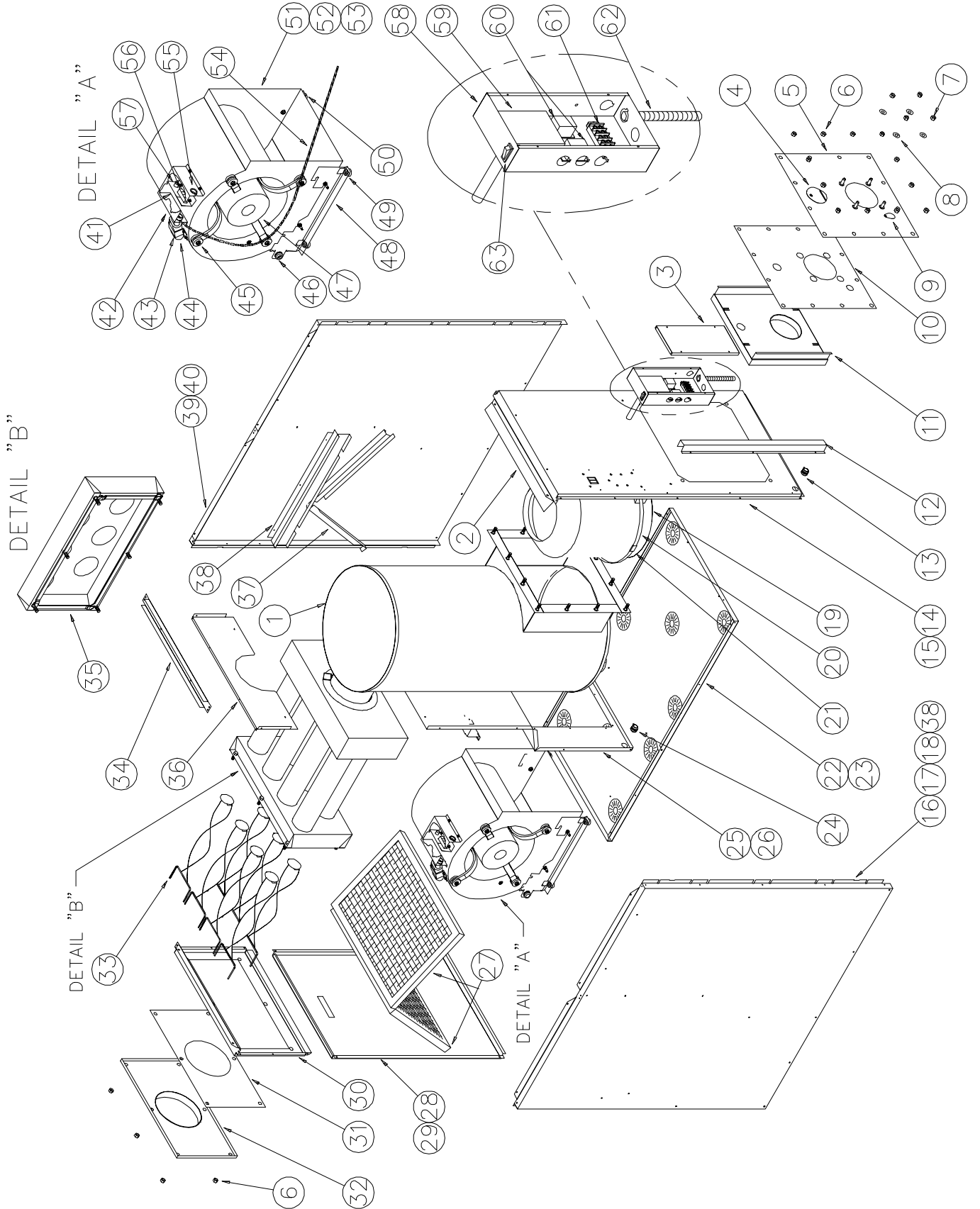
DETAIL "B"



PART LIST
Model : LBO125DABR13-B

ITEM	DESCRIPTION	NUMBER	COMMENTS
1	Compleat heat exchanger	B40117-01	Item 20 included and item 41 not included
2	Top baffle	B40067	
3	Electrical box cover ass'y	B40110	Label "electrical diagram" included
4	Observation door	B02282	
5	Burner panel ass'y	B40048	Items 4 and 9 included
6	Hexagonal flange nut 3/8-16NC brass	F07O001	Quantity: 18
7	Washer 3/8" AA zinc	F06F005	Quantity: 4
8	Hexagonal nut 3/8-16NC brass	F07F024	Quantity: 4
9	Air supply door	B40120	
10	Gasket, burner panel	B40030	
11	Heat shield ass'y	B40099	Insulation included
12	Corner conduit	B40070-01	
13	Strain reliefs bushing SR-34-2	L04I005	
14	Front panel ass'y	B40105-01	Item 15 included
15	Front panel insulation	B40096	
16	Left side panel ass'y	B40362-02	Items 17, 18 and 44 included
17	Left side panel insulation	B40095-02	
18	Left angle filter support	B40229-02	
19	Combustion chamber strap	Z05F009	Sold in feet
20	Combustion chamber	B40160	
21	Combustion chamber strap seal	Z05F009	
22	Floor ass'y	B40111-01	Item 23 included
23	Floor insulation	B01526-77	
24	Rubber grommet #19	Z01F006	Quantity: 4
25	Blower support bracket	B40072-02	
26	Bushing 7/8" UB-875	L04G001	
27	Blower support bracket	B40072-01	
28	15 X 20 X1 paper filter	Z04F012	Quantity: 2
29	Blower door ass'y	B40107	Item 30 included
30	Door handle	Z99F050	Quantity: 2
31	Top rear panel	B40049	
32	Gasket, smoke outlet	B40032	
33	Smoke outlet ass'y	B40046	
34	Inlet baffle	B40071	Quantity: 2
35	Plenum divider	B40043	
36	Baffle ass'y	B40054-01	Quantity: 5
37	Division panel ass'y	B40108	Central support, rear baffle and item 38 included
38	Sealing strip	B01291-02	Quantity: 4
39	Right angle filter support	B40229-01	
40	Top division panel	B40076	
41	Gasket, extruded 1/2" X 1/8" x 25'	J06L001	
42	Right side panel ass'y	B40362-01	Items 39, 43 and 44 included
43	Right side panel insulation	B40095-01	
44	Horizontal filter support	B40028	
45	1/3 HP direct drive motor	L06G011	
46	Motor mount ass'y	B01888	Legs, band and screws included
47	10 MF capacitor	L01I003	
48	Capacitor holder	B01024	
49	Terminal strip cover	B40059	Item 53 not included
50	Terminal strip	B40074	Items 51 and 52 not included
51	Terminal plug-in .250	L03J005	
52	Terminal block	L99F003	
53	Bushing 7/8" OCB-875	L04G013	Quantity: 2
54	Blower electrical kit	B40081	
55	Blower ass'y	B40114-01	Items 45 to 57 included
56	Blower 10 X 10	Z01I001	Housing and wheel included
57	Blower wheel 10 X 10	Z01L004	
58	Rocker switch SPST	L07F003	
59	10 MF capacitor	L01I003	Box only
60	Burner electrical kit	B40080	
61	Terminal strip, 6 positions	A00294	
62	Relay SPDT 120VAC	L01H011	Quantity: 2
63	Fan limit control	R02I006	

PART LIST
Models : LBO145DABR12-B, LBO145DABR34-B & OLR182A16A

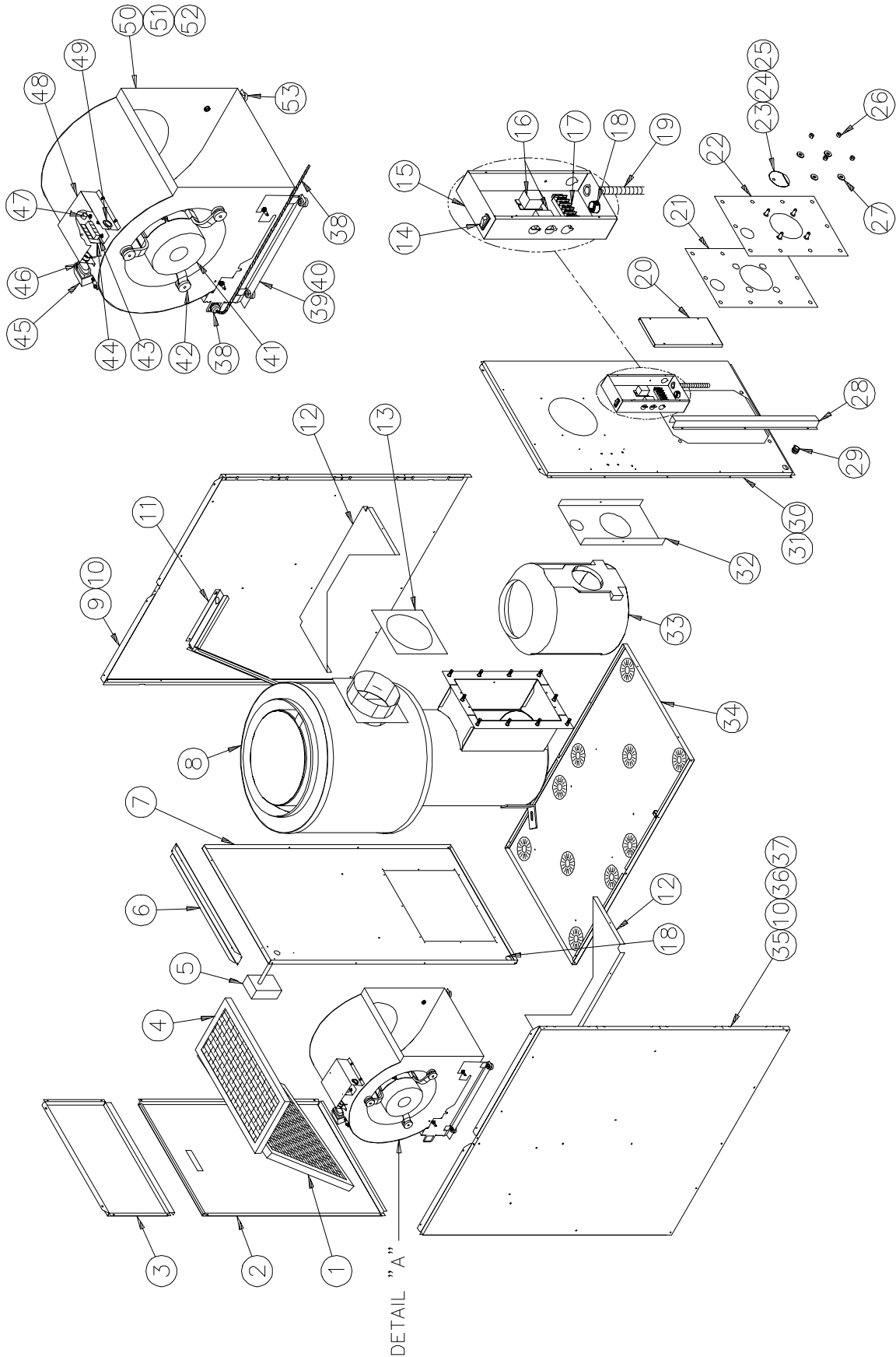


PART LIST

Models : LBO145DABR12-B, LBO145DABR34-B & OLR182A16A

ITEM	DESCRIPTION	NUMBER	COMMENTS
1	Compleat heat exchanger	B40118-01	Item 19 included. Item 35 not included
2	Top baffle	B40067	
3	Electrical box cover ass'y	B40110	Electrical diagram label included
4	Observation door	B00403	
5	Burner panel ass'y	B40048	Items 4 and 9 included
6	Hexagonal flange nut 3/8-16NC brass	F07O001	Quantity: 18
7	Hexagonal nut 3/8-16NC brass	F07F024	Quantity: 4
8	Washer 3/8" AA zinc	F06F005	Quantity: 4
9	Air supply door	B40120	
10	Gasket, burner panel	B40030	
11	Heat shield ass'y	B40099	Insulation included
12	Corner conduit	B40070-01	
13	Strain reliefs bushing SR-34-2	L04I005	
14	Front panel ass'y	B40105-01	Item 15 included
15	Front panel insulation	B40096	
16	Left side panel ass'y	B40362-02	Items 17, 18 and 38 included
17	Left side panel insulation	B40095-02	
18	Left angle filter support	B40229-02	
19	Combustion chamber	B40161	
20	Combustion chamber strap	Z05F008	Sold in feet
21	Combustion chamber strap seal	Z05F009	
22	Floor ass'y	B40111-02	Item 23 included
23	Floor insulation	B01526-77	
24	Bushing 7/8" UB-875	L04G001	
25	Division panel ass'y	B40109	Central support, rear baffle and item 26 included
26	Sealing strip	B01291-02	Quantity: 4
27	15 X 20 X 1 paper filter	Z04F012	Quantity: 2
28	Blower door ass'y	B40107	Item 29 included
29	Door handle	Z99F050	
30	Top rear panel	B40050	
31	Gasket, smoke outlet	B40031	
32	Smoke outlet	B40047	
33	Baffle ass'y	B40054-02	Quantity: 7
34	Plenum divider	B40043	
35	Gasket, extruded 1/2" X 1/8" x 25'	J06L001	
36	Top division panel	B40076	
37	Right angle filter panel	B40229-01	
38	Horizontal filter support	B40028	Quantity: 2
39	Right side panel ass'y	B40362-01	Items 37, 38 and 40 included
40	Right side panel insulation	B40095-01	
41	Terminal strip	B40074	Items 56 and 57 not included
42	Terminal strip cover	B40059	Item 55 not included
43	Capacitor holder	B01024	
44	10 MF capacitor	L01I003	
45	Motor mount ass'y	B40134	Legs, band and screws included
46	Strain reliefs bushing SR-34-2	L04I005	
47A	1/2 HP direct drive motor	B40113-01	For LBO145DABR12-A
47B	3/4 HP direct drive motor	B40113-02	For LBO145DABR34-A
48	Blower support bracket	B40072-02	
49	Rubber grommet #19	Z01F006	Quantity: 4
50	Blower support bracket	B40072-01	
51A	Blower wheel 120-9T (1/2 HP motor)	N/A	For LBO145DABR12-A
51B	Blower wheel 120-9T (3/4 HP motor)	N/A	For LBO145DABR34-A
52A	Blower 120-9T (1/2 HP motor)	Z01I015	For LBO145DABR12-A (Housing and wheel)
52B	Blower 120-9T (13/4 HP motor)	Z01I012	For LBO145DABR34-A (Housing and wheel)
53A	Blower ass'y (1/2 HP motor)	B40136-01	For LBO145DABR12-A (item 42 to 57 included)
53B	Blower ass'y (3/4 HP motor)	B40136-02	For LBO145DABR34-A (item 42 to 57 included)
54	Blower electrical kit	B40081	
55	Bushing 7/8" OCB-875	L04G013	Quantity: 2
56	Terminal block	L99F003	
57	Terminal plug-in .250	L03J005	
58	Electrical box	B40066	Box only
59	Fan limit control	R02I006	
60	Relay SPDT 120VAC	L01H011	Quantity: 2
61	Terminal strip, 6 positions	A00294	
62	Burner electrical kit	B40080	
63	Rocker switch SPST	B01291-02	

PART LIST
Model : FLO115DABR-A & OLF140C12A



PART LIST
Model : FLO115DABR-A & OLF140C12A

ITEM	DESCRIPTION	NUMBER	COMMENTS
1	Paper filter 20 x 20 x 1	Z04F004	
2	Blower door	B40381	
3	Top back panel	B40356	
4	Paper filter 10 x 20 x 1	Z04F001	
5	Fan limit control 5"	R02I006	
6	Plenum divider	B40353	
7	Division panel	B40382	
8	Heat exchanger	B40385	"Combustion chamber " included
9	Right side panel ass'y	B40380-01	Item 10, 11, included
10	Side panel insulation	B01526-82	
11	Right filter rack	B40374-01	
12	Side deflector	B40358	Quantity required per unit: 2
13	Gasket, smoke outlet	B40360	
14	Rocker switch SPST	L07F003	
15	Electric box	B40066	Box only
16	Relay SPDT 120 vac	L01H011	Quantity required per unit: 2
17	Terminal block 6 positions	A00294	
18	Bushing 7/8	L04G001	
19	Burner electrical kit	B40080	
20	Electric box cover	B40384	Label "electrical diagram " included
21	Gasket, burner panel	B40359	
22	Burner panel	B40376	
23	Observation door	B02282	"Observation door gasket" included
24	Observation door spring	A00183-01	
25	Vis TYP F Hex 1/4-20 x 11/4	F03F023	
26	Hex nut 3/8-16NC zinc	F07F011	Quantity required per unit: 4
27	Washer 3/8 zinc	F06F005	Quantity required per unit: 4
28	Corner conduit	B40070-01	
29	Strain relief bushing	L04I013	
30	Front panel	B40378-01	Insulation" included
31	Front panel insulation	B40379	
32	Heat shield	B40371	
33	Combustion chamber	B40161	
34	Floor ass'y	B40383	
35	Left side panel ass'y	B40380-02	
36	Left filter rack	B40374-02	
37	Strain relief bushing	L04I005	
38	Blower electrical kit	B40081	
39	Left blower support	B40072-02	
40	Right blower support	B40072-01	
41	Motor 1/2 HP	B40112-02	"Motor mount" included
42	Motor mount	Z01I016	
43	Terminal block 6 positions	L99F003	
44	Terminal strip	B40074	
45	Capacitor holder	B01024	
46	10 MF capacitor	L01I003	
47	Terminal plug-in .250	L03J005	
48	Electric box cover	B40059	
49	Strain relief bushing	L04G013	
50	Blower wheel 10 X 10	Z01L004	
51	Blower 10 X 10	Z01I001	"Blower wheel" included
52	Blower 10 X 10 ass'y	B40386	
53	Grommet	Z01F006	Quantity required per unit: 4