

**DUO-AIRE**  
**GENERAL INSTALLATION INSTRUCTIONS**  
**DIRECT-FIRED GAS HEATING AND MAKE-UP AIR UNITS**

The following recommendations are not intended to replace or void any requirements of federal, state or local codes having jurisdiction. All local authorities having jurisdiction should be consulted before installation is made. The heater should be installed and piped in accordance with the requirements of the National Fuel Gas Code, NFPA 54, and all wiring must be in accordance with the National Electrical Code, NFPA 70 current edition.

Inspect the unit for visible damage. The unit was thoroughly inspected before leaving the factory, and the carrier has accepted and signed for it. Any damage or irregularities should be noted at the time of delivery and immediately reported to the delivery carrier. Request a written inspection report from the Claims Inspector to substantiate any necessary claim. File the claim with the delivery carrier, not with Duo-Aire.

Further inspect the unit as follows:

- A) Unlatch and open Unit Access Doors. Inspect for internal damage.
- B) Remove and inspect all loose-shipped items, including remote mount control panel. Make certain all items are undamaged.

If questions or complications should arise regarding the application or installation of the Duo-Aire Air Handling Unit, that cannot be solved by using these instructions, our Maintenance Guidelines, or the Troubleshooting Guide, please feel free to contact us at (800) 262-8832.

It is the responsibility of the installing contractor to see that the unit is installed within the manufacturers design parameters, as stated on the rating plate, and that the start-up procedure specified by the manufacturer is followed. Failure to comply may void our warranty and/or the component manufacturer's warranty.

**INSTALLATION**

Inspect the blower wheels, shaft and motor for any shipping blocks which must be removed before operation.

**ROOFTOP/CURB MOUNTED**

For a unit that discharges downward through a curb, locate the required opening for connecting ductwork. Cut through roof deck for connection of duct to blower discharge. Allow adequate, at least one inch, clearance on all sides between ductwork and decking material. Position the curb on the roof in relation to the roof penetration, as shown on the blueprint. Secure the curb to the structural members. The curb may now be flashed into the roof. Roof top, down discharge units are provided with a skirt that is larger than the curb on all sides. This allows for roofing up to the top of the curb, if so desired. On applicable "AA" models, attach the furnished support legs to the intake end of unit, one on each side. The unit may now be lifted up onto the curb.

**NOTE:** Units which discharge down through the curb with discharge dampers must have the roof opening cut large enough to allow access to the damper motor and linkage from below the roof. The damper should be mounted and motor wired with pigtail provided before the unit is set on the curb.

**NOTE:** We recommend the connection of a short length of ductwork to the unit before setting on the curb to extend through the roof if minimum (1") clearance is being used around the duct.

### **PAD MOUNTED**

For a unit designed to mount on a pad or other support and discharge horizontally, vibration isolators are recommended. A channel iron support adequate to carry the weight of the unit must be secured to the bottom of the unit, one at each end, extending at least 3" past the sides of the unit. On standard "AA" models, four vibration isolators will be used, one for each corner of the unit. On some "AA" models, and all R300 models, refer to your submittal or record drawing for size, quantity, and location of isolators. Anchor the vibration isolators to the pad. The unit may now be set down onto the isolators and bolted to them.

### **INDOOR/SUSPENDED**

For a unit designed to be suspended within the building, hanger rods and channel iron adequate to support the weight of the unit will be required. On standard "AA" models, the channel iron must be secured to the bottom of the unit, one at each end, extending at least 3" past the sides of the unit. On some "AA" models, and all R300 models, refer to your submittal or record drawing for size, quantity, and location of channel iron and isolators. Attach the hanger rods to the building structure so they hang down to the channel extensions under the unit. Make sure the rod location does not interfere with the removal of unit access panels. Provide one suspension type vibration isolator in each hanger rod. The minimum combined ratings of the vibration isolators and suspension materials should equal the total weight of the fully assembled unit. Move the unit to its installation location. Fully assemble the unit with all included components (motorized discharge dampers, etc.) Raise the unit so that one hanger rod drops through holes in the channel extensions. Attach two nuts to hanger rods and level unit, jamb the two nuts together to prevent loosening.

*The unit is now ready for piping, wiring, and connection to any required ductwork.*

### **PIPING**

A female pipe connection has been provided on the upstream side of the first control within the unit for connection of the inlet gas pipe. This is the only gas connection required. Be sure the gas supply pipe is large enough to insure the proper gas volume and line pressure at the inlet of the unit. Gas pipe must be sized and installed in accordance with applicable codes and standards.

After connection of the gas pipe, check for leaks and bleed the line.

**NOTE:** NFPA 54 National Fuel Gas Code requires that an approved manual gas valve be installed within six feet of the unit. We recommend use of a gas valve with a pressure tap on the inlet to measure gas supply pressure.

**NOTE:** An inlet gas pressure measurement must be taken to insure proper inlet gas pressure. Inlet pressure should be neither too low or too high. Check your submittal or unit nameplate for the minimum and maximum pressure requirements for your unit. If the supply gas pressure exceeds the maximum inlet supply pressure as stated on the unit rating plate, an auxiliary high pressure regulator must be installed in the incoming gas line by the contractor. The gas supply pressure must meet or exceed the minimum inlet

gas supply pressure, as stated on the unit rating plate, while the burner is under full fire. (See Start-Up Procedure to operate unit on high fire).

This heater and its individual shut-off valve must be disconnected from the gas supply piping system during any pressure testing of that system at pressures in excess of 1/2 PSI (3.5 KPA). In addition, pressure testing of the gas supply piping system at pressures at or below 1/2 PSI (3.5 KPA) requires isolation from the heater by closing its individual manual shut-off valve.

## **WIRING**

All electrical wiring must be in accordance with applicable codes and standards. See the electrical diagram on the unit door or in the service manual before attempting any wiring. Refer to the unit rating plate for required incoming voltage and phase. Check for concurrence with voltage and phase shown on the wiring diagram.

Refer to wiring diagram for numbers of wires needed for main power connection and remote control wiring. Field wiring is shown with dashed lines.

**WARNING!!!** - Spark testing or shorting of control wires by any means will render the control transformer inoperative. **DO NOT** allow this to happen as it **IS NOT** covered under the warranty.

We recommend that the wires for the control circuit be routed through the conduit provided with the main electrical service to the equipment. This procedure is provided for in Chapter 3, Article 300-3(a) of the NFPA 70 1984 National Electrical Code. It reads as follows: "Conductors of 600 volts or less shall be permitted to occupy the same equipment wiring enclosure, cable or raceway, without regard to whether the individual circuits are alternating current or direct current, where all conductors are insulated for the maximum voltage of any conductor within the enclosure, cable or raceway."

An electric disconnect switch having adequate ampacity shall be installed in accordance with Article 430 of the National Electric Code (N.E.C.), ANSI/NFPA 70. If not factory installed, please refer to the unit rating plate for voltage and ampacity requirements.

Open cover on disconnect box, connect line voltage wiring to terminal block provided. Then feed the control wiring through the conduit to the master panel. Connect color coded and/or numbered control wires to terminal strip per the wiring diagram.

**NOTE:** Wires for Maxitrol Series 14 and Series 44 temperature controls must be run in shielded cable. For best results, run control wiring in separate conduit if the run is over 100 feet. For longer runs see Maxitrol Installation Instructions.

## **DUCTWORK**

Ductwork must be sized and installed in accordance with applicable codes and standards. On units mounted outdoors, it is recommended that all discharge and return air ducts be insulated to prevent condensation during the "Off" cycle in cold weather. A fresh air intake hood with bird screen and/or filters can be supplied by Duo-Aire with the heater. Our intake hood or one of a similar design is recommended.

On units mounted indoors with through the roof intake ductwork, a suitable weather resistant intake hood must be installed. Sheet metal standards should be adhered to to ensure uniform air delivery to the heater inlet. This aids in preventing moisture entrainment. When using a through the wall intake duct, an intake louver properly sized should be used, having adequate moisture baffling characteristics for the design air volume.

In lieu of an intake louver, a wall mounted intake hood with mesh screen may be used. This can be supplied by Duo-Aire. It is recommended that all intake ductwork which is exposed to the heated space be insulated.

The requirements for discharge ductwork are usually considerably less than with a conventional system, as the pressurization principle lends itself to effective air distribution. Generally, a "Splash Plate" or other method of distributing the air is all that is necessary.

### **SOUND CONTROL**

Flexible connectors should be employed on all ductwork connections. Unit vibration isolators are recommended for suspended units and can be supplied by Duo-Aire as optional equipment.

### **DO NOT OPERATE UNIT FOR MORE THAN SIXTY (60) SECONDS WITHOUT ALL**

### **ACCESS DOORS CLOSED. WITH THE EXCEPTION OF THE MASTER ELECTRICAL**

### **PANEL OR GAS MANIFOLD ENCLOSURE DOORS.**

Energize the system and check for unusual noises or vibrations, etc. Check the fan for proper rotation. **THIS MUST BE A VISUAL CHECK** as fans will move air even if they are running backward, but the system will not perform properly. Check the amp draw to all motors to insure it does not exceed the rated maximum current rating of the motor.

**If not factory installed, a low temperature limit switch should be interlocked with this heater to prevent prolonged discharge of cold air in the event of burner lockout or shutdown.**

**Recirculation of room air may be hazardous in the presence of:**

- \*Flammable liquids, solids and gases**
- \*Explosive dusts or powders**
- \*Substances which become toxic when exposed to heat**

**In order to reduce the chance of interior condensation, recirculation is not recommended in non-insulated buildings where outdoor temperatures fall below 32°F (0°C).**

### **PROCEED WITH THE FIELD START-UP AND CHECK LIST**

## **DUO-AIRE**

**316 West Central Ave., Suite 606**

**Winter Haven, FL. 33880**

**Telephone: (863) 294-2272**

**Facsimile: (863) 294-2704**

Customer: \_\_\_\_\_

Sales Representative: \_\_\_\_\_

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

# Field Start-Up Sheet

## Direct Fired Gas Equipment

\*\*\*Please Print\*\*\*

### INITIAL INSPECTION

#### I. Installer Responsibilities

- Remote Panel: All interconnecting wires run from remote to unit  Yes  
Temperature control interconnect wires to remote ran in:  Shielded Cable  Separate Conduit  
Remote Panel Location:  Inside Wall  Outside Wall \_\_\_\_\_ Feet From Unit (approx.)  
**NOTE: If the Remote to Main Panel Interconnect Wiring is over 200' Long, Please Consult Factory**
- Indoor Return Air Unit: Building Pressure Switch Tubing for "Low-Tap" is run outdoors  Yes
- Outdoor Return Air Unit: Building Pressure Switch Tubing for "High-Tap" is run indoors  Yes
- R366-R389 Models: The panel with the high & low temp limit switches & Maxitrol mixing tube is mounted at fan wall  Yes
- Gas supply run connected with proper gas pressure regulator and drip leg  Yes
- Electrical Supply properly installed to main panel, at the voltage and amperage as stated on the unit nameplate  Yes
- Multi-section units: joints caulked at mating frames, all bolts and nuts installed and tightened, seam tape applied  Yes
- Upright Units: Legs attached and bolted, shimmed properly so unit does not "rock"  Yes
- Duct connections made and sealed properly  Yes Return air screen installed at building wall  Yes
- Discharge head installed secure, with diffuser blades tightened and in the open position  Yes
- All "shipped loose" items installed properly - filters, vibration isolators, smoke detectors, dampers, louvers, service lights supply fan belts, service platform, roof curb, humidistat, CO detector, etc.  Yes
- All paint scratches have been properly touched-up  Yes

Comments: \_\_\_\_\_

#### II. Miscellaneous Items

- Visible Physical Damage? \_\_\_\_\_ NO IF YES, Specify \_\_\_\_\_
- Type of Installation:  Outdoor  Indoor  Roof Curb  Platform  Post  Suspended  Upright
- Hardware Tight & Secure \_\_\_\_\_ 4. Damper Linkages Secure \_\_\_\_\_

Comments: \_\_\_\_\_

#### III. Fan & Motor Sheaves

- \_\_\_ Fan & Motor Sheaves Secured Tightly to Shafts
- \_\_\_ V-Belts Aligned Properly
- \_\_\_ Fan Bearing Set screws Tight
- \_\_\_ Fan Motor: Manufacturer \_\_\_\_\_ HP \_\_\_\_\_ FLA \_\_\_\_\_ Frame Size \_\_\_\_\_
- \_\_\_ Fan Hub Set Screws Tight
- \_\_\_ V-Belts Tensioned Properly
- \_\_\_ Fan Bearing Mounting Bolts Tight

Comments: \_\_\_\_\_

#### IV. Burner Inspection

- \_\_\_ Spark Igniter Secured Properly
- \_\_\_ Flame Rod Secured Properly
- \_\_\_ Ignition Wire Attached at Igniter & Transformer
- \_\_\_ UV Scanner Secured Properly
- \_\_\_ Pilot Line Fittings Tight
- \_\_\_ Unions Tight and Secure

Comments: \_\_\_\_\_

## V. Gas Manifold & Vent Piping

1. \_\_\_ Manifold Assembly and Individual Components Tight and Securely Mounted
2. \_\_\_ Vent Screens Installed If Required
3. \_\_\_ Vent Piping Run to Outdoors (Some Indoor Models)
4. \_\_\_ Tighten Fittings and Components as Necessary

Comments: \_\_\_\_\_

## VI. Filters

1. \_\_\_ Filters Installed Properly
2. Type:  Aluminum  Pleated 30%  Pad & Frame  Other \_\_\_\_\_

Comments: \_\_\_\_\_

## VI. Electric Service

1. Electrical Service Provided to Unit: \_\_\_ Volts \_\_\_ Phase \_\_\_ Hertz \_\_\_ Amps
2. Unit Nameplate Electrical Requirement: \_\_\_ Volts \_\_\_ Phase \_\_\_ Hertz \_\_\_ Amps
3. Terminal Strip Wires Tight: Main Panel  Yes Remote Panel  Yes
4. Componentry and Relays Mounted Securely in Place  Yes
5. Light Bulbs Installed in Sockets for Control Enclosure Lighting  Yes
6. Main Fusing Size: \_\_\_ Volts \_\_\_ Amps
6. Overload Heater Size \_\_\_\_\_
7. The Unit has been grounded by the installer at the main unit panel  Yes

Comments: \_\_\_\_\_

## VII. Gas Service

(See maximum and minimum gas pressure requirements on unit rating plate)

1.  Natural Gas  LP Gas Service Pressure: \_\_\_ " W.C. -or- \_\_\_ Oz. -or- \_\_\_ Lbs
2. Manual Gas Shut-off Cock in line-of-sight  Yes  No
3. Handle Present on Manual Shut-off Cock  Yes  No

# VERIFICATION OF OPERATION

**NOTE:** Refer to the Sequence of Operation & Wiring Diagram in the Owners Manual for specific data on this unit.  
See Factory Start-up & Test Sheet in the Unit Owners Manual to note the unit settings prior to shipment.

## I. Fan Operation

1. The Inlet Damper is fully open when fan comes on  Yes  NA Discharge Damper operates properly  Yes  NA
2. The low-temperature limit switch is field set at \_\_\_\_\_°F. (Factory set at 40°F.)
3. The low-limit by-pass timer completes its cycle in \_\_\_\_\_ minutes \_\_\_\_\_ seconds (normal: 5 minutes)
4. Fan Rotation is in the same direction as the rotation arrow  Yes
5. Discharge External Static Pressure \_\_\_\_\_ " W.C.
6. Check the following:

Unit Off

Fan Running (Burner Off)

A-B \_\_\_\_\_ Volts

A-B \_\_\_\_\_ Volts \_\_\_\_\_ Amps

Verify the motor running

B-C \_\_\_\_\_ Volts

B-C \_\_\_\_\_ Volts \_\_\_\_\_ Amps

amps does not exceed the

A-C \_\_\_\_\_ Volts

A-C \_\_\_\_\_ Volts \_\_\_\_\_ Amps

motor nameplate FLA

7. Approximate Outdoor Air Temperature \_\_\_\_\_°F

## II. Burner Operation

1. The Profile Pressure Drop is \_\_\_ " W.C. (Measured using taps provided near airflow switch).
1. The Burner Suction Static Pressure is \_\_\_ " W.C. (Measured at the manifold pressure tap with unit fan on and gas off)
2. The Burner High Fire Pressure is \_\_\_ "W.C. (Measured as above, but with fan and gas on, and unit in forced high fire)

*Note: Burner High Fire Pressure plus Suction Pressure = Manifold Pressure (Example: -1.2 +3.4 = 4.6...ignore signs)*

**Refer to the unit rating plate for correct high fire manifold pressure and Maxitrol Bulletin in the O&M manual**

3. The High Temperature Limit Switch is field set to \_\_\_\_\_°F (Maximum recommended setting is 150°F)
4. The Low Gas Pressure Limit Switch is field set to \_\_\_\_\_ " WC (Factory set at 3" WC)
5. The High Gas Pressure Limit Switch is field set to \_\_\_\_\_ " WC (Factory set at 1.5" WC above the high fire pressure)
6. The Fan Airflow Switch is field set at \_\_\_\_\_ " W.C. (Adjust as needed - Factory set at 0.35" WC)

— Duo-Aire —

7. The Pilot Flame should be the approximate size of a baseball  Yes (Adjust as needed)
8. Set the burner low-fire gas pressure so there is a continuous "ribbon" of flame approximately 1" wide across face of burner
9. Flame Relay. If a Honeywell model, it should read **1.25 to 5.0 VDC** at terminals marked (+ -) on the flame relay face, if Fireye, it should read **4.0 to 10.0 VDC** at terminals marked (+ -) on the flame relay face
10. Mild Weather Stat (optional) trips the burner when outside air temp is higher than the stat set point  Yes, \_\_\_\_\_ °F Set (Factory setting is 65°F)

### III. Space Temperature Control Systems (Maxitrol 44 and DFM Series)

1. Modulating Regulator Valve ("MR Valve"): Voltage at Low Fire \_\_\_\_\_ VDC Voltage at High Fire \_\_\_\_\_ VDC
2. The Minimum Discharge Temperature is field set at \_\_\_\_\_ °F (Factory set at 55°F)
3. The Maximum Discharge Temperature is field set at \_\_\_\_\_ °F (Factory set at 95°F, Maximum setting is 120°F)
4. Burner responds to demand for heat from Room Temperature Selector in remote panel  Yes
5. Check calibration of the minimum/maximum discharge temperature control. Adjust if necessary.
6. Operation of Occupied/Unoccupied Switch (if applicable) or time clock verified  Yes
7. Is there evidence of temperature hunting?  Yes \*\*  No

### IV. Discharge Temperature Control Systems (Maxitrol 14 Series)

1. Modulating Regulator Valve ("MR Valve"): Voltage at Low Fire \_\_\_\_\_ VDC Voltage at High Fire \_\_\_\_\_ VDC
2. Check calibration of the Discharge Air Temperature Selector. Adjust if necessary.
3. Is there evidence of temperature hunting?  Yes \*\*  No

**\*\* Refer to the Maxitrol Troubleshooting Guide in the Owners Manual for further instructions**

### V. Damper Control Options

#### Manual Pot Control:

1. With the manual pot set to zero (0%), the outdoor air damper is closed and the return air damper is open.  Yes
2. With the manual pot set to 100%, the outdoor air damper is open and the return air damper is closed.  Yes
3. The manual pot was left set at \_\_\_\_\_% and the owner was instructed on its operation by me.  Yes

#### Building Pressure Control:

1. The differential setting on the building pressure switch is field set at \_\_\_\_\_ " WC (Typical is .01 - .03" WC)
2. By opening a building door or turning on an exhaust fan in the building, the unit pressure switch calls for more outside air (OA), causing the OA damper to open, and the return air (RA) damper to close. When the building door is closed, or the exhaust fan turned off, the OA and RA dampers react opposite.  Yes

Comments: \_\_\_\_\_

### VI. Miscellaneous Operational Checks:

1. With the unit fan and burner operating, all of the circuit check lights are illuminated (except the burner lock-out pilot light and the low temperature switch pilot light)  Yes
2. If furnished, the time clock has been programmed per owner instructions, and training provided to him by me  Yes
3. If provided, the following temperature control stats have been set by me, and instructions provided to the owner:

\_\_\_\_\_ Cycle Stat    \_\_\_\_\_ Cool-down Stat    \_\_\_\_\_ Mild Weather Stat    \_\_\_\_\_ Freeze Stat

4. The electrical drawing and sequence of operation is taped to the enclosure door.  Yes
5. The owners manual was reviewed by me with the owner, and placed back inside the unit enclosure  Yes
6. The owner was instructed by me on the operation of the following controls and options (check those that apply):

- |  |   |
|--|---|
| <input type="checkbox"/> Keyed Switches on remote panel        | <input type="checkbox"/> Maxitrol 44 Space Temperature Selector     |
| <input type="checkbox"/> Remote Reset for Flame Relay          | <input type="checkbox"/> Maxitrol 14 Discharge Temperature Selector |
| <input type="checkbox"/> Burner Alarm Horn                     | <input type="checkbox"/> 3-phase Power Monitor                      |
| <input type="checkbox"/> Natural Gas/Propane Changeover Switch | <input type="checkbox"/> Smoke Detector                             |
| <input type="checkbox"/> CO Detector                           | <input type="checkbox"/> Magnahelic Gauge                           |
| <input type="checkbox"/> Photohelic Gauge                      | <input type="checkbox"/> 120V GFI Outlet                            |
| <input type="checkbox"/> Dirty Filter Light/Alarm              | <input type="checkbox"/> Evaporative Cooler                         |

*Continued on Next Page*

- |   |   |
|---|---|
| <input type="checkbox"/> Fan Bearing Grease Type & Lube Cycle       | <input type="checkbox"/> Filter Maintenance           |
| <input type="checkbox"/> Exhaust Cycle Operation                    | <input type="checkbox"/> Internal By-Pass Operation   |
| <input type="checkbox"/> Discharge Head Deflection Blade Adjustment | <input type="checkbox"/> Coil Maintenance             |
| <input type="checkbox"/> Burner Maintenance                         | <input type="checkbox"/> Spray/Bake Control Operation |
| <input type="checkbox"/> _____                                      | <input type="checkbox"/> _____                        |

**Comments**

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**THE ABOVE START-UP WAS PERFORMED BY**

Company Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Phone Number: (\_\_\_\_) - \_\_\_\_\_ Fax Number: (\_\_\_\_) - \_\_\_\_\_  
 My Name (Service Tech) \_\_\_\_\_

**- MAKE A COPY FOR YOUR FILES AS NECESSARY**

**The Owner Representative that I met with and discussed the unit controls and operation was:**

**NAME:** \_\_\_\_\_ **TITLE:** \_\_\_\_\_  
 (Please Print)

**CUSTOMER'S AUTHORIZED SIGNATURE**

I acknowledge that I have been instructed on the operation of this unit:

Signature \_\_\_\_\_ Date: \_\_\_\_\_ Phone No. \_\_\_\_\_

*After Completion, Return this start-up sheet to:*

**Duo-Aire**

**316 West Central Ave., Suite 606  
 Winter Haven, FL 33880**

**Phone: (863) 294-2272 Fax: (863) 294-2704**

(stupshda.doc) 03/07



**Duo-Aire**  
**MAINTENANCE GUIDELINES**  
**DIRECT-FIRED GAS HEATERS AND MAKE-UP AIR UNITS**

316 West Central Ave., Suite 606 / Winter Haven, FL 33880  
Phone (863) 294-2272 / Facsimile (863) 294-2704

Your Duo-Aire product is engineered to provide trouble-free operation. In order to assure proper performance the following maintenance schedule is recommended.

**MOTOR:** Check the motor sheave set-screws and the motor slide base bolts for tightness upon initial start-up and before each heating season. The motor bearings are pre-lubricated at the factory for initial operation but should be re-lubricated (when provided with grease fittings) at six (6) month intervals. Duo-Aire recommends the use of Shell Oil Company's "Dolium R", Chevron Oil's "SRI No. 2", or Texaco "Premium RB" lubricant. Clean the grease fitting and then apply the grease with a proper grease gun. Use two full strokes for each bearing.

**CAUTION:** Do not over lubricate.  
Keep grease clean.  
Lubricate motors at standstill.  
Do not mix petroleum grease with silicone grease.

**BLOWER:** After initial start-up, check the tightness of the fan sheave, fan hub set screws, fan bearing collar set screws, and fan bearing mounting bolts. Also when re-tensioning the v-belts, when re-lubricating the fan bearings, and before each heating season.

**AA Model Heaters:** Most AA units with 18" and smaller blowers are provided with pre-lubricated sealed bearings which require no additional lubrication for the life of the bearing. Some AA models are provided with pillow block bearings and should be lubricated annually using the following (or equivalent) grease:

**ESSO Beacon 325 or Shell Alvania #3 or equivalent**

**R300 Model Heaters:** All R300 fan bearings should be lubricated after the first one hundred (100) hours of operation, and re-lubricated on a quarterly basis thereafter. We recommend the use of the following (or equivalent) grease:

**MOBIL SHC460**

Clean the grease fitting and then apply the grease with a proper grease gun. Inject enough grease until a small amount shows between the seal and the bearing race.

Examine the blower wheel at six (6) month intervals for accumulation of dust and dirt on the fan blades. Any build-up must be cleaned off to maintain performance. If the accumulation is heavy, more frequent cleaning may be required.

**BELTS:** Due to belt stretching, adjust belt tension after the first one hundred (100) hours of operation. Check belts every three months thereafter for proper tension. Do not over tighten. Adjustment should result in a belt deflection of 3/4" to 1" for each foot of span when applying medium thumb pressure inward at the center of the span.

**FILTERS:** Inspect monthly until an appropriate schedule can be established, based on need. Replace or clean as necessary.

**COILS:** Inspect and clean the coil fins on the entering air side annually. If these inspections indicate that more frequent cleaning is required, establish a cleaning schedule accordingly. Fins should be cleaned by brushing and/or back-washing with high pressure air or water. In extreme cases the coils may have to be removed and cleaned with high pressure steam or washed with a mild alkali solution followed by a water rinse.

**TRAPS AND STRAINERS:** Periodic inspections of traps, inspections of check and air valves, and the replacement of worn parts are important. Strainers should be cleaned regularly.

**BURNER:** Prior to each heating season, a check should be made of the burner and components. Clean the igniter and flame rod and examine porcelain for cracks. Wipe the sight glass clean on the UV scanner and inspect the sight tube for spider webs, removing as necessary.

Periodic maintenance will insure continued trouble-free operation of your burner system. We recommend a yearly inspection, in advance of the heating season.

- 1) Shut the system down totally, disconnecting or locking out the power supply so there can be no accidental start-up during the inspection.
- 2) Inspect the burner carefully, including upstream and downstream sides of mixing plates as well as burner body face. Any accumulation of scale or foreign material on either side of the mixing plates should be removed with a wire brush. Check visually that no holes in the mixing plates are blocked. If any mixing plates are loose or missing fasteners, tighten/replace as necessary. Always use zinc plated or stainless fasteners.

- 3) Check burner orifices for carbon build-up and clean. Use a pin vise with a #31 drill bit for cleaning Midco natural gas burner orifices, a #45 drill bit for cleaning Midco propane (LPG) gas burner orifices, a #47 (5/64") drill bit for Maxon NP-I burner orifices, and a #50 (1/16") drill bit for Maxon NP-II burner orifices.

**DO NOT ENLARGE BURNER ORIFICES - THIS MAY AFFECT PERFORMANCE**

- 4) Put the system back into operation and view the burner from the downstream side while cycling the burner through its full firing range. A good flame will be blue, with minimal yellow "fingers". The flame length in forced "high fire" should be 12-18" long. The pilot only flame should be about the size of a baseball when properly adjusted.

**GAS TRAIN:** An annual inspection of the gas control assembly should be made. Internal and external piping should be checked for leaks. Relief vents on gas controls should be checked for clogging.

**AIR PRESSURE SWITCHES:** An annual check of the tube for the air flow switch, and the entering and leaving side of building pressure switches, should be made to insure against blockage.

**DAMPER AND MOTOR:** Check linkage connection and/or set screws for tightness. Lubricate the damper bushings as required.

**PAINTING:** After unit installation, touch up any scratches caused by handling. Periodic touch-up painting should be done thereafter as needed.

**GASKETS:** Inspect door gasket seals annually. Replace those showing damage or deterioration.

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**GENERAL INSTALLATION INSTRUCTIONS**  
**AIR HANDLING UNITS**

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Further inspect the unit as follows:

- A) Unlatch and open Unit Access Doors. Inspect for internal damage.
- B) Remove and inspect all loose-shipped items, including remote mount control panel. Make certain all items are undamaged.

If questions or complications should arise regarding the application or installation of the Duo-Aire Air Handling System, that cannot be solved by using these instructions, our Maintenance Guidelines, or the Troubleshooting Guide, please feel free to contact us at (269) 382-1875.

It is the responsibility of the installing contractor to see that the unit is installed within the manufacturers design parameters, as stated on the rating plate, and that the start-up procedure specified by the manufacturer is followed. Failure to comply may void our warranty and/or the component manufacturer's warranty.

**INSTALLATION**

Inspect the blower wheels, shaft and motor for any shipping blocks which must be removed before operation.

**ROOFTOP/CURB MOUNTED**

For a unit that discharges downward through a curb, locate the required opening for connecting ductwork. Cut through roof deck for connection of duct to blower discharge. Allow adequate, at least one inch, clearance on all sides between ductwork and decking material. Position the curb on the roof in relation to the roof penetration, as shown on the blueprint. Secure the curb to the structural members. The curb may now be flashed into the roof. Roof top, down discharge units are provided with a skirt that is larger than the curb on all sides. This allows for roofing up to the top of the curb, if so desired. On applicable "AA" models, attach the furnished support legs to the intake end of unit, one on each side. The unit may now be lifted up onto the curb.

**NOTE:** Units which discharge down through the curb with discharge dampers must have the roof opening cut large enough to allow access to the damper motor and linkage from below the roof. The damper should be mounted and motor wired with pigtail provided before the unit is set on the curb.

**NOTE:** We recommend the connection of a short length of ductwork to the unit before setting on the curb to extend through the roof if minimum (1") clearance is being used around the duct.

### **PAD MOUNTED**

For a unit designed to mount on a pad or other support and discharge horizontally, vibration isolators are recommended. A channel iron support adequate to carry the weight of the unit must be secured to the bottom of the unit, one at each end, extending at least 3" past the sides of the unit. On standard "AA" models, four vibration isolators will be used, one for each corner of the unit. On some "AA" models, and all R300 models, refer to your submittal or record drawing for size, quantity, and location of isolators. Anchor the vibration isolators to the pad. The unit may now be set down onto the isolators and bolted to them.

### **INDOOR/SUSPENDED**

For a unit designed to be suspended within the building, hanger rods and channel iron adequate to support the weight of the unit will be required. On standard "AA" models, the channel iron must be secured to the bottom of the unit, one at each end, extending at least 3" past the sides of the unit. On some "AA" models, and all R300 models, refer to your submittal or record drawing for size, quantity, and location of channel iron and isolators. Attach the hanger rods to the building structure so they hang down to the channel extensions under the unit. Make sure the rod location does not interfere with the removal of unit access panels. Provide one suspension type vibration isolator in each hanger rod. The minimum combined ratings of the vibration isolators and suspension materials should equal the total weight of the fully assembled unit. Move the unit to its installation location. Fully assemble the unit with all included components (motorized discharge dampers, etc.) Raise the unit so that one hanger rod drops through holes in the channel extensions. Attach two nuts to hanger rods and level unit, jamb the two nuts together to prevent loosening.

*The unit is now ready for piping, wiring, and connection to any required ductwork.*

### **WIRING**

All electrical wiring must be in accordance with applicable codes and standards. See the electrical diagram on the unit door or in the service manual before attempting any wiring. Refer to the unit rating plate for required incoming voltage and phase. Check for concurrence with voltage and phase shown on the wiring diagram.

Refer to wiring diagram for numbers of wires needed for main power connection and remote control wiring. Field wiring is shown with dashed lines.

**WARNING!!!** - Spark testing or shorting of control wires by any means will render the control transformer inoperative. DO NOT allow this to happen as it IS NOT covered under the warranty.

We recommend that the wires for the control circuit be routed through the conduit provided with the main electrical service to the equipment. This procedure is provided for in Chapter 3, Article 300-3(a) of the NFPA 70 1984 National Electrical Code. It reads as follows: "Conductors of 600 volts or less shall be permitted to occupy the same equipment wiring enclosure, cable or raceway, without regard to whether the individual circuits are alternating current or direct current, where all conductors are insulated for the maximum voltage of any conductor within the enclosure, cable or raceway."

An electric disconnect switch having adequate ampacity shall be installed in accordance with Article 430 of the National Electric Code (N.E.C.), ANSI/NFPA 70. If not factory installed, please refer to the unit rating plate for voltage and ampacity requirements.

Open cover on disconnect box, connect line voltage wiring to terminal block provided. Then feed the control wiring through the conduit to the master panel. Connect color coded and/or numbered control wires to terminal strip per the wiring diagram.

### **DUCTWORK**

Ductwork must be sized and installed in accordance with applicable codes and standards. On units mounted outdoors, it is recommended that all discharge and return air ducts be insulated to prevent condensation during the "Off" cycle in cold weather. A fresh air intake hood with bird screen and/or filters can be supplied by Duo-Aire with the heater. Our intake hood or one of a similar design is recommended.

On units mounted indoors with through the roof intake ductwork, a suitable weather resistant intake hood must be installed. Sheet metal standards should be adhered to to ensure uniform air delivery to the heater inlet. This aids in preventing moisture entrainment. When using a through the wall intake duct, an intake louver properly sized should be used, having adequate moisture baffling characteristics for the design air volume.

In lieu of an intake louver, a wall mounted intake hood with mesh screen may be used. This can be supplied by Duo-Aire. It is recommended that all intake ductwork which is exposed to the heated space be insulated.

The requirements for discharge ductwork are usually considerably less than with a conventional system, as the pressurization principle lends itself to effective air distribution. Generally, a "Splash Plate" or other method of distributing the air is all that is necessary.

### **SOUND CONTROL**

Flexible connectors should be employed on all ductwork connections. Unit vibration isolators are recommended for suspended units and can be supplied by Duo-Aire as optional equipment.

**DO NOT OPERATE UNIT FOR MORE THAN SIXTY (60) SECONDS WITHOUT ALL**

**ACCESS DOORS CLOSED, WITH THE EXCEPTION OF THE MASTER ELECTRICAL**

**PANEL.**

Energize the system and check for unusual noises or vibrations, etc. Check the fan for proper rotation. THIS MUST BE A VISUAL CHECK as fans will move air even if they are running backward, but the system will not perform properly. Check the amp draw to all motors to insure it does not exceed the rated maximum current rating of the motor.

**If not factory installed, a low temperature limit switch should be interlocked with this heater to prevent prolonged discharge of cold air in the event of burner lockout or shutdown.**

**Recirculation of room air may be hazardous in the presence of:**

- \*Flammable liquids, solids and gases**
- \*Explosive dusts or powders**
- \*Substances which become toxic when exposed to heat**

**In order to reduce the chance of interior condensation, recirculation is not recommended in non-insulated buildings where outdoor temperatures fall below 32°F (0°C).**

### **PROCEED WITH THE FIELD START-UP AND CHECK LIST**

## **DUO-AIRE**

**316 West Central Ave., Suite 606**

**Winter Haven, FL. 33880**

**Telephone: (863) 294-2272**

**Facsimile: (863) 294-2704**

Customer: \_\_\_\_\_

Sales Representative: \_\_\_\_\_

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

# Field Start-Up Sheet

## Fan Box

\*\*\*Please Print\*\*\*

### INITIAL INSPECTION

#### I. Installer Responsibilities

- Remote Panel: All interconnecting wires run from remote to unit  Yes  
Remote Panel Location:  Inside Wall  Outside Wall \_\_\_\_\_ Feet From Unit (approx.)
- Electrical Supply properly installed to main panel, at the voltage and amperage as stated on the unit nameplate  Yes
- Multi-section units: joints caulked at mating frames, all bolts and nuts installed and tightened, seam tape applied  Yes
- Upright Units: Legs attached and bolted, shimmed properly so unit does not "rock"  Yes
- Duct connections made and sealed properly  Yes
- Discharge head installed secure, with diffuser blades tightened and in the open position  Yes
- All "shipped loose" items installed properly - filters, vibration isolators, smoke detectors, dampers, louvers, service lights supply fan belts, service platform, roof curb, humidistat, CO detector, etc.  Yes
- All shipping and rigging paint scratches have been properly touched-up  Yes

Comments: \_\_\_\_\_

#### II. Miscellaneous Items

- Visible Physical Damage? \_\_\_\_\_ NO IF YES, Specify \_\_\_\_\_
- Type of Installation:  Outdoor  Indoor  Roof Curb  Platform  Post  Suspended  Upright
- Hardware Tight & Secure \_\_\_\_\_
- Damper Linkages Secure \_\_\_\_\_

Comments: \_\_\_\_\_

#### III. Fan & Motor Sheaves

- \_\_\_\_ Fan & Motor Sheaves Secured Tightly to Shafts
- \_\_\_\_ V-Belts Aligned Properly
- \_\_\_\_ Fan Bearing Set screws Tight
- \_\_\_\_ Fan Motor Manufacturer \_\_\_\_\_ HP \_\_\_\_\_ FLA \_\_\_\_\_ Frame Size \_\_\_\_\_
- \_\_\_\_ Bushing Bolts Secure
- \_\_\_\_ V-Belts Tensioned Properly
- \_\_\_\_ Fan Bearing Mounting Bolts Tight

Comments: \_\_\_\_\_

#### IV. Filters

- \_\_\_\_ Filters Installed Properly
- Type:  Aluminum  Pleated 30%  Pad & Frame  Other

Comments: \_\_\_\_\_



## V. Electric Service

1. Electrical Service Provided to Unit: \_\_\_\_\_ Volts \_\_\_\_\_ Phase \_\_\_\_\_ Hertz \_\_\_\_\_ Amps
2. Unit Nameplate Electrical Requirement: \_\_\_\_\_ Volts \_\_\_\_\_ Phase \_\_\_\_\_ Hertz \_\_\_\_\_ Amps
3. Terminal Strip Wires Tight: Main Panel  Yes Remote Panel  Yes
4. Componentry and Relays Mounted Securely in Place  Yes
5. Main Fusing Size: \_\_\_\_\_ Volts \_\_\_\_\_ Amps
6. Overload Heater Size \_\_\_\_\_
6. The Unit has been grounded by the installer at the main unit panel  Yes

Comments: \_\_\_\_\_

## VERIFICATION OF OPERATION

**NOTE:** Refer to the Sequence of Operation & Wiring Diagram in the Owners Manual for specific data on this unit.  
See Factory Start-up & Test Sheet in the Unit Owners Manual to note the unit settings prior to shipment.

### I. Fan Operation

1. The Inlet Damper is fully open when fan comes on  Yes  NA Discharge Damper operates properly  Yes  NA
2. Fan Rotation is in the same direction as the rotation arrow  Yes
3. Discharge External Static Pressure \_\_\_\_\_ " W.C.
4. Check the following:

	Unit Off	Unit Running	
Phase 1:	_____ Volts	_____ Volts _____ Amps	<i>Verify the motor running amps does not exceed the motor nameplate FLA</i>
Phase 2:	_____ Volts	_____ Volts _____ Amps	
Phase 3:	_____ Volts	_____ Volts _____ Amps	

### II. Miscellaneous Operational Checks:

1. With the unit fan operating, the circuit check lights are illuminated  Yes
2. If furnished, the time clock has been programmed per owner instructions, and training provided to him by me  Yes
3. The electrical drawing and sequence of operation is taped to the enclosure door.  Yes
4. The owners manual was reviewed by me with the owner, and placed back inside the unit enclosure  Yes
5. The owner was instructed by me on the operation of the following controls and options (check those that apply):
 

<input type="checkbox"/> Keyed Switches on remote panel	<input type="checkbox"/> 3-phase Power Monitor
<input type="checkbox"/> Smoke Detector	<input type="checkbox"/> CO Detector
<input type="checkbox"/> Magnahelic Gauge	<input type="checkbox"/> Photohelic Gauge
<input type="checkbox"/> 120V GFI Outlet	<input type="checkbox"/> Dirty Filter Light/Alarm
<input type="checkbox"/> Fan Bearing Grease Type & Lube Cycle	<input type="checkbox"/> Filter Maintenance
<input type="checkbox"/> Discharge Head Deflection Blade Adjustment	<input type="checkbox"/> _____
<input type="checkbox"/> _____	

### Comments

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**THE ABOVE START-UP WAS PERFORMED BY**

Company Name: \_\_\_\_\_ Date: \_\_\_\_\_

Phone Number: (\_\_\_\_\_) - \_\_\_\_\_ Fax Number: (\_\_\_\_\_) - \_\_\_\_\_

My Name (Service Tech) \_\_\_\_\_

**- MAKE A COPY FOR YOUR FILES AS NECESSARY**

**The Owner Representative that I met with and discussed the unit controls and operation was:**

**NAME:** \_\_\_\_\_ **TITLE:** \_\_\_\_\_  
(Please Print)

**CUSTOMER'S AUTHORIZED SIGNATURE**

I acknowledge that I have been instructed on the operation of this unit:

Signature \_\_\_\_\_ Date: \_\_\_\_\_ Phone No. \_\_\_\_\_

*After Completion, Return this start-up sheet to:*

**Duo-Aire**

**316 West Central Ave., Suite 606  
Winter Haven, FL 33880**

**Phone: (863) 294-2272 Fax: (863) 294-2704**

(stupdafb) 5/07

## **DUO-AIRE**

### MAINTENANCE GUIDELINES

#### Unheated Make Up Air and Fan Box Models

316 West Central Ave., Suite 606 / Winter Haven, FL. 33880

Phone (863) 294-2272 / Facsimile (863) 294-2704

Your DUO-AIRE product is engineered to provide trouble-free operation. In order to assure proper performance the following maintenance schedule is recommended.

#### **MOTOR:**

Check the motor sheave set-screws and the motor slide base bolts for tightness upon initial start-up and before each heating season. The motor bearings are pre-lubricated at the factory for initial operation but should be re-lubricated (when provided with grease fittings) at six (6) month intervals. Duo-Aire recommends the use of Shell Oil Company's "Dolium R", Chevron Oil's "SRI No. 2", or Texaco "Premium RB" lubricant. Clean the grease fitting and then apply the grease with a proper grease gun. Use two full strokes for each bearing.

**CAUTION:** Do not over lubricate.  
Keep grease clean.  
Lubricate motors at standstill.  
Do not mix petroleum grease with silicone grease.

#### **BLOWER:**

After initial start-up, check the tightness of the fan sheave, fan hub set screws, fan bearing collar set screws, and fan bearing mounting bolts. Also when re-tensioning the v-belts, when re-lubricating the fan bearings, and before each cooling season.

Most FB Models with 18" and smaller blowers are provided with pre-lubricated sealed bearings which require no additional lubrication for the life of the bearing. Some Models are provided with pillow block bearings and should be lubricated annually using the following (or equivalent) grease:

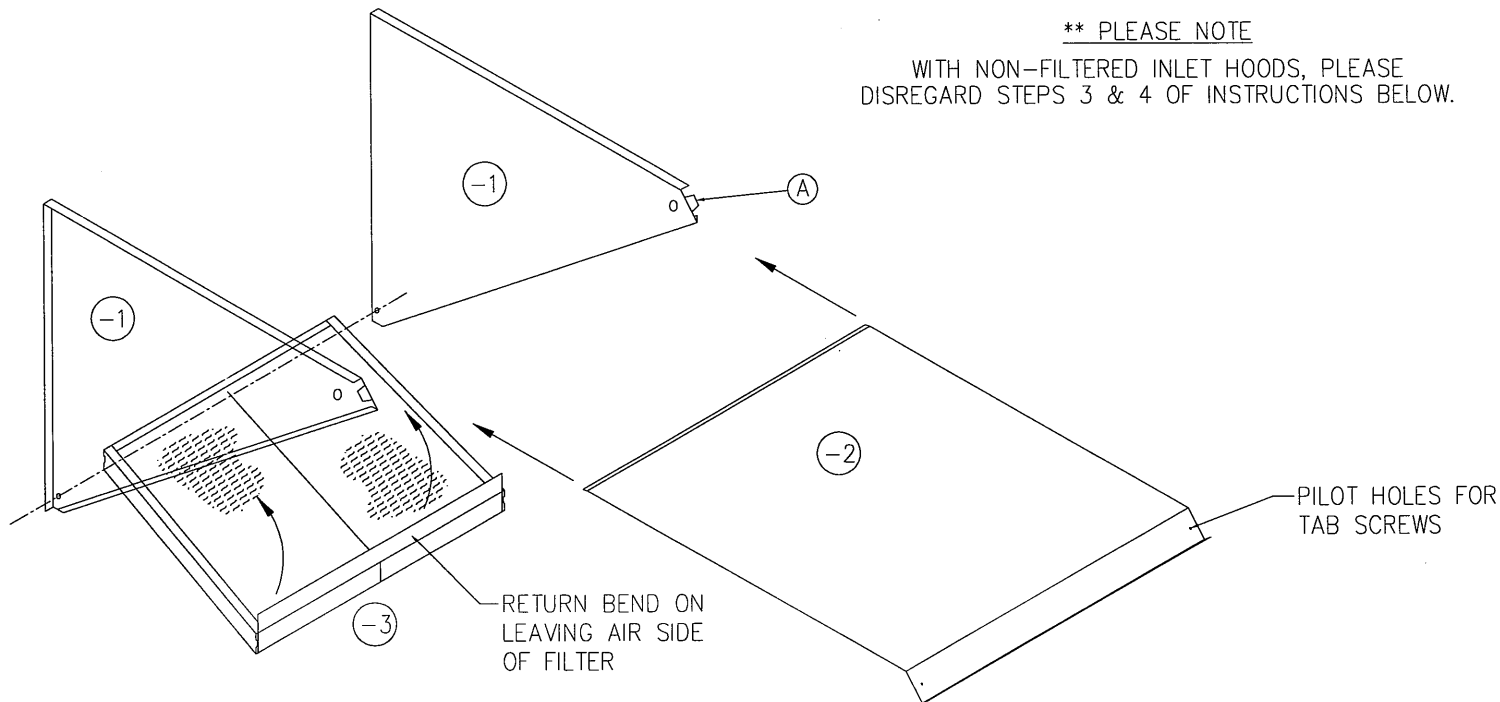
**ESSO Beacon 325 or Shell Alvania #3 or equivalent**

Clean the grease fitting and then apply the grease with a proper grease gun. Inject enough grease until a small amount shows between the seal and the bearing race.

Examine the blower wheel at six (6) month intervals for accumulation of dust and dirt on the fan blades. Any build-up must be cleaned off to maintain performance. If the accumulation is heavy, more frequent cleaning may be required.

- BELTS:** Due to belt stretching, adjust belt tension after the first one hundred (100) hours of operation. Check belts every three months thereafter for proper tension. Do not over tighten. Adjustment should result in a belt deflection of 3/4" to 1" for each foot of span when applying medium thumb pressure inward at the center of the span.
- FILTERS:** Inspect monthly until an appropriate schedule can be established, based on need. Replace or clean as necessary.
- AIR PRESSURE SWITCHES:** An annual check of the tubes for dirty filterswitches, and the entering and leaving side of building pressure switches, should be made to insure against blockage.
- DAMPER AND MOTOR:** Check linkage connection and/or set screws for tightness. Lubricate the damper bushings as required.
- PAINTING:** After unit installation, touch up any scratches caused by handling. Periodic touch-up painting should be done thereafter as needed.
- GASKETS:** Inspect door gasket seals annually. Replace those showing damage or deterioration.

Item	QTY.	Mat'l.	Description/Mat'l. Size	Weight
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**\*\* FILTERED INLET HOOD ASSEMBLY INSTRUCTIONS:**

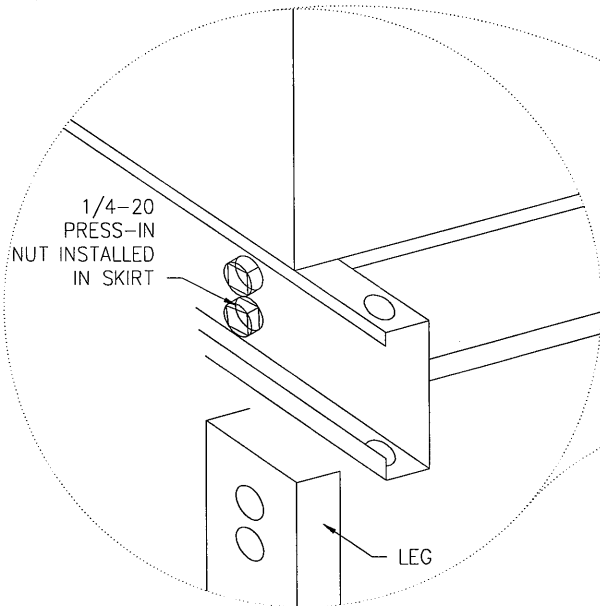
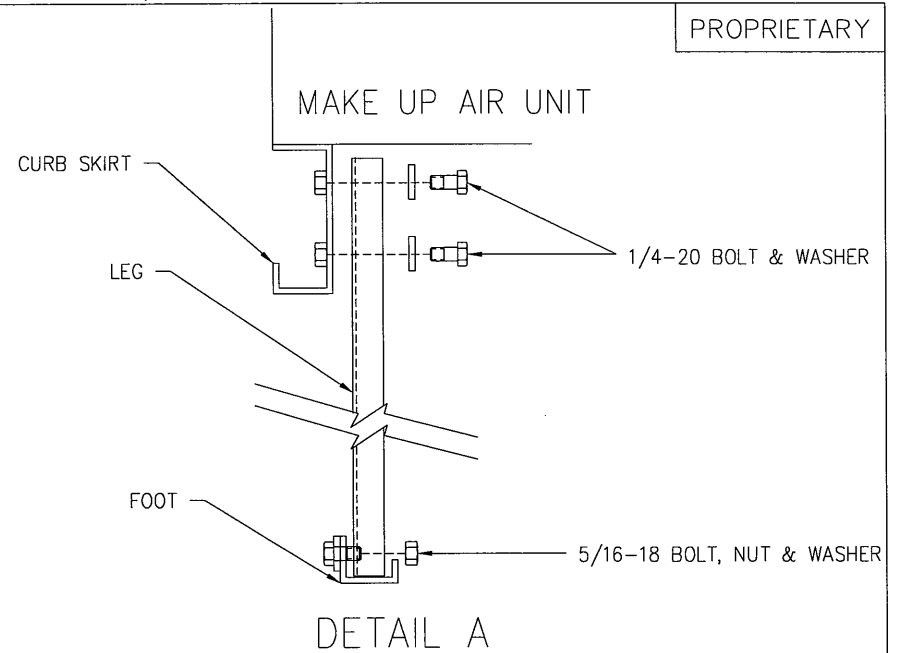
- 1- SLIDE HOOD SIDES (-1) INTO HOOD TOP (-2).
- 2- ATTACH HOOD TOP (-2) TO TABS (A) IN HOOD SIDES (-1) WITH GASKETED TEK SCREWS.
- 3- ATTACH BOTTOM OF FILTER ASSEMBLY (-3) TO BOTTOMS OF BOTH HOOD SIDES WITH SLOTTED 1/2" SCREWS. NOTE AIRFLOW DIRECTION.
- 4- ATTACH TOP OF FILTER ASSEMBLY TO TOPS OF HOOD SIDES WITH THUMB SCREWS.
- 5- ALIGN SIDE/TOP ASSEMBLY WITH MAU TOP & MAU FRAME AT RIGHT SIDE.
- 6- ATTACH HOOD TOP TO MAU TOP WITH GASKETED TEK SCREWS.
- 7- ATTACH FLANGE OF RIGHT HOOD SIDE TO MAU FRAME WITH GASKETED TEK SCREWS.
- 8- ATTACH LEFT HOOD SIDE TO MAU END THROUGH FLANGE WITH GASKETED TEK SCREWS.
- 9- CAULK INTERIOR TOP & SIDES OF HOOD WHERE IT MEETS THE MAKE-UP AIR UNIT.

LAST REVISION:	-	REV.	ECO#	DATE	CK BY	See List	See List	See List		
NOTES:						NET QTY	MATERIAL	MATERIAL SIZE		
						DESC. HOOD ASSEMBLY				
ALL O-LINES (OR O,0) WILL ALWAYS BE IN THE LOWER LEFT-HAND CORNER OF THE PART	-	-	-	-	-	SCALE NONE	DRAWN BY: AMB	DATE: 3-11-05	REV.	FILE NO.:
DRAWING FILE LOCATION: T:\VS						PLOT RATIO: 1=6	CK BY: -	WO# -	-	HOODASSY

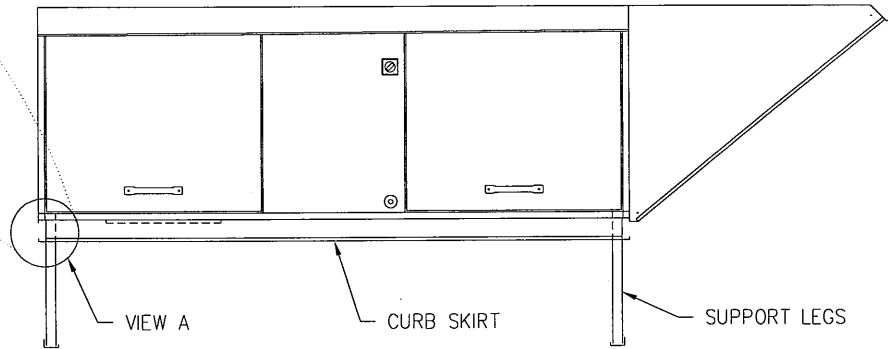
PROPRIETARY

LEG INSTALLATION DETAIL

- STEP 1: ATTACH A "FOOT" TO EACH "LEG" WITH THE 5/16-18 BOLT, NUT AND LOCK WASHER. (SEE DETAIL A)
- STEP 2: LIFT AND SECURE MAKE UP AIR UNIT (MUA) HIGH ENOUGH TO ENABLE LEGS TO MOUNT IN PLACE.
- STEP 3: IN THE LOWER CORNERS OF THE MUA, LOCATE THE TWO 1/4-20 NUTS PRESSED INTO THE CURB SKIRT. THIS IS THE LOCATION FOR THE LEG. (SEE DETAIL B)
- STEP 4: ALIGN EACH LEG/FOOT ASSEMBLY WITH THE 1/4-20 NUTS IN THE CURB SKIRT AND SECURE EACH LEG USING 1/4-20 BOLTS AND WASHERS.
- STEP 5: TIGHTEN ALL FASTENERS AND PLACE THE MUA UNIT IN ITS PERMANENT LOCATION.



DETAIL B



LAST REVISION:	-	REV.	ECO#	DATE	CK BY	-	-	-	
NOTES:						NET QTY	MATERIAL	MATERIAL SIZE	
						DESC. V-SERIES UNIT LEG INSTALLATION			
ALL O-LINES (OR O,0) WILL ALWAYS BE IN THE LOWER LEFT-HAND CORNER OF THE PART	-	-	-	-	-	SCALE NONE	DRAWN BY: KRW	DATE: 11-2-05	REV. FILE NO.:
DRAWING FILE LOCATION: T:\VS\		AAI PART #:	-			PLOT RATIO: 1=28	CK BY: -	WO# -	- LEGINSTALL

# **LIMITED WARRANTY**

***This warranty applies to all Supply Fans manufactured by Duo-Aire.***

*Any parts furnished by Duo-Aire that prove to be defective at the site of the original installation within **24 months from date of start-up, or 27 months from date of shipment**, (whichever comes first), will be replaced or repaired at Duo-Aire's discretion at no charge to the customer. **Wear items, such as V-Belts, filters, etc., are not included as covered parts under this Warranty.** Defective parts must be returned to Duo-Aire at the customer's expense. Warranty replacement parts will be shipped freight prepaid from Duo-Aire via normal ground service.*

*The customer must notify Duo-Aire promptly in writing of any claim under this Limited Warranty. Duo-Aire will require information to ensure the equipment has been installed and maintained properly, and operated as intended within the specifications as stated on the Duo-Aire quotation and/or Order Acknowledgment. Components provided by others are not covered under this Warranty. If a Duo-Aire part fails as a result of components furnished by others, the Duo-Aire component may not be covered under this Warranty.*

*Reimbursement for labor for removing and/or re-installing replacement parts is included in this Warranty for a period of 30 days from field start-up or 90 days from shipment, whichever comes first. Duo-Aire is responsible to determine the amount of labor reimbursement allowed, based upon the circumstances for each installation. Labor cost reimbursement must be approved by Duo-Aire prior to the work being performed.*

*Disclaimer: The warranties contained in this written Limited Warranty are made in lieu of all other warranties expressed or implied, statutory or otherwise. In particular, Duo-Aire makes no warranty of merchantability for fitness for a particular purpose, unless written and signed by an officer of the Company referencing this specific disclaimer. Duo-Aire shall have no liability to customer/owner for direct, consequential or incidental damages of any kind whatsoever.*

## ***Duo-Aire***

***316 W. Central Ave. Suite #606***

***Winter Haven, FL. 33880***

***Phone: 863.294.2272***

***Fax: 863.294.2704***

***E-mail: [info@duoaire.com](mailto:info@duoaire.com)***

***website: <http://www.duoaire.com>***