

VL / VLX Series Air Handler
Installation Instructions

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April 2005

**VL / VLX Series
Air Handlers**

Installation – Operation – Maintenance

The VL / VLX series is designed for permanent vertical installations in a closet or recessed mounted in a wall. Units of three tons and less can be installed with front return through the option return air filter grill. An optional wall hanging kit is available. Air conditioning and heat pump coils are available to match specific manufacturer's outdoor units. Various models are available for applications up to four tons of nominal cooling capacity. The VL model is 18 3/8 W x 18 1/4 D x 36 3/4 H with up to 2.5 tons nominal capacity, up to 10 KW electric resistance heat.



The VLX model is 20 5/8 W x 22 D x 40 1/8 H inches, up to four tons of nominal capacity, up to 20 KW electric resistance heat. Cabinets are fully insulated, constructed from embossed galvanized steel. Front panels are painted for an attractive appearance. Time delay fan relays are standard on all models. All models are prewired for heat pump application. Flowrator refrigerant metering devices are standard. Thermal expansion valves or check and expansion valves are available factory or field installed. All models are 208/230 single phase 60 hertz and are provided with a 24 volt control transformer.

Installation Instructions

Installation of this unit shall be made in accordance with the National Electric Code, NFPA No. 90A and 90B, and any other local codes or utilities requirements.

WARNING:

Due to possible damage to equipment or personal injury, installation, service and maintenance should be performed by a trained, qualified person. Consumer service is recommended only for filter replacement.

WARNING:

Insure all power is disconnected before installing or servicing this unit. More than one disconnect device may be required to de-energize the equipment. Hazardous voltage can cause sever personal injury. Make certain all panels are in place before operating the unit.

Installation – Operation – Maintenance

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Carefully unpack the unit and inspect the contents for damage. If any damage is found at the time of delivery, proper notification and claims should be made with the carrier who delivered the unit.

Check the rating plate to assure model number and voltage, plus any kits agree with what you ordered. The manufacturer should be notified within 5 days of any discrepancy or parts shortage.

Location

The blower coil unit should be centrally located and may be installed in a closet or recessed mounted in a wall with 0" clearance from any side, front, rear or duct work. The unit must be installed in a level position to ensure proper condensation drainage. Make sure the unit is level in both directions within 1/8" on either side.

When the unit is installed in a closet or utility room, the room should be large enough, and have an opening to allow replacement of the unit. All servicing is done from the front and a clearance of 24" is needed for service unless the closet door aligns with the front of the furnace. The unit is designed to sit on a platform or hang on the wall with an optional wall hanging kit.

If the unit is going to be installed with the return air through the base, remove the lower access door and remove the fiberboard insulation panel from the bottom channel. This channel may be used as a filter rack. A standard 18x18x1 in filter will fit the channel on the VL, a 20x20x1 inch filter is required on the VLX model. Be sure to replace the lower access door prior to operating the unit.

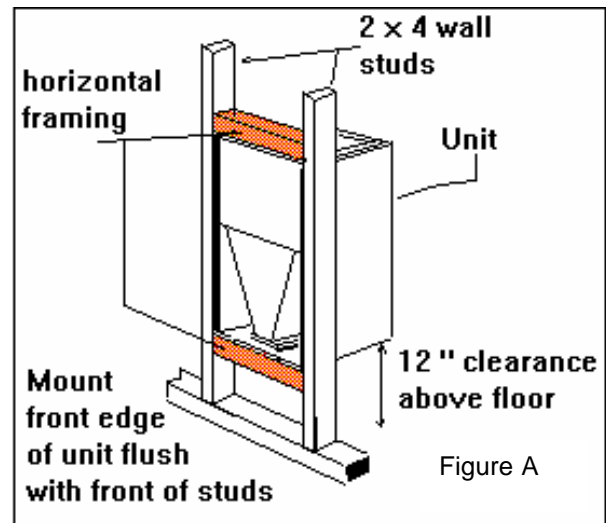
If the unit is to hang on the wall, an optional wall mounting kit is required. Carefully follow the instructions in the kit.

When the unit is mounted flush in the wall between studs, the optional return air filter grille panel is required. The unit should be positioned approximately 10 to 12 inches above the finished floor elevation between the studs of the wall. This will allow proper spacing to trap the primary auxiliary condensate drains. (see fig. A)

Any modifications to existing framing should be accomplished by the general contractor to ensure structural strength is maintained in the structure.

The structural opening in the framing should be 36 7/8" high and 18 1/2" wide for the VL model. Rough opening for the VLX model should be 20 3/4" wide and 40 1/2" high. The unit should be positioned where the front edge of the cabinet is flush with the finished face of the wall.

All service connection openings are recessed away from the front to allow clearance for 3 1/2" wall framing. Three installation tabs are provided on each side of the unit to facilitate mounting. Bend the tabs out 90 degrees and the tabs will position the unit to allow for 1/2" sheet rock finished walls.



Duct Work

The duct work should be installed in accordance with the NFPA No. 90A "Installation of Air Conditioning and Ventilating systems" and No. 90B "Residential Type Warm Air Heating and Air Conditioning Installation."

The duct work should be insulated in accordance with the applicable requirements for the particular type installation as required by HUD, FHA, VA the applicable building code, local utility or other governing body.

Condensate Drain

The unit is supplied with 3/4 inch primary and auxiliary condensate drains. Both drains must be

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trapped outside the unit and piped in accordance with applicable building codes. Do not reduce the drain line size less the connection size on the drain pan. Condensate should be piped to an open drain or to the outside. All drains must pitch downward away from the unit a minimum of 1/8" per foot of line to ensure proper drainage.

Refrigerant Piping

Refrigerant pipe connections are located on the top of the unit. Refrigerant piping external to the unit shall be sized in accordance with the instructions of the manufacturer of the outdoor equipment. When units are recessed mounted in the wall, make certain that piping connections are pressure tested prior to the wall being closed.

Metering Device

All units are shipped with a checkflow piston installed which is designed for air conditioning or heat pump operation. If your application requires a thermal expansion valve or check expansion valve then it is necessary to remove the piston from the distributor assembly and install the proper metering device. Be sure to follow the instruction in the kit to ensure proper installation.

Blower

This unit is supplied with a multi-speed motor with a direct drive blower wheel which can obtain various air flows. The unit is shipped with the blower connected for high speed. If a lower blower speed is required, disconnect all power to the unit, remove the black indoor fan motor lead from the fan relay, place an insulated cap on the black lead, remove the insulated cap from the red indoor fan motor lead, place a spade connector on the lead and connect it to the fan relay where the black lead was originally connected. Be sure to check the air flow and the temperature drop across the evaporator coil to ensure that you have sufficient air flow.

Wiring

Consult all schematic and pictorial wiring diagrams of this unit and the outdoor equipment to determine compatibility of the wiring connections and to determine specific requirements.

All field wiring to the blower coil should be installed in accordance with the latest edition of the National Electric Code NFPA No. 70 and any local codes. Check rating plates on unit for rated volts, minimum circuit ampacity and maximum over current protection. Supply circuit power wiring must be 75

degree C. (167 degree F) minimum copper conductors only. Copper supply wires shall be sized to the National Electric Code or local code requirements, whichever is more stringent.

The unit is shipped wired for 230/240 Volt AC 60 HZ 1 Phase Operation. If the unit is to operated at 208 VAC 60HZ, then follow the instruction on the indoor unit wiring diagram to change the low voltage transformer to 208 VAC operation.

Be sure the unit is properly grounded.

Class 2 low voltage control wiring should not be run in conduit with power wiring and must be separated from power wiring, unless class 1 wire of proper voltage rating is used. Low voltage control wiring should be 18 Awg, color coded (105 degree C minimum). For lengths longer than 100ft., 16 Awg wire should be used. Make certain that separation of control wiring and power wiring has been maintained.

Air Filter

An air filter must be installed prior to the air entering the evaporator coil to protect the coil, blower and other internal parts from excessive dirt and dust. If the unit is installed for the return air through the unit base, then the internal filter rack may be utilized.

If you decide to use a remote filter, then it should be sized for a maximum of 300 feet/minute air velocity.

If the unit is recess mounted in a wall utilizing the optional wall mount return filter grille, be sure to install a filter in the panel. The door must be fastened in place securely to ensure proper filtration of return air.

Thermostat

Select a thermostat that is commonly referred to as a single stage cooling with electric heat subbase. This stat will energize the fan on a demand for heat or cool.

Install the thermostat on an inside wall, away from drafts, lights or other heat sources in a location that has good air circulation from the other rooms being controlled by the thermostat. The thermostat should be mounted 4 to 5 feet above the floor.

Sequence of Operation

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Cooling (cooling only or heat pump with reversing valve energized in heat mode). When the thermostat calls for cooling, the blower relay is energized. The N.O. contacts will close, after a time delay, the indoor blower will operate. The circuit between R and Y is completed: causing the contactor on the outdoor equipment to close and start the compressor and the outdoor fan motor.

Cooling (heat pump with reversing valve energized in cooling mode). When the thermostat calls for cooling, the circuit between R and G and R and O is completed. Circuit R and O energizes the reversing valve to the cooling position, Circuit R and G energizes blower relay. The N.O. contacts will close, after a time delay, the indoor blower will operate. The circuit between R and Y is completed: causing the contactor on the outdoor equipment to close and start the compressor and the outdoor fan motor.

Heating (electric heat only). When the thermostat calls for heat, the circuit between R and W is completed, the heat sequencer is energized. A time delay will occur: Then the heating element(s) and the indoor blower motor will come on.

Heating (heat pump reversing valve energized in heat mode). When the thermostat calls for heat, the circuits between R and B, R and Y and R and G are completed. Circuit R and B energize the reversing valve switching it to the heat position. Circuit R and Y energized the outdoor unit contactor starting the compressor and outdoor fan. Circuit R and G energizes the blower relay starting the blower motor.

If the indoor room temperature should continue to fall, circuit R and W2 is by the second-stage heat bulb on the thermostat. Circuit R-W2 energizes the heat sequencer. The completed circuit will energize the supplemental electric heat.

Blower Time Delay. This unit is equipped with timed on and a timed off relay. This relay delays the start and delays the stopping of the indoor fan motor to maximize the efficiency of the unit.

Defrost. Supplemental heat during defrost can be provided by connecting B on the blower coil to the defrost relay on the outdoor heat pump. This will complete the circuit between R and B (in the blower coil) through a set of contacts in the defrost relay in the outdoor unit when the unit starts the defrost cycle. This circuit, when it is connected, will help prevent cold air from being discharged from the indoor unit during the defrost

The system air filter(s) should be inspected, cleaned or replaced at least monthly. If the filter is mounted internal to unit, make sure that electrical power is disconnected before removing the access panels. Make certain that the access panels are replaced and secured properly before placing the unit back in operation. This product is designed for dependable service; however, periodic maintenance should be scheduled to be conducted by trained professional service personnel. This service should be conducted at least annually, and should include testing and inspection of electrical and refrigerant components. The heat transfer surface should be cleaned. The blower motor is permanently lubricated for normal operating conditions.

Warnings

Do not store or use any corrosives or combustibles in the vicinity of this unit. All panels must be in place and properly secured before operating this equipment.

All electrical power servicing this unit must be disconnected prior to removal of any panels. Service of this unit must be accomplished by qualified trained professional personnel only

Conforms to UL STD 1995

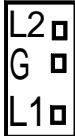
THIS UNIT IS MANUFACTURED IN THE USA BY:

AllStyle Coil Co., LP
7037 Brittmore
Houston, TX 77041



Maintenance

Models with less than 48 Amps total are equipped with a Terminal Block.



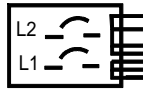
TB-1

USE COPPER CONNECTORS ONLY.
Use Conductors Suitable for 167 Deg F.

MAXIMUM CIRCUIT BREAKER 60 AMP
208/230 VOLTS 21.6/28.8 KW
104/120 TOTAL HEATER AMPS
MINIMUM CIRCUIT AMPACITY 137/157

CIRCUIT NO.2
208-230/60/1

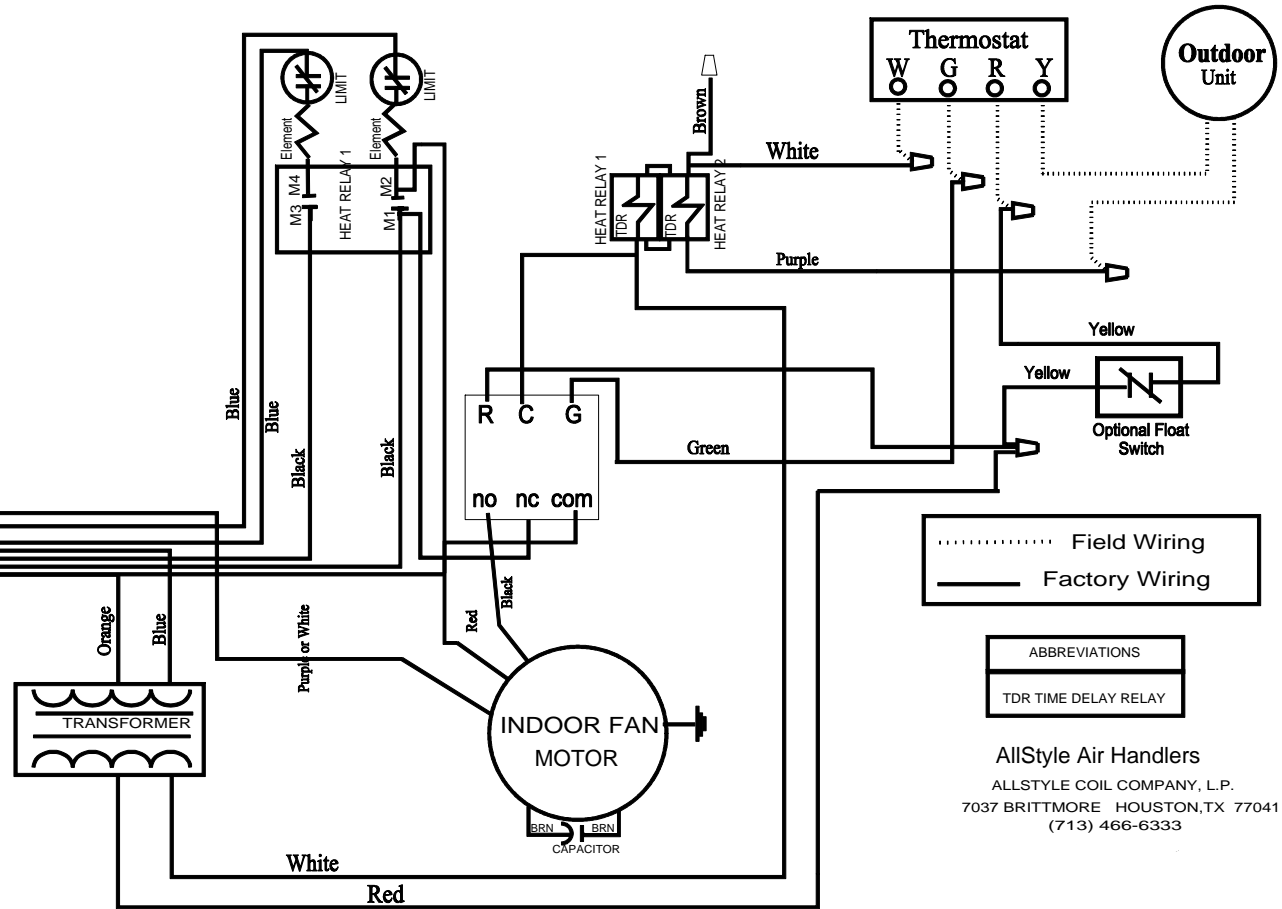
CIRCUIT NO.1
208-230/60/1



Consult National Code for Wire Size

DIAGRAM REPRESENTS THE MAXIMUM NUMBER OF CONTROLS, HEATERS/CONTROLS WHICH MAY BE INSTALLED. FEWER COMBINATIONS WILL RESULT IN LESS WIRING THAN SHOWN.

Wiring change required to convert transformer to 208 Volts. Disconnect power. Disconnect orange high voltage lead from transformer and cap with an insulated terminal. Connect yellow transformer lead where orange lead was originally connected.



230 VOLTS AC 60 HZ SINGLE PHASE

FORM W01-10 Oct 01

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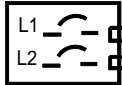
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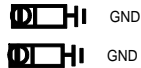
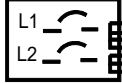
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MAXIMUM CIRCUIT BREAKER 60 AMP
208/230 VOLTS 21.6/28.8 KW
104/120 TOTAL HEATER AMPS
MINIMUM CIRCUIT AMPACITY 137/157

CIRCUIT NO.2
208-230/60/1



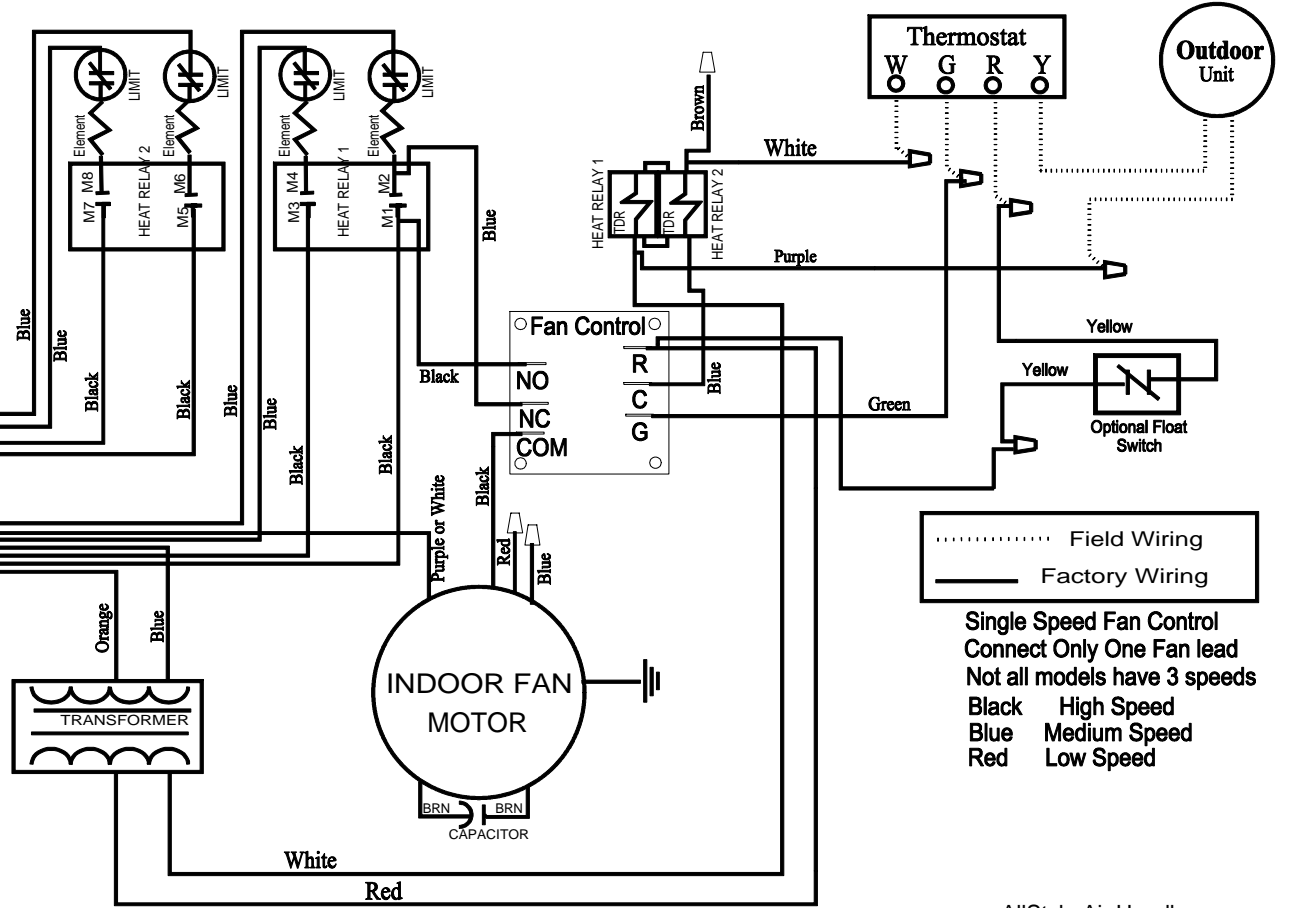
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Wiring change required to convert transformer to 208 Volts. Disconnect power. Disconnect orange high voltage lead from transformer and cap with an insulated terminal. Connect yellow transformer lead where orange lead was originally connected.



..... Field Wiring
—— Factory Wiring

Single Speed Fan Control
Connect Only One Fan lead
Not all models have 3 speeds
Black High Speed
Blue Medium Speed
Red Low Speed

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230 VOLTS AC 60 HZ SINGLE PHASE

FORM W02-10 SEP02