

Installation Instructions For LD/LJ Side Wall Vent Kit

⚠ WARNING

FOR YOUR SAFETY - This product must be installed and serviced by personnel qualified in pool/spa heater installation. Improper installation and/or operation can create carbon monoxide gas and flue gases which can cause serious injury, property damage, or death. For indoor installations, as an additional measure of safety, Zodiac Pool Systems, Inc. strongly recommends installation of suitable Carbon Monoxide detectors in the vicinity of this appliance and in any adjacent occupied spaces. Improper installation and/or operation will void the warranty.

These instructions are to be used with the following Jandy® Replacement Kits:

R0412001--Side Wall Vent Installation Kit, Jandy Pool Heater Model LD/LJ 125 and 175.

R0412003--Side Wall Vent Installation Kit, Jandy Pool Heater Model LD/LJ 250.

R0412005--Side Wall Vent Installation Kit, Jandy Pool Heater Model LD/LJ 325 and 400.

⚠ WARNING

If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

This document gives information on installing the side wall venting kit for all Jandy LD and LJ model pool/spa heaters. This kit is used to adapt an LD or LJ model heater for use when horizontal side wall venting is required or desirable for installation. The wiring diagrams provided with the kit assure proper installation. The included Tjernlund UC1 Universal Control is equipped with an adjustable post purge timing which allows for field settings to be compatible with the ignition sequence of the model LD and LJ. The control manufacturer's instructions are included for detailed reference and troubleshooting the control.

This kit supplies you with all of the major components of the system that you will need to install the side wall vent. Due to the different possible configurations for venting, we do not supply the vent pipe, elbows, tees, wiring or conduit needed to connect the heater to the vent blower. However, the appropriate size vent reducer, to transition from the vent pipe to the blower, is included for your convenience.

If you need help with the installation of the Side Wall Vent Kit or more information to clarify the following procedure, call the Zodiac Pool Systems, Inc. Technical Support Department at (800) 822.7933 extension 260. These instructions must be followed exactly. Read through the instructions completely before starting the procedure.

Before starting the procedure, use the parts list at the back of these instructions to identify the parts that are in your kit. If any parts are missing from the kit please call your local Jandy distributor for assistance.

1. Prepare The Heater

In general, locate the heater as described in the LD or LJ Installation and Operation Manual, provided with the heater. All requirements for heater installation and location are the same as the installation requirements of the manual. Only the section on venting of indoor installations will change.

Jandy LD and LJ heaters are shipped in the outdoor configuration with the low profile top installed. The heater will need to be fitted with a draft hood in order to properly connect the side wall vent kit. Use the following table to verify that the correct draft hood is fitted to the heater (see Table 1).

Instructions for the installation of the draft hood are included with the draft hood kit. Install the draft hood according to the manufacturer's instructions.

Table 1. Draft Hood and Vent Pipe Diameter

HEATER SIZE	DRAFT HOOD DIA.	VENT PIPE DIA.	JANDY DRAFT HOOD KIT NUMBER	USED WITH SIDE WALL VENT KIT NUMBER
125	5"	5"	10561501	R0412001
175	6"	6"	10561502	R0412001
250	7"	6"	10561503	R0412003
325	8"	8"	10561504	R0412005
400	9"	9"	10561505	R0412005

2. Vent Pipe and Side Wall Venter Installation.

In this section, special requirements relating to the combination of the LD or LJ heater and the Tjernlund side wall vent system are stated. All normal requirements of the LD and LJ heater installation and operation manual and those in the Tjernlund side-wall vent systems instructions must also be met. Heater location, combustion air supply, clearance to combustible material and all other normal installation requirements remain.

2.1 Construction

When using the Tjernlund side wall vent system with the LD or LJ heater, the following constraints must be met in order to assure safe and efficient operation of the system.

1. The appropriate diameter, type "B", double wall vent pipe must be used to connect the heater to the side wall vent blower (see Table 1).
2. The construction of the vent must not exceed ten (10) feet of straight pipe and a total of three (3) 90° turns.

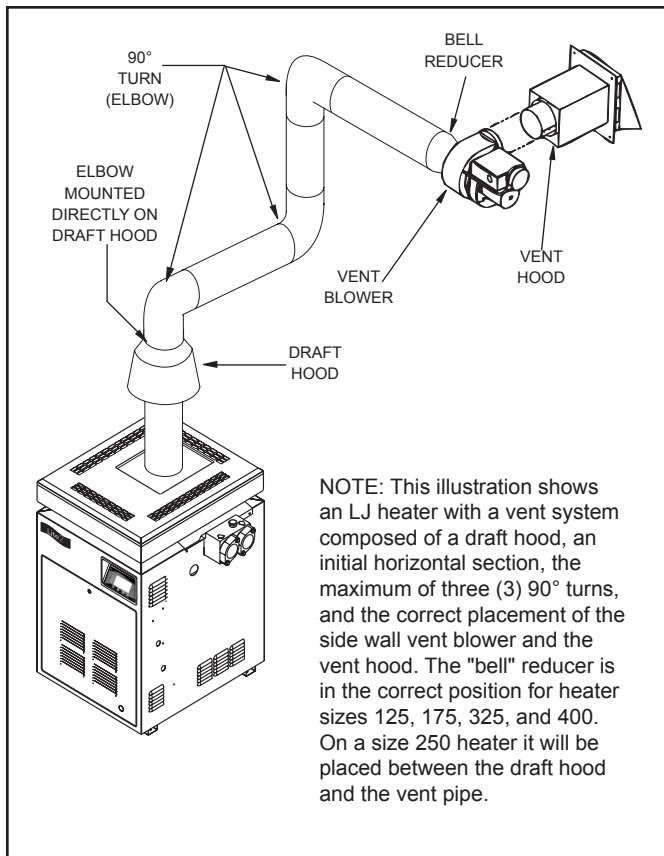


Figure 1. Vent Configuration With Initial Horizontal Section of Vent Pipe

3. Construction of the vent must meet all national and local building codes.

2.2 Configuration

There are two basic configurations that are allowable when combining the power venter with an LD or LJ heater. One is a configuration where the initial section of vent pipe is run horizontally from the top of the draft hood (see Figure 1). The other configuration consists of an initial vertical section of vent pipe (see Figure 2). Either configuration must meet the following constraints.

1. The draft hood must be connected directly to the heater as per the draft hood instructions.
2. The side wall vent blower must be installed at the point of exit from the structure.
3. The vent hood must be connected directly to the exhaust vent of the blower.

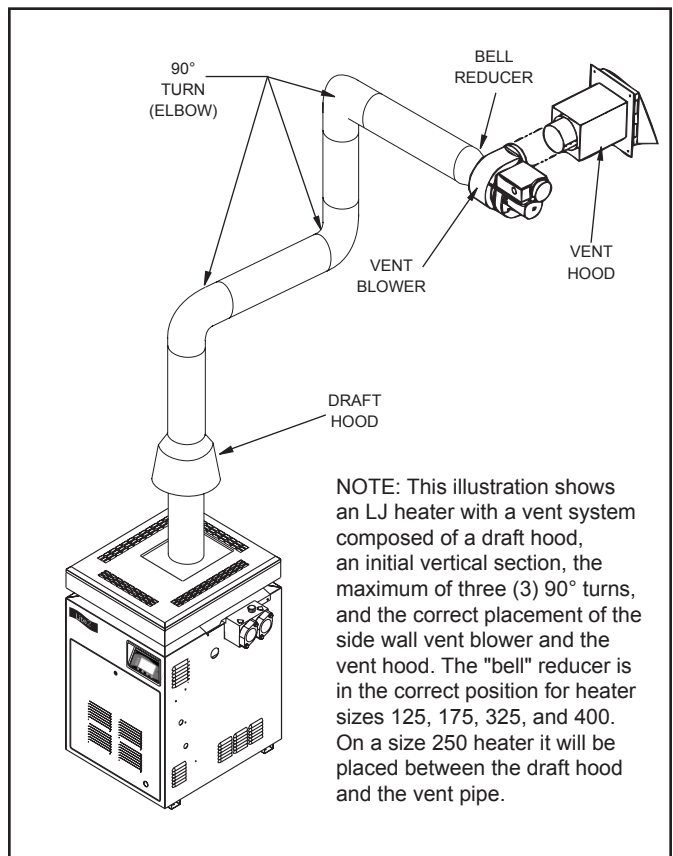


Figure 2. Vent Configuration With Initial Vertical Section of Vent Pipe

4. The vent pipe diameter is determined by the size of the heater. The full length of the vent pipe must be the diameter as stated in Table 1 on page 1. On heater sizes 125, 175, 325, and 400, use the "bell" reducer, enclosed in the kit to attach the vent pipe to the power venter blower. On heater size 250, use the "bell" reducer to attach the vent pipe to the draft hood.
5. Horizontal sections of the vent pipe must have a minimum 1/4 inch vertical rise per foot of pipe, sloping upward, away from the heater.
6. There must not be any other appliance connected to this venting system.

3. Electrical Connections

Please refer to the Tjernlund Products, Inc. "Side Wall Vent Systems" installation manual for safety information and detailed information on the Tjernlund products.

The following instructions are specific to the wiring and operation of the kit's blower and control panel with the LD and LJ heaters. These instructions and the wiring diagrams must be followed exactly in order for the system to operate safely and efficiently.

**⚠ WARNING
SHOCK HAZARD!**

Turn off all switches and the main breaker for the circuit supplying power to the heater before starting the installation procedure. Failure to comply may cause a shock hazard resulting in severe personal injury or death.

3.1 Preparing The Heater

The internal 24 volt heater wiring must be slightly modified to incorporate the side wall vent controller into the safety circuit.

Section 3.1.1 describes the steps to modify the model LD heater.

Section 3.1.2 describes the steps to modify the model LJ heater.

3.1.1. Modify the Model LD Heater Wiring

1. Turn off the main breaker to the circuit that supplies the heater with power.
2. Remove the heater door.

3. Locate the common terminal on the transformer. There will be a yellow wire with a "piggy back" terminal attached to the transformer and a green wire with a yellow trace connected to the "piggy back" terminal (refer to the heater's wiring diagram).
4. Disconnect the green wire with a yellow trace from the "piggy back" terminal.
5. Plug the double male connector, included in the kit, onto the "piggy back" terminal.
6. Reconnect the green wire with a yellow trace to one (1) terminal of the double male connector.
7. Connect the yellow wire, supplied in the kit, to the other terminal on the double male connector and strip 1/2" of insulation off of the end of the wire.
8. Remove the black wire from the "TH" terminal of the ignition control.
9. Cut the terminal off of the black wire and strip the insulation back 1/2" from the end.
10. Connect the purple wire, supplied in the kit, to the "TH" terminal of the ignition control.

3.1.2. Modify the Model LJ Heater Wiring

1. Turn off the main breaker to the circuit that supplies the heater with power. If the pump is connected to the heater's internal time clock, turn off the breaker to the circuit that supplies power to the pump.
2. Remove the heater door.
3. Remove the cover from the high voltage assembly (see Figure 3).
4. Mount the blower relay to the back panel of the high voltage assembly (see Figure 4). If the filter pump is connected to the heater's internal time clock, the pump relay will already be mounted in this position. To mount the blower relay, do the following:
 - Mount the blower relay to the relay bracket, included in the kit, using the provided screws, as shown in Figure 5, if a standard time clock is controlling the filter pump.
 - If a filter pump relay is controlling the filter pump, remove the pump relay from the back panel of the high voltage assembly. Do not disconnect any of the wires attached to the relay.

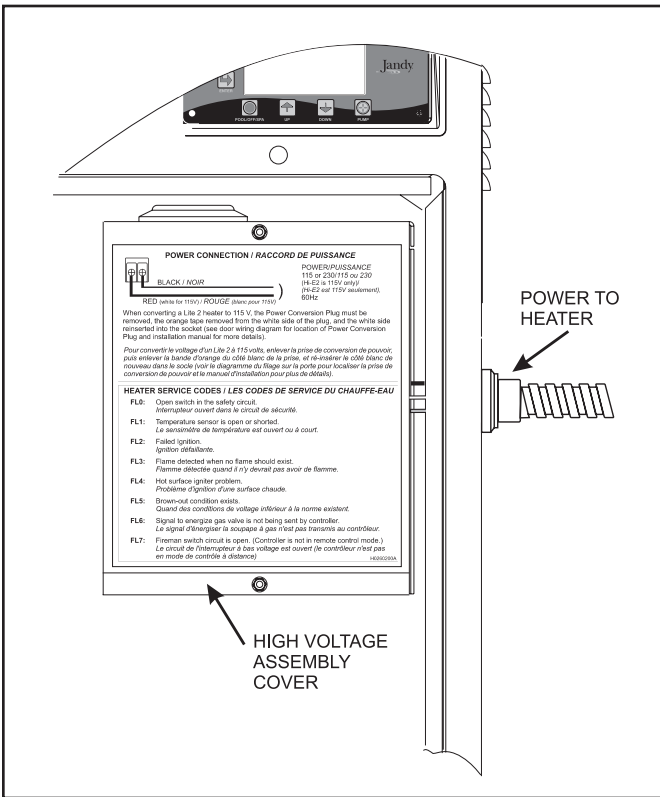


Figure 3. Remove the Cover of the High Voltage Assembly

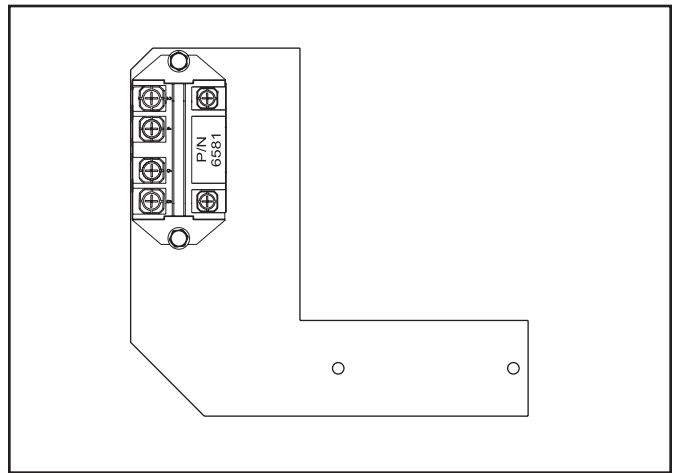


Figure 5. Use the Mounting Bracket if the Filter Pump Relay is Mounted in the High Voltage Assembly

- Place the bracket, with the blower relay, in position by aligning the holes in the bracket with the holes on the back panel where the pump relay was mounted. Place the pump relay over the bracket and use the screws removed earlier to secure the bracket and the pump relay to the back panel (see Figure 6).

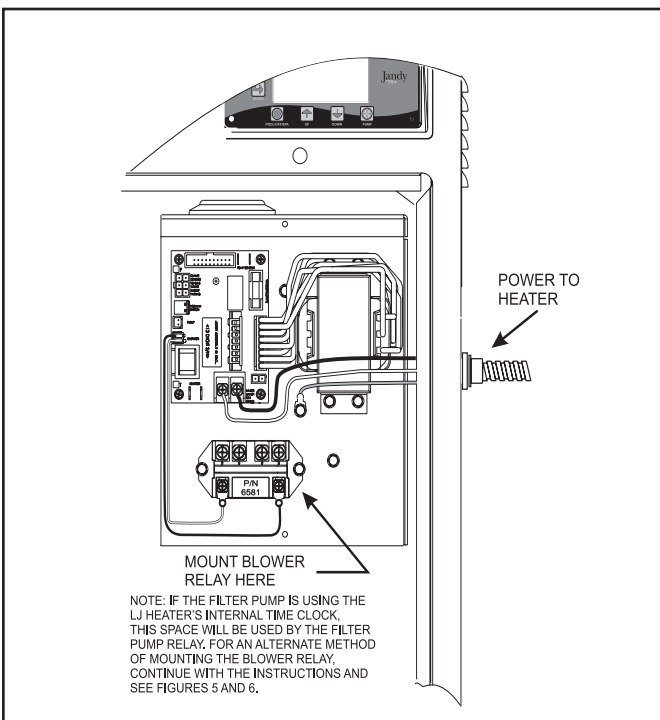


Figure 4. Mount the Blower Relay

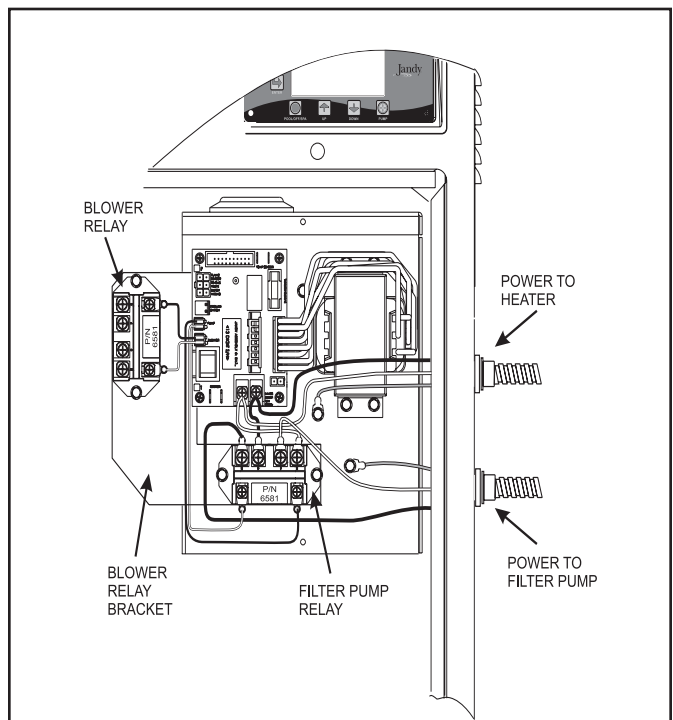


Figure 6. Mount the Bracket Under the Filter Pump Relay

5. Plug the wires attached to the blower relay into the receptacle marked "BLOWER" on the power distribution board (see Figure 4 or 6).
6. Remove the black wire from the terminal of the water pressure switch (refer to the heater's wiring diagram).
7. Cut the terminal off of the black wire and strip the insulation back 1/2" from the end.
8. Connect the purple wire, supplied in the kit, to the terminal of the water pressure switch where the black wire was connected.

3.1.3 Install the Air Deflector Bracket on the Model LJ Heater

NOTE This section is for serial numbers I06PI1612 and earlier ONLY. If your heater has a later serial number or has been retrofitted to move the igniter to the burner, proceed to section 3.2.

The power venter blower is turned on before the ignition sequence of the heater begins. This causes a situation where air is being circulated past the igniter when it is energized, cooling the igniter. The igniter is cooled to the point where it may not ignite the gas when the gas valve opens. The air deflector bracket, included in the kit, must be installed to deflect the air around the igniter, allowing it to heat enough to ignite the gas.

The air deflector bracket is not needed on the model LD heater because it uses a different type of igniter.

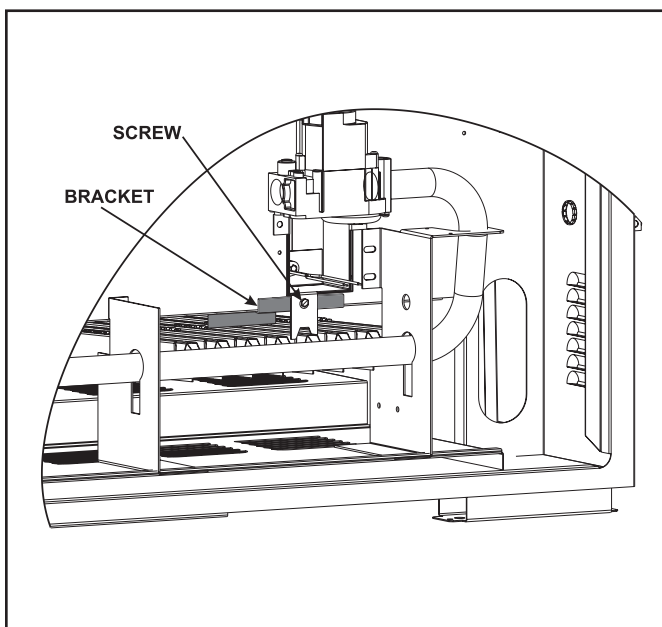


Figure 7. Install the Air Deflector Bracket

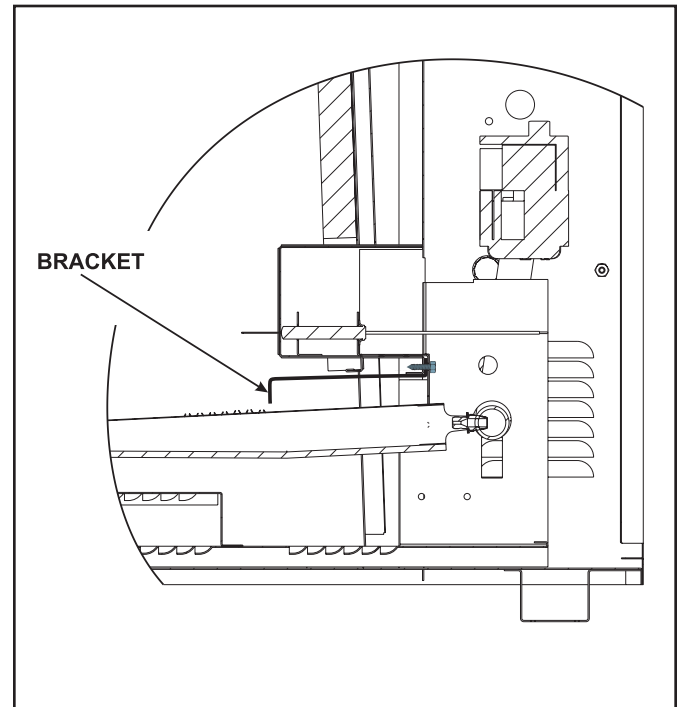


Figure 8. Cross-Section of Installed Air Deflector Bracket

1. Remove the screw that holds the bottom of the igniter box to the inner panel (see Figures 7 and 8).
2. Slide the top flange of the air deflector bracket between the locator bracket on the igniter box and the inner panel.
3. Align the hole in the bracket with the hole in the igniter.
4. Replace the screw.

3.2 Connect the Side Wall Vent Blower to the UC1 Controller

1. Mount the UC1 controller in a location that is near enough to the vent blower so that the supplied wire harness and conduit will connect the two (2) components easily.
2. Check that the harness is connected to the UC1 controller as shown in the wiring diagram (see Figure 10 or 11).
3. Remove the cover of the blower's junction box. Insert the wires from the free end of the wire harness, attached to the UC1 controller, through the hole in the side of the blower junction box and mount the conduit connector to the box.
4. Connect the wires as follows (see Figure 9):

- Connect the blue wire of the harness to the back of the blower prover switch.
 - Connect the yellow wire of the harness to the remaining terminal on the blower prover switch.
 - Connect the green wire of the harness to the ground screw where the green wire with a yellow trace, from the blower motor, is connected.
 - Connect the black wire of the harness to the black wire from the blower motor.
 - Connect the white wire of the harness to the white wire from the blower motor.
5. Replace the cover to the blower's junction box.

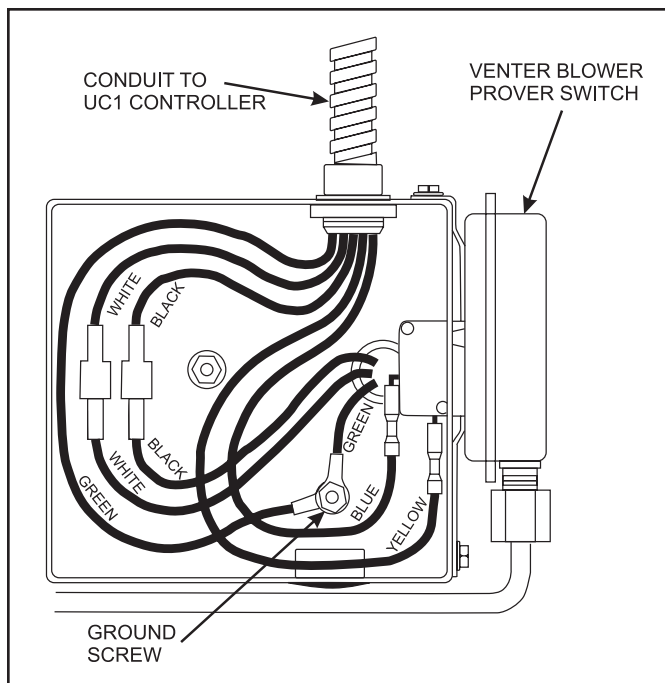


Figure 9. Connections at the Power Venter Blower Junction Box

3.3 Connect the Heater to the UC1 Controller

The installer must construct a wire harness of the length needed to connect the heater to the UC1 controller. Use wire of 20 AWG minimum with insulation rated at 90°C or higher. Installation can be made simpler by matching the colors of the wires in the heater, i.e. black with a yellow trace, yellow, black and purple. In any case the connections must be per the wiring diagram (see Figure 10 or 11). Run the wires in approved conduit.

3.3.1 Connections at the LD Heater

Three (3) copper wires of the type described above must be provided to connect the heater control system to the UC1 controller.

1. Remove the button plug from the hole on the right side of the heater. The hole is located near the front, just above the louver vent.
2. Connect the conduit to the side of the heater using a conduit connector and nut.
3. Strip the insulation from each of the wires that will lead to the UC1 controller about 1/2" from the end.
4. Locate the yellow wire installed on the transformer, the purple wire installed on the "TH" terminal of the ignition control during the steps in Section 3.1.1 and the black wire connected to the "F2" terminal on the ignition control.
5. Using the wire nuts provided in the kit, make the following connections in the heater's vestibule (see Figure 10, Wiring Diagram).
 - Connect the black wire from "F2" on the ignition control inside the heater to wire "a" of the field constructed wire harness.
 - Connect the yellow wire of the heater's transformer to wire "b" of the field constructed wire harness.
 - Connect the purple wire of the heater's ignition control to wire "c" of the field constructed wire harness.

3.3.2 Connections at the LJ Heater

Four (4) copper wires of the type described in Section 3.3 must be provided to connect the heater control system to the UC1 controller.

1. Remove the button plug from the hole on the right side of the heater. The hole is located near the front, just above the louver vent.
2. Connect the conduit to the side of the heater using a conduit connector and nut.
3. Strip the insulation from each of the wires that will lead to the UC1 controller about 1/2" from the end.
4. Locate the purple wire installed on the water pressure switch, during the steps in Section 3.1.2 and the black wire connected to the high voltage assembly that was cut and stripped.
5. Using the wire nuts provided in the kit, make the

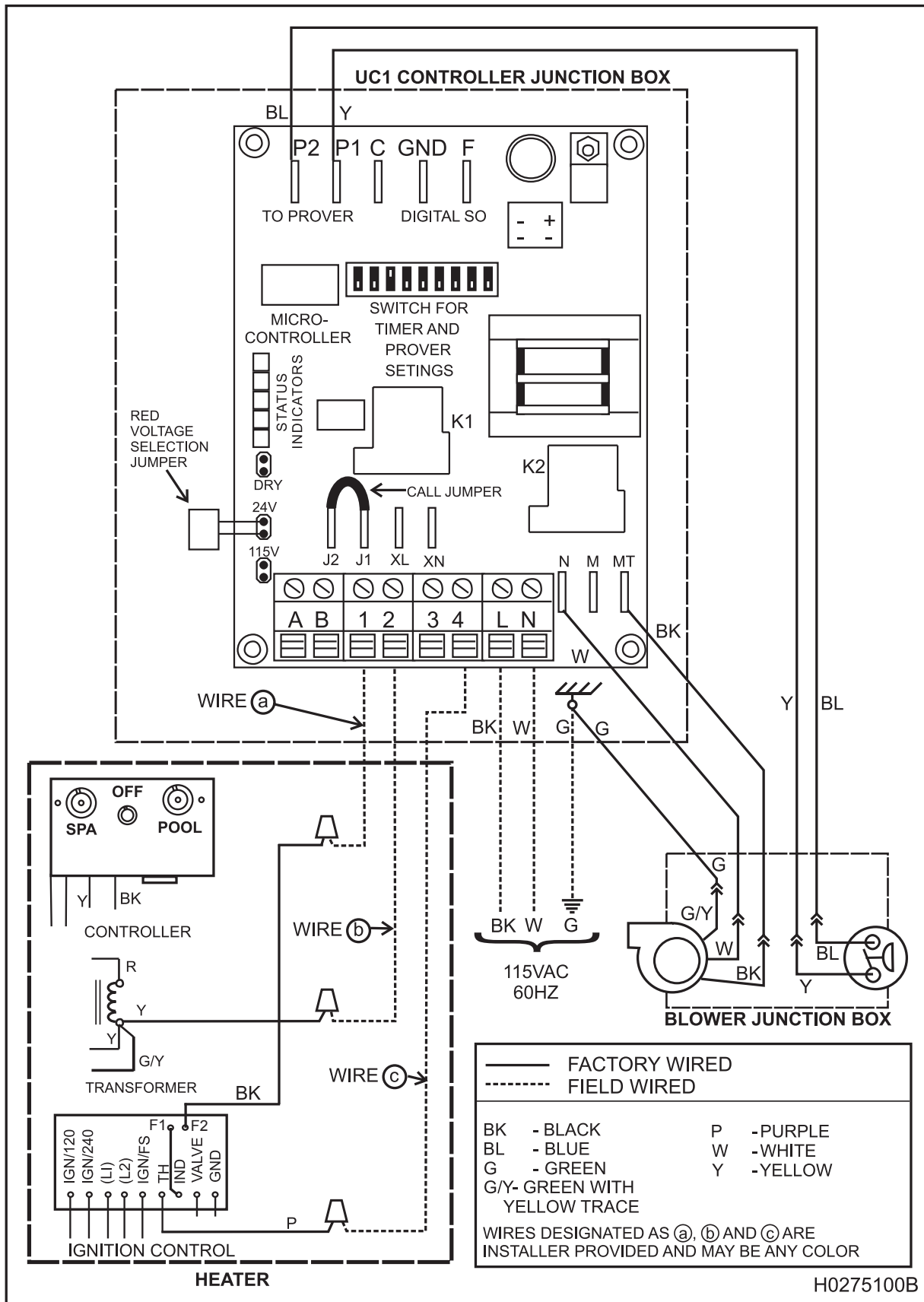


Figure 10. Wiring Diagram for Connecting a Model LD Heater to a Side Wall Power Venter

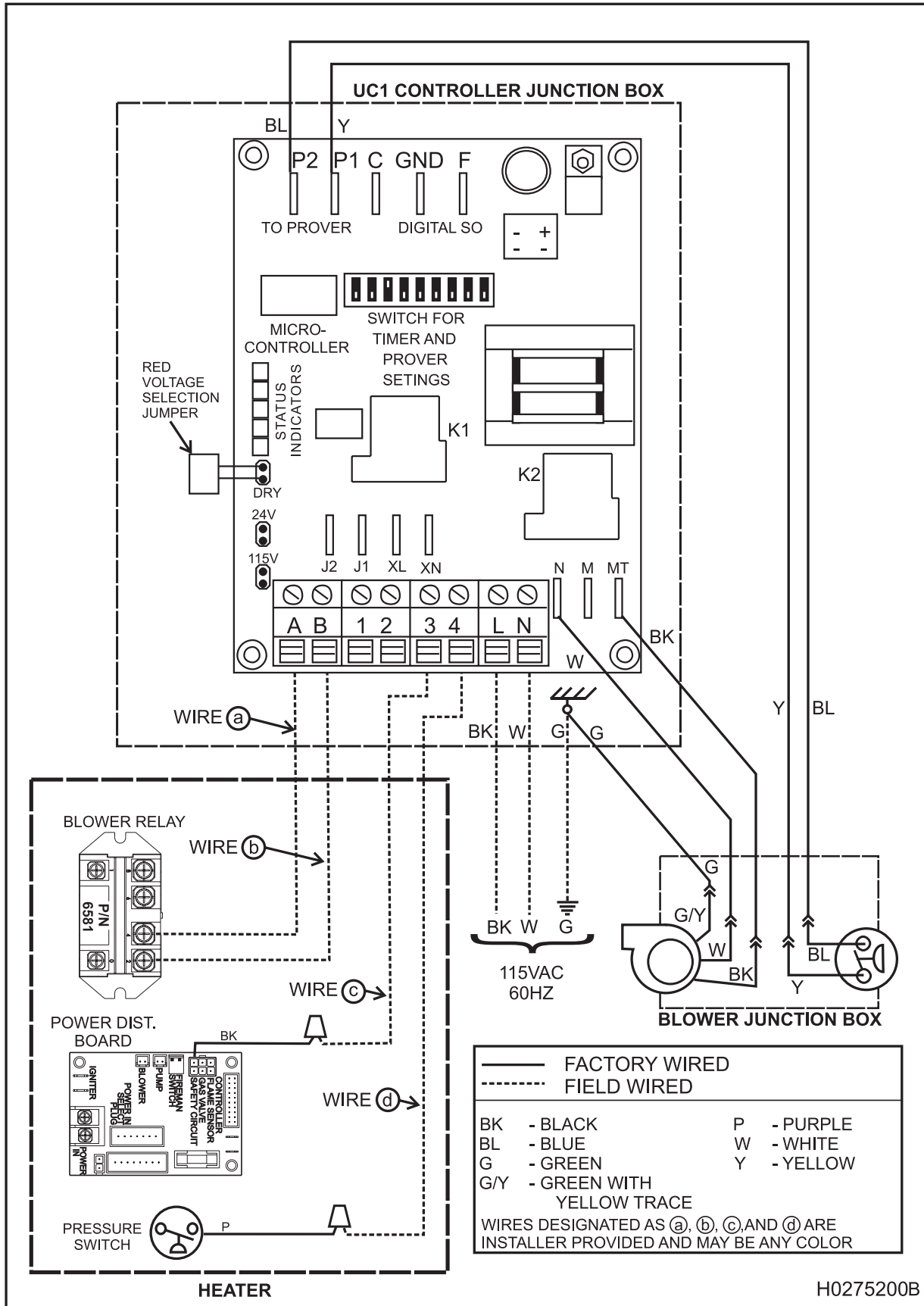


Figure 11. Wiring Diagram for Connecting a Model LJ Heater to a Side Wall Power Venter

following connections in the heater's vestibule (see Figure 11, Wiring Diagram).

- Connect the purple wire of the heater's water pressure switch to wire "Ⓓ" of the field constructed wire harness.
 - Connect the black wire to wire "Ⓒ" of the field constructed wire harness.
 - Connect wire "Ⓐ" and wire "Ⓑ" of the field constructed wire harness to the blower relay.
6. Reinstall the cover on the high voltage assembly. When putting the cover in place be sure that the igniter wires are routed through the cut-out in the lower left side of the cover and all 24V wires, including the blower relay if mounted on the bracket, are routed through the cut-out in the upper left side of the cover. Be careful not to pinch any wires under the cover when reinstalling it.

3.4 Connections at UC1 Controller

3.4.1 Installation on a Model LD Heater

1. Connect the conduit from the heater to the bottom of the junction box at the UC1 controller using the conduit connector and nut supplied in the kit.
2. Strip the insulation from each of the conductors about 3/8" from the end.
3. Connect the wires to the UC1 as follows (see Figure 10).
 - Connect wire "Ⓐ" of the field constructed harness to the number "1" position of the terminal strip at the bottom of the UC1 controller.
 - Connect wire "Ⓑ" of the field constructed harness to the number "2" position of the terminal strip at the bottom of the UC1 controller.
 - Connect wire "Ⓒ" of the field constructed harness to the number "4" position of the terminal strip at the bottom of the UC1 controller.

NOTE: Power connection to the controller requires a three (3) conductor copper wire harness that is run in a conduit from the power supply to the controller. These components must be supplied by the installer. Consult your local and national electrical codes for type and gauge of wire needed.

4. Connect 115VAC power to the UC1 controller as follows.
 - Connect the black wire (line) of the power to the terminal marked "L" in the controller.
 - Connect the white wire (neutral) of the power to the terminal marked "N" in the controller.
 - Connect the green wire (ground) of the power to a ground screw on the junction box.

3.4.2 Installation on a Model LJ Heater

1. Connect the conduit from the heater to the bottom of the junction box at the UC1 controller using the conduit connector and nut supplied in the kit.
2. Strip the insulation from each of the conductors about 3/8" from the end.
3. Connect the wires to the UC1 as follows (see Figure 11).
 - Connect wire "Ⓐ" of the field constructed harness to the "A" position of the terminal strip at the bottom of the UC1 controller.
 - Connect wire "Ⓑ" of the field constructed harness to the "B" position of the terminal strip at the bottom of the UC1 controller.
 - Connect wire "Ⓒ" of the field constructed harness to the number "3" position of the terminal strip at the bottom of the UC1 controller.
 - Connect wire "Ⓓ" of the field constructed harness to the number "4" position of the terminal strip at the bottom of the UC1 controller.

NOTE: Power connection to the controller requires a three (3) conductor copper wire harness that is run in a conduit from the power supply to the controller. These components must be supplied by the installer. Consult your local and national electrical codes for type and gauge of wire needed.

4. Connect 115VAC power to the UC1 controller as follows.
 - Connect the black wire (line) of the power to the terminal marked "L" in the controller.
 - Connect the white wire (neutral) of the power to the terminal marked "N" in the controller.
 - Connect the green wire (ground) of the power to a ground screw on the junction box.

3.5 Dip Switch And Jumper Settings in UC1 Controller

The UC1 controller is a universal controller and can accommodate a variety of pre-purge and post purge needs and signal types. The following sections describe the settings needed to configure the UC1 controller for use with the model LD and LJ heaters.

3.5.1 Dip Switch Settings in UC1 Controller Installed on a Model LD or LJ Heater

In order to purge the vent system, the side-wall venter must operate longer than the heater. The UC1 controller does this automatically, but correct delay timing must be set when it is installed. A bank of "dip switches" on the UC1 is provided for this purpose.

The heater's control system shuts the heater burners off when the call for heat is satisfied or when the pump is shut off. Set dip switch number 3 of the UC1 controller to the "ON" (up) position, which will impose 30 seconds of venter shutoff delay. All other dip switches must remain in the off (down) position (see Figure 12).

3.5.2 Jumper Placement in the UC1 Controller Installed on a Model LD Heater

The Jandy LD heater uses a 24V signal to activate the power venter blower. When using the UC1 controller with a 24V signal, the "Call Jumper" (see Figure 10) must be connected to the appropriate terminals to complete the circuit.

1. Check to be sure that the "Red Voltage Selection Jumper" is in the 24V position on the UC1 controller.
2. Check to be sure that the "Call Jumper" is connected between the J1 and J2 terminals.
3. Install the cover on the junction box of the controller.

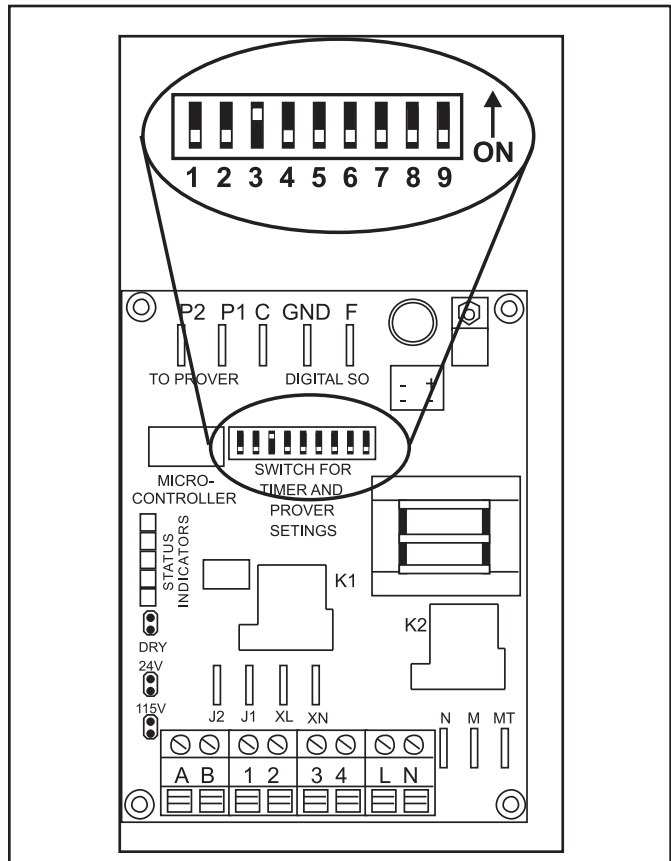


Figure 12. Dip Switch Settings on the UC1 Control

4. Peel the backing off of the wiring diagram label place it on lower right side of the heater.

3.5.2 Jumper Placement in the UC1 Controller Installed on a Model LJ Heater

The Jandy LJ heater uses an integrated circuit to sense a 24V signal, then energizes a relay (dry switch) to activate the power venter blower. When using the UC1 controller with a dry switch, the "Call Jumper" between terminals J1 and J2 must be removed (see Figure 11).

1. Check to be sure that the "Red Voltage Selection Jumper" on the UC1 controller is in the "DR" position.
2. Check to be sure that the "Call Jumper" is removed from the UC1 controller.
3. Install the cover on the junction box of the controller.
4. Peel the backing off of the wiring diagram label place it on lower right side of the heater.

4. Operational Checkout For The LD and LJ Heater

The heater and side-wall venter installation must be checked for correct control sequence and vent operation. This must be done in conjunction with procedures prescribed in the LD or LJ heater installation instructions and the Tjernlund instructions for side wall vent systems. The complete pool system must be in place and operable.

4.1 Sequence of Operation for the LD and LJ Heaters

When the electronic control of the heater senses that water flowing through the heat exchanger is too cool, a heating sequence is initiated as follows:

1. The heater control system turns on the side-wall venting system blower.
2. The venter pressure switch senses venter operation and enables the heater to begin its ignition sequence.
3. When the igniter is hot enough, the gas valve opens and burner ignition takes place.
4. When the call for heat ends, the burners are shut off.

5. Approximately 30 seconds after the heater burners are shut off, the side-wall venter stops.

If normal ignition is not accomplished during a call for heat, the heater ignition control imposes two (2) additional attempts. At appropriate times during those attempts, the heater will attempt to ignite the burners. The side-wall venter will operate continuously during recycle ignition attempts.

4.2 Draft Check and Venter Flow Adjustment

Operational checks for draft and venter flow are necessary to assure that the vent operates properly. A properly installed and adjusted system will operate at negative pressure, drawing air into the draft hood. Refer to the Tjernlund installation instructions and conduct the tests and adjustments prescribed therein.

5. Parts List

The following table is for your reference. To order additional parts, please contact your local Jandy distributor.

ITEM NO.	COMPONENT DESCRIPTION	QUANTITY		
		R0412001	R0412003	R0412005
1	UC1 CONTROL UNIT	1	1	1
2	HS1 POWER VENTER (BLOWER)	1	-	-
3	HS2 POWER VENTER (BLOWER)	-	1	1
4	VH1-4 4" VENT HOOD	1	-	-
5	VH1-6 6" VENT HOOD	-	1	1
6	VENT REDUCER (5" X 4" FOR MODEL 125)	1	-	-
7	VENT REDUCER (6" X 4" FOR MODEL 175)	1	-	-
8	VENT REDUCER (7" X 6" FOR MODEL 250)	-	1	-
9	VENT REDUCER (8" X 6" FOR MODEL 325)	-	-	1
10	VENT REDUCER (9" X 6" FOR MODEL 400)	-	-	1
11	WIRE NUTS	3	3	3
12	YELLOW WIRE ASSEMBLY (MODEL LD ONLY)	1	1	1
13	PURPLE WIRE ASSEMBLY	1	1	1
14	1/4" DOUBLE MALE X 1/4" FEMALE CONNECTOR (MODEL LD ONLY)	1	1	1
15	BLOWER RELAY (MODEL LJ ONLY)	1	1	1
16	BLOWER RELAY BRACKET (MODEL LJ WITH PUMP RELAY ONLY)	1	1	1
17	SCREWS (#6-20 X 1/2") RELAY MOUNTING (MODEL LJ WITH PUMP RELAY ONLY)	2	2	2
18	AIR DEFLECTOR BRACKET (MODEL LJ ONLY)	1	1	1
19	LD/POWER VENTER WIRING DIAGRAM LABEL (MODEL LJ ONLY)	1	1	1
20	LJ/POWER VENTER WIRING DIAGRAM LABEL (MODEL LJ ONLY)	1	1	1