

## Installation of Multiple Heater Control, Options CL31 and CL32

Applies to:                    **Models LDAP, UDAP, APD, UDAS,  
UDBP, UDBS, UEAS, F, B, VR**

### Description/ Application

These options are designed to permit the control of up to six heaters (one "Primary" heater and one to five "Secondary" units; see note for LDAP limitations) with one single-stage thermostat or with a time clock and single or multiple single-stage thermostats. For maximum safety, the multiple control is done in the low voltage circuit. (Interruption of the supply voltage is not recommended.) Wiring lengths may not exceed those shown in the table on page 8. **DO NOT use these multiple heater control options with a two-stage gas valve or a two-stage thermostat.**

Application by Voltage & Model	Model LDAP	Models UDAP, APD, UDAS, UDBP, UDBS, and UEAS**	Models F, B, and VR	Application by Voltage & Model	
115/1	N/A	CL31 for both the Primary and 1st Secondary Heater plus a CL32 each for the 2nd, 3rd, 4th, and 5th Secondary Heaters.	CL31 for both the Primary and 1st Secondary plus a CL32 each for 2nd, 3rd, 4th, and 5th Secondary Heaters.	115/1	
208/1	CL31 for both the Primary and 1st Secondary Heater plus a CL32 each for the 2nd, 3rd, 4th, and 5th Secondary Heaters. *		CL32 for the Primary Heater plus CL32 each for 1st, 2nd, 3rd, 4th, and 5th Secondary Heaters.	CL32 for the Primary Heater plus CL32 each for 1st, 2nd, 3rd, 4th, and 5th Secondary Heaters.	208/1
230/1					230/1
208/3	N/A				208/3
230/3	N/A				230/3
460/3	N/A				460/3
575/3	N/A		CL31 for both the Primary and 1st Secondary plus a CL32 each for 2nd, 3rd, 4th, and 5th Secondary Heaters.	575/3	

\* Model LDAP 400 can have five secondary heaters; Model LDAP 800 can have a maximum of three secondary heaters; and Model LDAP 1200 can have a maximum of two secondary heaters. \*\* Model UEAS is 115 volt only.

### Kit Components by Model

Check the components against the list for the model being installed.

- Model LDAP
- Model UDAP & APD
- Model UDAS
- Model UDBP
- Model UDBS
- Model UEAS
- Model F
- Model B
- Model VR

Kits for Model LDAP		
Qty	P/N	Description
Option CL31 for LDAP - <b>Pkg P/N 208366</b> for Primary and One Secondary Unit		
2	<b>208365</b>	Relay Assemblies each consisting of one P/N 18549 relay, with attached 42" red wire, 42" white wire, 6" blue wire, and 6" brown wire -- all with terminals.
2	<b>208185</b>	Wiring Diagram Label
Option CL32 for LDAP - <b>Pkg P/N 208367</b> for each Additional Secondary Unit		
Qty	P/N	Description
1	<b>208365</b>	Relay Assemblies each consisting of one P/N 18549 relay, with attached 42" red wire, 42" white wire, 6" blue wire, and 6" brown wire -- all with terminals.
1	<b>208185</b>	Wiring Diagram Label
Kits for Models UDAP, APD, UDAS, UDBP, UDBS, UEAS		
Opt CL31 for UDAP/ APD/UDAS/UEAS - <b>Pkg P/N 197155</b> for Primary & One Secondary Heater		
Qty	P/N	Description
1	<b>194808</b>	Transformer 40VA
2	<b>197157</b>	Relay Assemblies each consisting of one P/N 18549 relay, wired and mounted on a specially designed bracket.
2	<b>195249</b>	Self-drilling screw for attaching relay bracket
2	<b>16228</b>	Cable Clamp 3/16"
2	<b>197164</b>	Wiring Diagram Label
1	<b>197160</b>	Wiring Harness Assembly (brown wires)

## Kit Components by Model (cont'd)

<b>Kits for Models UDAP, APD, UDAS, UDBP, UDBS, and UEAS (cont'd)</b>		
Opt CL31 for UDBP/UDBS – <b>Pkg P/N 202958</b> for Primary & One Secondary Heater		
Qty	P/N	Description
2	197157	Relay Assemblies each consisting of one P/N 18549 relay, wired and mounted on a specially designed bracket.
2	195249	Self-drilling screw for attaching relay bracket
2	16228	Cable Clamp 3/16"
2	197164	Wiring Diagram Label
1	197160	Wiring Harness Assembly (brown wires)
Opt CL32 for UDAP/APD/UDAS/UDBP/UDBS/UEAS – <b>Pkg P/N 197156</b> for Each Additional Secondary Heater		
Qty	P/N	Description
1	197157	Relay Assembly consisting of one P/N 18549 relay, wired and mounted on a specially designed bracket.
1	195249	Self-drilling screw for attaching relay bracket
1	16228	Cable Clamp 3/16"
1	197164	Wiring Diagram Label

<b>Kits for Model VR</b>		
Option CL31 for VR – <b>Pkg P/N 205685</b> for Primary and One Secondary Heater		
Qty	P/N	Description
2	102243	Relay Assemblies each consisting of one P/N 18549 relay, wired and mounted on a specially designed bracket.
1	194808	Transformer 40VA
1	16354	Twist-on Wire Connector (Orange)
4	98872	Spacers
4	121033	Screws #8 x 1" lg
2	16228	Cable Clamp 3/16"
2	197164	Wiring Diagram Label
Option CL32 for VR – <b>Pkg P/N 205686</b> for Each Additional Secondary Heater		
Qty	P/N	Description
1	102243	Relay Assembly consisting of one P/N 18549 relay, wired and mounted on a specially designed bracket.
2	98872	Spacers
2	121033	Screws #8 x 1" lg
1	16228	Cable Clamp 3/16"
1	197164	Wiring Diagram Label

<b>Kits for Models F and B</b>		
Option CL31 for Models F & B – <b>Pkg P/N 102248</b> for Primary and One Secondary Heater		
Qty	P/N	Description
1	102708	Transformer 35VA – Basler #BE141640-RAK
2	103152	Sheetmetal Screws, #6 x 1-1/2 " long (for transformer)
2	111233	Tinnerman Clips, #C1110-62 (for transformer screws)
2	102243	Relay Assemblies each consisting of one P/N 18549 relay, wired and mounted on a specially designed bracket.
2	16228	Cable Clamp 3/16"
2	131127	Wiring Diagram Label
Option CL32 for Models F & B – <b>Pkg P/N 102249</b> for Each Additional Secondary Heater		
Qty	P/N	Description
1	102243	Relay Assembly consisting of one P/N 18549 relay, wired and mounted on a specially designed bracket.
1	16228	Cable Clamp 3/16"
1	131127	Wiring Diagram Label

## WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury, or death. Read the installation, operation, and maintenance instructions thoroughly before installing or servicing this equipment.

### Installation Instructions

These instructions are designed to assist a qualified electrician in installing this multiple heater control kit. All electrical wiring and connections, including electrical grounding, MUST be in accordance with the National Electric Code ANSI/NFPA No. 70 (latest edition) or, in Canada, with the Canadian Electrical Code, Part 1-C.S.A. Standard C22.1 In addition, the installation must comply with local ordinances and applicable gas company requirements.

Follow the instructions that apply to the option and model of heater.

1. Turn off the gas and electric power.
2. Change the Transformer (does not apply to Model LDAP, UDBP, or UDBS) – applies to OPTION CL31 installation on the "Primary" unit only

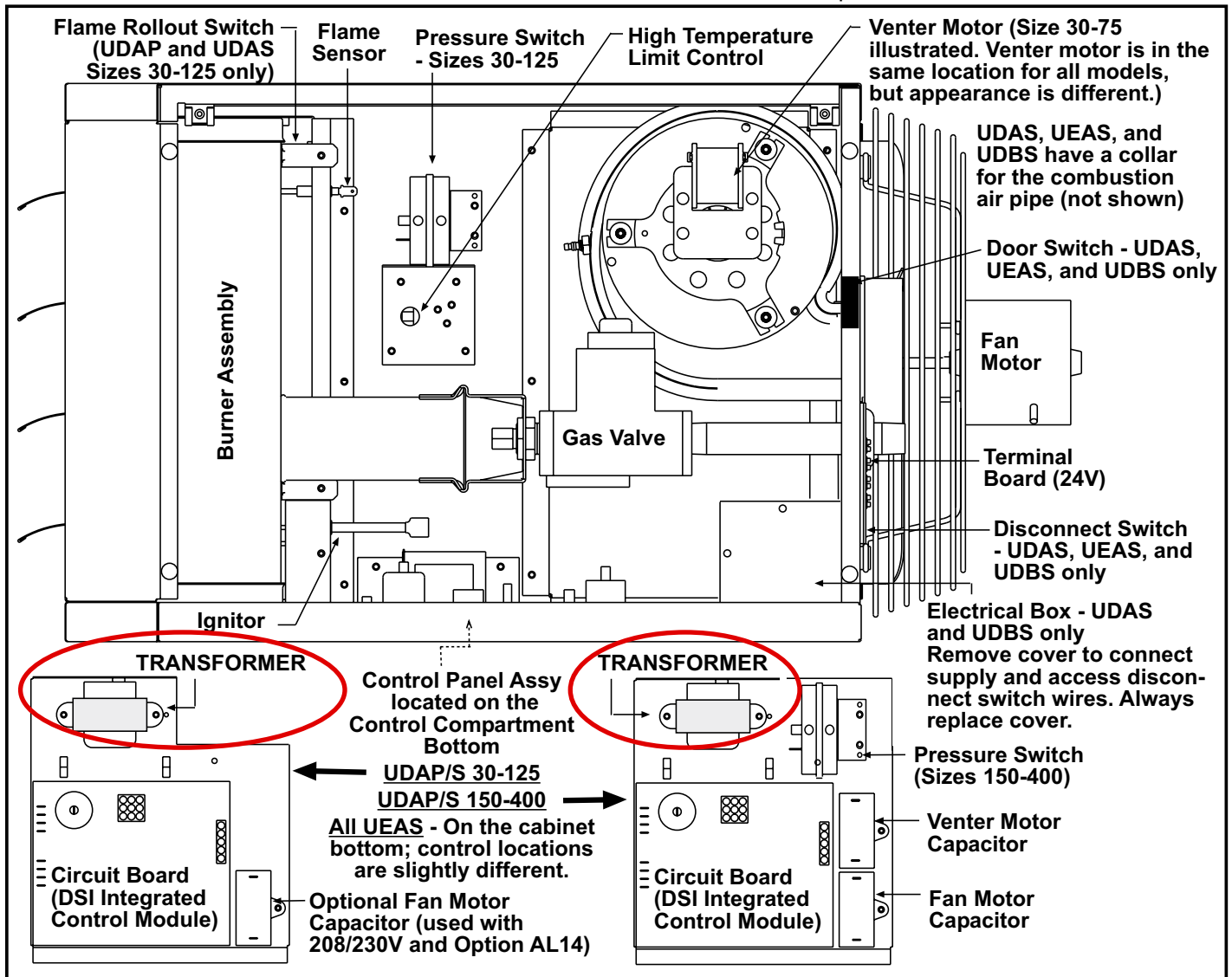
Refer to the illustration (FIGURE 1A, 1B, or 1C) for the unit being serviced.

Remove or open panels as required and locate the factory-installed transformer. Mark and disconnect the wires. Remove the transformer.

Using the same screws (except Models F and B; see FIGURE 1C), install the 35 or 40 VA transformer from the kit. Connect the wires. Close the panel.

**FIGURE 1A - Control Compartment showing Transformer Location, Models UDAP, APD, UDAS, and UEAS "Primary" Heater**

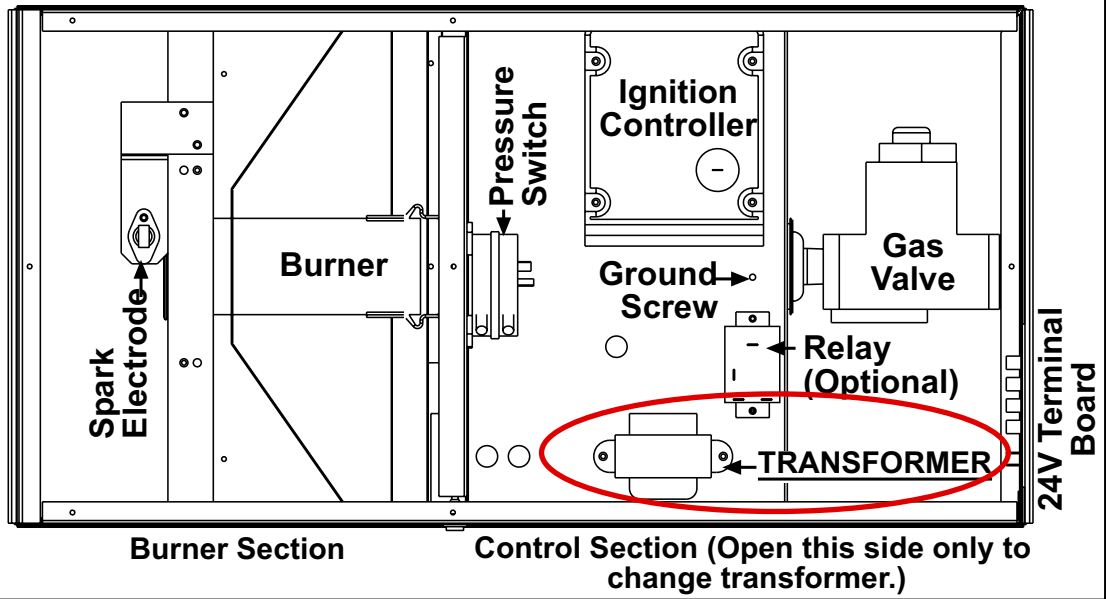
The transformer is mounted on the control board on the bottom of the control compartment.



# Installation Instructions (cont'd)

## 2. Change the Transformer (cont'd)

**FIGURE 1B -  
Bottom View  
showing  
Transformer  
Location, Model  
VR "Primary"  
Heater**



**FIGURE 1C - Transformer Location, Model F or B "Primary" Heater**

Remove the left outer side panel (left when facing the rear of the heater), exposing the inner side panel and the wiring.

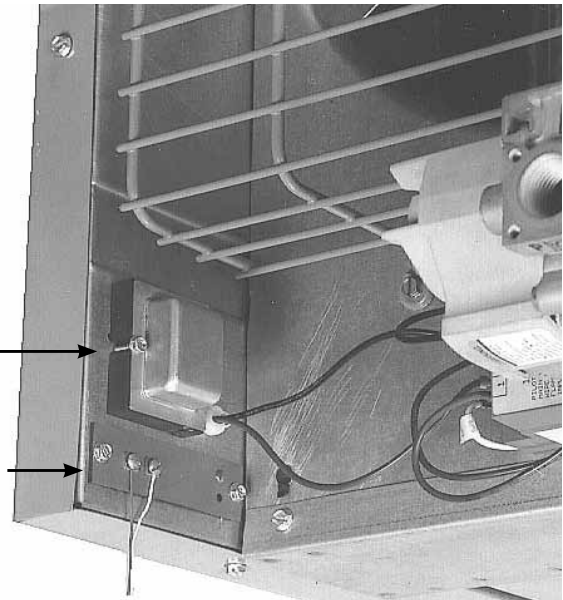
Locate the factory-installed transformer. Mark and disconnect the wires. Remove the transformer. Through the "large" hole in the side panel (for mounting the transformer), slide the Tinnerman clips over the new transformer. Attach with the screws included in the kit. Connect the wires to the new transformer.

Replace the outer side panel.

### Rear View

Transformer

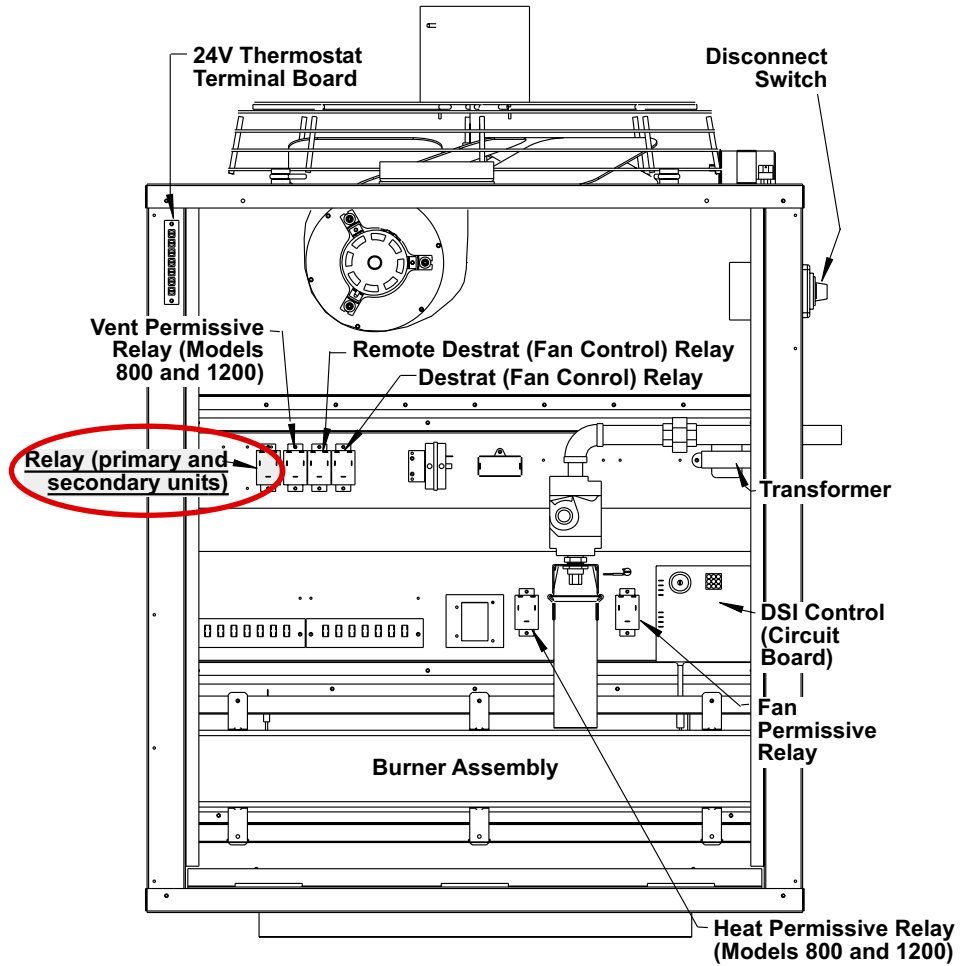
Terminal Strip



3. Install a Relay or Relay Bracket Assembly on the “Primary” Unit and all “Secondary” Units – Option CL31 and Option CL32. Select the appropriate FIGURE (2A, 2B, 2C, or 2D) for the Model of Heater.

**FIGURE 2A - Model LDAP**

Remove the access panel from the main heat section.  
 Locate the position on the control panel for the new relay.  
 Attach the relay with the screws provided in the kit.



**FIGURE 2B - Models UDAP, APD, UDAS, UDBP, UDBS, UEAS**

**Model UD Sizes 30, 45, 60, 75,**

**100, 125** - On the rear of the heater, position the bracket as illustrated.

Remove the screws from the edge of the cabinet bottom.

Re-insert the screws attaching the relay bracket.

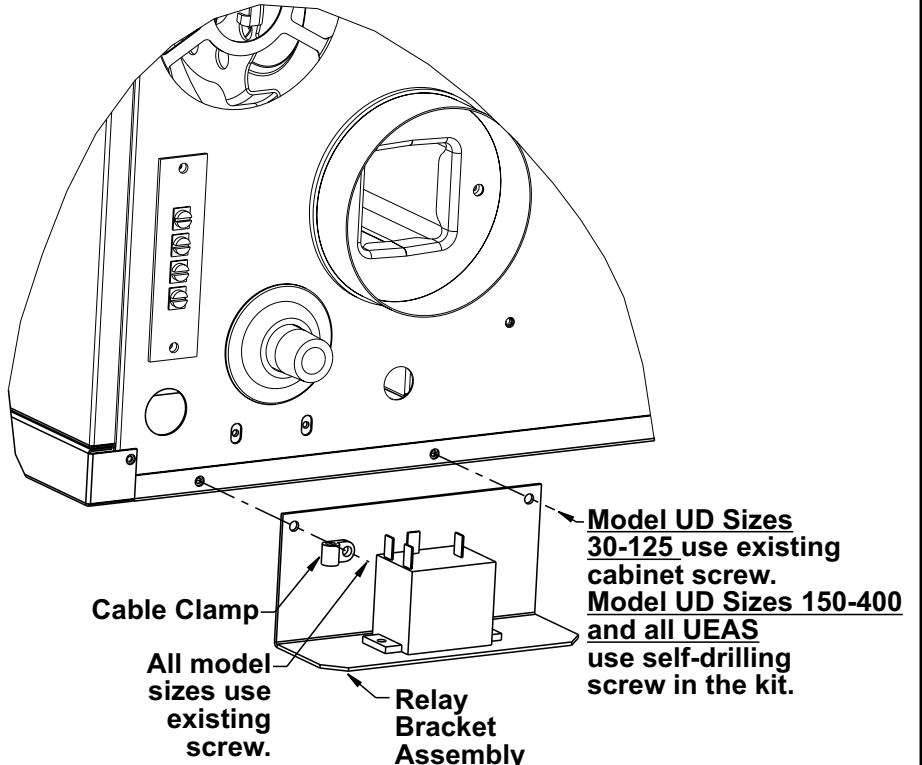
**Model UD Sizes 150, 175, 200,**

**225, 250, 300, 350, 400 and all UEAS** - On the rear of the heater, position the bracket as illustrated.

Remove the screw on the left from the edge of the cabinet bottom.

Re-insert the screw attaching the bracket.

Secure the other side of the bracket with the self-drilling screw in the kit.



# Installation Instructions (cont'd)

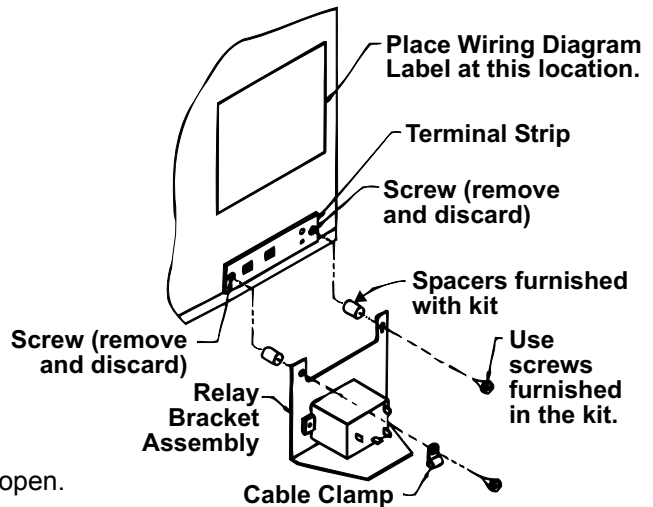
## 3. Install a Relay or Relay Bracket Assembly (cont'd)

**FIGURE 2C - Model VR**

On the end of the burner/control box, remove and discard the screws holding the thermostat terminal strip. Use the screws and spacers in the option package to attach the relay bracket and to re-attach the terminal strip. Follow the sequence below, starting at the burner/control box

- **first** the terminal strip,
- **second** the spacers,
- **third** the relay bracket,
- and **fourth** (on the left side only) – put the blue and brown wires through the plastic cable clamp and position the cable clamp on top of the relay bracket.

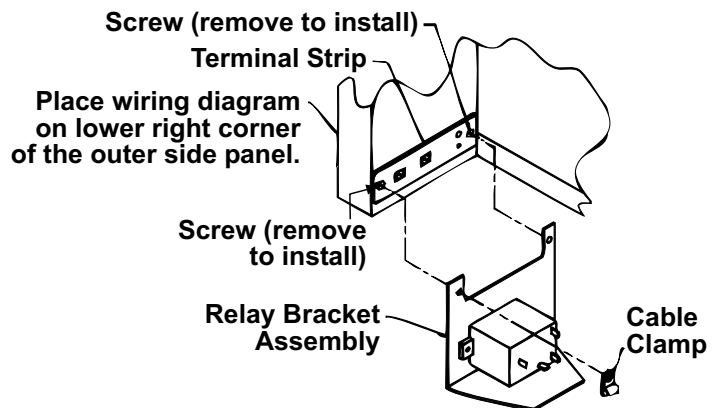
**NOTE:** The spacers are required to allow the access door to open.



**FIGURE 2D - Model F or B**

On the rear of the heater, remove the screws that hold the thermostat terminal strip. Slide the relay bracket underneath the terminal strip. Re-insert the screw on the right side. Put the blue and brown wires into the plastic cable clamp, and on the left end of the terminal strip, position the cable clamp on top. Fasten with the other screw.

**NOTE:** The 1" long screws and the spacers in the option package will not be used.



## 4. Wiring Diagram Label – All Heaters

See **FIGURE 3A, 3B, or 3C** for Option CL31 and CL32 wiring diagram.

Model	FIGURE	Label
LDAP .....	3A.....	208185
UDAP & APD....	3B.....	197164
UDAS.....	3B.....	197164
UDBP.....	3B.....	197164
UDBS.....	3B.....	197164
UEAS.....	3B.....	197164
VR.....	3B.....	197164
F.....	3C.....	131127
B.....	3C.....	131127

Select the wiring diagram for the model of heater being installed. Check the appropriate box on each diagram for the heater function (Primary or Secondary). Adhere the label in the location specified below for the model of heater .

**Packaged Model LDAP –** Position the label (**P/N 208185**) on the inside of the access panel. Wipe the area with a clean, dry cloth. Remove the backing and adhere the wiring diagram.

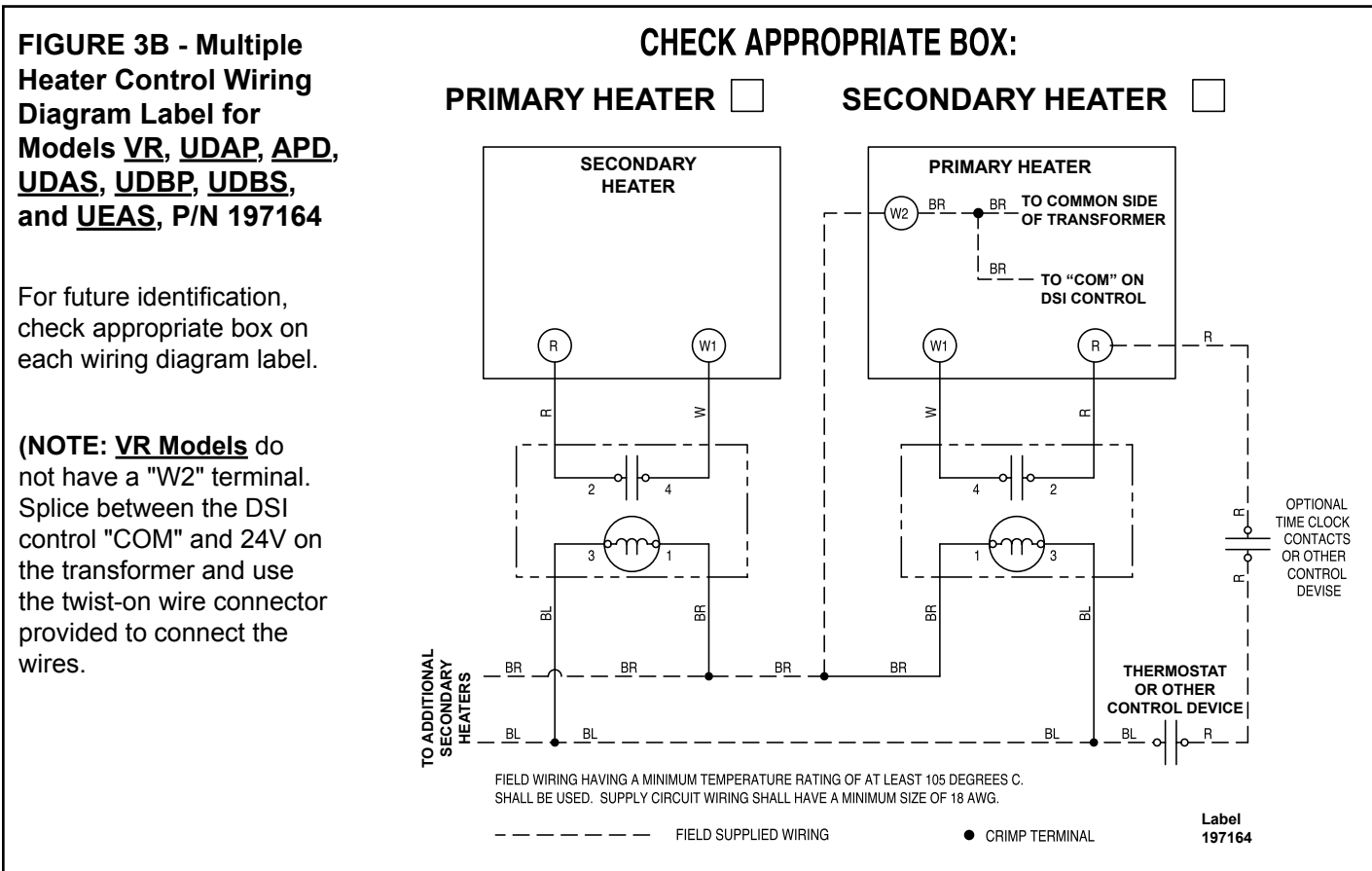
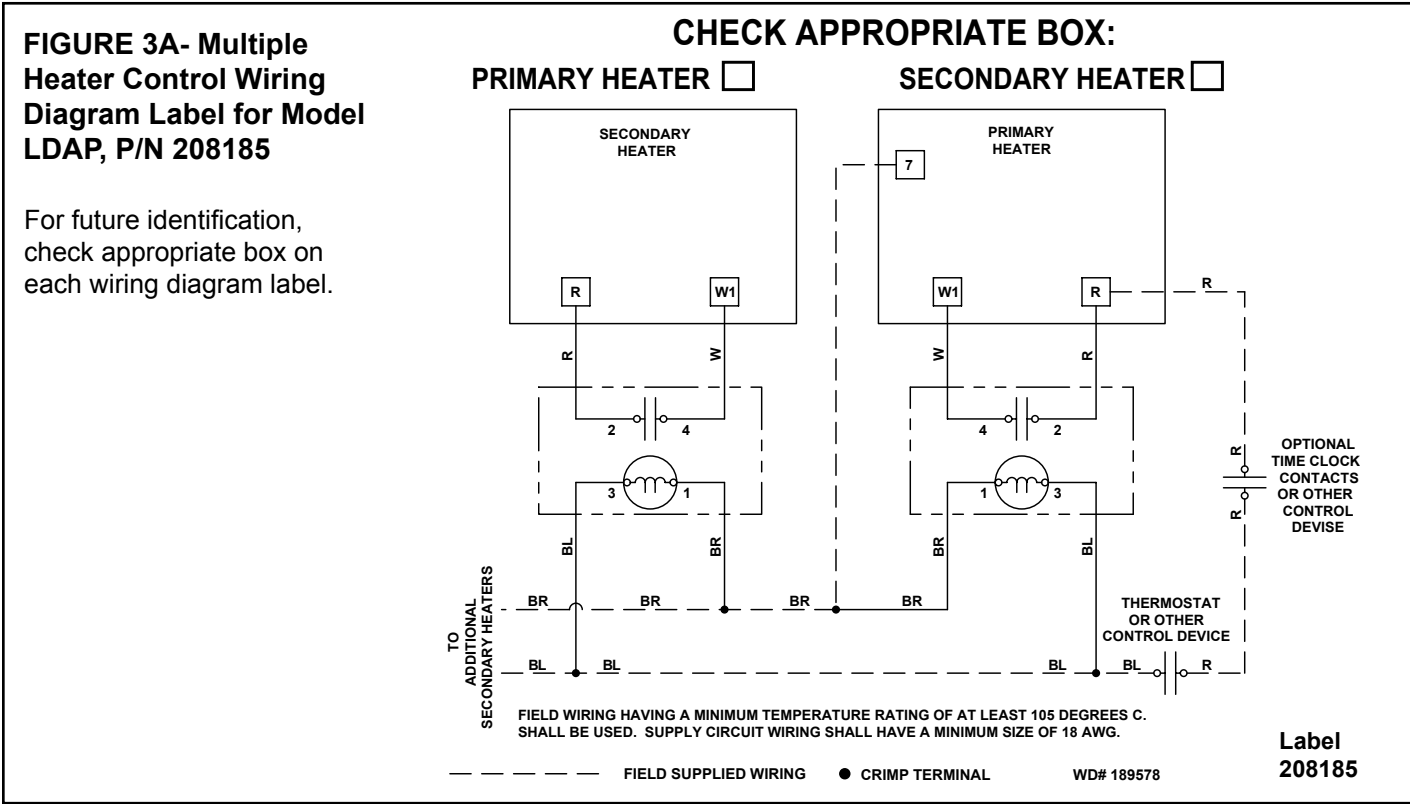
**Unit Heater Models UDAP, APD, UDAS, UDBP, UDBS, and UEAS –** Position the label (**P/N 197164**) on the bottom rear corner of the access panel. Wipe the area with a clean, dry cloth. Remove the backing and adhere the wiring diagram.

**Infrared Heater Model VR –** Position the label on the rear of the burner box above the terminal strip. Wipe the area with a clean, dry cloth. Remove the backing and adhere the wiring diagram.

**Unit Heater Models F and B** – Position the label (P/N 131127) in the lower right corner of the outer left side panel (left when facing the rear of the heater). Wipe the area with a clean, dry cloth. Remove the backing and adhere the wiring diagram.

**5. Control Wiring - All Models**

Follow the diagram label to wire the controls.

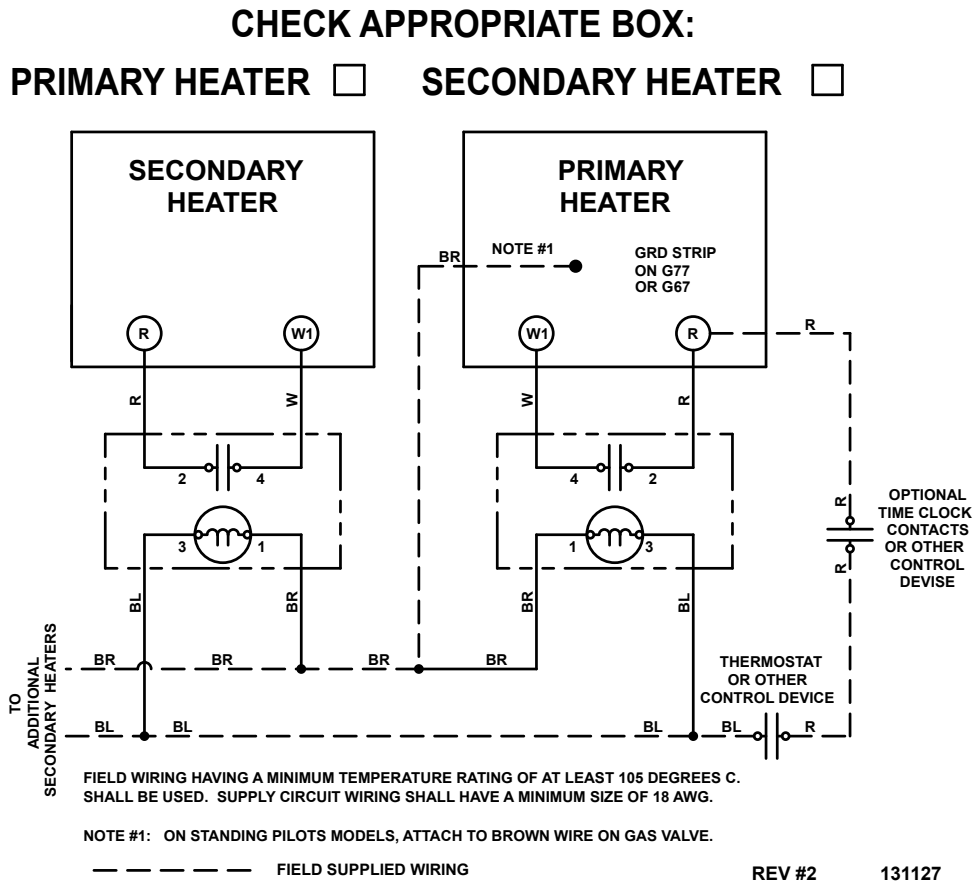


# Installation Instructions (cont'd)

## 5. Control Wiring (cont'd)

**FIGURE 3C - Multiple Heater Control Wiring Diagram Label for Models F and B, P/N 131127**

For future identification, check appropriate box on each wiring diagram label.



Do not exceed the control wire lengths shown in the table.

### Field Control Wiring (Length and Gauge)

Wire Type	Wire Gauge	Maximum Wire Length*	Maximum Distance
TEW	18	500 ft (152M)	250 ft (76M)
TEW	14	1300 ft (457M)	650 ft (198M)
TEW	12	2100 ft (640M)	1050 ft (320M)

\*Wire length equals wire for circuit going plus wire for returning circuit.

**CAUTION: Be careful not to short thermostat leads to a metal surface. Doing so will cause the transformer to fail, requiring it to be replaced.**

**6. Turn on the electric power and the gas.** Follow the lighting instructions to operate the heater.

Check the control system for proper and safe operation.

Specifications & illustrations subject to change without notice and without incurring obligations.

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