

CONVERSION KIT INSTALLATION FOR GAS-FIRED LOW-INTENSITY RADIANT TUBE HEATERS

OPTIONS DJ20 AND DL2 FOR MODELS VZ AND VZH

⚠ DANGER ⚠

These kits are to be installed by a qualified service agency in accordance with these instructions and in compliance with all codes and requirements of authorities having jurisdiction. Improper installation, adjustment, alteration, service, and/or maintenance can cause property damage, injury, or death. The qualified agency performing this work assumes responsibility for this installation.

- Option DJ20 is for converting units for use at elevations >2,000 feet (>610 meters). Deration is necessary to compensate for low atmospheric pressure at high elevations. This requires replacing the burner orifice.
- Option DL2 is for converting natural gas units for use with propane. When converting fuels, it is necessary to have the complete heater model. The identifying model number can be found on the heater rating plate. The rating plate identifies only original equipment, so also compare the label on the gas valve with the description listed.
- Refer to the installation manual provided with the unit for important safety information.

KIT COMPONENTS

Ensure that all applicable components listed in [Table 1](#) and/or [Table 2](#) are available before beginning installation.

Table 1. Option DJ20: High-Elevation Conversion Kit Components

Component	Unit Size (MBTUh)									
	40	60	80	100	115	125	140	150	175	200
	Model VZ Kit PN									
	1047456	1047457	1047458	1047459	1047460	1047461	1047462	1047463	1047464	1047465
	Model VZH Kit PN									
	1047466	1047467	1047468	1047469	—	1047470	—	1047471	1047472	—
Component PN										
Conversion label	197062									
Burner orifice	Refer to Table 3 or Table 4									

Table 2. Option DL2: Propane Conversion Kit Components

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Component	Unit Size (MBTUh)								
	40	60	80	100	115	125	140	150	175
	Model VZ Kit PN*								
	BH040NP-WR	BH060NP-WR	BH080NP-WR	BH100NP-WR	BH115NP-WR	BH125NP-WR	BH140NP-WR	BH150NP-WR	BH175NP-WR
	Model VZH Kit PN								
	V040NP	V060NP	V080NP	V100NP	—	V125NP	—	V150NP	V175NP
Component PN									
Conversion label	91039400								
Regulator spring	90032800								
Burner orifice	Refer to Table 4								
*There is no propane conversion kit available for model VZ unit size 200.									

DO NOT DESTROY. PLEASE READ CAREFULLY. KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.

KIT COMPONENTS—CONTINUED

Table 3. Replacement Natural Gas Burner Orifices											
Elevation* (Feet (Meters))	Model	Unit Size (MBTUh)									
		40	60	80	100	115	125	140	150	175	200
		PN (Drill Size)									
0–2000 (0–610)	VZ	91910486 (3.0 mm)	91910426 (#26)	91910418 (#18)	91910412 (#12)	91910404 (#4)	91910403 (#3)	91910496 (#26)	91910496 (#26)	91910495 (E)	91910494 (I)
	VZH		91910427 (#27)			—	91910405 (#5)	—	91910401 (#1)		—
2001–3000 (611–915)	VZ	91910433 (#33)	91910427 (#27)	91910419 (#19)	91910413 (#13)	91910406 (#6)	91910404 (#4)	91910496 (A)	91910496 (A)	91910495 (E)	91910494 (I)
	VZH		91910428 (#28)			—	91910407 (#7)	—	91910402 (#2)		—
3001–4000 (916–1220)	VZ	91910434 (#34)	91910428 (#28)	91910419 (#19)	91910414 (#14)	91910407 (#7)	91910405 (#5)	91910401 (#1)	91910401 (#1)	91910497 (D)	91910510 (H)
	VZH					—	91910408 (#8)	—	91910402 (#2)		—
4001–5000 (1221–1525)	VZ	91910435 (#35)	91910428 (#28)	91910420 (#20)	91910415 (#15)	91910408 (#8)	91910407 (#7)	91910401 (#1)	91910401 (#1)	91910497 (D)	91910499 (G)
	VZH		91910429 (#29)			—	91910409 (#9)	—	91910403 (#3)		—
5001–6000 (1526–1830)	VZ	91910435 (#35)	91910428 (#28)	91910421 (#21)	91910416 (#16)	91910409 (#9)	91910408 (#8)	91910402 (#2)	91910402 (#2)	91910503 (C)	91910499 (G)
	VZH		91910429 (#29)			—	91910410 (#10)	—	91910403 (#3)		—
6001–7000 (1831–2135)	VZ	91910436 (#36)	91910429 (#29)	91910422 (#22)	91910417 (#17)	91910411 (#11)	91910409 (#9)	91910402 (#2)	91910402 (#2)	91910503 (C)	91910493 (F)
	VZH					—	91910412 (#12)	—	91910404 (#4)		—
7001–8000 (2136–2440)	VZ	91910436 (#36)	91910429 (#29)	91910423 (#23)	91910417 (#17)	91910412 (#12)	91910410 (#10)	91910403 (#3)	91910403 (#3)	91910498 (B)	91910493 (F)
	VZH		91910430 (#30)			—	91910413 (#13)	—	91910405 (#5)		—
8001–9000 (2441–2745)	VZ	91910437 (#37)	91910430 (#30)	91910424 (#24)	91910418 (#18)	91910413 (#13)	91910412 (#12)	91910403 (#3)	91910403 (#3)	91910498 (B)	91910495 (E)
	VZH					—	91910414 (#14)	—	91910407 (#7)		—
9001–10,000 (2746–3045)	VZ	91910438 (#38)	91910430 (#30)	91910426 (#26)	91910419 (#19)	91910414 (#14)	91910413 (#13)	91910404 (#4)	91910404 (#4)	91910496 (A)	91910495 (E)
	VZH					—	91910415 (#15)	—	91910408 (#8)		—

*Orifices listed for elevations >2,000 feet (>610 meters) are included in option DJ20.

Table 4. Replacement Propane Burner Orifices

Elevation* (Feet (Meters))	Model	Unit Size (MBTUh)								
		40	60	80	100	115	125	140	150	175
		PN (Drill Size)								
0–2000 (0–610)	VZ	91910449 (#49)	91910444 (#44)	91910437 (#37)	91910433 (#33)	91910490 (1/8 inch)	91910430 (#30)	91910429 (#29)	91910428 (#28)	91910425 (#25)
	VZH			91910438 (#38)		—	91910484 (3.2 mm)	—		
2001–3000 (611–915)	VZ	91910450 (#50)	91910445 (#45)	91910438 (#38)	91910435 (#35)	91910479 (3.1 mm)	91910430 (#30)	91910429 (#29)	91910429 (#29)	91910426 (#26)
	VZH			91910439 (#39)		—	91910479 (3.1 mm)	—		
3001–4000 (916–1220)	VZ	91910450 (#50)	91910445 (#45)	91910439 (#39)	91910435 (#35)	91910432 (#32)	91910431 (#31)	91910430 (#30)	91910429 (#29)	91910427 (#27)
	VZH			91910440 (#40)		—	91910432 (#32)	—		
4001- 5000 (1221–1525)	VZ	91910450 (#50)	91910445 (#45)	91910439 (#39)	91910436 (#36)	91910433 (#33)	91910431 (#31)	91910430 (#30)	91910429 (#29)	91910427 (#27)
	VZH			91910441 (#41)		—	91910433 (#33)	—		
5001–6000 (1526–1830)	VZ	91910451 (#51)	91910446 (#46)	91910440 (#40)	91910436 (#36)	91910434 (#34)	91910431 (#31)	91910430 (#30)	91910430 (#30)	91910428 (#28)
	VZH			91910441 (#41)		—	91910434 (#34)	—		
6001–7000 (1831–2135)	VZ	91910451 (#51)	91910447 (#47)	91910441 (#41)	91910437 (#37)	91910435 (#35)	91910431 (#31)	91910430 (#30)	91910430 (#30)	91910428 (#28)
	VZH			91910442 (#42)		—	91910435 (#35)	—		
7001–8000 (2136–2440)	VZ	91910451 (#51)	91910447 (#47)	91910442 (#42)	91910438 (#38)	91910435 (#35)	91910432 (#32)	91910431 (#31)	91910430 (#30)	91910429 (#29)
	VZH					—	91910436 (#36)	—		
8001–9000 (2441–2745)	VZ	91910452 (#52)	91910448 (#48)	91910442 (#42)	91910438 (#38)	91910436 (#36)	91910432 (#32)	91910431 (#31)	91910430 (#30)	91910429 (#29)
	VZH			91910443 (#43)		—	91910436 (#36)	—		
9001–10,000 (2746–3045)	VZ	91910452 (#52)	91910448 (#48)	91910443 (#43)	91910440 (#40)	91910437 (#37)	91910433 (#33)	91910431 (#31)	91910431 (#31)	91910430 (#30)
	VZH					—	91910437 (#37)	—		
*Orifices listed for elevations >2,000 feet (>610 meters) are included in option DJ20. Orifices listed for elevations <2,001 feet (<611 meters) are included in option DL2.										

INSTALLATION

NOTE: This procedure assumes that the unit has already been installed. However, the conversion kits may be installed on a unit that has not been installed. For an uninstalled unit, ensure that the installation is completed in accordance with the installation manual provided with the unit when the conversion is complete.

1. Remove gas supply and electrical power:
 - a. Close manual shutoff valve on flexible gas connector to turn OFF gas supply to heater.
 - b. Turn OFF electrical power.
2. Remove burner cabinet panel(s) for access:
 - a. For model VZ, disconnect combustion air piping from blower if unit is connected to outside combustion air, unplug blower motor power cable, and remove top blower panel with blower and motor assembly attached.
 - b. For model VZH, remove both side panels.
3. Replace burner orifice:

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Ensure that the correct orifice for installation elevation and type of fuel is installed.

- a. Select appropriate replacement orifice from [Table 3](#) or [Table 4](#).
- b. Remove and save screws that secure ignitor assembly (see [Figure 1](#)) to inside panel and remove ignitor assembly (remains connected to wiring harness).

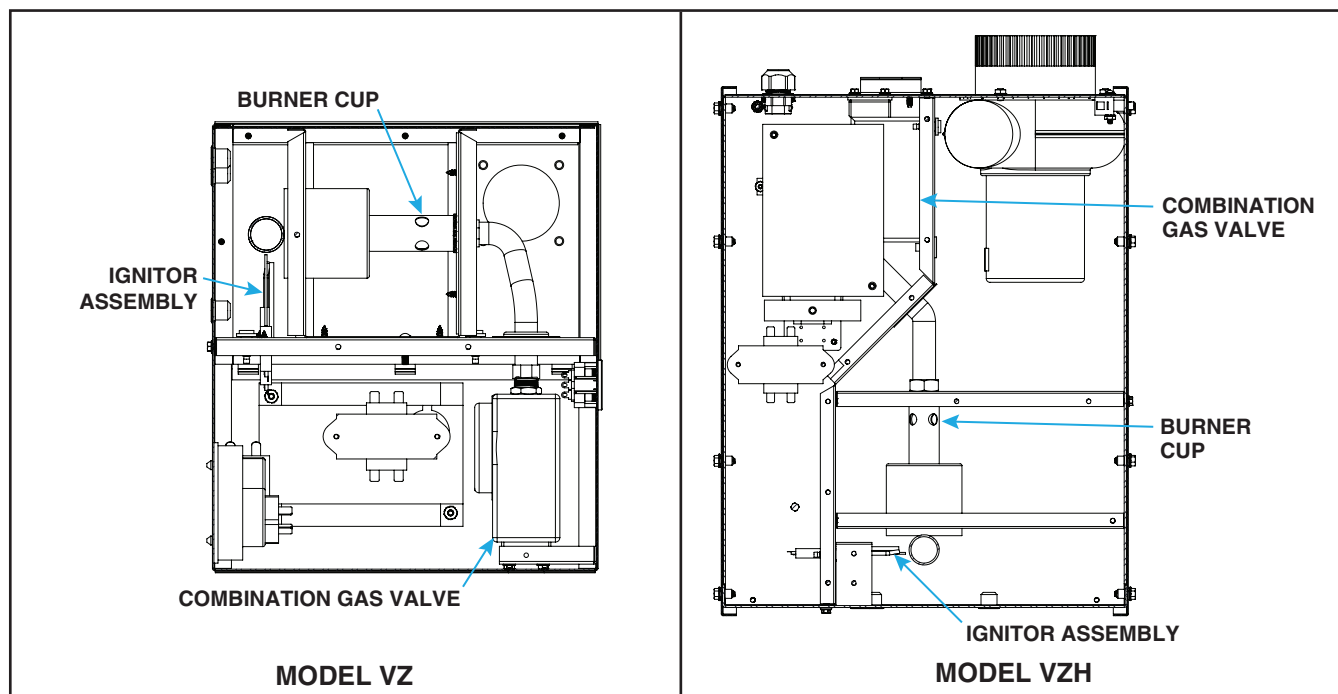


Figure 1. Component Locations

- c. Insert screwdriver in holes in burner cup shaft (see [Figure 1](#)) and use as leverage to loosen burner cup from gas manifold. Continue to unthread burner cup from gas manifold by hand and move out of way to access burner orifice.
- d. Using wrench, remove existing burner orifice (see [Figure 2](#)) from gas manifold.

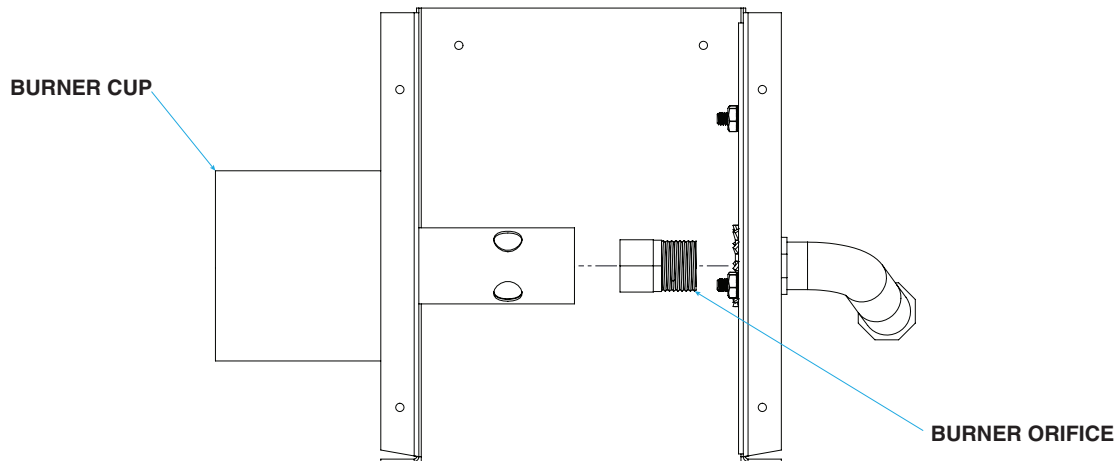


Figure 2. Typical Gas Manifold

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- **DO NOT attempt to drill the burner orifice. Use a factory-supplied orifice only.**
- **DO NOT block the burner orifice with pipe joint compound. Pipe joint compounds (pipe dope) shall be resistant to the action of any chemical constituents of the gas being supplied.**
- **DO NOT overtighten the burner orifice.**

- e. Using approved pipe joint compound, thread replacement orifice from kit into gas manifold by hand until snug. Torque orifice to 15 inch-pounds using wrench.
 - f. Rethread burner cup into gas manifold by hand and then tighten using screwdriver.
 - g. Re-install ignitor assembly on inside panel and secure using existing screws.
4. If installing high-elevation conversion kit (option DJ20) only, proceed to step 5. If installing propane conversion kit (option DL2), replace regulator spring in combination gas valve as follows:
- a. For model VZ, open hinged access door.
 - b. Remove cover screw, regulator screw, and existing regulator spring from combination gas valve's regulator sleeve (see [Figure 3](#)).
 - c. Install replacement regulator spring from kit into regulator sleeve and thread regulator screw approximately eight turns into sleeve.

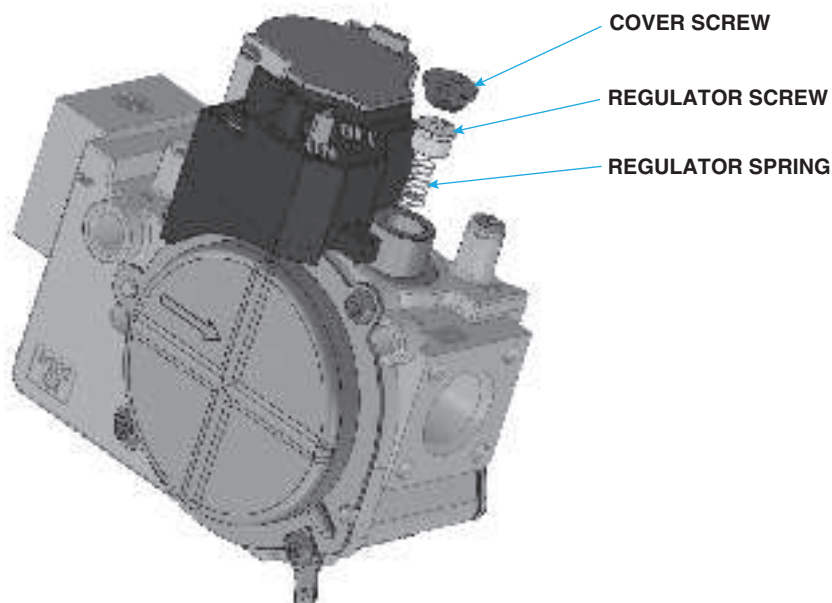


Figure 3. Regulator Spring Replacement

INSTALLATION—CONTINUED

5. Open manual shutoff valve on flexible gas connector to turn ON gas supply to heater.

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DO NOT use an open flame to check for gas leaks.

6. Perform leak test:
 - a. Check all connections for gas leaks using commercial leak-detecting fluid or rich soap and water solution. Leaks are indicated by presence of bubbles.
 - b. If leak is detected, tighten connection. If leak cannot be stopped by tightening connection, replace part(s).
7. Adjust manifold (outlet) gas pressure in accordance with **Measure and Adjust Manifold Gas (Outlet) Pressure** section in installation manual provided with unit.
8. Re-install panel(s) removed in step 2.
9. For model VZ, close hinged access door, reconnect combustion air piping to blower if unit is connected to outside combustion air, and plug in blower motor power cable.
10. Install appropriate conversion label (see **Figure 4**) from kit:
 - a. Using permanent marker, fill in data on conversion label. Refer to unit's rating plate for input.
 - b. Adhere label to burner cabinet.

⚠ WARNING / ⚠ AVERTISSEMENT This appliance has been converted at the time of installation for high altitude use by _____, which accepts responsibility that this conversion has been properly made. Replacement gas valves must be adjusted to the pressures listed below. Cet appareil a été converti pour l'installation à haute altitude par _____, qui assume responsabilité pour avoir effectué correctement cette conversion. Les soupapes à gaz de recharge doivent être réglées aux pressions indiquées ci-dessous. <table border="1" style="width: 100%; border-collapse: collapse; font-size: 0.7em;"> <thead> <tr> <th colspan="3" style="text-align: center;">ALTITUDE ADJUSTED/AJUSTÉ EN FONCTION DE L'ALTITUDE</th> </tr> </thead> <tbody> <tr> <td style="width: 33%;">Single stage or two stage high-fire manifold pressure has been set at:</td> <td style="width: 33%;">La pression d'admission haute inflammation à un étage ou à deux étages a été réglée à:</td> <td style="width: 34%; text-align: center;"> ft. w.c. </td> </tr> <tr> <td>Two stage (-2 Models) low-fire manifold pressure has been set at:</td> <td>La pression d'admission basse inflammation à deux étages (-2 modèles) a été réglée à:</td> <td style="text-align: center;"> ft. w.c. </td> </tr> <tr> <td>Altitude adjusted for operation at:</td> <td>Ajusté en fonction de l'altitude pour le fonctionnement à:</td> <td style="text-align: center;"> feet/pieds meters/mètres </td> </tr> <tr> <td>Normal Input</td> <td>Entrée Normale</td> <td style="text-align: center;"> Btu/h (joules/h) </td> </tr> <tr> <td>Thermal Output Capacity</td> <td>Rendement Thermique</td> <td style="text-align: center;"> Btu/h (joules/h) </td> </tr> <tr> <td>Min. Input (-2 Models)</td> <td>Entrée Min. (-2 Modèles)</td> <td style="text-align: center;"> Btu/h (joules/h) </td> </tr> </tbody> </table> 117983	ALTITUDE ADJUSTED/AJUSTÉ EN FONCTION DE L'ALTITUDE			Single stage or two stage high-fire manifold pressure has been set at:	La pression d'admission haute inflammation à un étage ou à deux étages a été réglée à:	ft. w.c.	Two stage (-2 Models) low-fire manifold pressure has been set at:	La pression d'admission basse inflammation à deux étages (-2 modèles) a été réglée à:	ft. w.c.	Altitude adjusted for operation at:	Ajusté en fonction de l'altitude pour le fonctionnement à:	feet/pieds meters/mètres	Normal Input	Entrée Normale	Btu/h (joules/h)	Thermal Output Capacity	Rendement Thermique	Btu/h (joules/h)	Min. Input (-2 Models)	Entrée Min. (-2 Modèles)	Btu/h (joules/h)	This appliance has been converted to _____ fuel. Orifice: _____ Manifold Pressure: _____ Input: _____ Cet appareil a été converti au: _____ Injecteur: _____ Pression à la tubulure d'alimentation: _____ Débit calorifique: _____ Este artefacto se ha convertido para funcionar con combustible _____ Orificio: _____ Presión del colector: _____ Entrada: _____ PIN 81058400 Rev C
ALTITUDE ADJUSTED/AJUSTÉ EN FONCTION DE L'ALTITUDE																						
Single stage or two stage high-fire manifold pressure has been set at:	La pression d'admission haute inflammation à un étage ou à deux étages a été réglée à:	ft. w.c.																				
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HIGH-ELEVATION CONVERSION	PROPANE CONVERSION																					

Figure 4. Conversion Labels

11. Start up heater and check for proper operation.

NOTES

