TDS93-56231 NG to LP Fuel Conversion Kit

For Stowe 8323

ATTENTION: THIS CONVERSION KIT MUST BE INSTALLED BY A QUALIFIED SERVICE AGENCY.

WARNING

This conversion kit shall be installed by a qualified service agency in accordance with the manufacturer's instructions and all applicable codes and requirements of the Authority Having Jurisdiction. If the information in these instructions is not followed exactly, a fire, explosion or production of carbon monoxide may result causing property damage, personal injury or loss of life. The qualified service agency is responsible for the proper installation of this kit. The installation is not proper and complete until the operation of the converted appliance is checked as specified in the manufacturer's instructions supplied with the kit.

This Liquid Propane (LP) fuel conversion kit is for use with the Hearthstone Stowe 8323 only. This kit is suitable for installations at elevations up to 4500 feet above sea level. When converted for LP, it is not necessary to derate the Stowe 8323 at elevations above 2000 feet.

Table – Settings and Specifications

Specification	NG	LP
INPUT RATING (Btu/hr) 0-2000 ft	22,400	22,400
INPUT RATING (Btu/hr) 2000-4500 ft	21000	22400
ORIFICE SIZE (DMS) 0-2000 ft	43	55
ORIFICE SIZE (DMS) 2000-4500 ft	44	55
MANIFOLD PRESSURE - LO SETTING (in.w.c./kPa)	1.2/0.30	4.1/1.02
MANIFOLD PRESSURE - HI SETTING (in.w.c./kPa)	3.4/0.85	10.4/2.59
INLET PRESSURE - MINIMUM (in.w.c./kPa)	5.0/1.25	12.0/2.99
INLET PRESSURE - MAXIMUM (in.w.c./kPa)	11.0/2.74	13.8/3.45
MINIMUM INPUT RATING LO SETTING (Btu/hr)	13,000	14,000

Packing List

1 - main burner orifice, #55 (U.S.)
1 - valve orifice, #130 (metric)
1 - valve conversion key
1 - conversion label 3300-589
1 - conversion label 3300-583
1 - warning label 3300-585
1 - installation manual

Tools Required

Manometer
5/32” (4mm) hex key
Flat-head screwdriver, 1/4” bit
Flat-head screwdriver, 3/32” bit
Phillips screwdriver
7/16” wrench
1/4” wrench
Adjustable wrench
Socket wrench w/ 6” extension
1/2” deep-well socket

Instructions

CAUTION: THE GAS SUPPLY SHALL BE SHUT OFF PRIOR TO DISCONNECTING THE ELECTRICAL POWER, BEFORE PROCEEDING WITH THE CONVERSION.

LP conversion orifices are identified by size stamped on side of part. Ensure that orifice sizes are correct before installation.

Note: <u>Do NOT</u> adjust and/or alter any components marked with tamper-indicating paint.

Figure 1 – Orifices, Marking Locations

Convertible regulators are designed to deliver either of two fixed outlet pressures for Natural Gas (NG) or LP Gas. To change from one gas to the other, turn the outlet pressure screw housing (see Figure 2) counter-clockwise to remove. **Be careful not to engage the small flat slot on the screw itself but use the larger slot of the screw housing to remove the unit.** Pull gently to remove the plastic spacer, rotate it 180°, and then slide it back onto the conversion plug until it snaps into place. Spacer is marked 'NG' at one end and 'LP' at the other. In NG configuration, 'NG' marking is closest to threads, and brass pin of conversion plug extends through spacer. In LP configuration, 'LP' marking is closest to threads, and spacer extends beyond end of conversion plug. With spacer in correct position, reinstall the conversion plug by screwing it clockwise until snug. The low pressure orifice must also be changed (see Figures 3 – 8).

To Switch the Valve to LP Operation:

Refer to Figures 3 – 8

1. Remove the conversion plug from the valve body.
2. Carefully and without turning the adjusting screw, grasp the plastic spacer at the end of the pressure screw and remove it from the shaft by gently pulling away from the screw head.
3. Flip the plastic spacer 180^0, so that 'LP' marking is closest to threads.
4. Slid the conversion plug back on to the pressure screw shaft and gently push until it clicks into place.
5. Reinstall the screw assembly using only the outer screw head slot for driving, and tighten until seated fully in the valve.

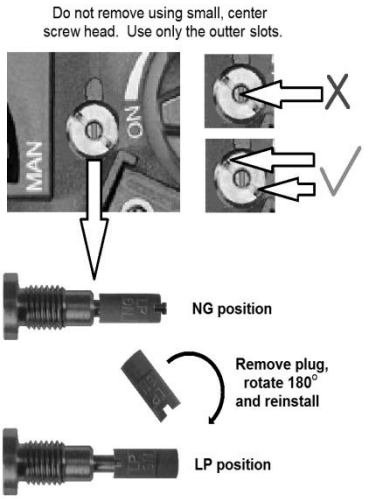


Figure 2 – GV60 LP Conversion Steps

6. With 1/4" wrench, loosen the valve mounting bracket (two hex-head screws, front R and L corners) and swing the front of the valve assembly down.
7. With 5/32" hex wrench, loosen and remove the existing low pressure NG screw by turning counter-clockwise until it spins freely. It may be necessary to grasp the screw head with your fingernails or gently pry it free of the valve body with a small flat blade screwdriver, as the screw has an o-ring at the top that may gently hold it in the valve body even after threads are fully loosened (see Figure 5).
8. Insert the #130 LP low pressure orifice in the receptacle, press firmly with finger to compress o-ring and engage threads, and tighten using the enclosed tool. Turn clockwise until orifice stops turning to fully seat the orifice body in the valve.
9. Swing the valve mounting bracket back up into its original position.
10. Tighten screws and ensure valve bracket is firmly held in position.

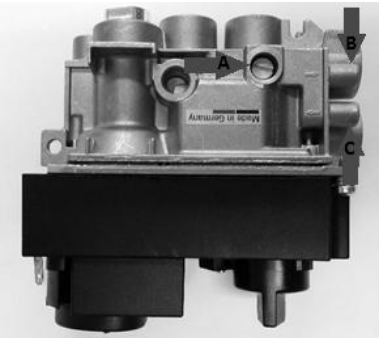


Figure 3 – Valve Top View
A: Low Pressure Orifice, B: Manifold Pressure Tap, C: Inlet Pressure Tap

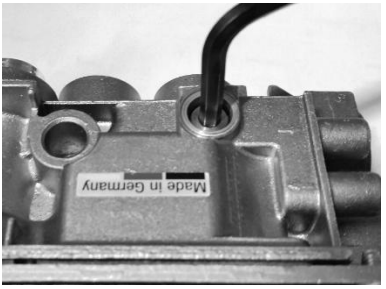


Figure 4 – Loosening

Figure 5 – Prying O-Ring

Figure 6 – NG Low Pressure Screw Removal

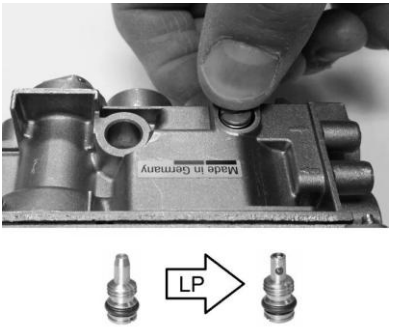


Figure 7 – Press LP Orifice into Valve to Compress O-ring

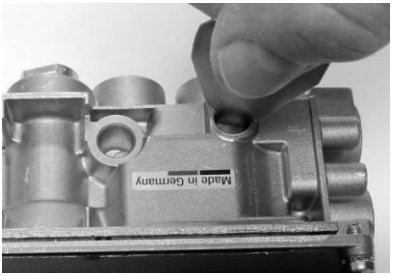
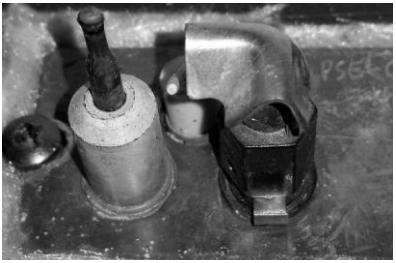


Figure 8 – Tighten LP Low Pressure Orifice

To Switch Pilot to LP Operation:

Refer to Figures 9 – 12
The pilot assembly in the Stowe 8323 is a slide convertible unit, requiring only a 7/16" open-end wrench for conversion. To convert pilot from NG to LP:

1. Open firebox and remove logs, burner, and pilot shield. Refer to Stowe 8323 main product manual for guidance.
2. Using the 7/16” wrench, grasp the pilot tower and turn counter-clockwise about 1/4 turn (see Figure 28).
3. Look at the front edge of the base of the pilot tower. You will see the NG/LP Pilot Orifice Gate protruding toward the front of the pilot tower and the letters “NAT” should be visible on the upper horizontal surface (see Figure 9). Slide the gate backward in the Pilot Tower by pushing on the upturned edge by the “NAT” lettering until the upturned edge is flush with the Pilot Tower surface. You will see the NG/LP Pilot Gate protruding from the back edge of the Pilot Tower and the letters “LP” will be visible, separated by a punched hole.
4. While holding the NG/LP Pilot Gate in the LP visible position, grasp the Pilot Tower with the 7/16” wrench and turn clockwise until the tower is snug. The Pilot Hood should be oriented such that one pilot flame is directed at the thermocouple and the other is facing the main burner (see Figure 11).



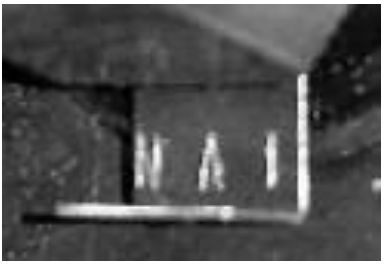


Figure 9 – Pilot in NG Position

Figure 10 – Loosen Tower and Slide Pilot Gate to Rear of Pilot Tower (LP Position)

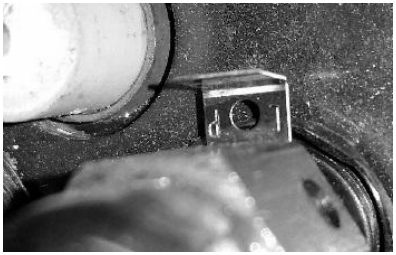


Figure 11 – Pilot in LP Position

To replace main burner orifice:

Using a 1/2" socket and extender, grasp orifice hood and turn counter-clockwise until loose and remove. Replace with #55 LP orifice hood, turning clockwise until snug.

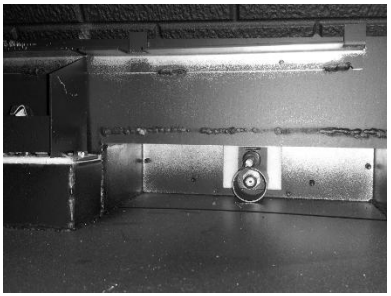


Figure 12 – Main Orifice Location

Reinstall burner, pilot shield, and logs. Ensure that pilot, pilot shield and burner are properly positioned (see Figure 13). Reinstall front glass, and front and top cast.

Figure 13 – Pilot, Shield, and Burner Position

Checking for leaks:

To perform initial gas leak test:

1. Check carefully for gas leaks immediately after the conversion has been performed. **Do this before attempting to operate the appliance or other gas burning device**.
2. Use an approved non-corrosive leak detection fluid, or other approved leak detection method, around the diaphragm flanges, pipe connections, seal cap, and all other joints. Bubbles indicate a leak.
3. If no leakage is detected, proceed with the instructions listed below to light the main burner and perform a secondary leak check of the appliance gas supply system.
4. If a leak is detected, tighten pipe connections (including adapters) and retest.

To perform secondary leak test:

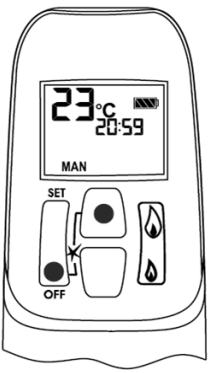
1. Light stove. With the main burner in operation, apply an approved leak test solution to all tubing, pipe connections , and adapters, and the valve inlet and outlet. Bubbles indicate a leak.
2. If no leak is detected, appliance is safe to use.
3. If a leak is detected, tighten pipe connections (including adapters) and retest.

WARNING
Absolutely no leakage should occur, otherwise there is a danger of fire or explosion depending upon conditions. Never use if leakage is detected.

To light stove:

Stove is factory-set for use with remote control. See main product manual for manual lighting instructions.

Remote Control Operation



• To light stove, simultaneously press the OFF and large flame buttons until a short beep confirms the start sequence has begun; release buttons.

- Continuing beeps confirm that ignition is in progress.
- Once pilot ignition is confirmed, valve will open to allow gas flow to main burner.
- After main burner ignition, the handset will automatically go into manual mode.
- After main burner ignition, stove is automatically set to maximum manifold pressure/flame level.
- To set stove to minimum pressure/flame level, double-click small flame button. To return to maximum pressure/flame, double-click large flame button.
- To turn stove off, press OFF button. To prevent reignition, remove access panel and set I/O power switch to O.

Adjustment for proper pilot and main burner appearance:

Pilot Adjustment

CAUTION: THE PILOT FLAME SHOULD ONLY BE ADJUSTED BY AN AUTHORIZED SERVICE TECHNICIAN.

The pilot flow adjustment is preset to maximum at the factory. The pilot flame should envelop 3/8" to 1/2" of the thermocouple (see Figure 14). If the pilot flame is too small or directed away from the thermopile, the Stowe may operate erratically, fail to light, or go out.

To adjust pilot:

1. The adjustment screw can be reached through a hole in the MANUAL knob (see Figure 15).
2. Turn the MANUAL knob to the ON position.
3. It is now possible to pierce through a film on the cover with a screwdriver to reach the adjustment screw beneath.
4. Turn the adjustment screw clockwise to decrease or counter-clockwise to increase pilot flame.

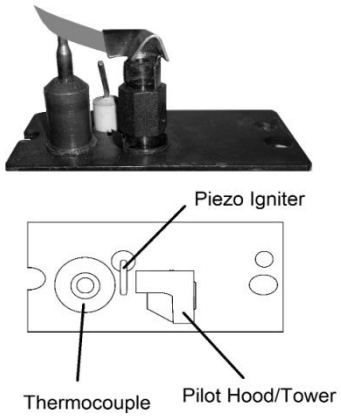


Figure 14 - Pilot Flame Pattern

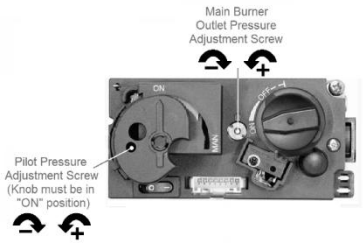


Figure 15 - Pilot and Burner Adjustment

Main Burner Adjustment

The appearance of the main burner flame may be adjusted by adjusting the primary air shutter and vent restrictor. For use with LP, these should be set to their fully open settings, and only adjusted if necessary to achieve a pleasing flame appearance. To determine if the burner flame needs adjustment, view the flame pattern with the valve output at its highest setting. Allow unit to operate for 10 minutes to allow the flame pattern to stabilize, then observe flame pattern and adjust as necessary. A periodic visual check of the burner flame should be performed. Flame pattern should resemble Figure 16. There are several guidelines to aid in determining if the flame pattern is correct:

1. Flames should not be dirty, smoky, sooty, or lick the top of the stove.
2. Flames should not rise off the pan burner; this is called “lifting”.
3. Flames should not impinge heavily on logs. They should “fit” through the pre-formed spaces designed in the log set.

Generally, the more air (open shutter), the bluer the flame. Less air (closed shutter) results in a more yellow flame, but too little air will result in incomplete combustion, low efficiency and sooting. There are two simple guidelines to aid in determining the correct flame pattern:

1. If the flame just above the

surface of the burner or at the base of the logs is completely blue, the air shutter may be open too far.

2. If flame is dirty, sooty, or licks the top of the baffle, the air shutter may be closed too far.
3.

Note: Some conditions cannot be corrected through air shutter adjustment; an adjustment must be made to the gas supply pressure or by changing the restriction plate setting. Qualified service personnel must perform supply line/manifold gas line pressure adjustments and restrictor plate adjustments. Do not attempt to complete any part of the installation or adjustment of this unit unless technically qualified.

Figure 16 – Typical Burner Flame Appearance

Air Shutter Adjustment

CAUTION: ADJUSTING ROD IS HOT!

WARNING: ONLY A QUALIFIED GAS TECHNICIAN SHOULD MAKE ADJUSTMENTS TO THE AIR SHUTTER.

The air shutter is adjustable while the stove is burning. Loosen the set screw on the adjusting rod located in the lower rear center of the stove. Move the rod in or out to adjust the flame pattern (see Figures 17 and 18). Push the rod in to open the air shutter, and pull it out to close the shutter. When the flame pattern is correct, tighten the set screw without letting the rod move.

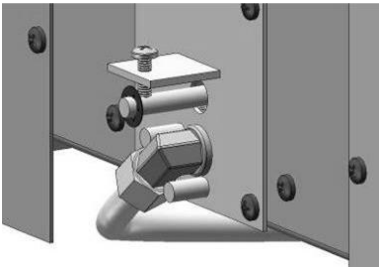


Figure 17 – Air Shutter Open

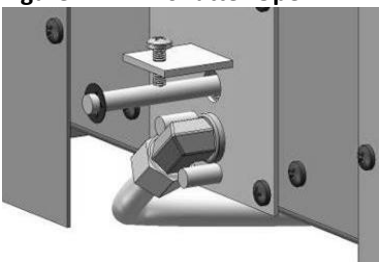


Figure 18 – Air Shutter Closed

Note: Very little movement is needed to substantially change the burn and flame patterns. Some conditions cannot be corrected through air shutter adjustment; an adjustment must be made to the gas supply pressure. Supply line/manifold gas line pressure adjustments must be performed by qualified service personnel. Do not

attempt to complete any part of the installation or adjustment of this unit unless technically qualified to do so.

Restrictor Plate

The restrictor plate is used to control excess draft if necessary. Controlling the draft also changes the aesthetics of the flame. The restrictor plate has a large range of possible settings (See Figure 19). The adjustment point is on the left side of the firebox (from front).

Restrictor Plate Position
The restrictor plate is factory set in the fully open position for shipping. This ensures proper flames for a wide variety of vent configurations and efficiency. The restrictor plate consists of a rotating flap in front of the firebox exhaust port behind the cast iron baffle plate. Depending on your vent configuration, you may need to adjust the restrictor plate position to reduce draft.

Restrictor Plate Adjustment
Loosen the screw and position the restrictor plate in the desired location. Tighten the screw to lock in place.

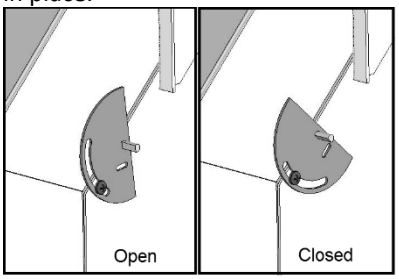


Figure 19 – Restrictor Indicator

To verify input rate:

The approximate input rate of the converted Stowe may be checked as follows:

1. Ensure that no other gas appliances are in operation.
2. Place Stowe in operation on high, and allow to burn for 15 minutes.
3. Using residential gas meter, measure the time in seconds required for the Stowe to consume 1 cubic foot of gas.
4. The gas consumption of the Stowe in BTU per hour may be calculated as (3,600 x heating value of gas) ÷ seconds to consume 1 cubic foot. Use local gas supplier's heating value, or use 2,500 for LP or 1,012 for NG.

EXAMPLE: Using LP with a heating value of 2,500, and a time of 392 seconds (6 minutes 32 seconds):

(3,600 x 2,500) ÷ 392 = 9,000,000 ÷ 392 = 22,959 BTU per hour

Note: *Stowe may operate safely up to 105% of its rated input, or 23,520 BTU per hour. If Stowe input is incorrect, it is necessary to adjust the gas supply pressure. Supply line/manifold gas line pressure adjustments must be performed by qualified service personnel. Do not attempt to complete any part of the installation or adjustment of this unit unless technically qualified to do so.*

Checking gas pressures:

When installation is complete, verify that inlet and manifold pressures are correct. Pressure taps are located on the side of the valve body as shown (see Figure 3).

To verify inlet pressure, with stove in operation, loosen threaded plug of inlet pressure tap and connect manometer. Retighten plug when finished.

To verify manifold pressure, with stove in operation, loosen threaded plug of manifold pressure tap and connect manometer. Verify manifold pressures at both high and low settings. Retighten plug when finished.

To adjust manifold high pressure:

CAUTION: THE VALVE MAXIMUM OUTLET PRESSURE SHOULD ONLY BE ADJUSTED BY AN AUTHORIZED SERVICE TECHNICIAN AND IS PRE-SET AT THE FACTORY.

CAUTION: OUTLET PRESSURE ADJUSTMENT REQUIRES THE USE OF A MANOMETER. DO NOT ATTEMPT TO ADJUST OUTLET PRESSURE WITHOUT A MANOMETER.

1. Connect a manometer to the valve outlet pressure tap. Pressure tap is opened by turning the screw counter-clockwise (see Figure 3).
2. Light stove and place main burner in operation on high.
3. Turn pressure regulator adjustment screw (see Figure 15) to set required burner pressure. Pressure is increased by turning clockwise (pressure regulator models), or decreased by turning counter-clockwise.

Note: *Pressure regulator adjustment screw is marked with tamper-indicating paint. Pressure regulator adjustment screw must be adjusted by an authorized service technician. Do not adjust unless necessary.*

4. Verify that manifold pressure is correct (see table, page 1). If necessary, verify input rate.
5. If no other adjustments are required, remove manometer and close pressure tap(s) by turning the screw(s) fully clockwise until snug. Check all connections/pressure tap(s) for leaks.
6. If the desired outlet pressure or flow cannot be achieved by adjusting the gas valve, check the gas valve inlet pressure using a manometer at the valve inlet pressure tap. If the inlet pressure is in the normal range, replace the gas valve; otherwise, take necessary steps to assure proper gas pressure to the valve.

To adjust manifold low pressure:

CAUTION: THE MINIMUM VALVE OUTLET PRESSURE SHOULD ONLY BE ADJUSTED BY AN AUTHORIZED SERVICE TECHNICIAN AND IS PRE-SET AT THE FACTORY.

1. Connect a manometer to the valve outlet pressure tap. Pressure tap is opened by turning the screw counter-clockwise (see Figure 3).
2. Light stove and place main burner in operation on low.
3. For LP, the low rate is set by installing a calibrated low pressure orifice, included with this kit. Once the Stowe has been converted to LP with the fixed rate low flow orifice, the low rate is not adjustable. If LP minimum pressure is not within ±0.1 i.w.c. of specified minimum pressure, ensure that low pressure orifice is properly seated in valve.

Conversion label placement:

When fuel conversion is complete, fill out and apply included marking labels to the appliance as shown.

Fill out all fields on large rating plate conversion label 3300-589 (number in lower right corner) and place over field provided on stove lighting instruction tag (see Figure 20).

Figure 20 – Rating Plate Conversion Label Location

Fill out all fields on smaller ash lip conversion label 3300-593 and place on inside surface of ash lip (see Figure 21).

Place small valve warning label 3300-585 on or near valve body (see Figure 22).

Figure 21 – Ash Lip Conversion Label Location

Figure 22 – Valve Warning Label Location