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GAS KITS AND ACCESSORIES

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NAT/LP TUNE-UP KIT

INSTALLATION INSTRUCTIONS FOR NAT/LP TUNE-UP KITS (LB-108211 A - N) USED ON G14/21-40/60/80/100 AND GSR14/21-50/80/100 UNITS

⚠ WARNING

This conversion kit is to be installed by a qualified Lennox service technician or other qualified agency in accordance with the manufacturer's instructions and all applicable codes and requirements of the authority having jurisdiction in the USA, and the requirements of the CSA-B149 installation codes in Canada. If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life. The qualified service agency performing this work assumes responsibility for the proper conversion of this furnace with this kit.

Shipping & Packing List

See table 1 for the conversion kit numbers and the unit that matches it.

G14/G21-40 NAT

- 1 - Air box gasket
- 1 - Gas diaphragm
- 1 - Gasket
- 8 - #6 32 X 1/4" screws
- 8 - #8 32 X 1/2" screws
- 8 - #8 18 X 3/4" screws
- 1 - Air diaphragm (.031)
- 2 - Orifices (23), (31)

G14/G21-60 NAT

- 1 - Air box gasket
- 1 - Gas diaphragm
- 1 - Gasket
- 8 - #6 32 X 1/4" screws
- 8 - #8 32 X 1/2" screws
- 8 - #8 32 X 3/4" screws
- 2 - Air diaphragms (.035), (.040)
- 2 - Orifices (19), (28)

G14/G21-80 NAT

- 1 - Air box gasket
- 1 - Gas diaphragm
- 1 - Gasket
- 8 - #6 32 X 1/4" screws
- 8 - #8 32 X 1/2" screws
- 8 - #8 32 X 3/4" screws
- 1 - Air diaphragm (.0425)
- 2 - Orifices (4), (23)

G14-100-1,2, G14-130 NAT AND LP

- 1 - Air box gasket
- 1 - Gas diaphragm
- 1 - Gasket
- 8 - #6 32 X 1/2" screws
- 1 - Gas valve
- 1 - Purge blower
- 1 - Update kit
- 1 - LP changeover plate

G14-100-5,6,7, G21Q/V-100-ALL, GSR14-100-ALL, GSR21Q/V-100-ALL NAT

- 1 - Air box gasket
- 1 - Gas diaphragm
- 1 - Gasket
- 8 - #8 32 X 1" screws
- 3 - Air diaphragm (.037), (.039), (.040)
- 2 - Orifices (10), (13)

GSR14-50 AND GSR21-50 NAT

- 1 - Air box gasket
- 1 - Gas diaphragm
- 1 - Gasket
- 8 - #8 32 X 1/2" screws
- 8 - #8 18 X 3/4" screws
- 1 - Air diaphragm (.035)
- 1 - Orifices (29)



GSR14 AND GSR21Q/V-80 NAT

- 1 - Air box gasket
- 1 - Gas diaphragm
- 1 - Gasket
- 8 - #8 32 X 1/2" screws
- 8 - #8 18 X 3/4" screws
- 1 - Air diaphragm (.0425)
- 1 - Orifice (23)

G14/G21-40 LP

- 1 - Air box gasket
- 1 - Gas diaphragm
- 1 - Gasket
- 8 - #6 32 X 1/4" screws
- 8 - #8 32 X 1/2" screws
- 8 - #8 18 X 3/4" screws
- 2 - Air diaphragms (.035), (.040)
- 2 - Orifices (3/32), (36)

G14/G21-60 LP

- 1 - Air box gasket
- 1 - Gas diaphragm
- 1 - Gasket
- 8 - #6 32 X 1/4" screws
- 8 - #8 32 X 1/2" screws
- 8 - #8 18 X 3/4" screws
- 2 - Air diaphragms (.035), (.045)
- 2 - Orifices (31), (36)

G14/G21-80 LP

- 1 - Air box gasket
- 1 - Gas diaphragm
- 1 - Gasket
- 8 - #6 32 X 1/4" screws
- 8 - #8 32 X 1/2" screws
- 8 - #8 18 X 3/4" screws
- 2 - Air diaphragms (.0425), (.050)
- 2 - Orifices (28), (32)

G14Q-100-5,6,7, G21Q/V-100-1 THROUGH 9, AND GSR14/21-100-ALL LP

- 1 - Air box gasket
- 1 - Gas diaphragm
- 1 - Gasket
- 8 - #8 32 X 1" screws
- 8 - #8 32 X 1/2" screws
- 8 - #8 18 X 1/4" screws
- 3 - Air diaphragms (.039), (.040), (.044)
- 1 - Orifice (29), (31)

GSR14 AND GSR21-50 LP

- 1 - Air box gasket
- 1 - Gas diaphragm
- 1 - Gasket
- 8 - #8 32 X 1/2" screws
- 8 - #8 18 X 3/4" screws
- 1 - Air diaphragm (.035)
- 1 - Orifice (39)

GSR14 AND GSR21-80 LP

- 1 - Air box gasket
- 1 - Gas diaphragm
- 1 - Gasket
- 8 - #8 32 X 1/2" screws
- 8 - #8 18 X 3/4" screws
- 1 - Air diaphragm (.0425)
- 1 - Orifice (32)

Application

This kit has three functions:

- to update early generation G14 series units (G14-40/60/80-1 through -8 and G14Q5-80-1,-2) to a more current generation of G14 units;
- to tune up older G14/21 and GSR14/21 series units with new parts;
- provide repair parts for G14/21 and GSR14/21 units.

Note that the natural gas update kits (LB-59350CA-CC) are replaced by this kit.

See table 1 for the conversion kit numbers and the matching units.

**Table 1
Model Number and Kit Number**

Unit	Catalog Number	LB Number
G14/G21-40 NAT	74M57	LB-108211A
G14/G21-60 NAT	74M58	LB-108211B
G14/G21-80 NAT	74M59	LB-108211C
G14-100-1,2, G14-130 NAT & LP	74M60	LB-108211D
G14-100-5,6,7, G21Q/V-100-ALL, GSR14-100-ALL, GSRQ/V-100-ALL NAT	74M61	LB-108211E
GSR14-50 & GSR21-50 NAT	74M62	LB-108211F
GSR14 & GSR21Q/V-80 NAT	74M63	LB-108211G
G14/G21-40 LP	74M64	LB-108211H
G14/G21-60 LP	74M65	LB-108211J
G14/G21-80 LP	74M66	LB-108211K
G14Q-100-5,6,7, G21Q/V-100-1 THRU 9, & GSR14/21-100-ALL LP	74M67	LB-108211L
GSR14 & GSR21-50 LP	74M68	LB-108211M
GSR14 & GSR21-80 LP	74M69	LB-108211N

Installation

A-Gas Orifice Replacement

- 1 - Set thermostat to lowest setting. Shut off the gas supply before disconnecting the electrical power.
- 2 - Remove unit access panel and turn automatic gas valve knob to **OFF**.
- 3 - Loosen union located in gas line just below gas decoupler. Remove elbow/gas flapper valve assembly.
- 4 - Replace o-ring on gas flapper valve if original o-ring is worn and will not seal.
- 5 - Remove orifice and replace with the proper gas orifice provided. See table 2 for orifice sizes.
- 6 - Replace elbow/gas valve flapper assembly.

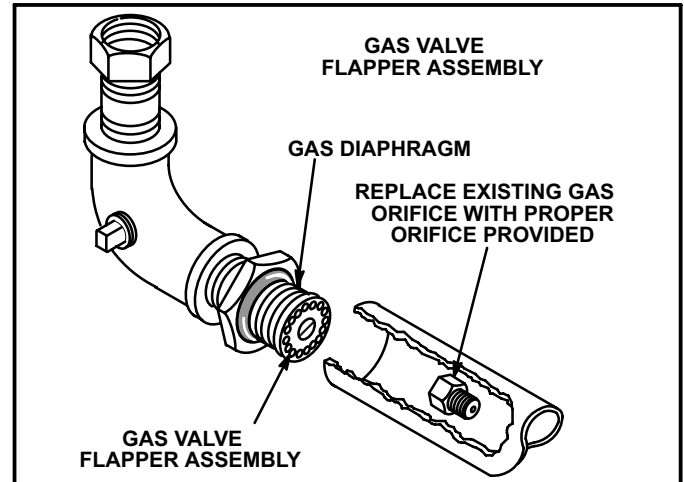


FIGURE 1

Table 2
Model Number and Orifice Sizes

Kit Number	Model Number	Orifice Part Number	Orifice Size	Orifice Drill Size	Air Diaphragm Part Number	Air Diaphragm Spacer Thickness
74M57 NAT	G14-40-1 through 15, C1-C6	60G08	0.154	#23	LB-81928CA	0.031
	G14-40-19 through 23, C22,C23 and G21-40-ALL	88G19	0.123	#31	LB-81928CA	0.031
74M58 NAT	G14-60-1 through 15, C1-C6	44G78	0.166	#19	LB-45918CC	0.040
	G14-60-19 through 23, C22,C23 and G21-60-ALL	54H08	0.1405	#28	LB-81928CB	0.035
74M59 NAT	G14-80-1 through 14, C1-C6 and G14Q5-80-1 through 5	37G82	0.209	#4	LB-81928CC	0.0425
	G14-80-18 through 22, C21, C22, G14Q5-80-8, 9, G21-80-ALL	60G08	0.154	#23	LB-81928CC	0.0425
74M60 NAT & LP	G14-100-1,2 and G14-130-1, 2 \ Natural Gas	37G76	0.199	#8	LB-55575CE	0.039
	G14-100-1,2 and G14-130-1, 2 LP Gas	37G77	0.1495	#25	LB-55575CE	0.039
74M61 NAT	G14-100-5, 6, 7	76G29	0.1935	#10	LB-55575CN	0.037
	GSR14-100-ALL	47H67	0.185	#13	LB-55575CN	0.037
	G21Q-100-1,3 & G21V-100-1 through 6	76G29	0.1935	#10	LB-55575CH	0.039
	G21Q-100-5 through 9 and G21V-100-7, 8	76G29	0.1935	#10	LB-93165A	0.040
	GSR21-100-ALL	47H67	0.185	#13	LB-55575CH	0.039
74M62 NAT	GSR14/GSR21-50-ALL	47H66	0.133	#29	LB-45918CG	0.035
74M63 NAT	GSR14/GSR21/GSR21V-80-ALL	60G08	0.154	#23	LB-81928CC	0.0425
74M64 LP	G14/G21-40-1 through 15, CP3, CP4	38G44	0.1065	#36	LB-45918CG	0.035
	G14-40-19 through 23, CP5 and G21-40-ALL	74G17	0.0938	3/32"	LB-81928CD	0.040
74M65 LP	G14-60-1 through 15, CP3, CP4	90K05	0.120	#31	LB-45918CB	0.045
	G14-60-19 through 23, CP5 and G21-60-ALL	38G44	0.1065	#36	LB-81928CB	0.035
74M66 LP	G14-80-1 through 14, CP3, CP4 and G14Q5-80-1 through 5	54H08	0.1405	#28	LB-45918CF	0.050
	G14-80-18 through 22, CP5, G14Q5-80-8, 9 and G21-80-ALL	60G09	0.116	#32	LB-81928CC	0.0425
64M67 LP	G14-100-5,6,7, G21Q-100-1, 3, 4 and G21V-100-1 through 6	57G00	0.136	#29	LB-55575CK	0.039
	GSR14-100-ALL	57G00	0.136	#29	LB-55575CA	0.044
	GSR21-100-ALL	57G00	0.136	#29	LB-55575CK	0.039
	G21Q-100-5 through 9 and G21V-100-7, 8	57G00	0.136	#29	LB-93165A	0.040
74M68 LP	GSR14/GSR21-50-ALL	60G07	0.0995	#39	LB-45918CG	0.035
74M69 LP	GSR14/GSR21/GSR21V-80-ALL	60G09	0.116	#32	LB-81928CC	0.0425

B-Air Diaphragm Replacement

⚠ WARNING

When servicing air diaphragm assembly, keep in mind that it is only moderately warm during unit operation. After unit cycles off, however, residual heat from the combustion chamber transfers back to valve causing it to become very hot. Allow valve to cool for 10 to 15 minutes before handling.

1 - Remove air intake chamber cover.

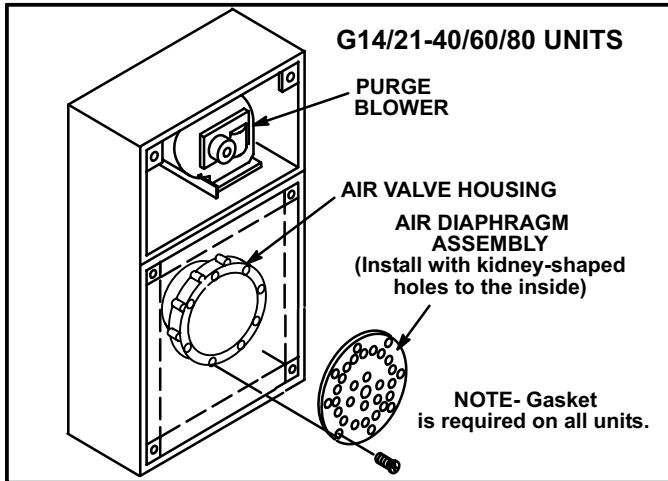


FIGURE 2

2 - Remove eight screws securing air diaphragm to air valve housing.

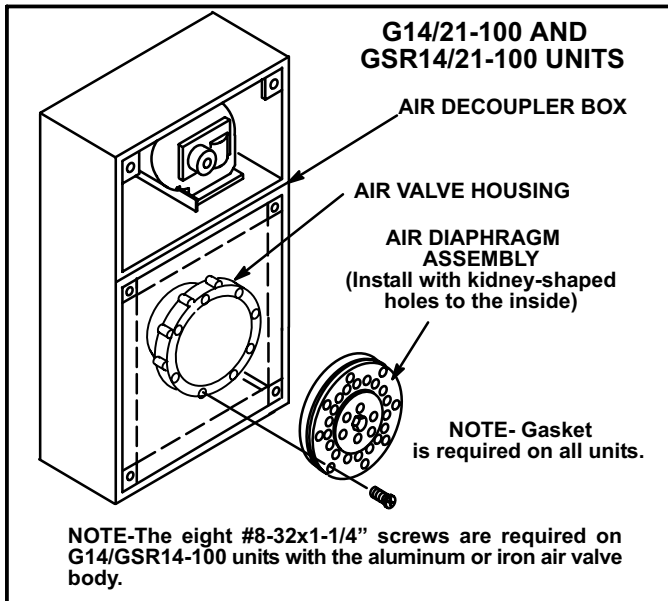


FIGURE 3

3 - Align replacement air flapper valve and install with existing screws. See figure 2 and 3. See table 2 for air diaphragm part number and spacer thickness.

CAUTION—Do not turn or remove center screw.

NOTE- On G14/GSR14-100 units, the eight #8-32 x 1-1/4" screws provided in kit are needed to install thicker air diaphragm assembly to an aluminum or iron air valve housing.

4 - Replace air intake chamber cover and continue.

Starting the Unit

Before starting unit, carefully check all piping connections for gas leaks. Use soap or other preferred means.

NOTE—Some soaps can be corrosive to stainless steel gas connector; rinse carefully.

⚠ CAUTION

Never use matches, candles or other sources of ignition to check for gas leaks.

Start unit according to operating instruction plate. BEFORE LIGHTING smell all around appliance area for gas.

Use only your hand to turn the gas control knob. Never use tools. If the knob will not turn by hand, do not try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

This appliance does not have a pilot. It is equipped with an ignition system which automatically lights the burner. Do **NOT** try to light by hand.

A-To place unit in operation

IMPORTANT—Follow the lighting instructions provided on the unit. If lighting instructions are not available, see section below.

- 1 - Make sure thermostat is set below room temperature and power is turned off to unit.
- 2 - This appliance is equipped with an ignition device which automatically lights the burner. **Burner CAN NOT be lit by hand.**
- 3 - Turn knob on gas valve clockwise to **OFF**. Do not force.
- 4 - Wait 15 minutes to clear out any gas. If you then smell gas, immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions. If you do not smell gas go to next step.
- 5 - Turn knob on gas valve counterclockwise to **ON**.
- 6 - Replace control access panel.
- 7 - Turn on all electrical power to unit.
- 8 - Set thermostat to desired setting.

B-Gas Pressure Adjustment

- 1 - Check gas line pressure with unit firing. Normal line pressure for natural gas is 7.0 in. w.c. Normal line pressure for LP gas is 11.0 in. w.c.

NOTE-Minimum gas supply pressure is listed on unit rating plate for normal input. Operation below minimum pressure may cause nuisance lockouts.

- 2 - After gas line pressure has been checked and adjusted, check manifold pressure at the pressure tap in elbow below expansion tank. The correct manifold pressure for natural gas is 2.0" in. w.c. The correct manifold pressure for LP gas is 9.0" in. w.c.

C-Means To Verify Gas Rate

Input must not exceed amount shown on unit rating plate. In cases where gas is not metered, the service technician performing the conversion will need to supply the meter. Input may then be checked by the following method:

The utility company may be contacted for the heating value of the gas. All other appliances should be shut off during the input check.

Locate meter just upstream in regulated pressure (7.0" w.c.). To check the Btu input rate, the dial hand on the gas meter should be timed for at least one revolution, using the one cubic foot dial.

To determine the number of seconds required for the flow of one cubic foot of gas, use the following formula:

$$\frac{\text{(BTU Content)} \\ \text{Heating Value Of Gas X 3600}}{\text{Furnace BTUH Input}}$$

Example: 1000 BTU gas
Furnace input 100,000 BTUH

Seconds for one cubic foot =

$$\frac{1000 \times 3600}{100,000} = 36 \text{ seconds}$$

Guidelines for Pulse Service

In order to maintain the efficiency and reliability of the furnace, the following service guidelines have been established and should be performed on each scheduled service inspection of a unit. As with any gas-fired appliance, incomplete combustion (CO) caused by improper maintenance along with leaks in the system could result in serious personal injury.

- Inspect heating system yearly. Inspect intake and exhaust PVC pipe for condensate leaks or joint separation. Repair, as necessary.
- Check supply and manifold gas pressure. Adjust pressure, as necessary.
- Check furnace firing rate by clocking gas meter. (Refer to installation instructions.)
- Test oxygen / carbon dioxide level of flue gas to determine if proper combustion is taking place.
- Test carbon monoxide levels in flue gas. Level should not exceed 50 PPM.
- Check temperature rise and make sure proper blower speed is selected to match nameplate rating.
- Inspect heat exchanger assembly for any signs of corrosion.
- Inspect secondary heat exchanger for dirt build-up and clean, as necessary.
- Inspect air diaphragm flapper material for dirt or deterioration and replace, if necessary. *Air flapper material **must be replaced every four years regardless of appearance.***
- Perform a pressure test of the heat exchanger and combustion chamber every four years.
- Inspect purge blower for dirt build-up every year and clean, as necessary.
- Inspect stainless steel flexible gas connector for corrosion.
Remember -- Some soaps used for leak testing are corrosive to stainless steel. Failure to thoroughly rinse gas connector after leak check can lead to corrosion.
- Check supply air blower wheel and clean, as necessary.
- Check fan and limit controls for proper operation and setting.
- Check all wiring for loose connections. Check for correct voltage.
- Inspect intake and exhaust pipe terminations to make sure they are free from obstruction.
- Inspect condensate lines for free flow of condensate during operation.
- Instruct homeowner to inspect filter monthly and clean or replace, as needed. Dirty filters cause inefficient operation. Running the unit with a dirty filter or without a filter could cause premature heat exchanger failure.
- Verify and check operation of existing CO detector.