

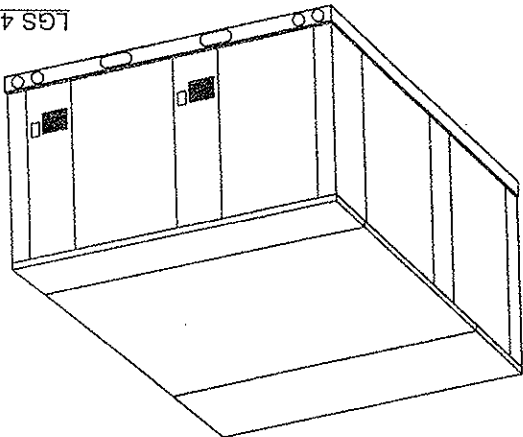
RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE

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**ROOFTOP GAS HEATING & VENTILATION UNITS
 CE CERTIFIED**

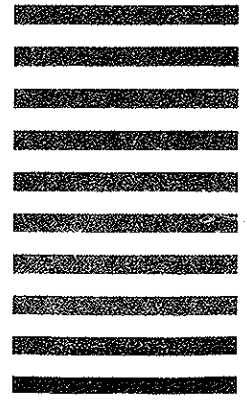
LGS 470 SHOWN



- LGS 470D
- LGS 470
- LGS 260
- LGS 235
- LGS 130

**Installation and
 Service Instructions**

L - Series





Lennox LGS Series Gas Heating Data - Models LGS-130 to LGS-470

Natural Gas cat. index 2H: AT, DK, ES, FI, GB, IE, IT, PT, SE. 2ELL: DE 2E(R)B: BE. 2ER: FR (Factory Setting).

Gas Type	LGS 130		LGS 235		LGS 260		LGS 470	
	low fire	high fire	low fire	high fire	low fire	high fire	low fire	high fire
input gross	21.8	33.5	39.2	60.3	43.6	67.0	78.3	120.5
input net	19.6	30.2	35.3	54.3	39.2	60.3	70.5	108.5
output	17.4	26.8	31.3	48.2	34.8	53.6	62.7	96.4
Gas cons.	2.07	3.19	3.73	5.74	4.15	6.38	7.46	11.48
press. setting	3.1		3.1		3.1		3.1	
Natural Gas cat. index 2L: NL (2E(R)B: BE 2ER: FR -G25 SETTING ONLY) - Pressure setting by installer.								
Gas Type	LGS 130		LGS 235		LGS 260		LGS 470	
	low fire	high fire	low fire	high fire	low fire	high fire	low fire	high fire
input gross	21.8	30.5	39.2	55.0	43.6	61.0	71.5	110.0
input net	19.6	28.1	35.3	50.6	39.2	56.1	64.4	101.2
output	17.4	24.4	31.3	44.0	34.8	48.8	57.2	88.0
Gas cons.	1.56	2.18	2.80	3.93	3.12	4.36	5.11	7.86
press. setting	11.0		21.7		11.0		21.7	
Propane cat. index 3P: BE, DE, ES, FR, GB, IE, NL, PT, Factory or field conversion								
Gas Type	LGS 130		LGS 235		LGS 260		LGS 470	
	low fire	high fire	low fire	high fire	low fire	high fire	low fire	high fire
input gross	21.8	30.5	39.2	55.0	43.6	61.0	71.5	110.0
input net	19.6	28.1	35.3	50.6	39.2	56.1	64.4	101.2
output	17.4	24.4	31.3	44.0	34.8	48.8	57.2	88.0
Gas cons.	1.56	2.18	2.80	3.93	3.12	4.36	5.11	7.86
press. setting	11.0		21.7		11.0		21.7	

Before installation, check that the local distribution conditions, nature of gas and pressure, and adjustment of the appliance are compatible.

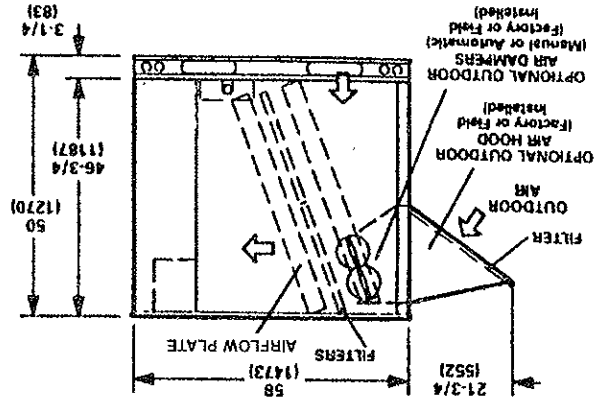
These appliances are suitable for use under the conditions defined by the gas categories listed above for the country of installation.

LGS series gas heating units are factory adjusted for 'G20' type natural gas for direct installation in Great Britain, Spain, Italy, Denmark, Ireland, Germany, Belgium and France.

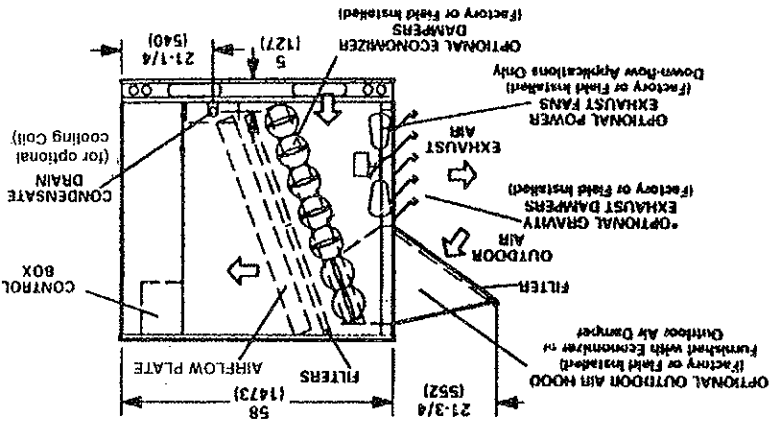
For installation in The Netherlands (cat. 1L) the gas pressure should be adjusted for natural gas type G25 as shown in the table above and the supplied rating plate label should be affixed to the appliance. In Belgium this adjustment may be made if the appliance is installed permanently on a network supplying gas type G25 (Ei). In France this adjustment may be made if supplied with gas type G25 (Ei) BUT the appliance MUST be returned to the factory setting above if it is subsequently supplied with gas type G20 (Es).



LEFT SIDE (Outdoor Air Dampers)

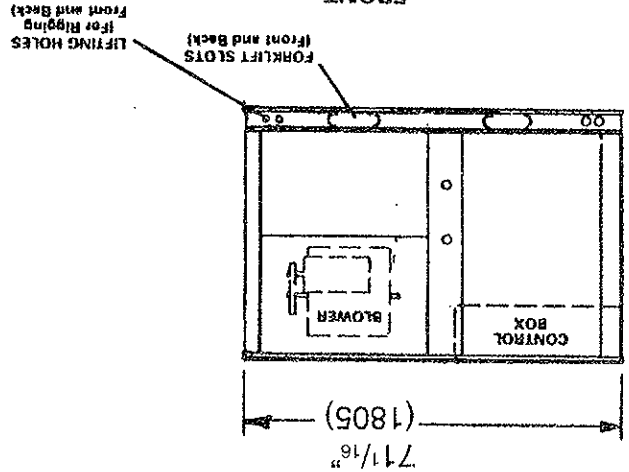


LEFT SIDE Return Air Section

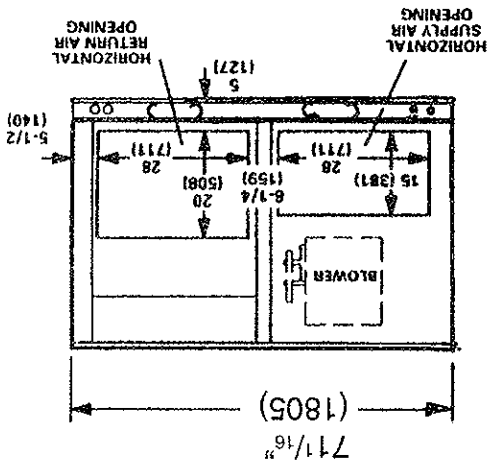


NOTE — Field Installed in Return Air Duct for Horizontal Applications

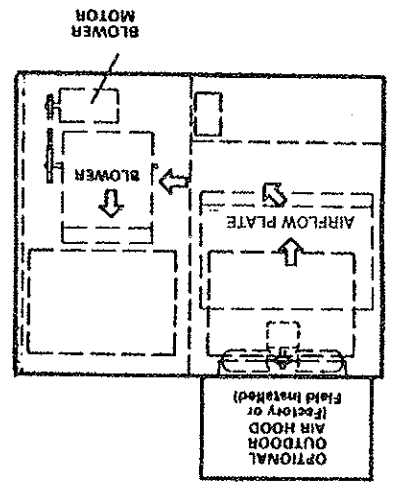
FRONT VIEW



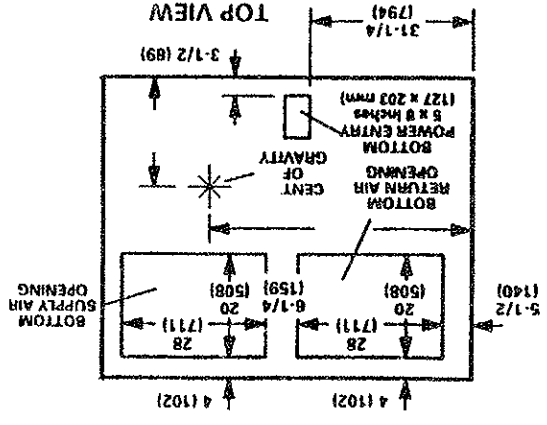
BACK VIEW

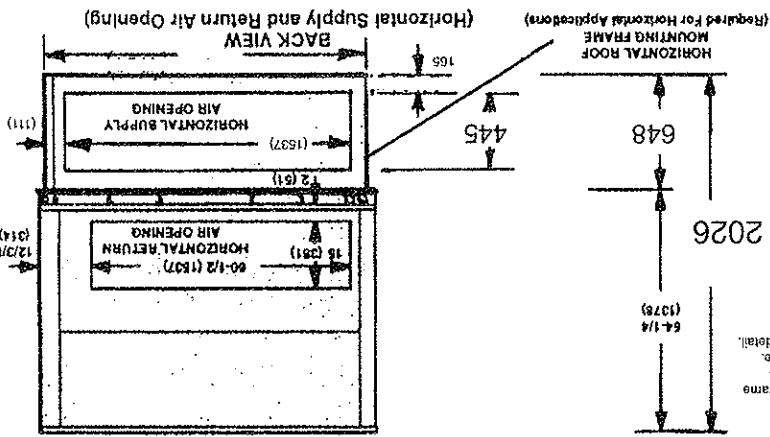


TOP VIEW

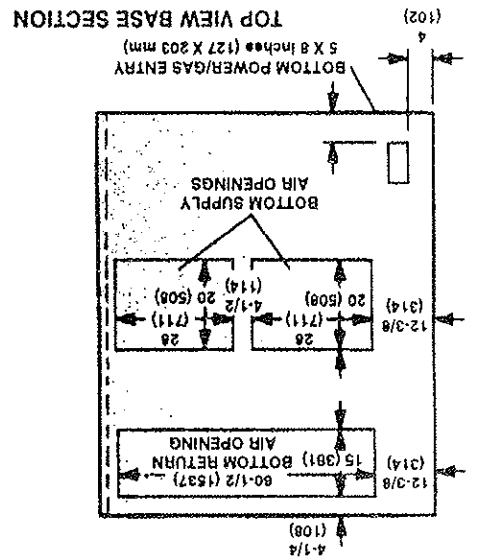
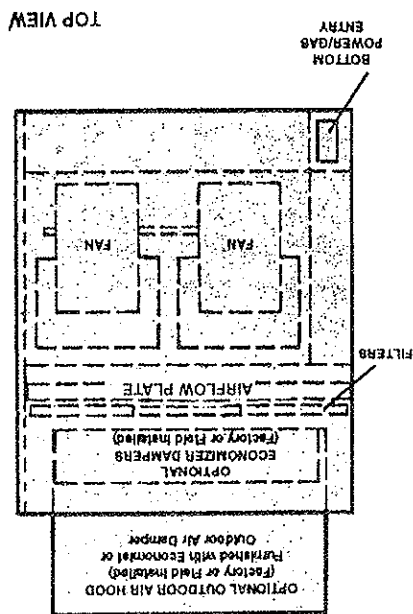
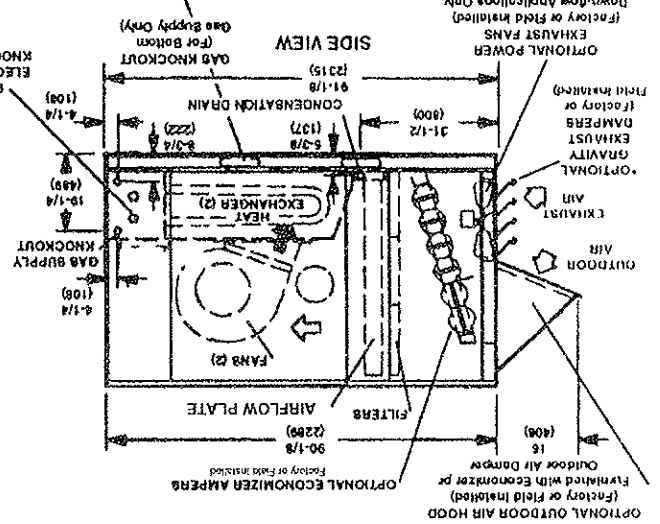
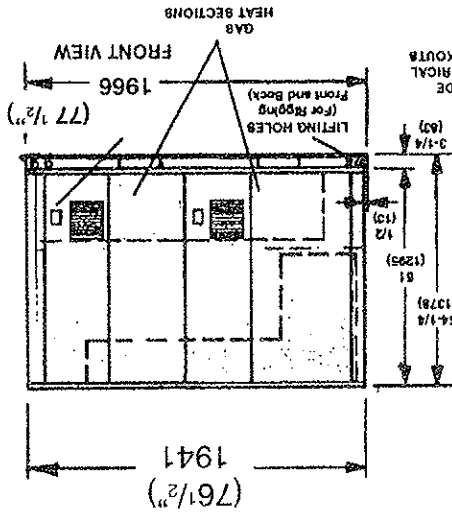


TOP VIEW Base Section





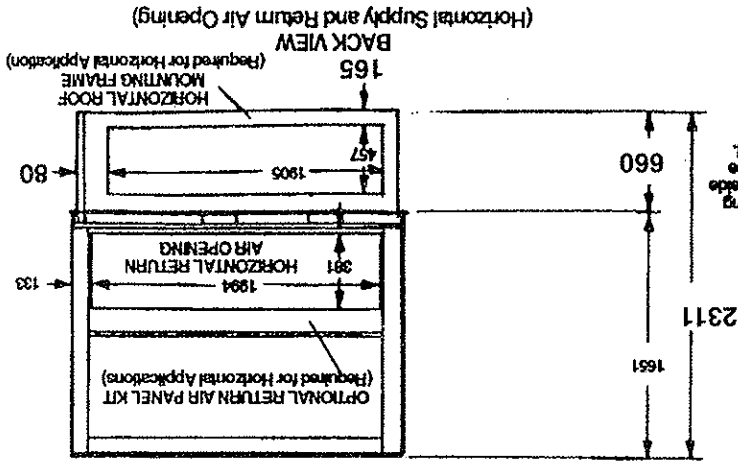
NOTE - Field installed in Return Air Duct for Horizontal Applications. (4 Sides)
 Fork Truck Slots



Note: Optional equipment shown for standard and optional features. Engineering Handbook for information only. See

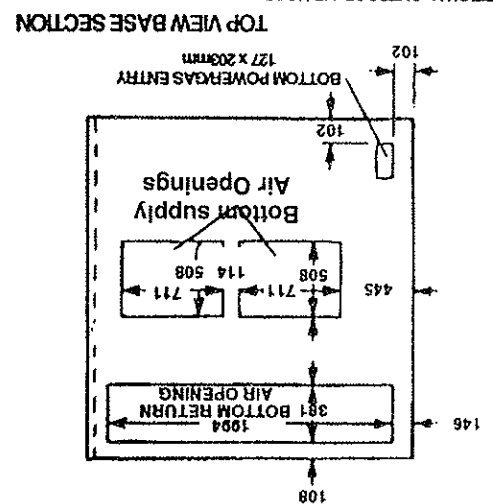
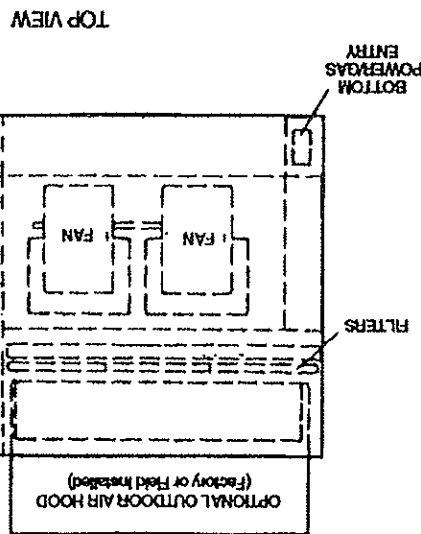
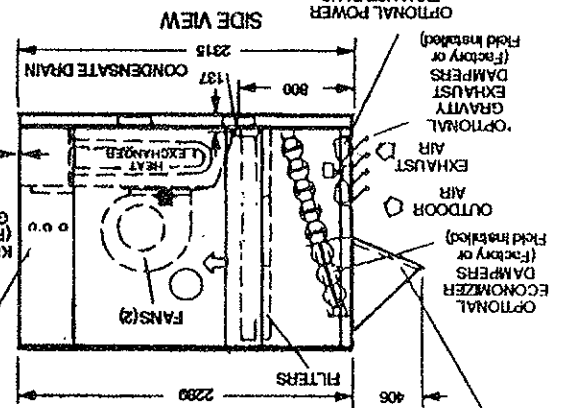
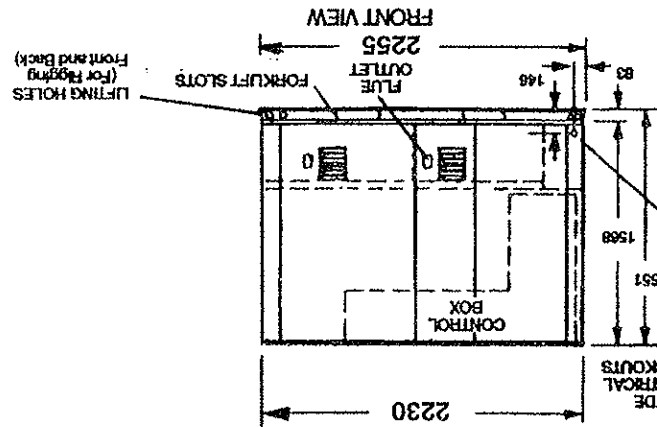
LGS 470D DIMENSIONS

Note: Optional equipment shown for information only. See Engineering Handbook for standard and optional features.



**NOTE - Top of Mounting Frame extends 102mm inside Typical Flashing Detail.

*NOTE - Field Installed in Return Air Duct for Horizontal Applications.



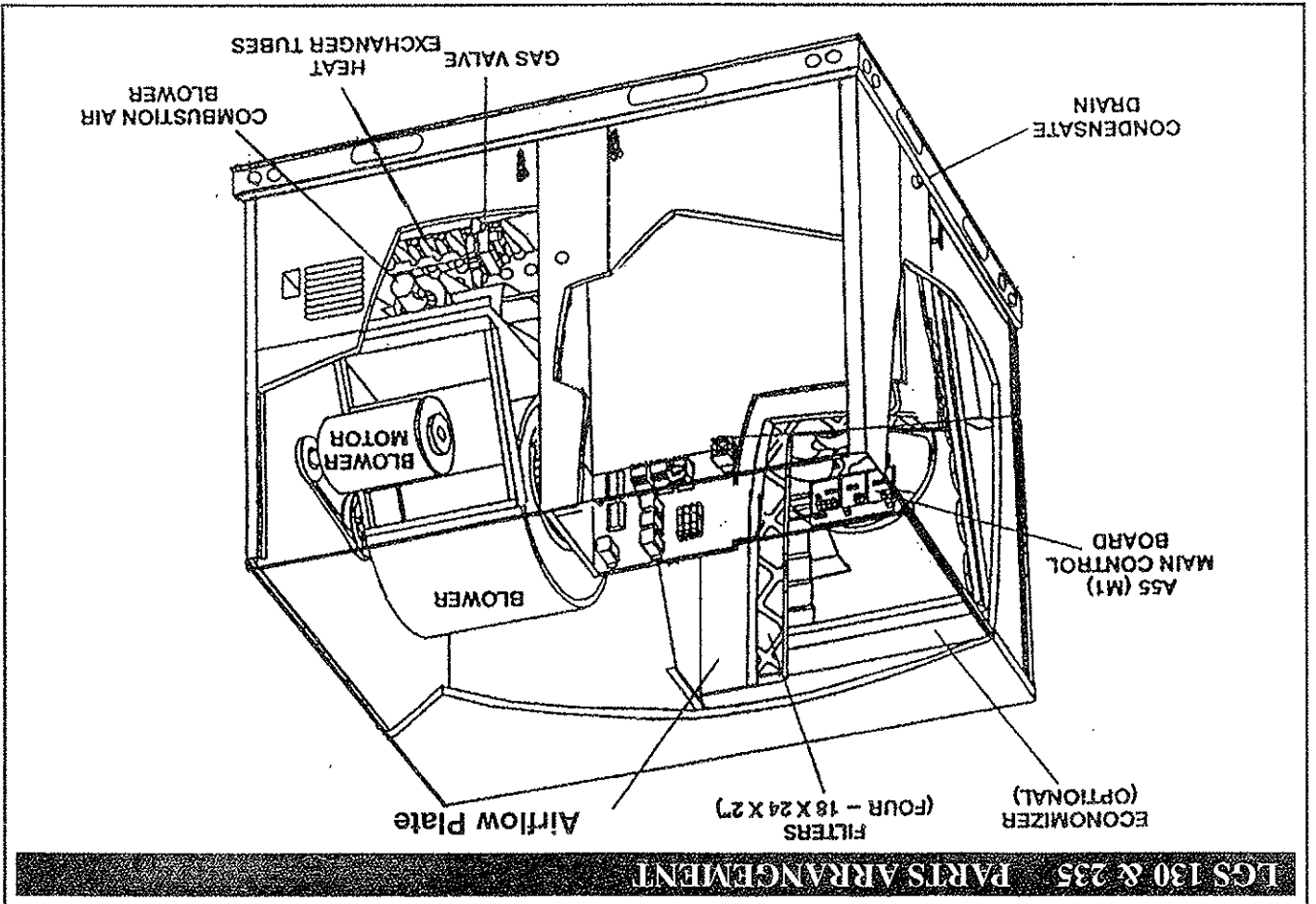
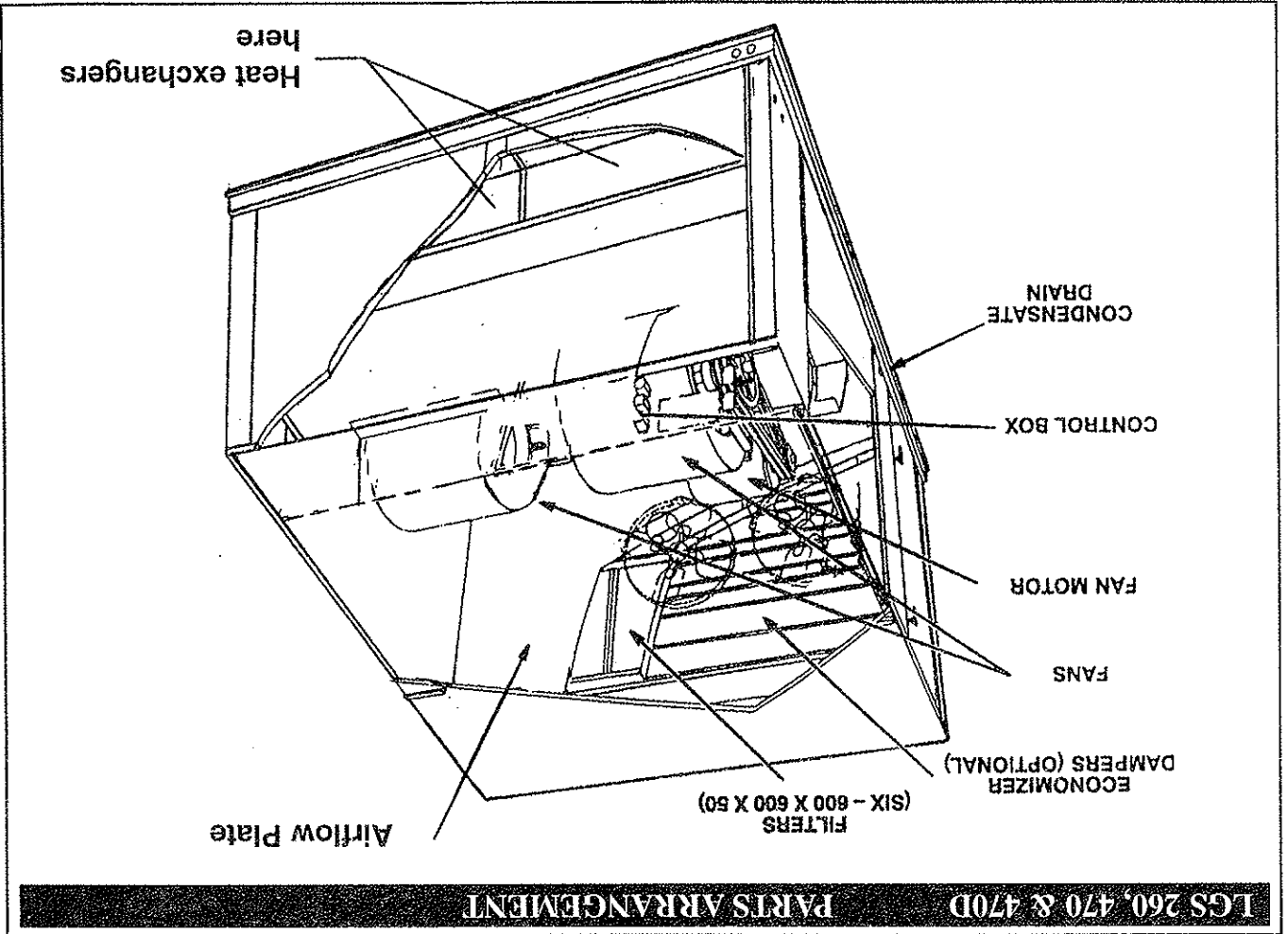
(Factory or Field Installed)

OPTIONAL OUTDOOR AIR HOOD (Factory or Field Installed)

BOTTOM POWER/GAS ENTRY

FILTERS

OPTIONAL OUTDOOR AIR HOOD (Factory or Field Installed)



SHIPPING AND PACKING LIST
 Package 1 of 1 contains:
 1 - Assembled unit
 Check unit for shipping damage. Receiving party should contact last carrier immediately if shipping damage is found.

GENERAL

These instructions are intended as a general guide and do not supersede local codes in any way. Authorities having jurisdiction should be consulted before installation.
 The LGS series are "CE" certified in accordance with the requirements of the European Gas Appliance Directive.

REQUIREMENTS

See figures 1 and 2 for unit clearances.
 NOTE - These units must not be used as a "construction heater" at any time during any phase of construction. Very low return air temperatures, harmful vapours, and mist/efficiency of the filters will damage the unit and its efficiency.
LGS 130 & 235

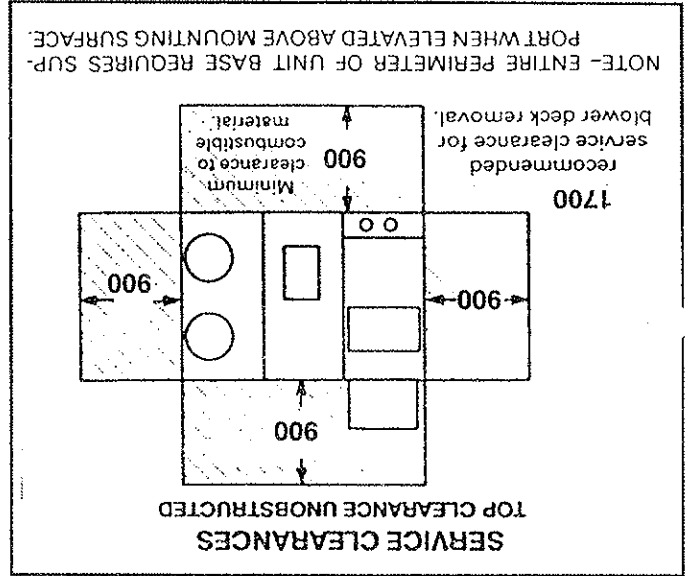


FIGURE 1

WARNING
 This equipment must only be installed and serviced by properly qualified personnel. Equipment contains dangerous voltages and moving parts. Always switch off power supply before opening any access panel. Electrical control panel doors and fan access door must be locked to prevent unauthorised access.

UNIT SUPPORT

In downflow discharge installations, install the unit on a non-combustible surface only. Unit may be installed on combustible surfaces when used in horizontal discharge applications or in downflow discharge applications when installed on an LSRMF roof mounting frame.
 NOTE - Securely fasten roof frame to roof per local codes.

A - Downflow Discharge Application

Roof Mounting with LSRMF

- 1 - The LSRMF roof mounting frame must be installed, flashed and sealed in accordance with the instructions provided with the frame.
- 2 - The LSRMF roof mounting frame should be square and level to 5mm per linear metre in any direction.
- 3 - Duct must be attached to the roof mounting frame and not to the unit; supply and return plenums must be installed before setting the unit.

LGS 260, 470 & 470D

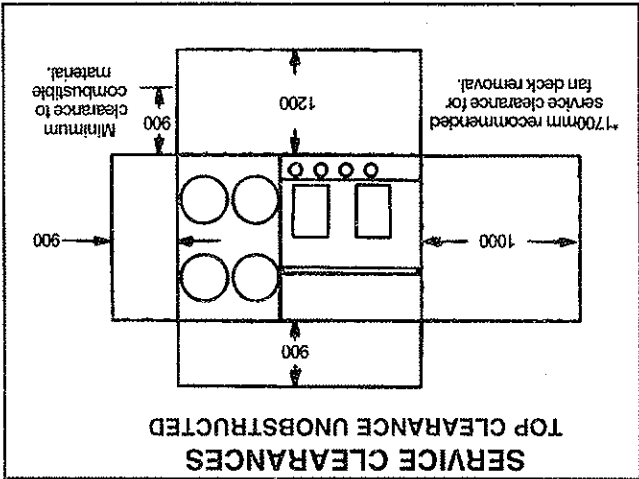
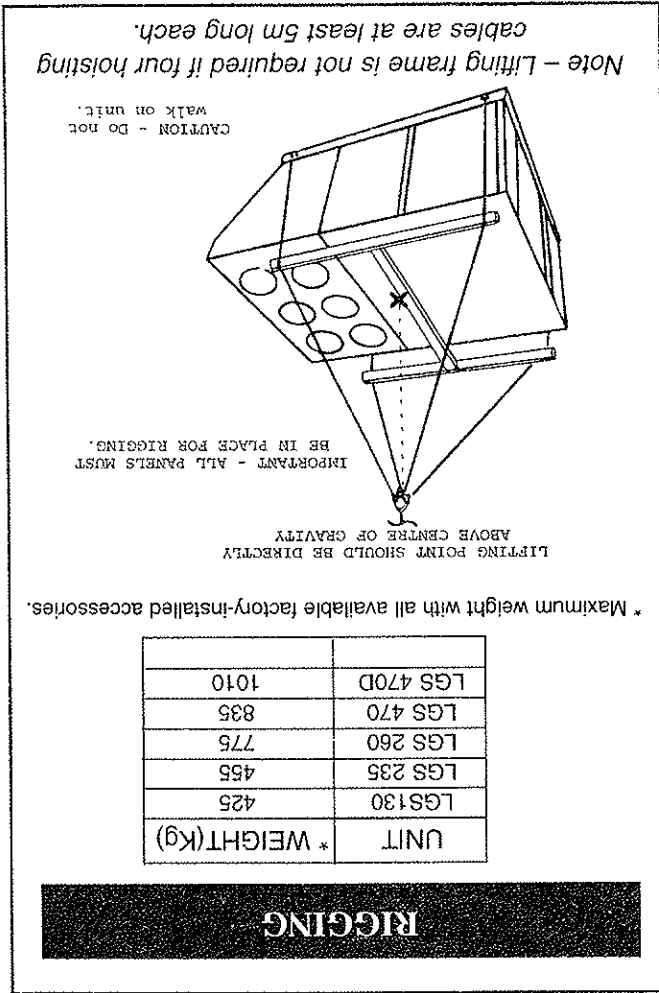


FIGURE 2

FIGURE 3



UNIT	* WEIGHT(Kg)
LGS130	425
LGS 235	455
LGS 260	775
LGS 470	835
LGS 470D	1010

RIGGING

- Note - Lifting frame is not required if four hoisting cables are at least 5m long each.*
- 1 - Detach wooden base protection before rigging.
 - 2 - Connect rigging to the unit base using both holes in each corner.
 - 3 - All panels must be in place for rigging.
 - 4 - Place field-provided H-style pick in place just above top edge of unit. Frame must be of adequate strength and length. (H-style pick prevents damage to top of unit.)
- Rig unit for lifting by attaching four cables to holes in unit base rail. See figure 3.

RIGGING UNIT FOR LIFTING

CAUTION

In downflow applications, do not drill or punch holes in base of unit. Leaking in roof may occur if unit base is punctured.

flashing and sealing compounds in accordance with applicable codes. Any duct passing through an unconditioned space must be insulated.

All exterior ducts, joints and openings in roof or building walls must be insulated and weather-proofed with

DUCT CONNECTION

- 1 - The unit base is fully enclosed and insulated, so an enclosed frame is not required.
 - 2 - The frames or supports must be constructed with non-combustible materials and should be square and level to 5mm per linear metre in any direction.
 - 3 - Frame or supports must be high enough to prevent any form of moisture from entering unit. Recommended minimum frame height is 350mm.
 - 4 - Duct must be attached to the roof mounting frame and not to the unit. Supply and return plenums must be installed before setting the unit.
 - 5 - Units require support along all four sides of unit base. Supports must be constructed of steel or suitably treated wood materials.
- NOTE - When installing a unit on a combustible surface for downflow discharge applications, an LARMF roof mounting frame is required.
- B - Horizontal Discharge Applications**
- 1 - LGS 130 & 235 units do not require horizontal roof mounting frame, both ducts connect to unit horizontal openings. All units require a horizontal conversion kit to provide the necessary horizontal duct openings and/or bottom opening covers.
 - 2-260 to 470 units installed in horizontal airflow applications must use an LSRMFH horizontal roof mounting frame. The supply air duct connects to the horizontal supply air opening on the LSRMFH. The return air duct connects to the unit horizontal return air opening. Refer to unit dimensions.
 - 3 - Specified installation clearances must be maintained when installing units. Refer to figures 1 & 2
 - 4 - Top of support slab should be approximately 100mm above the finished grade and located so no run-off water from higher ground can collect around the unit.
 - 5 - Units require support along all four sides of unit base. Supports must be constructed of steel or suitably treated wood materials.

Many types of roof frames can be used to install the unit depending upon different roof structures. Items to keep in mind when using the building frame or supports are:

Installer's Roof Mounting Frame

UNIT SUPPORT - Continued

Compounds used on threaded joints of gas piping shall be resistant to the action of liquified petroleum gases.

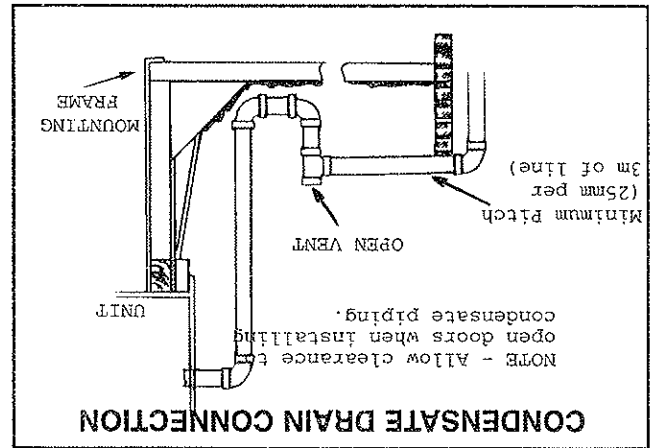
When making piping connections a drip leg may be installed on vertical pipe runs to serve as a trap for sediment or condensate. A plugged tap in field piping accessible for test gauge connection may be required upstream of gas supply connection to the unit. Install a ground joint union between the gas control manifold and the main manual shut-off valve. See figure 5 for gas supply piping entering outside the unit. Adapt existing piping as shown in figure 6 for bottom gas entry. Figure 6 shows complete bottom gas entry piping.

pressure.

connection must be within 5 mbar of nominal supply natural gas units, operating pressure at the unit gas use supply pipe smaller than unit gas connection. For pipe size for 1.2mbar maximum pressure drop. Do not run from gas meter must be considered in determining pipe size for 1.2mbar maximum pressure drop. Do not use supply pipe smaller than unit gas connection. For natural gas units, operating pressure at the unit gas connection must be within 5 mbar of nominal supply pressure.

GAS PIPING

FIGURE 4



Make drain connection to the drain coupling provided on unit. A trap must be installed between drain connection and an open vent for proper condensate removal. See figure 4. It is sometimes acceptable to drain condensate onto the roof or grade; however, a tee should be fitted to the trap to direct condensate downward. The condensate line must be vented. Check local codes concerning condensate disposal. Refer to pages 3 to 5 for condensate drain location.

UNITS WITH OPTIONAL COOLING COIL ONLY CONDENSATE DRAINS

FIGURE 6

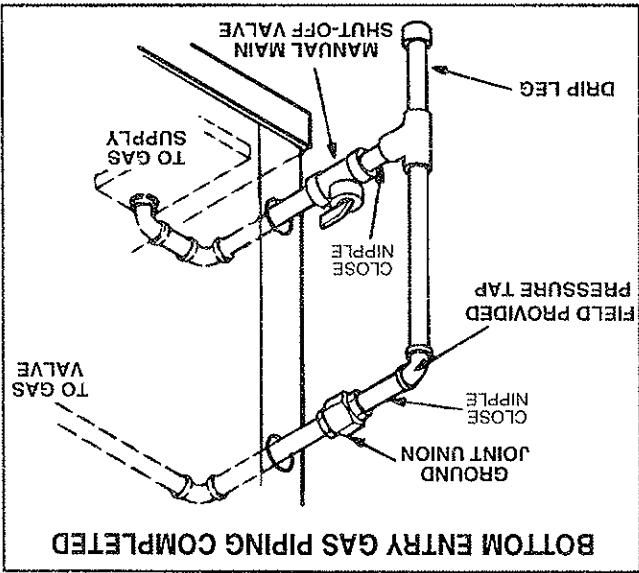
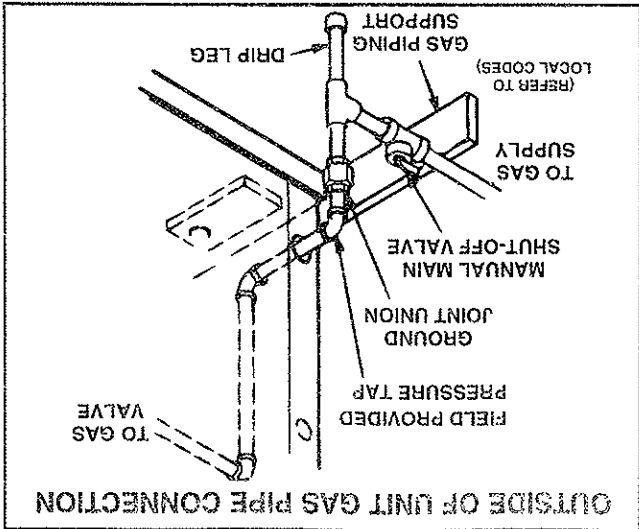


FIGURE 5



The A56 EMI economizer board controls economizer operation and provides potentiometers to control minimum damper position and enthalpy control adjustments. The economizer board is positioned on the A55 (M1) main control board in the unit control box. See the Integrated Modular Control Guide for economizer operation and adjustments.

A – Economizer

FACTORY-INSTALLED OPTIONS

When pressure testing gas lines, the gas valve must be disconnected and isolated. Gas valves can be damaged if subjected to more than 60 mbar. See figure 7.

If the test pressure is equal to or to less than 60 mbar, use the main manual shut-off valve before pressure testing to isolate the furnace from the gas supply system.

NOTE – Codes may require that manual main shut-off valve and union (furnished by installer) be installed in gas line external to unit. Union must be of the ground joint type.

After all connections have been made, check all piping connections for gas leaks. Use a soap solution or other preferred means. Do not use matches candles or other sources of ignition to check for gas leaks.

After all connections have been made, check all piping connections for gas leaks. Use a soap solution or other preferred means. Do not use matches candles or other sources of ignition to check for gas leaks.

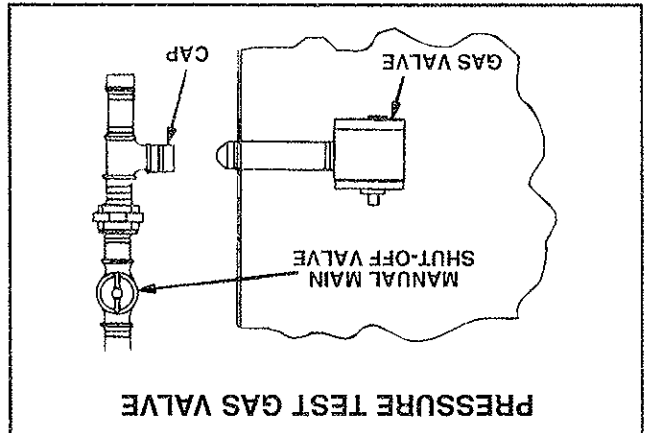


FIGURE 7

CAUTION

Some soaps used for leak detection are corrosive to certain metals. Carefully rinse piping thoroughly after leak test has been completed. Do not use matches, candles, flame or other sources of ignition for gas leaks.

NOTE – In case emergency shut down is required, turn off the main manual shut-off valve and disconnect main power to unit. These devices should be properly labeled by the installer.

PRESSURE TEST GAS PIPING

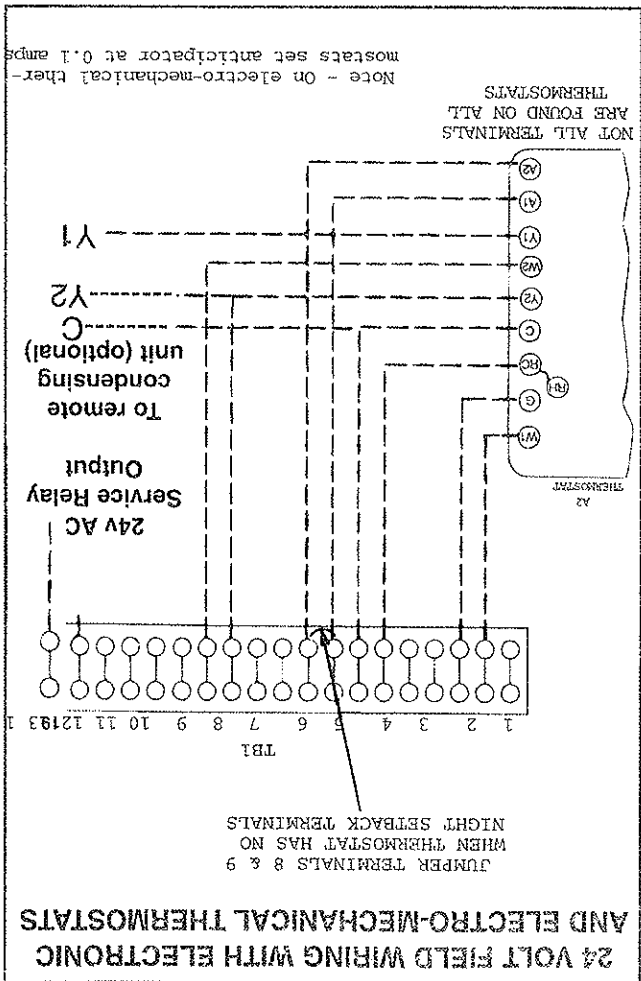


FIGURE 10

2 - Install thermostat assembly in accordance with instructions provided with thermostat. See figure 10 for field wiring electronic and electro-mechanical thermostats. If using other temperature control devices or energy management systems see instructions and wiring diagram provided by manufacturer.

IMPORTANT - Terminal connections at the wall plate or subbase must be made securely. Loose control wire connections may allow unit to operate but not with proper response to room demand.

B - Control Wiring

- hot or cold air from ducts
 - radiant heat from sun or appliances
 - concealed pipes and chimneys
- 1 - Route thermostat cable or wires from subbase through knockout provided in unit. Use 1.0mm² wire for all applications using remotely installed electro-mechanical and electronic thermostats.
 - 2 - Install thermostat assembly in accordance with instructions provided with thermostat. See figure 11 for field wiring electronic and electro-mechanical thermostats. If using other temperature control

CONTROL WIRING

A - Thermostat Location

Room thermostat mounts vertically on any non-conductive flat surface.

Locate thermostat approximately 1.5m above the floor in an area with good air circulation at average temperature. Avoid locating the room thermostat where it might be affected by:

- drafts or dead spots behind doors and in corners
- hot or cold air from ducts
- radiant heat from sun or appliances
- concealed pipes and chimneys

POWER SUPPLY

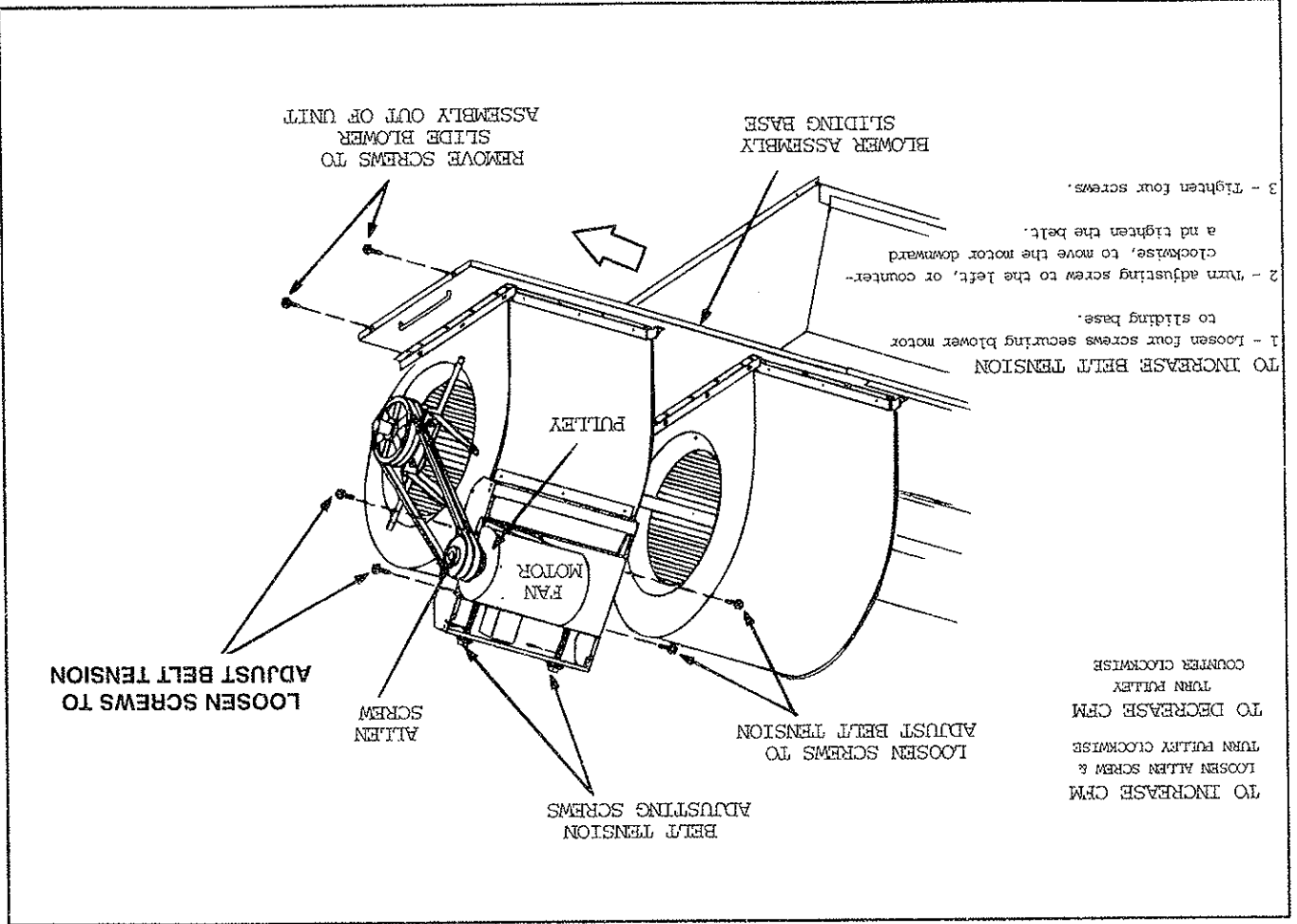
METRIC CONNECTIONS

not apply power or switch on the isolator until installation is complete. Refer to start-up directions. Refer closely to unit wiring diagram.

Refer to unit nameplate for minimum circuit ampacity and maximum fuse size.

Route power through the bottom power entry area and connect to line side of unit disconnect or circuit breaker. If unit does not contain optional controls package, connect power wiring to TB13 terminal block. See unit wiring diagram.

FIGURE 11

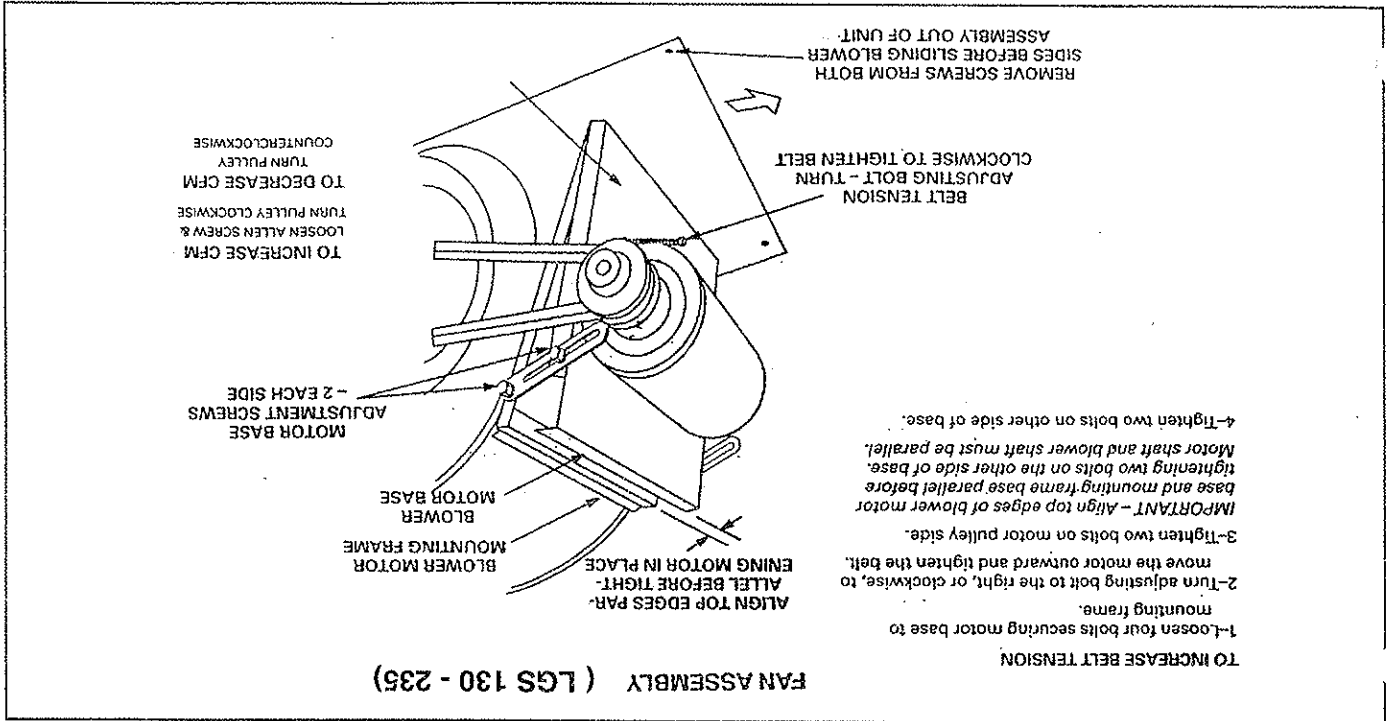


FAN ASSEMBLY (260/470/470D shown)

- A - Fan Operation**
- 1 - Fan operation is manually set at the thermostat.
 - 2 - With fan switch in **AUTO** position, the fans will cycle with demand. Fans and entire unit will be off when system switch is in **OFF** position.
 - 3 - **B - Fan Access**
 - 1 - Disconnect jack/plug connector to fan motor. Also disconnect jack/plug connector heating limit switches.
 - 2 - Remove screws on either side of fan assembly sliding base. See figure 11.
 - 3 - Pull base toward outside of unit.
- C - Determining Supply Air Volume**
- 1 - If an optional cooling coil is fitted, the following measurements must be made with a dry coil. Run fan without a cooling demand. Air filters must be in place when measurements are taken.
 - 2 - With all access panels in place, measure static pressure external to unit (from supply to return).
 - 3 - Measure the indoor fan motor RPM.
 - 4 - Referring to table 4, use static pressure and RPM readings to determine air volume. Use table 3 when installing units with any of the optional accessories listed.
 - 5 - The fan RPM can be adjusted at the motor pulley. Loosen Allen screw and turn adjustable pulley clockwise to increase airflow. Turn counterclockwise to decrease airflow. See figure 11.

FAN OPERATION AND ADJUSTMENTS

FIGURE 13



3 - Measure belt deflection force. For a used belt, the deflection force should be 32N (3.2kgF). A new belt deflection force should be 48N (4.8kgF). A force below these values indicates an under-tensioned belt. A force above these values indicates an over-tensioned belt.

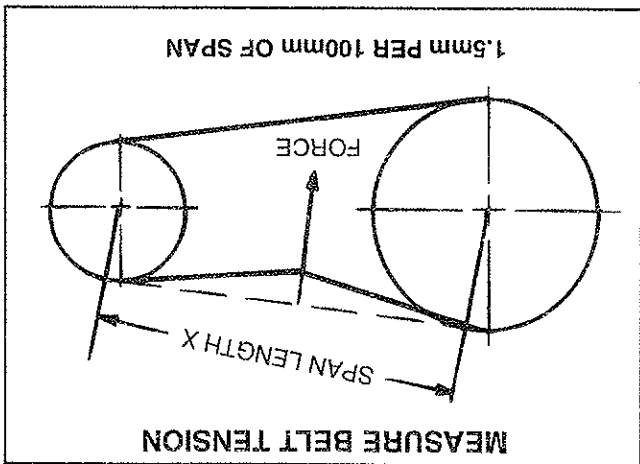


FIGURE 12

E - Check Belt Tension

Over-tensioning belts shortens belt and bearing life. Check belt tension as follows:

- 1 - Measure span length X. See figure 12.
 - 2 - Apply perpendicular force to centre of span (X) with enough pressure to deflect belt 1.5mm per 100mm of span length.
- Example: Deflection distance of a 400mm span would be 6mm.

D - Fan Belt Adjustment

Maximum life and wear can be obtained from belts only if proper pulley alignment and belt tension are maintained. Tension new belts after a 24-48 hour period of operation. This will allow belt to stretch and seat grooves.

- 1 - Loosen four screws securing fan motor to sliding base. See figures 11 or 13.
- 2 - To increase belt tension - Turn belt tension adjusting screw to the left, or counterclockwise, to tighten the belt. This increases the distance between the fan motor and the fan housing.

To loosen belt tension - Turn the adjusting screw to the right, or clockwise to loosen belt tension.

- 3 - Tighten four screws securing fan motor to sliding base once adjustments have been made.

- Continued -



TABLE 2

DRIVE KIT PART NUMBER & SPEED RANGE (LOWEST / HIGHEST)

Unit Model No.	Motor Outputs		DRIVE KIT PART NUMBER & SPEED RANGE (LOWEST / HIGHEST)					
	hp	kW	Drive 1	Drive 2	Drive 3	Drive 4	Drive 5	Drive 6
'B' Box LGS 130 & 235 ONLY	2	1.5	LDK10/15-1 562/764	-	LDK10/15-3 739/925	-	LDK10/15-5 917/1152	-
	3	2.2	-	-	-	STD DRIVE 750/938	-	LDK10/15-6(3) 930/1169
	5	3.7	-	LDK10/15-2 561/776	-	LDK10/15-4(5) 739/924	-	LDK10/15-6 916/1151
'C' Box LGS 260 & 470,	3	2.2	-	LDK18/24-2(3) 570/755	LDK18/24-3(3) 710/870	LDK18/24-4(3) 790/990	-	-
	5	3.7	-	LDK18/24-2 570/755	LDK18/24-3 710/870	STD DRIVE 790/990	-	-
	7.5	5.6	-	-	-	-	LDK18/24-5 790/990	LDK18/24-6 870/1070
'D' Box LGS 470D ONLY	5	3.7	STD ON 300 630/790 LDK36-1 630/790	LDK30-2 710/900 LDK36-2 710/900	-	-	-	-
	7.5	5.6	-	-	LDK30-3 710/870 STD ON 360 710/870	-	LDK30-5(7.5) 830/980 LDK36-5(7.5) 830/980	-
	10	7.5	-	-	-	LDK30-4 700/840 LDK36-4 700/840	LDK30-5(10) 870/1020 LDK36-5(10) 870/1020	-

Air Volume	Gas Heat Exchanger (LGA Models)		cfm	L/s
	Low Fire	High Fire		
2250	.05 (12)	.09 (22)	1060	.035 (9)
2500	.05 (12)	.11 (27)	1180	.04 (510)
2750	.06 (15)	.13 (32)	1300	.045 (11)
3000	.07 (17)	.16 (40)	1415	.05 (12)
3250	.08 (20)	.19 (47)	1535	.06 (15)
3500	.09 (22)	.22 (55)	1650	.07 (17)
3750	.10 (25)	.26 (65)	1770	.075 (19)
4000	.11 (27)	.30 (75)	1890	.08 (20)
4250	.12 (30)	.34 (85)	2005	.09 (22)
4500	.13 (32)	.38 (94)	2125	.10 (25)
4750	.14 (35)	.42 (104)	2240	.11 (27)
5000	.16 (40)	.47 (117)	2360	.12 (30)
5250	.18 (45)	.52 (129)	2475	.13 (32)
5500	.20 (50)	.57 (142)	2595	.14 (35)
5750	.22 (55)	.62 (154)	2715	.15 (37)
60000	.24 (60)	.68 (169)	2830	.16 (40)

FACTORY INSTALLED OPTIONS/FIELD INSTALLED ACCESSORY AIR RESISTANCE

Horizontal Roof Mounting Frame	Economizer	Gas Heat Exchanger (LGA Models)		L/S	Air Volume
		Low Fire	High Fire		
		.05 (12)	.09 (22)	.05 (12)	4500
		.05 (12)	.10 (25)	.05 (12)	4750
		.06 (15)	.11 (27)	.05 (12)	5000
		.06 (15)	.12 (20)	.06 (15)	5250
		.06 (15)	.13 (32)	.06 (15)	5500
		.07 (17)	.14 (35)	.06 (15)	5750
		.07 (17)	.15 (37)	.07 (17)	6000
		.08 (20)	.16 (40)	.07 (17)	6250
		.08 (20)	.17 (42)	.08 (20)	6500
		.08 (20)	.18 (45)	.08 (20)	6750
		.09 (22)	.19 (47)	.09 (22)	7000
		.09 (22)	.20 (50)	.09 (22)	7250
		.10 (25)	.21 (52)	.10 (25)	7500
		.10 (25)	.23 (57)	.10 (25)	7750
		.11 (27)	.24 (60)	.11 (27)	8000
		.11 (27)	.25 (62)	.11 (27)	8250
		.12 (30)	.26 (65)	.12 (30)	8500
		.12 (30)	.28 (70)	.12 (30)	8750
		.13 (32)	.29 (72)	.13 (32)	9000
		.14 (35)	.31 (77)	.14 (35)	9250
		.14 (35)	.32 (80)	.14 (35)	9500
		.15 (37)	.34 (85)	.15 (37)	9750
		.16 (40)	.35 (87)	.16 (40)	10,000

FACTORY INSTALLED OPTIONS/FIELD INSTALLED ACCESSORY AIR RESISTANCE

LGS 260 - 470

TABLE 3(B)



BURNER CONTROL LED FLASH CODES

Horizontal Roof Mounting Frame	Economizer	Gas Heat Exchanger (LGA Models)		L/S	cfm
		Low Fire	High Fire		
		.15 (37)	.25 (62)	.3540	7500
		.17 (42)	.28 (70)	.3775	8000
		.20 (50)	.31 (77)	.4010	8500
		.22 (55)	.34 (85)	.4245	9000
		.24 (50)	.38 (94)	.4485	9500
		.27 (67)	.42 (104)	.4720	10,000
		.30 (75)	.46 (114)	.4955	10,500
		.33 (82)	.50 (137)	.5190	11,000
		.37 (92)	.55 (137)	.5424	11,500
		.40 (99)	.60 (149)	.5665	12,000
		.44 (109)	.65 (162)	.5900	12,500
		.48 (119)	.70 (174)	.6135	13,000
		.53 (132)	.76 (189)	.6370	13,500
		.57 (142)	.82 (204)	.6605	14,000
		.62 (154)	.89 (221)	.6845	14,500
		.68 (169)	.95 (236)	.7080	15,000

FACTORY INSTALLED OPTIONS/FIELD INSTALLED ACCESSORY AIR RESISTANCE

LGS 470D

TABLE 3(C)

1. Normal operation, no demand for heat: LED flashes slowly (approx. 1 flash per second) indicating presence of power and normal control function).
2. Normal operation, demand for heat: LED flashes quickly (approx. 2 per second)
3. Ignition control internal fault: LED steady ON
4. False flame signal: 5 quick flashes repeated until reset.
5. High limit trip: 4 quick flashes repeated until reset.
6. Pressure switch open: 3 quick flashes repeated until switch closes.
7. Flame failure: 2 quick flashes repeated until reset.
- Codes 4 to 7 will normally be accompanied by error (burner 1) or 68 (burner 2) on the IMC control indicating that the burner has failed to operate during heat demand. Repeated locking-out & resetting of ignition control can cause error 59 (burner 1) or 69 (burner 2) to be displayed requiring reset at the IMC control.

TABLE 4(A)

LGS 130 - 235 BASE UNIT BLOWER PERFORMANCE

NOTES - BLOWER PERFORMANCE TABLE INCLUDES INTERNAL RESISTANCE FOR LGS 130 BASE UNIT ONLY.

- 1) All data is measured with filters in place.
- FOR OTHER UNITS, OR BASE UNIT WITH OPTIONS/ACCESSORIES
- TOTAL STATIC PRESSURE = TOTAL ADDED INTERNAL STATIC PRESSURE + TOTAL ADDED EXTERNAL STATIC PRESSURE.
- TO DETERMINE TOTAL ADDED INTERNAL STATIC PRESSURE: For design air volume, determine total air resistance for
- 1) wet indoor coil of selected unit, if fitted plus
- 2) all selected factory installed options (heat section, economizer, etc.) and field installed accessories (horizontal roof frame, diffuser, etc.).

NOTE - BOLD INDICATES FIELD FURNISHED DRIVE.

Unshaded area denotes 2 hp (1.5kW) blower motor. Light shaded area denotes 3 hp (2.2 kW) blower motor. Dark shaded area denotes 5 hp (3.7 kW) blower motor.

Air Volume cfm (m3/s)	TOTAL STATIC PRESSURE EXTERNAL TO UNIT - Inches Water Gauge (Pa)																			
	.20 (50)	.40 (100)	.60 (150)	.80 (200)	1.00 (250)	1.20 (300)	1.40 (350)	1.60 (400)	1.80 (450)	2.00 (495)	2.20 (545)	2.40 (595)	2.60 (645)	2.80 (695)						
	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)		
2250 (1.05)	455 (0.22)	0.30 (0.22)	555 (0.34)	0.45 (0.34)	640 (0.45)	0.60 (0.45)	720 (0.60)	0.80 (0.75)	790 (0.75)	1.00 (0.90)	855 (0.90)	1.20 (1.04)	915 (1.04)	975 (1.19)	1.60 (1.38)	1030 (1.38)	1.85 (1.53)	1080 (1.53)	2.05 (1.72)	1130 (1.72)
2500 (1.20)	475 (0.30)	0.40 (0.30)	575 (0.41)	0.55 (0.41)	660 (0.52)	0.70 (0.52)	735 (0.67)	805 (0.82)	870 (0.82)	930 (0.97)	990 (0.97)	1.10 (1.16)	1.15 (1.16)	1.55 (1.31)	1.75 (1.49)	2.00 (1.49)	2.25 (1.68)	2.25 (1.68)	2.55 (1.87)	2.55 (1.87)
2750 (1.30)	495 (0.34)	0.45 (0.34)	595 (0.48)	0.65 (0.48)	675 (0.63)	0.85 (0.63)	750 (0.78)	820 (0.93)	885 (0.93)	945 (1.08)	1.05 (1.08)	1.15 (1.27)	1.25 (1.27)	1.95 (1.42)	2.20 (1.42)	2.45 (1.64)	2.60 (1.64)	2.60 (1.64)	2.95 (1.98)	2.95 (1.98)
3000 (1.40)	525 (0.41)	0.55 (0.41)	615 (0.56)	0.75 (0.56)	695 (0.71)	0.95 (0.71)	770 (0.90)	835 (1.04)	895 (1.04)	955 (1.19)	1.05 (1.19)	1.15 (1.38)	1.25 (1.38)	2.10 (1.57)	2.35 (1.57)	2.60 (1.75)	2.60 (1.75)	2.95 (1.98)	2.95 (1.98)	3.30 (2.13)
3250 (1.55)	550 (0.48)	0.65 (0.48)	640 (0.67)	0.90 (0.67)	715 (0.82)	1.10 (0.82)	790 (1.01)	855 (1.19)	915 (1.19)	975 (1.53)	1.05 (1.53)	1.15 (1.53)	1.25 (1.53)	2.05 (1.75)	2.30 (1.75)	2.55 (1.94)	2.55 (1.94)	2.95 (1.98)	2.95 (1.98)	3.30 (2.13)
3500 (1.65)	580 (0.60)	0.80 (0.60)	665 (0.78)	1.05 (0.78)	740 (0.93)	1.25 (0.93)	810 (1.12)	870 (1.31)	930 (1.31)	990 (1.49)	1.15 (1.49)	1.25 (1.49)	1.35 (1.49)	2.15 (1.90)	2.40 (1.90)	2.65 (2.13)	2.65 (2.13)	3.00 (2.31)	3.00 (2.31)	3.35 (2.31)
3750 (1.75)	605 (0.71)	0.95 (0.71)	690 (0.90)	1.20 (0.90)	760 (1.08)	1.45 (1.08)	830 (1.27)	890 (1.45)	950 (1.45)	1005 (1.87)	1.25 (1.87)	1.35 (1.87)	1.45 (1.87)	2.25 (2.09)	2.50 (2.09)	2.75 (2.31)	2.75 (2.31)	3.10 (2.50)	3.10 (2.50)	3.35 (2.50)
4000 (1.90)	635 (0.82)	1.10 (0.82)	715 (1.04)	1.40 (1.04)	785 (1.23)	1.65 (1.23)	850 (1.42)	910 (1.64)	965 (1.64)	1020 (2.05)	1.35 (2.05)	1.45 (2.05)	1.55 (2.05)	2.35 (2.28)	2.60 (2.28)	2.85 (2.50)	2.85 (2.50)	3.20 (2.80)	3.20 (2.80)	3.35 (2.80)
4250 (2.00)	665 (0.97)	1.30 (0.97)	740 (1.19)	1.60 (1.19)	810 (1.38)	1.85 (1.38)	870 (1.60)	930 (1.83)	985 (1.83)	1040 (2.28)	1.45 (2.28)	1.55 (2.28)	1.65 (2.28)	2.45 (2.50)	2.70 (2.50)	2.95 (2.73)	2.95 (2.73)	3.30 (3.05)	3.30 (3.05)	3.65 (3.05)
4500 (2.15)	695 (1.12)	1.50 (1.12)	770 (1.34)	1.80 (1.34)	835 (1.57)	2.10 (1.57)	895 (1.45)	955 (1.60)	1015 (1.60)	1060 (2.05)	1.55 (2.05)	1.65 (2.05)	1.75 (2.05)	2.55 (2.50)	2.80 (2.50)	3.05 (2.73)	3.05 (2.73)	3.40 (3.15)	3.40 (3.15)	3.75 (3.15)
4750 (2.25)	725 (1.31)	1.75 (1.31)	795 (1.53)	2.05 (1.53)	860 (1.79)	2.40 (1.79)	920 (2.01)	975 (2.24)	1030 (2.24)	1080 (2.72)	1.65 (2.72)	1.75 (2.72)	1.85 (2.72)	2.65 (2.50)	2.90 (2.50)	3.15 (2.73)	3.15 (2.73)	3.50 (3.25)	3.50 (3.25)	3.85 (3.25)
5000 (2.35)	760 (1.53)	2.05 (1.53)	825 (1.75)	2.35 (1.75)	885 (1.98)	2.65 (1.98)	945 (2.24)	1000 (2.50)	1050 (2.50)	1100 (2.98)	1.75 (2.98)	1.85 (2.98)	1.95 (2.98)	2.75 (2.50)	3.00 (2.50)	3.25 (2.73)	3.25 (2.73)	3.60 (3.35)	3.60 (3.35)	3.95 (3.35)
5250 (2.50)	790 (1.72)	2.30 (1.72)	855 (1.98)	2.65 (1.98)	910 (2.20)	2.95 (2.20)	970 (2.50)	1025 (2.76)	1075 (2.76)	1120 (3.24)	1.85 (3.24)	1.95 (3.24)	2.05 (3.24)	2.85 (2.50)	3.10 (2.50)	3.35 (2.73)	3.35 (2.73)	3.70 (3.45)	3.70 (3.45)	4.05 (3.45)
5500 (2.60)	820 (1.94)	2.60 (1.94)	880 (2.20)	2.95 (2.20)	940 (2.40)	3.30 (2.40)	995 (2.76)	1045 (3.02)	1095 (3.02)	1140 (3.50)	1.95 (3.50)	2.05 (3.50)	2.15 (3.50)	2.95 (2.50)	3.20 (2.50)	3.45 (2.73)	3.45 (2.73)	3.80 (3.55)	3.80 (3.55)	4.15 (3.55)
5750 (2.70)	850 (2.20)	2.95 (2.20)	910 (2.46)	3.30 (2.46)	965 (2.76)	3.70 (2.76)	1020 (3.02)	1070 (3.28)	1120 (3.28)	1165 (3.76)	2.05 (3.76)	2.15 (3.76)	2.25 (3.76)	3.05 (2.50)	3.30 (2.50)	3.55 (2.73)	3.55 (2.73)	3.90 (3.55)	3.90 (3.55)	4.25 (3.55)
6000 (2.85)	885 (2.50)	3.35 (2.50)	940 (2.76)	3.70 (2.76)	995 (3.06)	4.10 (3.06)	1045 (3.32)	1095 (3.58)	1145 (3.58)	1190 (4.06)	2.15 (4.06)	2.25 (4.06)	2.35 (4.06)	3.15 (2.50)	3.40 (2.50)	3.65 (2.73)	3.65 (2.73)	4.00 (3.55)	4.00 (3.55)	4.35 (3.55)

TABLE 4(C)

MANDATA - BASE UNIT LGS 470D

NOTES - FAN PERFORMANCE TABLE INCLUDES INTERNAL RESISTANCE FOR LGS 470D BASE UNIT ONLY.
 All data is measured with air filters in place.
 FOR OTHER UNITS, OR BASE UNIT WITH OPTIONS/ACCESSORIES
 TOTAL STATIC PRESSURE = TOTAL ADDED INTERNAL STATIC PRESSURE + TOTAL ADDED EXTERNAL STATIC PRESSURE.
 TO DETERMINE TOTAL ADDED INTERNAL STATIC PRESSURE: For design air volume, determine total air resistance for 1" wet, indoor coil and of selected unit, plus 2) all selected factory installed options (heat section, economizer, etc.) and field installed accessories (horizontal roof frame, diffuser, etc.) See pages 19 and 20 for wet coil and optional/accessory air resistance data.
NOTE - BOLD ITALICS INDICATES FIELD FURNISHED DRIVE

Unshaded area denotes 5 hp (3.7kW) fan motor.

Light shaded area denotes 7.5 hp (5.6 kW) fan

Dark shaded area denotes 10 hp (7.5 kW) fan

Air Volume (m3/s)	TOTAL STATIC PRESSURE EXTERNAL TO UNIT - Inches Water Gauge (Pa)																	
	.20 (50)	.40 (100)	.60 (150)	.80 (200)	1.00 (250)	1.20 (300)	1.40 (350)	1.60 (400)	1.80 (450)	2.00 (495)	2.20 (545)	2.40 (595)	2.60 (645)	2.80 (695)	3.00 (745)			
Rev/Min	BHP (kW)	Rev/Min	BHP (kW)	Rev/Min	BHP (kW)	Rev/Min	BHP (kW)	Rev/Min	BHP (kW)	Rev/Min	BHP (kW)	Rev/Min	BHP (kW)	Rev/Min	BHP (kW)			
7500 (355)	380 (1.05) (0.78)	465 (1.50) (1.12)	540 (1.90) (1.42)	600 (2.30) (1.72)	660 (2.70) (2.01)	715 (3.15) (2.35)	765 (3.60) (2.69)	810 (4.00) (2.98)	855 (4.45) (3.32)	895 (4.90) (3.66)	935 (5.35) (3.99)	975 (5.85) (4.36)	1010 (6.30) (4.70)	1050 (6.85) (5.11)	1080 (7.30) (5.45)			
8000 (380)	390 (1.25) (0.93)	475 (1.65) (1.23)	545 (2.10) (1.57)	610 (2.55) (1.90)	665 (2.95) (2.20)	720 (3.45) (2.57)	770 (3.90) (2.91)	815 (4.35) (3.25)	860 (4.85) (3.62)	900 (5.30) (3.95)	940 (5.75) (4.29)	980 (6.20) (4.63)	1015 (6.70) (5.04)	1055 (7.15) (5.40)	1085 (7.60) (5.82)			
8500 (40)	405 (1.40) (1.04)	485 (1.80) (1.42)	555 (2.35) (1.75)	620 (2.80) (2.09)	675 (3.30) (2.80)	725 (3.75) (2.80)	775 (4.20) (3.13)	820 (4.70) (3.51)	865 (5.20) (3.88)	905 (5.70) (4.25)	945 (6.20) (4.63)	985 (6.75) (5.04)	1020 (7.25) (5.41)	1055 (7.75) (5.78)	1085 (8.19) (6.19)			
9000 (4.25)	415 (1.60) (1.19)	495 (2.10) (1.57)	565 (2.60) (1.94)	625 (3.10) (2.31)	685 (3.60) (2.69)	735 (4.10) (3.06)	785 (4.60) (3.43)	830 (5.10) (3.80)	870 (5.60) (4.18)	915 (6.15) (4.59)	955 (6.70) (5.00)	990 (7.20) (5.37)	1025 (7.70) (5.74)	1055 (8.15) (6.15)	1085 (8.60) (6.56)			
9500 (4.50)	430 (1.85) (1.38)	505 (2.35) (1.75)	575 (2.90) (2.16)	635 (3.40) (2.54)	690 (3.90) (2.91)	745 (4.50) (3.36)	790 (5.00) (3.69)	835 (5.50) (4.10)	880 (6.00) (4.51)	920 (6.60) (4.92)	960 (7.15) (5.33)	995 (7.70) (5.74)	1035 (8.30) (6.19)	1070 (8.85) (6.58)	1100 (9.40) (6.99)			
10000 (4.70)	445 (2.10) (1.57)	520 (2.65) (1.98)	585 (3.20) (2.39)	645 (3.75) (2.80)	700 (4.30) (3.21)	750 (4.85) (3.69)	800 (5.40) (4.03)	845 (5.95) (4.44)	890 (6.50) (4.85)	925 (7.05) (5.26)	965 (7.65) (5.71)	1000 (8.20) (6.12)	1040 (8.80) (6.60)	1080 (9.40) (7.07)	1115 (9.95) (7.54)			
10500 (4.95)	455 (2.35) (1.75)	530 (2.95) (2.20)	595 (3.50) (2.61)	655 (4.10) (3.06)	710 (4.70) (3.03)	760 (5.25) (3.92)	805 (5.80) (4.33)	850 (6.40) (4.77)	895 (7.00) (5.22)	935 (7.60) (5.67)	970 (8.15) (6.08)	1010 (8.80) (6.59)	1050 (9.40) (7.07)	1090 (10.00) (7.54)	1120 (11.20) (8.43)			
11000 (5.20)	470 (2.60) (1.94)	545 (3.25) (2.42)	605 (3.85) (2.87)	665 (4.45) (3.32)	720 (5.10) (3.80)	765 (5.65) (4.22)	815 (6.30) (4.70)	860 (6.90) (5.15)	900 (7.50) (5.22)	940 (8.10) (6.04)	980 (8.75) (6.53)	1020 (9.40) (6.99)	1060 (10.10) (7.43)	1100 (10.80) (7.91)	1130 (12.10) (8.99)			
11500 (5.45)	485 (2.95) (2.20)	565 (3.60) (2.69)	620 (4.25) (3.17)	685 (4.85) (3.62)	740 (5.55) (4.14)	785 (6.10) (4.53)	830 (6.70) (5.00)	875 (7.40) (5.52)	915 (8.05) (6.01)	955 (8.75) (6.45)	1000 (9.45) (6.94)	1040 (10.20) (7.51)	1080 (10.95) (7.91)	1120 (11.70) (8.73)	1150 (13.00) (9.79)			
12000 (5.65)	500 (3.30) (2.46)	570 (4.00) (2.98)	630 (4.65) (3.47)	690 (5.30) (3.95)	740 (6.00) (4.48)	785 (6.60) (4.92)	830 (7.25) (5.44)	875 (7.95) (5.93)	915 (8.60) (6.42)	955 (9.25) (6.87)	1000 (10.00) (7.42)	1040 (10.80) (7.91)	1080 (11.60) (8.43)	1120 (12.40) (9.29)	1150 (13.60) (10.20)			
12500 (5.90)	515 (3.65) (2.72)	580 (4.35) (3.28)	640 (5.05) (3.77)	695 (5.75) (4.29)	750 (6.50) (4.85)	795 (7.10) (5.30)	840 (7.80) (5.82)	885 (8.55) (6.38)	925 (9.20) (6.88)	965 (9.95) (7.39)	1010 (10.75) (7.91)	1050 (11.55) (8.43)	1090 (12.35) (9.29)	1130 (13.15) (10.00)	1160 (14.00) (10.55)			
13000 (6.15)	530 (4.05) (3.02)	595 (4.80) (3.51)	655 (5.55) (3.77)	710 (6.25) (4.66)	760 (7.00) (5.22)	805 (7.65) (5.71)	850 (8.40) (6.27)	895 (9.15) (6.78)	935 (9.90) (7.29)	975 (10.65) (7.80)	1020 (11.50) (8.43)	1060 (12.30) (9.29)	1100 (13.10) (10.00)	1140 (13.90) (10.55)	1170 (14.70) (11.00)			
13500 (6.35)	545 (4.45) (3.32)	610 (5.25) (3.92)	665 (6.00) (4.48)	720 (6.75) (5.04)	770 (7.50) (5.60)	815 (8.25) (6.15)	860 (9.00) (6.71)	905 (9.75) (7.28)	945 (10.50) (7.80)	985 (11.25) (8.39)	1030 (12.10) (8.90)	1070 (12.90) (9.41)	1110 (13.70) (10.00)	1150 (14.50) (10.55)	1180 (15.30) (11.00)			
14000 (6.60)	560 (4.90) (3.66)	620 (5.70) (4.25)	680 (6.55) (4.89)	730 (7.30) (5.45)	780 (8.10) (6.04)	825 (8.85) (6.60)	870 (9.60) (7.23)	915 (10.35) (7.76)	955 (11.10) (8.31)	1000 (11.95) (8.90)	1040 (12.70) (9.41)	1080 (13.50) (10.00)	1120 (14.30) (10.55)	1160 (15.10) (11.00)	1190 (16.00) (11.55)			
14500 (6.85)	575 (5.40) (4.03)	635 (6.25) (4.66)	690 (7.05) (5.26)	745 (7.90) (5.89)	790 (8.70) (6.44)	835 (9.45) (7.03)	880 (10.20) (7.58)	925 (10.95) (8.13)	965 (11.70) (8.68)	1010 (12.50) (9.20)	1050 (13.30) (9.71)	1090 (14.10) (10.26)	1130 (14.90) (10.81)	1170 (15.70) (11.36)	1200 (16.50) (12.10)			
15000 (7.10)	590 (5.90) (4.40)	650 (6.80) (5.07)	705 (7.65) (5.71)	755 (8.50) (6.34)	800 (9.30) (6.94)	845 (10.05) (7.53)	890 (10.80) (8.11)	935 (11.55) (8.68)	975 (12.30) (9.20)	1020 (13.10) (9.71)	1060 (13.90) (10.26)	1100 (14.70) (10.81)	1140 (15.50) (11.36)	1180 (16.30) (12.10)	1210 (17.10) (12.60)			

GAS HEAT START-UP

FOR YOUR SAFETY READ BEFORE LIGHTING

! WARNING

Electric shock hazard. Can cause injury or death. Do not use this furnace if any part has been under water. Immediately call a qualified service technician to inspect the furnace and to replace any part of the control system and any gas control which has been under water.

! WARNING

Danger of explosion. Can cause injury or product or property damage. If overheating occurs or if gas supply fails to shut off, shut off the manual gas valve to the appliance before shutting off electrical supply.

! WARNING

Electric shock hazard. Can cause injury or death. Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch(es). Unit may have multiple power supplies.

! WARNING

Danger of explosion. Can cause injury or death. Do not attempt to light manually. Unit has a direct spark ignition system.

This unit is equipped with an automatic spark ignition system. There is no pilot. In case of a safety shutdown, check ignition control LBD, 'Flash' code to determine reason for shutdown (see page 18). Control must be reset manually to re-start burner.

A - Placing Furnace in Operation

! WARNING

Danger of explosion and fire. Can cause injury or product or property damage. You must follow these instructions exactly.

- 1 - Set thermostat to lowest setting.
 - 2 - Turn off all electrical power to appliance.
 - 3 - This appliance is equipped with a fully automatic ignition control. Do not attempt to light the burner by hand.
 - 4 - Before starting the burners for the first time ensure that all gas piping to the appliance has been pressure tested (external to appliance) and checked for leaks (including pipework inside the appliance to which the supply is connected), see pages 9 & 10 of these instructions.
 - 5 - Wait five (5) minutes before restarting the appliance, if you smell gas STOP and ensure that the problem is rectified before continuing.
 - 6 - Restore electrical power to the appliance.
 - 7 - Increase thermostat setting so that the appliance receives a demand for heat. The burners should now light automatically (allow two (2) minutes for burners to light, if both burners do not light in this time it will be necessary to manually reset one or both ignition controls before repeating this procedure). When first installed there may be some air in the gas pipework and a number of ignition attempts may be necessary before the appliance lights and operates normally.
 - 8 - When the appliance is first started the gas pressures of both burners must be checked and, if necessary, adjusted both at high and low fire rates.
 - 9 - Once the appliance lights, ensure that access doors are locked and the thermostat is returned to the desired setting.
- B - To Turn Off Gas To Unit**
- 1 - Set thermostat to lowest setting.
 - 2 - Turn off all electrical power to unit if service is to be performed.
 - 3 - Isolate gas supply at field-installed external gas cock if fitted.

(LGS Units)

A - Heating Sequence of Operation

- 1 - On a heating demand the combustion air fan starts immediately after ignition control checks (ignition control LED - FAST FLASH)
- 2 - Combustion air pressure switch proves fan operation. Switch is factory set and requires no adjustment.
- 3 - After a 45-second prepurge, spark ignitor energizes and gas valve solenoid opens.
- 4 - Spark ignites gas, ignition sensor proves the flame and combustion continues.
- 5 - If flame is not detected after first ignition trial, ignition control will repeat steps 3 and 4 before locking out the gas valve.

B - Placing Heater In Operation

- 1 - Set thermostat to lowest setting.
- 2 - Turn off all electrical power to appliance.
- 3 - This appliance is equipped with a fully automatic ignition control. Do not attempt to light the burner by hand.
- 4 - Before starting the burners for the first time ensure that all gas piping to the appliance has been pressure tested (external to appliance) and checked for leaks (including pipework inside the appliance to which the supply is connected), see unit installation instructions.
- 5 - Wait five (5) minutes before restarting the appliance, if you smell gas STOP and ensure that the problem is rectified before continuing.
- 6 - Restore electrical power to the appliance.
- 7 - Increase thermostat setting so that the appliance receives a demand for heat. The burners should now light automatically (allow two (2) minutes for burners to light, if both burners do not light in this time it will be necessary to manually reset one or both ignition controls before repeating this procedure). When first installed there may be some air in the gas pipework and a number of ignition attempts may be necessary before the appliance lights and operates normally.
- 8 - When the appliance is first started the gas pressures of both burners must be checked and, if necessary, adjusted both at high and low fire rates.
- 9 - Once the appliance lights, ensure that access doors are locked and the thermostat is returned to the desired setting.

C - Burner Control 'LED' Flash Codes.

- 1 - Normal operation, no demand for heat: LED flashes slowly (approx. 1 flash per second indicating presence of power and normal control

D - Limit Controls

Limit controls are factory-set and are not adjustable. One of the primary limits is located in the bottom right corner of fan section. The other primary limit is located under the unit right hand side panel. The secondary limits are located on the back side of the fan housing.

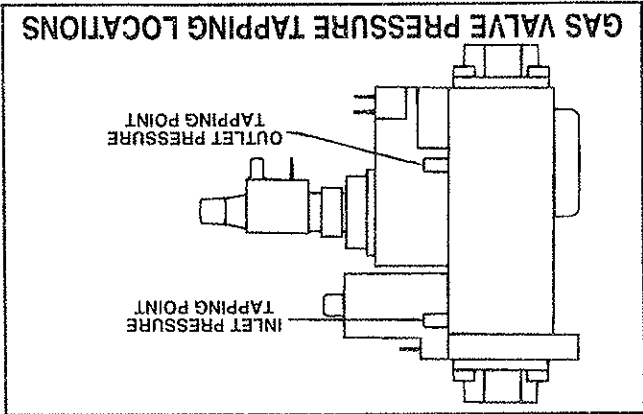


FIGURE 14

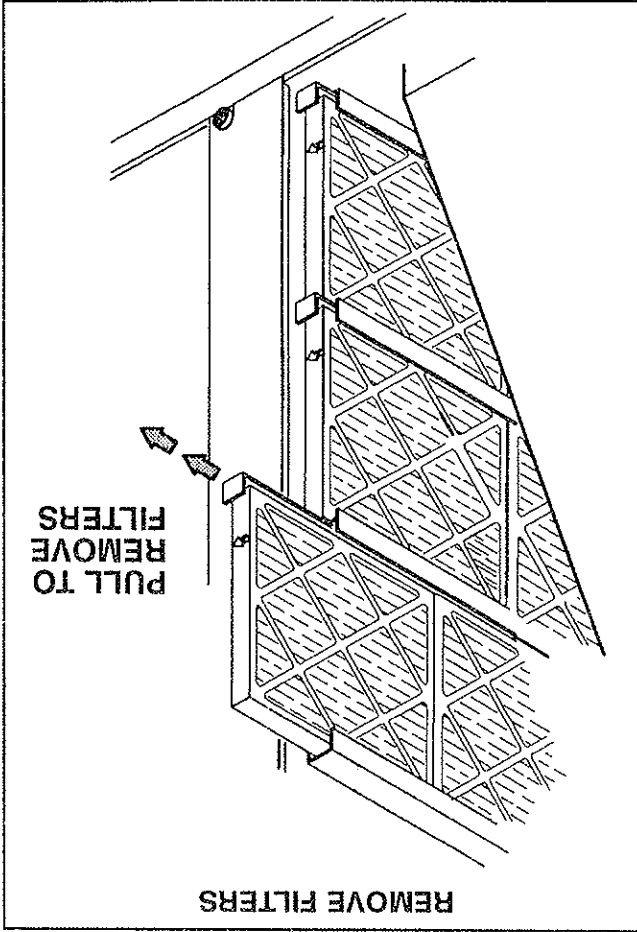
E - Checking/Setting Gas Pressures

To adjust the gas pressure, start the unit with a demand for both stages of heating and wait until an outlet pressure reading is obtained, the high stage gas pressure can now be adjusted using an 8mm wrench on the outer adjustment screw on the high/low regulator of the gas valve (located under the grey plastic cap). The high burner pressure should be monitored for several minutes and rechecked several times as the burner warms up, the final setting can only be made with the heater fully warmed up. The pressure setting for these appliances is given in the data table.

After adjusting the high output of the burner the second stage heating demand should be removed to operate the burner at its low setting, the low burner pressure can then be adjusted using a 3.5mm screwdriver on the inner adjustment screw on the high/low regulator.

- 2 - Normal operation, demand for heat: LED flashes quickly approx. 2 per second.
 - 3 - Ignition control internal fault: LED steady ON.
 - 4 - False flame signal: 5 quick flashes repeated until reset.
 - 5 - High limit trip: 4 quick flashes repeated until reset.
 - 6 - Pressure switch open: 3 quick flashes repeated until switch closes.
 - 7 - Flame failure: 2 quick flashes repeated until reset.
- NOTE: Codes 4 to 7 will normally be accompanied by error 58 (burner 1) or 68 (burner 2) on the IMC control indicating that the burner has failed to operate during a heat demand. Repeated locking-out & resetting of ignition control can cause error 59 (burner 1) or 69 (burner 2) to be displayed requiring reset at the IMC control.

FIGURE 16



- A - Filters**
- Units are equipped with: 130-235, four off 450x600x50; 260-470, 6 off 600x600x50; 470D 12 off 500x500x50 size filters. Filters should be checked and replaced when necessary with filters of like kind and size. Take note of air flow direction marking on filter frame when reinstalling filters. See figure 16.
- B - Lubrication**
- All motors are lubricated at the factory. No further lubrication is required.
- Fan shaft bearings are pre-lubricated. For extended bearing life, relubricate at least once every two years with a lithium base grease, such as Alvania 3 (Shell Oil) Chevron BRB2 (Standard Oil) or Regal AFB2 (Texas Oil). Use a hand grease gun for relubrication. Add only enough grease to purge through the bearings so that a bead of grease appears at the seal lip contacts.
- C - Burners (LGS Units)**
- 1 - Periodically examine burner flames for proper appearance during the heating season.
 - 2 - Before each heating season examine the burners for any deposits or blockage which may have occurred.
 - 3 - Clean burners as follows:
 - a - Turn off both electrical power and gas supply to unit.

HEATING OPERATION AND ADJUSTMENTS

...continued

Following adjustment of the low pressure, the high pressure setting must be rechecked.

When both high and low pressures are correct the cap should be replaced over the adjusting screws.

Note - factory setting is for natural gas group H (G20) for direct use in those countries marked on the rating plate. For use on natural gas type L (G25) the burner pressures must be adjusted on site.

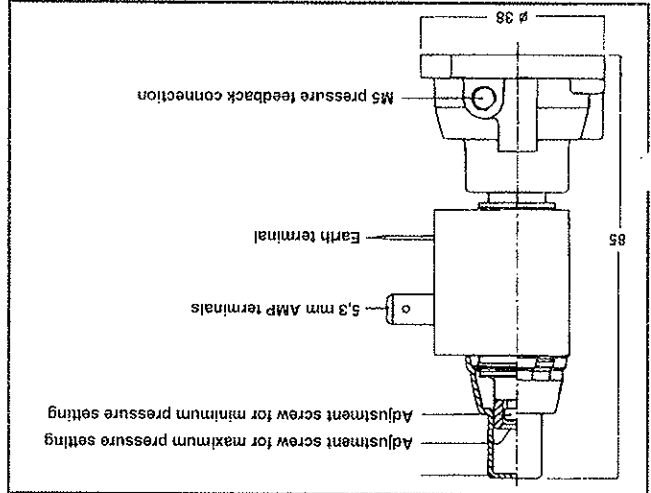


FIGURE 15

SERVICE

The unit should be inspected once a year by a qualified service technician.

CAUTION

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

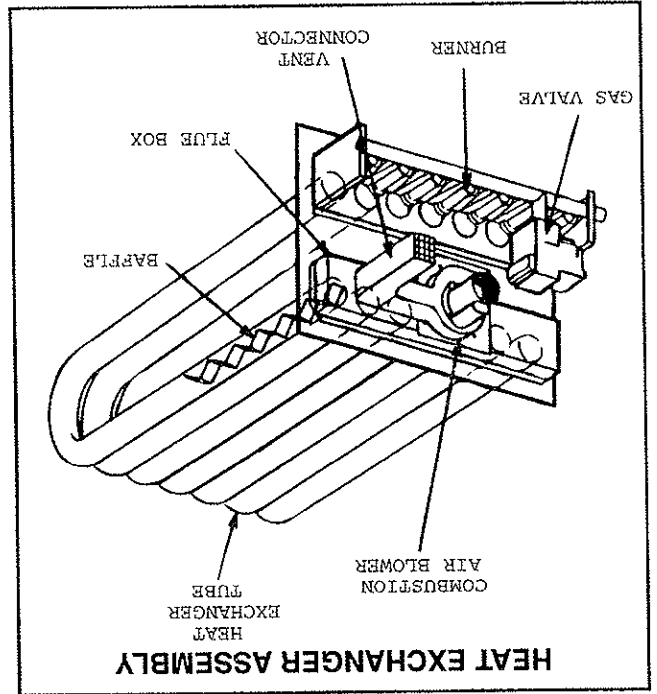
WARNING

Electric shock hazard and danger of explosion. Can cause injury, death or product or property damage. Turn off gas and electrical power to unit before performing any maintenance or servicing operations on the unit. Follow lighting instructions attached to unit when putting unit back into operation and after service or maintenance.

CAUTION

Danger of sharp metallic edges. Can cause injury. Take care when servicing unit to avoid accidental contact with sharp edges.

FIGURE 17




Under normal operating conditions, the combustion air fan wheel should be checked and cleaned prior to the heating season. However, it should be examined periodically during the heating season to establish an ideal cleaning schedule. With power supply disconnected, the condition of the fan wheel can be determined by looking through the vent opening.

D - Combustion Air Fan

A combustion air fan proving switch checks combustion air fan operation before allowing power to the gas controller. Gas controller will not operate if fan is obstructed.

e - Restore electrical power and gas supply. Follow lighting instructions attached to unit and use inspection port in access panel to check flame.

! WARNING



Danger of explosion. Can cause injury or death. Do not overtighten main burner mounting screws. Snug tighten only.

- b - Open access panel to burner compartment.
- c - Remove burner retaining bracket and lift burners from orifices.
- d - Clean as necessary and replace burners. Refit retaining brackets. Make sure that burner heads line up correctly. Spark gap on ignition electrode must be properly set. Refer to Heating Adjustment section. Replace access panel.

Clean combustion air fan as follows:

- 1 - Shut off power supply and gas to unit.
- 2 - Disconnect pressure switch air tubing from combustion air fan port.
- 3 - Remove and retain screws securing combustion air fan to flue box. Remove and retain two screws from bracket supporting vent connector. See figure 17.
- 4 - Clean fan wheel blades with a small brush and wipe off any dust from housing. Clean accumulated dust from front of flue box cover.
- 5 - Return combustion air fan motor and vent connector to original location and secure with retained screws. It is recommended that the combustion air fan gasket be replaced during reassembly.
- 6 - Clean combustion air inlet louvers on heat access panel using a small brush.

F - Flue Passageway and Flue Box

- 1 - Remove combustion air fan assembly as described in section D.
- 2 - Remove flue box cover. Clean with a wire brush as required.
- 3 - Remove flue baffle retaining bracket and pull tube baffles from heat exchanger tubes. Clean tubes and baffles with a wire brush.
- 4 - Reinsert tube baffles, secure baffle retaining cover gasket and combustion air fan gasket should also be replaced during assembly.

F - Evaporator Coil (if fitted)

Inspect and clean coil at beginning of each cooling season. Clean using mild detergent or commercial coil cleanser. Flush coil and condensate drain with water taking care not to get insulation, filters and return air ducts wet.

G - Supply Air Fan Wheel

Annually inspect supply air fan wheel for accumulated dirt or dust. Turn off power before attempting to remove access panel or to clean fan wheel.



Troubleshooting.

Important- Service and repair of this equipment should only be attempted by suitably qualified personnel. If in any doubt, contact the installer or a Lennox service agent. To avoid the risk of electric shock or personal injury, switch off power supply before opening any panel on this appliance.

In the event of this equipment failing to operate correctly:

1. Check electrical supply. All phases into the appliance must be present and should measure between 360v and 440v across phases (200v to 260v from each phase to neutral).
2. For LGS units the gas supply should also be checked, the supply pressure should be within 5mbar of the relevant nominal supply pressure for the country and gas category of the installation (see data table inside front cover).

The Lennox L-Series is equipped with micro-processor based 'IMC' controller, a separate manual supplied with the unit explains operation of this control and the error codes that are displayed for diagnostic purposes. The error codes are also listed on a chart fitted inside the control panel door.

4. LGS units are also equipped with a microprocessor based ignition control which provides diagnostic information via a flashing LED, these codes are listed in table 10.

5. These controls all incorporate a 'heartbeat' LED to indicate a healthy low voltage supply. If the 'heartbeat' LEDs do not operate, check 24v circuit breakers (incorporated in control transformers) and fan/control circuit breaker (CB10) as well as main power supply.

Troubleshooting - continued

1. Check that there is a demand for the fan to start (yellow LED 'G' lit on IMC control).
 2. Check condition and tension of drive belts.
- IMPORTANT** - you must ensure that the electrical supply remains switched off whenever the drive guard is removed and not switched on until the drive guard has been properly refitted.
3. Check condition of air filters, blocked filters reduce air flow and unit efficiency. Filters should be checked regularly and changed whenever necessary.
 4. Check that fan and motor are free to rotate (not mechanically seized).
 5. Check if fan overload (S42) has tripped.
 6. Ensure that fan rotation is in the correct direction (backward rotation will give a much reduced airflow).
- Heating fault (LGS units only)-
1. Check that there is a demand for heating (yellow LED 'W1' lit on IMC control).
- Note- ignition controls take a few minutes to start the gas burners.
2. Check ignition controls for 'lockout' condition (see table 10 for codes), once cause of lockout is cleared the controls can be reset by holding down the small white reset button on the control for a few seconds.
 3. If burner fails to light with good gas supply, check gas valve outlet pressure setting, check ignition electrode and lead.
 4. If burner lights but quickly shuts down, check flame sensor and lead.
 5. If high temperature shut-off limit operates, make checks on airflow as above.

ITEM	PART No.	COMMENTS
Belt - Drive # 1 Package (B47)	49K37	LGS 130-235 ONLY
Belt - Drive # 2 Package (BX51)	P-8-8093	LGS 130-235 ONLY
Belt - Drive # 3+6 Package (BX53)	49K38	LGS 130-235 ONLY
Belt - Drive # 4 Package STD. (BX55)	63K05	LGS 130-235 ONLY
Belt - Drive # 5 Package (BX50)	49K69	LGS 130-235 ONLY
Belt - Drive # 2+4 Package (BX62)	57A7701	LGS 260-470 (2PER SET)
Belt - Drive # 3+6 Package (BX64)	97J5801	LGS 260-470 (2PER SET)
Belt - Drive # 5 Package (BX63)	97J55	LGS 260-470 (2PER SET)
Belt - Drive # 1 Package STD. (BX64)	97J5801	LGS 470D (2PER SET)
Belt - Drive # 2 Package (BX62)	57A7701	LGS 260-470 (2PER SET)
Belt - Drive # 3+4 Package (BX71)	31K97	LGS 260-470 (2PER SET)
Belt - Drive # 5 Package (BX70)	31K96	LGS 260-470 (2PER SET)
Main Filter 600 x450 x 50	49K4401	LGS 130-235 (4PER SET)
Main Filter 600 x600 x 50	93G9201	LGS 260-470 (6PER SET)
Main Filter 500 x500 x 50	34K0201	LGS 470D (12PER SET)
O/D Air Hood Filter	P-8-7822	LGS 130-235(2) LGS 260-470(3)
Supply Fan Motor 1.5KW (2hp)	49A4301	LGS 470D (5)
Supply Fan Motor 2.2KW (3hp)	49A4401	LGS 130-470
Supply Fan Motor 3.7KW (5hp)	49A4501	ALL SIZES
Supply Fan Motor (7.5hp)	P-8-11298	LGS 260-470D
Supply Fan Motor (10hp)	49A46	LGS 470D ONLY
Economizer Motor	97J3701	ALL SIZES
Control IMC M1 Motherboard	56K86	ALL SIZES
Control IMC G1 Board	56K85	LGS 260-470D

RECOMMENDED REPLACEMENT ITEMS

ELECTRICAL CONTROLS			
Control IMC M1 Motherboard	56K8601		
Control IMC EMI Board	91J8901		
Control IMC G1 Board 2nd STG Burner		56K85	
Control IMC G1 Board 2nd STG Burner		56K85	
Churn Breaker (optional)	13H2801	P-8-66074	P-8-66074
Transformer (Control)	13H2801		
Transformer (Control)	13H2801		
Fan Connector	P-8-7736		
Fan Motor Overhead Flay (5 HP) 3.7KW	53J6601		
Adapter-Overhead Mounting	53J6601		
Fan Overhead Flay 1.5KW (2hp)	58H6601		
Fan Overhead Flay 2.2KW (3hp)	58H4901		
Fan Overhead Flay 3.5KW (7.5hp)	48H0801		
Fan Overhead Flay 7.5KW (10hp)	43H08		

REPAIR PARTS LISTING			
PART DESCRIPTION	MODELS	UNIT MODEL NUMBER	ST HI
Combustion Air Fan	97J6201		
Combustion Air Flaring Switch	97J7101		
Burner Inshot	79J7401		
Burner Manifold Assembly	LB-89177	LB-66726	LB-66726
Main Burner Orifice	33J2601		
Flame Rollout Switch	97J6801	71G1401	71G1401
Aux Limit Control (Burner#1)	98G4601	27H8701	27H8701
Aux Limit Control (Burner#2)	98G4601	98G4601	27H8701
Ignition Electrode Assembly	79J2701	18K2701 (647)	
Ignition Lead	79J2201		
Ignition Sensor Assembly	2200661		
Combustion Gas Valve	LB-67141		
Baffle Blackage			
Primary Limit Control (Burner#1)	79J8901	97J6601	97J4901
Primary Limit Control (Burner#2)	82J7401	97J6901	97J4901
Burner Control	LB-66725		
Control Plate	LB-66725		
Baffle Securing Bracket	LB-66969		

NOTE - Replacement parts for the unit should be ordered from the Lennox parts lists. Do not replace spare parts that are not of the equivalent specifications (use only genuine Lennox parts, inferior components may damage the unit and make void any warranty). Please contact Lennox prior to replacing parts other than those detailed in the servicing instructions.

Lennox Industries pursues a policy of continuous product improvement and reserves the right to alter specification(s) without prior notice.

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