

V SERIES

TECHNICAL DATA INFORMATION PACKET

**INDUSTRIAL
COMBUSTION**

Technical Data

V Series

Uncontrolled Emissions Configuration (VG, VL, VLG)

1.3 - 16.8 MM BTU/H NG; 9.3 - 120 GPH #2 OIL

UL listed with choice of NFPA, CSD-1, GAP, and FM for U.S. or Canadian units

Standard equipment:	Combustion Control System options:	Fuel options:
3450 RPM motor, panel signal lights (Power On, Main Fuel, Ignition, Flame Failure), combustion air proving switch, safety shutoff valves, 120/1/60 control circuit, burner mounted panel with standard or inverted configuration, and a shipped loose gas train (where applicable).	Parallel Positioning Combustion Control System with O ₂ Trim and Variable Frequency Drive (VFD)	Main Fuel: Natural gas (VG), #2 oil - pressure atomized (VL) or Combination gas/ #2 oil - pressure atomized (VLG). Igniter Fuel: Natural gas and/or propane. Fuel Changeover Switch: Combination gas/oil units only (VLG).

Series Features

◇ Optional Feature



Flame Safeguard	V-13 to V-25	V-30 to V-34	V-35 to V-40	V-42 to V-55	V-60 to V-63	V-70 to V-100	V-105 to V-168
Limited Damper Purge Control with UV Scanner	● ¹	● ¹	● ¹	● ¹	● ¹		
Open Damper Purge Control with UV Scanner	◇	◇	◇	◇	◇	●	●
Turndown							
Up to 10:1 on Natural Gas	● ²	● ²	● ²	● ²	● ²	● ²	● ²
Mode of Operation							
On-Off Firing	●						
Low-High-Off Firing	◇	●	●	●	●		
Low-High-Low Firing	◇	◇	◇	◇	◇		
Full Modulation Firing	◇	◇	◇	◇	◇	●	●
Auto-Manual Firing Rate Control	● ³	● ³	● ³	● ³	● ³	● ³	● ³
Ignition							
Gas/Electric Pilot and Ignition Transformer (VG/VLG)	● ⁴	● ⁴	● ⁴	● ⁴	●	●	●
Dual Ignition (VLG)	◇	◇	◇	◇	◇		
Direct Spark (VL)	●	●	●	●			
Oil Components							
Directly Driven Oil Pump Set	●	●	●	●			
Separately Driven Oil Pump Set	◇	◇	◇	◇	●	●	●
Simplex Oil Nozzle	●	●					
Return Flow Oil Nozzle	◇	●	●	●	●	●	●
Gas Components							
Butterfly Rate Control Valve	◇ ⁵	●	●	●	●	●	●
High & Low Gas Pressure Interlocks	◇	●	●	●	●	●	●
Gas Shutoff Cocks (2)	●	●	●	●	●	●	●

¹ LDP (60% air above 2,500 - 6,300 MBH). <2,500 MBH, purge is at low-fire damper setting
² High turndown on gas requires the Siemens SQM mod motor or a parallel positioning system (VLG burners only)
³ Standard for full modulation; optional on select parallel positioning systems
⁴ Optional for VL models 13-55
⁵ Standard for low-high or full modulation

Standard Ratings

V Series

VG - VL - VLG: Gas, #2 Oil, Gas/Oil Configuration

Model No. & Frame Size	Gas Input MBH	Oil Input GPH	BHP @ 80% Eff.	Blower Motor HP ¹	Blower Motor HP ²	Remote Oil Pump Motor HP ³	Furnace Pressure ("w.c.)	Standard Gas Train Pipe Size (in.)	Min. Gas Pressure ("w.c.) ⁶
V-13-1	1,300	9.3	31	1/2	3/4	1/2	0.4	1	8.6/9.2 ⁵
V-15-1	1,500	10.7	36	1/2	3/4	1/2	0.5	1	11.4/11.7 ⁵
V-17-1	1,700	12.1	40	1/2	3/4	1/2	0.7	1	14.3/14.7 ⁵
V-20-1	2,000	14.3	48	3/4	1	1/2	0.9	1	19.7/20.2 ⁵
V-21-1	2,100	15.0	50	3/4	1	1/2	1.0	1	21.5/22.1 ⁵
V-25-1	2,500	17.9	60	3/4	1	1/2	1.2	1 1/2	9.6/10.4 ⁵
V-30-1	3,000	21.4	71	3/4	1	1/2	1.4	2	8.7
V-34-1	3,400	24.3	81	3/4	1	1/2	1.8	2	10.3
V-35-2	3,500	25.0	83	1	1 1/2	1/2	1.9	2	8.1
V-40-2	4,000	28.6	95	1	1 1/2	1/2	1.2	2	10.4
V-42-2	4,200	30.0	100	1 1/2 ⁴	2	1/2	1.3	2	11.5
V-45-2	4,500	32.1	107	2	2	1/2	1.4	2	10.8
V-50-2	5,000	35.7	119	2	3	3/4	1.8	2	13.6
V-54-2	5,400	38.6	129	3	3	3/4	2.1	2	19.2
V-55-2	5,500	39.3	131	3	3	3/4	2.2	2	19.7
V-60-3	6,000	42.9	143	5	-	3/4	2.7	2	17.6
V-63-3	6,300	45.0	150	5	-	3/4	1.8	2	19.3
V-70-3	7,000	50.0	167	5	-	3/4	2.2	2 1/2	15.7
V-80-3	8,000	57.1	190	5	-	1	2.8	2 1/2	14.8
V-84-3	8,400	60.0	200	7 1/2	-	1	3.1	2 1/2	15.2
V-90-3	9,000	64.3	214	7 1/2	-	1 1/2	3.5	2 1/2	17.4
V-100-3	10,000	71.4	238	10	-	1 1/2	2.7	2 1/2	20.5
V-105-3	10,500	75.0	250	10	-	1 1/2	2.8	2 1/2	44.7
V-110-3	11,000	78.6	262	10	-	1 1/2	3.0	2 1/2	48.7
V-120-4	12,000	85.7	286	15	-	1 1/2	3.6	2 1/2	34.2
V-126-4	12,600	90.0	300	15	-	1 1/2	4.3	2	49.1
V-147-4	14,700	105.0	350	15	-	1 1/2	4.3	2	2.5 PSI
V-168-4	16,800	120.0	400	15	-	1 1/2	1.0	2	3.1 PSI

115 / 230 / 1

208 / 230 / 460 / 3

460 / 3

¹ Motor ratings for gas only or gas/oil burners using a remote oil pump

² Motor ratings for oil only and gas/oil burners using a direct drive oil pump

³ Remote oil pump is optional for frame size 1 and 2 but standard for frame sizes 3 and 4. All pump motors are 115/230/1

⁴ 1 1/2 HP blower motor voltage is 115/230/1

⁵ Low/High and Full Modulation minimum gas pressure

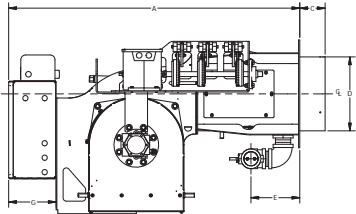
⁶ Lower gas supply pressure configurations available for New York City requirements

Input is based on fuel BTU content, listed furnace pressure and altitude of 2,000 feet or less. If altitude > 2,000 feet and < 8,000 feet, derate capacity 4% per 1,000 feet over 2,000. Consult factory for higher altitudes. If furnace pressure exceeds listed value, derate capacity 5% for every 0.5" w.c. of pressure in excess of stated. Consult factory if derate exceeds 20%. Gas input is based on natural gas with 1,000 BTU/cu.ft. and 0.60 gravity. For total pressure at manifold, add furnace pressure. Oil input based on 140,000 BTU/gal. Consult factory for 50 Hz. applications.

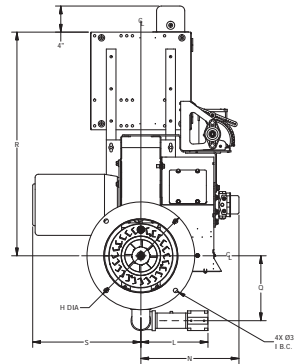
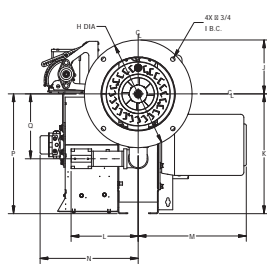
Standard Dimensions

V Series

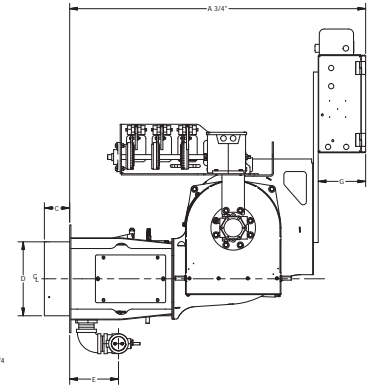
VG - VL - VLG: Gas, #2 Oil, Gas/Oil Configuration



Standard Configuration



Inverted Configuration



	DIM	Burner Frame Size			
		Size 1	Size 2	Size 3	Size 4
Length in inches					
Overall length	A	37 1/4	40 3/8	45 1/4	51 1/8
Width in inches					
Center line to right side (Standard)	M	14	13 5/8	16 7/8	21 7/8
Center line to left side (Standard)	N	12 7/16	13 7/8	15 1/4	15 1/4
Center line to right side (Inverted)	N	12 7/16	13 7/8	15 1/4	15 1/4
Center line to left side (Inverted)	S	14	13 5/8	16 7/8	21 7/8
Height in inches					
Center line to top (Standard)	J	9 1/2	9 1/8	8 3/8	9 3/4
Center line to bottom (Standard)	K	11 3/4	14 7/16	18 5/8	19 1/4
Center line to burner support (Standard)	P	11 3/4	14 7/16	18 5/8	19 1/4
Center line to top (Inverted)	R	28	30 5/8	34 3/4	35 1/2
Center line to center line of main gas inlet (Inverted)	Q	6 7/8	8 7/8	10 1/8	11 3/4
Blast tube dimensions in inches					
Extension (Standard)	C STD	4	4	4	5
Extension (Maximum)	C MAX	5	5	5	6
Diameter	D STD	8 1/4	10	11 1/2	13 5/8
Panel box depth in inches					
Panel box depth	G	7 3/8	7 3/8	7 3/8	7 3/8
Mounting flange dimensions in inches					
Diameter	H	12 7/8	15	16 3/4	17 1/2
Bolt circle diameter	I	11 1/4	13 1/4	15 1/4	15 3/8
Gas inlet measurement in inches					
Center line to main gas inlet	L	9 5/8	9 5/8	10 1/2	11
Mounting flange to main gas inlet	E	6 7/8	7 1/4	7 5/8	9 1/2

Accompanying dimensions, while sufficiently accurate for layout purposes, must be confirmed for construction.

Technical Data

V Series

<30 PPM Low NOx Configuration (LNV, LNVG)

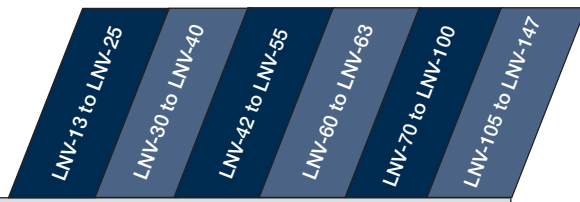
1.3 - 14.7 MM BTU/H NG: 9.3 - 105 GPH #2 OIL

UL listed with choice of NFPA, CSD-1, GAP, and FM for U.S. or Canadian units

Standard equipment:	Combustion Control System options:	Fuel options:
3450 RPM motor, panel signal lights (Power On, Main Fuel, Ignition, Flame Failure), FGR, combustion air proving switch, safety shutoff valves, 120/1/60 control circuit, burner mounted panel with standard or inverted configuration, and a shipped loose gas train (where applicable).	Parallel Positioning Combustion Control System with O ₂ Trim and Variable Frequency Drive (VFD)	Main Fuel: Natural gas (LNVG) or Combination gas/ #2 oil - pressure atomized (LNVLG). Igniter Fuel: Natural gas and/or propane. Fuel Changeover Switch: Combination gas/oil units only (LNVLG).

Series Features

◇ Optional Feature



Flame Safeguard	LNV-13 to LNV-25	LNV-30 to LNV-40	LNV-42 to LNV-55	LNV-60 to LNV-63	LNV-70 to LNV-100	LNV-105 to LNV-147
Open Damper Purge Control with UV Scanner	•	•	•	•	•	•
Turndown						
Up to 5:1 on Natural Gas	•	•	•	•	•	•
Mode of Operation						
Full Modulation Firing	•	•	•	•	•	•
Auto-Manual Firing Rate Control	• ¹	• ¹	• ¹	• ¹	• ¹	• ¹
Ignition						
Gas/Electric Pilot and Ignition Transformer	•	•	•	•	•	•
Dual Ignition (LNVLG)	◇	◇	◇	◇		
Oil Components						
Separately Driven Oil Pump Set	•	•	•	•	•	•
Simplex Oil Nozzle	•	◇	◇			
Return Flow Oil Nozzle		•	•	•	•	•
Gas Components						
Butterfly Rate Control Valve	•	•	•	•	•	•
High & Low Gas Pressure Interlocks	◇	•	•	•	•	•
Gas Shutoff Cocks (2)	•	•	•	•	•	•

¹ Standard for full modulation; optional on select parallel positioning systems

Standard Ratings

V Series

LNVG - LNVLG: <30 PPM Low NOx - Gas, Gas/Oil Configuration

	Gas Input MBH	Oil Input GPH	BHP @ 80% Eff.	Blower Motor HP	Remote Oil Pump Motor HP	Furnace Press. ("w.c.)	Standard Gas Train Pipe Size (in.)	Min. Gas Press. ("w.c.)	FGR Line Piping (in.)
Model No. & Frame Size									
LNV-13-1	1,300	9.3	31	3/4	1/2	0.5	1	9.2	4
LNV-15-1	1,500	10.7	36	3/4	1/2	0.6	1	11.7	4
LNV-17-1	1,700	12.1	40	3/4	1/2	0.7	1	14.7	4
LNV-20-1	2,000	14.3	48	3/4	1/2	1.0	1	20.2	4
LNV-21-1	2,100	15.0	50	3/4	1/2	1.1	1	22.1	4
LNV-25-1	2,500	17.9	60	3/4	1/2	1.4	1 1/2	10.4	4
LNV-30-2	3,000	21.4	71	2	1/2	1.5	2	8.7	4
LNV-34-2	3,400	24.3	81	3	1/2	1.9	2	10.3	4
LNV-35-2	3,500	25.0	83	3	1/2	2.0	2	8.1	4
LNV-40-2	4,000	28.6	95	3	1/2	1.4	2	10.4	4
LNV-42-2	4,200	30.0	100	3	1/2	1.5	2	11.5	4
LNV-45-2	4,500	32.1	107	3	1/2	1.6	2	10.8	4
LNV-50-2	5,000	35.7	119	3	3/4	2.0	2	13.6	4
LNV-54-3	5,400	38.6	129	5	3/4	2.4	2	19.2	4
LNV-55-3	5,500	39.3	131	5	3/4	2.5	2	19.7	4
LNV-60-3	6,000	42.9	143	5	3/4	3.0	2	17.6	4
LNV-63-3	6,300	45.0	150	5	3/4	2.0	2	19.4	4
LNV-70-3	7,000	50.0	167	7 1/2	3/4	2.5	2 1/2	15.8	4
LNV-80-3	8,000	57.1	190	7 1/2	3/4	3.2	2 1/2	15.1	4
LNV-84-3	8,400	60.0	200	7 1/2	1	3.5	2 1/2	15.5	4
LNV-90-3	9,000	64.3	214	10	1	4.0	2 1/2	17.4	4
LNV-100-4	10,000	71.4	238	15	1 1/2	3.2	2 1/2	20.5	6
LNV-105-4	10,500	75.0	250	15	1 1/2	3.4	2 1/2	44.7	6
LNV-110-4	11,000	78.6	262	15	1 1/2	3.6	2 1/2	48.7	6
LNV-120-4	12,000	85.7	286	15	1 1/2	4.2	2 1/2	34.2	6
LNV-126-4	12,600	90.0	300	15	1 1/2	4.8	2	49.1	6
LNV-147-4	14,700	105.0	350	15	1 1/2	4.8	2	2.5 PSI	6

115 / 230 / 1

208 / 230 / 460 / 3

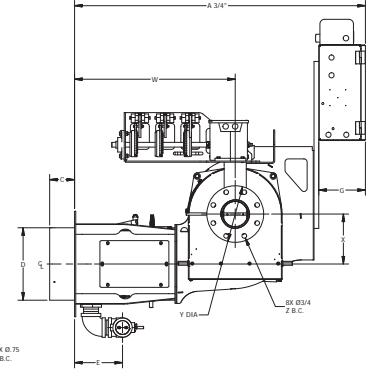
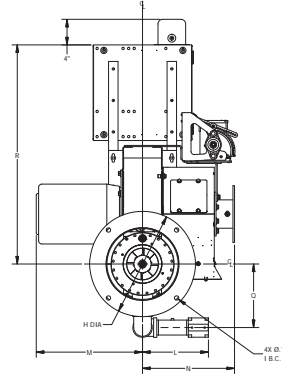
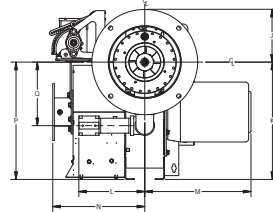
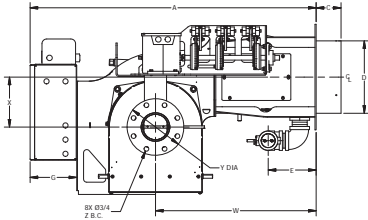
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Input is based on fuel BTU content, listed furnace pressure and altitude of 2,000 feet or less. If altitude > 2,000 feet and < 8,000 feet, derate capacity 4% per 1,000 feet over 2,000. Consult factory for higher altitudes. If furnace pressure exceeds listed value, derate capacity 5% for every 0.5" w.c. of pressure in excess of stated. Consult factory if derate exceeds 20%. Gas input is based on natural gas with 1,000 BTU/cu.ft. and 0.60 gravity. For total pressure at manifold, add furnace pressure. Oil input based on 140,000 BTU/gal. Consult factory for 50 Hz. applications.

Standard Dimensions

V Series

LNVG - LNVLG: <30 PPM Low NOx - Gas, Gas/Oil Configuration



Standard Configuration

Inverted Configuration

	Burner Frame Size				
	DIM	Size 1	Size 2	Size 3	Size 4
Length in inches					
Overall length	A	37 1/4	40 3/8	45 1/4	51 1/8
Width in inches					
Center line to right side (Standard)	M	14	13 5/8	16 7/8	21 7/8
Center line to left side (Standard)	N	12 7/16	13 7/8	14 5/8	17
Center line to right side (Inverted)	N	12 7/16	13 7/8	14 5/8	17
Center line to left side (Inverted)	S	14	13 5/8	16 7/8	21 7/8
Height in inches					
Center line to top (Standard)	J	9 1/2	9 1/8	8 3/8	9 3/4
Center line to bottom (Standard)	K	11 3/4	14 7/16	18 5/8	19 1/4
Center line to burner support (Standard)	P	11 3/4	14 7/16	18 5/8	19 1/4
Center line to top (Inverted)	R	28	30 5/8	34 3/4	35 1/2
Center line to center line of main gas inlet (Inverted)	Q	6 7/8	8 7/8	10 1/8	11 3/4
Blast tube dimensions in inches					
Extension (Standard)	C STD	4	4	4	5
Extension (Maximum)	C MAX	5	5	5	6
Diameter	D STD	8 1/4	10	11 1/2	13 5/8
Panel box depth in inches					
Panel box depth	G	7 3/8	7 3/8	7 3/8	7 3/8
Mounting flange dimensions in inches					
Diameter	H	12 7/8	15	16 3/4	17 1/2
Bolt circle diameter	I	11 1/4	13 1/4	15 1/4	15 3/8
Gas inlet measurement in inches					
Center line to main gas inlet	L	9 5/8	9 5/8	10 1/2	11
Mounting flange to main gas inlet	E	6 7/8	7 1/4	7 5/8	9 1/2
Flue gas recirculation (FGR) in inches					
Center line of FGR to mounting flange	W	20 1/4	22 1/8	25 1/2	30 1/4
Center line of burner to center line of FGR	X	4	5 1/4	8	7 1/4
Diameter	Y	9	9	9	11
Bolt circle diameter	Z	7 1/2	7 1/2	7 1/2	9 1/2

Accompanying dimensions, while sufficiently accurate for layout purposes, must be confirmed for construction.

INDUSTRIAL COMBUSTION

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