



PROFIRE V SERIES

TECHNICAL DATA INFORMATION PACKET

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



| Feature | V-13 to V-25 | V-30 to V-40 | V-42 to V-55 | V-60 to V-63 | V-70 to V-100 | V-105 to V-168 |
|--|----------------|----------------|----------------|----------------|----------------|----------------|
| Flame Safeguard | | | | | | |
| Limited Damper Purge Control with UV Scanner | ● ¹ | ● ¹ | ● ¹ | ● ¹ | | |
| Open Damper Purge Control with UV Scanner | ◇ | ◇ | ◇ | ◇ | ● | ● |
| Turndown | | | | | | |
| Up to 10:1 on Natural Gas | ● ² |
| Mode of Operation | | | | | | |
| On-Off Firing | ● | | | | | |
| Low-High-Off Firing | ◇ | ● | ● | ● | | |
| Low-High-Low Firing | ◇ | ◇ | ◇ | ◇ | | |
| Full Modulation Firing | ◇ | ◇ | ◇ | ◇ | ● | ● |
| Auto-Manual Firing Rate Control | ● ³ |
| Ignition | | | | | | |
| Gas/Electric Pilot and Ignition Transformer (VG/VLG) | ● 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 | ● ⁵ | ● ⁶ | ● ⁶ | ● ⁶ | ● | ● |
| Gas Components | | | | | | |
| Butterfly Rate Control Valve | ◇ ⁷ | ● | ● | ● | ● | ● |
| 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 full modulation option for V25 model only, not available for any other mode of operation or models V13-21

⁶ Standard for full modulation option, not available for any other mode of operation

⁷ 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

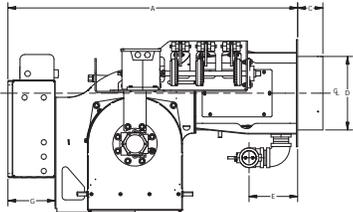
⁶ Lower gas supply pressure configurations available for New York City requirements

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 and the aforementioned conditions. Consult factory for 50 Hz. applications.

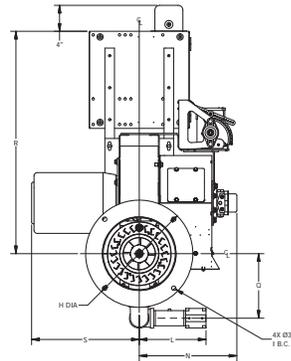
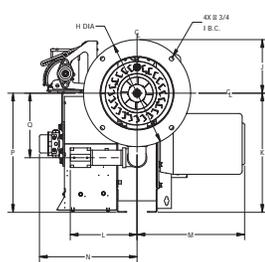
Standard Dimensions

V Series

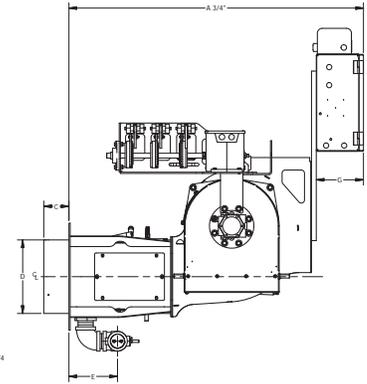
VG - VL - VLG: Gas, #2 Oil, Gas/Oil Configuration



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

Uncontrolled Emissions 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 |
| 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

| Model No. & Frame Size | 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.) |
|------------------------|---------------|---------------|----------------|-----------------|--------------------------|------------------------|------------------------------------|-------------------------|-----------------------|
| 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 | 1/2 | 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

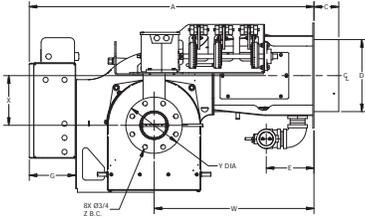
460 / 3

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 and the aforementioned conditions. Consult factory for 50 Hz. applications.

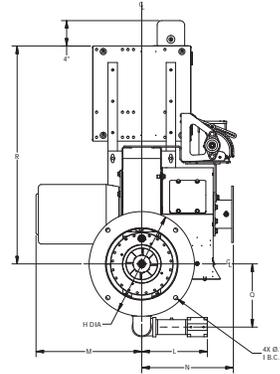
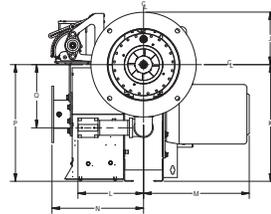
Standard Dimensions

V Series

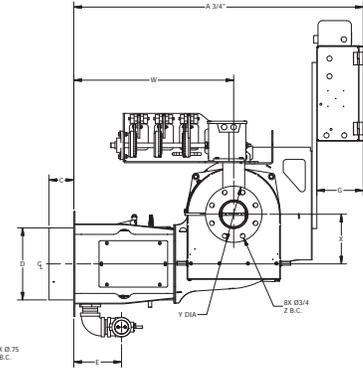
LNVG - LNVLG: <30 PPM Low NOx - Gas, Gas/Oil Configuration



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 | 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.



Packaged Burner Systems
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