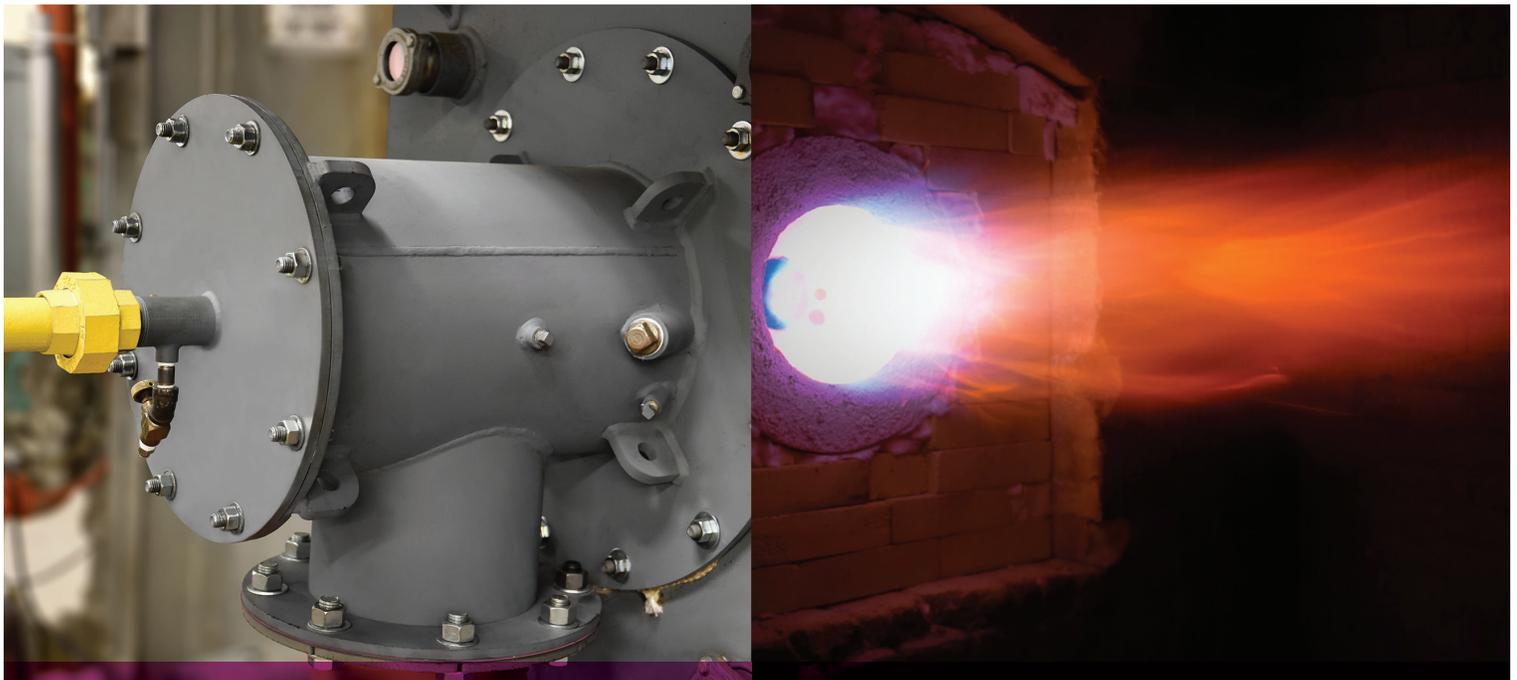




North American 4225 EcoFornax™ SLEx



Simple and effective ultra-low NO_x process heating

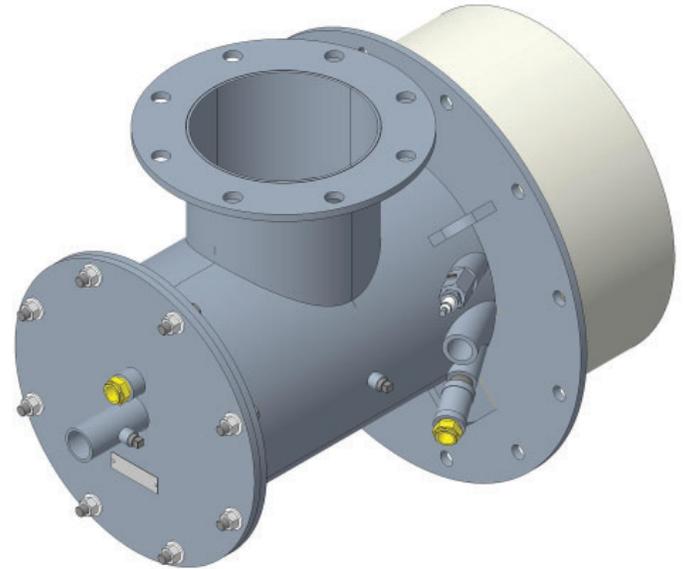
The EcoFornax™ SLEx is an ultra-low NO_x burner with a wide range of operating conditions for a variety of applications, including thermal oxidizers, air heaters, ovens and furnaces.

- Ultra-low NO_x emissions using innovative mixing technology
- Simple operation - single air and fuel connections
- Wide operating range
- Large range of capacities - 0.6 to 18.6 MM Btu/h HHV at 40% excess air
- Direct spark ignition
- UV scanner flame monitoring

Product Overview | 4225 EcoFornax™ SLEx

Designed to provide ultra-low NOx emission combustion, the SLEx is effective over a range of capacities offering performance down to 10:1 turndown with potential for lower levels of operation. Built with a single air connection, a single fuel connection, and the option of direct spark ignition the SLEx is simple to operate. The burner has a self-supporting tile and is designed for ceramic fiber insulated furnace walls.

The SLEx features an innovative mixing technology (patent pending) to improve the functional range of performance while simultaneously providing a compact, stable, ultra-low NOx, flame. This mixing concept has been validated in both computational fluid dynamic (CFD) studies and laboratory environments to optimize the ratios of air and fuel in each section of the burner.



PRODUCT HIGHLIGHTS

- Ultra-low NOx emissions
- Single air and gas connections
- Direct spark ignition
- Compact flame geometry
- No FGR required
- Hard refractory or fiber wall compatible
- Self-supporting tile refractory
- Medium velocity
- Compatible with combustion chambers up to 2200°F
- Designed for 20" w.c. back pressure
- 20% excess fuel to 90% excess air operation; range increases at lower capacities

MARKETS AND APPLICATIONS

The SLEx is designed for ultra-low NOx applications, including:

- Thermal Oxidizers
- Air Heaters
- Ovens and Dryers
- Furnaces

CAPACITY AND PERFORMANCE:

The SLEx is available in nine (9) sizes, as listed in the table below.

Burner Size	-6	-7	-8	-9	-10-A	-10-B	-12	-14	-16
Air Pressure ("w.c.) 40% XSA	25	25	25	25	25	25	25	25	25
Air Flow (scfh) 60°F	8,600	14,400	31,000	54,000	99,000	126,000	155,000	198,000	246,000
Fuel Pressure (psig) 40% XSA	3	3	3	3	3	3	3	3	3
Input (Btu/h HHV) 40% XSA	650,000	1,100,000	2,300,000	4,100,000	7,500,000	9,500,000	11,700,000	14,900,000	18,600,000

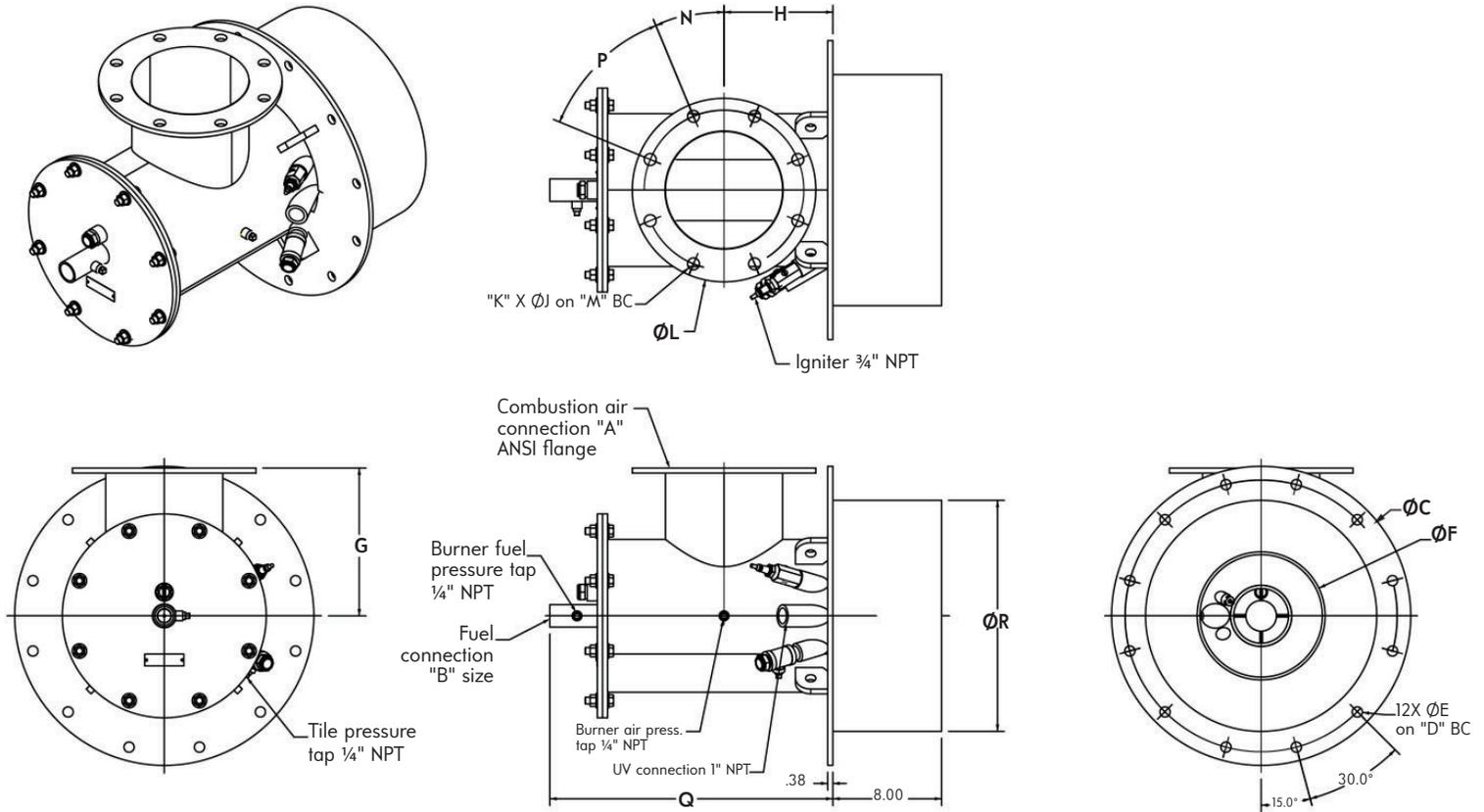


Note: Light of Recommendations: Recommended light-off conditions are 1.0-1.5" w.c. air pressure and 4-6" of gas pressure. Light off should be between 10-40% XSA.

Note: Maximum XSA% at high fire is 90% while low fire is 200% XSA. Low fire is 10:1 from max rated capacity.

Dimensions | 4225 EcoFornax™ SLEx

4225-8 thru -16



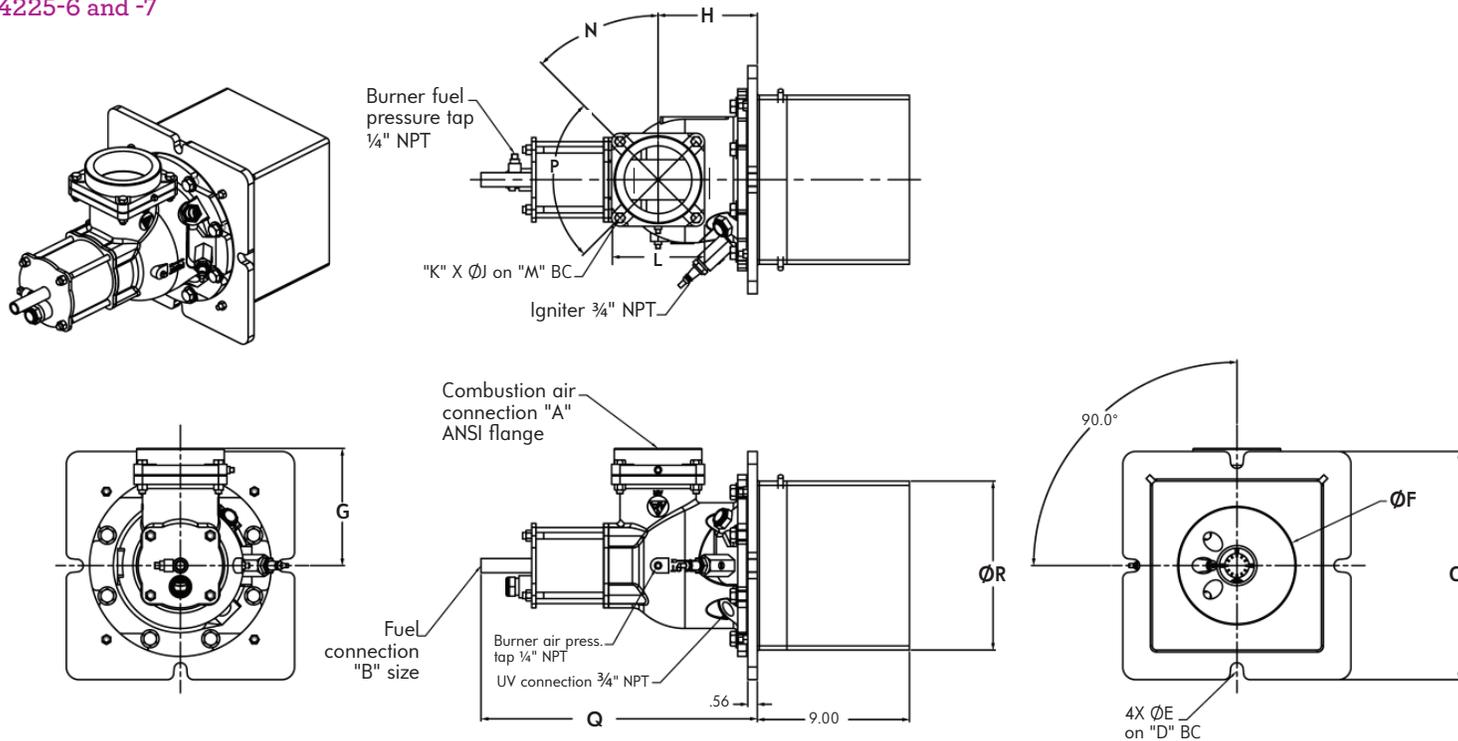
Burner Designation	Dimensions (inches)								
	A	B	C	D	E	F	G	H	J
4225-8	6" ANSI	1" NPT	19.38	17.38	0.75	8.42	9.88	7.00	0.88
4225-9	8" ANSI	1¼" NPT	22.00	20.00	0.75	9.42	10.88	8.00	0.88
4225-10-A	10" ANSI	1½" NPT	27.75	25.75	0.75	12.67	13.50	10.00	1.00
4225-10-B	10" ANSI	2" RF ANSI	27.75	25.75	0.75	14.17	13.50	10.00	1.00
4225-12	12" ANSI	2" RF ANSI	30.00	28.00	0.75	15.67	15.50	11.00	1.00
4225-14	14" ANSI	2½" RF ANSI	32.00	30.00	0.75	17.67	16.50	12.00	1.13
4225-16	16" ANSI	2½" RF ANSI	34.00	32.00	0.75	19.67	17.50	13.00	1.13

Burner Designation	Dimensions (inches)							Clearance Required
	K	L	M	N	P	Q	R	
4225-8	8	11.00	9.50	22.5	45.0	17.94	14.38	21.38
4225-9	8	13.50	11.75	22.5	45.0	20.82	17.00	22.50
4225-10-A	12	16.00	14.25	15.0	30.0	26.07	22.75	29.00
4225-10-B	12	16.00	14.25	15.0	30.0	31.94	22.75	34.88
4225-12	12	19.00	17.00	15.0	30.0	31.69	25.00	33.50
4225-14	12	21.00	18.75	15.0	30.0	34.94	27.00	37.00
4225-16	16	23.50	21.25	11.3	22.5	45.69	29.00	48.63

DIMENSIONS SHOWN ARE SUBJECT TO CHANGE. PLEASE OBTAIN CERTIFIED PRINTS FROM FIVES NORTH AMERICAN COMBUSTION, INC. IF SPACE LIMITATIONS OR OTHER CONSIDERATIONS MAKE EXACT DIMENSION(S) CRITICAL.

Dimensions | 4225 EcoFornax™ SLEx

4225-6 and -7



Burner Designation	Dimensions (inches)								
	A	B	C	D	E	F	G	H	J
4225-6	3" ANSI	3/8" NPT	17.38	15.38	0.75	7.29	9.00	6.00	0.75
4225-7	4" ANSI	1/2" NPT	13.50	12.50	0.75	7.00	6.94	5.87	0.41

Burner Designation	Dimensions (inches)							Clearance Required
	K	L	M	N	P	Q	R	
4225-6	4	7.50	6.00	45.0	90.0	15.25	12.38	10.00
4225-7	4	5.50	6.38	45.0	90.0	16.35	10.00	10.00

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Tile and Ignition | 4225 EcoFornax™ SLEx

The SLEx provides a self-supporting, refractory tile.

Burner Size	-6	-7	-8	-9	-10-A	-10-B	-12	-14	-16
Estimated Weight with Refractory Tile (lbs)	135	140	195	270	480	510	590	670	770

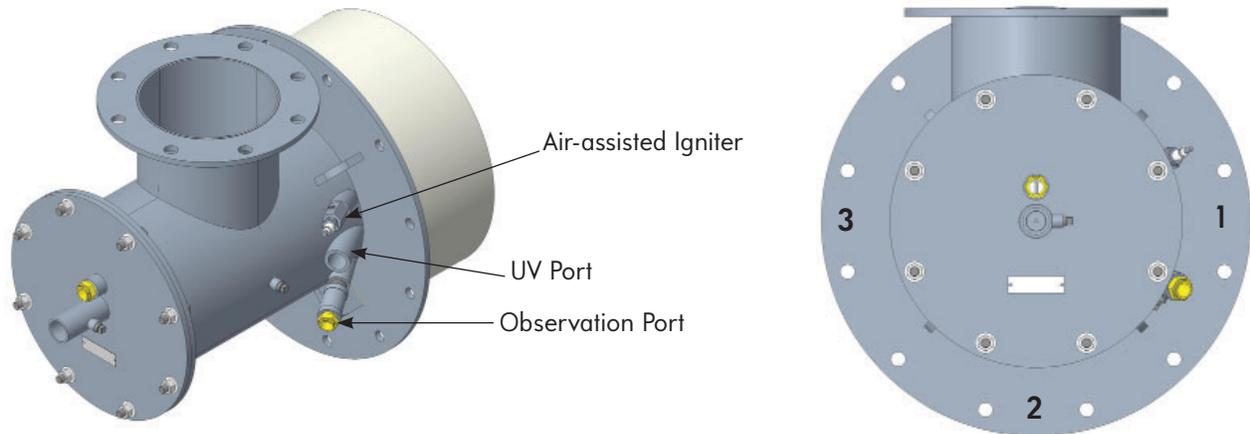
BURNER DESIGNATIONS

Designations	-6	-7	-8	-9	-10-A	-10-B	-12	-14	-16
Burner with Refractory Tile	4225-6-A	4225-7-A	4225-8-A	4225-9-A	4225-10-AA	4225-10-BA	4225-12-A	4225-14-A	4225-16-A

DIRECT SPARK IGNITION

The SLEx comes standard with an air-assisted direct spark igniter. Igniter air should be piped into the igniter from before the air control valve, and the pressure should be controlled through the use of a needle valve or LOV. If a VFD is being used on the combustion air blower, compressed air can be used to supply adequate pressure to the igniter. If furnace pressure constantly fluctuates, add a regulator to the igniter air line that is differential to the furnace chamber. Refer to Bulletin 4051 for additional information. The use of a standard a 6000 V secondary ignition transformer with a timed ignition period is recommended. Half wave ignition transformers should not be used.

PILOT ARRANGEMENT DESIGNATIONS

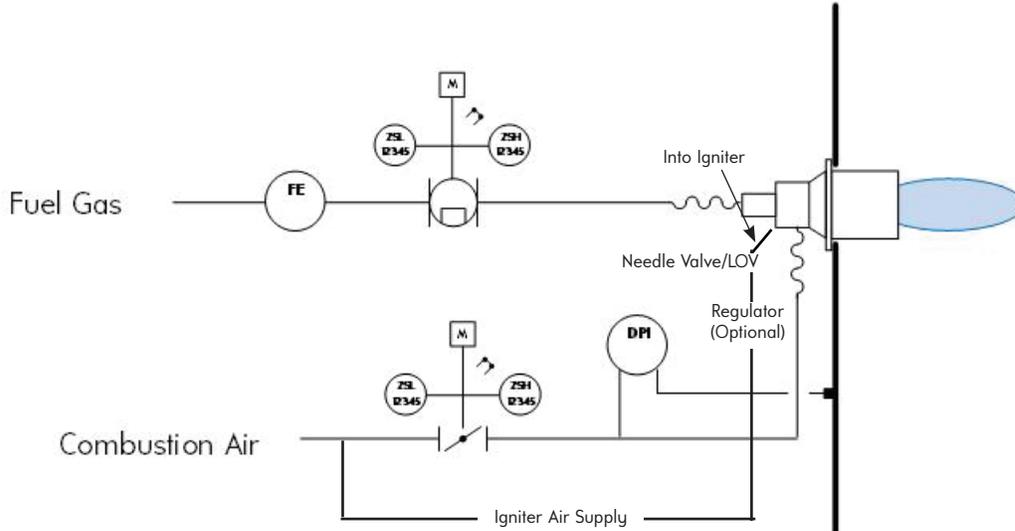


The standard burner is supplied with an igniter. Self-checking UV scanners (sold separately) are recommended for flame supervision.

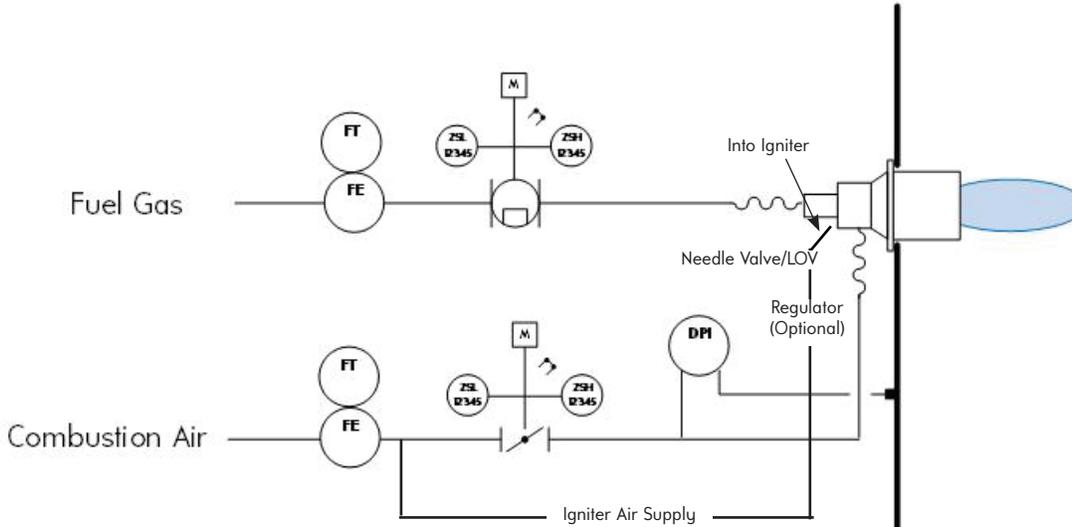
Arrangement designators are specified relative to the main air connection at 12 o'clock. The igniter and UV scanner positions are relative to the air inlet (1 - 90° clockwise, 2 - 180° clockwise, 3 - 270° clockwise). Good practice dictates that neither the source of ignition nor the flame detector be below the centerline of a horizontally-mounted burner. The igniter and observation ports can be swapped in the field as necessary.

Control Schematics | 4225 EcoFornax™ SLEx

SYNCHRONIZED FLOW CONTROL VALVES



METERED FLOW CONTROL



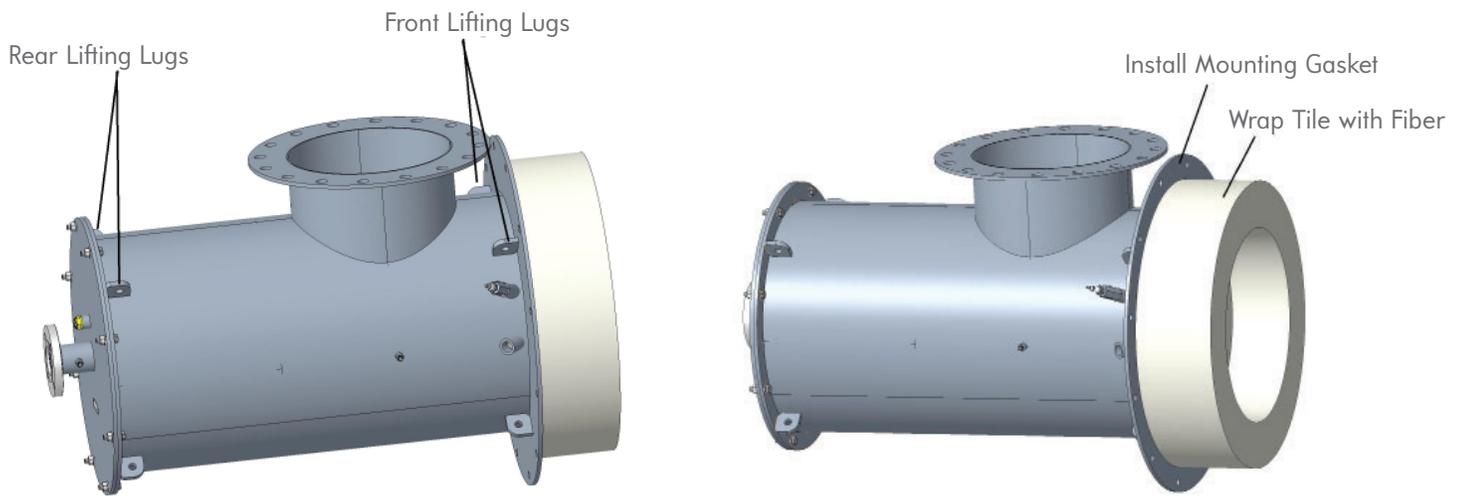
Valve profiling in the form of synchronized flow control valves or metered flow control is required. Mechanical linkages and the use of different valves are not recommended.

Compressed air may also be used to supply adequate air pressure to the igniter, especially if using a VFD to control the combustion air blower.

Installation & Lifting Instructions | 4225 EcoFornax™ SLEx

Reference DF-M1 and DF-M2 for further installation instructions.

No special lifting accessories are required for the SLEx, as the burners have integrated lifting lugs. Each of the smaller burners (4225-6 through 4225-9) have four lifting lugs on the front face of the burner. Two or more of the lugs should be used during installation. The larger burners (4225-10-A through 4225-16) have a similar set of four lifting lugs on the front face of the burner as well as an additional four on the rear. At least two lugs from each side should be used during installation.



PARTS LIST

Part Name	4225-6	4225-7	4225-8	4225-9	4225-10-A	4225-10-B	4225-12	4225-14	4225-16
Igniter Assembly	4051-XL-4.41	4051-XL-4.41	4051-XL-4.91	4051-XL-7.11	4051-XL-8.03	4051-XL-8.03	4051-XL-8.28	4051-XL-9.28	4051-XL-11.28
Backplate and Internals Assembly	4225-6-BA	4225-7-BA	4225-8-BA	4225-9-BA	4225-10-A-BA	4225-10-B-BA	4225-12-BA	4225-14-BA	4225-16-BA

The 4051-XL Igniter is available with the aircraft style ERA connection witch requires a special "4085-ERA" cable. See Bulletin 4051 for more information.

WARNING: Situations dangerous to personnel and property may exist with the operation and maintenance of any combustion equipment. The presence of fuels, oxidants, hot and cold combustion products, hot surfaces, electrical power in control and ignition circuits, etc., are inherent with any combustion application. Components in combustion systems may exceed 160°F (71°C) surface temperatures and present hot surface contact hazard. Fives North American Combustion, Inc. suggests the use of combustion systems that are in compliance with all Safety Codes, Standards, Regulations and Directives; and care in operation.

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