KINEDIZER® LE

High capacity low NOx gas burners

- Field proven low emissions. State-of-the-art low NOx firing - adjustable for application flexibility
- Lower NOx and less excess air than standard KINEDIZER® burners
- Rugged design for oxidizers, process heaters, kilns, furnaces, dryers, waste incineration and other high temperature applications
- Available in a wide range of capacities, each with turndown as high as 20:1
- Burns natural gas, propane or other fuel gases
- Provides excellent stirring and mixing with its medium velocity exhaust
- Accepts preheated and vitiated combustion air

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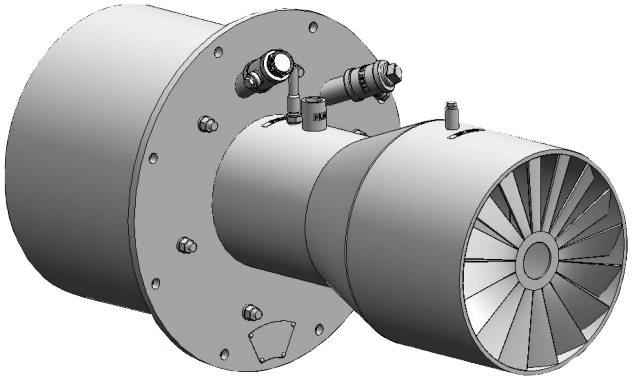
Product description

The KINEDIZER® LE burner is a nozzle-mix, medium-velocity design. Using advanced mixing technology, the burner produces low emissions with very little excess air. Ruggedly built with a reinforced refractory block and steel burner body and nozzle, it burns natural gas, propane or other gaseous fuels. Combustion air is supplied with an external blower. Accurate air and fuel modulation can be accomplished by the MAXON MICRO-RATIO® valve or SMARTLINK® technology.

Combustion air can range from 21% down to 17% O_2 if preheated and from ambient temperature up to 660°F (max. 800°F) on request. Maximum chamber temperature is 2000°F .

Turndown up to 20:1.

Contact MAXON for correct application details.



View of KINEDIZER® LE burner

Available KINEDIZER® LE sizes

Typical burner data Fuel: natural gas at 60°F with 1000 Btu/ft^3 (st) HHV - sg = 0.6 [1] Combustion air: 60°F - 21% O_2 - 50% humidity - sg = 1.0 [1] Stated pressures are indicative. Actual pressures are a function of air humidity, altitude, type of fuel and gas quality.										
KINEDIZER® LE size		1-1/2”	3”	4”	6”	8”	10”	12”	14”	16”
Maximum capacity @ n=1.3	MBtu/h	0.54	2.4	4.6	9.8	15.8	24.3	34	55	75
Air flow at maximum capacity	scfm	110	500	950	2030	3280	5050	7070	11400	15600
Advised pilot capacity	MBtu]/h	0.1	0.2	0.2	0.3	0.5	1.0	1.0	1.0	1.0
Combustion air pressure @ inlet [2] [3]	“wc	28	32	32	32	32	32	32	46	30
Natural gas inlet pressure differential	“wc	55	52	42	64	40	75	76	120	220

[1] sg (specific gravity) = relative density to air (density air = 0.0763 lb/ft^3 (st))
[2] Combustion air pressure required at full capacity, relative to process. Add 5% safety margin + piping & control valve pressure drops for blower sizing.
[3] At minimum capacity 0.1” wc absolute minimum air pressure

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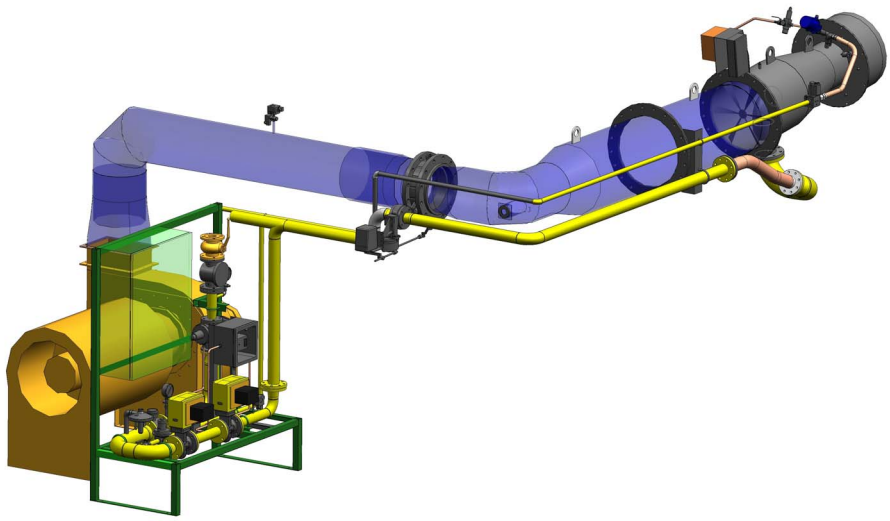
Applications

KINEDIZER® LE burners may be applied to a variety of applications for low to ultra-low emissions. The rugged design of the KINEDIZER® LE burner is ideal for oxidizers and incinerators, process heaters, kilns, furnaces, and other high temperature applications.

In low temperature air heating applications (less than 1400°F), a user-supplied discharge sleeve is needed. Contact MAXON for recommended discharge sleeve size and installation instructions.



KINEDIZER® LE burner with pipe train, control panel and combustion air blower

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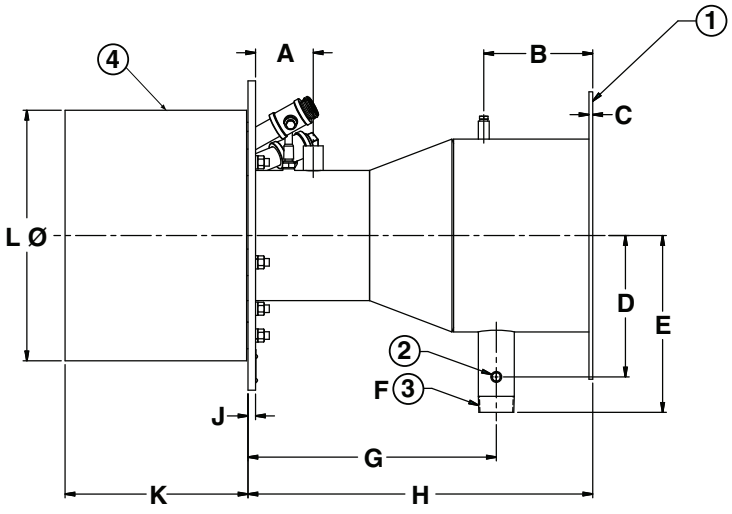
Dimensions and weights

1) Optional air inlet flange
2) 1/4" NPT gas test connection
3) Main gas inlet
4) Standard block or block with sleeve option



Dimensions in inches unless stated otherwise												
Burner size	A	B	C	D	E	F Ø NPT	G	H	J	K	L Ø	Weight lbs
1-1/2"	2.0	1.97	0.25	3.6	4.6	1/2"	5.7	7.86	0.25	9.5	8.6	66
3"	2.99	3.12	0.25	4.69	6.25	1-1/4"	6.94	10.06	0.375	9.5	10.4	100
4"	2.31	3.84	0.25	5.94	7.5	1-1/2"	11.24	15.09	0.375	9.5	12.9	165
6"	3.3	5.0	0.25	7.81	9.38	1-1/2"	14.76	19.75	0.5	12.1	14.6	265
8"	3.81	7.2	0.25	9.35	11.69	2"	16.42	22.79	0.5	12.1	16.6	331
10"	3.81	7.2	0.25	11.97	14.31	2"	23.86	29.71	0.5	12.1	18.7	662
12"	3.81	7.0	0.25	12.66	15.25	3" [1]	31.38	42.50	0.5	12.1	21.0	550
14"	3.81	11.12	0.25	13.66	16.25	3" [1]	37.08	48.21	0.5	12.0	23.9	950
16"	3.81	11.12	0.25	16.66	19.25	3" [1]	46.08	57.25	0.5	15.2	26.75	1030

[1] 3" ANSI raised face 150# slip on flange connection

Typical emissions

The KINEDIZER® LE burner is capable of low NOx when given excess air, typically 20-30% at high fire.

The same burner, when adjusted for on-ratio operation, will give low CO and high thermal efficiency. With flue gas recirculation, the emissions and efficiency can be further improved.

Read "Specifications of KINEDIZER® LE burners" for more detailed information on KINEDIZER® LE burners.

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Specifications of KINEDIZER® LE burners

Typical burner data Fuel: natural gas at 60°F with 1000 Btu/ft^3 (st) HHV - sg = 0.6 [1] Combustion air: 60°F - 21% O_2 - 50% humidity - sg = 1.0 [1] Stated pressures are indicative. Actual pressures are a function of air humidity, altitude, type of fuel and gas quality.										
KINEDIZER® LE size		1-1/2”	3”	4”	6”	8”	10”	12”	14”	16”
Max. capacity @ n=1.3 (low NOx) [2]	MBtu/h	0.54	2.4	4.6	9.8	15.8	24.3	34	55	75
Max. capacity @ n=1.1	MBtu/h	0.59	2.6	5.2	11.2	17.7	28.5	39	60	85
Min. capacity	KBtu/h	27	120	230	490	790	1215	1700	2750	3750
Turndown @ n=1.3 [2]		20:1	20:1	20:1	20:1	20:1	20:1	20:1	20:1	20:1
Turndown @ n=1.1		22:1	22:1	22:1	22:1	22:1	22:1	22:1	22:1	22:1
Air flow at max. capacity	scfm	110	500	950	2030	3280	5050	7070	11400	15600
Air flow at pilot lightoff [9] [10]	scfm	6	26	50	106	171	263	350	596	820
Air flow at minimum capacity	scfm	11	47	88	182	316	461	645	1077	1474
Advised pilot capacity [3]	MBtu/h	0.1	0.2	0.2	0.3	0.5	1.0	1.0	1.0	1.0
Pilot gas pressure [4] [10]	“wc	<0.4	1.0	<0.4	0.6	1.0	4.0	0.5	0.5	0.5
Combustion air pressure @ inlet [5] [10]	“wc	28	32	32	32	32	32	32	46	30
Combustion air pressure differential [6] [8] [10]	“wc	26	28	29	31	27	30	30	42	28
Natural gas inlet pressure differential [7] [10]	“wc	55	52	42	64	40	75	76	120	220
Flame length @ n=1.3 [2]	ft	1	1.5	2	4	6	9	9	10	10
Flame diameter @ n=1.3 [2]	ft	0.5	0.75	1	1.5	3	4	4	4	5
Flame length @ n=1.1	ft	1.5	2.5	4	6	8	10	10	11	11
Flame diameter @ n=1.1	ft	0.5	0.75	1	1.5	3	4	4	4	5

[1] sg (specific gravity) = relative density to air (density air = 0.0763 lb/ft^3 (st))
[2] n=1.3 meaning 30% excess air
[3] Installations without fuel air ratio control custom light-off position capability will require increased pilot capacities and pressures.
[4] Natural gas differential pressure at pilot burner gas inlet.
[5] Differential air pressure needed to the burner’s combustion air inlet.
[6] Differential air pressure as measured at the air pressure connection port
[7] Differential natural gas pressure required at burner gas inlet (gas inlet test connection) relative to process, for the “n=1.3” maximum capacities.
[8] Minimum capacity requires not less than 0.25” wc STP differential air pressure.
[9] Pilot lightoff requires 0.07–0.10” wc STP differential air pressure.
[10] Above differential pressures are relative to combustion chamber static pressures. Chamber pressure must be measured from a chamber tap in the furnace (do not use taps on burner assembly).

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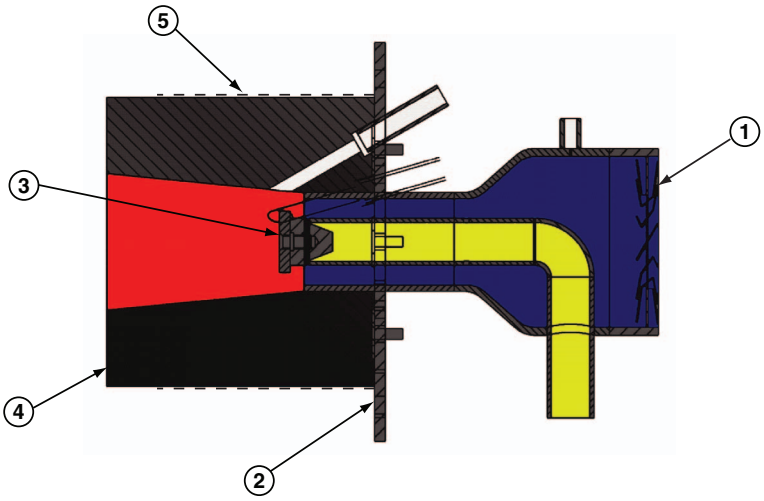
Materials of construction



Item number	Burner part	Material
1	Burner housing	Carbon steel, painted [1]
2	Burner parts (in contact with furnace)	AISI 304 (1.4301)
3	Burner tip	AISI 310 (1.4541)
4	Burner block	Castable refractory [2]
5	Burner block sleeve (optional)	AISI 304 (1.4301)

[1] Optional available: 100% stainless steel burner
[2] Typical composition of castable refractory: refractory with 50% SiO_2, 45% Al_2O_3 and smaller fractions of iron oxide, titanium, lime

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Selection criteria

KINEDIZER® LE burner versions

To suit the local demands of industry and specific regulations worldwide, the standard KINEDIZER® LE burner is available in different versions.

All burners can be ordered with NPT gas connection and SCH 10/40 air pipe connection (ANSI version - see drawings on page 3-11.9-10 through 3-11.9-16).

On request, special versions for hazardous locations, ISO connections, or high back pressure may be supplied. Contact MAXON for more details.

Application details

KINEDIZER® LE burners can be used in all direct fired high temperature air heating applications. It combines flexibility and stability with high turndown and the lowest available NOx emissions. The use of KINEDIZER® LE burners in indirect applications requires special consideration. Contact MAXON for application details.

Maximum capacities

All KINEDIZER® LE burners can be fired at higher maximum capacities if sufficient combustion air and fuel gas is allowed to the burner. Maximum capacities of all sizes can be 20% higher.

Preheated air/reduced O_2 air

KINEDIZER® LE burners accept preheated combustion air up to 660°F (800°F on request). Maximum capacities shall be reduced. Preheated combustion air can have reduced O_2 (as low as 17% if combustion air temperature is 800°F). Mixing of some low O_2 flue gas allows to combine increased system thermal efficiency with best emissions. However, combustion air temperatures greater than 300°F will require a special paint. Please contact Maxon.

Process back pressure

Standard KINEDIZER® LE burners can accept static back pressures between -40”wc and 40”wc. The burner shall be connected to a fuel gas and combustion air control system that is capable of controlling a correct fuel gas ratio against all possible installation back pressures. Special versions are available to accept up to 14.5 psi back pressure (with PED-certification).

Process temperature

The construction of the burner allows operation in all applications with process temperatures from ambient up to 2000°F. Protect burner from high furnace temperatures during burner stop (purge to avoid back flow of hot furnace/process air).

In low temperature air heating applications (less than 1400°F), a user-supplied discharge sleeve is needed. Contact MAXON for recommended discharge sleeve size and installation instructions.

Piloting & ignition

Direct ignition of standard KINEDIZER® LE burners is possible. In case the use of a pilot is preferred, the KINEDIZER® LE burner will be equipped with a raw gas pilot to ignite the main flame (using main burner combustion air). Pilots shall be used only for ignition of the main flame (interrupted). Permanent pilot operation is not advised (no permanent or intermittent pilot). Use main burner at minimum capacity for continuous operation.

Use minimally 5000 V/200 VA ignition transformers for sparking of the spark ignitor. Optional ignition equipment for hazardous locations is available as well as high energy ignitors for direct ignition.

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Typical ignition sequence

- Pre-purge of burner and installation, according to the applicable codes and the installation's requirements.
- Combustion air control valve shall be in a position to achieve pilot lightoff combustion air flow to the burner.
- Pre-ignition (typically 2 s sparking in air).
- Open pilot gas and continue to spark the ignitor (typically 5 s).
- Stop sparking, continue to power the pilot gas valves and start flame check. Trip burner if no flame from here on.
- Check pilot flame stability (typically 5 s to prove stable pilot).
- Open main gas valves and allow enough time to have main gas in the burner (typically 5 s + time required to have main gas in the burner).
- Close the pilot gas valves.
- Release to modulation (allow modulation of the burner).

Above sequence shall be completed to include all required safety checks during the start-up of the burner (process and burner safeties).

Locate one pilot gas valve as close as possible to the pilot burner gas inlet to have fast ignition of the pilot burner.

Ratio control

KINEDIZER® LE burners can be fired stable with air factors ("n") : 1.05 < n < 1.60 (5% to 60% excess air) from 20% to 100% of listed maximum air flows (lower capacities require somewhat higher excess air). Flame dimensions and burner emissions are heavily affected by the excess air amount.

In order to achieve the best ratio control and emissions, MAXON SMARTFIRE® or SMARTLINK® control systems should be utilized. MAXON MICRO-RATIO® valves are also available to obtain good performance over the entire turndown of the burner.

Ratio control on reduced capacity

Most KINEDIZER® LE applications will require burner operation with 30% excess air to have low NOx.

On reduced capacities, the excess air will slowly increase.

KINEDIZER® LE burners will operate with low NOx between 20% and 100% of their listed maximum capacity. Below 20% firing rate, the air factor will slightly increase to have the listed air flow at minimum capacity. Changes of combustion air temperature, system back pressure and other parameters could influence gas/air ratio if the control system is not designed to compensate for these.

Flame supervision

KINEDIZER® LE flames shall be supervised by UV scanners. Two scanner positions are available. Both locations allow verfication of both pilot flame and main flame. (It is not possible to distinguish main and pilot flame.)

Scanners are mounted on the burner flange and look through the block (30° relative to the burner center line).

Pay attention to possible pick-up of strange flames (if any in the furnace). Allow some purge or cooling air to the scanner connections (typically 1.5 scfm of fresh clean air).

Flame development

KINEDIZER® LE burners shall be installed in combustion chambers or furnaces that allow full development of the burner flame. Cylindrical combustion chambers shall have diameters of 1.5 to 2 times burner flame diameter (see table on page 3-11.9-5).

Consult MAXON for proper combustion chamber lay-out.

Cross velocities

Cross velocities up to 3000 ft/min can be allowed over the KINEDIZER® LE flame. Contact MAXON for proper lay-out and correct emission information in case of cross velocity over the flame.

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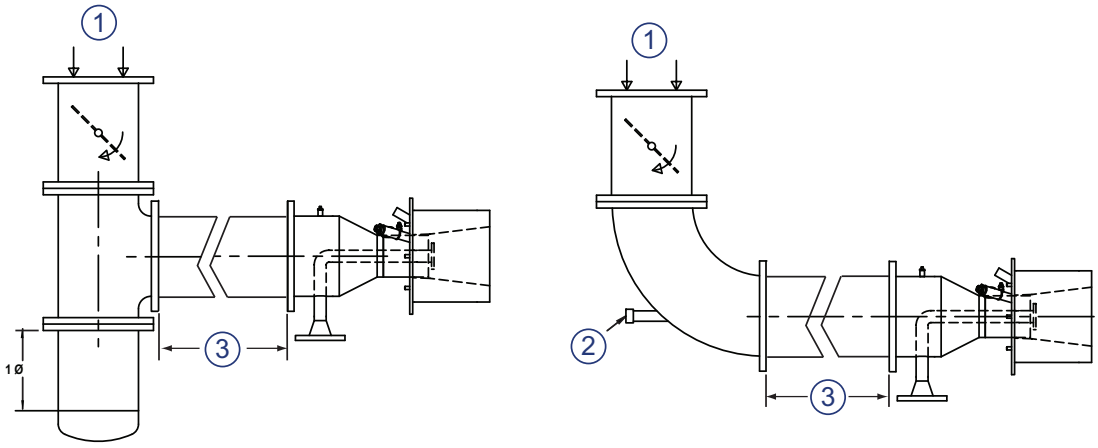
Combustion air control and piping

KINEDIZER® LE burners require combustion air control valves with high turndown (to guarantee correct air flow at minimum capacity). Air control valves shall be properly sized. Typically, the air control valve diameter shall be smaller than the burner air inlet. Combustion air piping to the burner shall be done in such a way that the air flow to the burner will not disturb the flame. Location of air control valves directly on the burner inlet is not possible. For installations that do not allow 4 duct diameters of straight duct before burner air inlet, special 90° transition adapters are available. Contact Maxon for details.

1) Air flow
2) Sight glass
3) Minimum 4 Ø



Typical lay-outs with correct piping between air control valve on the KINEDIZER® LE burner

Fuels

Standard KINEDIZER® LE burners are designed for low NOx firing of natural gas only. Special versions are available to fire propane/LPG. Multi-fuel burners will have higher NOx on the alternative fuel.

Expected emissions

Typical NOx for KINEDIZER® LE burners firing natural gas with 30% excess air:

- cold furnaces (< 1382°F): 50% of a conventional burner
- furnaces up to 1742°F : 40% of a conventional burner

CO highly depends on the installation's lay-out and can be reduced if sufficient dwell time after the flame is allowed. Consult MAXON for correct application information.

Low NOx furnace requirements

Low NOx operation requires properly designed combustion chamber or furnace.

KINEDIZER® LE flames have a medium velocity and will be influenced by the atmosphere around the flame. Contact MAXON for proper design.

CO and low NOx operation

Low NOx in combination with low CO is possible if sufficient dwell time is available after the flame. Mixing that occurs too fast with cold process air will increase CO.

Burner blocks

Standard KINEDIZER® LE burners will be shipped with block as shown on page 3-11.9-10. Two long block options are available: standard (without supporting sleeve) and with supporting sleeve.

Standard blocks without supporting sleeves shall be used only if the blocks are supported by the furnace walls. Supporting sleeves shall be used in all installations where the blocks are not supported (soft walls or steel ducting). Protect the supporting sleeve with insulation if used on high temperature furnaces. Consult installation instructions for detailed information.

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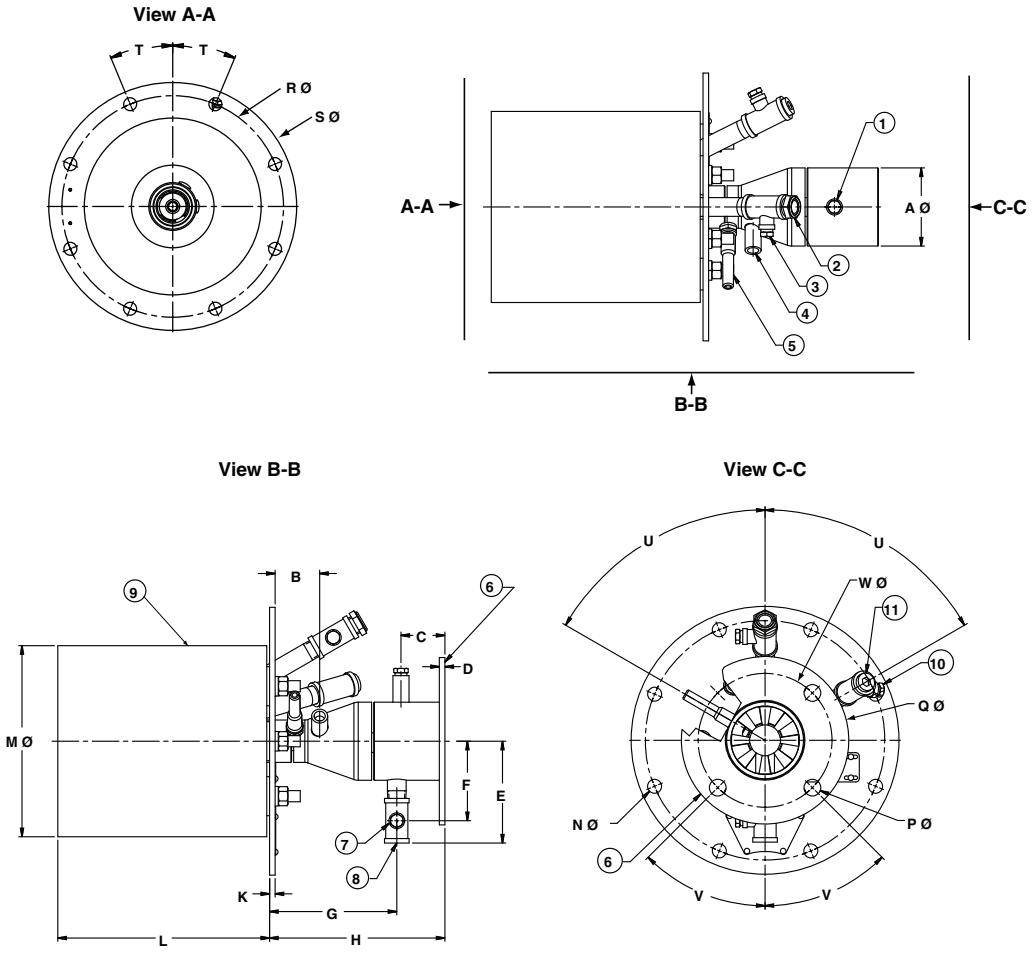
Dimensions and weights

1-1/2” KINEDIZER® LE burners

1) 1/4” NPT air test connection
2) Observation port
3) 1/4” NPT purge air connection
4) 1/4” NPT pilot gas inlet
5) Spark ignitor
6) Optional air inlet flange
7) 1/4” NPT gas test connection
8) 1/2” NPT main gas inlet
9) Standard block or block with sleeve option
10) 1/4” NPT purge air connection
11) 1/2” NPT scanner port



Dimensions in inches unless stated otherwise											
Size	A Ø	B	C	D	E	F	G	H	K	L	M Ø
1-1/2”	3.5	2.0	1.97	0.25	4.6	3.6	5.7	7.86	0.25	9.5	8.6

Size	N Ø	P Ø	Q Ø	R Ø	S Ø	T	U	V	W Ø	Weight lbs
1-1/2”	0.625	0.75	7.5	10.73	12.0	22.5°	60°	45°	6.0	66

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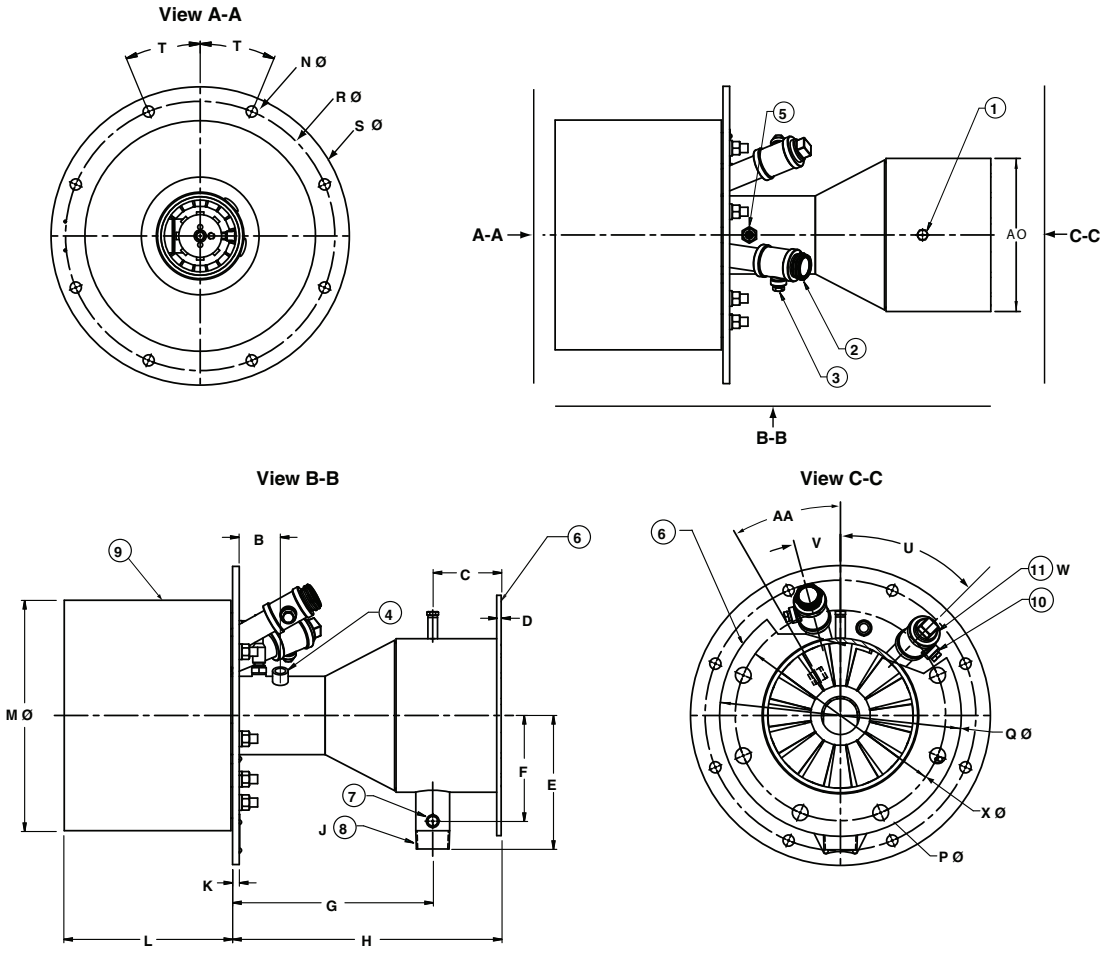
3” & 4” KINEDIZER® LE burners

1) 1/4” NPT air test connection
2) Observation port
3) 1/4” NPT purge air connection
4) 3/8” NPT pilot gas inlet
5) Spark ignitor
6) Optional air inlet flange
7) 1/4” NPT gas test connection
8) Main gas inlet
9) Standard block or block with sleeve option
10) 1/4” NPT purge air connection
11) Scanner port



Dimensions in inches unless stated otherwise												
Size	A Ø	B	C	D	E	F	G	H	J NPT	K	L	M Ø
3”	6.62	2.99	3.12	0.25	6.25	4.69	6.94	10.06	1-1/4”	0.375	9.5	10.4
4”	8.62	2.31	3.84	0.25	7.5	5.94	11.24	15.09	1-1/2”	0.375	9.5	12.9

Size	N Ø	P Ø	Q Ø	R Ø	S Ø	T	U	V	AA	W NPT	X Ø	Weight lbs
3”	0.625	0.875	11.0	12.52	14.15	22.5°	45°	15°	30°	1/2”	9.5	100
4”	0.625	0.875	13.5	15.12	16.75	22.5°	45°	15°	30°	1”	11.75	165

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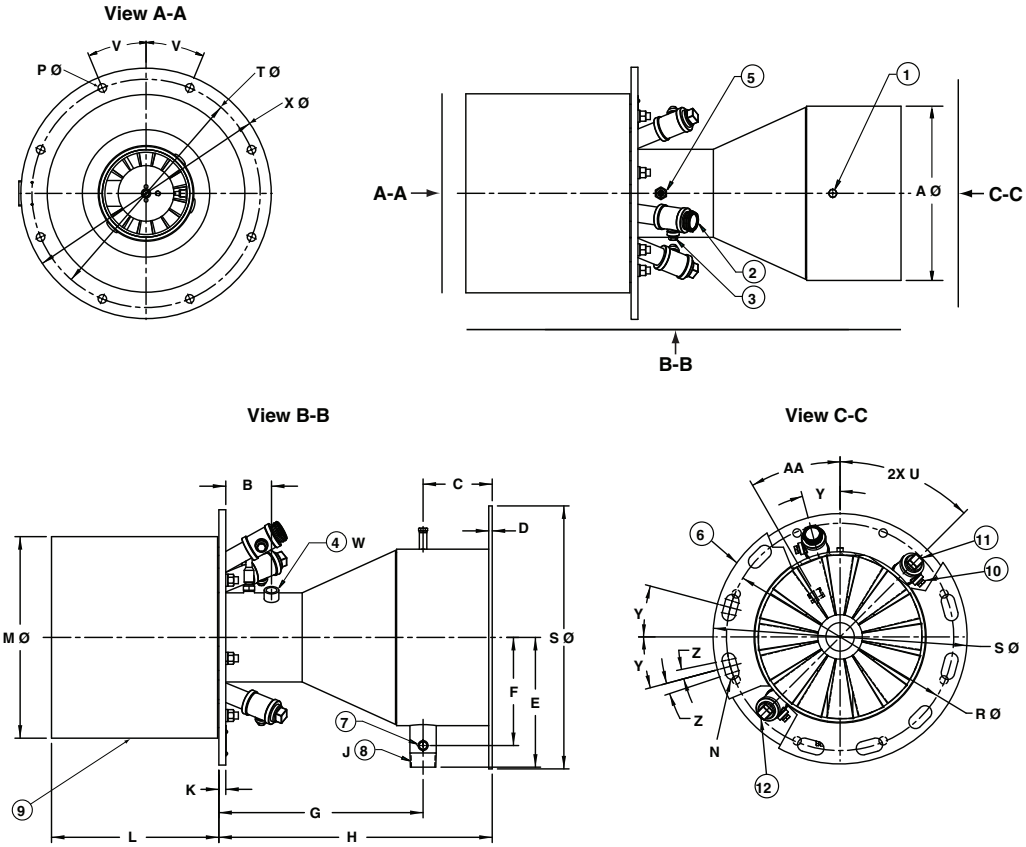
6” & 8” KINEDIZER® LE burners

1) 1/4” NPT air test connection
2) Observation port
3) 1/4” NPT purge air connection
4) Pilot gas inlet
5) Spark ignitor
6) Optional air inlet flange
7) 1/4” NPT gas test connection
8) Main gas inlet
9) Standard block or block with sleeve option
10) 1/4” NPT purge air connection
11) 1” NPT scanner port
12) Optional 1" NPT scanner port



Dimensions in inches unless stated otherwise												
Size	A Ø	B	C	D	E	F	G	H	J NPT	K	L	M Ø
6”	12.75	3.3	5.0	0.25	9.38	7.81	14.76	19.75	1-1/2”	0.5	12.1	14.6
8”	12.75	3.81	7.2	0.25	11.69	9.35	16.42	22.79	2”	0.5	12.1	16.6

Size	N	P Ø	R Ø	S Ø	T Ø	U	V	W NPT	X Ø	Y	Z	AA	Weight lbs
6”	0.5	0.625	17.0	19.0	16.823	45°	22.5°	1/2”	18.45	15°	3°	30°	265
8”	0.5	0.625	17.0	19.0	18.82	45°	22.5°	3/4”	20.45	15°	3°	30°	331

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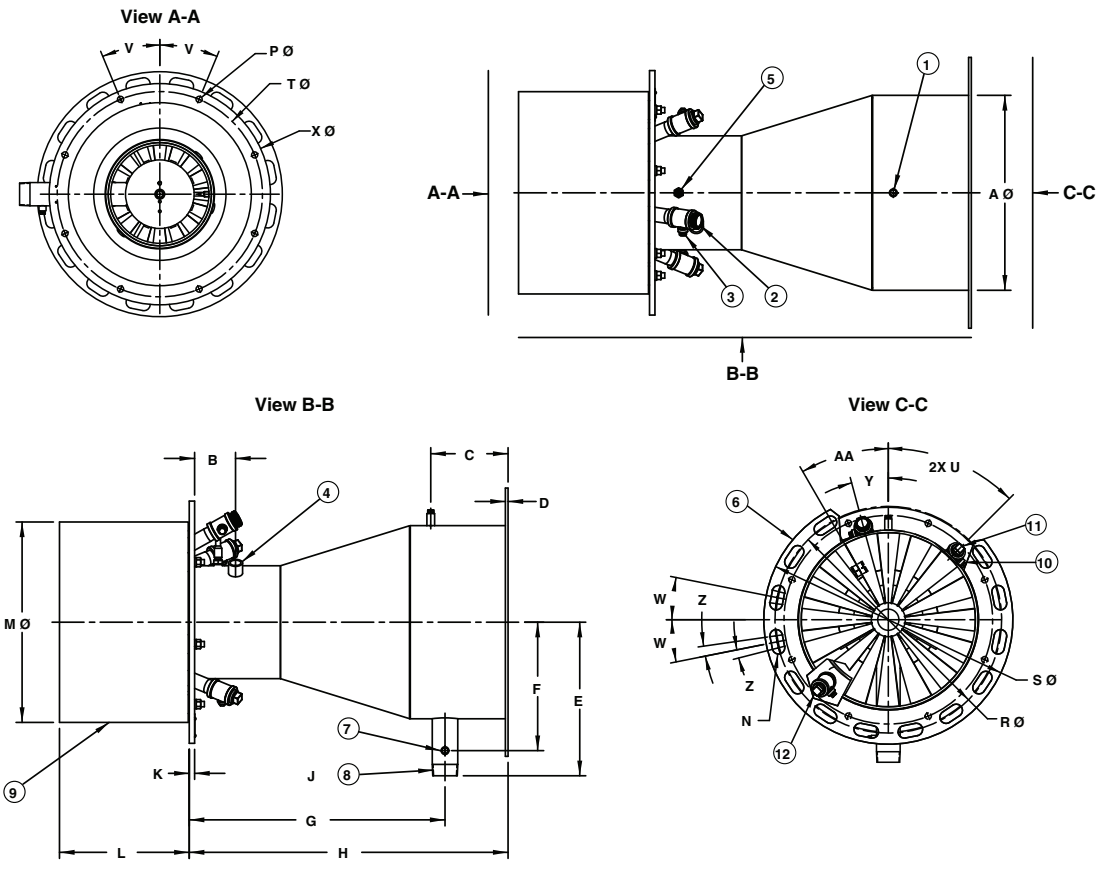
10” KINEDIZER® LE burners

1) 1/4” NPT air test connection
2) Observation port
3) 1/4” NPT purge air connection
4) 3/4” NPT pilot gas inlet
5) Spark ignitor
6) Air inlet flange
7) 1/4” NPT gas test connection
8) 2” NPT main gas inlet
9) Standard block or block with sleeve option
10) 1/4” NPT purge air connection
11) 1” NPT scanner port
12) Optional 1" NPT scanner port



Dimensions in inches unless stated otherwise												
Size	A Ø	B	C	D	E	F	G	H	K	L	M Ø	N
10”	18.0	3.81	7.2	0.25	14.31	11.97	23.86	29.71	0.5	12.1	18.7	0.62

Size	P Ø	R Ø	S Ø	T Ø	U	V	W	X Ø	Y	Z	AA	Weight lbs
10”	0.625	22.75	25.0	20.95	45°	22.5°	11.25°	22.57	15°	3°	30°	662

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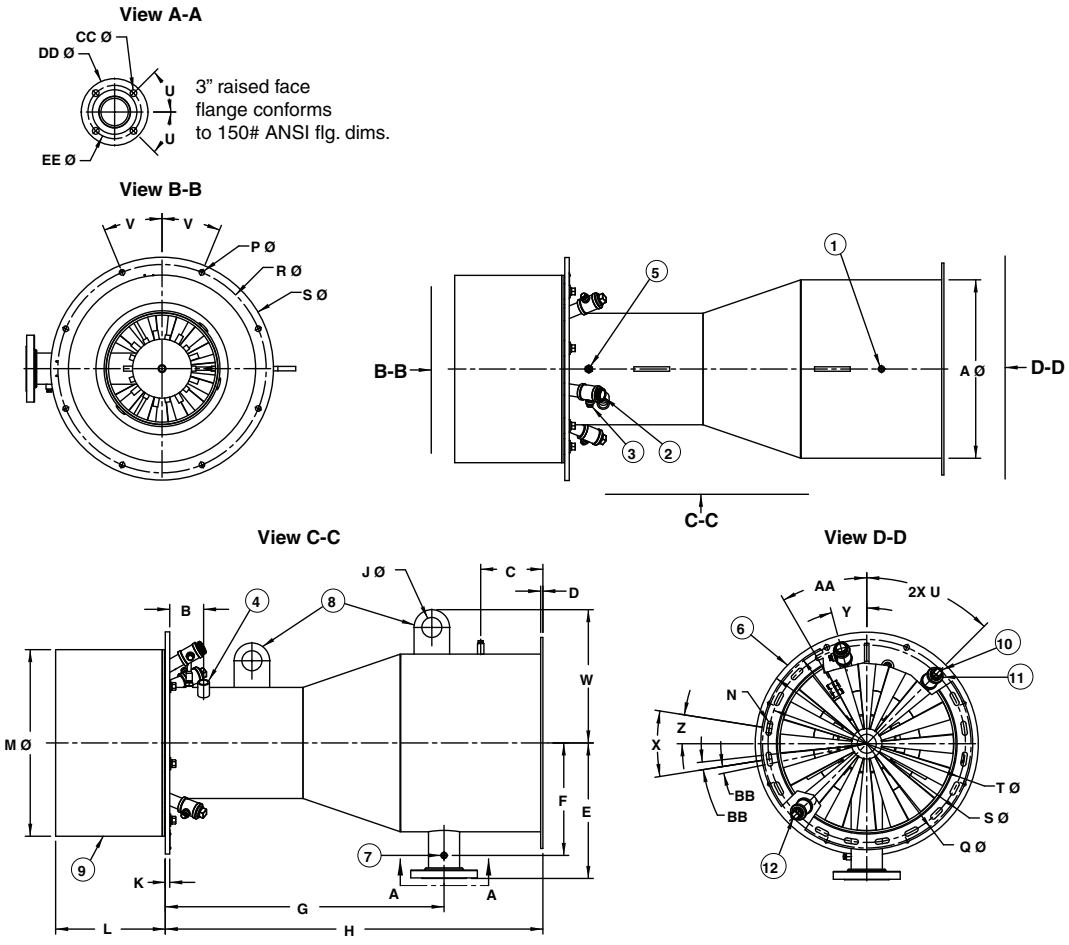
12” KINEDIZER® LE burners

1) 1/4” NPT air test connection
2) Observation port
3) 1/4” NPT chamber test connection
4) 3/4” NPT pilot gas inlet
5) Spark ignitor
6) Air inlet flange
7) 1/4” NPT gas test connection
8) Lifting lugs
9) Standard block or block with sleeve option
10) 1/4” NPT purge air connection
11) 1” NPT scanner port
12) Optional 1" NPT scanner port



Dimensions in inches unless stated otherwise										
Size	A Ø	B	C	D	E	F	G	H	J Ø	K
12”	20.0	3.81	7.0	0.25	15.25	12.66	31.38	42.50	2.25	0.5
Size	L	M Ø	N	P Ø	Q Ø	R Ø	S Ø	T Ø	U	V
12”	12.1	21.0	0.281	0.625	23.75	23.375	25.0	22.12	45°	22.5°

Size	W	X	Y	Z	BB	AA	CC Ø	DD Ø	EE Ø	Weight lbskg
12”	15.0	18°	15°	9°	2.65°	30°	0.75	7.5	6.0	550

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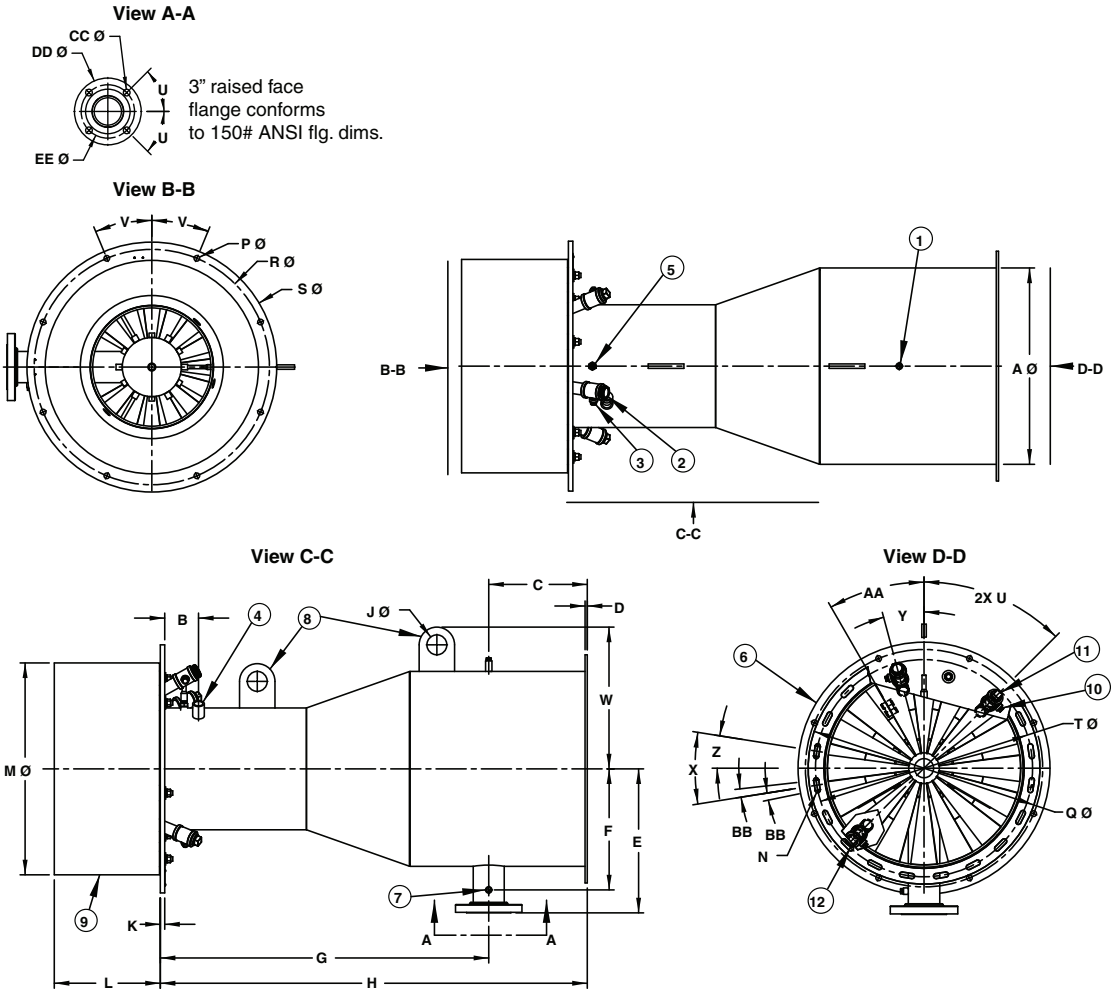
14” KINEDIZER® LE burners

1) 1/4” NPT air test connection
2) Observation port
3) 1/4” NPT purge air connection
4) 3/4” NPT pilot gas inlet
5) Spark ignitor
6) Air inlet flange
7) 1/4” NPT gas test connection
8) Lifting lugs
9) Standard block or block with sleeve option
10) 1/4” NPT purge air connection
11) 1” NPT scanner port
12) Optional 1" NPT scanner port



Dimensions in inches unless stated otherwise										
Size	A Ø	B	C	D	E	F	G	H	J Ø	K
14”	22.0	3.81	11.12	0.25	16.25	13.66	37.08	48.21	2.25	0.5

Size	L	M Ø	N	P Ø	Q Ø	R Ø	S Ø	T Ø	U	V
14”	12.0	23.9	0.281	0.625	25.75	26.375	28.0	24.12	45°	22.5°

Size	W	X	Y	Z	AA	BB	CC	DD	EE	Weight lbs
14”	16.0	18°	15°	9°	30°	2.65°	0.75	7.5	6.0	950

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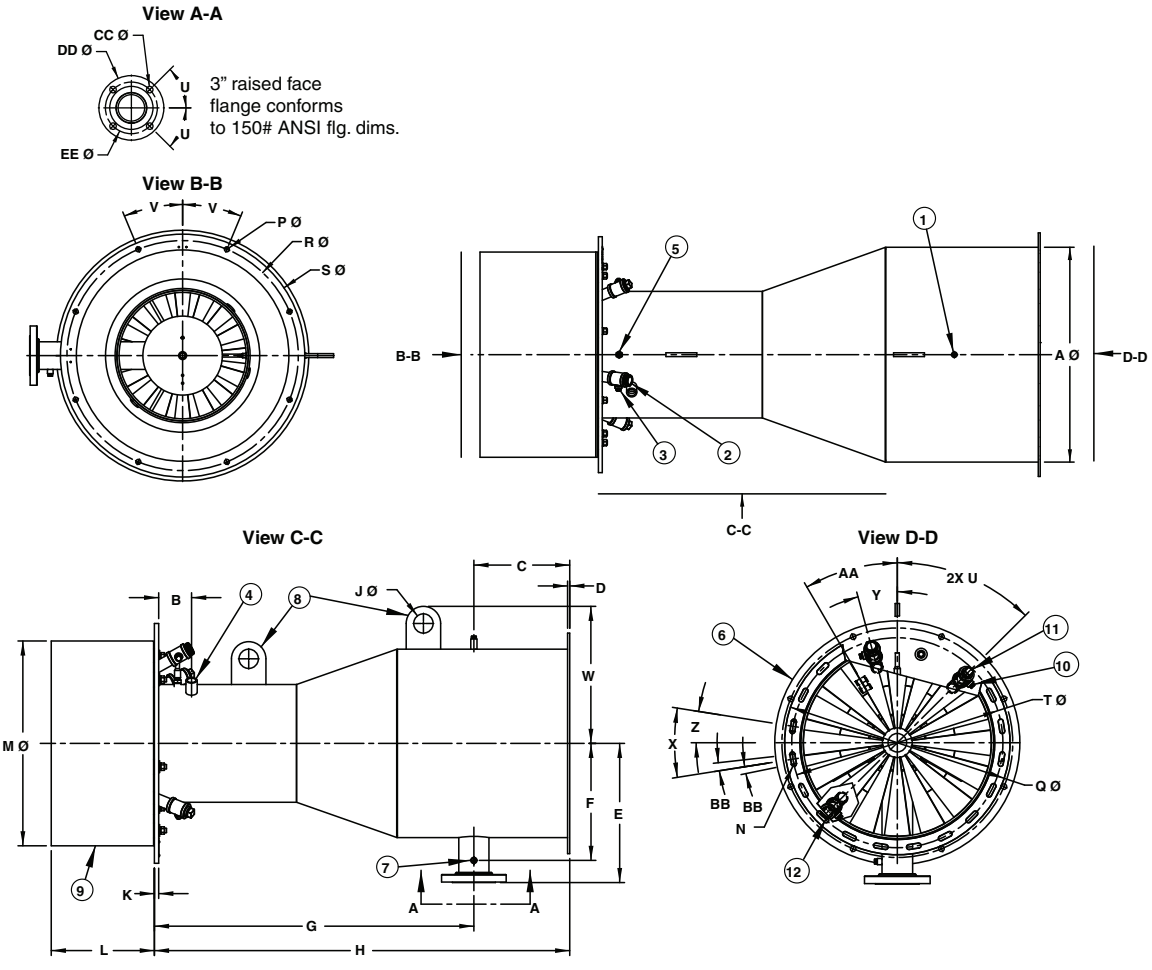
16” KINEDIZER® LE burners

1) 1/4” NPT air test connection
2) Observation port
3) 1/4” NPT purge air connection
4) 3/4” NPT pilot gas inlet
5) Spark ignitor
6) Air inlet flange
7) 1/4” NPT gas test connection
8) Lifting lugs
9) Standard block or block with sleeve option
10) 1/4” NPT purge air connection
11) 1” NPT scanner port
12) Optional 1" NPT scanner port



Dimensions in inches unless stated otherwise										
Size	A Ø	B	C	D	E	F	G	H	J Ø	K
16”	28	3.81	11.12	0.25	19.25	16.66	46.08	57.25	2.25	0.5

Size	L	M Ø	N	P Ø	Q Ø	R Ø	S Ø	T Ø	U	V
16”	15.2	26.75	0.281	0.625	31.75	29.13	30.75	30.12	45°	22.5°

Size	W	X	Y	Z	AA	BB	CC	DD	EE	Weight lbs
16”	19	15°	15°	7.5°	30°	2.5°	0.75	7.5	6.0	1030

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Installation instructions for KINEDIZER® LE burners

Application requirements

View port

A view port to observe burner flame is essential to inspect flame aspect. Locate the view port downstream of the flame, looking back to the burner block. Make sure the complete flame can be evaluated.

Support burner air and gas piping

The KINEDIZER® LE burner shall not be used as support for the piping to the burner. Gas and air piping shall be supported in such a way that no additional loads will be created on the burner.

Burner mounting flange loads

Check burner weight and reinforce burner mounting flange or combustion chamber/furnace back wall if necessary to take complete burner weight.

Installation instructions

Storage of KINEDIZER® LE burners

KINEDIZER® LE burners shall be stored dry (inside). Burner blocks have been cured carefully before shipment and shall be kept dry. Wetting of blocks could result in premature failures.

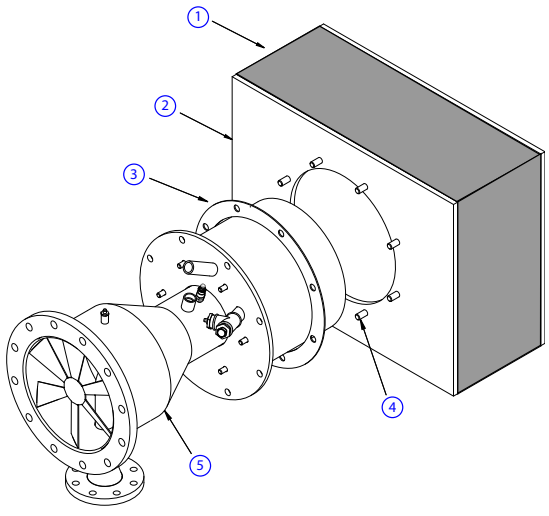
Handling of KINEDIZER® LE burners

KINEDIZER® LE burners are shipped as complete units. Handle burners with care during unpacking, transport, lifting and installation. Use proper equipment. Any impact on the burner could result in damage.

Flange the burner to the installation

Bolt the burner to the installation's burner mounting flange. Use proper gasketing. Tighten the flange bolting with correct torque. Retighten all bolts after first firing and regularly after commissioning.

1) Insulation
2) Furnace shell
3) Gasket (by others)
4) Mounting studs
5) Burner



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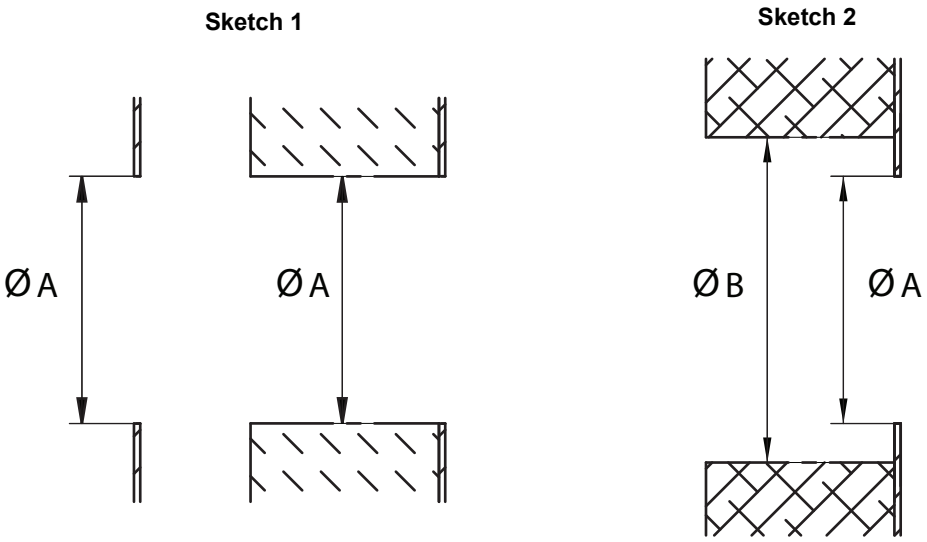
Burner mounting

Furnace/combustion chamber requirements



Dimensions in inches unless stated otherwise									
Burner size	1-1/2”	3”	4”	6”	8”	10”	12”	14”	16”
A Ø [1]	9.6	11.5	14	15.6	17.6	19.7	22	24.9	27.75
B Ø [2]	14.5	16.4	18.9	20.5	22.5	24.6	26.8	29.7	32.5

[1] Ø A = block diameter + 1 in
[2] Ø B = block diameter + 5.8 in

Sketch 1: sheet metal combustion chambers, furnaces without internal insulation or with soft wall internal insulation: flange / opening internal diameter shall be = Ø A

Sketch 2: furnaces or ovens with brick walls: opening in brick wall shall be = Ø B (to be rammed with castable refractory)

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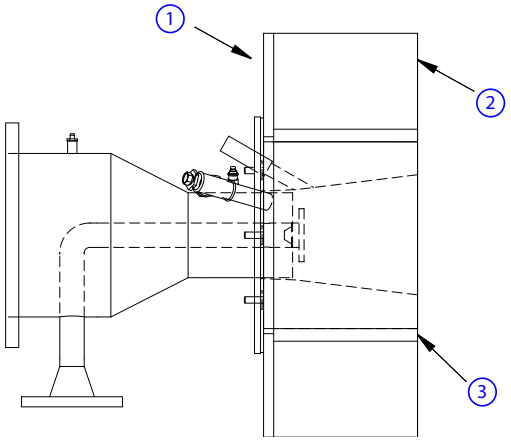
Standard blocks

Burners with standard blocks require supporting of the burner block by the furnace wall. Ram the gap between block and furnace wall with castable refractory.

1) Furnace shell
2) Furnace wall
3) Castable refractory material



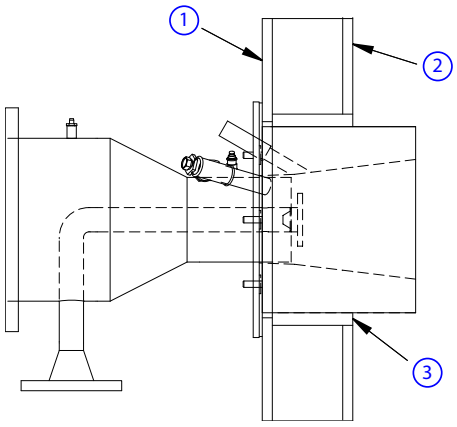
Blocks with supporting sleeve

Burners with blocks that have supporting sleeves can be used in all applications if the supporting sleeve is protected from temperatures that may be too high.

Sheet metal combustion chambers without internal insulation do not require any provision for supporting or protecting the burner blocks.

Furnaces with internal insulation or refractory walls will require protection of the block supporting sleeve from the high temperature. Close the gap between block and furnace wall with soft insulation fiber to provide thermal protection of the block sleeve.

1) Furnace shell
2) Panel wall
3) Soft insulating material



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Start-up instructions for KINEDIZER® LE burners

Instructions provided by the company or individual responsible for the manufacture and/or overall installation of a complete system incorporating MAXON burners take precedence over the installation and operating instructions provided by MAXON. If any of the instructions provided by MAXON are in conflict with local codes or regulations, please contact MAXON before initial start-up of equipment.

Read the combustion system manual carefully before initiating the start-up and adjustment procedure. Verify that all of the equipment associated with and necessary to the safe operation of the burner system has been installed correctly, that all pre-commissioning checks have been carried out successfully and that all safety-related aspects of the installation are properly addressed.

Initial adjustment and light-off should be undertaken only by a trained commissioning engineer.

First firing or restart after shut-down

During first start-up of the burner, and after every longer installation shut-down, the temperature rise shall be limited. Allow the burner to fire on low fire for some time to allow the parts to heat up slowly.

Checks during and after start-up

During and after start-up, check the integrity of the system. Check all bolted connections after first firing (first time on temperature) and retighten if necessary.

Pilot ignition

Before ignition of the pilot, adjust the combustion air to the pilot lightoff burner air flow. Pilot will not ignite if air flow is too high. Set pilot gas pressure to the correct value before pilot ignition attempt.

Main burner ignition

Set correct gas flow for burner minimum capacity before attempt of main burner ignition.

After ignition of main burner, allow some time on minimum capacity to allow the burner parts to heat up slowly.

To avoid overheating of burner internals, confirm that combustion air differential pressure is at or above minimum capacity value in specifications burner table.

Adjust air/gas ratio, set maximum capacity

Once the main flame is ignited, adjust air/gas ratio of the burner to have the required combustion quality and slowly increase capacity. (Do not increase capacity too fast to avoid damage to burner parts or furnace due to excessive temperature gradient.)

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Maintenance & inspection instructions

Safety requirements

Regular inspection, testing and recalibration of combustion equipment according to the installation manual is an integral part of its safety. Inspection activities and frequencies shall be carried out as specified in the installation manual.

Visual inspection

Regular visual inspection of all connections (air and gas piping to the burner, bolting of the burner to the furnace) and burner flame size and aspect are essential.

Spare parts

Keep local stock of spark ignitor. It is not recommended to keep local stock of other burner parts.

Consult installation manual for burner spare parts and system accessories.

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