

VENTITE™ Inspirator Mixers



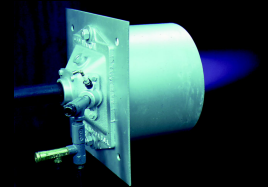
- **Use kinetic energy of higher gas pressures** to provide air/gas mixture for all Maxon premix-type burner systems
- **Uses most clean fuel gases** 500-3200 Btu/ft³
- **Low initial cost**
- **Maintenance-free design**
- **Easy to adjust and operate**
- **Maximum application flexibility** offered with 10 different sizes
- **Provides for partial premixing** of air/gas ratios to Maxon AIRFLO® type burner systems

Partial Premix Burner Systems



'66' AIRFLO® Burner

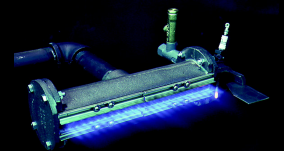
Premix Burner Systems



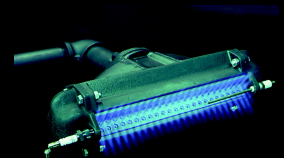
SN Sealed Nozzles



STICKTITE™ Nozzles



Style A & B
LINOFLAME® Burners



VFL & VFH
LINOFLAME® Burners



VENTITE™ Inspirator Mixers

Principle of Operation

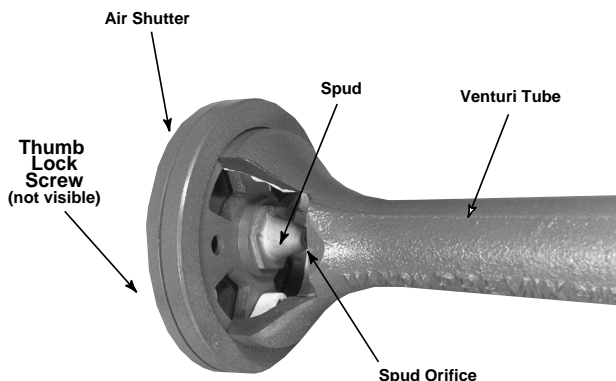
VENTITE™ Inspirators provide a low-cost means of supplying air/gas mixture to premix-type gas burners.

Gaseous fuel under high pressure is introduced through a drilled spud orifice into the venturi throat, pulling in a proportional amount of combustion air. The air and gas are mixed and may be used to supply most premix-type burner nozzles.

Spud is easily replaceable in the field, so different fuels can be readily accommodated. (Spud orifice drilling varies with gas characteristics and available inlet pressures.)

Air shutter is adjustable to accommodate draft requirements of installation and includes a thumb lock screw.

Control can be **manual**, as by the firing cock; **automatic**, using a control motor to throttle fuel flow through Maxon's Series "CV", "Q", or Synchro Gas Valves; or **on/off firing** using a solenoid valve.



VENTITE™ Inspirator

A complete VENTITE™ Inspirator system will also include gas train, burner, throttling equipment, and a control panel. Your Maxon representative can help you choose from the broad range available.

Typical applications include air heaters, grain dryers, ceramic kilns, incinerators, solution heating, metal melting, refinery heater/treaters, and many other direct flame applications.

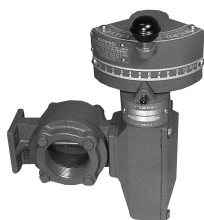
Flow Control Valves



Series "CV" Valve



Series "Q" Valve



SYNCHRO Valve

Aluminum hand torches are specialized aluminum VENTITE™ Inspirators with a cast iron HD-2-24 STICKTITE™ Nozzle.

These lightweight units (only 9 pounds) are easy to handle and are totally portable, requiring only flexible gas and/or air connections.

Application flexibility is provided with six different options available for high or low gas pressure installations.

Typical applications include foundry floor mould drying, ladle drying, core drying, die preheating, brazing, preheating for welding and ore car thawing operations.



Aluminum Hand Torch



CORPORATION

201 East 18th Street, P.O. Box 2068, Muncie, Indiana, 47307-0068. Phone: (765) 284-3304. FAX (765) 286-8394

Capacity/Selection Data

General

Capacity of a burner system incorporating VENTITE™ Inspirators is determined by the size, type and number of burners or nozzles through which it fires, and by the field conditions under which it operates. Select from the following capacity/selection tables for the combination of mixer, burner and operating conditions of your application.

Even slight variations in combustion chamber pressure, draft conditions or the availability of secondary air can affect ratings and performance drastically.

Designations of VENTITE™ Inspirators are based on outlet pipe size. **For example:** A 1-1/2" VENTITE™ Inspirator will discharge the air/gas mixture through a 1-1/2" standard threaded pipe connection. A specific spud orifice drilling must always be designated when ordering a VENTITE™ Inspirator.

Open-port firing with STICKTITE™ Nozzles

VENTITE™ Inspirators may be used as shown at right to supply air/gas mixture to STICKTITE™ Burner Nozzles being fired out in the open, into immersion tubes, or firing through a chamber wall with the use of a Maxon tuyere block.

STICKTITE™ Nozzle may be threaded directly onto VENTITE™ Inspirator outlet or optional 90° elbow arrangement may be specified as shown at right. Support clamp is standard on 3" and larger VENTITE™ Inspirators and available as optional accessory on 2" and 2-1/2" versions.

Capacities and nozzle sizing information are provided on pages 3304-3306 for burner systems utilizing VENTITE™ Inspirators with STICKTITE™ Burner Nozzles. Data is based on the use of a single, full-sized STICKTITE™ Nozzle threaded directly onto the outlet of a VENTITE™ Inspirator or arranged for right-angle firing with a single elbow and close nipple.

Use only the "HD" STICKTITE™ Nozzle size indicated for each VENTITE™ Inspirator.

Your actual choice of an appropriate VENTITE™ Inspirator and STICKTITE™ Nozzle combination will be based on combustion chamber back pressure or draft and the available pressure and heating value of the fuel gas being used.

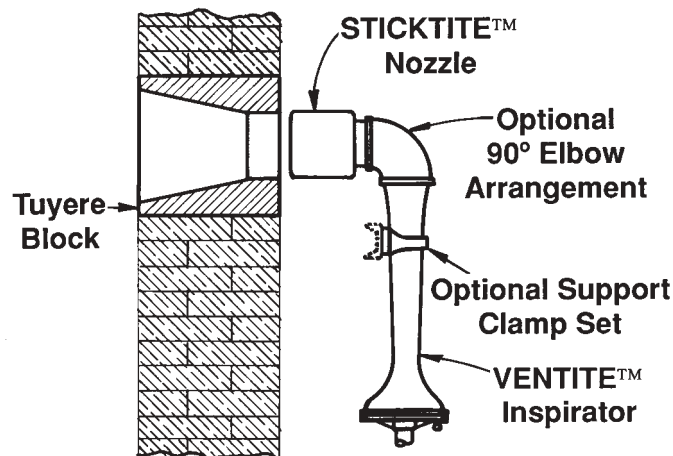
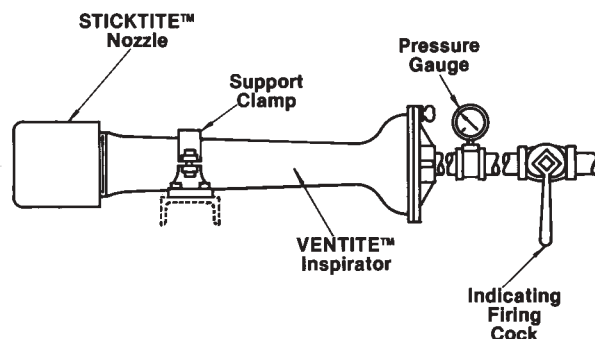
To select the appropriate Inspirator/STICKTITE™ Nozzle combination, determine your expected negative pressure conditions and available gas pressure.

Catalog data extends only to 30 PSIG. Higher pressures are possible, but noise frequently becomes a consideration.

Locate your available gas pressure in the appropriate table and scan downward in that column to the fuel and heat release required. Separate data is provided for 1000 Btu/ft³ natural gas and 2500 Btu/ft³ propane.

Identify VENTITE™ Inspirator size and spud orifice drilling by following across the line showing your desired fuel, pressure and heat release.

Select and order the matching "HD" STICKTITE™ Nozzle from the information given in the STICKTITE™ Nozzle catalog section.



Capacity/Selection Data

VENTITE™ Inspirator and STICKTITE™ Nozzle

SCFH natural gas capacities when firing into balanced combustion chamber pressure
(0 to -0.05" wc static pressure) – Under these firing conditions, approximately 80% primary air inspiration is expected. **Do not fire on propane gas with these conditions.**

VENTITE™ Inspirator Size with single STICKTITE™ Nozzle size	Inspirator's Spud Orifice Drill Size area of spud orifice in square inches	Natural Gas [1] Pressures (PSIG) measured at VENTITE™ Inspirator Inlet												
		1 Min.	2	3	4	5	6	8	10	12	15	20	25 [2]	30 [2]
1" HD- 1" -9	#56 .00169	24	33	39	45	50	54	62	69	74	83	94	104	114
1-1/4" HD- 1-1/4" -14	#51 .00353	39	54	66	76	86	92	105	119	130	143	165	185	200
1-1/2" HD- 1-1/2" -18	#36 .0089	85	118	144	167	183	203	235	267	285	320	370	405	425
2" HD- 2" -24	#33 .01003	114	157	187	213	237	258	299	335	368	416	490	565	638
2-1/2" HD- 2-1/2" -27	#30 .01297	146	200	241	275	304	333	384	430	470	530	620	720	810
3" HD- 3" -30	9/64" .01553	172	238	284	324	360	393	454	508	560	631	743	855	968
4" HD- 4" -41	13/64" .03241	360	495	592	673	750	818	945	1060	1170	1317	1550	1780	2020
5" HD- 5" -50	17/64" .05542	610	840	1005	1140	1275	1380	1605	1790	1980	2240	2635	3030	3425
6" HD- 6" -60	19/64" .06922	765	1055	1260	1435	1590	1740	2005	2250	2500	2800	330	3800	4300
8" HD- 8" -88	13/32" .1296	1360	1870	2240	2550	2830	3100	3575	4000	4400	4980	5860	6750	7600

[1] Gross heating value of natural gas assumed to be 1000 Btu/ft³ and specific gravity 0.60.

[2] Inlet gas pressures above 20 PSIG on a VENTITE™ Inspirator often result in higher noise levels.

Aluminum Hand Torches

These are specialized aluminum VENTITE™ Inspirators with cast iron HD-2"-24 STICKTITE™ Nozzles and provisions for simple air/gas adjustments.

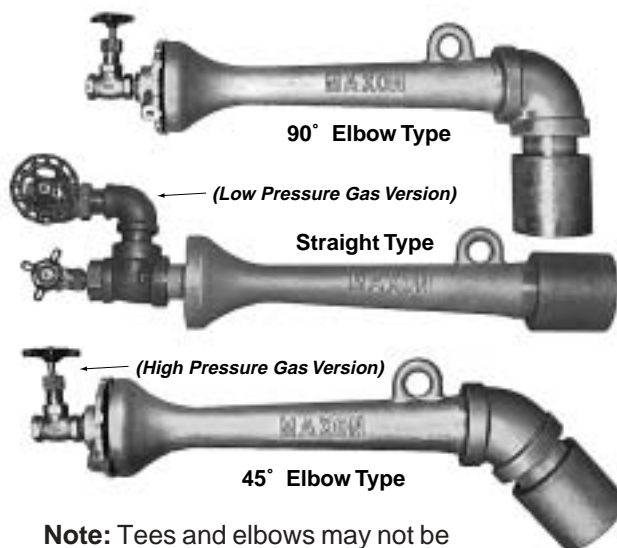
Three styles are offered (as illustrated at right): straight type, 45° elbow type, and 90° elbow type. Each style may also be specified in two (2) versions (based upon available gas pressure).

Low pressure gas version requires 0.2" wc to 8 psi natural gas pressure and a compressed air supply at 5-60 PSIG (2-3 SCFM flow) and is rated at 210,000-475,000 Btu/hr. **High gas pressure** version requires natural gas supply at 5-25 PSIG capacity and is rated at 250,000-500,000 Btu/hr.

These lightweight units (only 9 pounds) are easy to handle, requiring only flexible gas and/or air connections for portability. You need only connect to your gas supply (and compressed air lines for low pressure versions).

Light-off is normally manual in most applications, without flame supervision.

When ordering, specify spud orifice drilled #33 for natural gas firing or #43 spud orifice for propane gas.



Note: Tees and elbows may not be in the orientation shown.

Capacity/Selection Data

VENTITE™ Inspirator and STICKTITE™ Nozzle

SCFH gas capacities when firing into slightly negative combustion chamber pressure

(-0.05 to -0.15" wc static pressure) – Under these firing conditions, approximately 65% primary air inspiration is expected.

VENTITE™ Inspirator Size with single STICKTITE™ Nozzle Size	Inspirator's Spud Orifice Drill Size area of spud orifice in square inches	Fuel Gas Type [1] (SCFH)	Gas Pressures (PSIG) measured at VENTITE™ Inspirator Inlet													
			1 Min.	2	3	4	5	6	8	10	12	15	20	25 [2]	30 [2]	
1" HD- 1" -9	#55 .00212	Natural	30	41	49	56	62	67	78	87	95	106	123	140	156	
	#59 .00132	Propane	12	16	20	22	24	27	31	35	38	42	49	56	62	
1-1/4" HD- 1-1/4" -14	#46 .00515	Natural	59	81	98	112	124	135	156	175	192	215	252	287	320	
	#52 .00317	Propane	24	32	39	45	50	54	62	70	77	86	101	115	128	
1-1/2" HD- 1-1/2" -18	#31 .01131	Natural	122	169	203	232	257	283	327	367	400	450	528	600	660	
	#41 .00724	Propane	50	68	81	93	103	113	131	147	160	180	211	240	264	
2" HD- 2" -24	#27 .01629	Natural	188	259	309	352	391	425	493	552	607	687	808	930	1050	
	#32 .01057	Propane	75	104	124	141	156	170	197	221	243	275	323	372	420	
2-1/2" HD- 2-1/2" -27	#19 .02164	Natural	238	325	393	448	497	542	625	700	770	875	1030	1185	1335	
	#29 .01453	Propane	95	130	154	180	199	217	250	280	308	350	412	475	534	
3" HD- 3" -30	#13 .02688	Natural	294	404	484	552	613	669	772	864	955	1075	1265	1450	1650	
	#25 .01755	Propane	118	162	194	221	245	267	310	346	382	430	506	580	660	
4" HD- 4" -41	17/64" .05542	Natural	605	835	1000	1135	1265	1375	1595	1780	1965	2220	2610	3000	3400	
	#3 .03563	Propane	242	335	400	455	508	550	638	712	790	890	1040	1200	1360	
5" HD- 5" 50	#Q .08657	Natural	938	1295	1545	1750	1960	2125	2465	2755	3040	3440	4050	4650	5260	
	17/64" .05542	Propane	375	518	620	700	785	850	985	1100	1215	1375	1620	1860	2100	
6" HD- 6" -60	3/8" .11045	Natural	1155	1590	1900	2170	2400	2620	3025	3390	3750	4225	4975	5725	6460	
	#N .07163	Propane	462	636	760	870	960	1050	1210	1330	1500	1690	1990	2300	2580	
8" HD- 8" -88	17/32" .2217	Natural	2130	2935	3500	4000	4440	4850	5600	6260	6900	7800	9180	10600	11900	
	27/64" .1398	Propane	850	1170	1400	1600	1780	1940	2240	2500	2760	3120	3670	4240	4760	

[1] Gross heating value of natural gas assumed to be 1000 Btu/ft³ and specific gravity 0.060; propane gas to be 2500 Btu/ft³ with specific gravity of 1.55

[2] Inlet gas pressures above 20 PSIG on a VENTITE™ Inspirator often result in higher noise levels.

Capacity/Selection Data

VENTITE™ Inspirators and STICKTITE™ Nozzle

SCFH capacities when firing into high negative combustion chamber pressure

(-0.15 to -0.3" wc static pressure) – Under these firing conditions, approximately 50% primary air inspiration is expected.

VENTITE™ Inspirator Size with single STICKTITE™ Nozzle Size	Inspirator's Spud Orifice Drill Size area of spud orifice in square inches	Fuel Gas Type [1] (SCFH)	Gas Pressures (PSIG) measured at VENTITE™ Inspirator Inlet												
			1 Min.	2	3	4	5	6	8	10	12	15	20	25 [2]	30 [2]
1" HD- 1" -9	#53 .00278	Natural	35	48	58	66	73	80	93	104	115	129	152	175	198
	3/64" .00173	Propane	14	19	23	26	29	32	37	42	45	51	61	70	79
1-1/4" HD- 1-1/4" -14	#42 .00687	Natural	78	108	129	147	161	178	206	230	254	286	338	388	440
	#49 .00419	Propane	31	43	52	59	64	71	82	92	101	114	135	155	176
1-1/2" HD- 1-1/2" -18	#29 .01453	Natural	159	219	262	296	331	362	418	467	516	581	685	790	895
	7/64" .0094	Propane	64	87	105	118	131	145	168	186	206	233	274	316	358
2" HD- 2" -24	11/64" .0232	Natural	262	360	430	490	545	592	686	768	846	958	1125	1295	1465
	#29 .01453	Propane	105	144	172	196	218	237	274	306	338	383	450	518	586
2-1/2" HD- 2-1/2" -27	#10 .02941	Natural	330	450	545	620	690	750	865	970	1070	1220	1440	1650	1860
	#23 .01863	Propane	132	180	217	247	276	300	346	388	428	487	575	660	742
3" HD- 3" -30	7/32" .03758	Natural	415	570	683	779	865	945	1090	1220	1350	1520	1790	2050	2325
	#17 .02351	Propane	166	228	274	311	346	378	436	487	540	608	715	820	930
4" HD- 4" -41	5/16" .0767	Natural	850	1175	1400	1600	1775	1935	2240	2500	2760	3120	3670	4225	4785
	1/4" .04909	Propane	340	470	560	640	710	770	890	1000	1100	1245	1465	1690	1915
5" HD- 5" -50	25/64" .1198	Natural	1265	1745	2085	2365	2640	2875	3325	3720	4100	4640	5465	6275	7100
	5/16" .0767	Propane	508	700	830	950	1050	1150	1330	1495	1640	1850	2180	2500	2840
6" HD- 6" 60	7/16" .15033	Natural	1540	2125	2540	2900	3215	3500	4050	4530	5000	5650	6650	7650	8625
	#S .09511	Propane	615	850	1010	1160	1285	1400	1620	1810	2000	2260	2660	3060	3450
8" HD- 8" -88	5/8" .3068	Natural	2900	4000	4760	5440	6050	6600	7625	8520	9400	10625	12500	14400	16250
	1/2" .19635	Propane	1160	1600	1910	2170	2420	2640	3050	3410	3760	4250	5000	5760	6600

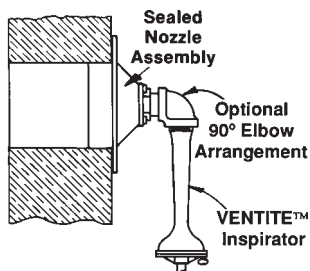
[1] Gross heating value of natural gas assumed to be 1000 Btu/ft³ and specific gravity 0.060; propane gas to be 2500 Btu/ft³ with specific gravity of 1.55

[2] Inlet gas pressures above 30 PSIG on a VENTITE™ Inspirator often result in higher noise levels.

Capacity/Selection Data

VENTITE™ Inspirator and Series “SN” Sealed Nozzle

Where sealed-port firing is preferred for atmosphere control or energy conservation, VENTITE™ Inspirators may be used to supply air/gas mixture to Series “SN” Sealed Nozzles as shown in sketch below. The elimination of secondary air reduces capacities somewhat from open-port or ribbon-firing applications, but multiple inspirators and nozzles may be used to achieve virtually any desired heat input. **Do not use against back pressures exceeding 0.20" wc or for propane or butane fuels.**



Capacities and nozzle sizing information are provided below and on the following page for burner systems utilizing VENTITE™ Inspirators with Sealed Nozzles.

To select the appropriate Inspirator/Sealed Nozzle combination, determine your expected back pressure conditions and available gas pressure. Catalog data extends only to 30 PSIG. While higher pressures may be used, higher noise levels must be expected.

Locate your available gas pressure in the appropriate table and scan downward in that column to the heat release required. **Identify the VENTITE™ Inspirator size** and spud orifice drilling required by following across the line showing your desired pressure and heat release. **Select and order a matching SN Sealed Nozzle** from the information given in the Sealed Nozzle catalog section.

SCFH natural gas capacities when firing against combustion chamber back pressures (0 to +0.1" wc static pressure)

VENTITE™ Inspirator Size with single Series "SN" Sealed Nozzle Burner size	Inspirator's Spud Orifice Drill Size area of spud orifice in square inches	Natural Gas [1] Pressures (PSIG) measured at VENTITE™ Inspirator inlet												
		1 Min.	2	3	4	5	6	8	10	12	15	20	25 [2]	30 [2]
1" SN- 1" 9	#61 .00113	17	24	28	32	36	39	45	50	54	61	70	78	85
1-1/4" SN- 1-1/4" -14	#53 .00278	31	43	52	59	67	72	82	93	102	113	132	149	164
1-1/2" SN- 1-1/2" -18	#41 .00724	69	96	116	134	147	162	188	212	229	258	300	335	363
2" SN- 2" -20	#37 .00849	96	133	158	180	200	218	253	283	311	351	414	477	540
2-1/2" SN- 2" -24	#32 .01057	123	169	203	231	256	280	323	361	398	448	523	605	685
3" SN- 2-1/2" -27	#30 .01297	198	205	245	279	310	338	390	437	482	543	641	737	834

[1] Gross heating value of natural gas assumed to be 1000 Btu/hr³ and specific gravity to be 0.60.

[2] Inlet gas pressures above 20 PSIG on a VENTITE™ Inspirator often result in higher noise levels.

Capacity/Selection Data

VENTITE™ Inspirator and Series “SN” Sealed Nozzle

SCFH natural gas capacities when firing against combustion chamber back pressures
(+0.1 to +0.2" wc static pressure)

VENTITE™ Inspirator Size with single Series "SN" Sealed Nozzle Burner size	Inspirator's Spud Orifice Drill Size area of spud orifice in square inches	Natural Gas [1] Pressures (PSIG) measured at VENTITE™ Inspirator inlet												
		1 Min.	2	3	4	5	6	8	10	12	15	20	25 [2]	30 [2]
1" SN- 1" 9	#70 .00057	10	14	17	19	22	24	27	31	34	38	45	52	59
1-1/4" SN- 1-1/4" -14	#56 .00169	23	31	37	42	47	52	59	67	74	83	98	113	128
1-1/2" SN- 1-1/2" -18	#48 .00454	53	74	88	100	111	121	140	156	172	195	230	265	300
2" SN- 2" -20	#42 .00687	78	108	129	147	163	178	206	230	254	286	338	388	440
2-1/2" SN- 2" -24	#36 .00890	100	137	164	187	208	227	262	292	325	365	425	490	555
3" SN- 2-1/2" -27	#31 .01131	124	171	205	233	259	282	325	365	404	455	538	618	700

[1] Gross heating value of natural gas assumed to be 1000 Btu/hr³ and specific gravity to be 0.60.

[2] Inlet gas pressures above 20 PSIG on a VENTITE™ Inspirator often result in higher noise levels.

Capacity/Selection Data

VENTITE™ Inspirators and Style “A” & “B” LINOFLAME® Burners

Where wide distribution of heat is required, VENTITE™ Inspirators may be used to supply air/gas mixture to LINOFLAME® Burner assemblies.

Heat releases are affected by available gas pressures, air velocity, percent recirculation, and firing chamber pressure conditions.

Capacities and burner selection information are provided on pages 3310-3313 for burner systems utilizing VENTITE™ Inspirators and Style “A” and “B” LINOFLAME® Burners.

To select the appropriate Inspirator/LINOFLAME® Burner combination, determine your expected operating conditions and the available fuel and pressure. Catalog data extends only to 30 PSIG. Higher pressures are possible, but higher noise levels will be experienced.

Locate your available gas pressure in the appropriate table and scan down that column to the heat release required, then read across to identify the necessary VENTITE™ Inspirator size and its spud orifice drilling for your fuel gas (spud orifice drillings are shown for 1000 Btu/ft³ natural gas or 2500 Btu/ft³ propane).

In the “burner length” section on the right side of the table, you will find six possible LINOFLAME® Burner footages and drillings which might be selected.

Identify the footage which best fits your application needs then, at the top of that column, read the indicated LINOFLAME® type and drilling pattern.

Style “A” or “B” LINOFLAME® Burner heat release must NOT exceed 525,000 Btu/hr per lineal foot of burner.

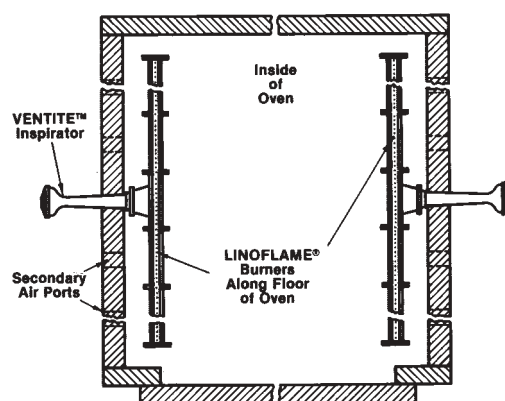
Air stream applications require a minimum flow of fresh make-up air, with the actual amount based on heat release. Minimum fresh air (SCFM) columns shown at the right of tables 2, 3 and 4 indicate a range corresponding to the 5 PSIG through 30 PSIG maximum capacities. Minimum fresh air requirements for intermediate pressures may be interpolated.

See “A” & “B” LINOFLAME® Burner catalog section for additional burner information.

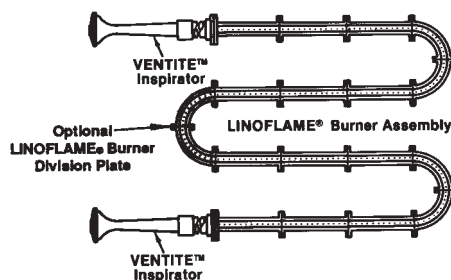
The sketch below shows VENTITE™ Inspirators

feeding two LINOFLAME® Burner assemblies in a still air oven heating application. Some secondary air should normally be supplied around the burner, possibly through secondary air ports as shown.

The sketch below shows one possible arrangement



of the burner assembly mounted in an airstream to be heated. For heat releases in excess of those in capacity tables, multiple VENTITE™ Inspirators may be used as shown and the LINOFLAME® Burner assembly divided into separate sections by division plates.



Capacity/Selection Data

VENTITE™ Inspirators and Style “A” & “B” LINOFLAME® Burners

Table 1: LINOFLAME® Burners in still air applications

with VENTITE™ Inspirator located in fresh air and LINOFLAME® Burner subject only to normal convection currents

Capacities (1000's Btu/hr) at indicated natural gas pressures (PSIG) measured at VENTITE™ Inspirator inlet						Size	Spud Orifice Drill Size Area of spud orifice in square inches	Style "A" or "B" LINOFLAME® Burner Length (feet of indicated type and drillings)					
Maximum					Minimum			B-36-4242	B-96-5050	B-96-4444	B-96-3643	A-72-1733	A-72-C33
30 [1]	20	15	10	5									
105	86	75	63	46	23	1"	#56 .00169	1.5	1	.5	---	---	---
185	150	130	108	78	60	1-1/4"	#52 .00317	3.25	2.5	1.5	1.25	1	---
385	335	290	245	168	85	1-1/2"	#38 .00809	5.5	4	2.5	2	1.25	1
575	445	336	305	215	170	2"	7/64" .0094	9.5	6.5	4.5	3.5	2.5	1.5
730	560	475	380	270	215	2-1/2"	1/8" .0122	12	8.75	5.5	4.25	3	2
880	675	570	470	330	250	3"	#29 .01453	15	10	7	5.25	3.75	2.5
1850	1410	1200	970	680	475	4"	#10 .02941	29	20	13	10	7	4.5
3100	2400	2050	1630	1170	675	5"	#F .05187	42	30	20	15	10	7
3100	2400	2050	1630	1170	1025	6"	9/32" .06213	62	44	27	22	15	10

[1] Inlet gas pressures above 20 PSIG on a VENTITE™ Inspirator often result in high noise levels

Capacity/Selection Data

VENTITE™ Inspirators and Style “A” & “B” LINOFLAME® Burners

For air heating applications

with air stream velocities across burner in the range of
500 to 1500 FPM and return air temperatures not to
exceed 500°F (260°C), if in a recirculating system

Table 2: LINOFLAME® Burners on pressure or suction side of volume air fan
with VENTITE™ Inspirator inside of duct parallel to direction of air flow

Capacities (1000's Btu/hr) at indicated gas pressures (PSIG) measured at VENTITE™ Inspirator inlet						Size	Inspirator's Spud Orifice Drill Size Area of spud orifice in square inches		Style "A" or "B" LINOFLAME® Burner Length (feet of indicated type and drillings)						Minimum Fresh Air Required (SCFM) at indicated duct static pressure conditions
Maximum					Min.		Natural Gas	Propane Gas	B-36-4242	B-96-5050	B-96-4444	B-96-3643	A-72-1733	A-72-C33 [2]	
30 [1]	20	15	10	5											
142	118	105	87	63	25	1"	#55 .00212	#59 .00132	1.25	1	---	---	---	---	63 - 142
250	206	179	150	108	65	1-1/4"	#49 .00419	#53 .00278	3	2.5	1.5	1.25	1	---	108 - 250
530	465	400	335	230	95	1-1/2"	#31 .01131	#41 .00724	5	4	2.5	2	1.25	1	230 - 530
800	615	480	420	300	175	2"	1/8" .01227	#39 .00777	8.5	6.5	4.5	3.5	2.5	1.5	300 - 800
1000	775	660	535	380	200	2-1/2"	#28 .0155	#34 .00968	10.5	8.75	5.5	4.25	3	2	380 - 1000
1200	930	790	640	450	275	3"	#22 .01936	1/8" .01227	13	10	7	5.25	3.75	2.5	450 - 1200
2550	1950	1650	1325	940	560	4"	#1 .04083	#14 .02602	24	20	13	10	7	4.5	940 - 2500
4300	3300	2800	2240	1600	725	5"	19/64" .06922	#B .04449	35	30	20	15	10	7	1600 - 4300
5400	4000	3500	2820	2000	1000	6"	#Q .08657	17/64" .05542	50	44	27	22	15	10	2000 - 5400

[1] Inlet gas pressures above 20 PSIG on a VENTITE™ Inspirator often result in high noise levels.

[2] Do not use when maximum capacity divided by lineal feet of LINOFLAME® Burner exceeds 525,000 Btu/hr per foot

Capacity/Selection Data

VENTITE™ Inspirators and Style "A" & "B" LINOFLAME® Burners

Table 3: LINOFLAME® Burners on suction side of volume air fan

(0 to -0.1" wc duct static pressures) with VENTITE™ Inspirator outside of duct in fresh air

Capacities (1000's Btu/hr) at indicated gas pressures (PSIG) measured at VENTITE™ Inspirator inlet						Size	Inspirator's Spud Orifice Drill Size Area of spud orifice in square inches		Style "A" or "B" LINOFLAME® Burner Length (feet of indicated type and drillings)						Minimum Fresh Air Required (SCFM) at indicated duct static pressure conditions
Maximum					Min.		Natural Gas	Propane Gas	B-36-4242	B-96-5050	B-96-4444	B-96-3643	A-72-1733	A-72-C33 [2]	
30 [1]	20	15	10	5											
142	118	105	87	63	25	1"	#55 .00212	#59 .00132	1.25	1	---	---	---	---	17 - 35
250	206	179	150	108	65	1-1/4"	#49 .00419	#53 .00278	3	2.5	1.5	1.25	1	---	30 - 60
530	465	400	335	230	95	1-1/2"	#31 .01131	#41 .00724	5	4	2.5	2	1.25	1	60 - 130
800	615	480	420	300	175	2"	1/8" .01227	#39 .00777	8.5	6.5	4.5	3.5	2.5	1.5	115 - 320
1000	775	660	535	380	200	2-1/2"	#28 .0155	#34 .00968	10.5	8.75	5.5	4.25	3	2	130 - 320
1200	930	790	640	450	275	3"	#22 .01936	1/8" .01227	13	10	7	5.25	3.75	2.5	150 - 390
2550	1950	1650	1325	940	560	4"	#1 .04083	#14 .02602	24	20	13	10	7	4.5	260 - 700
4300	3300	2800	2240	1600	725	5"	19/64" .06922	#B .04449	35	30	20	15	10	7	400 - 1000
5400	4000	3500	2820	2000	1000	6"	#Q .08657	17/64" .05542	50	44	27	22	15	10	550 - 1400

[1] Inlet gas pressures above 20 PSIG on a VENTITE™ Inspirator often result in high noise levels.

[2] Do not use when maximum capacity divided by lineal feet of LINOFLAME® Burner exceeds 525,000 Btu/hr per foot

Capacity/Selection Data

VENTITE™ Inspirators and Style “A” & “B” LINOFLAME® Burners

Table 4: LINOFLAME® Burner on suction side of volume air fan

(-0.11 to -0.5" wc duct static pressures) with VENTITE™ Inspirator outside of duct in fresh air

Capacities (1000's Btu/hr) at indicated gas pressures (PSIG) measured at VENTITE™ Inspirator inlet						Size	Inspirator's Spud Orifice Drill Size Area of spud orifice in square inches		Style "A" or "B" LINOFLAME® Burner Length (feet of indicated type and drillings)						Minimum Fresh Air Required (SCFM) at indicated duct static pressure conditions
Maximum					Min.		Natural Gas	Propane Gas	B-36-4242	B-96-5050	B-96-4444	B-96-3643	A-72-1733	A-72-C33 [2]	
30 [1]	20	15	10	5											
170	140	125	103	75	34	1"	#53 .00278	#56 .00169	1.25	1	---	---	---	---	29 - 63
300	250	215	180	130	88	1-1/4"	#46 .00515	#51 .00353	3	2.5	1.5	1.25	1	---	52 - 110
640	550	480	400	275	130	1-1/2"	#29 .01453	#36 .0089	5	4	2.5	2	1.25	1	105 - 240
960	730	620	500	350	235	2"	#28 .0155	7/64" .0094	8.5	6.5	4.5	3.5	2.5	1.5	165-385
1200	930	800	650	450	270	2-1/2"	#23 .01863	#31 .01131	10.5	8.75	5.5	4.25	3	2	200 - 520
1450	1100	950	760	540	375	3"	11/64" .0232	#29 .01453	13	10	7	5.25	3.75	2.5	240 - 640
3000	2300	1950	1600	1150	760	4"	1/4" .04909	#8 .0311	24	20	13	10	7	4.5	470 -1150
5300	3950	3350	2700	1900	1000	5"	21/64" .08456	#G .0535	35	30	20	15	10	7	700 - 2000
6400	5000	4200	3350	2400	1350	6"	#U .1064	#L .06605	50	44	27	22	15	10	950 - 2400

[1] Inlet gas pressures above 20 PSIG on a VENTITE™ Inspirator often result in high noise levels.

[2] Do not use when maximum capacity divided by lineal feet of LINOFLAME® Burner exceeds 525,000 Btu/hr per foot

Capacity/Selection Data

VENTITE™ Inspirators and Type “VF” LINOFLAME® Burners

Capacities of Type “VF” LINOFLAME® Burner assemblies fed by VENTITE™ Inspirators are shown in the tables below and on page 3315.

To select, identify the appropriate application (still air or air stream), then check in the column showing available fuel supply pressure to locate your desired capacity.

Within that same application section of the tables, you will also find the minimum capacity, the VENTITE™ spud orifice drill size, the VENTITE™ Inspirator size and the necessary burner footage.

Increased minimums may be necessary for higher air stream velocities.

End bell of VENTITE™ Inspirator must be located in fresh air, even though Type “VF” LINOFLAME® Burners themselves may be installed in the recirculating air stream of a pull-through heater.

Table 1: Type “VF” LINOFLAME® Burner in still air applications

Maximum Capacities (1000's Btu/hr) at indicated gas pressures (PSIG) measured at VENTITE™ Inspirator inlet				Minimum Capacity (1000's Btu/hr)	VENTITE™ Inspirator Size	Inspirator's Spud Orifice Drill Size Area of spud orifice in square inches		Type "VF" LINOFLAME® Burner Length (feet of indicated type)	
20	15	10	5			Natural Gas	Propane Gas	VFL	VFH
45	38	31	22	5	1"	#70 .00062	#74 .0004	.5	.25
98	83	67	47	45	1-1/4"	#56 .00169	#61 .0012	1.5	.75
230	195	156	111	90	1-1/2"	#48 .00454	1/16" .00307	3	1.5
338	286	230	163	120	2"	#42 .00687	#48 .00454	4	2
425	365	292	208	150	2-1/2"	#36 .0089	#44 .00581	5	2.5
538	455	365	259	180	3"	#31 .01131	#40 .00754	6	3
680	570	480	360	240		#28 .0155	#32 .01057	8	4
860	740	585	430	300	4"	5/32" .01917	#31 .01131	10	5
1035	880	705	500	360		#19 .02164	#29 .01453	12	6

Capacity/Selection Data

VENTITE™ Inspirators and Type “VF” LINOFLAME® Burners

For air heating applications with air stream velocities across burner less than 1500 SFPM for “VFL” or less than 2000 SFPM for “VFH”, ambient and/or return air stream temperatures over the burner should not exceed 800°F (437°C). Downstream temperatures should not exceed 1000°F (538°C) for recirculating air streams and 1200°F (649°C) for all fresh air applications.

For fresh (non-recirculating) air heating applications, “VF” Burners can be located on pressure or suction side of volume air fan with VENTITE™ Inspirator located inside of duct parallel to direction of air flow.

For recirculating air heating applications, “VF” Burner must be located on suction side of volume air fan with VENTITE™ Inspirator located outside of duct in fresh air.

Table 2: Type “VF” LINOFLAME® Burners for air stream heating applications

with VENTITE™ Inspirator located in fresh air outside of duct while “VF” burner installed in the passing air stream

Maximum Capacities (1000's Btu/hr) at indicated gas pressures (PSIG) measured at VENTITE™ Inspirator inlet				Minimum Capacity (1000's Btu/hr)	VENTITE™ Inspirator Size	Inspirator's Spud Orifice Drill Size Area of spud orifice in square inches		Type "VF" LINOFLAME® Burner Length (feet of indicated type)	
20	15	10	5			Natural Gas	Propane Gas	VFL	VFH
94	83	69	50	15	1"	#56 .00169	#60 .00126	.5	.25
165	143	119	86	45	1-1/4"	#51 .00353	#54 .00238	1.5	.75
370	320	270	185	90	1-1/2"	#36 .0089	#44 .00581	3	1.5
490	416	335	237	120	2"	#33 .01003	#42 .00687	4	2
620	530	430	304	150	2-1/2"	#30 .01297	#37 .00849	5	2.5
743	631	508	360	180	3"	9/64" .01553	#33 .01003	6	3
930	800	635	470	240		#19 .02164	#30 .01297	8	4
1220	1040	850	600	300	4"	3/16" .02761	#28 .0155	10	5
1550	1317	1060	750	360		13/64" .03241	#19 .02164	12	6

Capacity/Selection Data

VENTITE™ Inspirators and Series "66" AIRFLO® Burners

Air heating applications with Series "66" AIRFLO® Burner

Capacity and burner footage information are provided below for burner systems utilizing VENTITE™ Inspirators and Series "66" AIRFLO® Burners. Data is based on the use of Type AL5 AIRFLO® Burner and a natural gas supply pressure of 4-1/2 PSIG measured at the inspirator's inlet. **Higher inlet pressures are not recommended.**

The VENTITE™ Inspirator must be mounted directly in the air stream being heated and must feed directly into a burner back inlet as shown in sketch below.

NOTE: This combination is not suitable for make-up air supply heating.

To select the appropriate Inspirator/Series "66" AIRFLO® Burner combination, determine your required maximum capacity.

For recirculated process air heating, maximum capacity is 600,000 Btu/hr per lineal foot. Minimum capacity is determined by air stream velocity across the burner, which must be maintained in the range of 2200-3000 SFPM. Fresh make-up air must be added to the recirculated air stream at the rate of 100 SCFM per 100,000 Btu/hr heat release (introduced so as to pass effectively through and over the burner).

Approximate flame lengths shown in the table vary with air stream velocity and are measured from discharge end of burner mixing plates (i.e. from profile).

In the table below, scan downward to the maximum capacity required for your application, then read to the left for the required VENTITE™ Inspirator size and spud orifice drill size.

Minimum capacity attainable with inspirator combination is shown in the right side of the table, corresponding to various air stream velocities. Table shows corresponding AL5 Series "66" AIRFLO® Burner footage.

Higher air velocities give shorter flame lengths and result in increased pressure drop across the burner and profile plate.

For additional burner details, see catalog section for Series "66" AIRFLO® Burners.

Typical Piping Layout

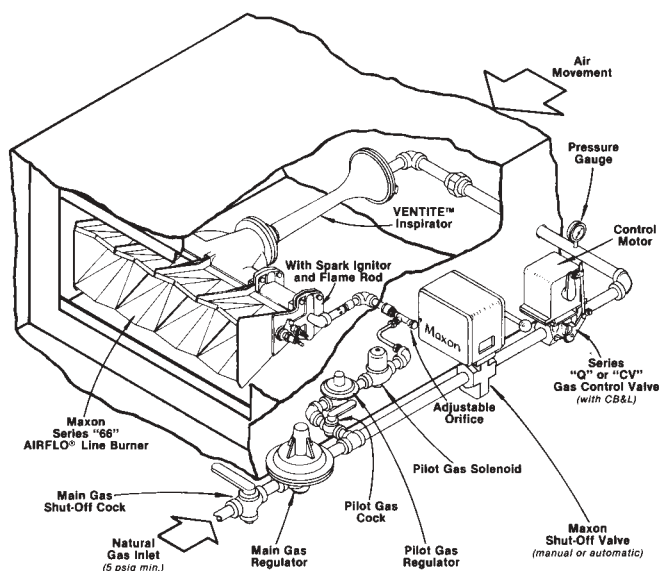


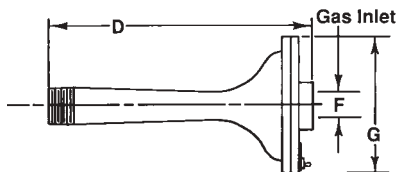
Table 1: Recirculated Process Air Heating

VENTITE™ Inspirator Size	Inspirator's Spud Orifice		Series "66" Type AL-5 AIRFLO® Burner length (feet)	Maximum Capacity (1000's Btu/hr)	Minimum Capacities (1000's Btu/hr) at indicated air stream velocities (SFPM)		
	Drill Size	Area (square inches)			2200	2600	3000
1-1/2"	9/64"	.01553	.5	300	45	50	55
2"	13/64"	.03241	1	600	90	100	110
3"	9/32"	.06213	2	1200	180	200	220
	11/32"	.09281	3	1800	270	300	330
4"	25/64"	.1198	4	2400	360	400	440
Approximate turndown range at indicated velocities					6.7:1	6:1	5.5:1
Approximate flame length at indicated velocities					15" - 18"	12" - 15"	11" - 14"

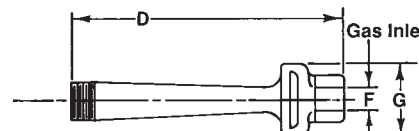
Dimensions (in inches)

Standard VENTITE™ Inspirators

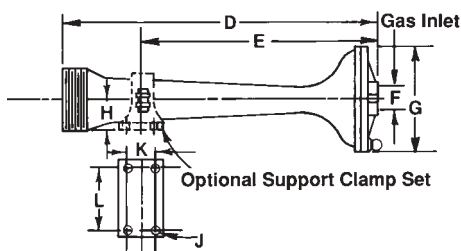
1" – 1-1/2" Sizes (with primary air shutter)



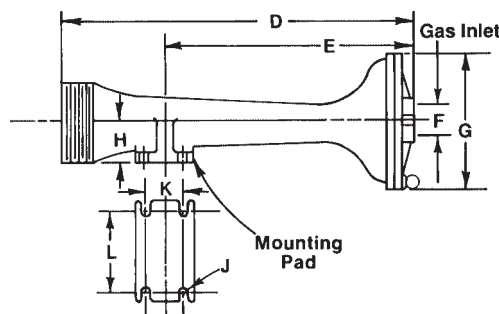
1" Size (without primary air shutter)



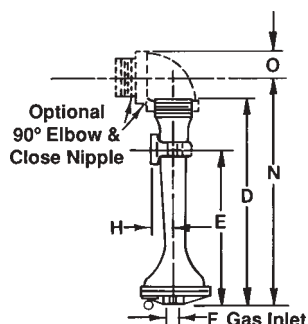
2" – 2-1/2" Sizes



3" – 8" Sizes



Elbow Type (any size)



Accessories

90° firing arrangements are available to reduce space requirements by mounting VENTITE™ Inspirator parallel to chamber wall.

Support clamps are included as part of 3" and larger VENTITE™ Inspirators. They are optional for 2" and 2-1/2" sizes.

VENTITE™ Inspirator Size	D	E	F (gas)	G	H	J	K	L	N [3]	O
1"	8.62	---	1/2	2.25 [1]	---	---	---	---	9.69	1.06
1-1/4"	10.56			4.44 [2]						
1-1/2"	12.38			4.44						
2"	17.31	12.81	3/4	6.5	1.69	.44	1.5	3.62	18.88	1.81
2-1/2"	19.56	13							21.38	2.12
3"	16.5	13.56	1	7.88	1.88	.56	1.12	2.88	18.56	2.56
4"	18	14.38			2.12		2	3.38	20.75	3.12
5"	21.06	15.94	1-1/2	11.5	2.38	.69	2.25	4.75	24.38	3.75
6"					2.62				25	4.38
8"	28.5	22		15	3.25	.69	3	5	33.88	5.69

[1] Assembly without primary air shutter. [2] Assembly with primary air shutter

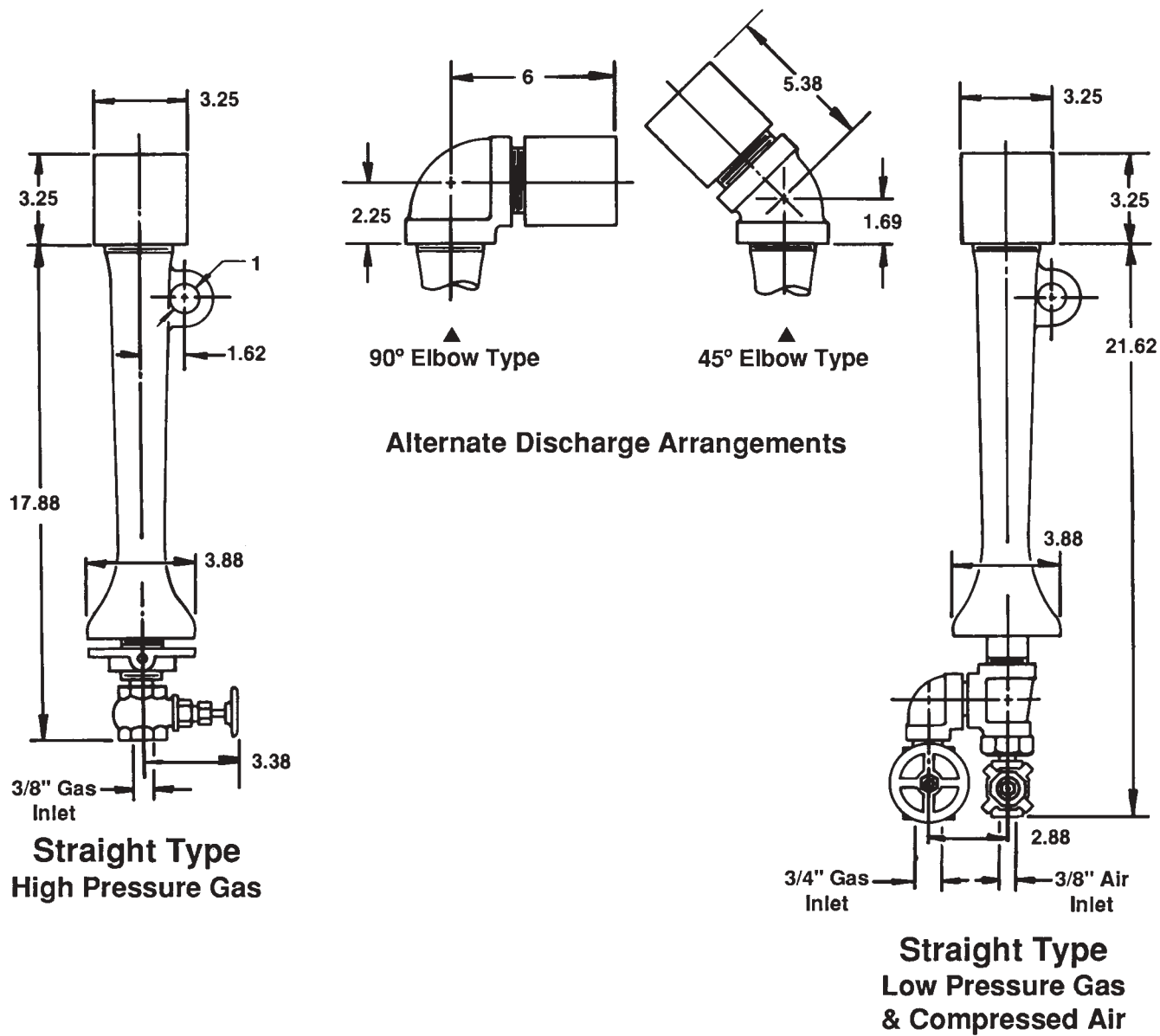
[3] VENTITE™ Inspirator size is outlet pipe size. Dimension "N" is based on typical thread engagement and may vary.

Pipe threads on this page conform to ANSI Standard B2.1.

Dimensions (in inches)

Aluminum Hand Torches

includes aluminum VENTITE™ Inspirator and cast iron HD-2-24 STICKTITE™ Nozzle



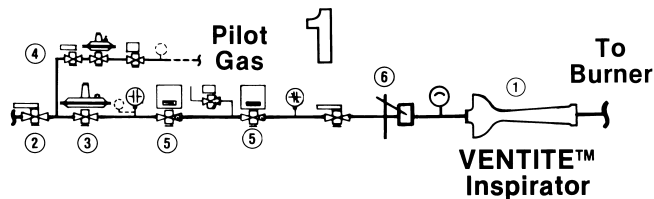
Pipe threads on this page conform to ANSI Standard B2.1.

Installation Instructions

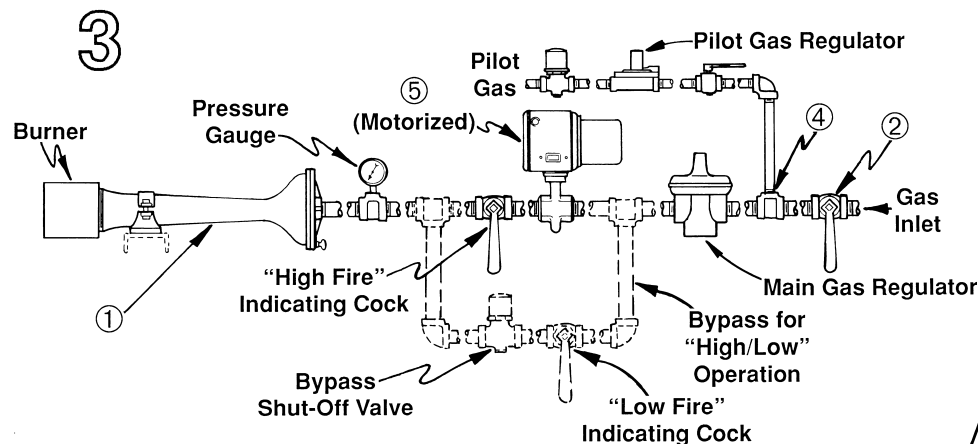
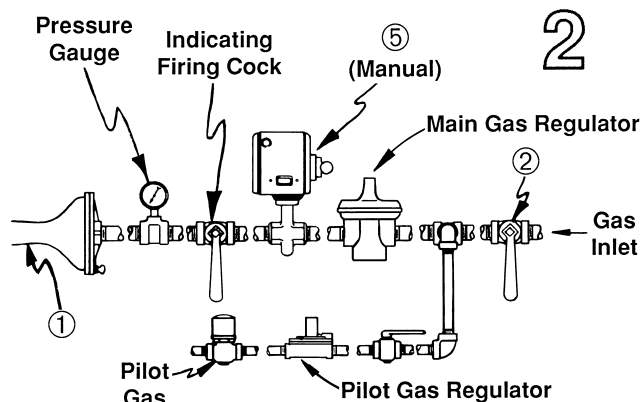
General

VENTITE™ Inspirators are only a part of a complete combustion system.

Sketch 1 below summarizes the additional components that might typically be part of a complete modulated system. Use this sketch and the following comments as a check list prior to actual installation.



Maxon assumes no responsibility for the use or misuse of the piping layouts shown. Specific piping and wiring diagrams should always be submitted to the appropriate agencies for approval on each application.



Alternate operating modes are illustrated below: for **manual operation**, see sketch 2; for **on-off operation**, see sketch 3 (solid lines); for **high-low operation**, see sketch 3 (including dotted lines).

1. **Electrical service** must match the voltage, phase and cycle of all electrical system components.
2. **Gas supply piping** must be large enough to maintain required fuel pressures (as high as 30 PSIG depending on application) at the inspirator's inlet while burner is operating at full capacity. Anything more than minimum distance or piping turns may necessitate "oversizing" piping runs to keep pressure drops within acceptable ranges.
3. **Clean fuel lines** are essential to prevent blockage of pipe train components and inspirator burner gas ports. All dirt, scale and pipe dope should be blown out of any new gas line before actually connecting to the burner system.
4. **Main shut-off cock** ② should be upstream of both main gas regulator and pilot line take-off. Use it to shut off fuel to both pilot and main burner during shutdown periods of more than a few hours.
5. **Main gas regulator** ③ is essential to maintain a uniform system supply pressure. A separate regulator should be provided in the branch leading to each burner system if more than one is served by a common main. Size regulator for full system capacity at required pressure, including pipe train losses. Follow the instructions attached to the regulator for installation.

Installation Instructions

6. **Pilot take-off** ④ should be upstream of main gas regulator but downstream of main gas cock. It should normally include its own pilot gas regulator, a solenoid valve and a shut-off cock. An adjustable orifice gas cock at the pilot inlet simplifies adjustment.

Suitable pilots should be provided for the type of burner and control system being used.

7. **Fuel shut-off valve(s)** ⑤ (when properly connected to a safety control system) are designed to shut the fuel supply off when a hazardous operating condition is sensed. Manual reset valves require operator attendance each time the system is started up (or restarted after a trip-out). Motorized shut-off valves permit automatic start-restart when used with an appropriate control system.
8. **Fuel Control Valve** controls burner heat release by throttling gas flow to it. It should include provision for an adjustable minimum and throttling over a turndown range that matches burner capabilities. In manual systems, it may be an indicating cock. Maxon Control Valves are not intended for tight shut-off.
9. **Minimize pressure drop** between inspirator and burner(s). Inlet pipe leading to any burner should be a straight run of at least four pipe diameters in length. If the VENTITE™ Inspirator is supplying multiple burners or multiple inlets to a single burner element, care should be taken so that air/gas mixing piping gives minimal pressure drop and maximum uniformity.

Do not install any shut-off device in the air/gas mixture line.

10. **Test connections** are essential for burner adjustment. They should be provided downstream of the main regulator and at each burner inlet. Test connections must be plugged except when readings are being taken.



Maxon practices a policy of continuous product improvement. It reserves the right to alter specifications without prior notice.

Start-up Instructions

Before proceeding, verify that all equipment has been installed in accordance with the general instructions found in the preceding pages.

Initial adjustment and light-off should be undertaken only by trained and experienced personnel familiar with combustion systems, control/safety circuitry and overall installation. If Maxon instructions conflict with local codes or regulations, contact Maxon before start-up.

For initial system start-up:

1. **Disconnect control motor** from flow control valve (if applicable). Initial start-up should only be accomplished during a "manual" burner control mode.
2. **Purge furnace or oven.** Furnace doors, vents and flues should all be wide open and the purging allowed to continue until all possible accumulation of explosive vapors is dispersed. Twenty minutes or more may be necessary on large installations.

CAUTION: Do not by-pass control panel timers typically controlling sequential operations.

3. **Bleed air** out of gas line leading to main gas cock, taking care not to allow accumulation of flammable vapors.
4. **Open main and pilot gas cocks** and light pilots following instructions appropriate for the burner and pilot type. If multiple pilots are used, open individual cocks and adjust each in turn.
5. **Install manometer** to read mixture pressure at burner and to establish required minimum. With pilots burning, open fuel shut-off valve(s) and advance fuel control valve slowly from minimum setting until ignition of main flame occurs.

Refine main gas regulator setting, if necessary, and verify control valve setting which gives required minimum mixture pressure. Adjust minimum stop of control valves as needed (if applicable).

6. **Advance control valve** (or indicating firing cock) manually to high fire position (adjusting if necessary), observing burner performance.

CAUTION: If burners go out, close shut-off valve or shut main gas cock at once. Return to minimum setting, re-light pilots if necessary, then turn main gas on again. Check carefully that every burner nozzle is lit before proceeding.

7. **Adjust inspirator air shutter** opening (if necessary) to obtain desired flame character. Shutter will normally be wide open if spud orifice has been correctly sized.

8. **Cycle system** off and re-light several times. When burner performance is satisfactory and stable throughout the firing range, reconnect control valve linkage to control motor.

Control linkage travel must be such that control valve is moved throughout its complete travel, or cataloged capacities and turndowns will not be achieved.

If less than full-rated burner capacity is required, linkage can be adjusted to limit maximum output. **With interrupted pilot**, it may be necessary to set control for somewhat higher than minimum burner setting to permit hold-in of flame detection system without pilot.

CAUTION: Internal drive mechanism within the control motor may be damaged if linkage is adjusted so as to cause binding.

9. **Re-check differential gas pressure** with unit at operating temperature. Refine "high fire" setting if necessary, considering differential pressure, flame length, and appearance. Dust or contaminants in the air stream may affect flame appearance.
10. **Plug all test connections not in use to avoid dangerous fuel leakage.** Replace equipment cover caps and tighten linkage screws.
11. **Check out overall system operation** by cycling through light-off at minimum, interrupting pilot, and allowing temperature control system to cycle burner from minimum to maximum and return.

Re-check all safety system interlocks for proper setting and operation.

WARNING: Test every UV installation for dangerous spark excitation from ignitors and other possible sources of direct or reflected UV radiation. Use only gas-tight scanner connections.

12. **Before system is placed into full service, instruct operator personnel** on proper start-up, operation, and shut-down of system. Establish written instructions for their future reference.

Start-Up Instructions

For Low Pressure Gas Hand Torches

To start-up:

1. Open air valve to the desired degree.
2. With an ignition source at the hand torch nozzle, open gas valve until flame is established.
3. Adjust gas valve for the desired flame with sharp well-defined structure. A flame with long weak structure indicates a rich mixture and too much gas. A short light flame with hissing noise indicates a lean mixture with too little gas.
4. If higher or lower heat release is desired, re-adjust air valve first, then refine gas valve setting.

To shut-down, close the gas valve first, then the air valve.

CAUTION: Always observe good judgement and common sense when operating a portable hand torch.

Maintenance Instructions

The Venturi tube and air shutter of the VENTITE™ Inspirator should be kept clean to assure normal operation.

Burner nozzles should be regularly inspected for possible deterioration and replaced if necessary. Generally, the higher the operating temperature, the more frequent the inspections should be.



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