

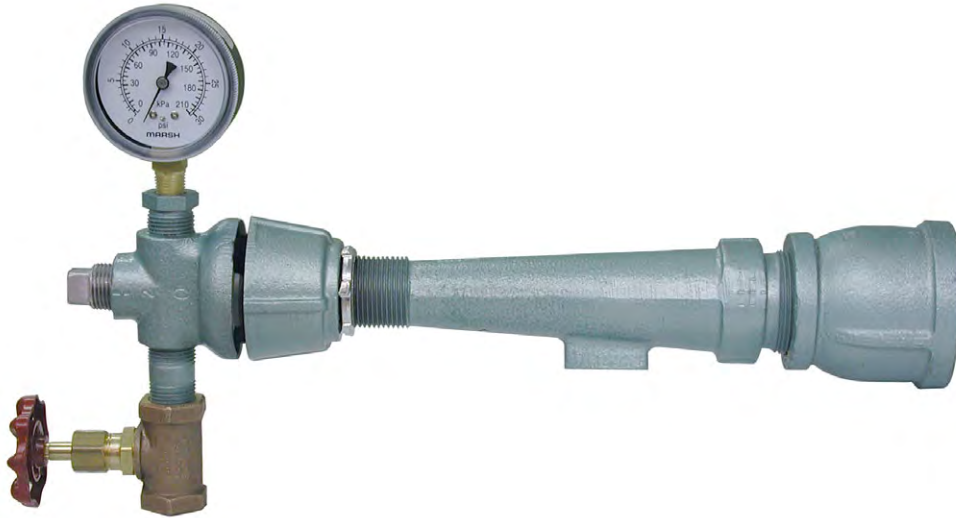
AIR-DUCTORS

(30 to 125 psig Air)
To Entrain Atmospheric Air
for Delivery at 1 psig or Less

MODEL: 4201 - AD

Revision: 0

BULLETIN
4201, 4211



DESCRIPTION

Air-Ductors are useful for supplying large volumes of air at pressures of 1 psig or less when high-pressure air is available at steady pressure. Because Hi-Pressure Air is relatively costly, it usually is less expensive to use a blower if the air requirements are continuous. However, for occasional use or where excess compressed air is already available, Air-Ductors are initially less costly and very easy to install.

The Selection Table shows the approximate volume of low-pressure air (1 psig) that various sizes of Air-Ductors will deliver. It also shows the high-pressure air orifice size to be used with various inlet air pressures. When operating at capacities shown and 1 psig delivery pressure, about 25 - 35% of the total delivered air will be high-pressure air (measured on a free basis). See pages

2 and 3 for capacity of high-pressure air orifices. At lower delivery pressures, the ratio of high-pressure air will be less than indicated above.

Air-Ductors are particularly useful for supplying the combustion air requirements of a single Flomixer or group of burners. No valves or blast gates should be used between the Air-Ductor and the Mixer or Mixers it is supplying. If volume controls, either manual or automatic, are required, they should be placed in the high-pressure air supply.

Air-Ductor Assemblies include Hijector, valve, gauge (0 - 30 psig standard), and expanding coupling on outlet end of Hijector, which determines the outlet pipe size to use.

SELECTION TABLE

Catalog Numbers		Approximate Delivery Capacity @ 1 psig Pressure Cubic Feet/Hour	Pipe Size Discharge	Suggested Hi-Pressure Air Orifice (Drill Size) For Various Air Gauge Pressures - psig *						
With Needle Valve	Without Needle Valve			30	50	70	80	90	100	125
68 ADC	68 AD	1000 - 1600	1"	38	47	49	51	52	53	57
810 ADC	810 AD	1600 - 2600	1-1/4"	30	38	44	46	48	49	51
1012 ADC	1012 AD	2600 - 4200	1-1/2"	25	30	36	39	43	43	46
1216 ADC	1216 AD	4200 - 6200	2"	6	20	28	30	31	33	38
1620 ADC	1620 AD	6200 - 10500	2-1/2"	1/4"	7	16	19	25	27	29
2024 ADC	2024 AD	10500 - 15000	3"	21/64"	1/4"	4	10	15	17	5/32"
2432 ADC	2432 AD	15000 - 25000	4"	27/64"	11/32"	K	H	C	1	13/64"
3248 ADC	3248 AD	25000 - 45000	6"	35/64"	29/64"	3/8"	S	O	19/64"	17/64"

* Note 1. For higher discharge pressures enlarge orifice slightly. For lower discharge pressures, reduce orifice size or reduce inlet pressure.

* Note 2. See orifice capacity tables on pages 2 and 3 to determine quantity of high pressure air required per minute for orifice indicated.

CAUTION: Operation of combustion equipment can be hazardous resulting in bodily injury or equipment damage. Each burner should be supervised by a combustion safeguard and only qualified personnel should install, make system adjustments and perform any required service.

pyronics
A Selas Heat Technology Brand
11012 Aurora Hudson Road
Streetsboro, OH 44241
Email: sales@selas.com
Toll Free: 800-883-9218
Main: 216-662-8800
Fax: 216-663-8954

NOTICE: PYRONICS practices a policy of continuous improvement in the design of its products. It reserves the right to change the specifications at any time without prior notice.

CAPACITIES OF ORIFICES FOR HIGH PRESSURE AIR
CUBIC FEET PER MINUTE - AIR AT SEA LEVEL AND 70° F.
DISCHARGE COEFFICIENT - 1.0

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Drill Size	Orifice Area Sq. In.	CFM For Various Air Pressures - psig						
		30	50	70	80	90	100	125
80	0.00014	0.12	0.17	0.22	0.25	0.27	0.30	0.36
79	0.00016	0.13	0.19	0.25	0.28	0.31	0.34	0.41
1/64	0.00019	0.16	0.23	0.30	0.33	0.37	0.40	0.49
78	0.00020	0.17	0.24	0.31	0.35	0.39	0.43	0.52
77	0.00025	0.21	0.30	0.39	0.44	0.49	0.53	0.65
76	0.00031	0.26	0.37	0.49	0.54	0.60	0.66	0.80
75	0.00034	0.28	0.41	0.53	0.60	0.66	0.72	0.88
74	0.00039	0.32	0.47	0.61	0.68	0.76	0.83	1.01
73	0.00045	0.37	0.54	0.71	0.79	0.87	0.96	1.16
72	0.00049	0.41	0.59	0.77	0.86	0.95	1.04	1.27
71	0.00053	0.44	0.64	0.83	0.93	1.03	1.13	1.37
70	0.00061	0.51	0.73	0.96	1.07	1.18	1.30	1.58
69	0.00067	0.55	0.80	1.05	1.18	1.30	1.42	1.73
68	0.00075	0.62	0.90	1.18	1.32	1.46	1.59	1.94
1/32	0.00076	0.63	0.91	1.19	1.33	1.47	1.62	1.97
67	0.00080	0.66	0.96	1.26	1.40	1.55	1.70	2.07
66	0.00085	0.70	1.02	1.33	1.49	1.65	1.81	2.20
65	0.00096	0.80	1.15	1.51	1.68	1.86	2.04	2.49
64	0.00101	0.84	1.21	1.59	1.77	1.96	2.15	2.61
63	0.00107	0.89	1.28	1.68	1.88	2.08	2.27	2.77
62	0.00113	0.94	1.35	1.77	1.98	2.19	2.40	2.93
61	0.00119	0.99	1.43	1.87	2.09	2.31	2.53	3.08
60	0.00125	1.04	1.50	1.96	2.19	2.43	2.66	3.24
59	0.00132	1.09	1.58	2.07	2.32	2.56	2.81	3.42
58	0.00138	1.14	1.65	2.17	2.42	2.68	2.93	3.57
57	0.00145	1.20	1.74	2.28	2.54	2.81	3.08	3.75
56	0.00169	1.40	2.03	2.65	2.97	3.28	3.59	4.37
3/64	0.00172	1.42	2.06	2.70	3.02	3.34	3.66	4.45
55	0.00212	1.76	2.54	3.33	3.72	4.11	4.51	5.49
54	0.00237	1.96	2.84	3.72	4.16	4.60	5.04	6.14
53	0.00278	2.30	3.33	4.36	4.88	5.39	5.91	7.20
1/16	0.00306	2.53	3.67	4.80	5.37	5.94	6.50	7.92
52	0.00316	2.62	3.79	4.96	5.55	6.13	6.72	8.18
51	0.00352	2.92	4.22	5.52	6.18	6.83	7.48	9.11
50	0.00384	3.18	4.60	6.03	6.74	7.45	8.16	9.94
49	0.00418	3.46	5.01	6.56	7.34	8.11	8.88	10.8
48	0.00453	3.75	5.43	7.11	7.95	8.79	9.63	11.7
5/64	0.00479	3.97	5.74	7.52	8.41	9.29	10.2	12.4
47	0.00484	4.01	5.80	7.60	8.49	9.39	10.3	12.5
46	0.00515	4.27	6.17	8.08	9.04	9.99	10.9	13.3
45	0.00528	4.37	6.33	8.29	9.27	10.2	11.2	13.7
44	0.00580	4.80	6.95	9.10	10.2	11.3	12.3	15.0
43	0.00622	5.15	7.46	9.76	10.9	12.1	13.2	16.1
42	0.00686	5.68	8.22	10.8	12.0	13.3	14.6	17.8
3/32	0.00690	5.72	8.27	10.8	12.1	13.4	14.7	17.9
41	0.00723	5.99	8.67	11.3	12.7	14.0	15.4	18.7
40	0.00754	6.25	9.04	11.8	13.2	14.6	16.0	19.5
39	0.00777	6.44	9.32	12.2	13.6	15.1	16.5	20.1
38	0.00809	6.70	9.70	12.7	14.2	15.7	17.2	20.9
37	0.00849	7.03	10.2	13.3	14.9	16.5	18.0	22.0
36	0.00890	7.37	10.7	14.0	15.6	17.3	18.9	23.0
7/64	0.00939	7.78	11.3	14.7	16.5	18.2	20.0	24.3
35	0.00950	7.87	11.4	14.9	16.7	18.4	20.2	24.6
34	0.00967	8.01	11.6	15.2	17.0	18.8	20.6	25.0
33	0.01002	8.30	12.0	15.7	17.6	19.4	21.3	25.9
32	0.01056	8.75	12.7	16.6	18.5	20.5	22.4	27.3
31	0.01131	9.37	13.6	17.8	19.8	21.9	24.0	29.3
1/8	0.01227	10.2	14.7	19.3	21.5	23.8	26.1	31.8
30	0.01297	10.7	15.5	20.4	22.8	25.2	27.6	33.6
29	0.01452	12.0	17.4	22.8	25.5	28.2	30.9	37.6
28	0.01550	12.8	18.6	24.3	27.2	30.1	32.9	40.1
9/64	0.01553	12.9	18.6	24.4	27.3	30.1	33.0	40.2
27	0.01628	13.5	19.5	25.6	28.6	31.6	34.6	42.1
26	0.01697	14.1	20.3	26.6	29.8	32.9	36.1	43.9
25	0.01755	14.5	21.0	27.5	30.8	34.0	37.3	45.4
24	0.01814	15.0	21.7	28.5	31.8	35.2	38.6	47.0
23	0.01862	15.4	22.3	29.2	32.7	36.1	39.6	48.2
5/32	0.01917	15.9	23.0	30.1	33.6	37.2	40.7	49.6

QM = Volume of air discharged per minute (free basis).
 A = Orifice area in square inches.
 K = Orifice coefficient of discharge.
 P = Air pressure, psig.
 T = High pressure air temperature, degrees F. Absolute.

FORMULA

$$QM = \frac{426.6 \times A \times K \times (P + 14.7)}{\sqrt{T \cdot \text{Absolute}}}$$

**CAPACITIES OF ORIFICES FOR HIGH PRESSURE AIR
CUBIC FEET PER MINUTE - AIR AT SEA LEVEL AND 70° F.
DISCHARGE COEFFICIENT - 1.0**

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Drill Size	Orifice Area Sq. In.	CFM For Various Air Pressures - psig						
		30	50	70	80	90	100	125
22	0.01935	16.0	23.2	30.4	34.0	37.5	41.1	50.1
21	0.01985	16.4	23.8	31.2	34.8	38.5	42.2	51.4
20	0.02035	16.9	24.4	31.9	35.7	39.5	43.3	52.7
19	0.02164	17.9	25.9	34.0	38.0	42.0	46.0	56.0
18	0.02256	18.7	27.0	35.4	39.6	43.8	47.9	58.4
11/64	0.02320	19.2	27.8	36.4	40.7	45.0	49.3	60.1
17	0.02350	19.5	28.2	36.9	41.2	45.6	49.9	60.8
16	0.02460	20.4	29.5	38.6	43.2	47.7	52.3	63.7
15	0.02544	21.1	30.5	39.9	44.6	49.4	54.1	65.9
14	0.02601	21.5	31.2	40.8	45.6	50.5	55.3	67.3
13	0.02688	22.3	32.2	42.2	47.2	52.2	57.1	69.6
3/16	0.02761	22.9	33.1	43.3	48.5	53.6	58.7	71.5
12	0.02805	23.2	33.6	44.0	49.2	54.4	59.6	72.6
11	0.02865	23.7	34.3	45.0	50.3	55.6	60.9	74.2
10	0.02940	24.4	35.2	46.1	51.6	57.0	62.5	76.1
9	0.03017	25.0	36.2	47.4	52.9	58.5	64.1	78.1
8	0.03110	25.8	37.3	48.8	54.6	60.3	66.1	80.5
7	0.03173	26.3	38.0	49.8	55.7	61.6	67.4	82.1
13/64	0.03240	26.8	38.8	50.9	56.9	62.9	68.9	83.9
6	0.03268	27.1	39.2	51.3	57.3	63.4	69.5	84.6
5	0.03316	27.5	39.8	52.0	58.2	64.3	70.5	85.8
4	0.03430	28.4	41.1	53.8	60.2	66.5	72.9	88.8
3	0.03563	29.5	42.7	55.9	62.5	69.1	75.7	92.2
7/32	0.03758	31.1	45.1	59.0	65.9	72.9	79.9	97.3
2	0.03836	31.8	46.0	60.2	67.3	74.4	81.5	99.3
1	0.04082	33.8	48.9	64.1	71.6	79.2	86.8	106
A	0.04300	35.6	51.6	67.5	75.5	83.4	91.4	111
15/64	0.04314	35.7	51.7	67.7	75.7	83.7	91.7	112
B	0.04448	36.8	53.3	69.8	78.1	86.3	94.5	115
C	0.04599	38.1	55.1	72.2	80.7	89.2	97.7	119
D	0.04752	39.4	57.0	74.6	83.4	92.2	101	123
1/4 E	0.04908	40.7	58.8	77.0	86.1	95.2	104	127
F	0.05187	43.0	62.2	81.4	91.0	101	110	134
G	0.05350	44.3	64.1	84.0	93.9	104	114	138
17/64	0.05541	45.9	66.4	87.0	97.2	108	118	143
H	0.05557	46.0	66.6	87.2	97.5	108	118	144
I	0.05810	48.1	69.7	91.2	102	113	123	150
J	0.06026	49.9	72.2	94.6	106	117	128	156
K	0.06201	51.4	74.3	97.3	109	120	132	161
9/32	0.06212	51.5	74.5	97.5	109	121	132	161
L	0.06605	54.7	79.2	104	116	128	140	171
M	0.06834	56.6	81.9	107	120	133	145	177
19/64	0.06921	57.3	83.0	109	121	134	147	179
N	0.07163	59.3	85.9	112	126	139	152	185
5/16	0.07669	63.5	91.9	120	135	149	163	199
O	0.07842	65.0	94.0	123	138	152	167	203
P	0.08194	67.9	98.2	129	144	159	174	212
21/64	0.08455	70.0	101	133	148	164	180	219
Q	0.08657	71.7	104	136	152	168	184	224
R	0.09025	74.8	108	142	158	175	192	234
11/32	0.09280	76.9	111	146	163	180	197	240
S	0.09511	78.8	114	149	167	185	202	246
T	0.10066	83.4	121	158	177	195	214	261
23/64	0.10143	84.0	122	159	178	197	216	263
U	0.10636	88.1	128	167	187	206	226	275
3/8	0.11044	91.5	132	173	194	214	235	286
V	0.11162	92.5	134	175	196	217	237	289
W	0.11702	96.9	140	184	205	227	249	303
25/64	0.11984	99.3	144	188	210	233	255	310
X	0.12378	103	148	194	217	240	263	320
Y	0.12819	106	154	201	225	249	272	332
13/32	0.12962	107	155	203	227	251	275	336
Z	0.13396	111	161	210	235	260	285	347
27/64	0.13972	116	168	219	245	271	297	362
7/16	0.15033	125	180	236	264	292	320	389
29/64	0.16124	134	193	253	283	313	343	417
15/32	0.17257	143	207	271	303	335	367	447
31/64	0.18425	153	221	289	323	357	392	477
1/2	0.19635	163	235	308	345	381	417	508

QM = Volume of air discharged per minute (free basis).
A = Orifice area in square inches.
K = Orifice coefficient of discharge.
P = Air pressure, psig.
T = High pressure air temperature, degrees F. Absolute.

FORMULA

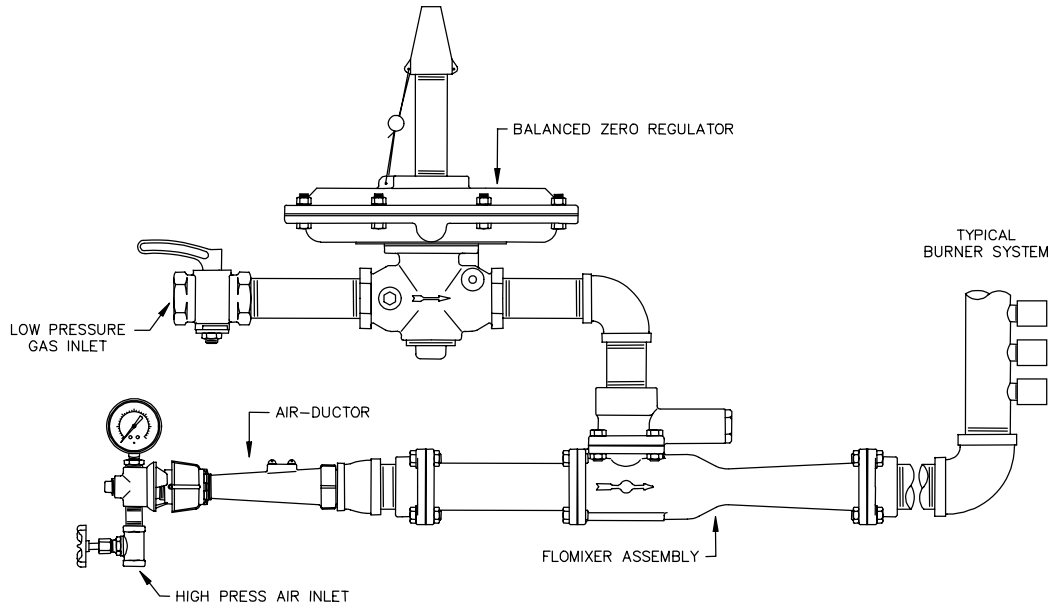
$$QM = \frac{426.6 \times A \times K \times (P + 14.7)}{\sqrt{T \text{ (F. Absolute) }}}$$

AIR-DUCTORS

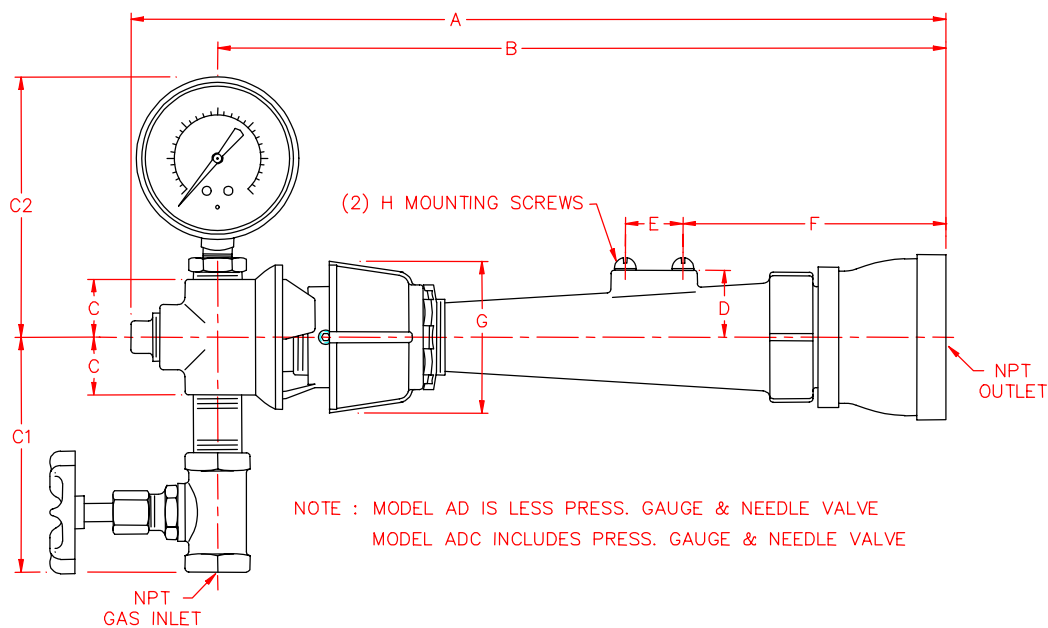
For Producing 1 psig or Less Combustion Air,
Using Air at 30-125 psig

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TYPICAL PIPING ARRANGEMENT



DIMENSIONS -- "AD" and "ADC" SERIES



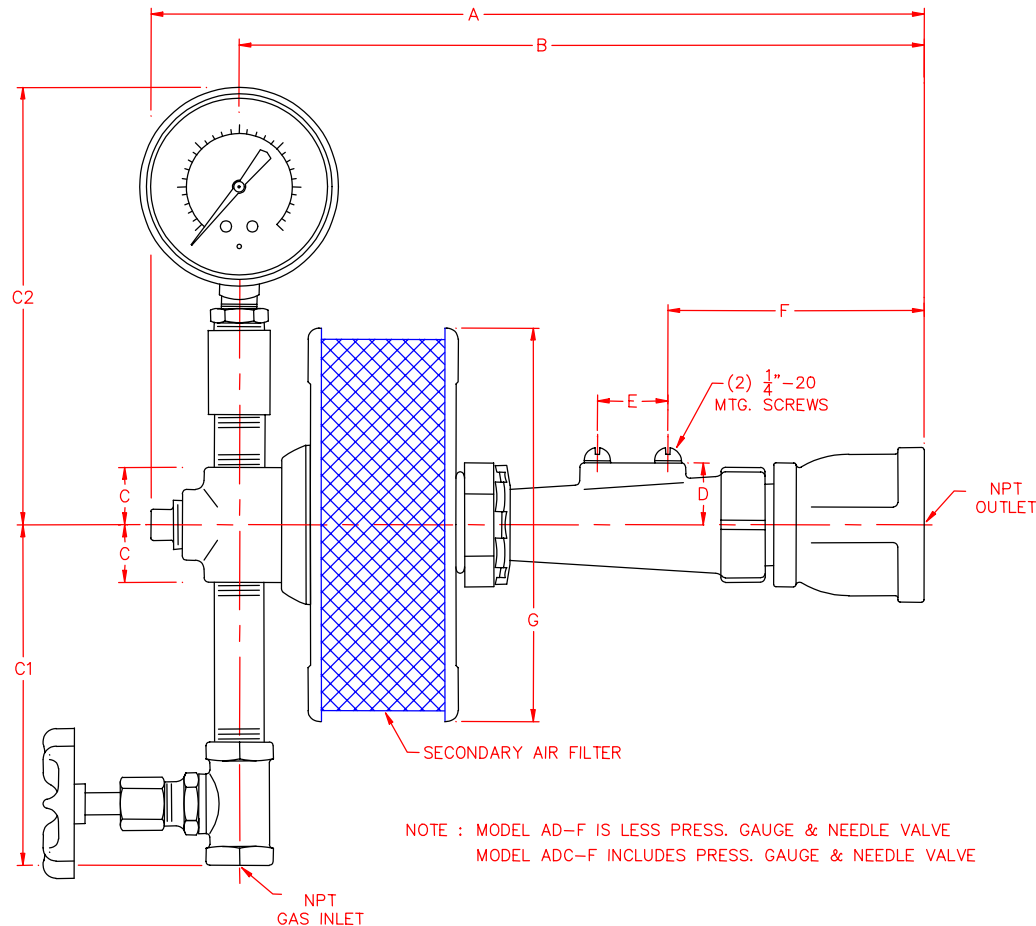
CATALOG NUMBERS		Outlet Pipe Size NPT	Inlet Pipe Size NPT	A	B	C	C1	C2	D	E	F	G	H	Approximate Weight With NV & Gauge Lbs.
With NV & Gauge	Without NV & Gauge													
68ADC	68AD	1	3/8	8-3/8	7-1/8	13/16	3-3/8	4-1/4	-----	-----	-----	2-3/8	-----	3.8
810ADC	810AD	1-1/4	3/8	10-5/8	9-3/8	13/16	3-3/8	4-1/4	7/8	1	3-5/8	2-3/8	1/4"-20	5.1
1012ADC	1012AD	1-1/2	1/2	13-1/4	11-3/4	1	4-1/8	4-1/2	1-1/8	1	4-3/8	2-5/8	1/4"-20	7.1
1216ADC	1216AD	2	1/2	14-3/4	13-1/4	1	4-1/8	4-1/2	1-1/8	1	5-1/8	2-5/8	1/4"-20	8.7
1620ADC	1620AD	2-1/2	3/4	19	17	1-3/8	4-3/4	5	1-1/2	1	5-3/4	3-5/8	1/4"-20	15.4
2024ADC	2024AD	3	3/4	22-1/8	20-1/8	1-3/8	4-3/4	5	1-7/8	1	6-3/8	3-5/8	1/4"-20	21.6
2432ADC	2432AD	4	1	26-7/8	24-3/4	1-1/2	5-3/4	5-1/4	2-1/8	1-1/2	8-1/8	4-1/4	3/8"-16	30.7
3248ADC	3248AD	6	1-1/4	34-1/4	31-3/4	1-3/4	6-5/8	5-3/8	2-5/8	1-1/2	10-1/4	5-3/8	3/8"-16	57.6

AIR-DUCTORS

For Producing 1 psig or Less Combustion Air,
Using Air at 30-125 psig

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DIMENSIONS -- "AD-F" and "ADC-F" SERIES



CATALOG NUMBERS		Outlet Pipe Size NPT	Inlet Pipe Size NPT	A	B	C	C1	C2	D	E	F	G	Approximate Weight With NV & Gauge Lbs.
With NV & Gauge	Without NV & Gauge												
68ADC-F	68AD-F	1	3/8	8-3/8	7-1/8	13/16	4-7/8	6-1/4	-----	-----	-----	5-5/8	3.9
810ADC-F	810AD-F	1-1/4	3/8	11	9-3/4	13/16	4-7/8	6-1/4	7/8	1	3-5/8	5-5/8	5.0

ORDERING INFORMATION

Please include the following information for each size Air-Ductor ordered:

1. Number required.
2. Catalog number complete, showing whether type AD or ADC and orifice size.

3. Specify gauge range or maximum air pressure used.
 4. List additional parts required by catalog number.
- Each order should also indicate shipping instructions.

If in doubt about Air-Ductor selection, send complete information about application so we may assist you.

CAUTION: Operation of combustion equipment can be hazardous resulting in bodily injury or equipment damage. Each burner should be supervised by a combustion safeguard and only qualified personnel should install, make system adjustments and perform any required service.



pyronics
A Selas Heat Technology Brand
11012 Aurora Hudson Road
Streetsboro, OH 44241
Email: sales@selas.com
Toll Free: 800-883-9218
Main: 216-662-8800
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