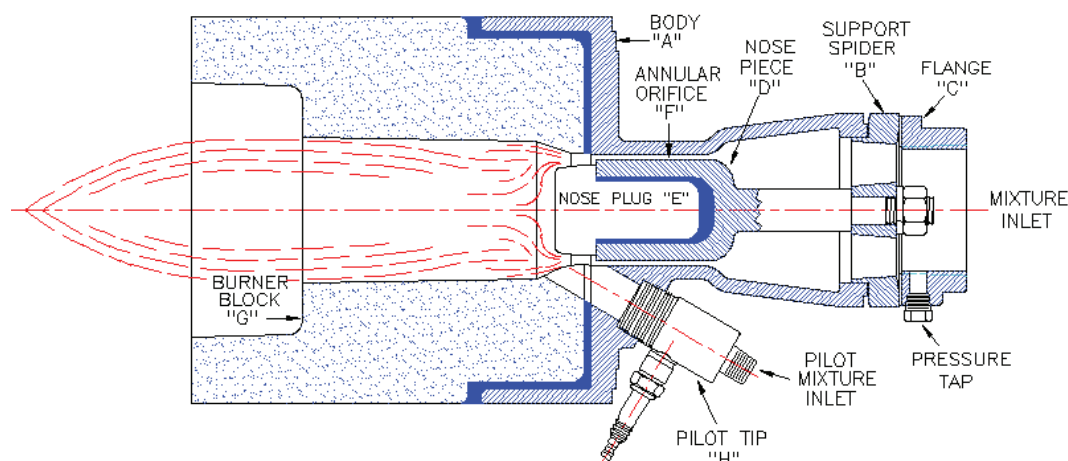
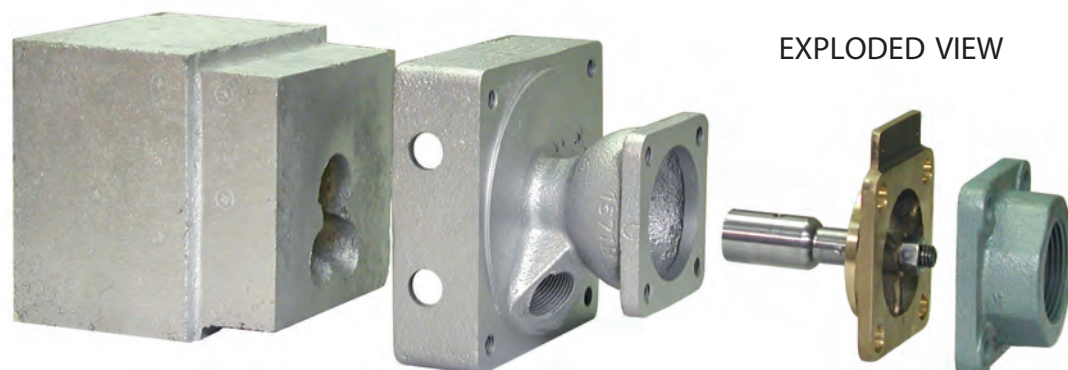


PREMIX TUNNEL BURNERS FOR ENCLOSED GAS-AIR COMBUSTION

MODEL: 3301, 3305, 3306

Revision: 0

BULLETIN
3301, 3305,
3306



DESCRIPTION

Pyronic Tunnel Burners will burn any standard fuel gas at mixture pressures ranging from 0.1" to 60" W. C. Exclusive, patented design of refractory plug "E" and combustion tunnel insures smooth stable operation. The long annular orifice "F" reduces back firing even at very low mixture pressures.

Turbulence created by the nose plug and the stepped burner block "G" provides positive flame retention at high mixture pressures with shorter flame length and higher heat release (on std. block only).

Pyronic Tunnel Burners are easily lighted at stated mixture pressure. The pilot tip "H" is screwed into the body to insure permanent and correct location of the pilot flame. A second threaded hole is provided for accurate location of flame electrodes at the junction of the pilot and main flame.

Integral flanged units are available for pressurized furnaces (see pg. 6).

Flange connection of insert "D" and support spider "B" with flange "C" provides:

1. Capacity changes with out removing burner from furnace.
2. Simplified piping . . . no unions required.
3. Mixture pressure test tapping at each burner.
4. Combustion tunnel inspection without removing burner from furnace.

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

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PREMIX TUNNEL BURNERS

SELECTION DATA

BULLETIN 3301, 3305, 3306
PAGE NO. 2

SELECTION

1. Determine the number of Pyronic Burners required for proper heat distribution.
2. Divide the total heat required by the number of burners for BTU/hr input to each burner.
3. Locate "Mixture Pressure" at burners on Table I under available "Air Pressure" column.
4. Select Pyronic Burner size required from Table II using BTU/hr per burner and mixture pressure from steps 2 and 3.
5. Add letter designating wall mounting assembly to burner catalog number.
Example: 101 - 2 - A (see pg. 4)

Burner Model No.  Mounting Arrangement
Insert (see F0028)

TABLE I - BURNER MIXTURE PRESSURE (INCHES W. C.) - USING FLOMIXERS

Air Pressure at Flomixer	4 oz.	8 oz.	12 oz.	16 oz.	20 oz.	24 oz.	32 oz.
Mixture Pressure at Burners	2"	4"	7"	9"	11"	14"	18"

TABLE II - PYRONIC BURNER CAPACITIES

Model No.	Actual * Burner Area Sq. Inches	1000 BTU/hr at Various Mixture Pressures at Burner - Inches W. C. (see Table I)										
		0.1	2	3	4	5	7	9	11	14	18	22
101- 2	0.095	3	15	18	21	25	28	32	35	40	45	50
101- 4	0.184	9	38	45	55	60	70	80	86	100	110	120
101- 6	0.267	12	55	67	80	87	105	115	130	145	165	185
121- 8	0.343	16	75	92	105	120	140	160	175	200	225	250
121-10	0.414	20	90	110	125	140	170	190	210	240	270	300
121-12	0.479	22	100	125	140	160	185	210	240	265	305	330
162- 6	0.561	22	100	125	140	160	185	210	240	265	305	330
162- 7	0.653	26	120	150	170	190	225	255	285	320	365	400
162- 8	0.737	32	140	170	200	220	260	300	325	370	415	465
162- 9	0.822	36	160	195	225	250	300	340	375	425	475	530
162-10	0.902	42	190	230	265	295	350	400	440	500	560	620
162-12	1.068	50	220	270	315	350	415	470	520	595	665	745
203- 8	1.129	51	225	275	320	355	420	475	525	600	670	750
203-10	1.396	65	290	350	410	455	535	610	675	760	855	960
243-12	1.657	82	370	450	520	575	680	770	860	960	1100	1200
243-14	1.912	97	425	525	610	675	800	900	1000	1120	1280	1410
243-16	2.160	113	500	600	715	790	935	1060	1150	1320	1470	1660
243-18	2.403	126	555	670	795	880	1040	1180	1280	1455	1630	1815

*Coefficient of discharge - 0.90 Average

PREMIX TUNNEL BURNERS FLOWMIXER SELECTION DATA

A group of Pyronic Tunnel burners may be manifolded to a single Flomixer. Table III below shows the correct Flomixer for various combinations of the same size burners.

On applications that require long mixture piping, use several Flomixers to reduce pressure losses. Mixture piping must be at least as large as the Flomixer outlet size.

HIGH PRESSURE GASES

For selection of proper Hijector for combinations of Pyronic Burners, refer to Hijector Bulletin 2201. Use total port area for mixer selection.

No. 92 HPST Pilot (Bulletin 3270) can be used for all gases when single burner is required.

TABLE III - FLOWMIXER SELECTION - ALL GASES

Model No.	Model Number of Flomixer (No. 4 Ass'y.) To Supply Number of Burners Shown							
	1	2	3	4	5	6	7	8
101- 2	---	88-4- 9	88-4-11	88-4-12	1010-4-14	1210-4-15	1210-4-16	1210-4-17
101- 4	88-4-10	1010-4-14	1210-4-17	1210-4-19	1612-4-22	1612-4-24	1612-4-26	2016-4-28
101- 6	88-4-12	1210-4-17	1210-4-20	1612-4-23	1612-4-26	2016-4-28	2016-4-31	2016-4-32
121- 8	1010-4-14	1210-4-19	1612-4-24	2016-4-28	2016-4-31	2420-4-34	2420-4-36	2420-4-38
121-10	1210-4-15	1612-4-21	1612-4-26	2016-4-30	2420-4-34	2420-4-36	3224-4-40	3224-4-42
121-12	1210-4-16	1612-4-22	1612-4-27	2016-4-32	2420-4-36	2420-4-38	3224-4-42	3224-4-44
162- 6	1210-4-16	1612-4-22	1612-4-27	2016-4-32	2420-4-36	2420-4-38	3224-4-42	3224-4-44
162- 7	1210-4-17	1612-4-24	2016-4-30	2420-4-34	2420-4-38	3224-4-42	3224-4-46	3224-4-48
162- 8	1210-4-19	1612-4-27	2016-4-32	2420-4-38	3224-4-42	3224-4-46	3224-4-50	3224-4-54
162- 9	1210-4-20	2016-4-28	2420-4-34	3224-4-40	3224-4-44	3224-4-48	3224-4-54	3224-4-56
162-10	1612-4-22	2016-4-31	2420-4-38	3224-4-44	3224-4-48	3224-4-54	3224-4-58	3224-4-62
162-12	1612-4-23	2016-4-32	3224-4-40	3224-4-46	3224-4-50	3224-4-56	3224-4-60	
203- 8	1612-4-23	2420-4-34	3224-4-40	3224-4-48	3224-4-52	3224-4-58	3224-4-62	
203-10	1612-4-27	2420-4-38	3224-4-46	3224-4-54	3224-4-60			
243-12	2016-4-30	3224-4-42	3224-4-52	3224-4-60		Select number of burners required using capacity table II and mixture pressure table I.		
243-14	2016-4-32	3224-4-46	3224-4-56					
243-16	2420-4-36	3224-4-50	3224-4-62					
243-18	2420-4-38	3224-4-52	3224-4-64					

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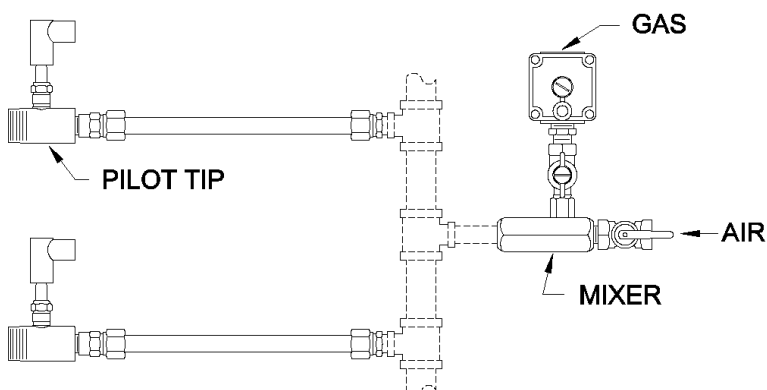
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PREMIX TUNNEL BURNERS

PILOT ASSEMBLIES

MOUNTING ARRANGEMENTS

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PAGE NO.4



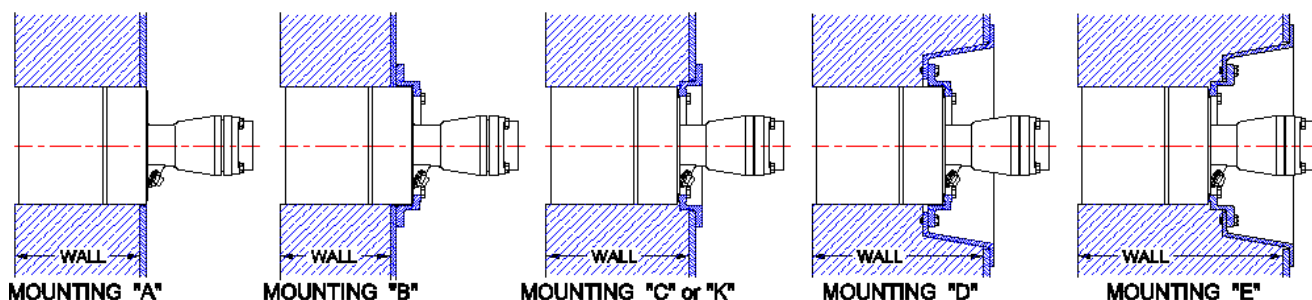
BLAST PILOT SELECTION

Model No.	Description - Pilot Tips and Mixers				
3121-162BTSA	Spark alloy blast tip only - 1/4" pipe connection with 8" Flexible Tubing.				
Mixer for number of Tips below		Pipe Connections			Midget Mixer Assembly including Air Cock, Combination gas cock ratio adjuster, gas regulator and midget mixer sized to handle number of pilot tips shown.
		Air	Gas	Mix	
2351-2MMCR	1 only	1/4	3/8	1/4	
2351-3MMCR	2	3/8	3/8	3/8	
2351-4MMCR	3-4	1/2	3/8	1/2	
2351-6MMCR	5-6	3/4	3/8	3/4	

MOUNTING ARRANGEMENTS

Reversible mounting flanges permit application to a wide variety of wall thickness.

"A" assemblies are held in place by cementing into the wall. All other assemblies are normally attached to the wall by bolts or studs in the slotted openings provided on the flange periphery.



SELECTION OF MOUNTING ASSEMBLY TO FIT WALL THICKNESS

Pyronic Burner Series	Letter Indicates Type of Wall Mounting Above Wall Thickness - Inches												
	4"	5"	6.5"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"
101	B	B	C	C	D	D	E*	E	E	-	-	-	-
121	B	B	C	C	D	D	E*	E	E	-	-	-	-
162	-	-	B	B	B	C	C	D	D	E	E	E	-
203	-	-	-	B	B	C	C	C	-	K*	K	K	K
243	-	-	-	B	B	C	C	C	-	K*	K	K	K

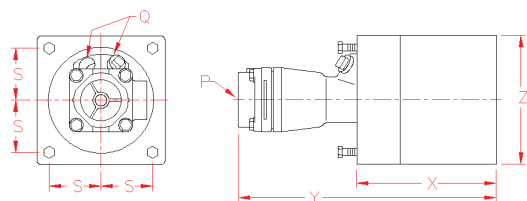
Blocks Flush or Slightly Recessed. *Blocks Extend Beyond Furnace Wall up to 1/2". Flame Detectors adaptable to "A", "B", & "C" mountings only.

PREMIX TUNNEL BURNERS

DIMENSIONS

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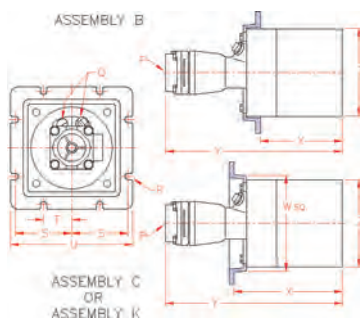
"A" ASSEMBLY DIMENSIONS (IN INCHES)



	P	Q	S	X	Y	Z	
Series No.	Inlet Pipe Size	Pilot & Flame Electrode Conn. (2)		Min. Wall Thickness	Overall Length $\pm 1/8"$	Block Square $\pm$	Weight Lbs.
101 A	1-1/4	3/4 Pipe	2-1/32	5-1/4	9-1/8	5	15-1/2
121 A	1-1/2	3/4 Pipe	2-1/32	5-1/4	9-1/8	5	15-1/2
162 A	2	3/4 Pipe	2-13/16	7-3/4	14	7	40
203 A	2-1/2	3/4 Pipe	3-17/32	8-1/8	15-7/8	9	73
243 A	3	3/4 Pipe	3-17/32	8-1/8	15-7/8	9	73

‡ For Shell Cutout Add 1/4" to "Z"

"B", "C", "K" ASSEMBLY DIMENSIONS (IN INCHES)



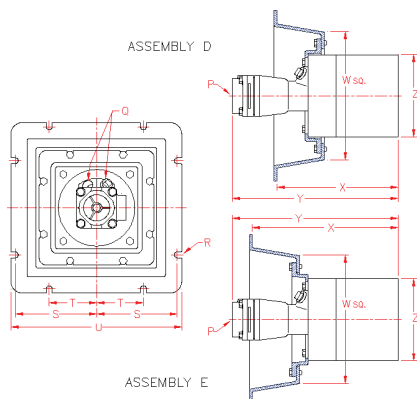
	P	Q	R	S	T	U	W	X	Y	Z	
Series No.	Inlet Pipe Size	¶	Bolt Size				- ‡	Min. Wall Thickness	Overall Length $\pm 1/8"$	Block Square	Weight Lbs.
101 B	1-1/4	3/4 Pipe	3/8	3-3/8	†	7-1/2	-	3-3/4	9-1/8	5	19-1/2
101 C	1-1/4	" "	3/8	3-3/8	†	7-1/2	6	6-3/4	9-1/8	5	19-1/2
121 B	1-1/2	" "	3/8	3-3/8	†	7-1/2	-	3-3/4	9-1/8	5	19-1/2
121 C	1-1/2	" "	3/8	3-3/8	†	7-1/2	6	6-3/4	9-1/8	5	19-1/2
162 B	2	" "	3/8	4-5/8	2-1/4	9-3/4	-	6-3/4	14	7	47
162 C	2	" "	3/8	4-5/8	2-1/4	9-3/4	7-3/4	8-3/4	14	7	47
203 B	2-1/2	" "	3/8	6-1/4	3-1/2	13-1/2	-	7-1/8	15-7/8	9	86
203 C	2-1/2	" "	3/8	6-1/4	3-1/2	13-1/2	11	9-1/8	15-7/8	9	86
203 K	2-1/2	" "	3/8	6-1/4	3-1/2	13-1/2	11	13-5/8	15-7/8	9	96
243 B	3	" "	3/8	6-1/4	3-1/2	13-1/2	-	7-1/8	15-7/8	9	86
243 C	3	" "	3/8	6-1/4	3-1/2	13-1/2	11	9-1/8	15-7/8	9	86
243 K	3	" "	3/8	6-1/4	3-1/2	13-1/2	11	13-5/8	15-7/8	9	96

‡ For Shell Cutout Add 1/4" to "W"

† Only One "U" Notch Centered On Side.

¶ Pilot And Flame Electrode Connection (2).

"D", "E" ASSEMBLY DIMENSIONS (IN INCHES)



	P	Q	R	S	T	U	W	X	Y	Z
Series No.	Inlet Pipe Size	Pilot & Flame Electrode Conn. (2)	Bolt Size			Wall Bracket Square	See Note ‡	Min. Wall Thickness	Overall Length $\pm 1/8"$	Block Square
101 D	1-1/4	3/4" Pipe	3/8"	6-7/8"	4"	14-1/2"	12-1/2"	7-1/2"	9-1/8"	5"
101 E	1-1/4	"	3/8"	6-7/8"	4"	14-1/2"	12-1/2"	10-1/2"	9-1/8"	5"
121 D	1-1/2	"	3/8"	6-7/8"	4"	14-1/2"	12-1/2"	7-1/2"	9-1/8"	5"
121 E	1-1/2	"	3/8"	6-7/8"	4"	14-1/2"	12-1/2"	10-1/2"	9-1/8"	5"
162 D	2"	"	3/8"	6-7/8"	4"	14-1/2"	12-1/2"	10-5/8"	14"	7"
162 E	2"	"	3/8"	6-7/8"	4"	14-1/2"	12-1/2"	12-5/8"	14"	7"

‡ For Shell Cutout Add 1/4" to "W" or "Z"

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
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PREMIX TUNNEL BURNERS

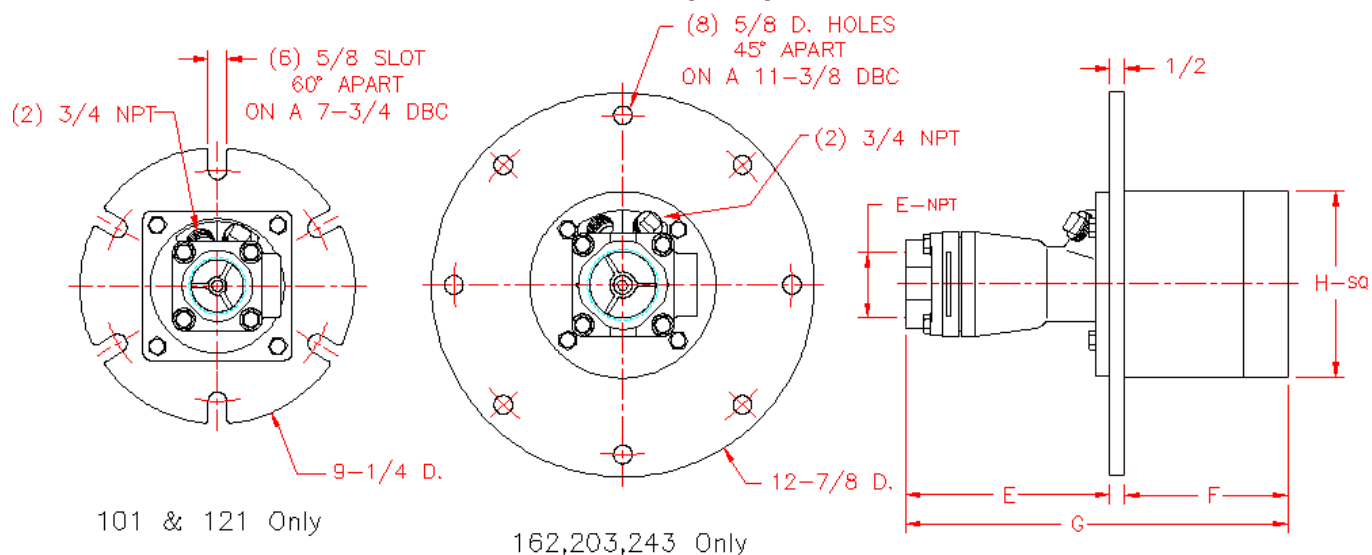
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PAGE NO.6

GAR & GA DIMENSIONS

Style GAR & GA Burners having the same capacities and construction are available with an integral mounting flange especially designed for pressurized combustion chambers.

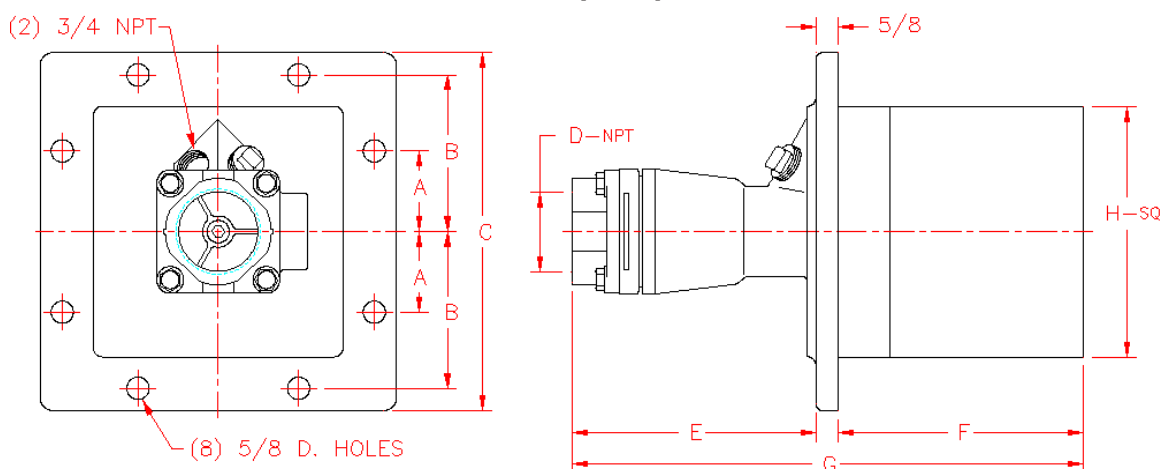
Flange surface is machined for gasket tight seal of pressures up to 10 PSIG. Applications include pressurized air heaters, atmosphere generators and other sealed furnaces or retorts.

GAR (3305)



Model No.	A	B	C	D	E	Weight	
						Lbs.	Kgs.
101 GAR	4	4-1/4	8-3/4	5-1/2	1-1/4	24	10.88
121 GAR	4	4-1/4	8-3/4	5-1/2	1-1/2	24	10.88
162 GAR	5-1/2	6-3/4	12-3/4	6-1/4	2	40	18.14
203 GAR	7	8-1/4	15-3/4	8	2-1/2	65	29.48
243 GAR	7	8-1/4	15-3/4	8	3	65	29.48

GA (3306)



Model No.	A	B	C	D	E	F	G	H	Weight	
									Lbs.	Kgs.
162 GA	2-1/4	4-3/8	10	2	6-5/8	6-3/4	14	7	50	22.67
203 GA	3-1/2	6	13-1/2	2-1/2	8	7	15-5/8	9	87	39.45
243 GA	3-1/2	6	13-1/2	3	8	7	15-5/8	9	87	39.45

INSERT ASSEMBLIES MODEL NO. - 203 & 243 TUNNEL BURNERS		
INSERT MODEL NO.	PART NUMBER	INSERT DIA.
- 8	4772-C01	2.750
- 9	4772-C02	2.718
- 10	4772-C03	2.687
- 11	4772-C04	2.656
- 12	4772-C05	2.625
- 13	4772-C06	2.593
- 14	4772-C07	2.562
- 15	4772-C08	2.531
- 16	4772-C09	2.500
- 17	4772-C10	2.468
- 18	4772-C11	2.437
- 19*	17518-C01	2.406
- 20*	17518-C02	2.375
- 21*	17518-C03	2.343
- 22*	17518-C04	2.312
- 23*	17518-C05	2.281
- 24*	17518-C06	2.250
- 25*	17518-C07	2.218
- 26*	17518-C08	2.187

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