

North American Magna-Flame™ Burners Oil and D-F Wide Flame

- Dual Fuel Burner, gas or oil (light or heavy grade oil)
- Short and wide flame pattern
- 18 to 75 million Btu/hr
- For furnaces, boilers, air heaters, incinerators, gypsum kettles, etc.
- Broad stability range
- Chambers up to 2200F
- Includes high pressure tip emulsion atomizer



6796 MAGNA-FLAME™ DUAL FUEL BURNERS use high pressure atomization (70 to 100 psi steam or compressed air), and are designed to fire combustion chambers of limited length but with sufficient width to allow the flame envelope to develop. They are well suited to cubic combustion chambers typical of coal-fired water tube boilers.

ATOMIZER. Series 6796 burners incorporate an efficient 5646 tip-emulsion atomizer that can be used with #2 or #6 oil (heated to reduce its viscosity to 100 SSU). The burner may be operated on oil or gas. The atomizer should be retracted (6") during gas only operation. Adjustable external and internal stops on the atomizer, as well as a packing gland, allow repositioning the atomizer to its exact predetermined location for oil firing.

"Maximum" steam and compressed air consumption rates shown below are with no oil flowing. Actual usage will always be less--from 1.5 to 2.8 pounds of steam (or 34 to 63 scf air) per gallon of oil, depending on the quantity of oil being atomized. (Use figures shown below to size piping--not to determine cost of the atomizing medium.)

IGNITION and FLAME SUPERVISION. Magna-Flame Burners should be pilot ignited. The 4014 gas-boosted pilot (sold separately) listed in the dimension table is required, and provision must be made for low fire start with 1.0" wc or less main air. Pilot operation must be interrupted to prevent overheating of the mounting. The

UV detector location should be 90° clockwise of the pilot when viewing rear of burner (in the direction of air swirl). Self-checking UV scanners (sold separately) are recommended for flame supervision. See Bulletin 8832 for selection of UV adapters. It is possible for a UV scanner mounted on this burner to sight flame(s) of other burners in the same firing chamber. Consult Fives North American Combustion, Inc. for configuration guidance on multiple burner applications. On burners using steam atomization, the UV detector on the burner will pick up only the pilot. An additional detector must be mounted on the side of the furnace to sight on the base of the main flame. Check with Fives for additional details.

CONTROL. If atomizing steam is throttled along with oil and air, 5 to 1 turndown from 8 psi high fire air rate is obtainable. If steam pressure is left constant, only about 3 to 1 turndown is obtainable, and steam pressure must be reduced for low fire lighting.

Gas pressure required is approximately 0.6 times the air pressure. Maximum excess air rates of 50% at low fire and 150% at high fire are suggested, although proper conditions may permit exceeding these limits.

INSTALLATION. The burner does not include a tile. Tunnel shape shown on the dimension drawing (page 2) must be built into the combustion chamber wall. See Supplement DF-M1 for installation recommendations.

Burner designation	COMBUSTION AIR CAPACITY, (scfh) For Btu/hr, multiply by 100				FLOW RATE of ATOMIZING MEDIUM For sizing piping only		FLAME DIMENSIONS @ 8 psi main air and 10% XSair Add 10% for heavy oil	
	Air pressure drop across burner, psi				"Maximum" ^③ steam flow, lb/hr with 80 psi steam	"Maximum" ^③ compr. air, scfm with 80 psi air	Length	Diameter
	1.0	5.0	6.0	8.0 ^②				
6796-12-46	67 000	150 000	164 000	190 000	300	111	6'	5'
6796-14-46	86 000	193 000	211 000	244 000	425	157	7'	6'
6796-16-46	120 000	269 000	295 000	340 000	550	204	7 ½'	6'
6796-18-46	155 000	346 000	380 000	438 000	700	260	8'	6'
6796-20-46	200 000	447 000	490 000	565 000	900	333	9'	7'
6796-22-46	237 000	530 000	580 000	670 000	1100	407	9 ½'	8'
6796-24-46	282 000	630 000	690 000	795 000	1300	480	10'	8'

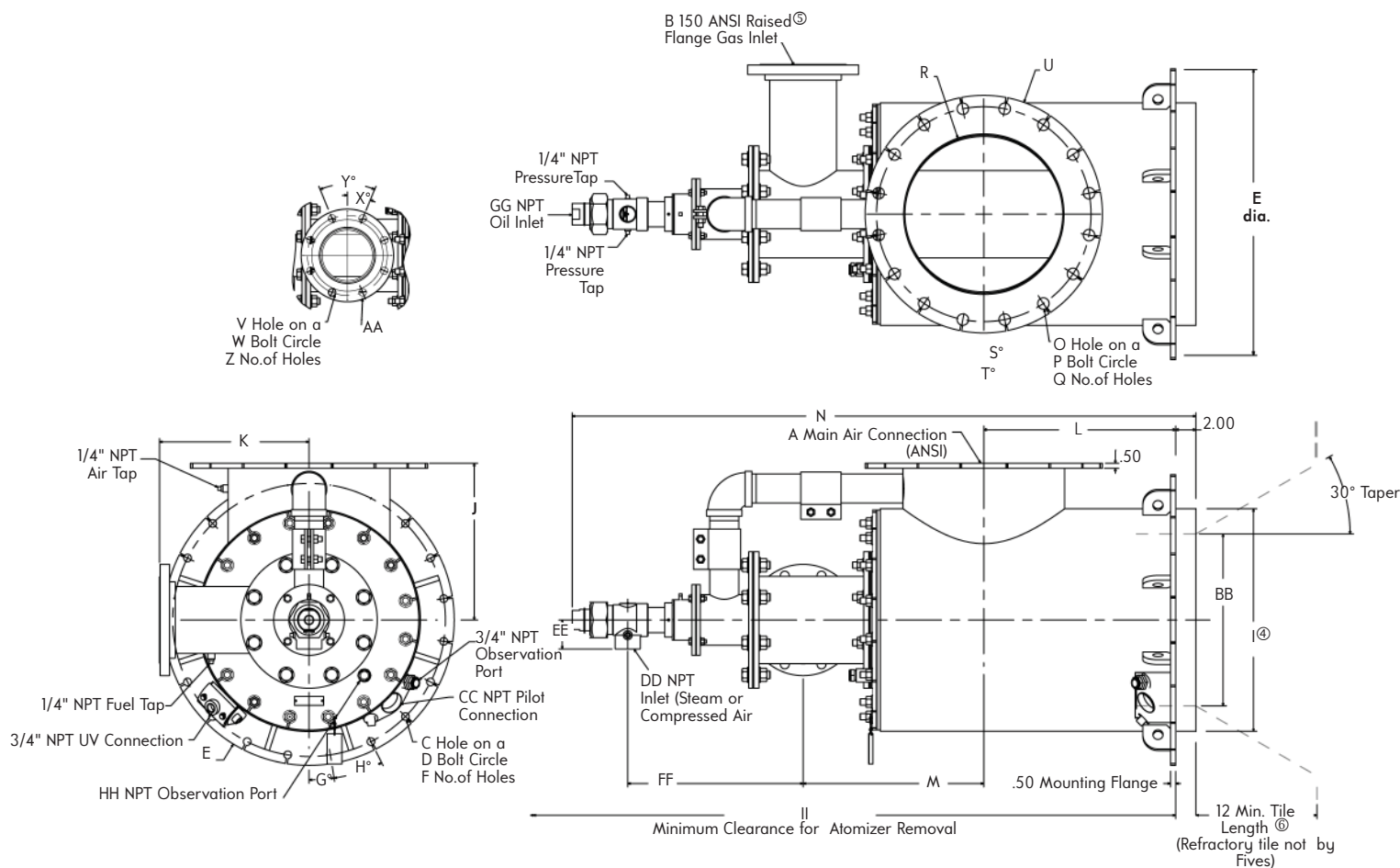
① Because of a positive pressure in the burner, it is difficult to light with a torch unless the air is turned very low and a strong pressure torch is used.

② Maximum recommended pressure

③ See explanation in the text under "Atomizer".

WARNING: Situations dangerous to personnel and property may exist with the operation and maintenance of any combustion equipment. The presence of fuels, oxidants, hot and cold combustion products, hot surfaces, electrical power in control and ignition circuits, etc., are inherent with any combustion application. Parts of this product may exceed 160F in operation and present a contact hazard. Fives North American Combustion, Inc. urges compliance with National Safety Standards and insurance Underwriters recommendations, and care in operation.

DIMENSIONS



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

Dimensions in Inches and Degrees

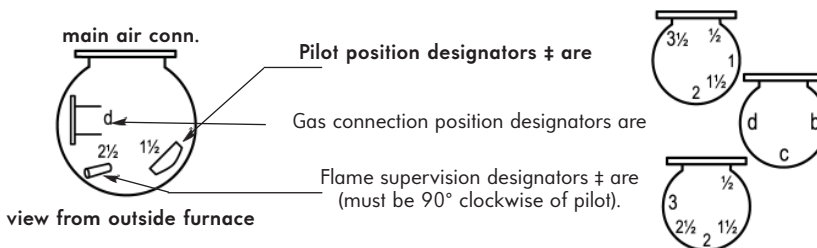
Burner Designation	A	B	C	D	E	F	G°	H°	I [ⓐ]	J	K	L	M	N	O	P	Q	R	S°	T°
6796-12-46	12	4	0.75	24.25	26	16	11.25	22.5	18	14	14.75	15	14.56	53.63	1.00	17	12	12.25	15	30
6796-14-46	14	6	0.75	25.25	27	16	11.25	22.5	20	14.5	14.75	18	15.75	57.88	1.13	18.75	12	13.88	15	30
6796-16-46	16	6	0.75	27	28.75	20	9	18	22	15.5	14.81	19	17.88	61.75	1.13	21.25	16	15.88	11.25	22.5
6796-18-46	18	6	0.75	29	30.75	20	9	18	24	16.5	14.81	19.5	18.25	62.38	1.25	22.75	16	17.88	11.25	22.5
6796-20-46	20	8	0.88	31	32.75	20	9	18	26	18.5	14	20	20.75	66.63	1.25	25	20	19.88	9	18
6796-22-46	22	8	0.88	33.5	35.25	20	9	18	28	19.5	14	21	21.88	70.50	1.25	26	20	21.88	9	18
6796-24-46	24	8	0.88	35.5	37.75	24	7.5	15	30	20.5	14	22	22.88	72.13	1.38	29.5	20	23.88	9	18

Burner Designation	U	V	W	X°	Y°	Z	AA	BB	CC	DD	EE	FF	GG	HH	II	Atomizer Designation	Pilot Assy. Designation	Weight lbs.
6796-12-46	19.0	0.75	7.50	22.5	45	8	9	12.5	1.5	1.00	3.06	17.12	½	¾	94.00	5646-1-110	4014-2-T	430
6796-14-46	21.0	0.88	9.50	22.5	45	8	11	14.75	2.0	1.25	2.50	17.12	½	¾	94.25	5646-2-150	4014-3-AT	485
6796-16-46	23.5	0.88	9.50	22.5	45	8	11	17	2.0	1.25	2.88	17.31	¾	2	100.75	5646-2-195	4014-3-AT	585
6796-18-46	25.0	0.88	9.50	22.5	45	8	11	19.25	2.0	1.50	2.88	17.12	¾	2	102.75	5646-3-250	4014-3-AT	625
6796-20-46	27.5	0.88	11.75	22.5	45	8	13.5	21.5	2.0	1.50	2.88	18.31	¾	2	111.50	5646-3-320	4014-3-BT	730
6796-22-46	29.5	0.88	11.75	22.5	45	8	13.5	24	2.0	1.50	2.88	20.06	¾	2	115.25	5646-3-380	4014-3-BT	820
6796-24-46	32.0	0.88	11.75	22.5	45	8	13.5	26	2.0	1.50	2.88	19.69	¾	2	119.75	5646-3-450	4014-3-BT	880

- ⓐ Furnace opening should be ½" larger than dimension I for sizes -12 through -16 and ¾" larger than dimension I for sizes -18 through -24.
- ⓑ Flat face companion ANSI flange available upon request.
- ⓒ For tiles longer than 15" consult Fives.

Arrangement Designators are specified relative to the main air connection at 12 o'clock and should be listed for pilot, gas, and flame supervision in that order.

Atomizer connections need not be specified because they can be rotated in the field.



‡Good practice dictates that neither pilot nor flame detector be below the centerline of a horizontally-mounted burner.

ORDER MUST SPECIFY: (1) Burner designation (such as 6796-16-46); (2) Arrangement designation for pilot, gas and flame safety positions in that order such as: 6796-16-46, arrangement 1½ d 2½ (for the arrangement shown above).



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