

## North American 4441-8 Large Capacity Tempest® Burner

The 4441-8-A, -8-B, and -8-C are the largest members of the Tempest family of high velocity, wide operating range nozzle-mix burners with capacities up to 5.4 million Btu/hr. They feature low NOx emissions, high excess air, direct spark ignition, wide stability range, integral air and gas meters, and sturdy cast construction. Wide operating limits and ignition combined with flame supervision capabilities make the 4441-8 ideal for use with Step Fire™ or any pulse fired control system.

The Tempest's high velocity jet action and superior recirculation capabilities have brought the benefit of temperature uniformity to a wide variety of furnaces. Common applications include: periodic and tunnel kilns in the ceramics and heavy clay industries, forge furnaces, heat treat furnaces, galvanizing baths, scrap preheaters, carbon baking furnaces, cupolas, pipe coaters, portable refractory dryout and preheat equipment, and many more.

The -8-A, -8-B and -8-C sizes have a 90° air inlet and a flanged air connection. A 6" NPT mating air inlet flange is provided. A gas limiting orifice valve should always be located within 3 pipe diameters of the gas connection.



### FLEXIBLE OPERATING CAPABILITIES

- Wide operating range--from 30% excess fuel to 3000% excess air
- Flame stability across full operating range to suit continuous and StepFire (pulse firing) control
- Direct spark ignited (/E version) with wide operating window (optional premix pilot /G version also available)
- Low NOx emissions--less than 60 ppm typical in 2000 F applications
- Maximum furnace temperature--2700 F

### CHOICE of FLAME SUPERVISION SYSTEMS

- Flame rod or UV detector (ordered separately)

### DEPENDABLE, LONG LASTING CAST CONSTRUCTION

- Design allows full access to internals and ease of maintenance
- Alloy stabilizer bolted to main body
- Built-in air purge for observation port and UV scanner
- Integral air and gas meters
- Round self-supporting tile for both hard wall (brick, cast, or rammed refractory) or fiber wall applications
- Fuels--natural gas at 8 osig inlet to burner (design capacity, stoic ratio, requires higher gas pressure for air pressures above 16 osig and/or excess fuel operating conditions)

**Table 1. Performance Data (natural gas)**

4441-8-A	Air Pressure, osi (UA Pressure Tap)						
	0.2	1	4	9	12	16	20
Air flow, not burning, scfh						36,000	
Air flow, stoich., scfh	4,000	7,500	15,000	23,200	26,900	31,000	34,500
Air Orifice $\Delta P$ , (UA-DA), inches wc	-	0.9	3.3	8.4	10.5	13.8	18.5
Gas Orifice $\Delta P$ , (UG-Dg), inches wc, stoich.	-	0.3	0.7	1.6	1.8	2.5	2.9
Max. % XSA, fst, ignition	1,000	2,000	3,000	3,000	3,000	3,000	2,000
Max. % XSFuel, fst	30	30	30	30	30	30	30
Flame Length, in.	36	40	45	45	48	50	50
Flame Diameter, in.	12	12	12	12	12	12	12
Tile Pressure, "wc	0.2	0.6	2.7	5.4	6.7	9.1	10.6

4441-8-B	Air Pressure, osi (UA Pressure Tap)						
	0.2	1	4	9	12	16	20
Air flow, not burning, scfh						50,000	
Air flow, stoich., scfh	5,500	10,000	20,000	32,000	36,000	42,000	47,000
Air Orifice $\Delta P$ , (UA-DA), inches wc	-	0.7	2.3	5.7	8.4	11.9	14.6
Gas Orifice $\Delta P$ , (UG-Dg), inches wc, stoich.	-	0.4	1.1	2.6	3.3	4.6	5.7
Max. % XSA, fst, ignition	1,000	2,000	2,000	3,000	3,000	3,000	2,500
Max. % XSFuel, fst	30	30	30	30	30	30	30
Flame Length, in.	46	49	53	53	55	60	62
Flame Diameter, in.	13	13	13	13	14	14	14
Tile Pressure, "wc	0.2	0.7	2.6	5.5	6.8	8.4	10.1

4441-8-C	Air Pressure, osi (UA Pressure Tap)						
	0.2	1	4	9	12	16	20*
Air flow, not burning, scfh						63,000	
Air flow, stoich., scfh	6,500	12,500	25,000	38,000	45,000	54,000	60,000
Air Orifice $\Delta P$ , (UA-DA), inches wc	-	0.5	1.6	3.8	5.9	8.3	9.9
Gas Orifice $\Delta P$ , (UG-Dg), inches wc, stoich.	-	0.2	1.7	3.8	5.3	7.3	9.2
Max. % XSA, fst, ignition	2,000	3,000	3,000	3,000	3,000	3,000	2,000
Max. % XSFuel, fst	30	30	30	30	30	30	30
Flame Length, in.	48	53	57	59	60	68	72
Flame Diameter, in.	14	14	14	14	14	14	15
Tile Pressure, "wc	0.1	0.5	1.9	3.9	4.9	5.8	6.5

\* max. recommended air pressure

† flame supervisory limits with either UV or flame rod supervision

**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.



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