

# North American HiRAM<sup>®</sup> Dual-Fuel<sup>™</sup> Burners

Bulletin 6575

Ref: GRM-64

- High velocity
- Low NO<sub>x</sub>
- High turndown
- Inputs from 6 to 16 million Btu/hr
- Gas and light oil

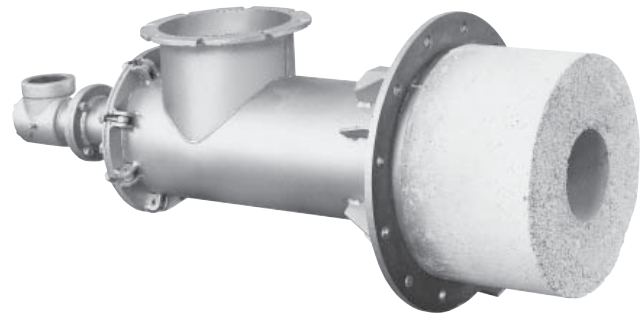
HiRAMs are particularly applicable to aluminum melters, ladle heaters, soaking pits, rotary kilns, heat treat furnaces, thermal oxidizers, and dryers: Any installation where high velocity entrainment, penetration, and recirculation can benefit temperature uniformity and thermal efficiency.

A 6575 HiRAM Burner's true high velocity results from exceptionally high Btu/hr input rates relative to its reduced tile discharge area. Velocities ranging from 500 to 750 feet per second (340 to 510 mph) drive heat into a furnace load, creating tremendous momentum while entraining and recirculating 7-10 cubic feet of furnace gases for every cubic foot of burner product.

HiRAMs are suitable for furnace temperatures up to 2400 F. They can be used with preheated air up to 600 F. The reduced tile discharge opening also protects burner internals from radiant heat and from melting furnace splash. Standard burners include 3000 F dense castable tiles.

Burner tile installation should be made in accord with instructions on Supplement DF-M1 for hard refractory lined furnaces or DF-M2 for fiber lined furnaces.

The HiRAM burners can be used with a variety of control systems including pressure-balanced or electronic fuel/air ratio systems. The gas pressure requirement is approximately 0.7 that of the combustion air when firing on stoichiometric ratio. System pressure drops should be checked to make sure that adequate gas pressure will be available at the burner. In order to avoid any potential combustion driven oscillations which can produce excessive noise or vibration, it is imperative that a limiting orifice



valve (North American model 1807) be installed within 5 pipe diameters (5D) of the gas connection. HiRAM burners are not designed for fuel rich operation. Prolonged fuel rich operation may damage the burner.

A gas pilot is required for operation with oil. Direct spark ignition is satisfactory for gas only operation. Torch lighting is not recommended because of high tile pressures. See Sheet 4000-2 for general details concerning direct spark ignition.

For applications where access into the tile is desired, the HiRAM can be supplied with a hinged mechanism. Contact North American for further information.

The 6575 HiRAM Burner is designed for clean fuel gases or light oil. Consult North American re other fuels. A gas only version is described on Bulletin 4575.

HiRAMs are an extension upward of North American's line of high velocity burners. For capacities less than 6 000 000 Btu/hr, consider 4441 or 4445 Tempest<sup>®</sup> Burners.

**ATOMIZING AIR REQUIREMENTS**

High tile pressures create the superior velocities of HiRAM Burners; these pressures also create an atomizing air requirement of 22 osi (at the burner) when burning oil, to realize at least 16 osi drop across the atomizer at high fire. When burning gas, atomizing air pressure can be same as main air pressure.

**Main Air Capacities\*  
scfh  
(burning on stoichiometric ratio)**

Burner designation	Main air pressure drop across the burner, osi					
		0.2	1	4	9	16
6575-8-B	Natural Gas	4 100	12 500	27 000	45 000	63 000
	#2 Oil	4 980	9 700	29 000	44 000	61 000
6575-9	Natural Gas	10 900	20 200	43 250	64 800	85 900
	#2 Oil	10 600	17 900	42 000	66 100	91 200
6575-10-A	Natural Gas	12 000	26 600	53 000	76 000	104 000
	#2 Oil	12 000	26 600	53 000	83 500	106 000
6575-10-B	Natural Gas	11 300	27 800	62 000	89 500	125 000
	#2 Oil	10 900	21 200	68 500	101 000	129 000
6575-12	Natural Gas	18 200	40 700	71 500	105 000	155 000
	#2 Oil	18 200	40 700	82 500	122 000	151 000

\* Not including atomizing air, which adds 3-5% to main air scfh (see box above.)

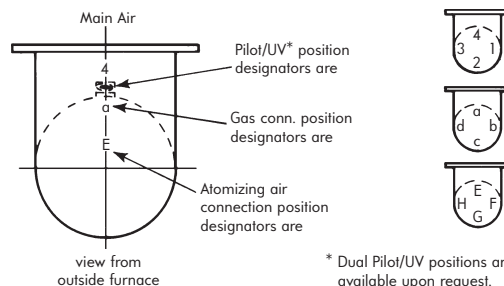
**Total Air Capacities  
scfh  
16 osi main and 22 osig atomizing air at burner**

Burner designation	Burning #2 oil stoichiometric ratio	Main combustion air not burning
6575-8-B	65 000	84 000
6575-9	94 300	113 000
6575-10-A	112 000	151 000
6575-10-B	134 000	183 000
6575-12	160 000	213 000

**Dual Fuel HiRAM® Characteristics**

Gas		Main air pressure (osi)	Oil	
4	16		4	16
<b>Flame length (ft) stoichiometric ratio</b>				
4	6	6575-8-B	6½	7½
6½	8	6575-9	7	9
6	8	6575-10-A	7	9
8½	10	6575-10-B	9½	10
7	8	6575-12	9	9½
<b>Excess air (%)①</b>			②	②
750	700	6575-8-B	450	750
1000	500	6575-9	150	225
1000	1200	6575-10-A	200	1000
800	850	6575-10-B	200	1000
2500	4000	6575-12	225	1500

**HiRAM® ORDERING INFORMATION**



\* Dual Pilot/UV positions are available upon request.

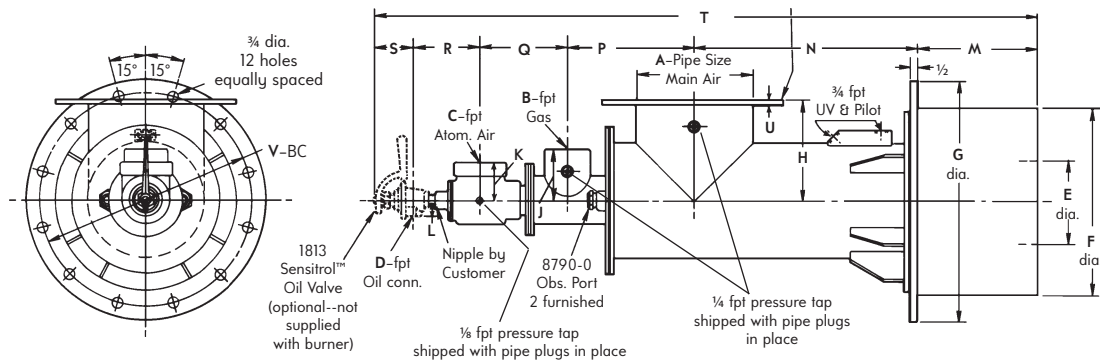
NOTE: Position #4 may not be suitable for some flame scanners due to interference with the main air connection.

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

Good practice dictates that the pilot/UV **NOT** be on the bottom of the burner.

① Do not operate fuel rich.      ② May produce smoke and/or noxious fumes in cold chambers below 1400 F.

**DIMENSIONS**  
inches



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.

Burner designation	dimensions in inches																			
	A	B	C	D	E	F	G	H*	J	K	L	M	N	P	Q	R	S	T	U	V
6575-8-B	6	2 1/2	2 1/2	3/8	4 5/8	14	18	7 1/2	3 3/4	2 13/16	1 1/8	9	16 5/8	9 1/2	6 5/8	5 1/4	2 9/16	49 1/16	3/8	16
6575-9	8	2 1/2	2 1/2	3/8	5 5/16	14	18	7 1/2	3 3/4	2 13/16	1 1/8	9	16 5/8	9 1/2	6 5/8	5 1/4	2 9/16	49 1/16	3/8	16
6575-10-A	10	3	2 1/2	1/2	6 1/4	18	22	10 1/2	4 3/4	2 13/16	1 5/8	12	20 5/8	11 1/16	7 1/8	5 1/4	3 1/16	59 1/8	3/8	20
6575-10-B	10	3	2 1/2	1/2	6 1/2	18	22	10 1/2	4 3/4	2 13/16	1 5/8	12	20 5/8	11 1/16	7 1/8	5 1/4	3 1/16	59 1/8	3/8	20
6575-12	12	3	2 1/2	1/2	7	18	22	10 1/2	4 3/4	2 13/16	1 5/8	12	20 5/8	11 1/16	7 1/8	5 1/4	3 1/16	59 1/8	3/8	20

\* SW style inlet (optional--see Parts List, 6575-2) will add 4 3/8" to dimension "H" shown.

Burner designation	Optional Sensitrol valve	recommended pilot set	net weight lb
6575-8-B	1813-02-C	4011-12	215
6575-9	1813-02-D	4011-12	215
6575-10-A	1813-01	4011-12	300
6575-10-B	1813-01	4011-12	300
6575-12	1813-01	4011-12	300

To order, specify: 6575-(code)-(A or B if applicable) Burner complete (specify Arrangement Designator--see sketch above). List 1813 Sensitrol™ Oil Valve as a separate line item.

**Example:** (1) 6575-9 Burner complete, Arrangement 4aE  
(1) 4011-12 3/4" Threaded Spark Pilot Set  
(1) 1813-02-D Sensitrol Oil Valve

**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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