# DUAL-FUEL BURNERS
## for High Temperature Applications
Bulletin 625

625 Burners are designed specifically for higher temperature operations such as forge furnaces, ceramic kilns, metal and glass melters, heat treat furnaces, etc. They are the high temperature version of Continental Thermal's 642 Fire • All Burner, one of the most widely used industrial burners in the world.

625's are particularly appropriate for applications that run at both high and low temperatures --an example is a batch type kiln in which early parts of the cycle run below 1200 F and require free oxygen in kiln atmosphere for raw material to process properly; then frequently the product must "soak" at temperatures above 2000 F. 625 Burners handle this duty with ease due to their excess air flexibility and their construction that withstands radiant heat.

### CONSTRUCTION

Metal parts are shielded by refractory: the tile and an insulating refractory "biscuit" covering face of burner. Mounting plate and burner body are made of heat resistant cast iron. Air tubes are high grade alloy.

In furnace chambers above 2000 F, combustion air should not be turned down below 2 osi (with or without fuel on).

### HIGH VELOCITY TILES

625- -MB Burners have a 13-1/2" "Milk Bottle" tile with reduced outlet; they produce higher velocity flames than the standard burner, also offer somewhat better protection for burner internals from furnace radiation. Good tile installation practice is important with any burner (see supplements DF-M1 and -M2). It is critical with Milk Bottle tiles because of higher pressures developed in the tile, which can cause burner and furnace wall damage if not properly sealed into the wall.

### FLAME SUPERVISION

All burners should use flame supervision if they operate in combustion chambers that are below 1400 F during at least part of their cycles. Interrupted pilots are required for such installations. For continuous high temperature furnaces and those with 1400 F flame supervision bypass systems, intermittant pilots are sometimes used. These should be tuned off in all applications above 2000 F to avoid overheating burner body and mounting.

**Table 1. TOTAL AIR CAPACITIES**
**scfh**
(for Btu/hr, multiply by 100)

| Burner designation | 16 osi air at burner |
|---|---|
| 625-2 | 2600 |
| 625-3 | 4100 |
| 625-4 | 6300 |
| 625-5 | 10300 |
| 625-6 | 15700 |
| 625-7-A | 27000 |
| 625-7-B | 33500 |
| 625-8-A | 44800 |

**Table II. MAXIMUM EXCESS AIR RATES in %**
(with 9" long tiles, without pilot)

| Burner designation | GAS Combusion Air pressure | | | GAS Combusion Air pressure | | |
|---|---|---|---|---|---|---|
| | 1 osi | 8 osi | 14 osi | 1 osi | 8 osi | 14 osi |
| 625-2 | - | 380 | 500 | - | 380 | 500 |
| 625-3 | 330 | 1000 | 1300 | 210 | 480 | 670 |
| 625-4 | 560 | 1560 | 1560 | 480 | 800 | 900 |
| 625-5 | 1070 | 1440 | 1150 | 50 | 250 | 400 |
| 625-6 | 380 | 1000 | 1400 | 140 | 560 | 610 |
| 625-7-A | 3200 | 4900 | 1000 | 160 | 330 | 450 |
| 625-7-B | 900 | 1450 | 1600 | 150 | 700 | 830 |
| 625-8-A | 460 | 660 | 400 | 200 | 280 | 350 |

NOTE: Excess air ratings are based on operation in a cold open furnace.

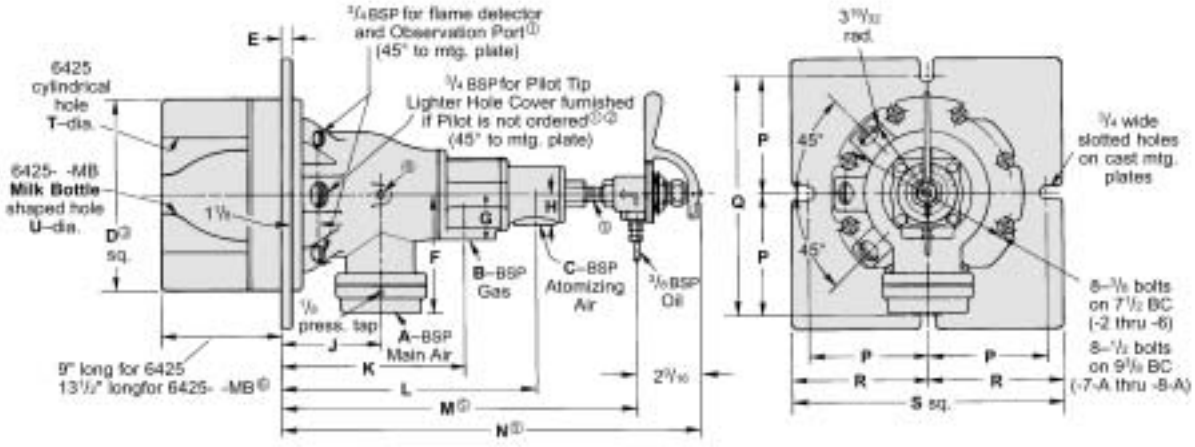
**Table III. MAIN AIR CAPACITIES**
**scfh** (not including atomizing air)

| Burner designation | air pressure ar burner in osi | | | | | |
|---|---|---|---|---|---|---|
| | 0.1 | 1 | 5 | 8 | 12 | 16 |
| 625-2 | 160 | 520 | 1160 | 1470 | 1800 | 2100 |
| 625-3 | 280 | 890 | 1980 | 2500 | 3050 | 3550 |
| 625-4 | 460 | 1450 | 3240 | 4100 | 5000 | 5800 |
| 625-5 | 750 | 2370 | 5300 | 6700 | 8150 | 9450 |
| 625-6 | 1180 | 3700 | 8300 | 10500 | 12900 | 14800 |
| 625-7-A | 2070 | 6550 | 14600 | 18500 | 22700 | 26200 |
| 625-7-B | 2580 | 8150 | 18200 | 23000 | 28200 | 32600 |
| 625-8-A | 3320 | 10500 | 23500 | 29700 | 36400 | 42000 |

**Table IV. ATOMIZING AIR CAPACITIES**
**scfh**

| Burner designation | air pressure ar burner in osi | | | |
|---|---|---|---|---|
| | 14 | 16 | 18 | 20 |
| 625-2,-3,-4 | 500 | 520 | 560 | 600 |
| 625-5 | 640 | 690 | 720 | 760 |
| 625-6 | 800 | 850 | 910 | 950 |
| 625-7-A,7-B | 870 | 930 | 990 | 1040 |
| 625-8-A | 2650 | 2840 | 3000 | 3170 |

**DIMENSIONS**
**inches**




| Burner designation | A | B | C | D | E | F | G | H | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 625-2 | 1 1/4 | 1 | 3/4 | 8 1/2 | 1/2 | 5 1/4 | 2 | 1 3/8 | 4 3/8 | 8 3/8 | 11 5/16 | 15 13/16 | 18 3/8 |
| 625-3 | 1 1/2 | 1 | 3/4 | 8 1/2 | 1/2 | 5 1/4 | 2 | 1 3/8 | 4 3/8 | 8 3/8 | 11 5/16 | 15 13/16 | 18 3/8 |
| 625-4 | 2 | 1 1/4 | 3/4 | 8 1/2 | 1/2 | 5 1/4 | 2 | 1 3/8 | 4 3/8 | 8 3/8 | 11 5/16 | 15 13/16 | 18 3/8 |
| 625-5 | 2 1/2 | 1 1/2 | 1 | 8 1/2 | 1/2 | 5 1/4 | 2 | 1 3/8 | 4 3/8 | 8 3/8 | 11 5/16 | 15 13/16 | 18 3/8 |
| 625-6 | 3 | 1 1/2 | 1 | 8 1/2 | 1/2 | 5 1/4 | 2 | 1 3/8 | 4 3/8 | 8 3/8 | 11 5/16 | 15 13/16 | 18 3/8 |
| 625-7-A | 4 | 2 1/2 | 1 1/4 | 10 | 9/16 | 6 15/16 | 2 5/8 | 2 1/8 | 5 7/8 | 11 | 15 1/8 | 20 1/16 | 22 5/8 |
| 625-7-B | 4 | 2 1/2 | 1 1/4 | 10 | 9/16 | 6 15/16 | 2 5/8 | 2 1/8 | 5 7/8 | 11 | 15 1/8 | 20 1/16 | 22 5/8 |
| 625-8-A | 6 | 2 1/2 | 2 | 10 | 9/16 | 10 15/16 | 2 5/8 | 1 3/4 | 5 7/8 | 11 | 15 1/8 | 20 1/16 | 22 5/8 |

| Burner designation | A | B | C | D | E | F | wt. in lb | Microtrol Oil Valve | approx. flame lengths* with 16 osi Main Air (in open furnace) gas | oil |
|---|---|---|---|---|---|---|---|---|---|---|
| 625-2 | 5 1/4 | 10 1/2 | 6 | 12 | 5 | 3 | 83 | 183-02-A | 1/2' | 1 1/2' |
| 625-3 | 5 1/4 | 10 1/2 | 6 | 12 | 5 | 3 | 83 | 183-02-A | 1 1/2' | 2' |
| 625-4 | 5 1/4 | 10 1/2 | 6 | 12 | 5 | 3 | 83 | 183-02-A | 2' | 2 1/2' |
| 625-5 | 5 1/4 | 10 1/2 | 6 | 12 | 5 | 3 | 83 | 183-02-A | 2 1/2' | 2 1/2' |
| 625-6 | 5 1/4 | 10 1/2 | 6 | 12 | 5 | 3 | 83 | 183-02-B | 3' | 4' |
| 625-7-A | 6 1/8 | 12 1/4 | 6 3/4 | 13 1/2 | 7 | 4 1/2 | 139 | 183-02-C | 6' | 6' |
| 625-7-B | 6 1/8 | 12 1/4 | 6 3/4 | 13 1/2 | 7 | 4 1/2 | 139 | 183-02-C | 6' | 5' |
| 625-8-A | 6 1/8 | 12 1/4 | 6 3/4 | 13 1/2 | 7 | - | 139 | 183-02-D | 7' | 6' |

All burners use 411-11 or 411-12 Pilot tips

625- -MB Burners have a 1/16 gasket between mounting plate and burner body.

*625 Burners with standard tiles

1. Pilot, flame detector, and Obesrvation Port positions are interchangeable as long as Pilot and flame detector are in adjacent holes.
2. For 625- -MB Burners, as second observation port is substituted for Lighter Hole Cover.
3. Opening in furnace shell should be about 1/2" larger than dimension D to allow for fillets and draft on mounting plate.
4. 1/4" air pressure tap on -2,-3,-4,-5 and -6.
5. Dimensions M and N assuem use of a 3/8" close nipple (not furnished by Continental Thermal) between burner and Sensitrol Valve.
6. Milk Bottle tile is not offered with 625-8-A Burner.

**Tiles for 625 Burners**

| Burner designation | Standard 42% alumina PN | Premium 80% alumina PN | Milk Bottle 80% alumina PN |
|---|---|---|---|
| 625-2 thru-6 | 4-2121-2 | 4-2121-3 | OC4-2332-1 |
| 625-7A, -7B, -8A | 4-2142-2 | 4-2142-6 | OC4-2547-2 |

All tiles are pre-fired.

80% Alumina end use limit temperature is 3200 F; 42% is 3000 F

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