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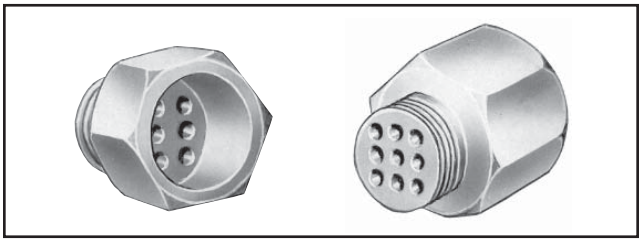
Blast Tips
Sheet 4622/4624

Ref: Bulletin 3065 or 3070

April 1992



4622 Cast Iron and 4624 Stainless Steel Blast Tips are small, self-piloted premix burners. Mounted on pipe manifolds, they are well suited for such applications as corebox and mold heating. They burn natural or LP gases.

Operation. For longest tip life, operate blast tips on or near stoichiometric ratio about 4"wc mixture pressure. For added capacity, they can be run slightly rich in the presence of secondary air. To avoid flashback, mixture pressure should not drop below 0.25"wc. Maximum mixture pressure for stability is over 10"wc.

Installation. Tips should be threaded into half couplings welded to pipe manifolds, spaced closely enough for uniform heating. (4622-02-P Blast Tips with tapered, plain shank, are press-fit into pipe manifolds and welded.) Minimum tip-to-work spacing, for uniform non-impingement heating, is 4" on stoichiometric ratio at 4"wc mixture pressure. Shorter tip-to-work spacing can be used if impingement heating is desired.

Tip can be fed from either 3065 Aspirator Mixers or 3070 Inspirators. Manifold pipe size generally should be the same as the mixer outlet. On end-fed manifolds, allow five pipe diameters between the mixer and first blast tip.

Maximum ambient temperature for 4622 tip is 300 F; 4624 tips will withstand 800 F.

Selection Example: Select blast tips and an aspirator mixer for 148 000 Btu/hr release on natural gas. Tips are to operate over 3:1 turndown on stoichiometric ratio.

Minimum permissible mixture pressure is 0.25"wc, therefore required high fire mixture pressure to obtain 3:1 turndown is based on the following equation:

$$\text{Turndown Ratio} = \sqrt{\frac{\Delta P_1}{\Delta P_2}} \quad \therefore \Delta P_1 = (\text{Turndown Ratio})^2 \times \Delta P_2$$

$$0.25\text{"wc} \times 3^2 = 2.25\text{"wc.}$$

At this pressure, -02 tip capacity can be calculated as follows:

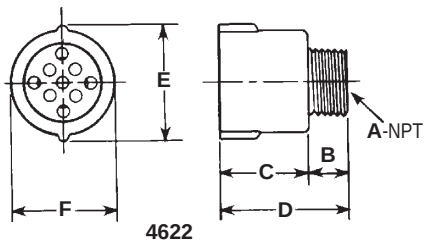
$$Q_2 = Q_1 \sqrt{\frac{\Delta P_2}{\Delta P_1}}$$

Q_2 for -02 tip = 22 000 at 5"wc (from capacity chart below)

$$22\,000 \times \sqrt{\frac{2.25"}{5"}} = 14\,800 \text{ Btu/hr.}$$

$$Q_2 \text{ for -01 tip} = 34\,000 \times \sqrt{\frac{2.25"}{5"}} = 22\,800 \text{ Btu/hr.}$$

If the -02 tips are selected, 10 are required for the desired capacity (10 × 14 800 Btu/hr = 148 000 Btu/hr). From Bulletin 3065, a 3065-3-11 Mixer, with a capacity of 1550 scfh air at 2.5"wc mixture pressure will suffice. This mixer has a 1½" pipe size outlet; so fabricate the blast tip manifold from $1^1/_2$" pipe.

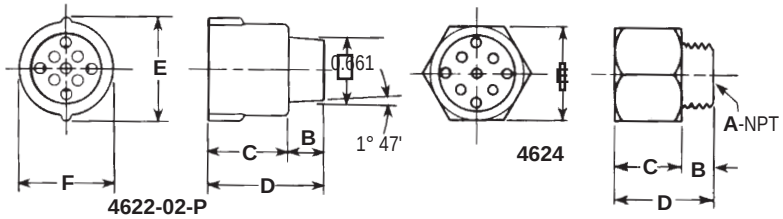


4622

Burner Capacities, Btu/hr, with 100% air through burner①

Burner designation	mixture pressure, "wc 0.5	1	4	5	6	8	10
4622-02, -02-P, 4624-02	7 000	10 000	20 000	22 000	24 000	28 000	31 000
4622-01, 4624-01	11 000	15 000	30 000	34 000	37 000	43 000	48 000

① Burners can be run with less than 100% primary air (rich) if sufficient secondary air is available. If operating with 90% primary air, multiply capacities above by 1.11; multiply by 1.22 for 80% primary air.



Blast Tip designation	dimensions in inches A	B	C	D	E	F	wt, oz
4622-02	⅜	⅜	⅞	1¼	1⅛	1	2
4622-01	½	7⁄16	⅞	1 5⁄16	1 5⁄16	1 3⁄16	2½
4624-02	⅜	⅜	⅞	1¼	1⅛	-	3
4624-01	½	7⁄16	7/8	1 5⁄16	1¼	-	3½
4622-02-P	-	⅜	⅞	1¼	1⅛	1	2

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.

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