

# TORCH BURNERS

## LOW, MEDIUM, AND HI-PRESSURE SERIES

MODEL : T,TA,TB,RTA,RTB  
ET,ETA,ETB,RETA,RETB

Revision: 0

BULLETIN  
3215, 3216,  
3217



12 ET



12 RETB

### DESCRIPTION

Torches are made up in three series - Low-Pressure, Medium-Pressure, and Hi-Pressure. The chief differences in construction and operation are based on gas pressure requirements and primary air-gas ratios. These factors affect capacity, flame lengths and all other operating characteristics. All series are made up in various assemblies, including mounting cages and combustion blocks to fit almost any job requirement.

The charts on the following pages cover the important operating characteristics of the three Torch Series and show the important physical features of each. For detailed description of each series and capacity tables see Pages 3 and 4.

### LOW-PRESSURE SERIES

LOW-PRESSURE SERIES TORCH BURNERS are made up of Lojectors, lever-handled gas cocks, AN Burner nozzles, mounting cages, pilots and blocks in cast iron holders, and assembled as required. They are designed for low pressure gas at normal city pressures. Because they depend mainly on draft for most of the combustion air required, their capacity can only be increased by increasing the draft through the burners.

The Multiplier Table for Capacity Table No. 1 on Pages 4 & 5, shows how much gas can be burned at drafts other than 0.1" W. C. To obtain the increased capacities, the gas orifice must be enlarged or, in some cases, removed altogether. Valves and lead-in pipes may also have to be enlarged.

CAUTION: Operation of combustion equipment can be hazardous resulting in bodily injury or equipment damage. Each burner should be supervised by a combustion safeguard and only qualified personnel should install, make system adjustments and perform any required service.



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# TORCH BURNERS

## MEDIUM-PRESSURE SERIES

MEDIUM-PRESSURE SERIES TORCH BURNERS are similar to the Standard Series, except they are for use with gas at pressures from 1 lb. to 10 lbs.

Medium-Pressure Series capacities are based on entrainment, by the gas, of primary air of about 50% of the total air required for combustion. Secondary air is entrained partially by the velocity of the mixture issuing from the burner nozzle and partially by draft. For this reason, draft variations are not so important as for the Standard Series, although some increase in capacity can be secured by using higher drafts as indicated by the Table for Capacity Table No. 2 on Pages 4 & 5. It will, of course, be necessary to increase the orifice size to secure this additional capacity.

Particularly with the slow burning gases like Propane and Natural Gas, the flame tends to blow away from the nozzle at gas pressures above 10 lbs. Also, in some sizes, lack of secondary air space in the cage limits the gas that can be burned. See Capacity Table No. 2.

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## HI-PRESSURE SERIES

HI-PRESSURE SERIES TORCH BURNERS for use with gases at pressures from 10 lbs. to 60 lbs. are made up of Hijectors, FR Nozzles, high pressure needle valves and necessary cages and blocks, as required by various assembly specifications. The 4800 size uses the 6" Lojector and a lubricated high pressure cock as Hijectors are only made up to 4". HI-PRESSURE TORCHES provide for entrainment through the Hijector of practically all of the air necessary for combustion (80 to 90%) so they are almost independent of draft and can even operate against normal furnace back pressures of several hundredths of an inch W. C.

The Hi-Pressure Series capacity varies according to the kind of gas and gas pressure to be used. By enlarging the orifice, the gas capacity can be increased but the primary air-gas ratio is at once decreased and the additional air required must be drawn in by draft. FR Nozzles used in this series will not hold flames with less than 60% primary air.

Having once established the maximum capacity for a given gas and primary air-gas ratio, the burner capacity will vary with changes in gas pressure as shown by the Multiplier Table, for Capacity Table No. 3 on Pages 4 & 5, with practically no change in flame characteristics.

# COMPARISON CHART AND GENERAL SPECIFICATIONS

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PAGE NO. 3

## LOW, MEDIUM, AND HI-PRESSURE SERIES

### TORCH BURNER SERIES COMPARISON CHART

Gas Pressure Range	LOW-PRESSURE SERIES *	MEDIUM PRESSURE SERIES **	HI-PRESSURE SERIES ***
	3" to 15" W. C.	1 to 10 PSIG	10 to 30 PSIG
Percent of Total Combustion Air induced by gas as primary air	20% to 40%	40% to 60%	65% to 100%
Percent of Total Combustion Air pulled in by draft	70% to 90%	40% to 60%	0 to 40%
Effect of draft on capacity	The most important factor.	Required to develop ratings.	Not important but can be utilized.
Btu/hr normally released per cubic foot combustion space	20,000 to 40,000	40,000 to 50,000	60,000 to 100,000

\*LOW-PRESSURE SERIES commonly used on air heaters, kilns, dryers, stills and boilers, where ample draft is always available and combustion chambers are large enough for slow combustion.

\*\*MEDIUM PRESSURE SERIES commonly used on large boilers, kilns and furnaces where combustion chambers are suitable for large capacities. Draft must be ample if high capacities required.

\*\*\*HI-PRESSURE SERIES commonly used on furnaces and kilns operating at high temperatures where high heat releases are required, regardless of draft. Capacity may be increased when ample draft available.

### GENERAL SPECIFICATIONS TORCH BURNERS

Burner Numbers		Lojector & AN Nozzle Pipe Size Inches	AN Nozzle Area Sq. Inches	Cage Catalog Number	Block Dimension Inches	Block & Holder Assy. Catalog Number	Gas Cock Pipe Size Inches	Maximum Orifice Diameter Inches
Standard Series	Medium Series							
6	60	3/4	0.55	-	-	-	3/8	ADJ
8	80	1	0.80	-	-	-	3/8	ADJ
10	100	1-1/4	1.35	10 BCA	7 x 7	7 BH	1/2	ADJ
12A	120A	1-1/2	1.75	12 BCA	7 x 7	7 BH	1/2	ADJ
12B	120B	1-1/2	1.75	12 BCB	7 x 7	7 BH	1/2	ADJ
16	160	2	2.90	16 BCB	9 x 9	9 BH	1	5/8
20	200	2-1/2	4.20	20 BCB	11 x 11	11 BH	1	5/8
24	240	3	6.20	24 BCB	11 x 11	11 BH	1	7/8
321	3210	4	8.38	32 BCB	13 x 13	13 BH	1-1/4	7/8
322	3220	4	10.72	32 BCB	13 x 13	13 BH	1-1/4	7/8
323	3230	4	12.19	32 BCB	13 x 13	13 BH	1-1/4	7/8
481	4810	6	14.16	48 BCC	18 x 18	18 BH	1-1/2	1-3/8
482	4820	6	16.93	48 BCC	18 x 18	18 BH	1-1/2	1-3/8
483	4830	6	20.63	48 BCC	18 x 18	18 BH	1-1/2	1-3/8
484	4840	6	23.19	48 BCC	18 x 18	18 BH	1-1/2	1-3/8
485	4850	6	25.35	48 BCC	18 x 18	18 BH	1-1/2	1-3/8

### HI-PRESSURE SERIES

Burner Number	Hijector and FR Nozzle Size Inches	FR Burner Area Sq. Inches	Cage Catalog Number	Block Dimension Inches	Block & Holder Assembly Catalog Number	Gas Connection Pipe Size Inches
600	3/4	0.182	-	-	-	3/8
800	1	0.294	-	-	-	3/8
1000	1-1/4	0.666	10 BCA	7 x 7	7 BH	1/2
1200	1-1/2	1.059	12 BCB	7 x 7	7 BH	1/2
1600	2	1.848	16 BCB	7 x 7	7 BH	3/4
2000	2-1/2	2.486	20 BCB	9 x 9	9 BH	3/4
2400	3	3.045	24 BCB	9 x 9	9 BH	1
3200	4	5.533	32 BCB	11 x 11	11 BH	1-1/4
4800	6*	11.191	48 BCB	15 x 15	15 BH	1-1/2

\* NOTE: Lojector used in this size only.

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# CAPACITY TABLES

BULLETIN 3215, 3216, 3217

PAGE NO. 4

## LOW, MEDIUM, AND HI-PRESSURE SERIES TORCH BURNERS

CAPACITY TABLE NO. 1 - LOW PRESSURE SERIES						
for all gases - 20% to 40% primary air						
Torch Size	1000 BTU/HR 0.1 DRAFT		Approximate Flame Length Inches	Based on Gas Pressures* shown below		
	Minimum	Maximum		Kind of Gas	Btu/cf	Gas Pressure
6	40	65	12 - 18	Manufactured Gas	450/600 Btu/cf	3" - 12" W.C.
8	70	95	14 - 24	Mixed Gas	650/850 Btu/cf	4" - 12" W.C.
10	100	135	16 - 28			
12 (A cage)	140	165	18 - 32			
12 (B cage)	160	175	18 - 36	Natural Gas	900/1150 Btu/cf	5" - 12" W.C.
16	200	280	20 - 40			
20	300	400	22 - 44			
24	450	600	24 - 48	Propane	2500 Btu/cf	11" - 15" W.C.
321	650	800	26 - 52	Butane	3200 Btu/cf	11" - 15" W.C.
322	850	1,000	28 - 56			
323	1,000	1,200	30 - 60	* Specify gas pressure on order so correctly sized orifice can be supplied.		
481	1,300	1,400	32 - 64			
482	1,600	1,700	34 - 68			
483	1,900	2,000	36 - 72			
484	2,200	2,300	38 - 76			
485	2,500	2,600	40 - 80			

CAPACITY TABLE NO. 2 - MEDIUM-PRESSURE SERIES									
for all gases - 1000 Btu/hr - 0.1 draft - 40% to 60% primary air									
Torch Size	gas pressures - PSIG								Approximate Flame Length in Inches
	1#	2#	3#	4#	5#	6#	8#	10#	
60	70	100	120	140	155	170	195	210	14 - 28
80	100	140	170	200	220	240	280	300	16 - 32
100	135	190	230	270	300	320	380	400	18 - 36
120	200	280	340	400	440	480	560	600	20 - 40
160	280	390	475	560	610	-	-	-	22 - 44
200	500	700	850	1,000	1,100	1,200	1,400	1,500	24 - 48
240	600	840	1,000	1,200	1,300	1,450	-	-	28 - 56
3210	900	1,250	1,500	1,800	2,000	2,150	2,500	2,700	30 - 60
3220	1,250	1,750	2,100	2,500	2,750	3,000	-	-	34 - 68
3230	1,400	1,950	2,400	2,800	3,000	-	-	-	36 - 72
4810	1,750	2,400	2,900	3,500	3,850	4,200	4,900	5,250	40 - 80
4820	2,100	2,900	3,500	4,200	4,600	5,000	5,800	6,300	44 - 88
4830	2,500	3,500	4,200	5,000	5,500	6,000	7,000	-	48 - 96
4840	2,900	4,000	4,900	5,800	6,300	7,000	-	-	52 - 104
4850	3,000	4,200	5,100	6,000	6,600	-	-	-	56 - 112

CAPACITY TABLE NO. 3 - HI-PRESSURE SERIES						
Torch Size	*Mfg. Gas - 450/600 Btu @ 10# PSIG		*Propane - 2500 Btu/cf @ 25# PSIG		Approximate Flame Length Inches	
	*Mixed Gas - 650/850 Btu @ 15# PSIG		*Butane - 3200 Btu/cf @ 25# PSIG			
	*Natural Gas - 900/1200 Btu @ 25# PSIG					
	Draft - 0.1" W.C. or more		Draft - 0.1" W.C. or more			
	Sharp Flame	Soft Flame	Sharp Flame	Soft Flame	Sharp	Soft
	90% Primary Air	60% Primary Air	90% Primary Air	60% Primary Air		
600	38,000	57,000	25,000	37,000	8	16
800	66,000	94,000	38,000	57,000	10	18
1000	150,000	210,000	90,000	133,000	12	20
1200	240,000	340,000	144,000	215,000	14	24
1600	400,000	595,000	250,000	370,000	16	28
2000	535,000	800,000	340,000	500,000	18	32
2400	700,000	1,040,000	435,000	640,000	20	36
3200	1,200,000	1,760,000	740,000	1,100,000	22	40
4800	2,200,000	3,300,000	1,440,000	2,100,000	26	48

\*Btu/hr

# DRAFT MULTIPLIER TABLES

## USE WITH CAPACITY TABLE NO. 1

LOW-PRESSURE SERIES ONLY					
Draft - Inches W.C.	0.01	0.05	0.10	0.20	0.30
Capacity Multiplier	0.40	0.75	1.00	1.40	1.70
Draft - Inches W.C.	0.40	0.50	0.60	0.80	1.00
Capacity Multiplier	2.00	2.20	2.40	2.80	3.20

Allow one cubic foot of combustion space for each 20,000 to 40,000 Btu/hr capacity. Allow forward flame travel at least 1-1/2 times flame length.

## USE WITH CAPACITY TABLE NO. 2

MEDIUM-PRESSURE SERIES ONLY					
Draft - Inches W.C.	0.01	0.05	0.10	0.20	0.30
Capacity Multiplier	0.60	0.90	1.00	1.10	1.20
Draft - Inches W.C.	0.40	0.50	0.60	0.80	1.00
Capacity Multiplier	1.30	1.35	1.40	1.60	1.70

Medium-Pressure Series Torch will be furnished with orifice, to pass capacity indicated by gas pressure, kind of gas, and available draft.  
Allow one Cubic Foot of combustion space for each 40,000 to 50,000 Btu/hr capacity. Allow forward flame travel at least 1-1/2 times flame length.

## USE WITH CAPACITY TABLE NO. 3

HI-PRESSURE SERIES								
Gas Pressure Listed	For pressures other than listed							
	5#	10#	15#	20#	25#	30#	35#	40#
10#	0.709	1.000	1.220	1.410	1.580	1.730	1.870	2.000
15#	0.578	0.815	1.000	1.150	1.260	1.410	1.530	1.630
25#	0.447	0.631	0.775	0.895	1.000	1.090	1.180	1.260

NOTE: Allow one Cubic Foot of combustion space for each 60,000 to 100,000 Btu/hr. Allow forward flame travel of at least 2 times sharp flame length.

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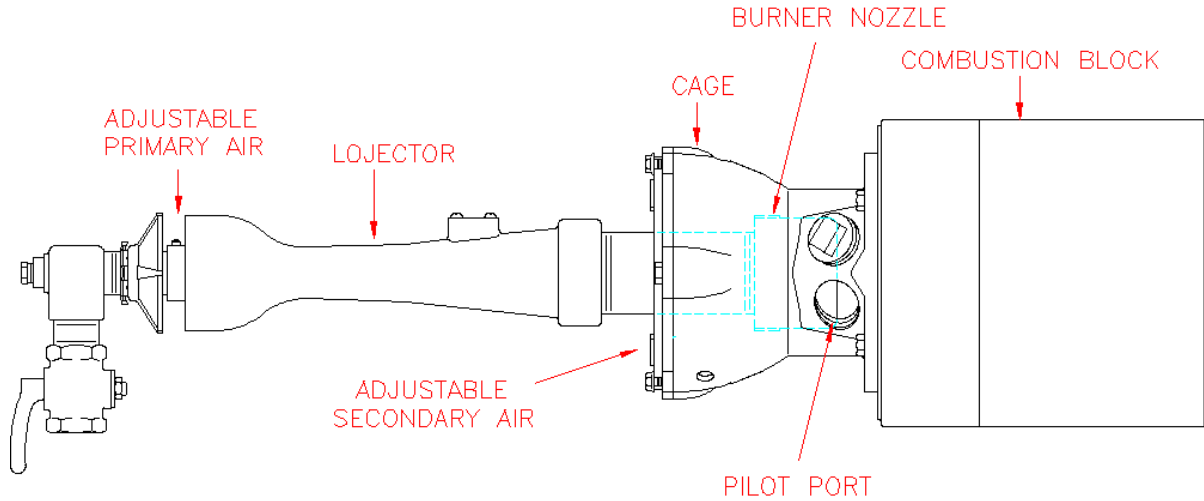
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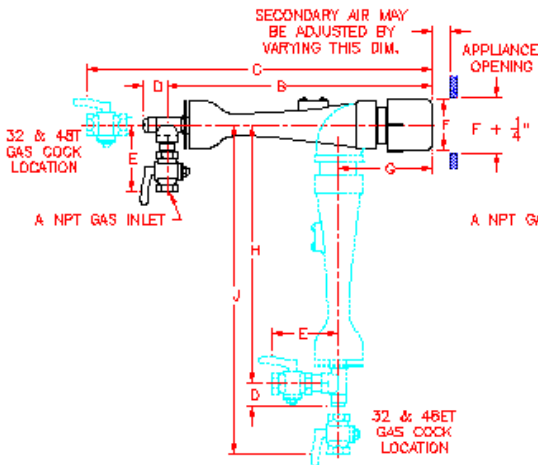
# DIMENSIONS

## LOW AND MEDIUM PRESSURE

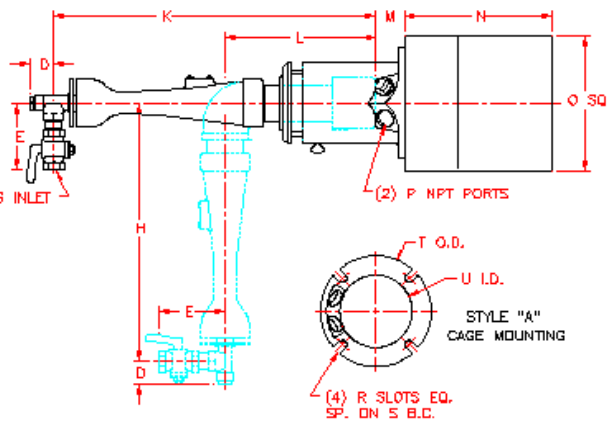
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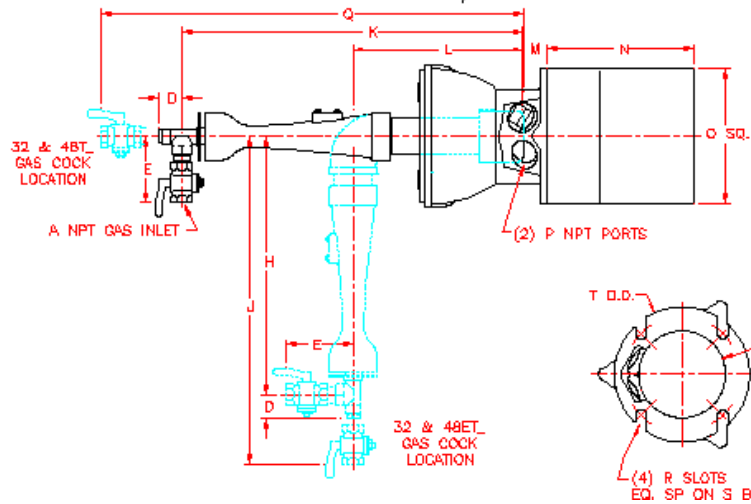
MODEL T & ET



MODEL TA & ETA W/CAGE ONLY  
MODEL RTA & RETA W/CAGE & BLOCK



MODEL TB & ETB W/CAGE ONLY  
MODEL RTB & RETB W/CAGE & BLOCK



# DIMENSIONS

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PAGE NO. 7

## ALL LOW & MEDIUM PRESSURE TORCHES

### 4800 HI-PRESSURE TORCH

All dimensions in inches  
All dimensions  $\pm 1/8$ " unless noted

#### T & ET SERIES LOW & MEDIUM PRESSURE

Torch Size	A NPT	B $\pm 1/4$	*C $\pm 1/4$	D	*E	F DIA	G	H $\pm 1/4$	*J $\pm 1/4$
6	3/8	10	-	2	2-1/2	1-3/4	3-3/4	9-1/2	-
8	3/8	10	-	2	2-1/2	1-7/8	3-7/8	9-1/2	-
10	1/2	13-1/2	-	1-1/4	3-1/2	2-3/8	4-3/8	13-1/4	-
12	1/2	13-3/4	-	1-1/4	3-1/2	2-5/8	4-7/8	13-1/2	-
16 & 160	1	19	-	1-5/8	4-3/4	3-1/4	5-3/4	18-3/4	-
20 & 200	1	22	-	1-5/8	4-3/4	3-7/8	6-1/2	21-3/4	-
24 & 240	1	25	-	1-5/8	4-3/4	4-1/2	7-1/4	24-3/4	-
32_ & 32_0	1-1/4	-	37-1/2	-	-	5-7/8	9-1/2	-	37-1/2
48_ & 48_0	1-1/2	-	48	-	-	7-1/2	11-1/2	-	48-1/2
4800 **	1-1/2	-	49-1/2	-	-	8-1/4	12	-	49-1/2

#### TA & ETA, RTA & RETA SERIES ADDITIONS LOW & MEDIUM PRESSURE

Torch Size	K $\pm 1/4$	L	M MAX	N	O SQ	P NPT	R DIA	S B.C.	T O.D.	U I.D.
10	16-1/2	7-3/8	1-3/4	7-5/8	7	3/4	7/16	4-7/8	5-3/4	3-3/4
12	16-3/4	7-7/8	1-1/2	7-5/8	7	3/4	7/16	4-7/8	5-3/4	3-3/4

#### TB & ETB, RTB & RETB SERIES ADDITIONS LOW & MEDIUM PRESSURE

Torch Size	K $\pm 1/4$	L	M MAX	N	O SQ	P NPT	Q $\pm 1/4$	R DIA	S B.C.	T O.D.	U I.D.
12	17-3/4	9	2	7-5/8	7	1-1/4	-	9/16	6	7	4-1/2
16 & 160	22-12	9-1/4	1-7/8	9-5/8	9	1-1/4	-	9/16	6	7	4-1/2
20 & 200	28	12-5/8	4	11-5/8	11	1-1/4	-	9/16	7-5/8	8-5/8	6-1/8
24 & 240	31	13-1/4	3-1/4	11-5/8	11	1-1/4	-	9/16	7-5/8	8-5/8	6-1/8
32_ & 32_0	-	15	3-1/4	13-5/8	13	1-1/4	43	5/8	9-3/4	11-1/4	8-1/4
48_ & 48_0	-	18	2-1/4	13-1/4	18	1/2 / 1-3/8	54-1/2	5/8	18-1/2	15 SQ	13-3/4
4800 **	-	18-1/2	1-3/4	15-5/8	15	1-1/4	56	5/8	11-3/4	13	9-1/2

\* Add 1" for medium pressure series \*\* 4800 Hi pressure torch dimensions

### CATALOG NUMBER EXPLANATION

Torch catalog numbers give complete information on the unit desired, except the orifice size.

The complete catalog number includes the burner number (which automatically specifies the series) and the letters designating the exact assembly required in the following order:

- R - Indicates refractory block and holder.
- E - Indicates elbow between injector and nozzle.
- T - Indicates basic torch (nozzle, nipple, injector and cock or valve).
- A - Indicates A style cage (one piece).
- B - Indicates B style cage (two piece).

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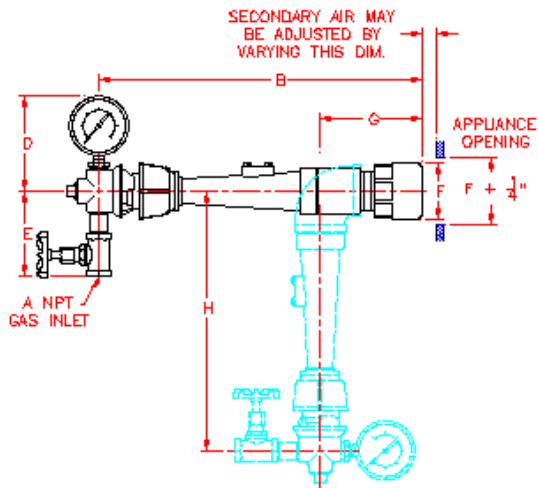
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# DIMENSIONS

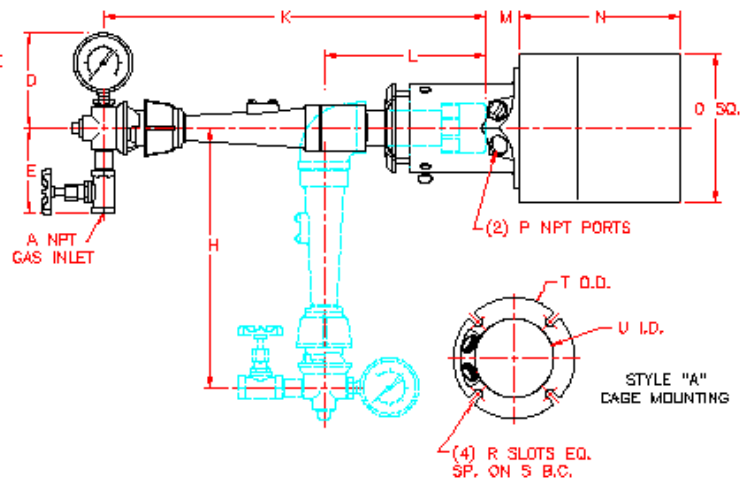
## HI-PRESSURE TORCHES

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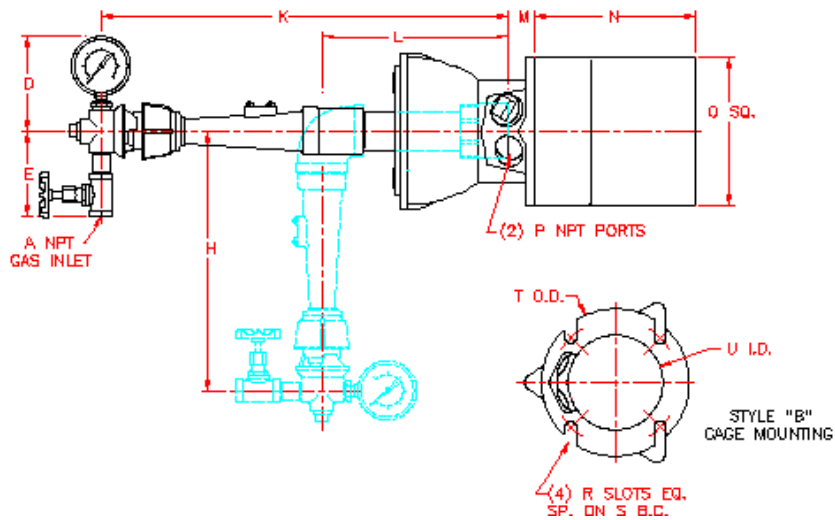
MODEL T & ET



MODEL TA & ETA W/CAGE ONLY  
MODEL RTA & RETA W/CAGE & BLOCK



MODEL TB & ETB W/CAGE ONLY  
MODEL RTB & RETB W/CAGE & BLOCK



# DIMENSIONS

## HI-PRESSURE TORCHES

BULLETIN 3215, 3216, 3217  
PAGE NO.9

All dimensions in inches  
All dimensions  $\pm 1/8$ " unless noted

### T & ET SERIES

Torch Size	A NPT	B $\pm 1/4$	D	E	F DIA	G	H $\pm 1/4$
600	3/8	8-1/2	4-1/4	3-3/8	1-5/8	3-3/4	6-3/4
800	3/8	11-1/2	4-1/4	3-3/8	1-7/8	3-7/8	8-5/8
1000	1/2	14-1/8	4-1/2	4-1/8	2-3/8	4-1/2	11-1/8
1200	1/2	15-3/8	4-1/2	4-1/8	2-5/8	4-3/4	12-1/4
1600	3/4	19-1/4	5	4-3/4	3-1/4	5-5/8	16
2000	3/4	23-1/2	5	4-3/4	3-7/8	6-1/2	19-1/8
2400	1	27-3/4	5-1/8	5-3/4	4-1/2	7-1/4	23-3/8
3200	1-1/4	35-1/8	5-3/8	6-5/8	5-7/8	9-5/8	29-3/4
4800	See Low & Medium Pressure Dimensions						

### TA & ETA, RTA & RETA SERIES

Torch Size	K $\pm 1/4$	L	M MAX	N	O SQ	P NPT	R DIA	S B.C.	T O.D.	U I.D.
1000	17-1/4	7-1/2	1-5/8	7-5/8	7	3/4	7/16	4-7/8	5-3/4	3-3/4

### TB & ETB, RTB & RETB SERIES

Torch Size	K $\pm 1/4$	L	M MAX	N	O SQ	P NPT	R DIA	S B.C.	T O.D.	U I.D.
1200	16-3/8	8-7/8	2	7-5/8	7	1-1/4	9/16	6	7	4-1/2
1600	22-3/4	9-1/4	1-7/8	7-5/8	7	1-1/4	9/16	6	7	4-1/2
2000	29-1/2	12-5/8	4	9-5/8	9	1-1/4	9/16	7-5/8	8-5/8	6-1/8
2400	33-3/4	13-1/4	3-1/4	9-5/8	9	1-1/4	9/16	7-5/8	8-5/8	6-1/8
3200	40-5/8	15-1/8	3-1/8	11-5/8	11	1-1/4	5/8	9-3/4	11-1/4	8-1/4
4800	See Low & Medium Pressure Dimensions									

## ORDERING INFORMATION

Orders for gas torch assemblies should show:

1. Quantity and catalog number.
2. Kind of gas and Btu/cf.
3. Gas pressure.
4. Btu each torch is to handle.
5. Draft conditions.

Examples:

10-#24 ETB -Nat. Gas (1050 Btu/cf)-6" W.C.  
500,000 Btu/hr each - 0.1" - W.C. Draft.

5-#200 RTBP-Mixed Gas (800 Btu/cf)-5 PSI.  
1,320,000 Btu/hr each - 0.3" W.C. Draft.

5-#1600 ET -Propane (2500 Btu/cf)-25 PSI.  
250,000 Btu/hr each - Balanced Draft.

**CAUTION:** Operation of combustion equipment can be hazardous resulting in bodily injury or equipment damage. Each burner should be supervised by a combustion safeguard and only qualified personnel should install, make system adjustments and perform any required service.



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Combustion Equipment & Controls for Industry  
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# LOW-PRESSURE TORCH BURNER SELECTION DATA

## TYPE T, ET, TA, ETA, TB, ETB, RTA, RETA, RTB & RETB

\*Capacity @ draft

		3"		4"		5"		10"		10"	
		MFD. 450-600		MIXED 700-850		NAT. 900-1200		PROPANE 2500		BUTANE 3200	
		0.0"	0.2"	0.0"	0.2"	0.0"	0.2"	0.0"	0.2"	0.0"	0.2"
#6	BTU	35000	83000	30000	61000	22000	50000	16000	40000	16000	40000
	CFH	66	157	38	76	22	50	6.4	16	5	12.5
	ORIFICE	#27	#1	#37	#25	#45	#31	#56	#48	#57	#53
#8	BTU	57000	120000	44000	96000	38000	72000	25000	62000	25000	62000
	CFH	108	226	55	120	38	72	10	25	7.8	19.4
	ORIFICE	#12	"I"	#30	#10	#38	#28	#53	#43	#54	#50
#10	BTU	82000	200000	74000	162000	55000	125000	40000	100000	40000	100000
	CFH	155	378	93	202	55	125	16	40	12.5	31
	ORIFICE	#1	11/32"	#19	1/4"	1/8"	#12	#49	#34	#50	#44
#12	BTU	105000	265000	96000	210000	70000	160000	52000	130000	52000	130000
	CFH	198	500	120	262	70	160	21	52	16	41
	ORIFICE	1/4"	25/64"	#10	9/32"	#28	7/32"	#45	#30	#46	#40
#16	BTU	165000	430000	150000	340000	110000	260000	87000	220000	87000	220000
	CFH	310	790	188	427	110	260	35	88	27	69
	ORIFICE	5/16"	33/64"	15/64"	23/64"	#16	"I"	#38	#19	#41	#22
#20	BTU	250000	630000	220000	500000	175000	380000	125000	310000	125000	310000
	CFH	460	1190	275	625	175	380	50	124	39	97
	ORIFICE	23/64"	41/64"	9/32"	7/16"	#2	21/64"	1/8"	#7	#31	#12
#240	BTU	375000	930000	340000	740000	250000	560000	185000	460000	185000	460000
	CFH	710	1760	425	925	250	560	74	184	58	144
	ORIFICE	15/32"	23/32"	23/64"	35/64"	17/64"	"X"	#24	"C"	#28	#1

### CAPACITY MULTIPLIER FOR DRAFTS OTHER THAN 0.0" & 0.2"

DRAFT - INCHES W.C.	0.05	0.1	0.2	0.3	0.4	0.5
MULTIPLIER	0.5	0.7	1.0	1.2	1.4	1.6

# LOW-PRESSURE TORCH BURNER SELECTION DATA

## TYPE T, ET, TA, ETA, TB, ETB, RTA, RETA, RTB & RETB

\*Capacity @ draft

		3"		4"		5"		10"		10"	
		MFD. 450-600		MIXED 700-850		NAT. 900-1200		PROPANE 2500		BUTANE 3200	
		0.0"	0.2"	0.0"	0.2"	0.0"	0.2"	0.0"	0.2"	0.0"	0.2"
#321	BTU	510000	125000	460000	1000000	340000	750000	250000	625000	250000	625000
	CFH	960	2360	575	1250	340	750	100	250	78	195
	ORIFICE	37/64"	59/64"	13/32"	39/64"	5/16"	29/64"	#16	9/32"	#19	17/64"
#322	BTU	650000	1600000	590000	1300000	430000	960000	320000	800000	320000	800000
	CFH	1230	3020	740	1620	430	960	128	320	100	250
	ORIFICE	21/32"	1-1/16"	15/32"	23/32"	"S"	35/64"	#7	"O"	#11	5/16"
#323	BTU	750000	1850000	670000	1500000	500000	1100000	375000	940000	375000	940000
	CFH	1420	3500	840	1880	500	1100	150	376	117	294
	ORIFICE	45/64"	1-1/8"	1/2"	25/32"	3/8"	37/64"	7/32"	11/32"	#5	21/64"
#481	BTU	850000	2100000	780000	1700000	570000	1300000	425000	1100000	425000	1100000
	CFH	1600	3960	975	2120	570	1300	170	440	133	344
	ORIFICE	3/4"	1-3/16"	9/16"	13/16"	"X"	5/8"	15/64"	3/8"	#2	23/64"
#482	BTU	1000000	2500000	930000	2000000	680000	1500000	500000	1300000	500000	1300000
	CFH	1890	4720	1160	2500	680	1500	200	520	157	407
	ORIFICE	13/16"	1-5/16"	5/8"	29/32"	7/16"	11/16"	1/4"	"Y"	"B"	25/64"
#483	BTU	1250000	3100000	1100000	2500000	830000	1850000	620000	1600000	620000	1600000
	CFH	2360	5850	1380	3130	830	1850	248	640	194	500
	ORIFICE	29/32"	1-15/32"	21/32"	1"	31/64"	3/4"	9/32"	29/64"	17/64"	27/64"
#484	BTU	1400000	3500000	1280000	2800000	930000	2100000	700000	1800000	700000	1800000
	CFH	2640	6600	1600	3500	930	2100	280	720	219	563
	ORIFICE	31/32"	1-9/16"	927680	1-1/16"	17/32"	13/16"	19/64"	15/32"	9/32"	29/64"
#485	BTU	1550000	3800000	1400000	3000000	1020000	2300000	760000	2000000	760000	2000000
	CFH	2920	7170	1750	3750	1020	2300	304	800	238	625
	ORIFICE	1-1/32"	1-5/8"	3/4"	1-3/32"	9/16"	27/32"	5/16"	1/2"	"L"	15/32"

### CAPACITY MULTIPLIER FOR DRAFTS OTHER THAN 0.0" & 0.2"

DRAFT - INCHES W.C.	0.05	0.1	0.2	0.3	0.4	0.5
MULTIPLIER	0.5	0.7	1.0	1.2	1.4	1.6

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