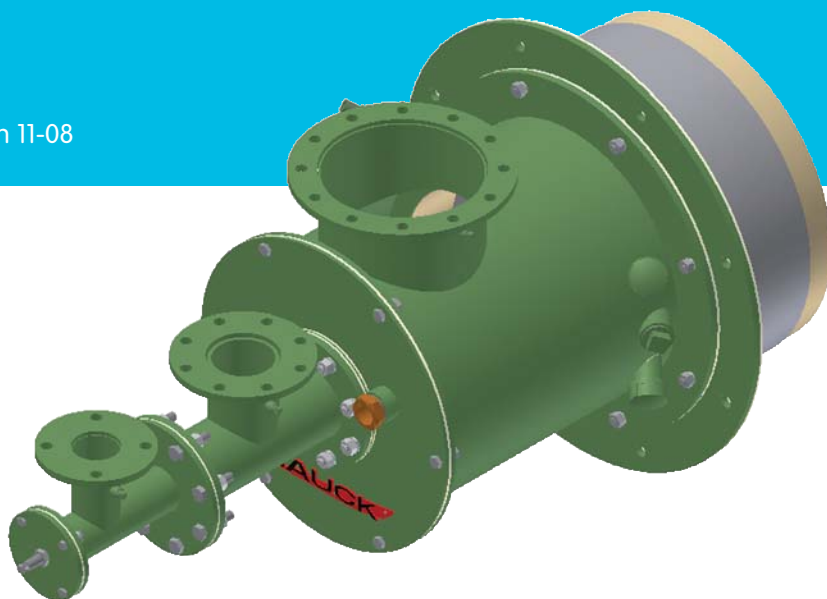




BBC

Multi-fuel Combination Beta Burner

BBC-1
Edition 11-08



Hauck, a product brand
of the Elster Group



- Designed for low pressure air operation
- Rugged heavy gauge steel construction
- Converging tile provides higher velocity flames for higher convective heat transfer
- Diverging tile permits ignition from hot furnace
- UV flame supervision
- Preheated air versions up to 900°F (480°C)
- Custom packaged versions available with air and fuel manifolds
- Broad range of air/fuel ratios
- Available with refractory or alloy tile
- Compressed air atomization option for heavy fuel oils
- Liquid propane option available



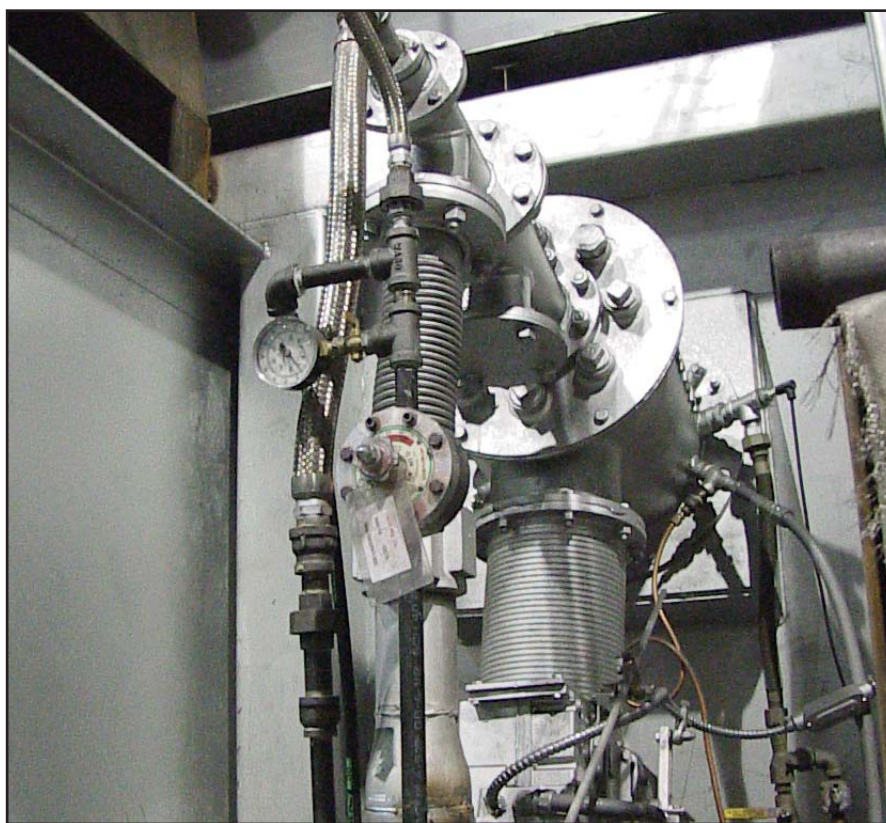
Hauck's BBC Multi-fuel Combination Beta Burner is designed for exceptionally long life in continuous or intermittent operation in furnace, kiln and dryer environments. Its low pressure air operation makes it ideal for a wide range of applications including steel reheat and aluminum furnaces, rotary kilns, gypsum kettles, air heaters and incinerators. The BBC is well suited for applications operating under backpressure. Burner capacities range from 2.5 million to more than 100 million Btu/hr (730 to 29,300 kW). The burner is designed to operate with all types of industrial fuel oils, including heavy oils, and with any clean industrial fuel gas with a higher heating value of 500 Btu/scf (19.7 MJ/nm³) or greater with ambient or preheated combustion air. The flame shapes of the BBC are well defined throughout the burner's operating range.

Available with stainless steel or refractory baffle with application temperatures of 2000°F (1090°C) and 2800°F (1540°C) respectively. The 1100 and 2100 series can operate with air preheat temperatures up to 600°F (315°C). The 3100 series can operate with air preheat temperatures up to 900°F (480°C).

On ratio turndown varies depending on fuel type, and higher thermal turndown is possible with excess air firing. Nominal burner air supply pressure is 8 osig (34.5 mbar). 16 osig primary air pressure (69 mbar) is recommended for No. 2 oil. Nominal natural gas supply pressure is 4 osig (17.25 mbar).

The burner can be supplied with a self supporting tile for soft wall applications. For hard refractory installations, a self supporting tile or a mandrel for pouring on a burner port can be supplied. Consult Hauck for mounting options.

All burners are ignited by a spark ignited gas pilot and utilize UV flame supervision. Diverging tile designs can be ignited from a hot furnace.



**Aluminum Furnace with Beta Burner
Firing Heavy Oil**

For additional information on this product, visit our website at:

www.hauckburner.com

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Hauck, a product brand
of the Elster Group



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BBC BETA BURNER COMBINATION SERIES

NATURAL GAS OPERATION									
		Model Number							
Specifications - HIGH FIRE		_04	_06	_08	_10	_12	_14	_18	_24
Max Input @ 10% Excess Air	(MMBtu/hr)	3.6	6.7	9.7	14.6	21.4	29.5	47.5	91.6
Max Excess Air	(%)	320	320	400	500	560	600	700	600
Flame Length @ Max Input	(ft)	7	8	9	13	14	15	18	25
LOW FIRE									
Input @ 10% Excess Air	(MMBtu/hr)	0.3	0.9	1.6	2.1	3.2	4.7	6.8	11.6
Max Excess Air	(%)	150	210	350	260	250	80	270	100
LOW PRESSURE OIL OPERATION									
		Model Number							
Specifications - HIGH FIRE		_04	_06	_08	_10	_12	_14	_18	_24
Max Input @ 20% Excess Air	(MMBtu/hr)	3.0	4.5	8.3	12.3	18.1	25.3	39.8	76.1
Max Excess Air	(%)	270	690	400	1000	500	550	350	1000
Flame Length @ Max Input	(ft)	8	7	10	10	11	16	20	18
LOW FIRE									
Input @ 20% Excess Air	(MMBtu/hr)	0.5	1.2	2.1	2.6	4.0	6.1	8.2	13.5
Max Excess Air	(%)	70	20	500	700	400	160	80	200
HIGH PRESSURE OIL OPERATION									
		Model Number							
Specifications - HIGH FIRE		_04	_06	_08	_10	_12	_14	_18	_24
Max Input @ 20% Excess Air	(MMBtu/hr)	3.0	5.2	10.1	16.5	20.8	27.0	40.0	72.7
Max Excess Air	(%)	70	160	120	400	400	600	350	750
Flame Length @ Max Input	(ft)	5	6	10	11	11	12	14	16
LOW FIRE									
Input @ 20% Excess Air	(MMBtu/hr)	0.5	1.7	3.0	4.9	6.1	6.5	7.3	14.1
Max Excess Air	(%)	90	55	100	100	100	150	220	500

Notes:

- All burners equipped with converging tile and refractory baffle plate.
- Btu input based on HHV's of natural gas with 1034 Btu/ft³ and 9.74:1 air/fuel ratio No. 2 oil with 138,000 Btu/gallon and 1380:1 air/fuel ratio and No. 6 oil with 151,000 Btu/gallon, 1510:1 air/fuel ratio.
- Flame lengths measured from the end of converging tile; for a diverging tile (available from size _ _06 to _ _18), add 18% to the converging tile flame length.

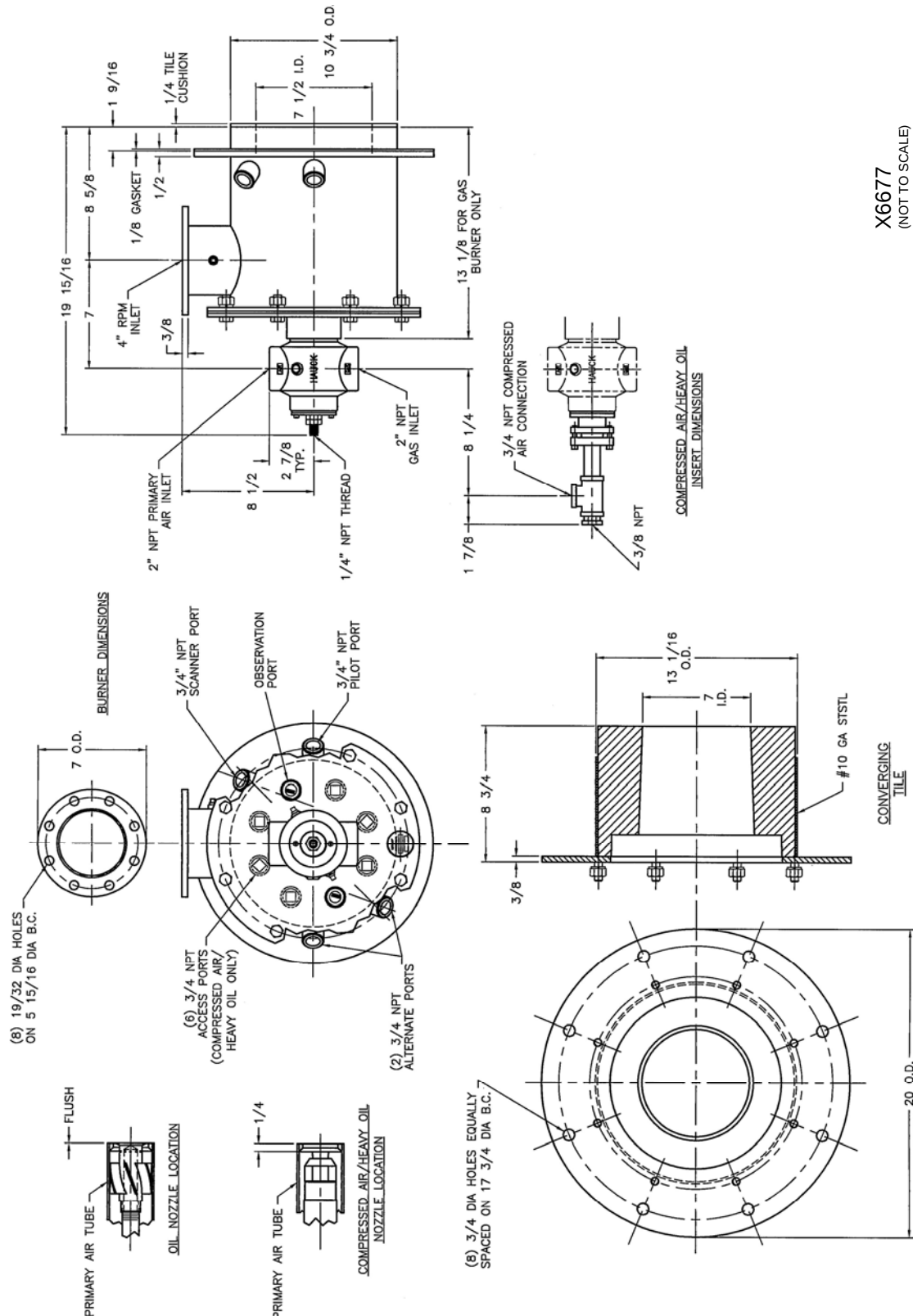
In accordance with Hauck's commitment to Total Quality Improvement, Hauck reserves the right to change the specifications of products without prior notice.

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DIMENSIONS

BBC BETA BURNERS

BBC_104

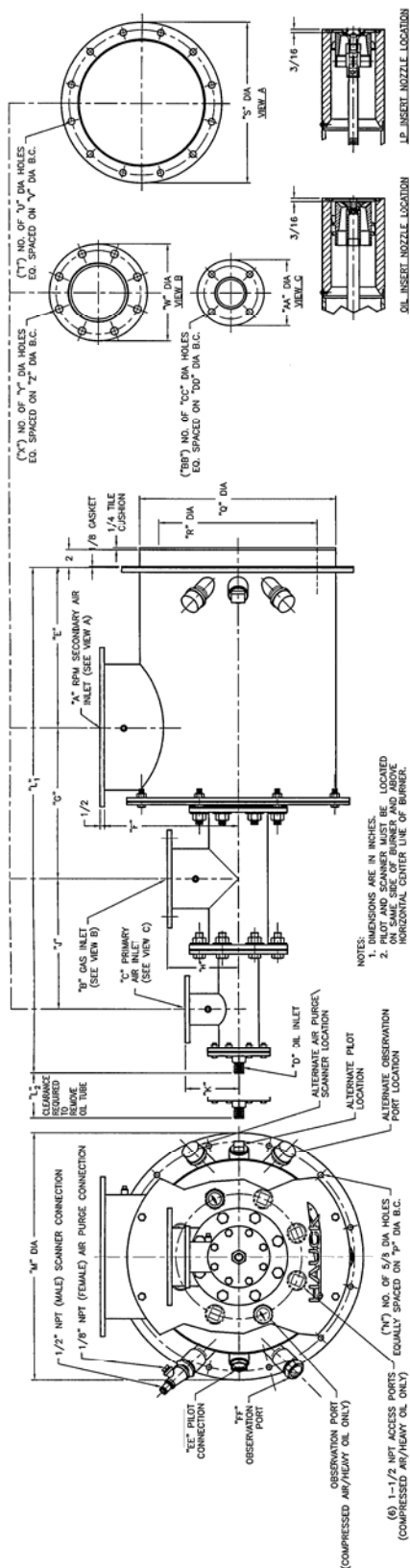


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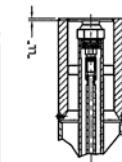
In accordance with Hauck's commitment to Total Quality Improvement, Hauck reserves the right to change the specifications of products without prior notice.

BBC BETA BURNERS

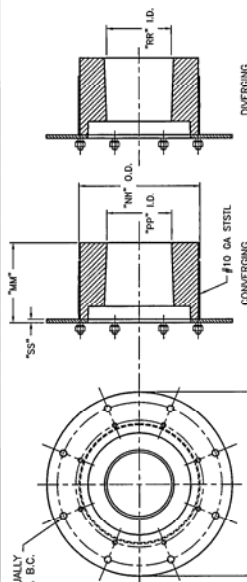
BBC_106 THROUGH _118



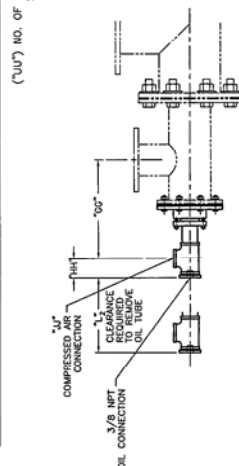
BBC DIMENSIONS																																		
MODEL NO.	A	B	C	D	E	F	G	H	J	K	L ₁	L ₂	M	N	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF			
-106	6 RPM	3 ANSI	3/8 NPT	12-1/2	12-3/8	12-5/8	6-1/2	11	6	42-1/2	40-1/2	22	8	20	16	9-13/16	5	8	19/32	7-7/8	10	7-1/2	4	3/4	6	7-1/2	4	3/4	6	1-1/4 NPS	3/4 NPS			
-108	8 RPM	3 ANSI	3/8 NPT	12-1/2	12-3/8	12-5/8	6-1/2	11	6	42-1/2	40-1/2	22	8	20	16	9-13/16	11	8	9/16	10	10	7-1/2	4	3/4	6	7-1/2	4	3/4	6	1-1/4 NPS	3/4 NPS			
-110	10 RPM	4 ANSI	3/8 NPT	15	13-1/2	13-1/2	6-1/2	12-1/2	6	47-5/16	44-13/16	24	8	22	18	13-3/4	14	12	3/4	12-1/4	9	8	3/4	7-1/2	4	3/4	6	7-1/2	4	3/4	6	1-1/2 NPS		
-112	12 RPM	4 ANSI	3/8 NPT	17	14-1/2	14-1/2	6-1/2	12-1/2	6	50-5/16	47-13/16	26	8	24	20	15-3/4	16	12	3/4	14-1/4	9	8	3/4	7-1/2	4	3/4	6	7-1/2	4	3/4	6	1-1/2 NPS		
-114	14 RPM	6 ANSI	3/4 NPT	18	15-1/2	17	8	14-5/8	6	58	6	58	32	12	26	22	17-3/4	18	12	3/4	16-1/4	11	8	7/8	9-1/2	7-1/2	4	3/4	6	7-1/2	4	3/4	6	1-1/2 NPS
-118	18 RPM	6 ANSI	3/4 NPT	20	17-1/2	19	8	14-5/8	14	60-13/16	57-3/4	32	12	30	26	21-3/4	23-1/4	16	3/4	21-3/4	11	8	7/8	9-1/2	7-1/2	4	3/4	6	7-1/2	4	3/4	6	1-1/2 NPS	



MODEL NO.	LL
2106, 3106	1/32
2108, 3108	1/32
2110, 3110	1/8
2112, 3112	0
2114, 3114	0
2116, 3116	1/4



MODEL NO.	MM	NN	PP	RR	SS	TT	UU	VV	WW
-106	8-3/4	18-5/16	7-13/16	10-1/2	1/2	28	8	7/8	25
-108	8-3/4	18-5/16	7-13/16	10-1/2	1/2	28	8	7/8	25
-110	10-5/8	22-5/16	11-3/4	14-5/8	1/2	30	8	7/8	27
-112	12-1/2	24-5/16	13-3/4	16-3/4	1/2	32	12	7/8	29
-114	14-7/8	26-5/16	15-3/4	18-1/8	1/2	34	12	7/8	31
-118	18-5/8	30-5/16	19-3/4	24	1/2	36	12	7/8	35



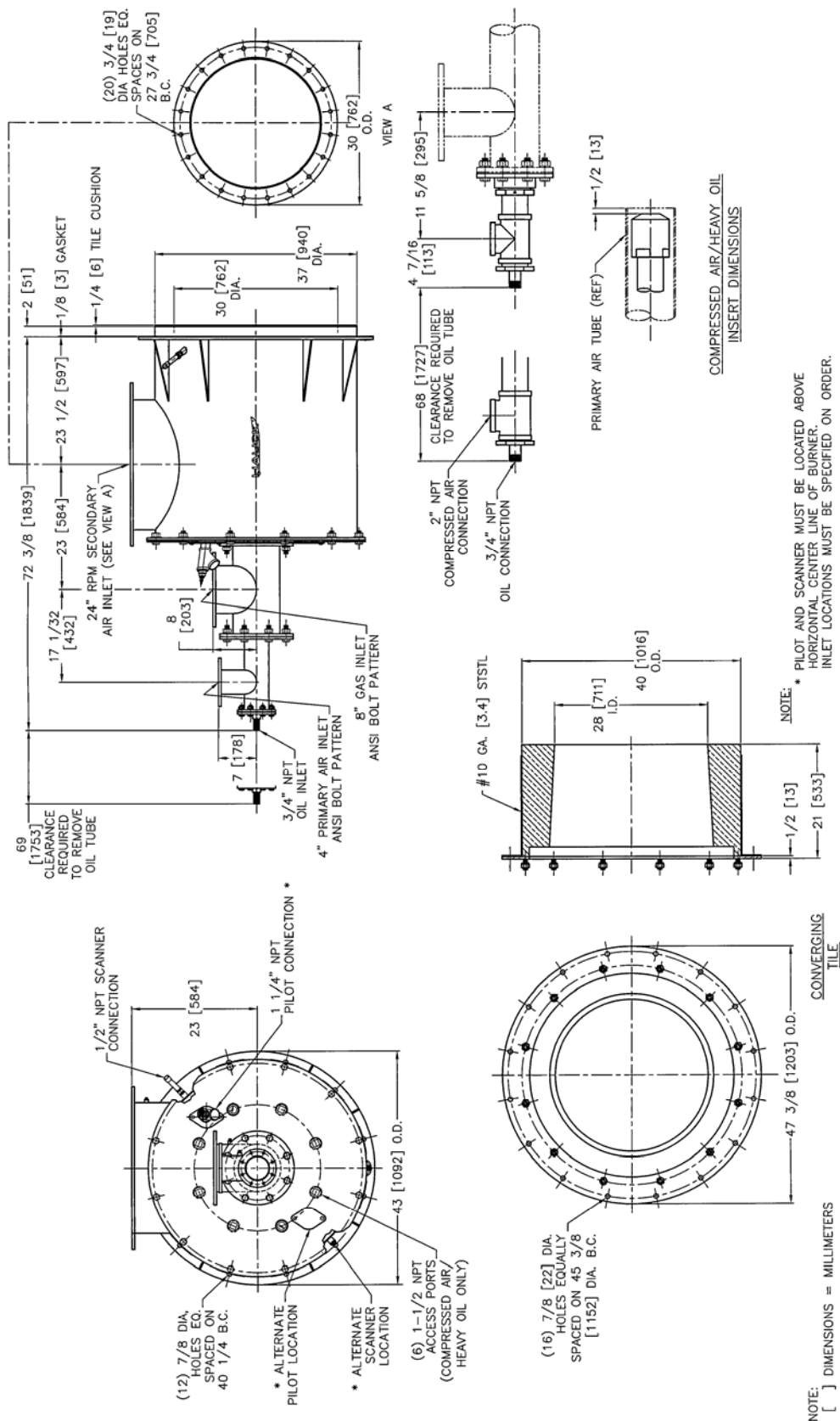
MODEL NO.	GG	HH	JJ
2106, 3106	8-1/16	1-7/8	1 NPT
2108, 3108	8-13/16	1-7/8	1 NPT
2110, 3110	9-3/8	1-7/8	1 NPT
2112, 3112	10-7/8	2-1/8	1-1/4 NPT
2114, 3114	11-11/16	2-1/8	1-1/4 NPT
2116, 3116	12-7/8	2-1/2	1-1/2 NPT

Y4115
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(See Reverse Side For Metric Dimensions)



BBC_124



Y5527
(NOT TO SCALE)



SUPPLEMENTAL DATA

BBC BETA BURNER COMBINATION SERIES BBC-2104/3104

Natural Gas

Secondary Air		Primary Air		Total Air Flow (scfh)	Natural Gas		Million Btu/hr (with 10% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)		Inlet Pressure ("wc)	Flow (scfh)		Length (ft)	Diameter (ft)	
27.7	32,900	6.9	1,200	34,100	0.8	3,500	3.6	6.5	2.0	320
20.8	28,500	6.9	1,200	29,700	0.6	3,000	3.1	5.5	1.5	300
13.8	23,200	6.9	1,200	24,400	0.4	2,500	2.6	5.0	1.5	340
6.9	16,200	6.9	1,200	17,400	0.2	1,800	1.9	3.0	1.0	200
1.7	8,100	6.9	1,200	9,300	0.1	1,000	1.0	2.7	1.0	150
1.0	6,200	6.9	1,200	7,400	0.04	800	0.8	2.5	1.0	150
0.2	2,200	6.9	1,200	3,400	0.01	300	0.3	2.5	0.7	150

No. 2 Fuel Oil

Secondary Air		Primary Air		Total Air Flow (scfh)	No. 2 Fuel Oil Flow (gph)	Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)				Length (ft)	Diameter (ft)	
27.7	32,900	27.7	2,400	35,300	25.7	3.5	8.0	2.0	270
20.8	28,500	27.7	2,400	30,900	22.5	3.0	6.5	2.0	250
13.8	23,200	27.7	2,400	25,600	18.7	2.6	5.5	2.0	250
6.9	16,200	27.7	2,400	18,600	13.6	2.2	5.5	1.5	200
1.7	8,100	27.7	2,400	10,500	7.7	1.6	4.5	1.5	100
1.0	6,200	27.7	2,400	8,600	6.3	0.9	4.0	1.0	70
0.2	2,200	27.7	2,400	4,600	3.4	0.4	3.5	0.8	70

No. 6 Heavy Oil

Secondary Air		Primary Air		Atomizing Air			Total Air Flow (scfh)	Fuel			Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)	Upstream Pressure (psi)	Nozzle Pressure (psi)	Flow (scfh)		Microvalve Inlet Pressure (psi)	Nozzle Pressure (psi)	Flow (gph)		Length (ft)	Diameter (ft)	
27.7	34,210	4.0	920	105	62	330	35,460	68	64	20.0	3.0	4.5	1.5	70
13.8	24,710	4.0	920	105	61	330	25,960	68	62	14.6	2.2	4.0	1.5	180
6.9	18,650	4.0	920	105	54	330	19,900	70	54	11.2	1.7	3.5	1.0	260
1.7	6,470	4.0	920	105	36	300	7,690	72	36	4.3	0.7	2.5	0.5	140
0.4	4,580	4.0	920	105	34	300	5,800	72	34	3.3	0.5	1.5	0.5	90

Notes:

- Air Flows are at 100°F and sea level.
- All pressures are static measurement at their respective pressure tap.
- All burners equipped with converging tile and refractory baffle plate.
- Btu input based on HHV's of natural gas with 1034 Btu/ft³, and 9.74:1 air/fuel ratio No. 2 oil with 138,000 Btu/gallon, and 1380:1 air/fuel ratio and No. 6 oil with 151,000 Btu/gallon, 1510:1 air/fuel ratio.
- Flame lengths measured from the end of converging tile; for a diverging tile (available from size __06 to __18), add 18% to the flame length.

(OTHER)

In accordance with Hauck's commitment to Total Quality Improvement, Hauck reserves the right to change the specifications of products without prior notice.



SUPPLEMENTAL DATA

BBC BETA BURNER COMBINATION SERIES BBC-2106/3106

Natural Gas

Secondary Air		Primary Air		Total Air Flow (scfh)	Natural Gas		Million Btu/hr (with 10% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)		Inlet Pressure ("wc)	Flow (scfh)		Length (ft)	Diameter (ft)	
27.7	66,100	6.9	3,600	69,700	7.3	6,500	6.7	8.0	2.2	320
20.8	56,800	6.9	3,600	60,400	5.4	5,700	5.9	7.5	2.2	250
13.8	46,000	6.9	3,600	49,600	3.6	4,700	4.9	7.0	2.2	640
6.9	32,400	6.9	3,600	36,000	1.7	3,400	3.5	7.0	2.2	720
1.7	15,600	6.9	3,600	19,200	0.4	1,800	1.9	6.5	2.0	440
1.0	12,000	6.9	3,600	15,600	0.2	1,460	1.5	5.5	1.5	240
0.2	5,600	6.9	3,600	9,200	0.04	860	0.9	3.0	0.7	210

No. 2 Fuel Oil

Secondary Air		Primary Air		Total Air Flow (scfh)	No. 2 Fuel Oil Flow (gph)	Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)				Length (ft)	Diameter (ft)	
20.8	57,600	24.2	6,200	63,800	39.0	4.5	7.0	2.0	690
13.8	46,600	24.2	6,200	52,800	32.5	3.8	7.0	1.7	550
6.9	32,900	24.2	6,200	39,100	24.0	2.8	6.0	1.6	390
1.7	16,600	24.2	6,300	22,900	14.0	1.6	4.5	1.5	190
1.0	13,000	24.2	6,300	19,300	11.9	1.3	3.5	1.1	150
0.2	7,400	24.2	6,300	13,700	8.4	1.0	2.5	1.0	20

No. 6 Heavy Oil

Secondary Air		Primary Air		Atomizing Air			Total Air Flow (scfh)	Fuel			Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)	Upstream Pressure (psi)	Nozzle Pressure (psi)	Flow (scfh)		Microvalve Inlet Pressure (psi)	Nozzle Pressure (psi)	Flow (gph)		Length (ft)	Diameter (ft)	
20.8	53,265	3.6	8,020	96	48	750	62,035	75	50	34.2	5.2	6.0	1.5	160
13.8	43,635	4.0	8,035	96	42	700	52,370	75	46	28.8	4.4	5.0	1.5	120
6.9	31,750	4.3	8,050	96	37	665	40,465	75	40	22.2	3.5	4.0	1.5	110
1.7	16,165	4.7	8,060	96	26	620	24,845	75	28	13.8	2.1	3.0	1.0	80
1.0	12,220	4.8	8,060	96	23	620	20,900	75	25	11.4	1.7	3.0	1.0	55

Notes:

- Air Flows are at 100°F and sea level.
- All pressures are static measurement at their respective pressure tap.
- All burners equipped with converging tile and refractory baffle plate.
- Btu input based on HHV's of natural gas with 1034 Btu/ft³, and 9.74:1 air/fuel ratio No. 2 oil with 138,000 Btu/gallon, and 1380:1 air/fuel ratio and No. 6 oil with 151,000 Btu/gallon, 1510:1 air/fuel ratio.
- Flame lengths measured from the end of converging tile; for a diverging tile (available from size __06 to __18), add 18% to the flame length.

In accordance with Hauck's commitment to Total Quality Improvement, Hauck reserves the right to change the specifications of products without prior notice.

(OVER)



SUPPLEMENTAL DATA

BBC BETA BURNER COMBINATION SERIES BBC-2108/3108

Natural Gas

Secondary Air		Primary Air		Total Air Flow (scfh)	Natural Gas		Million Btu/hr (with 10% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)		Inlet Pressure ("wc)	Flow (scfh)		Length (ft)	Diameter (ft)	
13.8	88,000	6.9	5,500	93,500	6.8	9,350	9.7	9.0	3.5	400
6.9	62,000	6.9	5,500	67,500	3.5	6,750	7.0	7.0	2.5	450
1.7	31,000	6.9	5,500	36,500	1.0	3,650	3.8	5.5	2.5	270
1.0	23,800	6.9	5,500	29,300	0.7	2,930	3.0	5.0	2.5	270
0.2	9,800	6.9	5,500	15,300	0.2	1,530	1.6	4.0	2.0	350

No. 2 Fuel Oil

Secondary Air		Primary Air		Total Air Flow (scfh)	No. 2 Fuel Oil Flow (gph)	Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)				Length (ft)	Diameter (ft)	
13.8	88,000	24.2	11,000	99,000	72.2	8.3	10.0	3.5	400
6.9	62,000	24.2	11,000	73,000	53.2	6.1	10.0	3.0	600
1.7	31,000	24.2	11,000	42,000	30.6	3.5	9.0	3.0	440
1.0	23,800	24.2	11,000	34,800	25.4	2.9	8.0	3.0	440
0.2	9,800	24.2	11,000	20,800	15.2	1.7	6.0	2.5	500

No. 6 Heavy Oil

Secondary Air		Primary Air		Atomizing Air			Total Air Flow (scfh)	Fuel			Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)	Upstream Pressure (psi)	Nozzle Pressure (psi)	Flow (scfh)		Microvalve Inlet Pressure (psi)	Nozzle Pressure (psi)	Flow (gph)		Length (ft)	Diameter (ft)	
20.8	112,612	2.7	7,425	90	58	1,142	121,180	90	60	66.6	10.1	10.0	2.0	120
13.8	91,248	2.7	7,627	90	46	1,060	99,935	90	48	55.2	8.3	9.0	2.0	120
6.9	67,908	3.2	7,627	90	36	815	76,350	90	38	42.0	6.3	8.0	1.5	110
1.7	40,807	3.5	7,627	90	19	490	48,925	90	21	27.0	4.1	7.0	1.5	110
1.0	27,724	3.8	7,627	90	16	450	35,801	90	17	19.8	3.0	5.0	1.5	100

Notes:

- Air Flows are at 100°F and sea level.
- All pressures are static measurement at their respective pressure tap.
- All burners equipped with converging tile and refractory baffle plate.
- Btu input based on HHV's of natural gas with 1034 Btu/ft³, and 9.74:1 air/fuel ratio No. 2 oil with 138,000 Btu/gallon, and 1380:1 air/fuel ratio and No. 6 oil with 151,000 Btu/gallon, 1510:1 air/fuel ratio.
- Flame lengths measured from the end of converging tile; for a diverging tile (available from size __06 to __18), add 18% to the flame length.

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SUPPLEMENTAL DATA

BBC BETA BURNER COMBINATION SERIES BBC-2110/3110

Natural Gas

Secondary Air		Primary Air		Total Air Flow (scfh)	Natural Gas		Million Btu/hr (with 10% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)		Inlet Pressure ("wc)	Flow (scfh)		Length (ft)	Diameter (ft)	
13.8	136,000	6.9	5,500	141,500	8.3	14,150	14.6	13.0	5.0	500
6.9	96,000	6.9	5,500	101,500	4.3	10,150	10.5	11.0	4.2	400
1.7	48,000	6.9	5,500	53,500	1.2	5,350	5.5	9.0	4.2	260
1.0	36,800	6.9	5,500	42,300	0.7	4,230	4.4	7.0	4.0	260
0.2	15,200	6.9	5,500	20,700	0.2	2,070	2.1	5.0	3.5	260

No. 2 Fuel Oil

Secondary Air		Primary Air		Total Air Flow (scfh)	No. 2 Fuel Oil Flow (gph)	Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)				Length (ft)	Diameter (ft)	
13.8	136,000	24.2	11,000	147,000	107.2	12.3	10.0	3.5	1000
6.9	96,000	24.2	11,000	107,000	78.0	9.0	11.5	3.5	1000
1.7	48,000	24.2	11,000	59,000	43.0	5.0	10.5	3.0	700
1.0	36,800	24.2	11,000	47,800	34.9	4.0	9.5	1.5	700
0.2	15,200	24.2	11,000	26,200	19.1	2.2	8.0	1.5	700

No. 6 Heavy Oil

Secondary Air		Primary Air		Atomizing Air			Total Air Flow (scfh)	Fuel			Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)	Upstream Pressure (psi)	Nozzle Pressure (psi)	Flow (scfh)		Microvalve Inlet Pressure (psi)	Nozzle Pressure (psi)	Flow (gph)		Length (ft)	Diameter (ft)	
20.8	188,600	2	7,656	90	76	1,958	198,300	110	86	109.0	16.5	11.0	3.0	400
13.8	155,400	2.3	7,737	90	72	1,877	165,000	110	80	91.2	13.8	11.0	3.0	300
6.9	115,400	3.2	7,817	90	60	1,795	125,000	110	64	69.0	10.4	10.0	2.5	250
1.7	63,400	4.2	7,975	90	34	1,387	72,800	110	38	40.2	6.1	10.0	2.0	150
1.0	49,800	4.5	8,053	90	32	1,142	59,000	110	32	32.4	4.9	6.0	2.0	100

Notes:

- Air Flows are at 100°F and sea level.
- All pressures are static measurement at their respective pressure tap.
- All burners equipped with converging tile and refractory baffle plate.
- Btu input based on HHV's of natural gas with 1034 Btu/ft³, and 9.74:1 air/fuel ratio No. 2 oil with 138,000 Btu/gallon, and 1380:1 air/fuel ratio and No. 6 oil with 151,000 Btu/gallon, 1510:1 air/fuel ratio.
- Flame lengths measured from the end of converging tile; for a diverging tile (available from size __06 to __18), add 18% to the flame length.

In accordance with Hauck's commitment to Total Quality Improvement, Hauck reserves the right to change the specifications of products without prior notice.

(OVER)



SUPPLEMENTAL DATA

BBC BETA BURNER COMBINATION SERIES BBC-2112/3112

Natural Gas

Secondary Air		Primary Air		Total Air Flow (scfh)	Natural Gas		Million Btu/hr (with 10% Excess Air)	Flame		Max % XSA
Pressure (wc)	Flow (scfh)	Pressure (wc)	Flow (scfh)		Inlet Pressure (wc)	Flow (scfh)		Length (ft)	Diameter (ft)	
13.8	198,000	6.9	8,800	206,800	3.0	20,680	21.4	14.0	5.0	560
6.9	140,000	6.9	8,800	148,800	1.6	14,880	15.4	11.0	2.5	480
1.7	70,000	6.9	8,800	78,800	0.4	7,880	8.1	8.0	2.5	250
1.0	53,700	6.9	8,800	62,500	0.3	6,250	6.5	6.0	2.5	250
0.2	22,000	6.9	8,800	30,800	0.1	3,080	3.2	3.0	2.5	250

No. 2 Fuel Oil

Secondary Air		Primary Air		Total Air Flow (scfh)	No. 2 Fuel Oil Flow (gph)	Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure (wc)	Flow (scfh)	Pressure (wc)	Flow (scfh)				Length (ft)	Diameter (ft)	
13.8	198,000	24.2	17,500	215,500	157.2	18.1	11.0	3.7	500
6.9	140,000	24.2	17,500	157,500	114.9	13.2	11.0	2.0	500
1.7	70,000	24.2	17,500	87,500	63.8	7.3	8.0	1.5	480
1.0	53,700	24.2	17,500	71,200	51.9	6.0	3.0	1.0	400
0.2	22,000	24.2	17,500	39,500	28.8	3.3	1.0	1.0	400

No. 6 Heavy Oil

Secondary Air		Primary Air		Atomizing Air			Total Air Flow (scfh)	Fuel			Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure (wc)	Flow (scfh)	Pressure (wc)	Flow (scfh)	Upstream Pressure (psi)	Nozzle Pressure (psi)	Flow (scfh)		Microvalve Inlet Pressure (psi)	Nozzle Pressure (psi)	Flow (gph)		Length (ft)	Diameter (ft)	
20.8	232,500	4.2	13,700	90	38	2,938	249,100	70	40	138.0	20.8	11.0	2.5	400
13.8	193,500	5.1	13,900	90	30	2,693	210,100	70	32	116.0	17.5	10.0	2.5	400
6.9	138,600	6.2	14,200	90	24	2,122	154,900	70	26	85.2	12.9	9.0	2.0	300
1.7	73,300	6.8	14,300	90	14	2,050	89,700	70	16	49.5	7.5	8.0	2.0	250
1.0	57,100	7	14,400	90	12	1,990	73,500	70	14	40.5	6.1	6.5	2.0	100

Notes:

- Air Flows are at 100°F and sea level.
- All pressures are static measurement at their respective pressure tap.
- All burners equipped with converging tile and refractory baffle plate.
- Btu input based on HHV's of natural gas with 1034 Btu/ft³, and 9.74:1 air/fuel ratio No. 2 oil with 138,000 Btu/gallon, and 1380:1 air/fuel ratio and No. 6 oil with 151,000 Btu/gallon, 1510:1 air/fuel ratio.
- Flame lengths measured from the end of converging tile; for a diverging tile (available from size __06 to __18), add 18% to the flame length.

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SUPPLEMENTAL DATA

BBC BETA BURNER COMBINATION SERIES BBC-2114/3114

Natural Gas

Secondary Air		Primary Air		Total Air Flow (scfh)	Natural Gas		Million Btu/hr (with 10% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)		Inlet Pressure ("wc)	Flow (scfh)		Length (ft)	Diameter (ft)	
13.8	270,000	6.9	15,500	285,500	0.6	28,550	29.5	15.0	5.0	600
6.9	190,000	6.9	15,500	205,500	0.3	20,550	21.2	13.0	3.0	500
1.7	95,000	6.9	15,500	110,500	0.09	11,050	11.4	7.0	2.2	170
1.0	72,900	6.9	15,500	88,400	0.06	8,840	9.1	6.0	2.0	80
0.2	30,000	6.9	15,500	45,500	0.02	4,550	4.7	5.0	2.0	80

No. 2 Fuel Oil

Secondary Air		Primary Air		Total Air Flow (scfh)	No. 2 Fuel Oil Flow (gph)	Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)				Length (ft)	Diameter (ft)	
13.8	270,000	24.2	31,000	301,000	219.5	25.3	16.0	4.0	550
6.9	190,000	24.2	31,000	221,000	161.2	18.5	13.0	4.0	500
1.7	95,000	24.2	31,000	126,000	91.9	10.6	10.0	2.5	320
1.0	72,900	24.2	31,000	103,900	75.8	8.7	8.0	2.0	160
0.2	30,000	24.2	31,000	61,000	44.5	5.1	5.0	1.2	160

No. 6 Heavy Oil

Secondary Air		Primary Air		Atomizing Air			Total Air Flow (scfh)	Fuel			Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)	Upstream Pressure (psi)	Nozzle Pressure (psi)	Flow (scfh)		Microvalve Inlet Pressure (psi)	Nozzle Pressure (psi)	Flow (gph)		Length (ft)	Diameter (ft)	
20.8	300,600	2.0	20,000	90	40	2,955	323,600	70	42	179.0	27.0	12.0	3.5	600
13.8	241,200	2.0	19,800	90	34	2,715	263,700	70	36	146.0	22.0	12.0	3.5	530
6.9	160,700	2.0	19,600	90	25	2,555	182,900	70	26	101.0	15.2	12.0	3.5	475
1.7	80,300	2.0	19,600	90	20	2,475	102,500	70	21	56.4	8.5	10.0	3.0	225
1.0	56,800	2.0	19,600	90	18	2,475	78,900	70	19	43.2	8.5	10.0	3.0	150

Notes:

- Air Flows are at 100°F and sea level.
- All pressures are static measurement at their respective pressure tap.
- All burners equipped with converging tile and refractory baffle plate.
- Btu input based on HHV's of natural gas with 1034 Btu/ft³, and 9.74:1 air/fuel ratio No. 2 oil with 138,000 Btu/gallon, and 1380:1 air/fuel ratio and No. 6 oil with 151,000 Btu/gallon, 1510:1 air/fuel ratio.
- Flame lengths measured from the end of converging tile; for a diverging tile (available from size __06 to __18), add 18% to the flame length.

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SUPPLEMENTAL DATA

BBC BETA BURNER COMBINATION SERIES BBC-2118/3118

Natural Gas

Secondary Air		Primary Air		Total Air Flow (scfh)	Natural Gas		Million Btu/hr (with 10% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)		Inlet Pressure ("wc)	Flow (scfh)		Length (ft)	Diameter (ft)	
13.8	444,000	6.9	15,500	459,500	6.5	45,950	47.5	18.0	5.0	700
6.9	314,000	6.9	15,500	329,500	3.3	32,950	34.1	15.0	3.5	500
1.7	157,000	6.9	15,500	172,500	0.9	17,250	17.8	12.0	3.0	250
1.0	120,400	6.9	15,500	135,900	0.6	13,590	14.1	10.0	3.0	250
0.2	50,000	6.9	15,500	65,500	0.1	6,550	6.8	8.0	3.0	270

No. 2 Fuel Oil

Secondary Air		Primary Air		Total Air Flow (scfh)	No. 2 Fuel Oil Flow (gph)	Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)				Length (ft)	Diameter (ft)	
13.8	444,000	24.2	31,000	475,000	346.5	39.8	20.0	4.0	350
6.9	314,000	24.2	31,000	345,000	251.6	28.9	13.0	4.0	350
1.7	157,000	24.2	31,000	188,000	137.1	15.8	7.0	2.5	150
1.0	120,400	24.2	31,000	151,400	110.4	12.7	5.0	2.0	80
0.2	50,000	24.2	31,000	81,000	59.1	6.8	3.0	1.5	80

No. 6 Heavy Oil

Secondary Air		Primary Air		Atomizing Air			Total Air Flow (scfh)	Fuel			Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)	Upstream Pressure (psi)	Nozzle Pressure (psi)	Flow (scfh)		Microvalve Inlet Pressure (psi)	Nozzle Pressure (psi)	Flow (gph)		Length (ft)	Diameter (ft)	
13.8	444,000	5.0	31,400	100	64	3,360	478,800	100	66	264.6	40.0	14.0	3.0	350
6.9	307,000	5.7	31,170	100	44	2,880	341,100	100	47	189.0	28.5	12.0	3.0	425
1.7	130,000	6.5	30,650	100	27	2,400	163,100	100	30	90.0	13.6	10.0	3.0	425
0.5	55,000	7.0	30,570	100	18	2,280	87,900	100	20	48.6	7.3	7.5	1.7	220

Notes:

1. Air Flows are at 100°F and sea level.
2. All pressures are static measurement at their respective pressure tap.
3. All burners equipped with converging tile and refractory baffle plate.
4. Btu input based on HHV's of natural gas with 1034 Btu/ft³, and 9.74:1 air/fuel ratio No. 2 oil with 138,000 Btu/gallon, and 1380:1 air/fuel ratio and No. 6 oil with 151,000 Btu/gallon, 1510:1 air/fuel ratio.
5. Flame lengths measured from the end of converging tile; for a diverging tile (available from size __06 to __18), add 18% to the flame length.

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SUPPLEMENTAL DATA

BBC BETA BURNER COMBINATION SERIES BBC-2124/3124

Natural Gas

Secondary Air		Primary Air		Total Air Flow (scfh)	Natural Gas		Million Btu/hr (with 10% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)		Inlet Pressure ("wc)	Flow (scfh)		Length (ft)	Diameter (ft)	
13.8	870,000	6.9	15,500	885,500	5.0	88,550	91.6	25.0	5.0	600
6.9	615,000	6.9	15,500	630,500	2.5	63,050	65.2	22.0	4.0	400
1.7	183,000	6.9	15,500	198,500	0.3	19,850	20.5	8.0	3.0	150
1.0	140,400	6.9	15,500	155,900	0.2	15,590	16.1	7.0	2.5	100
0.2	97,000	6.9	15,500	112,500	0.1	11,250	11.6	5.5	2.0	100

No. 2 Fuel Oil

Secondary Air		Primary Air		Total Air Flow (scfh)	No. 2 Fuel Oil Flow (gph)	Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)				Length (ft)	Diameter (ft)	
13.8	870,000	24.2	37,000	907,000	661.6	76.1	18.0	5.0	1000
6.9	615,000	24.2	37,000	652,000	475.6	54.7	14.0	3.5	1200
1.7	183,000	24.2	37,000	220,000	160.5	18.5	10.0	2.0	580
1.0	140,400	24.2	37,000	177,400	129.4	14.9	10.0	2.0	200
0.2	97,000	24.2	37,000	134,000	97.7	11.2	9.0	1.5	200

No. 6 Heavy Oil

Secondary Air		Primary Air		Atomizing Air			Total Air Flow (scfh)	Fuel			Million Btu/hr (with 20% Excess Air)	Flame		Max % XSA
Pressure ("wc)	Flow (scfh)	Pressure ("wc)	Flow (scfh)	Upstream Pressure (psi)	Nozzle Pressure (psi)	Flow (scfh)		Microvalve Inlet Pressure (psi)	Nozzle Pressure (psi)	Flow (gph)		Length (ft)	Diameter (ft)	
13.8	819,300	4.0	12,100	100	46	3,900	835,300	90	52	461	72.2	16.0	3.3	750
6.9	579,300	4.0	12,100	100	42	4,200	595,600	90	46	329	51.5	15.0	3.0	1,000
1.7	287,600	4.0	12,100	100	26	3,720	303,420	90	30	167	26.2	11.0	3.0	1,000
0.5	147,900	4.0	12,100	100	16	3,600	163,600	90	25	90	14.1	8.0	2.0	500

Notes:

1. Air Flows are at 100°F and sea level.
2. All pressures are static measurement at their respective pressure tap.
3. All burners equipped with converging tile and refractory baffle plate.
4. Btu input based on HHV's of natural gas with 1034 Btu/ft³, and 9.74:1 air/fuel ratio No. 2 oil with 138,000 Btu/gallon, and 1380:1 air/fuel ratio and No. 6 oil with 151,000 Btu/gallon, 1510:1 air/fuel ratio.
5. Flame lengths measured from the end of converging tile; for a diverging tile (available from size __06 to __18), add 18% to the flame length.

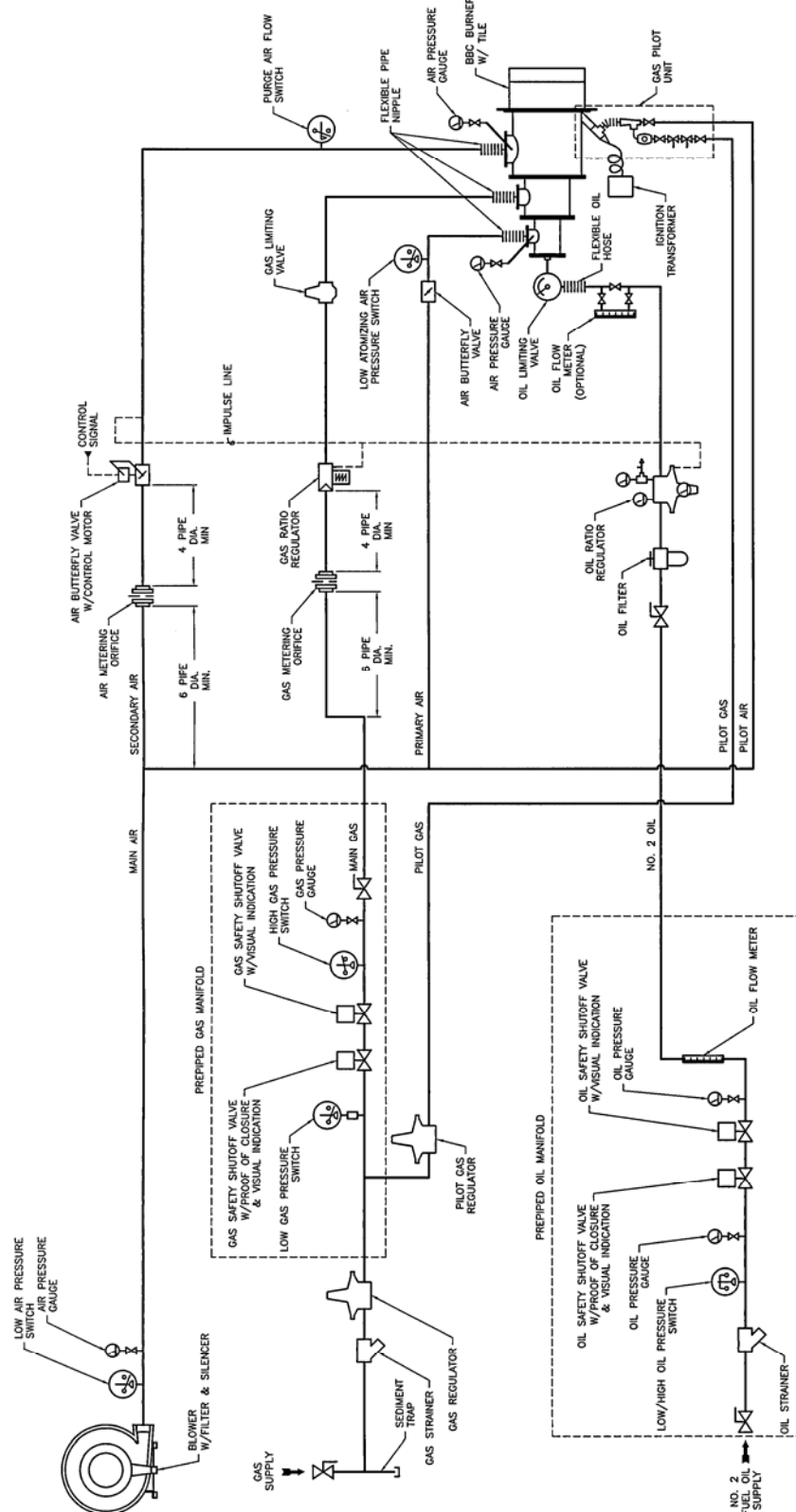
In accordance with Hauck's commitment to Total Quality Improvement, Hauck reserves the right to change the specifications of products without prior notice.

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SUPPLEMENTAL DATA

BBC BETA BURNERS

CROSS-CONNECTED CONTROL
GAS/LIGHT OILY6923
(NOT TO SCALE)

NOTES:

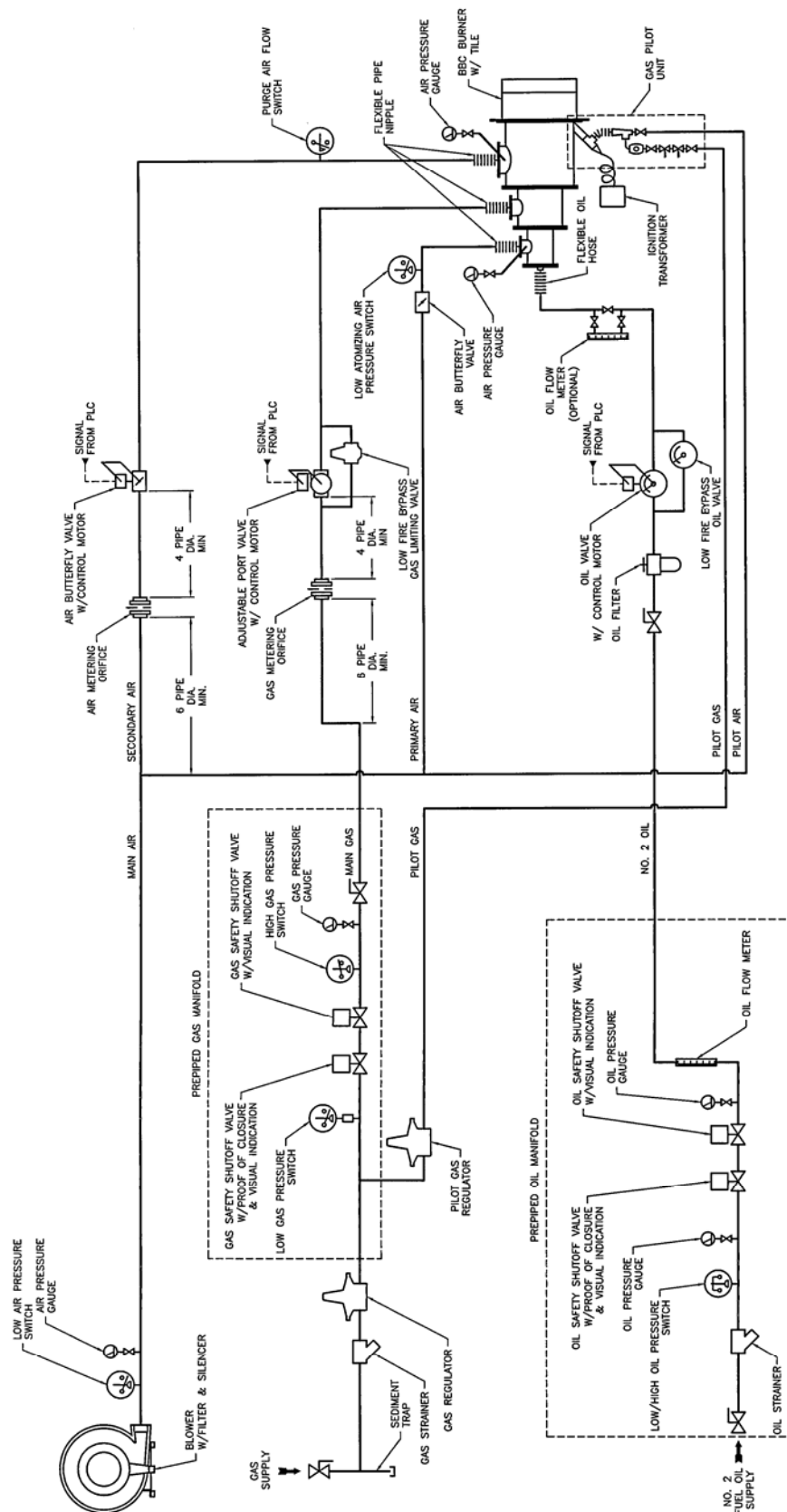
1. PIPING SCHEMATIC SHOWN FOR SINGLE BURNER FIRING GAS OR NO.2 (LIGHT) FUEL OIL USING CROSS-CONNECTED RATIO CONTROL. CONSULT FACTORY FOR MULTIPLE BURNER APPLICATIONS.
2. OIL RATIO REGULATOR OUTLET CAN NOT BE LOCATED MORE THAN 6" (152MM) LOWER AND NEVER HIGHER THAN THE CENTER LINE OF THE BURNER OIL VALVE FOR HORIZONTALLY MOUNTED BURNERS, OR THE BURNER NOZZLE DISCHARGE FOR VERTICALLY MOUNTED DOWN-FIRED BURNERS. OIL RATIO REGULATOR MUST BE MOUNTED WITHIN 20' (6M) OR LESS OF THE OIL VALVE AT THE BURNER.
3. AIR IMPULSE FILTER & BLEED ASSEMBLY (NOT SHOWN) MUST BE INSTALLED IN THE AIR IMPULSE LINE TO THE MRO IF THE SECONDARY AIR PRESSURE IS GREATER THAN 16 OSIG (6.9 KPA).

(OVER)

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BBC BETA BURNERS

CHARACTERIZED VALVE FLOW CONTROL GAS/LIGHT OIL

Y6944
(NOT TO SCALE)

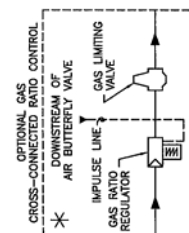
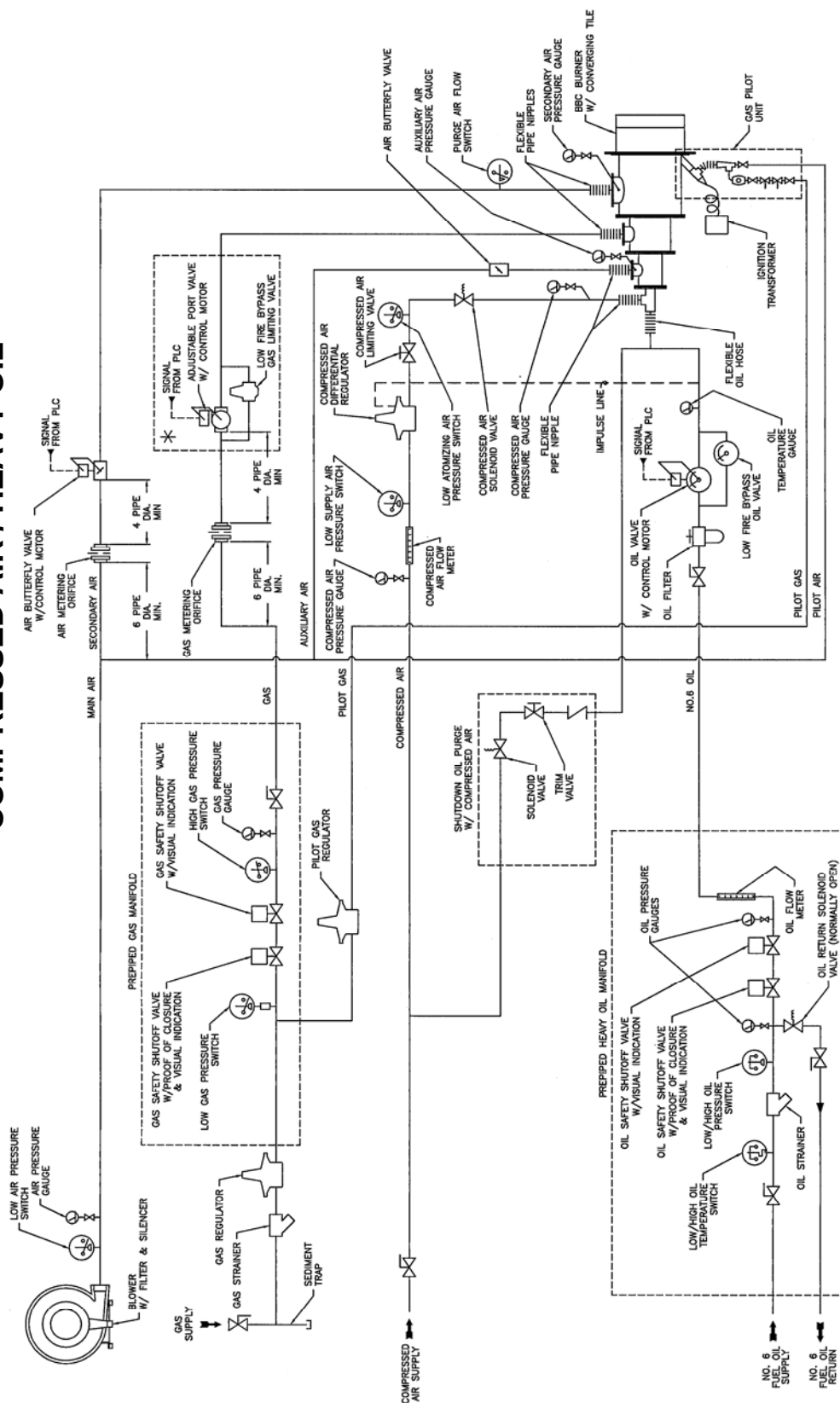
NOTES: 1. PIPING SCHEMATIC SHOWN FOR SINGLE BURNER FIRING GAS OR NO.2 (LIGHT) FUEL OIL USING CHARACTERIZED VALVE FLOW CONTROL. CONSULT FACTORY FOR MULTIPLE BURNER APPLICATIONS.

In accordance with Hauck's commitment to Total Quality Improvement, Hauck reserves the right to change the specifications of products without prior notice.



SUPPLEMENTAL DATA

BBC BETA BURNERS



Y6845
(NOT TO SCALE)

- NOTES: 1. PIPING SCHEMATIC SHOWN FOR SINGLE BURNER FIRING GAS AND NO.6 (HEAVY) FUEL OIL USING CHARACTERIZED VALVE FLOW CONTROL
2. HEAVY FUEL OIL SUPPLY SYSTEM (NOT SHOWN) IS AN INTEGRAL PART OF ANY HEAVY OIL BURNER SYSTEM. TYPICAL COMPONENTS INCLUDE SECTION OF HEAVY FUEL OIL PIPING, HEAVY FUEL OIL PUMP, HEAVY FUEL OIL PRESSURE REGULATOR OR PRESSURE RELIEF VALVE, HOWEVER, REQUIREMENTS ARE DEPENDENT UPON THE SPECIFIC BURNER SYSTEM (CONSULT HAUKE).

(OVER)

5. AUXILIARY AIR IS REQUIRED FOR FLAME SHAPING AND SHOULD NOT EXCEED 7"WC [1.7KPA] AS MEASURED AT THE AUXILIARY AIR PRESSURE GAUGE.

In accordance with Hauck's commitment to Total Quality Improvement, Hauck reserves the right to change the specifications of products without prior notice.

HAUCK MANUFACTURING CO., P.O. Box 90 Lebanon, PA 17042-0090 717-272-3051

3/09

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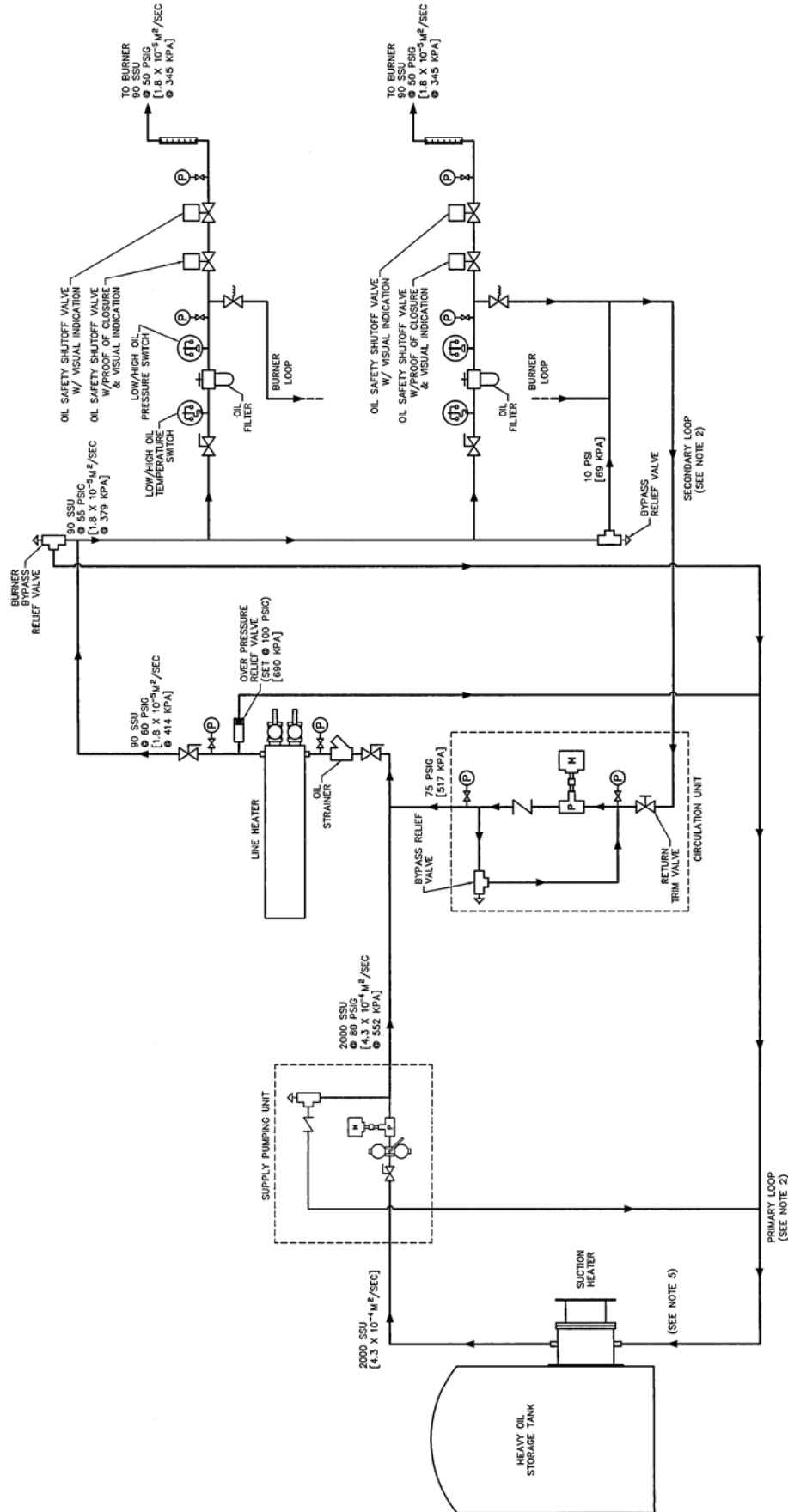
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BBC BETA BURNERS

MULTIPLE BURNER SYSTEM HEAVY OIL SUPPLY



NOTES:

1. PIPING SCHEMATIC SHOWS TYPICAL COMPONENTS AND NOMINAL VISCOSITIES AND PRESSURES FOR HEAVY FUEL OIL SUPPLY; ACTUAL REQUIREMENTS ARE DEPENDENT UPON THE SPECIFIC BURNER SYSTEM (CONSULT HAUCK).
2. OIL RETURN LINES TO BE SIZED ACCORDING TO DISTANCE TO PUMP - MINIMUM SIZE EQUAL TO TWO PIPE SIZES LARGER THAN OIL SUPPLY LINE (SEE GL88 FOR MINIMUM LINE SIZES FOR HAUCK SUPPLY PUMPING OIL UNITS).
3. FOR ALL HEAVY OIL APPLICATIONS, OIL PIPING MUST BE HEAT TRACED (ELECTRIC OR STEAM) AND INSULATED. SELF-REGULATING HEAT TRACING IS RECOMMENDED TO MAINTAIN THE DESIRED TEMPERATURE OF OIL FUEL OIL TO ACHIEVE 90 SSU ($1.8 \times 10^{-3} \text{ m}^2/\text{SEC}$) OR LESS AT THE BURNER. ELECTRICAL HEAT TRACING WITH A NOMINAL RATING OF 12 W/FT (34W/M) COVERED WITH A NOMINAL $2" (50\text{MM})$ FIBERGLASS TYPE INSULATION IS SUFFICIENT FOR MOST APPLICATIONS.
4. IF USING NO. 6 FUEL OIL AND THE PIPING BETWEEN THE SUPPLY PUMPING UNIT AND THE HEAVY OIL MANIFOLD IS GREATER THAN 50 FT (15 M), AN ADDITIONAL BYPASS RELIEF VALVE MAY BE REQUIRED IN THE SUPPLY PIPING TO ACCOMMODATE COLD SYSTEM START UP (CONSULT HAUCK).
5. IF SUCTION HEATER IS NOT UTILIZED, OIL RETURN LINE SHOULD BE PIPED TO THE OIL STORAGE TANK.

Y7123

(NOT TO SCALE)



SUPPLEMENTAL DATA

BBC BETA BURNER COMBINATION SERIES

ORDERING INFORMATION

	<u>BBC</u>	<u>2</u>	<u>1</u>	<u>06</u>
Burner Type				
Burner Internals 1 – Metallic Baffle 2 – Refractory Baffle 3 – Refractory Baffle with Insulating Inserts				
Ignition 1 – IPG Pilot 2 – Direct Spark (For use with BBG only)				
Burner Size 04, 06, 08, 10, 12, 14, 18, 24				

Tile Options

Converging Refractory Tile
Converging Alloy Tile (For use with BBG only)
Diverging Refractory Tile

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