Burner Capacity Information, BBC 1104/2104

NATURAL GAS, AMBIENT COMBUSTION AIR OPERATION, LOW PRESSURE ATOMIZATION

SPECIFICATIONS		OPERATIONAL INFORMATION				
Capacity (at 10% Excess Air)	**(BTU/hr)**	**440,000**	**1,670,000**	**2,320,000**	**2,810,000**	**3,200,000**
	(kW)	**120**	**440**	**610**	**740**	**850**
Secondary Air Capacity	(scfh)	3,320	16,100	22,800	27,900	32,000
	(nm^3/hr)	89	431	611	747	857
Secondary Air Inlet Pressure	(in.w.c.)	0.3	6.9	13.9	20.8	27.7
	(mbar)	0.7	17.2	34.5	51.7	68.9
Primary Air Capacity	(scfh)	1,200	1,200	1,200	1,200	1,200
	(nm^3/hr)	32	32	32	32	32
Primary Air Inlet Pressure	(in.w.c.)	6.9	6.9	6.9	6.9	6.9
	(mbar)	17.2	17.2	17.2	17.2	17.2
Gas Inlet Pressure	(in.w.c.)	0.1	0.5	0.9	1.3	1.5
	(mbar)	0.1	1.2	2.2	3.1	3.7
Flame Length (at 10% Excess Air)	(in)	30	36	60	66	72
	(mm)	760	910	1520	1680	1830
Flame Diameter (at 10% Excess Air	(in)	12	12	16	16	24
	(mm)	300	300	410	410	610
Maximum Operating Excess	(Air)	100%	400%	600%	600%	600%
	(Fuel)	30%	30%	30%	30%	30%

Burner Capacity Information, BBC 3104

NATURAL GAS, 900°F/482°C PREHEATED SECONDARY AIR OPERATION, LOW PRESSURE ATOMIZATION

SPECIFICATIONS		OPERATIONAL INFORMATION				
Capacity (at 10% Excess Air)	**(BTU/hr)**	**310,000**	**1,080,000**	**1,480,000**	**1,780,000**	**2,030,000**
	(kW)	**80**	**290**	**390**	**470**	**540**
Secondary Air Capacity	(scfh)	2,055	9,967	14,115	17,272	19,811
	(nm^3/hr)	55	267	378	463	531
Secondary Air Inlet Pressure	(in.w.c.)	0.3	6.9	13.9	20.8	27.7
	(mbar)	0.7	17.2	34.5	51.7	68.9
Primary Air Capacity	(scfh)	1,200	1,200	1,200	1,200	1,200
	(nm^3/hr)	32	32	32	32	32
Primary Air Inlet Pressure	(in.w.c.)	6.9	6.9	6.9	6.9	6.9
	(mbar)	17.2	17.2	17.2	17.2	17.2
Gas Inlet Pressure	(in.w.c.)	0.0	0.4	0.7	0.9	1.1
	(mbar)	0.1	0.9	1.7	2.4	2.8
Flame Length (at 10% Excess Air)	(in)	23	27	45	50	54
	(mm)	570	690	1140	1260	1370
Flame Diameter (at 10% Excess Air	(in)	11	11	14	14	22
	(mm)	270	270	370	370	550
Maximum Operating Excess	(Air)	80%	320%	480%	480%	480%
	(Fuel)	30%	30%	30%	30%	30%

NOTES:

1. Capacities based on Natural Gas with HHV of 1034 BTU/ft^3 (Standard) / LHV of 10.21 kWh/nm3 (Metric), 0.59 S.G.,and a stoichiometric ratio of 9.74:1 at 10% excess air; with burner firing into chamber under no pressure.
2. Air and fuel flows based on STP operating conditions at sea level and industry standard air and gas piping practices.
3. Fuel inlet pressures given for reference only and should not be used for measuring fuel flow to the burner.
4. Flame lengths measured from end of the combustion tile.
5. Flame detection via UV scanner; for detection limits refer to the Burner Operating and Ignition Window.
6. Ignition via IPG5411 gas pilot; for ignition limits refer to the Burner Operating and Ignition Window.
7. Burner is suitable for use on gaseous and liquid fuels other than those listed, and with combustion air other than ambient temperature or that listed; for further information consult Hauck.

Burner Capacity Information, BBC 1104/2104

NO. 2 FUEL OIL, AMBIENT COMBUSTION AIR OPERATION, LOW PRESSURE ATOMIZATION

SPECIFICATIONS		OPERATIONAL INFORMATION				
Capacity (at 20% Excess Air)	**(BTU/hr)**	**480,000**	**1,540,000**	**2,100,000**	**2,530,000**	**2,870,000**
	(kW)	**130**	**410**	**560**	**670**	**760**
Secondary Air Capacity	(scfh)	3,320	16,100	22,800	27,900	32,000
	(nm^3/hr)	89	431	611	747	857
Secondary Air Inlet Pressure	(in.w.c.)	0.3	6.9	13.9	20.8	27.7
	(mbar)	0.7	17.2	34.5	51.7	68.9
Primary Air Capacity	(scfh)	2,400	2,400	2,400	2,400	2,400
	(nm^3/hr)	64	64	64	64	64
Primary Air Inlet Pressure	(in.w.c.)	27.7	27.7	27.7	27.7	27.7
	(mbar)	68.9	68.9	68.9	68.9	68.9
Fuel Oil Flow(at 20% Excess Air)	(gph)	3.5	11.2	15.2	18.3	20.8
	(lph)	13	42	58	69	79
Flame Length (at 20% Excess Air)	(in)	36	60	66	72	84
	(mm)	910	1520	1680	1830	2130
Flame Diameter (at 20% Excess Air	(in)	12	16	24	24	24
	(mm)	300	410	610	610	610
Maximum Operating Excess	(Air)	100%	200%	250%	250%	275%
	(Fuel)	30%	30%	30%	30%	30%

Burner Capacity Information, BBC 3104

NO. 2 FUEL OIL, 900°F/482°C PREHEATED SECONDARY AIR OPERATION, LOW PRESSURE ATOMIZATION

SPECIFICATIONS		OPERATIONAL INFORMATION				
Capacity (at 20% Excess Air)	**(BTU/hr)**	**370,000**	**1,030,000**	**1,380,000**	**1,640,000**	**1,850,000**
	(kW)	**100**	**270**	**370**	**430**	**490**
Secondary Air Capacity	(scfh)	2,055	9,967	14,115	17,272	19,811
	(nm^3/hr)	55	267	378	463	531
Secondary Air Inlet Pressure	(in.w.c.)	0.3	6.9	13.9	20.8	27.7
	(mbar)	0.7	17.2	34.5	51.7	68.9
Primary Air Capacity	(scfh)	2,400	2,400	2,400	2,400	2,400
	(nm^3/hr)	64	64	64	64	64
Primary Air Inlet Pressure	(in.w.c.)	27.7	27.7	27.7	27.7	27.7
	(mbar)	68.9	68.9	68.9	68.9	68.9
Fuel Oil Flow(at 20% Excess Air)	(gph)	2.7	7.5	10.0	11.9	13.4
	(lph)	10	28	38	45	51
Flame Length(at 20% Excess Air)	(in)	27	45	50	54	63
	(mm)	690	1140	1260	1370	1600
Flame Diameter(at 20% Excess Air)	(in)	11	14	22	22	22
	(mm)	270	370	550	550	550
Maximum Operating Excess	(Air)	80%	160%	200%	200%	220%
	(Fuel)	30%	30%	30%	30%	30%

NOTES:

1. Capacities based on No. 2 Fuel Oil with HHV of 138,000 BTU/USgal (Standard) / LHV of 10.3 kWh/liter (Metric), 0.87 S.G., and a stoichiometric ratio of 1380:1 at 20% excess air; with burner firing into chamber under no pressure.
2. Air and fuel flows based on STP operating conditions at sea level and industry standard air and gas piping practices.
3. Fuel inlet pressures given for reference only and should not be used for measuring fuel flow to the burner.
4. Flame lengths measured from end of the combustion tile.
5. Flame detection via UV scanner; for detection limits refer to the Burner Operating and Ignition Window.
6. Ignition via IPG5411 gas pilot; for ignition limits refer to the Burner Operating and Ignition Window.
7. Burner is suitable for use on gaseous and liquid fuels other than those listed, and with combustion air other than ambient temperature or that listed; for further information consult Hauck.

Burner Capacity Information, BBC 1104/2104

NO. 6 FUEL OIL, AMBIENT COMBUSTION AIR OPERATION, HIGH PRESSURE ATOMIZATION

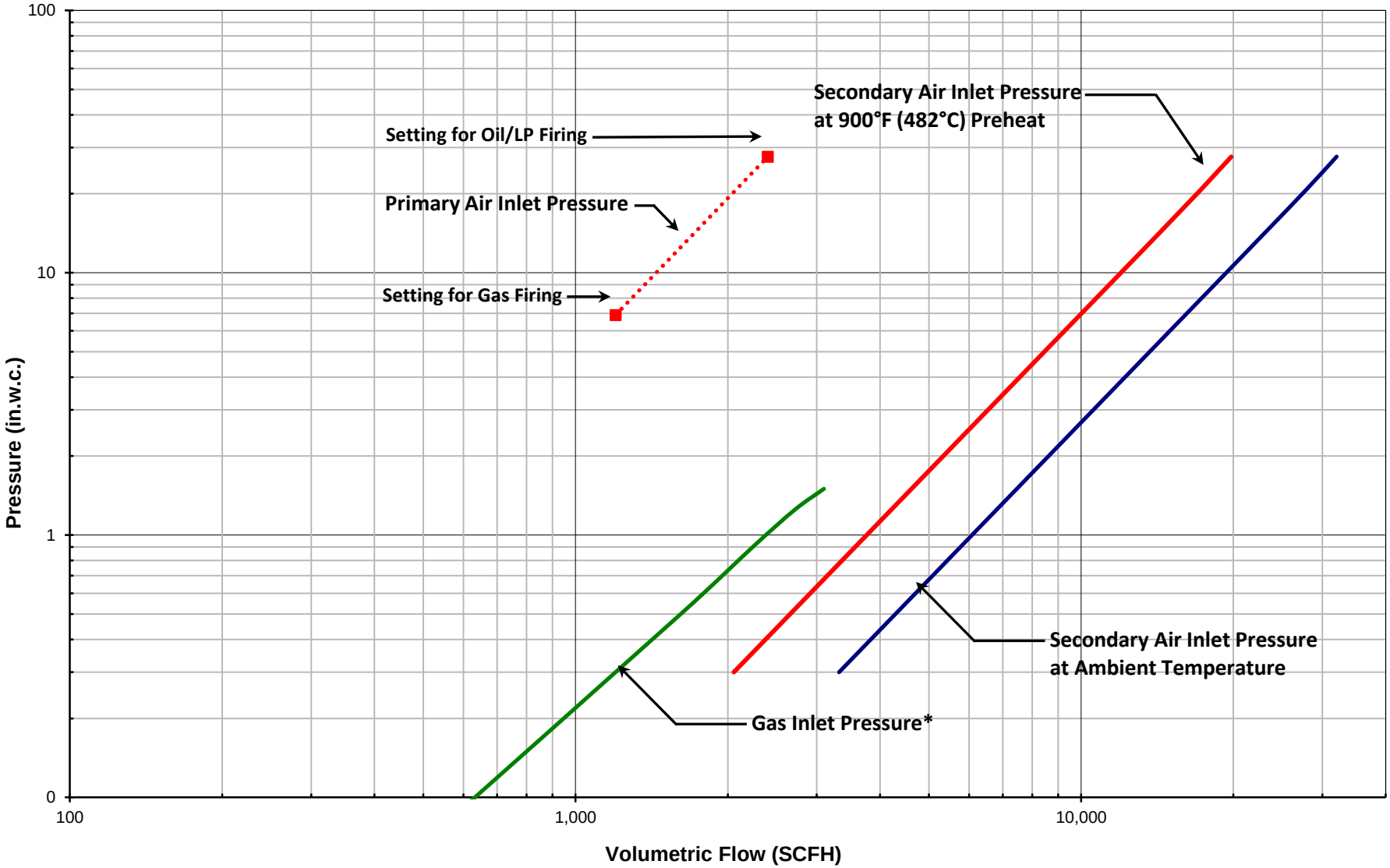
SPECIFICATIONS		OPERATIONAL INFORMATION				
Capacity (at 20% Excess Air)	**(BTU/hr)**	**390,000**	**1,480,000**	**2,050,000**	**2,490,000**	**2,840,000**
	(kW)	**100**	**390**	**540**	**660**	**750**
Secondary Air Capacity	(scfh)	3,320	16,100	22,800	27,900	32,000
	(nm^3/hr)	89	431	611	747	857
Secondary Air Inlet Pressure	(in.w.c.)	0.3	6.9	13.9	20.8	27.7
	(mbar)	0.7	17.2	34.5	51.7	68.9
Primary Air Capacity	(scfh)	920	920	920	920	920
	(nm^3/hr)	25	25	25	25	25
Primary Air Inlet Pressure	(in.w.c.)	4.0	4.0	4.0	4.0	4.0
	(mbar)	10.0	10.0	10.0	10.0	10.0
Atomizing Air Capacity	(scfh)	300	330	330	330	330
	(nm^3/hr)	8	9	9	9	9
Atomizing Air Inlet Pressure	(psig)	34	54	60	61	62
	(bar)	2.3	3.7	4.1	4.2	4.3
Fuel Oil Flow	(gph)	2.6	10	14	17	19
	(lph)	10	38	53	64	72
Fuel Oil Inlet Pressure	(psig)	34	56	62	63	64
	(bar)	2.3	3.9	4.3	4.3	4.4
Flame Length(at 20% Excess Air)	(in)	16	42	48	54	60
	(mm)	410	1070	1220	1370	1520
Flame Diameter(at 20% Excess Air)	(in)	12	16	16	24	24
	(mm)	300	410	410	610	610
Maximum Operating Excess	(Air)	50%	100%	125%	150%	200%
	(Fuel)	30%	30%	30%	30%	30%

NOTES:

1. Capacities based on No. 6 Fuel Oil with HHV of 150,000 BTU/USgal (Standard) / LHV of 11.2 kWh/liter (Metric), 1.02 S.G., and a stoichiometric ratio of 1465:1 at 20% excess air; all cases with burner firing into chamber under no pressure.
2. Air and fuel flows based on STP operating conditions at sea level and industry standard air and gas piping practices.
3. Fuel inlet pressures given for reference only and should not be used for measuring fuel flow to the burner.
4. Flame lengths measured from end of the combustion tile.
5. Flame detection via UV scanner; for detection limits refer to the Burner Operating and Ignition Window.
6. Ignition via IPG5411 gas pilot; for ignition limits refer to the Burner Operating and Ignition Window.
7. Burner is suitable for use on gaseous and liquid fuels other than those listed, and with combustion air other than ambient temperature or that listed; for further information consult Hauck.

BBC 1104/2104/3104 Pressure Curves

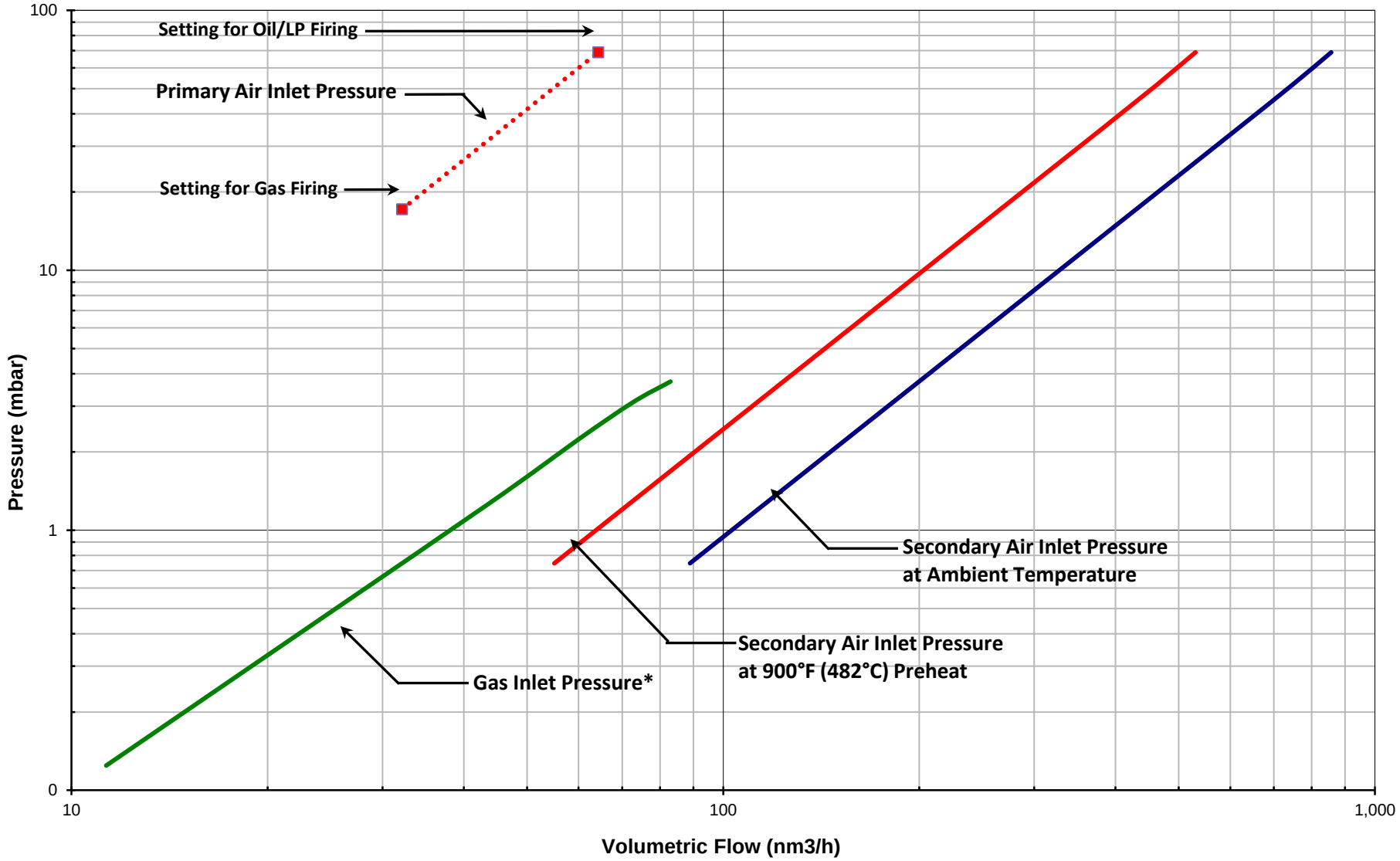
Natural Gas 1034 BTU/ft³ (HHV Standard) / 10.21 kWh/nm³ (LHV Metric), 0.59 S.G. and Ambient and Preheated Combustion Air



*Note: Gas Inlet Pressure for BBC burner is not suitable for fuel flow measurement and is given for component sizing and reference only

BBC 1104/2104/3104 Pressure Curves

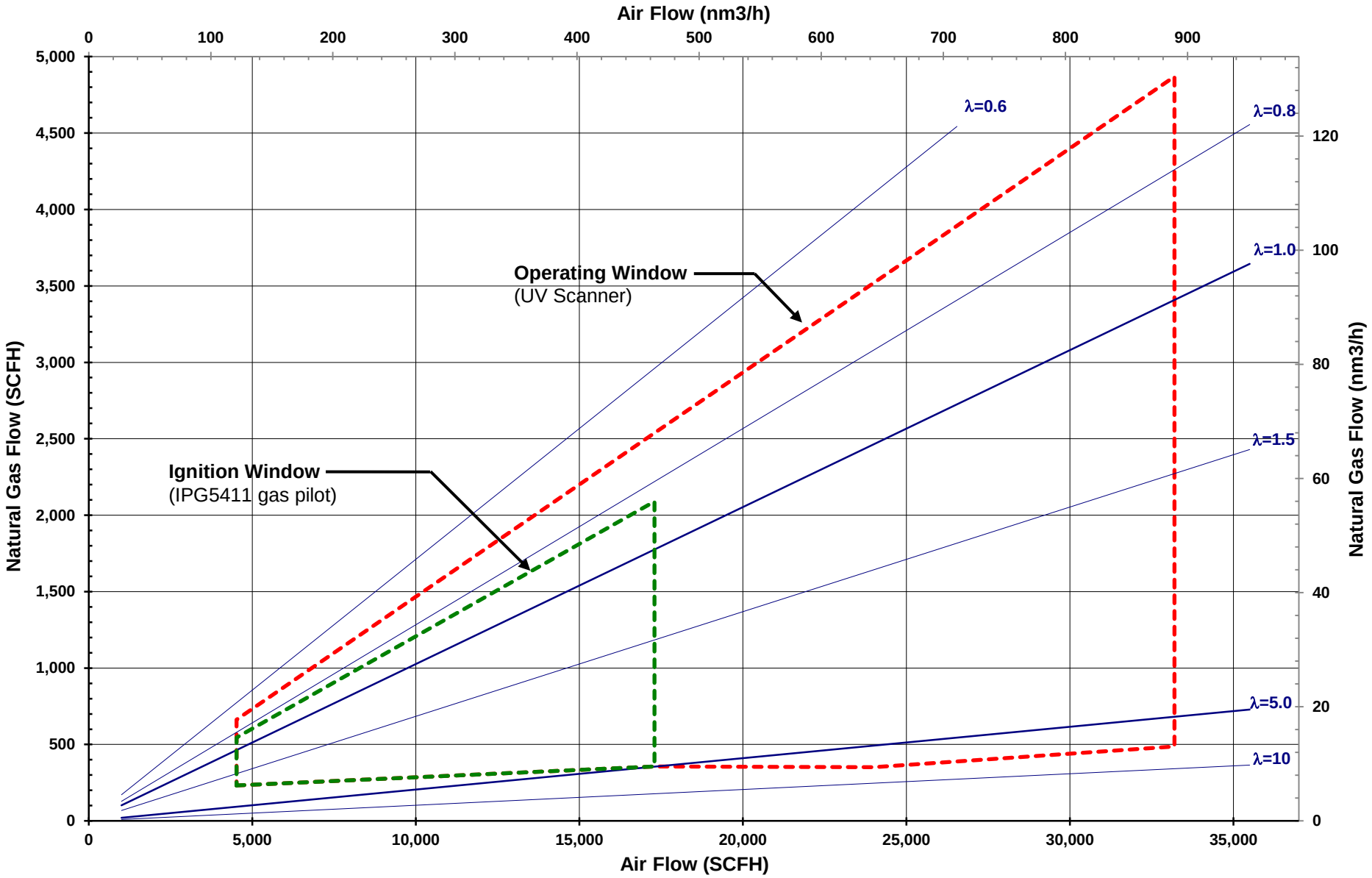
Natural Gas 1034 BTU/ft³ (HHV Standard) / 10.21 kWh/nm³ (LHV Metric), 0.59 S.G. and Ambient and Preheated Combustion Air



*Note: Gas Inlet Pressure for BBC burner is not suitable for fuel flow measurement and is given for component sizing and reference only

BBC 1104/2104/3104 Operating and Ignition Window

Natural Gas 1034 BTU/ft3 (HHV Standard) / 10.21 kWh/nm3 (LHV Metric), 0.59 S.G. and Ambient Combustion Air



BBC 1104/2104/3104 Operating and Ignition Window

No. 2 Fuel Oil 138,000 BTU/gal (HHV Standard) / 10.3 kWh/liter (LHV Metric), 0.87 S.G. and Ambient Combustion Air