

12/22/2009		Gas Performance Data																				
PT-100-G		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
% Burner output		0%	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%
1 Heat input	Btu/hr	4,200,000	11,500,000	16,684,211	21,868,421	27,052,632	32,236,842	37,421,053	42,605,263	47,789,474	52,973,684	58,157,895	63,342,105	68,526,316	73,710,526	78,894,737	84,078,947	89,263,158	94,447,368	99,631,579	104,815,789	110,000,000
2 Gas Flow	SCFH	4,200	11,500	16,684	21,868	27,053	32,237	37,421	42,605	47,789	52,974	58,158	63,342	68,526	73,711	78,895	84,079	89,263	94,447	99,632	104,816	110,000
3 Gas Mod. valve position	%	5.0	11.0	14.9	19.5	25.0	30.3	34.3	37.1	39.8	42.4	45.0	48.0	50.8	53.9	56.5	60.0	63.0	66.0	70.0	75.0	100.0
4 Gas Pressure at Train Inlet	PSI	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
5 Gas Manifold Pressure	"w.c."	0.2	0.6	1.1	2.3	3.6	5.1	6.8	8.8	11.1	13.5	16.5	20.1	24.2	27.7	32.0	36.7	40.7	44.2	47.8	52.3	58.0
6 Dp at gas orifice	"w.c."	0.0	0.1	0.3	0.5	0.8	1.1	1.5	1.9	2.3	2.8	3.4	4.1	4.8	5.6	6.2	7.3	8.2	9.1	10.1	11.1	12.4
7 Blower Output	%	0.0	4.0	9.5	14.9	19.9	24.9	29.8	34.8	40.0	45.0	50.0	55.0	60.0	66.5	70.0	78.0	82.0	86.0	90.0	94.0	100.0
8 Blower Body Pressure	"w.c."	0.28	0.42	0.65	0.95	1.25	1.61	1.97	2.40	2.90	3.40	3.90	4.50	5.20	6.00	6.60	7.80	8.40	9.10	9.90	10.60	11.70
9 Blower Speed	Hz	8.3	9	13.2	15.6	18.0	20.5	23.0	25.4	27.9	30.4	33.3	35.7	38.2	40.6	42.6	45.1	47.5	49.9	52.4	54.9	57.3
10 Combustion Air Motor Power	HP	0.6	0.8	1.3	1.9	2.8	3.8	5.0	6.8	8.5	11.0	13.8	16.6	20.5	24.5	28.5	37.5	41.3	46.8	53.1	58.0	69.0
11 Combustion Air Motor Current	Amp.	22.5	22.6	23.0	22.2	23.2	24.5	26.8	29.2	32.0	36.0	40.2	44.1	49.2	56.1	59.0	69.0	73.1	77.5	82.6	85.9	94.0
12 Gas Manifold Pressure - Body Pressure	"w.c."	-0.08	0.18	0.45	1.35	2.35	3.49	4.83	6.40	8.20	10.10	12.60	15.60	19.00	21.70	25.40	28.90	32.30	35.10	37.90	41.70	46.30
13 Main Air Flow	SCFH	254,730	254,730	311,060	367,390	423,720	480,050	536,380	592,710	649,040	705,370	761,700	818,030	874,360	930,690	987,020	1,043,350	1,099,680	1,156,010	1,212,340	1,268,670	1,325,000
14 Excess air	%	503%	120%	85%	67%	56%	48%	42%	35%	30%	28%	27%	26%	24%	23%	22%	22%	21%	20%	20%	20%	20%
15 Flame Length	Feet																					
16 Flame Diameter	Feet																					

Combustion Air VFD Setup			Limit Switch Setup		
Min Ref	Hz	8.3	Blower Proof of Running	-20	in H ₂ O
Max Ref	Hz	50	Blower Proof of High Fire	6.9	in H ₂ O
Ramp Up Time	Sec	40	Blower Proof of Low Fire	0.5	in H ₂ O
Ramp Down Time	Sec	40	Low Gas Pressure	1.5	psi
Nominal Motor Speed	rpm	1780	High Gas Pressure	15	psi
Motor Current	A	85.3	Pilot Low Gas Pressure	n/a	PSI
Motor Frequency	Hz	60			
Motor Voltage	V	460			
Motor Power	kW	55			

Use either chart 1 or chart 2 below to match the natural gas flow to the blower body pressure. Chart 1 shows the relationship between the differential pressure as measured across the gas orifice plate with the appropriate blower body pressure. Chart 2 shows the relationship between the differential pressure as measured between the difference of the gas manifold on the burner body and the burner body pressure and the appropriate blower body pressure. Increase or decrease the fan speed or the gas control valve setting in the burner profile as needed to match the values. Please note that in premix burners gas and air compete for space inside the burner. That means that a change in the pressure or flow of either gas or air will effect the other. You will usually have to adjust both fuel and air to get the desired pressures. Chart 3 shows natural gas flow against the difference of the gas manifold pressure and the burner body pressure. The unique geometry of the Phoenix Talon allows the gas to be measured this way, eliminating the need for a traditional orifice plate.

