

2/21/2011		Gas Performance Data																				
PT-125-G-2009		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	MMBtu/hr	3.75	13.75	20.26	26.78	33.29	39.80	46.32	52.83	59.34	65.89	72.37	78.88	85.40	91.91	98.42	104.93	111.45	117.96	124.47	130.99	137.50
2	KW	1,099	4,030	5,938	7,847	9,756	11,665	13,574	15,483	17,391	19,309	21,209	23,118	25,027	26,936	28,844	30,753	32,662	34,571	36,480	38,388	40,297
3 Gas Flow	SCFH	3,750	13,750	20,263	26,776	33,289	39,803	46,316	52,829	59,342	65,855	72,368	78,882	85,395	91,908	98,421	104,934	111,447	117,961	124,474	130,987	137,500
4	M^3	106	389	574	758	943	1,127	1,312	1,496	1,680	1,866	2,049	2,234	2,418	2,603	2,787	2,971	3,156	3,340	3,525	3,709	3,894
5 Gas Pressure at Train Inlet	PSI	7.6	7.4	7.3	7.2	7.2	7.2	7.2	7.0	6.9	6.8	6.7	6.7	6.7	6.7	6.5	6.5	6.6	6.6	6.6	6.6	6.6
6	kPa	52.4	51.0	50.3	49.6	49.6	49.6	49.6	48.3	47.6	46.9	46.2	46.2	46.2	46.2	44.8	44.8	45.5	45.5	45.5	45.5	45.5
7 Gas Manifold Pressure	"w.c."	0.1	0.1	0.2	1.1	2.3	4.9	6.5	11.0	19.1	21.8	34.3	40.6	53.0	60.0	73.5	79.6	79.9	88.3	92.3	94.8	96.4
8	Pa	25	25	50	274	573	1221	1619	2740	4757	5430	8544	10113	13201	14945	18308	19827	19902	21994	22990	23613	24012
9 Gas Valve Position		1.4	1.8	4.2	14.9	22.2	28.7	32.8	38.2	44.0	49.5	52.6	58.1	61.8	64.6	74.5	75.3	79.0	84.1	87.0	90.6	99.6
10 Blower Output	%	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0	90.0	95.0	100.0
11 Blower Speed	Hz	13	14.8	16.6	18.4	20.2	22	23.8	25.6	27.4	29.2	31	32.8	34.6	36.4	38.2	40	41.8	43.6	45.4	47.2	49
12 Blower Body Pressure	"w.c."	0.63	0.82	1.00	1.25	1.50	1.85	2.15	2.50	2.85	3.30	3.70	4.20	4.70	5.20	5.80	6.30	6.80	7.50	8.20	8.90	9.50
13	Pa	157	204	249	311	374	461	536	623	710	822	922	1046	1171	1295	1445	1569	1694	1868	2042	2217	2366
14 Combustion Air Motor Power	HP	1.7	2.5	3.2	4.2	5.4	7.0	8.8	10.8	12.9	16.0	18.8	22.3	26.1	30.5	35.0	40.4	46.9	52.5	59.6	66.9	74.5
15	KW	1.3	1.9	2.4	3.1	4.0	5.2	6.6	8.1	9.6	11.9	14.0	16.6	19.5	22.7	26.1	30.1	35.0	39.1	44.4	49.9	55.6
16 Combustion Air Motor Current	Amp.	23.9	24.8	26.6	28.2	30.7	34.5	37.7	41.8	44.0	47.1	54.4	59.2	65.2	69.9	74.5	80.1	86.7	90.4	95.6	102.0	106.0
17 Gas Manifold Pressure - Body Pressure	"w.c."	-0.53	-0.72	-0.80	-0.15	0.80	3.05	4.35	8.50	16.25	18.50	30.60	36.40	48.30	54.80	67.70	73.30	73.10	80.80	84.10	85.90	86.90
18	Pa	-132.01	-179.34	-199.27	-37.36	199.27	759.70	1083.51	2117.20	4047.58	4608.02	7621.91	9066.58	12030.66	13649.69	16862.85	18257.71	18207.89	20125.83	20947.80	21396.14	21645.23
19 Main Air Flow	SCFH	560,000	614,750	669,500	724,250	779,000	833,750	888,500	943,250	998,000	1,052,750	1,107,500	1,162,250	1,217,000	1,271,750	1,326,500	1,381,250	1,436,000	1,490,750	1,545,500	1,600,250	1,655,000
20	M^3	15,857	17,408	18,958	20,508	22,059	23,609	25,160	26,711	28,262	29,811	31,361	32,911	34,462	36,012	37,562	39,113	40,663	42,213	43,764	45,314	46,864
21 Excess air	%	138.4%	344%	228%	169%	133%	108%	91%	47%	67%	59%	52%	46%	42%	38%	34%	31%	28%	26%	23%	21%	20%
22 Flame Length	Feet	4	5	6	7	7	8	8	8	8	8	8	9	10	10	10	10	12	12	12	12	12
23 Flame Diameter	Feet	2.5	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4.5	4.5	4.5	4.5	4.5	4.5

Combustion Air VFD Setup			Limit Switch Setup		
Min Ref	Hz	13	Blower Proof of Running	-20	in H ₂ O
Max Ref	Hz	49.0	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	10	psi
Motor Current	A	unknown	Pilot Low Gas Pressure	n/a	PSI
Motor Frequency	Hz	60			
Motor Voltage	V	480			
Motor Power	kW	44			

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 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.

