

From Start-Up Manual		
Max RPM	1000	Rev/min
Max Working Pressure	10000	PSIG
Mechanical Efficiency	90%	
Flow Rate	215	GPM

For a Temperature of -320°F (Min for the Tank)				
RPM	scf/hr	GPM	ft ³ /hr	lbm/hr
100	150,000.00	26.85	215.36	11,026.79
200	300,000.00	53.70	430.72	22,053.59
300	450,000.00	80.55	646.08	33,080.38
400	600,000.00	107.40	861.44	44,107.17
500	750,000.00	134.25	1,076.80	55,133.96
600	900,000.00	161.10	1,292.15	66,160.76
700	1,050,000.00	187.95	1,507.51	77,187.55
800	1,200,000.00	214.80	1,722.87	88,214.34
900	1,350,000.00	241.65	1,938.23	99,241.14
1000	1,500,000.00	268.50	2,153.59	110,267.93

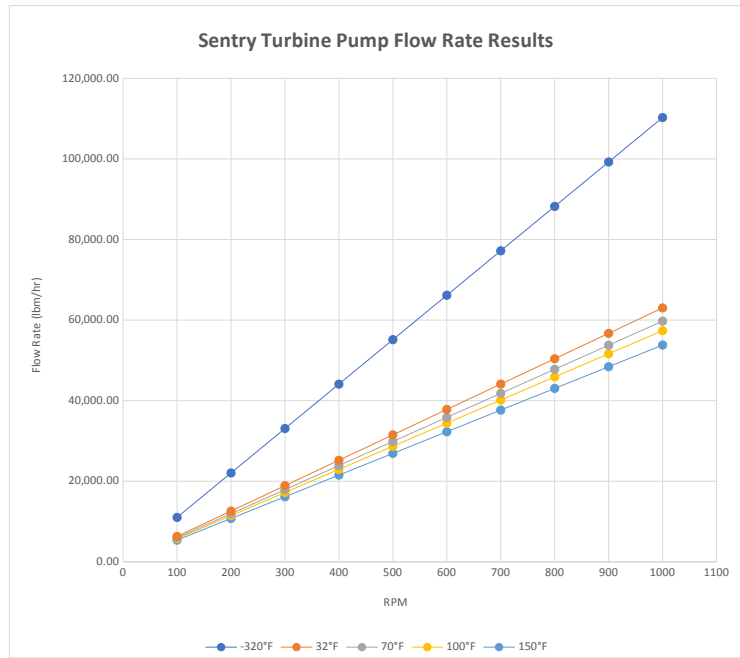
For a Temperature of 32°F				
RPM	scf/hr	GPM	ft ³ /hr	lbm/hr
100	150,000.00	26.85	215.36	6,300.80
200	300,000.00	53.70	430.72	12,601.61
300	450,000.00	80.55	646.08	18,902.41
400	600,000.00	107.40	861.44	25,203.21
500	750,000.00	134.25	1,076.80	31,504.02
600	900,000.00	161.10	1,292.15	37,804.82
700	1,050,000.00	187.95	1,507.51	44,105.62
800	1,200,000.00	214.80	1,722.87	50,406.42
900	1,350,000.00	241.65	1,938.23	56,707.23
1000	1,500,000.00	268.50	2,153.59	63,008.03

For a Temperature of 70°F				
RPM	scf/hr	GPM	ft ³ /hr	lbm/hr
100	150,000.00	26.85	215.36	5,973.24
200	300,000.00	53.70	430.72	11,946.48
300	450,000.00	80.55	646.08	17,919.73
400	600,000.00	107.40	861.44	23,892.97
500	750,000.00	134.25	1,076.80	29,866.21
600	900,000.00	161.10	1,292.15	35,839.45
700	1,050,000.00	187.95	1,507.51	41,812.69
800	1,200,000.00	214.80	1,722.87	47,785.94
900	1,350,000.00	241.65	1,938.23	53,759.18
1000	1,500,000.00	268.50	2,153.59	59,732.42

For a Temperature of 100°F (Max for the Tank)				
RPM	scf/hr	GPM	ft ³ /hr	lbm/hr
100	150,000.00	26.85	215.36	5,736.39
200	300,000.00	53.70	430.72	11,472.78
300	450,000.00	80.55	646.08	17,209.17
400	600,000.00	107.40	861.44	22,945.56
500	750,000.00	134.25	1,076.80	28,681.95
600	900,000.00	161.10	1,292.15	34,418.34
700	1,050,000.00	187.95	1,507.51	40,154.73
800	1,200,000.00	214.80	1,722.87	45,891.12
900	1,350,000.00	241.65	1,938.23	51,627.51
1000	1,500,000.00	268.50	2,153.59	57,363.90

For a Temperature of 150°F				
RPM	scf/hr	GPM	ft ³ /hr	lbm/hr
100	150,000.00	26.85	215.36	5,379.76
200	300,000.00	53.70	430.72	10,759.51
300	450,000.00	80.55	646.08	16,139.27
400	600,000.00	107.40	861.44	21,519.02
500	750,000.00	134.25	1,076.80	26,898.78
600	900,000.00	161.10	1,292.15	32,278.53
700	1,050,000.00	187.95	1,507.51	37,658.29
800	1,200,000.00	214.80	1,722.87	43,038.04
900	1,350,000.00	241.65	1,938.23	48,417.80
1000	1,500,000.00	268.50	2,153.59	53,797.55

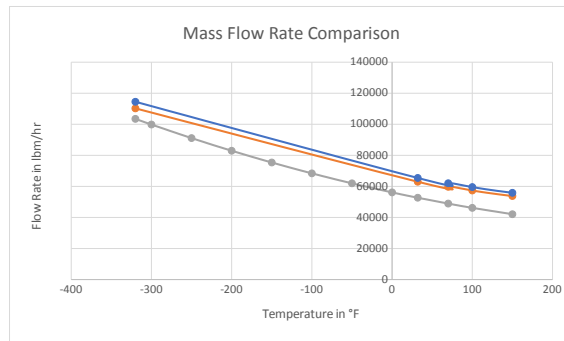
-320	-320	103509.6
32	-300	99856
70	-250	91126.25
100	-200	82974
150	-150	75399.25
	-100	68402
	-50	61982.25
	0	56140
	32	52704.032
	70	48931.05
	100	46188
	150	42078.25



# of Cylinders	5	
Bore	2.7 in	0.225 ft
Stroke	2.25 in	0.1875 ft
Volume	0.037276 ft ³	
Flow Rate	33.54816 ft ³ /min	2012.89 ft ³ /hr
	15057.46 gphr	1,402,000 scf/hr

mass flow rate		
at -320°F	114515.3 lbm/hr	3.708999 %
at 32°F	65435.01 lbm/hr	3.708999 %
at 70°F	62033.23 lbm/hr	3.708999 %
at 100°F	59573.48 lbm/hr	3.708999 %
at 150°F	55869.76 lbm/hr	3.708999 %

Volume = (bore/2)² x π x Stroke x # of Cylinders



Temp	Pressure	Density	Quality	Phase
-320	10000	56.891	Superheated	Gas
-315	10000	56.447	Superheated	Gas
-310	10000	56.005	Superheated	Gas
-305	10000	55.564	Superheated	Gas
-300	10000	55.125	Superheated	Gas
-295	10000	54.688	Superheated	Gas
-290	10000	54.253	Superheated	Gas
-285	10000	53.819	Superheated	Gas
-280	10000	53.388	Superheated	Gas
-275	10000	52.96	Superheated	Gas
-270	10000	52.533	Superheated	Gas
-265	10000	52.109	Superheated	Gas
-260	10000	51.688	Superheated	Gas
-255	10000	51.269	Superheated	Gas
-250	10000	50.853	Superheated	Gas
-245	10000	50.44	Superheated	Gas
-240	10000	50.029	Superheated	Gas
-235	10000	49.621	Superheated	Gas
-230	10000	49.217	Undefined	Supercritical
-225	10000	48.815	Undefined	Supercritical
-220	10000	48.416	Undefined	Supercritical
-215	10000	48.02	Undefined	Supercritical
-210	10000	47.626	Undefined	Supercritical
-205	10000	47.236	Undefined	Supercritical
-200	10000	46.849	Undefined	Supercritical
-195	10000	46.466	Undefined	Supercritical
-190	10000	46.085	Undefined	Supercritical
-185	10000	45.707	Undefined	Supercritical
-180	10000	45.333	Undefined	Supercritical
-175	10000	44.961	Undefined	Supercritical
-170	10000	44.593	Undefined	Supercritical
-165	10000	44.228	Undefined	Supercritical
-160	10000	43.867	Undefined	Supercritical
-155	10000	43.508	Undefined	Supercritical
-150	10000	43.153	Undefined	Supercritical
-145	10000	42.801	Undefined	Supercritical
-140	10000	42.453	Undefined	Supercritical
-135	10000	42.107	Undefined	Supercritical
-130	10000	41.765	Undefined	Supercritical
-125	10000	41.427	Undefined	Supercritical
-120	10000	41.092	Undefined	Supercritical
-115	10000	40.76	Undefined	Supercritical
-110	10000	40.432	Undefined	Supercritical
-105	10000	40.107	Undefined	Supercritical
-100	10000	39.785	Undefined	Supercritical

-95	10000	39.467	Undefined	Supercritical
-90	10000	39.152	Undefined	Supercritical
-85	10000	38.841	Undefined	Supercritical
-80	10000	38.533	Undefined	Supercritical
-75	10000	38.228	Undefined	Supercritical
-70	10000	37.927	Undefined	Supercritical
-65	10000	37.629	Undefined	Supercritical
-60	10000	37.335	Undefined	Supercritical
-55	10000	37.044	Undefined	Supercritical
-50	10000	36.757	Undefined	Supercritical
-45	10000	36.472	Undefined	Supercritical
-40	10000	36.192	Undefined	Supercritical
-35	10000	35.914	Undefined	Supercritical
-30	10000	35.64	Undefined	Supercritical
-25	10000	35.369	Undefined	Supercritical
-20	10000	35.102	Undefined	Supercritical
-15	10000	34.837	Undefined	Supercritical
-10	10000	34.576	Undefined	Supercritical
-5	10000	34.318	Undefined	Supercritical
0	10000	34.064	Undefined	Supercritical
5	10000	33.812	Undefined	Supercritical
10	10000	33.564	Undefined	Supercritical
15	10000	33.319	Undefined	Supercritical
20	10000	33.077	Undefined	Supercritical
25	10000	32.838	Undefined	Supercritical
30	10000	32.602	Undefined	Supercritical
32	10000	32.508	Undefined	Supercritical
35	10000	32.368	Undefined	Supercritical
40	10000	32.138	Undefined	Supercritical
45	10000	31.911	Undefined	Supercritical
50	10000	31.687	Undefined	Supercritical
55	10000	31.466	Undefined	Supercritical
60	10000	31.247	Undefined	Supercritical
65	10000	31.031	Undefined	Supercritical
70	10000	30.818	Undefined	Supercritical
75	10000	30.608	Undefined	Supercritical
80	10000	30.4	Undefined	Supercritical
85	10000	30.195	Undefined	Supercritical
90	10000	29.993	Undefined	Supercritical
95	10000	29.793	Undefined	Supercritical
100	10000	29.596	Undefined	Supercritical
105	10000	29.401	Undefined	Supercritical
110	10000	29.209	Undefined	Supercritical
115	10000	29.019	Undefined	Supercritical
120	10000	28.832	Undefined	Supercritical

125	10000	28.647	Undefined	Supercritical
130	10000	28.464	Undefined	Supercritical
135	10000	28.284	Undefined	Supercritical
140	10000	28.106	Undefined	Supercritical
145	10000	27.93	Undefined	Supercritical
150	10000	27.756	Undefined	Supercritical

Pressure PSI

Pressure in PSI

1000	Solid	Gas	Gas	Gas	Gas	Crit
900	Solid	Gas	Gas	Gas	Gas	Crit
800	Solid	Gas	Gas	Gas	Gas	Crit
700	Solid	Gas	Gas	Gas	Gas	Crit
600	Solid	Gas	Gas	Gas	Gas	Crit
500	Solid	Gas	Gas	Gas	Gas	Crit
400	Solid	Liquid	Liquid	Liquid	Liquid	Gas
300	liquid	Liquid	Liquid	Liquid	Gas	Gas
200	liquid	Liquid	Liquid	Liquid	Gas	Gas
100	liquid	Liquid	Liquid	Gas	Gas	Gas
0.1	Solid	Solild	Solid	Solid	Solid	Gas
-345		-325	-300	-275	-250	-225

Pressure PSI

Crit	Crit	Crit	Crit	Crit	Crit	Crit
Crit	Crit	Crit	Crit	Crit	Crit	Crit
Crit	Crit	Crit	Crit	Crit	Crit	Crit
Crit	Crit	Crit	Crit	Crit	Crit	Crit
Crit	Crit	Crit	Crit	Crit	Crit	Crit
Crit	Crit	Crit	Crit	Crit	Crit	Crit
Crit	Crit	Crit	Crit	Crit	Crit	Crit
Gas	Gas	Gas	Gas	Gas	Gas	Gas
Gas	Gas	Gas	Gas	Gas	Gas	Gas
Gas	Gas	Gas	Gas	Gas	Gas	Gas
Gas	Gas	Gas	Gas	Gas	Gas	Gas
Gas	Gas	Gas	Gas	Gas	Gas	Gas
-200	-175	-150	-125	-100	-75	-50

Temp in F

Pressure PSI

Crit	Crit	Crit	Crit	Crit	Crit
Crit	Crit	Crit	Crit	Crit	Crit
Crit	Crit	Crit	Crit	Crit	Crit
Crit	Crit	Crit	Crit	Crit	Crit
Crit	Crit	Crit	Crit	Crit	Crit
Crit	Crit	Crit	Crit	Crit	Crit
Crit	Crit	Crit	Crit	Crit	Crit
Gas	Gas	Gas	Gas	Gas	Gas
Gas	Gas	Gas	Gas	Gas	Gas
Gas	Gas	Gas	Gas	Gas	Gas
Gas	Gas	Gas	Gas	Gas	Gas
Gas	Gas	Gas	Gas	Gas	Gas
Gas	Gas	Gas	Gas	Gas	Gas
-25	0	25	50	75	100