



COMBINED FLUID PRODUCTS COMPANY

ENGINEERING DATA – COMPRESSED AIR SYSTEMS

CFP PUMP UP FORMULA

$$\text{Pump Up Time in Minutes} = \frac{A \times B}{C}$$

WHERE

A = Tank size in cubic feet

B = $\frac{\text{Desired psig} - \text{initial psig}}{14.7}$

C = Average scfm output

NOTE: The above formula assumes the heat of compression is removed at the pump discharge or by dissipation from the system .

SCFM AIR FLOW THROUGH AN ORIFICE

Downstream Pressure = 14.7 psia Cd (discharge coefficient) = 0.65 Air Temperature = 70 degrees F

Upstream Pressure

ORIFICE DIAMETERS

PSIG	1/64	1/32	1/16	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1
1.00	0.02	0.07	0.29	1.1	4.6	10	18	29	41	56	73
2.00	0.03	0.10	0.40	1.6	6.4	14	26	40	58	79	103
3.00	0.03	0.12	0.49	2.0	7.9	18	31	49	71	96	126
4.00	0.04	0.14	0.57	2.3	9.1	20	36	57	82	111	145
5.00	0.04	0.16	0.63	2.5	10	23	40	63	91	124	162
6.00	0.04	0.17	0.69	2.8	11	25	44	69	99	135	177
7.00	0.05	0.19	0.74	3.0	12	27	48	74	107	146	190
8.00	0.05	0.20	0.79	3.2	13	29	51	79	114	156	203
9.00	0.05	0.21	0.84	3.4	13	30	54	84	121	165	215
10.00	0.06	0.22	0.88	3.5	14	32	57	88	127	173	226
15.00	0.07	0.27	1.1	4.3	17	39	69	107	154	210	275
20.00	0.08	0.31	1.3	5.0	20	45	80	125	180	246	321
25.00	0.09	0.36	1.4	5.7	23	52	92	143	206	281	367
30.00	0.10	0.40	1.6	6.5	26	58	103	161	232	316	413
35.00	0.11	0.45	1.8	7.2	29	65	115	179	258	352	459
40.00	0.12	0.49	2.0	7.9	32	71	126	198	284	387	506
45.00	0.13	0.54	2.2	8.6	34	78	138	216	310	423	552
50.00	0.15	0.58	2.3	9.3	37	84	150	234	336	458	598
60.00	0.17	0.67	2.7	11	43	97	173	270	388	529	691
70.00	0.19	0.76	3.1	12	49	110	196	306	440	600	783
80.00	0.21	0.85	3.4	14	55	123	219	342	492	670	876
90.00	0.24	0.95	3.8	15	60	136	242	378	544	741	968
100.00	0.26	1.0	4.1	17	66	149	265	414	596	812	1060

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