

PARAMETERS FOR ISENTROPIC FLOW THROUGH DUCTS ( $\gamma = 1.4$ )

NORMAL SHOCK-WAVE RELATIONS FOR  $\gamma = 1.4$

M	$P/P_0$	$\rho/\rho_0$	$T/T_0$	$a/a_0$	$A/A^*$	$M_1$	$P_2/P_1$	$\rho_2/\rho_1$	$T_2/T_1$	$a_2/a_1$	$P_{20}/P_{10}$	$M_2$
0.0	1.000	1.000	1.000	1.000	0.000	1.00	1.000	1.000	1.000	1.000	1.000	0
0.05	.9983	.9988	.9995	.9998	.0863	1.05	1.120	1.084	1.035	1.016	.9999	.9531
0.10	.9930	.9950	.9980	.9990	.1718	1.10	1.245	1.169	1.065	1.032	.9989	.9118
0.15	.9844	.9888	.9955	.9978	.2557	1.20	1.513	1.342	1.128	1.062	.9928	.8422
0.20	.9725	.9803	.9921	.9960	.3374	1.25	1.656	1.429	1.159	1.077	.9871	.8126
0.25	.9575	.9694	.9877	.9938	.4162	1.30	1.805	1.516	1.191	1.091	.9794	.7860
0.30	.9395	.9564	.9823	.9911	.4914	1.35	1.960	1.603	1.223	1.106	.9697	.7618
0.35	.9188	.9413	.9761	.9880	.5624	1.40	2.120	1.690	1.255	1.120	.9582	.7397
0.40	.8956	.9243	.9690	.9844	.6289	1.45	2.286	1.776	1.287	1.135	.9448	.7196
0.45	.8703	.9055	.9611	.9803	.6903	1.5	2.458	1.862	1.320	1.149	.9298	.7011
0.50	.8430	.8852	.9524	.9759	.7464	1.55	2.636	1.947	1.354	1.164	.9132	.6841
0.55	.8142	.8634	.9430	.9711	.7968	1.6	2.820	2.032	1.388	1.178	.8952	.6684
0.60	.7840	.8405	.9328	.9658	.8416	1.65	3.010	2.115	1.423	1.193	.8760	.6540
0.65	.7528	.8164	.9221	.9603	.8806	1.70	3.205	2.198	1.458	1.208	.8557	.6405
0.70	.7209	.7916	.9107	.9543	.9138	1.75	3.406	2.279	1.495	1.223	.8346	.6281
0.75	.6886	.7660	.8989	.9481	.9412	1.8	3.613	2.359	1.532	1.238	.8127	.6165
0.80	.6560	.7400	.8865	.9416	.9632	1.85	3.826	2.438	1.563	1.253	.7902	.6057
0.85	.6235	.7136	.8737	.9347	.9797	1.9	4.045	2.516	1.608	1.268	.7674	.5956
0.90	.5913	.6870	.8606	.9277	.9912	1.95	4.270	2.592	1.647	1.283	.7442	.5862
0.95	.5595	.6604	.8471	.9204	.9979	2.00	4.500	2.667	1.688	1.299	.7209	.5773
1.0	.5283	.6339	.8333	.9129	1.0000	2.10	4.978	2.812	1.770	1.331	.6742	.5613
1.1	.4684	.5817	.8052	.8973	.9921	2.2	5.480	2.915	1.857	1.363	.6281	.5471
1.2	.4124	.5311	.7764	.8811	.9705	2.3	6.005	3.085	1.947	1.395	.5833	.5344
1.3	.3609	.4829	.7474	.8645	.9378	2.4	6.553	3.212	2.040	1.418	.5401	.5231
1.4	.3142	.4374	.7184	.8476	.8969	2.5	7.125	3.333	2.138	1.462	.4990	.5130
1.5	.2724	.3950	.6897	.8305	.8502	2.6	7.720	3.449	2.238	1.496	.4601	.5039
1.6	.2353	.3557	.6614	.8133	.7998	2.7	8.338	3.559	2.343	1.531	.4236	.4956
1.7	.2026	.3197	.6337	.7961	.7476	2.8	8.980	3.664	2.451	1.566	.3895	.4882
1.8	.1740	.2868	.6068	.7790	.6949	2.9	9.645	3.763	2.563	1.601	.3577	.4814
1.9	.1492	.2570	.5807	.7620	.6430	3.0	10.33	3.857	2.679	1.637	.3283	.4752
2.0	.1278	.2300	.5556	.7454	.5926	3.2	11.78	4.031	2.922	1.709	.2762	.4643
2.2	.09352	.1841	.5081	.7128	.4988	3.4	13.32	4.188	3.180	1.783	.2322	.4552
2.4	.06840	.1472	.4647	.6817	.4161	3.6	14.95	4.330	3.454	1.858	.1953	.4474
2.6	.05012	.1179	.4252	.6521	.3453	3.8	16.68	4.457	3.743	1.935	.1645	.4407
2.8	.03685	.09463	.3894	.6240	.2857	4.0	18.50	4.571	4.047	2.012	.1388	.4350
3.0	.02722	.07623	.3571	.5974	.2362							