Table 18.1: Physical Properties of Water (SI units)*

T ^{o}C	ρ (kg/m^3)	γ (kN/m^3)	a (m/s)	μ (N.s/m^2)	ν (m^2/s)	σ_e (N/m)
0	999.9	9.806	1403	1.78E-03	1.78E-06	7.56E-02
5	1000	9.807	1427	1.52E-03	1.52E-06	7.49E-02
10	999.7	9.804	1447	1.31E-03	1.31E-06	7.42E-02
20	998.2	9.789	1481	1.00E-03	1.00E-06	7.28E-02
30	995.7	9.765	1507	7.98E-04	8.01E-07	7.12E-02
40	992.2	9.731	1526	6.53E-04	6.58E-07	6.96E-02
50	988.1	9.69	1541	5.47E-04	5.53E-07	6.79E-02
60	983.2	9.642	1552	4.67E-04	4.75E-07	6.62E-02
70	977.8	9.589	1555	4.04E-04	4.13E-07	6.44E-02
80	971.8	9.53	1555	3.55E-04	3.65E-07	6.26E-02
90	965.3	9.467	1550	3.15E-04	3.26E-07	6.08E-02
100	958.4	9.399	1543	2.82E-04	2.94E-07	5.89E-02

APPENDIX: PROPERTIES OF WATER

Table 18.2: Properties of Water

T ^{o}C	Specific Weight kN/m^3	Density kg/m^3	Abs. Viscosity Pa.s
0	9.81	1000	1.75×10^{-3}
5	9.81	1000	1.52×10^{-3}
10	9.81	1000	1.3×10^{-3}
15	9.81	1000	1.15×10^{-3}
20	9.79	998	1.02×10^{-3}
25	9.78	997	8.91×10^{-4}
30	9.77	996	8×10^{-4}
35	9.75	994	7.18×10^{-4}
40	9.73	992	6.51×10^{-4}
45	9.71	990	5.94×10^{-4}
50	9.69	988	5.41×10^{-4}
55	9.67	986	4.98×10^{-4}
60	9.65	984	4.6×10^{-4}
65	9.62	981	4.31×10^{-4}
70	9.59	978	4.02×10^{-4}
75	9.56	975	3.73×10^{-4}
80	9.53	971	3.5×10^{-4}
85	9.5	968	3.3×10^{-4}
90	9.47	965	3.11×10^{-4}
95	9.44	962	2.92×10^{-4}
100	9.4	958	2.82×10^{-4}

APPENDIX: Water Dynamic Viscosity Pa.s

Table 18.3: Water Dynamic Viscosity $10^6.\mu$ (Pa.s)

bars	1	10	50	100	200	500
^{o}C						
0	1791.53	1789.28	1779.51	1767.9	1746.57	1696.53
10	1305.88	1304.9	1300.68	1295.69	1286.64	1266.44
20	1001.61	1001.22	999.59	997.7	994.42	988.36
30	797.35	797.26	796.92	796.59	796.2	797.24
40	652.98	653.05	653.39	653.87	655	659.71
50	546.85	547.01	547.71	548.63	550.56	557.18
60	466.4	466.6	467.5	468.65	471.01	478.57
70	403.9	404.12	405.13	406.39	408.96	416.96
80	354.36	354.59	355.64	356.96	359.62	367.76
90	314.41	314.65	315.72	317.06	319.74	327.86
100	12.27	281.99	283.06	284.39	287.06	295.08
110	12.64	254.93	255.99	257.31	259.95	267.81
120	13.02	232.26	233.31	234.62	237.22	244.91
130	13.41	213.08	214.12	215.41	217.96	225.49
140	13.79	196.7	197.73	199	201.51	208.88
150	14.18	182.59	183.6	184.86	187.33	194.55
160	14.58	170.34	171.34	172.58	175.02	182.11
170	14.97	159.61	160.6	161.83	164.25	171.24
180	15.37	15.03	151.13	152.35	154.76	161.66
190	15.77	15.46	142.71	143.94	146.33	153.17
200	16.18	15.89	135.18	136.41	138.81	145.61
210	16.58	16.33	128.39	129.63	132.04	138.82
220	16.99	16.76	122.21	123.47	125.9	132.7
230	17.4	17.19	116.54	117.83	120.31	127.15
240	17.81	17.62	111.3	112.62	115.16	122.08
250	18.22	18.05	106.4	107.78	110.39	117.42
260	18.63	18.47	101.77	103.21	105.93	113.12
270	19.05	18.9	18.34	98.87	101.72	109.12
280	19.46	19.33	18.83	94.68	97.71	105.37
290	19.88	19.76	19.32	90.57	93.84	101.84
300	20.29	20.19	19.8	86.46	90.05	98.48
310	20.71	20.61	20.27	82.23	86.29	95.26
320	21.12	21.04	20.74	20.7	82.47	92.16
330	21.54	21.46	21.21	21.19	78.5	89.14
340	21.95	21.89	21.67	21.67	74.22	86.17
350	22.37	22.31	22.13	22.15	69.31	83.24
360	22.79	22.74	22.58	22.63	62.81	80.3

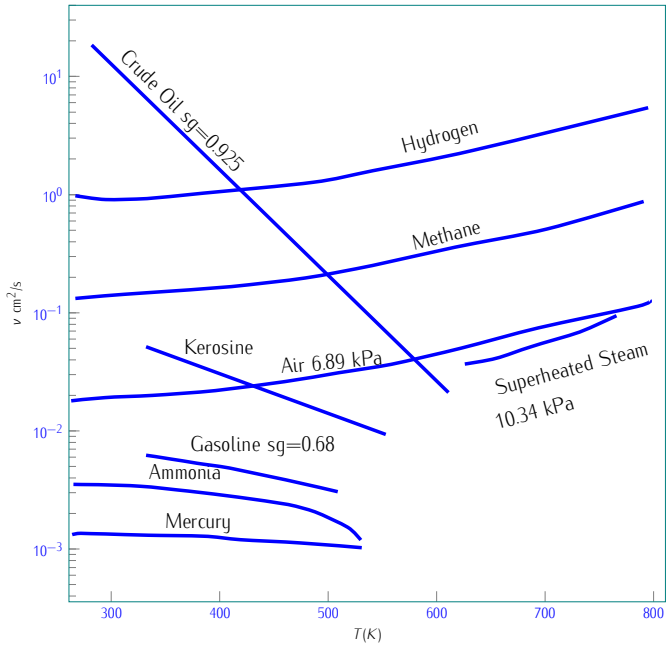

Figure 18.1: Kinematic viscosity versus temperature.

Table 18.4: Some common quantities and their dimensions

Quantity	symbol	Dimensions
Length	l	L
Mass	m	M
Time	t	T
Velocity	V	L/T
Acceleration	a	L/T^2
Angular velocity	Ω	T^2
Force	F	ML/T^2
Gravity	g	L/T^2
Volume Flow rate	Q	L^3/T
Pressure	p	M/LT^2
Density	ρ	M/L^3
Specific weight	γ	M/L^2T^2
Work	W	ML^2/T^2
Viscosity	μ	M/LT
Kinematic viscosity	ν	L^2/T
Power	P	ML^2/T^3
Heat flux	Q/A	ML^2/T^3
Surface tension	σ	M/T^2
Bulk modulus	κ	M/LT^2
Normal stress	σ	M/LT^2
Shear stress	τ	M/LT^2

APPENDIX: DIMENSIONS OF NOMIAL PIPE SIZES WITH INTERNAL DIAMETERS

Table 18.5: DIMENSIONS OF NOMIAL PIPE SIZES

Dia (in.)	Schedule	Dia (ft)	Dia (cm)	A (ft^2)	A (cm^2)
1/8	40	0.02242	0.683	0.0003947	0.3664
	80	0.01792	0.547	0.0002522	0.235
1/4	40	0.03033	0.924	0.0007227	0.6706
	80	0.2517	0.768	0.0004974	0.4632
3/8	40	0.04108	1.252	0.001326	1.233
	80	0.03525	1.074	0.0009759	0.9059
1/2	40	0.05183	1.58	0.00211	1.961
	80	0.0455	1.386	0.001626	1.508
	160	0.03867	1.178	0.001174	1.09
3/4	40	0.06867	2.093	0.003703	3.441
	80	0.06183	1.883	0.003003	2.785
	160	0.03867	1.178	0.002043	1.898
1	40	0.08742	2.664	0.006002	5.574
	80	0.07975	2.43	0.004995	5.083
	160	0.06792	2.07	0.003623	3.365
$1\frac{1}{4}$	40	0.115	3.504	0.01039	9.643
	80	0.1065	3.246	0.008908	8.275
	160	0.09667	2.946	0.007339	6.816
$1\frac{1}{2}$	40	0.1342	4.09	0.01313	13.13
	80	0.125	3.81	0.01227	11.4
	160	0.1115	3.398	0.009764	9.068
2	40	0.1723	5.252	0.0233	21.66
	80	0.1616	4.926	0.02051	19.06
	160	0.1306	4.286	0.01552	13.43
$2\frac{1}{2}$	40	0.2058	6.271	0.03325	30.89
	80	0.1936	5.901	0.02943	27.35
	160	0.1771	5.397	0.02463	22.88
3	40	0.2557	7.792	0.05134	47.69
	80	0.2417	7.366	0.04587	42.61
	160	0.2187	6.664	0.03755	34.88
$3\frac{1}{2}$	40	0.2957	9.012	0.06866	63.79
	80	0.2803	8.544	0.06172	57.33
4	40	0.3355	10.23	0.08841	82.19
	80	0.3198	9.718	0.07984	74.17
	120	0.302	9.204	0.07163	66.54
	160	0.2865	8.732	0.06447	59.88
5	40	0.4206	12.82	0.1389	129.1
	80	0.4801	13.64	0.181	168.3
	120	0.3803	11.59	0.1136	105.5
	160	0.3594	10.95	0.1015	94.17

APPENDIX: Properties of some gases

Table 18.6: Properties of some gases

Gas	Molar mass	$k=c_p/c_v$ (15 °C)	P_{cri} (bar)	T_{cri} (K)
n-Decane	142	1.03	22.1	619
n-Hexane	86	1.06	30.3	508
5n-Pentane	72	1.07	33.7	470
Benzene	78	1.12	49.2	563
Ethyl alcohol	46	1.13	63.9	517
Propane	44	1.13	42.5	370
Propylene	42	1.15	46	365
Ethane	30	1.19	48.8	305
Methyl alcohol	32	1.2	79.8	513
Acetylene	26	1.24	62.4	172
Sulfur dioxide	64	1.24	78.7	430
Ethylene	28	1.24	51.2	283
Natural gas	18.8	1.27	46.5	210
Carbon dioxide	44	1.3	74	304
Ammonia	17	1.31	114.2	406
Methane	16	1.31	46.4	191
Steam	18	1.33	221.2	648
Water gas	19.5	1.35	31.3	130
Coke oven	10.7	1.35	29.1	109
Chlorine	71	1.36	77.1	417
Blast furnace	29.6	1.39		
Air	29	1.4	37.7	133
Nitrogen	28	1.4	33.9	127
Carbon monoxide	28	1.4	35.2	134
Oxygen	32	1.4	50.3	154
Hydrogen	2	1.41	13	33
Argon	40	1.66	48.6	151
Helium	4	1.66	2.3	5

APPENDIX: ISENTROPIC TABLE $k = 1.4$

Table 18.7: APPENDIX: ISENTROPIC TABLE $\gamma = 1.4$

M	T_o/T	P_o/P	ρ_o/ρ	V^*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A^*
0.01	1.000	1.000	1.000	91.288	0.012	57.874
0.02	1.000	1.000	1.000	91.291	0.024	28.942
0.03	1.000	1.001	1.000	91.295	0.035	19.301
0.04	1.000	1.001	1.001	91.302	0.047	14.481
0.05	1.001	1.002	1.001	91.310	0.059	11.591
0.06	1.001	1.003	1.002	91.320	0.071	9.666
0.07	1.001	1.003	1.002	91.332	0.083	8.292
0.08	1.001	1.004	1.003	91.345	0.094	7.262
0.09	1.002	1.006	1.004	91.361	0.106	6.461
0.1	1.002	1.007	1.005	91.378	0.118	5.822
0.11	1.002	1.008	1.006	91.397	0.129	5.299
0.12	1.003	1.010	1.007	91.418	0.141	4.864
0.13	1.003	1.012	1.008	91.441	0.152	4.497
0.14	1.004	1.014	1.010	91.466	0.164	4.182
0.15	1.005	1.016	1.011	91.492	0.175	3.910
0.16	1.005	1.018	1.013	91.520	0.186	3.673
0.17	1.006	1.020	1.015	91.551	0.198	3.464
0.18	1.006	1.023	1.016	91.582	0.209	3.278
0.19	1.007	1.025	1.018	91.616	0.220	3.112
0.2	1.008	1.028	1.020	91.652	0.231	2.964
0.21	1.009	1.031	1.022	91.689	0.242	2.829
0.22	1.010	1.034	1.024	91.728	0.253	2.708
0.23	1.011	1.038	1.027	91.769	0.264	2.597
0.24	1.012	1.041	1.029	91.811	0.274	2.496
0.25	1.013	1.044	1.032	91.856	0.285	2.403
0.26	1.014	1.048	1.034	91.902	0.295	2.317
0.27	1.015	1.052	1.037	91.950	0.306	2.238
0.28	1.016	1.056	1.040	92.000	0.316	2.166
0.29	1.017	1.060	1.043	92.052	0.326	2.098
0.3	1.018	1.064	1.046	92.105	0.336	2.035
0.31	1.019	1.069	1.049	92.160	0.346	1.977

Table 18.8: APPENDIX: ISENTROPIC TABLE k = 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
0.32	1.020	1.074	1.052	2.882	0.356	1.922
0.33	1.022	1.078	1.055	2.884	0.366	1.871
0.34	1.023	1.083	1.059	2.886	0.376	1.823
0.35	1.025	1.088	1.062	2.887	0.385	1.778
0.36	1.026	1.094	1.066	2.889	0.394	1.736
0.37	1.027	1.099	1.070	2.892	0.404	1.696
0.38	1.029	1.105	1.074	2.894	0.413	1.659
0.39	1.030	1.111	1.078	2.896	0.422	1.623
0.4	1.032	1.117	1.082	2.898	0.431	1.590
0.41	1.034	1.123	1.086	2.900	0.439	1.559
0.42	1.035	1.129	1.091	2.903	0.448	1.529
0.43	1.037	1.136	1.095	2.905	0.456	1.501
0.44	1.039	1.142	1.100	2.907	0.465	1.474
0.45	1.041	1.149	1.104	2.910	0.473	1.449
0.46	1.042	1.156	1.109	2.912	0.481	1.425
0.47	1.044	1.163	1.114	2.915	0.488	1.402
0.48	1.046	1.171	1.119	2.918	0.496	1.380
0.49	1.048	1.178	1.124	2.920	0.504	1.359
0.5	1.050	1.186	1.130	2.923	0.511	1.340
0.51	1.052	1.194	1.135	2.926	0.518	1.321
0.52	1.054	1.202	1.141	2.929	0.525	1.303
0.53	1.056	1.211	1.146	2.932	0.532	1.286
0.54	1.058	1.219	1.152	2.935	0.539	1.270
0.55	1.061	1.228	1.158	2.938	0.546	1.255
0.56	1.063	1.237	1.164	2.941	0.552	1.240
0.57	1.065	1.247	1.170	2.944	0.558	1.226
0.58	1.067	1.256	1.177	2.947	0.564	1.213
0.59	1.070	1.266	1.183	2.950	0.570	1.200

Table 18.9: APPENDIX: ISENTROPIC TABLE k = 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
0.6	1.072	1.276	1.190	1.575	0.576	1.188
0.61	1.074	1.286	1.197	1.577	0.582	1.177
0.62	1.077	1.296	1.203	1.579	0.587	1.166
0.63	1.079	1.307	1.210	1.581	0.593	1.155
0.64	1.082	1.317	1.218	1.583	0.598	1.145
0.65	1.085	1.328	1.225	1.584	0.603	1.136
0.66	1.087	1.340	1.232	1.586	0.608	1.127
0.67	1.090	1.351	1.240	1.588	0.613	1.118
0.68	1.092	1.363	1.247	1.590	0.617	1.110
0.69	1.095	1.375	1.255	1.592	0.621	1.102
0.7	1.098	1.387	1.263	1.594	0.626	1.094
0.71	1.101	1.400	1.271	1.596	0.630	1.087
0.72	1.104	1.412	1.280	1.598	0.634	1.081
0.73	1.107	1.425	1.288	1.600	0.637	1.074
0.74	1.110	1.439	1.297	1.603	0.641	1.068
0.75	1.113	1.452	1.305	1.605	0.645	1.062
0.76	1.116	1.466	1.314	1.607	0.648	1.057
0.77	1.119	1.480	1.323	1.609	0.651	1.052
0.78	1.122	1.495	1.333	1.611	0.654	1.047
0.79	1.125	1.509	1.342	1.614	0.657	1.043
0.8	1.128	1.524	1.351	1.616	0.660	1.038
0.81	1.131	1.540	1.361	1.618	0.662	1.034
0.82	1.134	1.555	1.371	1.621	0.664	1.030
0.83	1.138	1.571	1.381	1.623	0.667	1.027
0.84	1.141	1.587	1.391	1.625	0.669	1.024
0.85	1.145	1.604	1.401	1.628	0.671	1.021
0.86	1.148	1.621	1.412	1.630	0.673	1.018
0.87	1.151	1.638	1.422	1.633	0.674	1.015

Table 18.10: APPENDIX: ISENTROPIC TABLE k= 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
0.88	1.155	1.655	1.433	1.115	0.676	1.013
0.89	1.158	1.673	1.444	1.117	0.677	1.011
0.9	1.162	1.691	1.456	1.118	0.679	1.009
0.91	1.166	1.710	1.467	1.120	0.680	1.007
0.92	1.169	1.729	1.478	1.122	0.681	1.006
0.93	1.173	1.748	1.490	1.123	0.682	1.004
0.94	1.177	1.767	1.502	1.125	0.683	1.003
0.95	1.181	1.787	1.514	1.127	0.683	1.002
0.96	1.184	1.808	1.526	1.129	0.684	1.001
0.97	1.188	1.828	1.539	1.131	0.684	1.001
0.98	1.192	1.850	1.552	1.133	0.685	1.000
0.99	1.196	1.871	1.564	1.134	0.685	1.000
1	1.200	1.893	1.577	1.136	0.685	1.000
1.01	1.204	1.915	1.591	1.138	0.685	1.000
1.02	1.208	1.938	1.604	1.140	0.685	1.000
1.03	1.212	1.961	1.618	1.142	0.684	1.001
1.04	1.216	1.985	1.632	1.144	0.684	1.001
1.05	1.221	2.009	1.646	1.146	0.683	1.002
1.06	1.225	2.033	1.660	1.148	0.683	1.003
1.07	1.229	2.058	1.674	1.150	0.682	1.004
1.08	1.233	2.083	1.689	1.152	0.681	1.005
1.09	1.238	2.109	1.704	1.154	0.680	1.006
1.1	1.242	2.135	1.719	1.156	0.679	1.008
1.11	1.246	2.162	1.734	1.158	0.678	1.010
1.12	1.251	2.189	1.750	1.160	0.677	1.011
1.13	1.255	2.217	1.766	1.162	0.676	1.013
1.14	1.260	2.245	1.782	1.164	0.674	1.015
1.15	1.265	2.274	1.798	1.167	0.673	1.017

Table 18.11: APPENDIX: ISENTROPIC TABLE k = 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
1.14	1.260	2.245	1.782	0.899	0.674	1.015
1.15	1.265	2.274	1.798	0.900	0.673	1.017
1.16	1.269	2.303	1.814	0.902	0.671	1.020
1.17	1.274	2.333	1.831	0.904	0.670	1.022
1.18	1.278	2.363	1.848	0.905	0.668	1.025
1.19	1.283	2.394	1.865	0.907	0.666	1.028
1.2	1.288	2.425	1.883	0.909	0.665	1.030
1.21	1.293	2.457	1.900	0.910	0.663	1.033
1.22	1.298	2.489	1.918	0.912	0.661	1.037
1.23	1.303	2.522	1.936	0.914	0.659	1.040
1.24	1.308	2.556	1.955	0.916	0.656	1.043
1.25	1.313	2.590	1.974	0.917	0.654	1.047
1.26	1.318	2.625	1.992	0.919	0.652	1.050
1.27	1.323	2.661	2.012	0.921	0.650	1.054
1.28	1.328	2.697	2.031	0.923	0.647	1.058
1.29	1.333	2.733	2.051	0.924	0.645	1.062
1.3	1.338	2.771	2.071	0.926	0.642	1.066
1.31	1.343	2.809	2.091	0.928	0.640	1.071
1.32	1.348	2.847	2.112	0.930	0.637	1.075
1.33	1.354	2.887	2.132	0.932	0.634	1.080
1.34	1.359	2.927	2.153	0.934	0.632	1.084
1.35	1.365	2.968	2.175	0.935	0.629	1.089
1.36	1.370	3.009	2.197	0.937	0.626	1.094
1.37	1.375	3.051	2.218	0.939	0.623	1.099
1.38	1.381	3.094	2.241	0.941	0.620	1.104
1.39	1.386	3.138	2.263	0.943	0.617	1.109
1.4	1.392	3.182	2.286	0.945	0.614	1.115
1.41	1.398	3.227	2.309	0.947	0.611	1.120

Table 18.12: APPENDIX: ISENTROPIC TABLE k = 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
1.42	1.403	3.273	2.333	0.762	0.608	1.126
1.43	1.409	3.320	2.356	0.763	0.605	1.132
1.44	1.415	3.368	2.381	0.765	0.602	1.138
1.45	1.421	3.416	2.405	0.766	0.599	1.144
1.46	1.426	3.465	2.430	0.768	0.595	1.150
1.47	1.432	3.516	2.455	0.769	0.592	1.156
1.48	1.438	3.566	2.480	0.771	0.589	1.163
1.49	1.444	3.618	2.506	0.773	0.586	1.169
1.5	1.450	3.671	2.532	0.774	0.582	1.176
1.51	1.456	3.725	2.558	0.776	0.579	1.183
1.52	1.462	3.779	2.585	0.777	0.575	1.190
1.53	1.468	3.835	2.612	0.779	0.572	1.197
1.54	1.474	3.891	2.639	0.781	0.569	1.204
1.55	1.481	3.948	2.667	0.782	0.565	1.212
1.56	1.487	4.007	2.695	0.784	0.562	1.219
1.57	1.493	4.066	2.724	0.786	0.558	1.227
1.58	1.499	4.127	2.752	0.787	0.555	1.234
1.59	1.506	4.188	2.782	0.789	0.551	1.242
1.6	1.512	4.250	2.811	0.790	0.548	1.250
1.61	1.518	4.314	2.841	0.792	0.544	1.258
1.62	1.525	4.378	2.871	0.794	0.541	1.267
1.63	1.531	4.444	2.902	0.796	0.537	1.275
1.64	1.538	4.511	2.933	0.797	0.533	1.284
1.65	1.545	4.579	2.965	0.799	0.530	1.292
1.66	1.551	4.648	2.996	0.801	0.526	1.301
1.67	1.558	4.718	3.029	0.802	0.523	1.310
1.68	1.564	4.790	3.061	0.804	0.519	1.319
1.69	1.571	4.862	3.095	0.806	0.516	1.328

Table 18.13: APPENDIX: ISENTROPIC TABLE k= 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
1.7	1.578	4.936	3.128	0.675	0.512	1.338
1.71	1.585	5.011	3.162	0.676	0.508	1.347
1.72	1.592	5.087	3.196	0.677	0.505	1.357
1.73	1.599	5.165	3.231	0.679	0.501	1.367
1.74	1.606	5.244	3.266	0.680	0.497	1.376
1.75	1.613	5.324	3.302	0.682	0.494	1.386
1.76	1.620	5.406	3.338	0.683	0.490	1.397
1.77	1.627	5.489	3.374	0.685	0.487	1.407
1.78	1.634	5.573	3.411	0.686	0.483	1.418
1.79	1.641	5.659	3.449	0.688	0.479	1.428
1.8	1.648	5.746	3.487	0.689	0.476	1.439
1.81	1.655	5.834	3.525	0.691	0.472	1.450
1.82	1.662	5.924	3.564	0.692	0.469	1.461
1.83	1.670	6.016	3.603	0.694	0.465	1.472
1.84	1.677	6.109	3.643	0.695	0.462	1.484
1.85	1.685	6.204	3.683	0.697	0.458	1.495
1.86	1.692	6.300	3.723	0.698	0.454	1.507
1.87	1.699	6.398	3.765	0.700	0.451	1.519
1.88	1.707	6.497	3.806	0.702	0.447	1.531
1.89	1.714	6.598	3.849	0.703	0.444	1.543
1.9	1.722	6.701	3.891	0.705	0.440	1.555
1.91	1.730	6.805	3.934	0.706	0.437	1.568
1.92	1.737	6.911	3.978	0.708	0.433	1.580
1.93	1.745	7.019	4.022	0.709	0.430	1.593
1.94	1.753	7.128	4.067	0.711	0.426	1.606
1.95	1.761	7.240	4.112	0.712	0.423	1.619
1.96	1.768	7.353	4.158	0.714	0.419	1.633
1.97	1.776	7.468	4.205	0.716	0.416	1.646

Table 18.14: APPENDIX: ISENTROPIC TABLE k= 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
1.98	1.784	7.585	4.251	0.616	0.413	1.660
1.99	1.792	7.704	4.299	0.617	0.409	1.674
2	1.800	7.824	4.347	0.619	0.406	1.688
2.01	1.808	7.947	4.395	0.620	0.402	1.702
2.02	1.816	8.072	4.445	0.621	0.399	1.716
2.03	1.824	8.199	4.494	0.623	0.396	1.730
2.04	1.832	8.327	4.545	0.624	0.392	1.745
2.05	1.841	8.458	4.596	0.625	0.389	1.760
2.06	1.849	8.591	4.647	0.627	0.386	1.775
2.07	1.857	8.726	4.699	0.628	0.382	1.790
2.08	1.865	8.863	4.752	0.630	0.379	1.806
2.09	1.874	9.003	4.805	0.631	0.376	1.821
2.1	1.882	9.145	4.859	0.632	0.373	1.837
2.11	1.890	9.289	4.914	0.634	0.370	1.853
2.12	1.899	9.435	4.969	0.635	0.366	1.869
2.13	1.907	9.584	5.025	0.637	0.363	1.885
2.14	1.916	9.735	5.081	0.638	0.360	1.902
2.15	1.925	9.888	5.138	0.640	0.357	1.919
2.16	1.933	10.044	5.196	0.641	0.354	1.935
2.17	1.942	10.202	5.254	0.642	0.351	1.953
2.18	1.950	10.363	5.313	0.644	0.348	1.970
2.19	1.959	10.527	5.373	0.645	0.345	1.987
2.2	1.968	10.693	5.433	0.647	0.342	2.005
2.21	1.977	10.861	5.494	0.648	0.338	2.023
2.22	1.986	11.033	5.556	0.650	0.335	2.041
2.23	1.995	11.207	5.619	0.651	0.333	2.059

Table 18.15: APPENDIX: ISENTROPIC TABLE k = 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
2.24	2.004	11.384	5.682	0.577	0.330	2.078
2.25	2.013	11.563	5.746	0.578	0.327	2.096
2.26	2.022	11.746	5.810	0.579	0.324	2.115
2.27	2.031	11.931	5.876	0.581	0.321	2.134
2.28	2.040	12.119	5.942	0.582	0.318	2.154
2.29	2.049	12.310	6.008	0.583	0.315	2.173
2.3	2.058	12.504	6.076	0.585	0.312	2.193
2.31	2.067	12.701	6.144	0.586	0.309	2.213
2.32	2.076	12.902	6.213	0.587	0.307	2.233
2.33	2.086	13.105	6.283	0.589	0.304	2.254
2.34	2.095	13.312	6.354	0.590	0.301	2.274
2.35	2.105	13.521	6.425	0.591	0.298	2.295
2.36	2.114	13.734	6.497	0.593	0.296	2.316
2.37	2.123	13.951	6.570	0.594	0.293	2.338
2.38	2.133	14.170	6.644	0.595	0.290	2.359
2.39	2.142	14.393	6.718	0.597	0.288	2.381
2.4	2.152	14.620	6.794	0.598	0.285	2.403
2.41	2.162	14.850	6.870	0.599	0.282	2.425
2.42	2.171	15.084	6.947	0.601	0.280	2.448
2.43	2.181	15.321	7.025	0.602	0.277	2.471
2.44	2.191	15.562	7.103	0.603	0.275	2.494
2.45	2.201	15.806	7.183	0.605	0.272	2.517
2.46	2.210	16.054	7.263	0.606	0.270	2.540
2.47	2.220	16.306	7.345	0.607	0.267	2.564
2.48	2.230	16.562	7.427	0.609	0.265	2.588
2.49	2.240	16.822	7.510	0.610	0.262	2.612
2.5	2.250	17.086	7.594	0.611	0.260	2.637
2.51	2.260	17.354	7.679	0.613	0.257	2.661

Table 18.16: APPENDIX: ISENTROPIC TABLE k= 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
2.52	2.270	17.626	7.764	0.546	0.255	2.686
2.53	2.280	17.902	7.851	0.547	0.253	2.712
2.54	2.290	18.182	7.939	0.548	0.250	2.737
2.55	2.301	18.466	8.027	0.549	0.248	2.763
2.56	2.311	18.755	8.116	0.551	0.246	2.789
2.57	2.321	19.048	8.207	0.552	0.243	2.815
2.58	2.331	19.346	8.298	0.553	0.241	2.842
2.59	2.342	19.648	8.391	0.554	0.239	2.869
2.6	2.352	19.954	8.484	0.556	0.236	2.896
2.61	2.362	20.265	8.578	0.557	0.234	2.923
2.62	2.373	20.581	8.673	0.558	0.232	2.951
2.63	2.383	20.901	8.770	0.559	0.230	2.979
2.64	2.394	21.227	8.867	0.560	0.228	3.007
2.65	2.405	21.557	8.965	0.562	0.226	3.036
2.66	2.415	21.892	9.065	0.563	0.223	3.065
2.67	2.426	22.232	9.165	0.564	0.221	3.094
2.68	2.436	22.577	9.266	0.565	0.219	3.123
2.69	2.447	22.927	9.369	0.567	0.217	3.153
2.7	2.458	23.283	9.472	0.568	0.215	3.183
2.71	2.469	23.644	9.577	0.569	0.213	3.213
2.72	2.480	24.010	9.683	0.570	0.211	3.244
2.73	2.491	24.381	9.789	0.572	0.209	3.275
2.74	2.502	24.758	9.897	0.573	0.207	3.306
2.75	2.513	25.140	10.006	0.574	0.205	3.338
2.76	2.524	25.528	10.116	0.575	0.203	3.370
2.77	2.535	25.922	10.227	0.577	0.201	3.402
2.78	2.546	26.322	10.340	0.578	0.199	3.434
2.79	2.557	26.727	10.453	0.579	0.198	3.467

Table 18.17: APPENDIX: ISENTROPIC TABLE k= 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
2.8	2.568	27.138	10.568	0.522	0.196	3.500
2.81	2.579	27.556	10.684	0.524	0.194	3.534
2.82	2.590	27.979	10.801	0.525	0.192	3.567
2.83	2.602	28.408	10.919	0.526	0.190	3.601
2.84	2.613	28.844	11.038	0.527	0.188	3.636
2.85	2.625	29.286	11.159	0.528	0.187	3.671
2.86	2.636	29.735	11.281	0.529	0.185	3.706
2.87	2.647	30.190	11.404	0.530	0.183	3.741
2.88	2.659	30.651	11.528	0.532	0.181	3.777
2.89	2.670	31.119	11.653	0.533	0.180	3.813
2.9	2.682	31.594	11.780	0.534	0.178	3.850
2.91	2.694	32.076	11.908	0.535	0.176	3.887
2.92	2.705	32.564	12.037	0.536	0.175	3.924
2.93	2.717	33.060	12.168	0.537	0.173	3.961
2.94	2.729	33.563	12.300	0.539	0.171	3.999
2.95	2.741	34.073	12.433	0.540	0.170	4.038
2.96	2.752	34.590	12.567	0.541	0.168	4.076
2.97	2.764	35.114	12.703	0.542	0.166	4.115
2.98	2.776	35.646	12.840	0.543	0.165	4.155
2.99	2.788	36.186	12.979	0.544	0.163	4.194
3	2.800	36.733	13.119	0.546	0.162	4.235
3.01	2.812	37.288	13.260	0.547	0.160	4.275
3.02	2.824	37.850	13.403	0.548	0.159	4.316
3.03	2.836	38.421	13.547	0.549	0.157	4.357
3.04	2.848	39.000	13.692	0.550	0.156	4.399
3.05	2.861	39.586	13.839	0.551	0.154	4.441
3.06	2.873	40.182	13.987	0.553	0.153	4.483
3.07	2.885	40.785	14.137	0.554	0.151	4.526

Table 18.18: APPENDIX: ISENTROPIC TABLE k= 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
3.08	2.897	41.397	14.288	0.504	0.150	4.570
3.09	2.910	42.017	14.441	0.506	0.148	4.613
3.1	2.922	42.646	14.595	0.507	0.147	4.657
3.11	2.934	43.284	14.750	0.508	0.146	4.702
3.12	2.947	43.931	14.908	0.509	0.144	4.747
3.13	2.959	44.586	15.066	0.510	0.143	4.792
3.14	2.972	45.251	15.226	0.511	0.142	4.838
3.15	2.985	45.925	15.388	0.512	0.140	4.884
3.16	2.997	46.608	15.551	0.513	0.139	4.930
3.17	3.010	47.301	15.716	0.514	0.138	4.977
3.18	3.022	48.003	15.882	0.515	0.136	5.025
3.19	3.035	48.715	16.050	0.516	0.135	5.073
3.2	3.048	49.437	16.219	0.517	0.134	5.121
3.21	3.061	50.169	16.391	0.519	0.132	5.170
3.22	3.074	50.910	16.563	0.520	0.131	5.219
3.23	3.087	51.662	16.738	0.521	0.130	5.268
3.24	3.100	52.424	16.914	0.522	0.129	5.319
3.25	3.113	53.196	17.091	0.523	0.128	5.369
3.26	3.126	53.979	17.271	0.524	0.126	5.420
3.27	3.139	54.773	17.452	0.525	0.125	5.472
3.28	3.152	55.577	17.634	0.526	0.124	5.523
3.29	3.165	56.393	17.819	0.527	0.123	5.576
3.3	3.178	57.219	18.005	0.528	0.122	5.629
3.31	3.191	58.056	18.192	0.529	0.121	5.682
3.32	3.204	58.905	18.382	0.531	0.119	5.736
3.33	3.218	59.765	18.573	0.532	0.118	5.790
3.34	3.231	60.637	18.766	0.533	0.117	5.845
3.35	3.245	61.520	18.961	0.534	0.116	5.900

Table 18.19: APPENDIX: ISENTROPIC TABLE k= 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
3.36	3.258	62.415	19.158	0.490	0.115	5.956
3.37	3.271	63.323	19.357	0.491	0.114	6.012
3.38	3.285	64.242	19.557	0.492	0.113	6.069
3.39	3.298	65.173	19.759	0.493	0.112	6.126
3.4	3.312	66.117	19.963	0.494	0.111	6.184
3.41	3.326	67.074	20.169	0.495	0.110	6.242
3.42	3.339	68.043	20.377	0.496	0.109	6.301
3.43	3.353	69.025	20.586	0.497	0.108	6.360
3.44	3.367	70.020	20.798	0.499	0.107	6.420
3.45	3.381	71.029	21.011	0.500	0.106	6.480
3.46	3.394	72.050	21.227	0.501	0.105	6.541
3.47	3.408	73.085	21.444	0.502	0.104	6.602
3.48	3.422	74.134	21.663	0.503	0.103	6.664
3.49	3.436	75.196	21.885	0.504	0.102	6.727
3.5	3.450	76.272	22.108	0.505	0.101	6.790
3.51	3.464	77.363	22.333	0.506	0.100	6.853
3.52	3.478	78.467	22.561	0.507	0.099	6.917
3.53	3.492	79.586	22.790	0.508	0.098	6.982
3.54	3.506	80.720	23.021	0.509	0.097	7.047
3.55	3.521	81.868	23.255	0.510	0.096	7.113
3.56	3.535	83.031	23.490	0.511	0.095	7.179
3.57	3.549	84.210	23.728	0.512	0.094	7.246
3.58	3.563	85.403	23.968	0.513	0.094	7.313
3.59	3.578	86.612	24.209	0.514	0.093	7.381
3.60	3.592	87.837	24.453	0.515	0.092	7.450
3.61	3.606	89.077	24.700	0.516	0.091	7.519
3.62	3.621	90.334	24.948	0.517	0.090	7.589
3.63	3.635	91.606	25.198	0.518	0.089	7.659

Table 18.20: APPENDIX: ISENTROPIC TABLE k = 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
3.64	3.650	92.895	25.451	0.479	0.089	7.730
3.65	3.665	94.200	25.706	0.480	0.088	7.802
3.66	3.679	95.522	25.963	0.481	0.087	7.874
3.67	3.694	96.861	26.223	0.482	0.086	7.947
3.68	3.708	98.217	26.484	0.483	0.085	8.020
3.69	3.723	99.590	26.748	0.484	0.085	8.094
3.7	3.738	100.981	27.015	0.485	0.084	8.169
3.71	3.753	102.389	27.283	0.486	0.083	8.244
3.72	3.768	103.815	27.554	0.487	0.082	8.320
3.73	3.783	105.259	27.827	0.488	0.082	8.397
3.74	3.798	106.721	28.103	0.489	0.081	8.474
3.75	3.813	108.202	28.381	0.490	0.080	8.552
3.76	3.828	109.701	28.661	0.491	0.079	8.630
3.77	3.843	111.219	28.944	0.492	0.079	8.709
3.78	3.858	112.757	29.229	0.493	0.078	8.789
3.79	3.873	114.313	29.517	0.494	0.077	8.869
3.8	3.888	115.889	29.807	0.495	0.077	8.951
3.81	3.903	117.485	30.099	0.495	0.076	9.032
3.82	3.918	119.100	30.394	0.496	0.075	9.115
3.83	3.934	120.736	30.692	0.497	0.074	9.198
3.84	3.949	122.391	30.992	0.498	0.074	9.282
3.85	3.965	124.068	31.295	0.499	0.073	9.366
3.86	3.980	125.765	31.600	0.500	0.072	9.451
3.87	3.995	127.483	31.908	0.501	0.072	9.537
3.88	4.011	129.223	32.218	0.502	0.071	9.624
3.89	4.026	130.984	32.531	0.503	0.071	9.711
3.9	4.042	132.766	32.847	0.504	0.070	9.799
3.91	4.058	134.570	33.165	0.505	0.069	9.888

Table 18.21: APPENDIX: ISENTROPIC TABLE k = 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
3.92	4.073	136.397	33.486	0.470	0.069	9.977
3.93	4.089	138.246	33.809	0.471	0.068	10.067
3.94	4.105	140.118	34.136	0.472	0.067	10.158
3.95	4.121	142.012	34.465	0.473	0.067	10.250
3.96	4.136	143.929	34.796	0.474	0.066	10.342
3.97	4.152	145.870	35.131	0.475	0.066	10.435
3.98	4.168	147.835	35.468	0.475	0.065	10.529
3.99	4.184	149.823	35.808	0.476	0.064	10.623
4	4.200	151.835	36.151	0.477	0.064	10.719
4.01	4.216	153.872	36.497	0.478	0.063	10.815
4.02	4.232	155.933	36.846	0.479	0.063	10.912
4.03	4.248	158.019	37.197	0.480	0.062	11.009
4.04	4.264	160.131	37.551	0.481	0.062	11.108
4.05	4.281	162.267	37.908	0.482	0.061	11.207
4.06	4.297	164.429	38.269	0.483	0.061	11.307
4.07	4.313	166.618	38.632	0.484	0.060	11.408
4.08	4.329	168.832	38.998	0.485	0.059	11.509
4.09	4.346	171.073	39.367	0.485	0.059	11.611
4.1	4.362	173.340	39.739	0.486	0.058	11.715
4.11	4.378	175.635	40.114	0.487	0.058	11.819
4.12	4.395	177.957	40.492	0.488	0.057	11.923
4.13	4.411	180.306	40.873	0.489	0.057	12.029
4.14	4.428	182.683	41.257	0.490	0.056	12.135
4.15	4.444	185.089	41.644	0.491	0.056	12.243
4.16	4.461	187.523	42.035	0.492	0.055	12.351
4.17	4.478	189.985	42.428	0.493	0.055	12.460
4.18	4.494	192.477	42.825	0.494	0.054	12.570
4.19	4.511	194.997	43.225	0.495	0.054	12.680

Table 18.22: APPENDIX: ISENTROPIC TABLE k= 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
4.2	4.528	197.548	43.628	0.463	0.054	12.792
4.21	4.545	200.128	44.034	0.463	0.053	12.904
4.22	4.562	202.739	44.444	0.464	0.053	13.017
4.23	4.579	205.380	44.857	0.465	0.052	13.131
4.24	4.596	208.052	45.273	0.466	0.052	13.246
4.25	4.613	210.755	45.692	0.467	0.051	13.362
4.26	4.630	213.489	46.115	0.468	0.051	13.479
4.27	4.647	216.255	46.541	0.469	0.050	13.597
4.28	4.664	219.054	46.970	0.469	0.050	13.715
4.29	4.681	221.884	47.403	0.470	0.049	13.835
4.3	4.698	224.748	47.839	0.471	0.049	13.955
4.31	4.715	227.644	48.279	0.472	0.049	14.076
4.32	4.732	230.574	48.722	0.473	0.048	14.198
4.33	4.750	233.538	49.168	0.474	0.048	14.322
4.34	4.767	236.535	49.618	0.475	0.047	14.446
4.35	4.785	239.568	50.072	0.475	0.047	14.571
4.36	4.802	242.634	50.529	0.476	0.047	14.697
4.37	4.819	245.736	50.989	0.477	0.046	14.823
4.38	4.837	248.873	51.453	0.478	0.046	14.951
4.39	4.854	252.047	51.921	0.479	0.045	15.080
4.4	4.872	255.256	52.392	0.480	0.045	15.210
4.41	4.890	258.501	52.867	0.481	0.045	15.341
4.42	4.907	261.784	53.346	0.481	0.044	15.472
4.43	4.925	265.104	53.828	0.482	0.044	15.605
4.44	4.943	268.461	54.314	0.483	0.044	15.739
4.45	4.961	271.856	54.804	0.484	0.043	15.873
4.46	4.978	275.290	55.298	0.485	0.043	16.009
4.47	4.996	278.762	55.795	0.486	0.042	16.146

Table 18.23: APPENDIX: ISENTROPIC TABLE k = 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
4.48	5.014	282.273	56.296	0.456	0.042	16.284
4.49	5.032	285.824	56.801	0.457	0.042	16.422
4.5	5.050	289.414	57.310	0.458	0.041	16.562
4.51	5.068	293.045	57.822	0.459	0.041	16.703
4.52	5.086	296.716	58.339	0.460	0.041	16.845
4.53	5.104	300.428	58.859	0.460	0.040	16.988
4.54	5.122	304.182	59.384	0.461	0.040	17.132
4.55	5.141	307.977	59.912	0.462	0.040	17.277
4.56	5.159	311.815	60.444	0.463	0.039	17.423
4.57	5.177	315.695	60.981	0.464	0.039	17.570
4.58	5.195	319.618	61.521	0.464	0.039	17.718
4.59	5.214	323.585	62.065	0.465	0.038	17.867
4.6	5.232	327.595	62.614	0.466	0.038	18.018
4.61	5.250	331.649	63.166	0.467	0.038	18.169
4.62	5.269	335.748	63.723	0.468	0.037	18.322
4.63	5.287	339.893	64.284	0.469	0.037	18.476
4.64	5.306	344.082	64.849	0.469	0.037	18.630
4.65	5.325	348.318	65.418	0.470	0.036	18.786
4.66	5.343	352.600	65.991	0.471	0.036	18.943
4.67	5.362	356.929	66.569	0.472	0.036	19.101
4.68	5.380	361.305	67.151	0.473	0.036	19.261
4.69	5.399	365.728	67.737	0.473	0.035	19.421
4.7	5.418	370.200	68.328	0.474	0.035	19.583
4.71	5.437	374.720	68.923	0.475	0.035	19.746
4.72	5.456	379.290	69.522	0.476	0.034	19.910
4.73	5.475	383.909	70.126	0.477	0.034	20.075
4.74	5.494	388.577	70.734	0.478	0.034	20.241
4.75	5.513	393.297	71.346	0.478	0.034	20.408

Table 18.24: APPENDIX: ISENTROPIC TABLE k = 1.4 (Continued)

M	T_o/T	P_o/P	ρ_o/ρ	V*/V	$\frac{\dot{m}\sqrt{RT_o}}{P_oA}$	A/A*
4.76	5.532	398.067	71.963	0.451	0.033	20.577
4.77	5.551	402.888	72.585	0.452	0.033	20.747
4.78	5.570	407.761	73.211	0.453	0.033	20.918
4.79	5.589	412.687	73.841	0.453	0.032	21.090
4.8	5.608	417.665	74.477	0.454	0.032	21.264
4.81	5.627	422.696	75.116	0.455	0.032	21.438
4.82	5.646	427.782	75.761	0.456	0.032	21.614
4.83	5.666	432.921	76.410	0.456	0.031	21.792
4.84	5.685	438.116	77.064	0.457	0.031	21.970
4.85	5.705	443.365	77.722	0.458	0.031	22.150
4.86	5.724	448.670	78.385	0.459	0.031	22.331
4.87	5.743	454.032	79.053	0.460	0.030	22.513
4.88	5.763	459.450	79.726	0.460	0.030	22.696
4.89	5.782	464.926	80.403	0.461	0.030	22.881
4.9	5.802	470.459	81.086	0.462	0.030	23.067
4.91	5.822	476.051	81.773	0.463	0.029	23.254
4.92	5.841	481.702	82.465	0.464	0.029	23.443
4.93	5.861	487.412	83.162	0.464	0.029	23.633
4.94	5.881	493.181	83.864	0.465	0.029	23.824
4.95	5.900	499.012	84.571	0.466	0.029	24.017
4.96	5.920	504.903	85.283	0.467	0.028	24.211
4.97	5.940	510.856	86.000	0.467	0.028	24.406
4.98	5.960	516.871	86.722	0.468	0.028	24.603
4.99	5.980	522.949	87.449	0.469	0.028	24.801
5	6.000	529.090	88.182	0.470	0.027	25.000
5.01	6.020	535.294	88.919	0.471	0.027	25.201
5.02	6.040	541.564	89.662	0.471	0.027	25.403
5.03	6.060	547.898	90.409	0.472	0.027	25.606

APPENDIX: NORMAL SHOCK TABLE k= 1.333

Table 18.25: Combustion gases: R= 0.287 J/kg.K, c_p=1.148 kJ/kg.K, k = 1.333

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
1	1.000	1.000	1.000	1.000	1.000	0.00E+00
1.15	0.874	1.369	1.082	1.264	0.997	3.14E-03
1.3	0.784	1.788	1.163	1.538	0.979	2.09E-02
1.45	0.716	2.260	1.244	1.817	0.943	5.80E-02
1.6	0.663	2.783	1.329	2.094	0.891	1.14E-01
1.75	0.621	3.357	1.419	2.366	0.828	1.88E-01
1.9	0.587	3.983	1.514	2.630	0.757	2.78E-01
2.05	0.559	4.660	1.616	2.884	0.683	3.80E-01
2.2	0.536	5.388	1.723	3.126	0.610	4.93E-01
2.35	0.517	6.168	1.838	3.356	0.540	6.15E-01
2.5	0.500	6.999	1.959	3.573	0.474	7.44E-01
2.65	0.486	7.882	2.087	3.776	0.414	8.79E-01
2.8	0.473	8.816	2.222	3.967	0.361	1.02E+00
2.95	0.463	9.802	2.365	4.145	0.313	1.16E+00
3.1	0.453	10.839	2.514	4.311	0.271	1.30E+00
3.25	0.445	11.927	2.670	4.466	0.234	1.45E+00
3.4	0.438	13.067	2.834	4.611	0.202	1.60E+00
3.55	0.432	14.259	3.005	4.745	0.174	1.74E+00
3.7	0.426	15.501	3.183	4.870	0.150	1.89E+00
3.85	0.421	16.795	3.369	4.986	0.130	2.04E+00
4	0.416	18.141	3.561	5.094	0.112	2.18E+00
4.15	0.412	19.538	3.761	5.195	0.097	2.33E+00
4.3	0.408	20.986	3.969	5.288	0.084	2.47E+00
4.45	0.405	22.486	4.183	5.376	0.073	2.61E+00
4.6	0.402	24.038	4.405	5.457	0.064	2.75E+00
4.75	0.399	25.640	4.634	5.533	0.055	2.89E+00
4.9	0.396	27.294	4.870	5.604	0.048	3.03E+00
5.05	0.394	29.000	5.114	5.671	0.042	3.16E+00

APPENDIX: NORMAL SHOCK TABLE k = 1.4

Table 18.26

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
1	1.000	1.000	1.000	1.000	1.000	0.00E+00
1.01	0.990	1.023	1.007	1.017	1.000	1.28E-05
1.02	0.981	1.047	1.013	1.033	1.000	3.29E-05
1.03	0.971	1.071	1.020	1.050	1.000	6.72E-05
1.04	0.962	1.095	1.026	1.067	1.000	1.22E-04
1.05	0.953	1.120	1.033	1.084	1.000	2.03E-04
1.06	0.944	1.144	1.039	1.101	1.000	3.16E-04
1.07	0.936	1.169	1.046	1.118	1.000	4.67E-04
1.08	0.928	1.194	1.052	1.135	0.999	6.58E-04
1.09	0.920	1.219	1.059	1.152	0.999	8.95E-04
1.1	0.912	1.245	1.065	1.169	0.999	1.18E-03
1.11	0.904	1.271	1.071	1.186	0.999	1.52E-03
1.12	0.897	1.297	1.078	1.203	0.998	1.92E-03
1.13	0.889	1.323	1.084	1.221	0.998	2.37E-03
1.14	0.882	1.350	1.090	1.238	0.997	2.89E-03
1.15	0.875	1.376	1.097	1.255	0.997	3.48E-03
1.16	0.868	1.403	1.103	1.272	0.996	4.13E-03
1.17	0.861	1.430	1.109	1.290	0.995	4.85E-03
1.18	0.855	1.458	1.115	1.307	0.995	5.64E-03
1.19	0.848	1.485	1.122	1.324	0.994	6.50E-03
1.2	0.842	1.513	1.128	1.342	0.993	7.44E-03
1.21	0.836	1.541	1.134	1.359	0.992	8.45E-03
1.22	0.830	1.570	1.141	1.376	0.991	9.54E-03
1.23	0.824	1.598	1.147	1.394	0.990	1.07E-02
1.24	0.818	1.627	1.153	1.411	0.988	1.20E-02
1.25	0.813	1.656	1.159	1.429	0.987	1.33E-02
1.26	0.807	1.686	1.166	1.446	0.986	1.47E-02
1.27	0.802	1.715	1.172	1.463	0.984	1.62E-02

Table 18.27: NORMAL SHOCK TABLE (Continued)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
1.28	0.796	1.745	1.178	1.481	0.983	1.78E-02
1.29	0.791	1.775	1.185	1.498	0.981	1.94E-02
1.3	0.786	1.805	1.191	1.516	0.979	2.11E-02
1.31	0.781	1.835	1.197	1.533	0.978	2.30E-02
1.32	0.776	1.866	1.204	1.551	0.976	2.49E-02
1.33	0.771	1.897	1.210	1.568	0.974	2.69E-02
1.34	0.766	1.928	1.216	1.585	0.972	2.89E-02
1.35	0.762	1.960	1.223	1.603	0.970	3.11E-02
1.36	0.757	1.991	1.229	1.620	0.968	3.33E-02
1.37	0.753	2.023	1.235	1.638	0.965	3.56E-02
1.38	0.748	2.055	1.242	1.655	0.963	3.80E-02
1.39	0.744	2.087	1.248	1.672	0.961	4.05E-02
1.4	0.740	2.120	1.255	1.690	0.958	4.31E-02
1.41	0.736	2.153	1.261	1.707	0.956	4.58E-02
1.42	0.731	2.186	1.268	1.724	0.953	4.85E-02
1.43	0.727	2.219	1.274	1.742	0.950	5.13E-02
1.44	0.723	2.253	1.281	1.759	0.948	5.42E-02
1.45	0.720	2.286	1.287	1.776	0.945	5.72E-02
1.46	0.716	2.320	1.294	1.793	0.942	6.02E-02
1.47	0.712	2.354	1.300	1.811	0.939	6.34E-02
1.48	0.708	2.389	1.307	1.828	0.936	6.66E-02
1.49	0.705	2.423	1.314	1.845	0.933	6.99E-02
1.5	0.701	2.458	1.320	1.862	0.930	7.33E-02
1.51	0.698	2.493	1.327	1.879	0.927	7.67E-02
1.52	0.694	2.529	1.334	1.896	0.923	8.03E-02
1.53	0.691	2.564	1.340	1.913	0.920	8.39E-02
1.54	0.687	2.600	1.347	1.930	0.917	8.76E-02
1.55	0.684	2.636	1.354	1.947	0.913	9.13E-02

Table 18.28: NORMAL SHOCK TABLE (Continued)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
1.56	0.681	2.673	1.361	1.964	0.910	9.52E-02
1.57	0.678	2.709	1.367	1.981	0.906	9.91E-02
1.58	0.675	2.746	1.374	1.998	0.903	1.03E-01
1.59	0.671	2.783	1.381	2.015	0.899	1.07E-01
1.6	0.668	2.820	1.388	2.032	0.895	1.11E-01
1.61	0.665	2.857	1.395	2.049	0.891	1.15E-01
1.62	0.663	2.895	1.402	2.065	0.888	1.20E-01
1.63	0.660	2.933	1.409	2.082	0.884	1.24E-01
1.64	0.657	2.971	1.416	2.099	0.880	1.29E-01
1.65	0.654	3.010	1.423	2.115	0.876	1.33E-01
1.66	0.651	3.048	1.430	2.132	0.872	1.38E-01
1.67	0.648	3.087	1.437	2.148	0.868	1.42E-01
1.68	0.646	3.126	1.444	2.165	0.864	1.47E-01
1.69	0.643	3.165	1.451	2.181	0.860	1.52E-01
1.7	0.641	3.205	1.458	2.198	0.856	1.56E-01
1.71	0.638	3.245	1.466	2.214	0.852	1.61E-01
1.72	0.635	3.285	1.473	2.230	0.847	1.66E-01
1.73	0.633	3.325	1.480	2.247	0.843	1.71E-01
1.74	0.631	3.366	1.487	2.263	0.839	1.76E-01
1.75	0.628	3.406	1.495	2.279	0.835	1.82E-01
1.76	0.626	3.447	1.502	2.295	0.830	1.87E-01
1.77	0.623	3.488	1.509	2.311	0.826	1.92E-01
1.78	0.621	3.530	1.517	2.327	0.822	1.97E-01
1.79	0.619	3.571	1.524	2.343	0.817	2.03E-01
1.8	0.617	3.613	1.532	2.359	0.813	2.08E-01
1.81	0.614	3.655	1.539	2.375	0.808	2.14E-01
1.82	0.612	3.698	1.547	2.391	0.804	2.19E-01
1.83	0.610	3.740	1.554	2.407	0.799	2.25E-01

Table 18.29: NORMAL SHOCK TABLE (Continued)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
1.84	0.608	3.783	1.562	2.422	0.795	2.30E-01
1.85	0.606	3.826	1.569	2.438	0.790	2.36E-01
1.86	0.604	3.870	1.577	2.454	0.786	2.42E-01
1.87	0.602	3.913	1.585	2.469	0.781	2.48E-01
1.88	0.600	3.957	1.592	2.485	0.777	2.54E-01
1.89	0.598	4.001	1.600	2.500	0.772	2.60E-01
1.9	0.596	4.045	1.608	2.516	0.767	2.66E-01
1.91	0.594	4.089	1.616	2.531	0.763	2.72E-01
1.92	0.592	4.134	1.624	2.546	0.758	2.78E-01
1.93	0.590	4.179	1.631	2.562	0.753	2.84E-01
1.94	0.588	4.224	1.639	2.577	0.749	2.90E-01
1.95	0.586	4.270	1.647	2.592	0.744	2.96E-01
1.96	0.584	4.315	1.655	2.607	0.740	3.03E-01
1.97	0.583	4.361	1.663	2.622	0.735	3.09E-01
1.98	0.581	4.407	1.671	2.637	0.730	3.15E-01
1.99	0.579	4.453	1.679	2.652	0.726	3.22E-01
2	0.577	4.500	1.688	2.667	0.721	3.28E-01
2.01	0.576	4.547	1.696	2.681	0.716	3.35E-01
2.02	0.574	4.594	1.704	2.696	0.712	3.41E-01
2.03	0.572	4.641	1.712	2.711	0.707	3.48E-01
2.04	0.571	4.689	1.720	2.725	0.702	3.55E-01
2.05	0.569	4.736	1.729	2.740	0.698	3.61E-01
2.06	0.567	4.784	1.737	2.755	0.693	3.68E-01
2.07	0.566	4.832	1.745	2.769	0.688	3.75E-01
2.08	0.564	4.881	1.754	2.783	0.684	3.81E-01
2.09	0.563	4.929	1.762	2.798	0.679	3.88E-01
2.1	0.561	4.978	1.770	2.812	0.674	3.95E-01
2.11	0.560	5.027	1.779	2.826	0.670	4.02E-01

Table 18.30: NORMAL SHOCK TABLE (Continued)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
2.12	0.558	5.077	1.787	2.840	0.665	4.09E-01
2.13	0.557	5.126	1.796	2.854	0.660	4.16E-01
2.14	0.555	5.176	1.805	2.868	0.656	4.23E-01
2.15	0.554	5.226	1.813	2.882	0.651	4.30E-01
2.16	0.553	5.277	1.822	2.896	0.646	4.37E-01
2.17	0.551	5.327	1.831	2.910	0.642	4.44E-01
2.18	0.550	5.378	1.839	2.924	0.637	4.52E-01
2.19	0.548	5.429	1.848	2.938	0.633	4.59E-01
2.2	0.547	5.480	1.857	2.951	0.628	4.66E-01
2.21	0.546	5.531	1.866	2.965	0.624	4.73E-01
2.22	0.544	5.583	1.875	2.978	0.619	4.81E-01
2.23	0.543	5.635	1.883	2.992	0.615	4.88E-01
2.24	0.542	5.687	1.892	3.005	0.610	4.95E-01
2.25	0.541	5.740	1.901	3.019	0.606	5.03E-01
2.26	0.539	5.792	1.910	3.032	0.601	5.10E-01
2.27	0.538	5.845	1.919	3.045	0.597	5.18E-01
2.28	0.537	5.898	1.929	3.058	0.592	5.25E-01
2.29	0.536	5.951	1.938	3.071	0.588	5.33E-01
2.3	0.534	6.005	1.947	3.085	0.583	5.40E-01
2.31	0.533	6.059	1.956	3.098	0.579	5.48E-01
2.32	0.532	6.113	1.965	3.110	0.575	5.55E-01
2.33	0.531	6.167	1.974	3.123	0.570	5.63E-01
2.34	0.530	6.222	1.984	3.136	0.566	5.71E-01
2.35	0.529	6.276	1.993	3.149	0.561	5.78E-01
2.36	0.527	6.331	2.002	3.162	0.557	5.86E-01
2.37	0.526	6.386	2.012	3.174	0.553	5.94E-01
2.38	0.525	6.442	2.021	3.187	0.549	6.02E-01
2.39	0.524	6.497	2.031	3.199	0.544	6.09E-01

Table 18.31: NORMAL SHOCK TABLE (Continued)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
2.4	0.523	6.553	2.040	3.212	0.540	6.17E-01
2.41	0.522	6.609	2.050	3.224	0.536	6.25E-01
2.42	0.521	6.666	2.059	3.237	0.532	6.33E-01
2.43	0.520	6.722	2.069	3.249	0.528	6.41E-01
2.44	0.519	6.779	2.079	3.261	0.523	6.49E-01
2.45	0.518	6.836	2.088	3.273	0.519	6.57E-01
2.46	0.517	6.894	2.098	3.285	0.515	6.64E-01
2.47	0.516	6.951	2.108	3.298	0.511	6.72E-01
2.48	0.515	7.009	2.118	3.310	0.507	6.80E-01
2.49	0.514	7.067	2.128	3.321	0.503	6.88E-01
2.5	0.513	7.125	2.138	3.333	0.499	6.96E-01
2.51	0.512	7.183	2.147	3.345	0.495	7.04E-01
2.52	0.511	7.242	2.157	3.357	0.491	7.13E-01
2.53	0.510	7.301	2.167	3.369	0.487	7.21E-01
2.54	0.509	7.360	2.177	3.380	0.483	7.29E-01
2.55	0.508	7.420	2.187	3.392	0.479	7.37E-01
2.56	0.507	7.479	2.198	3.403	0.475	7.45E-01
2.57	0.507	7.539	2.208	3.415	0.472	7.53E-01
2.58	0.506	7.599	2.218	3.426	0.468	7.61E-01
2.59	0.505	7.659	2.228	3.438	0.464	7.69E-01
2.6	0.504	7.720	2.238	3.449	0.460	7.78E-01
2.61	0.503	7.781	2.249	3.460	0.456	7.86E-01
2.62	0.502	7.842	2.259	3.471	0.453	7.94E-01
2.63	0.501	7.903	2.269	3.483	0.449	8.02E-01
2.64	0.500	7.965	2.280	3.494	0.445	8.11E-01
2.65	0.500	8.026	2.290	3.505	0.442	8.19E-01
2.66	0.499	8.088	2.301	3.516	0.438	8.27E-01
2.67	0.498	8.150	2.311	3.527	0.434	8.35E-01

Table 18.32: NORMAL SHOCK TABLE (Continued)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
2.68	0.497	8.213	2.322	3.537	0.431	8.44E-01
2.69	0.496	8.275	2.332	3.548	0.427	8.52E-01
2.7	0.496	8.338	2.343	3.559	0.424	8.60E-01
2.71	0.495	8.401	2.354	3.570	0.420	8.69E-01
2.72	0.494	8.465	2.364	3.580	0.417	8.77E-01
2.73	0.493	8.528	2.375	3.591	0.413	8.86E-01
2.74	0.493	8.592	2.386	3.601	0.410	8.94E-01
2.75	0.492	8.656	2.397	3.612	0.406	9.02E-01
2.76	0.491	8.721	2.407	3.622	0.403	9.11E-01
2.77	0.490	8.785	2.418	3.633	0.399	9.19E-01
2.78	0.490	8.850	2.429	3.643	0.396	9.28E-01
2.79	0.489	8.915	2.440	3.653	0.393	9.36E-01
2.8	0.488	8.980	2.451	3.664	0.389	9.45E-01
2.81	0.487	9.045	2.462	3.674	0.386	9.53E-01
2.82	0.487	9.111	2.473	3.684	0.383	9.61E-01
2.83	0.486	9.177	2.484	3.694	0.380	9.70E-01
2.84	0.485	9.243	2.496	3.704	0.376	9.78E-01
2.85	0.485	9.310	2.507	3.714	0.373	9.87E-01
2.86	0.484	9.376	2.518	3.724	0.370	9.95E-01
2.87	0.483	9.443	2.529	3.734	0.367	1.00E+00
2.88	0.483	9.510	2.540	3.743	0.364	1.01E+00
2.89	0.482	9.577	2.552	3.753	0.361	1.02E+00
2.9	0.481	9.645	2.563	3.763	0.358	1.03E+00
2.91	0.481	9.713	2.575	3.773	0.355	1.04E+00
2.92	0.480	9.781	2.586	3.782	0.352	1.05E+00
2.93	0.479	9.849	2.598	3.792	0.349	1.06E+00
2.94	0.479	9.918	2.609	3.801	0.346	1.06E+00
2.95	0.478	9.986	2.621	3.811	0.343	1.07E+00

Table 18.33: NORMAL SHOCK TABLE (Continued)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
2.96	0.478	10.055	2.632	3.820	0.340	1.08E+00
2.97	0.477	10.124	2.644	3.829	0.337	1.09E+00
2.98	0.476	10.194	2.656	3.839	0.334	1.10E+00
2.99	0.476	10.263	2.667	3.848	0.331	1.11E+00
3	0.475	10.333	2.679	3.857	0.328	1.12E+00
3.01	0.475	10.403	2.691	3.866	0.326	1.12E+00
3.02	0.474	10.474	2.703	3.875	0.323	1.13E+00
3.03	0.473	10.544	2.714	3.884	0.320	1.14E+00
3.04	0.473	10.615	2.726	3.893	0.317	1.15E+00
3.05	0.472	10.686	2.738	3.902	0.315	1.16E+00
3.06	0.472	10.758	2.750	3.911	0.312	1.17E+00
3.07	0.471	10.829	2.762	3.920	0.309	1.18E+00
3.08	0.471	10.901	2.774	3.929	0.306	1.18E+00
3.09	0.470	10.973	2.786	3.938	0.304	1.19E+00
3.1	0.470	11.045	2.799	3.947	0.301	1.20E+00
3.11	0.469	11.117	2.811	3.955	0.299	1.21E+00
3.12	0.468	11.190	2.823	3.964	0.296	1.22E+00
3.13	0.468	11.263	2.835	3.973	0.293	1.23E+00
3.14	0.467	11.336	2.848	3.981	0.291	1.24E+00
3.15	0.467	11.410	2.860	3.990	0.288	1.25E+00
3.16	0.466	11.483	2.872	3.998	0.286	1.25E+00
3.17	0.466	11.557	2.885	4.006	0.284	1.26E+00
3.18	0.465	11.631	2.897	4.015	0.281	1.27E+00
3.19	0.465	11.705	2.909	4.023	0.279	1.28E+00
3.20	0.464	11.780	2.922	4.031	0.276	1.29E+00
3.21	0.464	11.855	2.935	4.040	0.274	1.30E+00
3.22	0.463	11.930	2.947	4.048	0.271	1.31E+00
3.23	0.463	12.005	2.960	4.056	0.269	1.31E+00

Table 18.34: NORMAL SHOCK TABLE (Continued)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
3.24	0.462	12.081	2.972	4.064	0.267	1.32E+00
3.25	0.462	12.156	2.985	4.072	0.265	1.33E+00
3.26	0.461	12.232	2.998	4.080	0.262	1.34E+00
3.27	0.461	12.308	3.011	4.088	0.260	1.35E+00
3.28	0.461	12.385	3.023	4.096	0.258	1.36E+00
3.29	0.460	12.461	3.036	4.104	0.255	1.37E+00
3.3	0.460	12.538	3.049	4.112	0.253	1.38E+00
3.31	0.459	12.615	3.062	4.120	0.251	1.38E+00
3.32	0.459	12.693	3.075	4.128	0.249	1.39E+00
3.33	0.458	12.770	3.088	4.135	0.247	1.40E+00
3.34	0.458	12.848	3.101	4.143	0.245	1.41E+00
3.35	0.457	12.926	3.114	4.151	0.243	1.42E+00
3.36	0.457	13.005	3.127	4.158	0.240	1.43E+00
3.37	0.456	13.083	3.141	4.166	0.238	1.44E+00
3.38	0.456	13.162	3.154	4.173	0.236	1.44E+00
3.39	0.456	13.241	3.167	4.181	0.234	1.45E+00
3.4	0.455	13.320	3.180	4.188	0.232	1.46E+00
3.41	0.455	13.399	3.194	4.196	0.230	1.47E+00
3.42	0.454	13.479	3.207	4.203	0.228	1.48E+00
3.43	0.454	13.559	3.220	4.211	0.226	1.49E+00
3.44	0.454	13.639	3.234	4.218	0.224	1.50E+00
3.45	0.453	13.720	3.247	4.225	0.222	1.51E+00
3.46	0.453	13.800	3.261	4.232	0.220	1.51E+00
3.47	0.452	13.881	3.274	4.240	0.219	1.52E+00
3.48	0.452	13.962	3.288	4.247	0.217	1.53E+00
3.49	0.452	14.043	3.301	4.254	0.215	1.54E+00
3.5	0.451	14.125	3.315	4.261	0.213	1.55E+00
3.51	0.451	14.207	3.329	4.268	0.211	1.56E+00

Table 18.35: NORMAL SHOCK TABLE (Continued)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
3.52	0.450	14.289	3.342	4.275	0.209	1.57E+00
3.53	0.450	14.371	3.356	4.282	0.207	1.57E+00
3.54	0.450	14.454	3.370	4.289	0.206	1.58E+00
3.55	0.449	14.536	3.384	4.296	0.204	1.59E+00
3.56	0.449	14.619	3.398	4.303	0.202	1.60E+00
3.57	0.449	14.702	3.412	4.309	0.200	1.61E+00
3.58	0.448	14.786	3.426	4.316	0.199	1.62E+00
3.59	0.448	14.869	3.440	4.323	0.197	1.63E+00
3.6	0.447	14.953	3.454	4.330	0.195	1.64E+00
3.61	0.447	15.037	3.468	4.336	0.194	1.64E+00
3.62	0.447	15.122	3.482	4.343	0.192	1.65E+00
3.63	0.446	15.206	3.496	4.350	0.190	1.66E+00
3.64	0.446	15.291	3.510	4.356	0.189	1.67E+00
3.65	0.446	15.376	3.525	4.363	0.187	1.68E+00
3.66	0.445	15.462	3.539	4.369	0.185	1.69E+00
3.67	0.445	15.547	3.553	4.376	0.184	1.70E+00
3.68	0.445	15.633	3.567	4.382	0.182	1.70E+00
3.69	0.444	15.719	3.582	4.388	0.181	1.71E+00
3.7	0.444	15.805	3.596	4.395	0.179	1.72E+00
3.71	0.444	15.891	3.611	4.401	0.178	1.73E+00
3.72	0.443	15.978	3.625	4.408	0.176	1.74E+00
3.73	0.443	16.065	3.640	4.414	0.175	1.75E+00
3.74	0.443	16.152	3.654	4.420	0.173	1.76E+00
3.75	0.442	16.240	3.669	4.426	0.172	1.76E+00
3.76	0.442	16.327	3.684	4.432	0.170	1.77E+00
3.77	0.442	16.415	3.698	4.439	0.169	1.78E+00
3.78	0.441	16.503	3.713	4.445	0.167	1.79E+00
3.79	0.441	16.591	3.728	4.451	0.166	1.80E+00

Table 18.36: NORMAL SHOCK TABLE (Continued)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
3.8	0.441	16.680	3.743	4.457	0.164	1.81E+00
3.81	0.440	16.769	3.757	4.463	0.163	1.82E+00
3.82	0.440	16.858	3.772	4.469	0.162	1.82E+00
3.83	0.440	16.947	3.787	4.475	0.160	1.83E+00
3.84	0.440	17.037	3.802	4.481	0.159	1.84E+00
3.85	0.439	17.126	3.817	4.487	0.158	1.85E+00
3.86	0.439	17.216	3.832	4.492	0.156	1.86E+00
3.87	0.439	17.306	3.847	4.498	0.155	1.87E+00
3.88	0.438	17.397	3.862	4.504	0.154	1.88E+00
3.89	0.438	17.487	3.878	4.510	0.152	1.88E+00
3.9	0.438	17.578	3.893	4.516	0.151	1.89E+00
3.91	0.437	17.669	3.908	4.521	0.150	1.90E+00
3.92	0.437	17.761	3.923	4.527	0.148	1.91E+00
3.93	0.437	17.852	3.939	4.533	0.147	1.92E+00
3.94	0.437	17.944	3.954	4.538	0.146	1.93E+00
3.95	0.436	18.036	3.969	4.544	0.145	1.94E+00
3.96	0.436	18.129	3.985	4.549	0.144	1.94E+00
3.97	0.436	18.221	4.000	4.555	0.142	1.95E+00
3.98	0.436	18.314	4.016	4.560	0.141	1.96E+00
3.99	0.435	18.407	4.031	4.566	0.140	1.97E+00
4	0.435	18.500	4.047	4.571	0.139	1.98E+00
4.01	0.435	18.593	4.062	4.577	0.138	1.99E+00
4.02	0.434	18.687	4.078	4.582	0.136	1.99E+00
4.03	0.434	18.781	4.094	4.588	0.135	2.00E+00
4.04	0.434	18.875	4.110	4.593	0.134	2.01E+00
4.05	0.434	18.970	4.125	4.598	0.133	2.02E+00
4.06	0.433	19.064	4.141	4.604	0.132	2.03E+00
4.07	0.433	19.159	4.157	4.609	0.131	2.04E+00

Table 18.37: NORMAL SHOCK TABLE (Continued)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
4.08	0.433	19.254	4.173	4.614	0.130	2.04E+00
4.09	0.433	19.349	4.189	4.619	0.129	2.05E+00
4.1	0.432	19.445	4.205	4.624	0.128	2.06E+00
4.11	0.432	19.541	4.221	4.630	0.126	2.07E+00
4.12	0.432	19.637	4.237	4.635	0.125	2.08E+00
4.13	0.432	19.733	4.253	4.640	0.124	2.09E+00
4.14	0.431	19.830	4.269	4.645	0.123	2.10E+00
4.15	0.431	19.926	4.285	4.650	0.122	2.10E+00
4.16	0.431	20.023	4.301	4.655	0.121	2.11E+00
4.17	0.431	20.120	4.318	4.660	0.120	2.12E+00
4.18	0.430	20.218	4.334	4.665	0.119	2.13E+00
4.19	0.430	20.315	4.350	4.670	0.118	2.14E+00
4.2	0.430	20.413	4.367	4.675	0.117	2.15E+00
4.21	0.430	20.511	4.383	4.680	0.116	2.15E+00
4.22	0.429	20.610	4.399	4.685	0.115	2.16E+00
4.23	0.429	20.708	4.416	4.690	0.114	2.17E+00
4.24	0.429	20.807	4.432	4.694	0.113	2.18E+00
4.25	0.429	20.906	4.449	4.699	0.113	2.19E+00
4.26	0.429	21.006	4.465	4.704	0.112	2.20E+00
4.27	0.428	21.105	4.482	4.709	0.111	2.20E+00
4.28	0.428	21.205	4.499	4.713	0.110	2.21E+00
4.29	0.428	21.305	4.515	4.718	0.109	2.22E+00
4.3	0.428	21.405	4.532	4.723	0.108	2.23E+00
4.31	0.427	21.505	4.549	4.728	0.107	2.24E+00
4.32	0.427	21.606	4.566	4.732	0.106	2.24E+00
4.33	0.427	21.707	4.583	4.737	0.105	2.25E+00
4.34	0.427	21.808	4.600	4.741	0.105	2.26E+00
4.35	0.427	21.910	4.616	4.746	0.104	2.27E+00

Table 18.38: NORMAL SHOCK TABLE (Continued)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
4.36	0.426	22.011	4.633	4.750	0.103	2.28E+00
4.37	0.426	22.113	4.650	4.755	0.102	2.29E+00
4.38	0.426	22.215	4.668	4.760	0.101	2.29E+00
4.39	0.426	22.317	4.685	4.764	0.100	2.30E+00
4.4	0.426	22.420	4.702	4.768	0.099	2.31E+00
4.41	0.425	22.523	4.719	4.773	0.099	2.32E+00
4.42	0.425	22.626	4.736	4.777	0.098	2.33E+00
4.43	0.425	22.729	4.753	4.782	0.097	2.34E+00
4.44	0.425	22.833	4.771	4.786	0.096	2.34E+00
4.45	0.425	22.936	4.788	4.790	0.096	2.35E+00
4.46	0.424	23.040	4.805	4.795	0.095	2.36E+00
4.47	0.424	23.144	4.823	4.799	0.094	2.37E+00
4.48	0.424	23.249	4.840	4.803	0.093	2.38E+00
4.49	0.424	23.353	4.858	4.808	0.092	2.38E+00
4.5	0.424	23.458	4.875	4.812	0.092	2.39E+00
4.51	0.423	23.563	4.893	4.816	0.091	2.40E+00
4.52	0.423	23.669	4.910	4.820	0.090	2.41E+00
4.53	0.423	23.774	4.928	4.824	0.089	2.42E+00
4.54	0.423	23.880	4.946	4.829	0.089	2.42E+00
4.55	0.423	23.986	4.963	4.833	0.088	2.43E+00
4.56	0.422	24.093	4.981	4.837	0.087	2.44E+00
4.57	0.422	24.199	4.999	4.841	0.087	2.45E+00
4.58	0.422	24.306	5.017	4.845	0.086	2.46E+00
4.59	0.422	24.413	5.034	4.849	0.085	2.46E+00
4.6	0.422	24.520	5.052	4.853	0.085	2.47E+00
4.61	0.421	24.627	5.070	4.857	0.084	2.48E+00
4.62	0.421	24.735	5.088	4.861	0.083	2.49E+00
4.63	0.421	24.843	5.106	4.865	0.083	2.50E+00

Table 18.39: NORMAL SHOCK TABLE (Continued)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
4.64	0.421	24.951	5.124	4.869	0.082	2.50E+00
4.65	0.421	25.060	5.142	4.873	0.081	2.51E+00
4.66	0.421	25.168	5.161	4.877	0.081	2.52E+00
4.67	0.420	25.277	5.179	4.881	0.080	2.53E+00
4.68	0.420	25.386	5.197	4.885	0.079	2.54E+00
4.69	0.420	25.495	5.215	4.889	0.079	2.54E+00
4.7	0.420	25.605	5.233	4.893	0.078	2.55E+00
4.71	0.420	25.715	5.252	4.896	0.077	2.56E+00
4.72	0.420	25.825	5.270	4.900	0.077	2.57E+00
4.73	0.419	25.935	5.289	4.904	0.076	2.58E+00
4.74	0.419	26.046	5.307	4.908	0.076	2.58E+00
4.75	0.419	26.156	5.325	4.912	0.075	2.59E+00
4.76	0.419	26.267	5.344	4.915	0.074	2.60E+00
4.77	0.419	26.378	5.363	4.919	0.074	2.61E+00
4.78	0.419	26.490	5.381	4.923	0.073	2.62E+00
4.79	0.418	26.601	5.400	4.926	0.073	2.62E+00
4.8	0.418	26.713	5.418	4.930	0.072	2.63E+00
4.81	0.418	26.825	5.437	4.934	0.072	2.64E+00
4.82	0.418	26.938	5.456	4.937	0.071	2.65E+00
4.83	0.418	27.050	5.475	4.941	0.070	2.66E+00
4.84	0.418	27.163	5.493	4.945	0.070	2.66E+00
4.85	0.417	27.276	5.512	4.948	0.069	2.67E+00
4.86	0.417	27.390	5.531	4.952	0.069	2.68E+00
4.87	0.417	27.503	5.550	4.955	0.068	2.69E+00
4.88	0.417	27.617	5.569	4.959	0.068	2.69E+00
4.89	0.417	27.731	5.588	4.962	0.067	2.70E+00
4.9	0.417	27.845	5.607	4.966	0.067	2.71E+00
4.91	0.417	27.959	5.626	4.969	0.066	2.72E+00

Table 18.40: NORMAL SHOCK TABLE (Continued)

M_1	M_2	p_2/p_1	T_2/T_1	ρ_2/ρ_1	P_{o2}/P_{o1}	$(s_2-s_1)/R$
4.92	0.416	28.074	5.646	4.973	0.066	2.73E+00
4.93	0.416	28.189	5.665	4.976	0.065	2.73E+00
4.94	0.416	28.304	5.684	4.980	0.065	2.74E+00
4.95	0.416	28.420	5.703	4.983	0.064	2.75E+00
4.96	0.416	28.535	5.722	4.987	0.064	2.76E+00
4.97	0.416	28.651	5.742	4.990	0.063	2.77E+00
4.98	0.416	28.767	5.761	4.993	0.063	2.77E+00
4.99	0.415	28.883	5.781	4.997	0.062	2.78E+00
5	0.415	29.000	5.800	5.000	0.062	2.79E+00
5.01	0.415	29.117	5.819	5.003	0.061	2.80E+00
5.02	0.415	29.234	5.839	5.007	0.061	2.80E+00
5.03	0.415	29.351	5.859	5.010	0.060	2.81E+00
5.04	0.415	29.469	5.878	5.013	0.060	2.82E+00
5.05	0.415	29.586	5.898	5.016	0.059	2.83E+00
5.06	0.414	29.704	5.917	5.020	0.059	2.83E+00
5.07	0.414	29.822	5.937	5.023	0.058	2.84E+00
5.08	0.414	29.941	5.957	5.026	0.058	2.85E+00
5.09	0.414	30.059	5.977	5.029	0.058	2.86E+00
5.1	0.414	30.178	5.997	5.033	0.057	2.87E+00
5.11	0.414	30.297	6.016	5.036	0.057	2.87E+00
5.12	0.414	30.417	6.036	5.039	0.056	2.88E+00
5.13	0.413	30.536	6.056	5.042	0.056	2.89E+00
5.14	0.413	30.656	6.076	5.045	0.055	2.90E+00
5.15	0.413	30.776	6.096	5.048	0.055	2.90E+00
5.16	0.413	30.897	6.116	5.051	0.055	2.91E+00
5.17	0.413	31.017	6.137	5.054	0.054	2.92E+00
5.18	0.413	31.138	6.157	5.058	0.054	2.93E+00
5.19	0.413	31.259	6.177	5.061	0.053	2.93E+00

APPENDIX: FANNO LINE FLOW TABLE $k = 1.4$

Table 18.41

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	(s*–s)/R	$4C_f L_{max}/D$
0.01	1.200	109.543	91.288	57.874	4.058	7134.405
0.02	1.200	54.770	45.645	28.942	3.365	1778.450
0.03	1.200	36.512	30.432	19.301	2.960	787.081
0.04	1.200	27.382	22.825	14.481	2.673	440.352
0.05	1.199	21.903	18.262	11.591	2.450	280.020
0.06	1.199	18.251	15.220	9.666	2.269	193.031
0.07	1.199	15.642	13.047	8.292	2.115	140.655
0.08	1.198	13.684	11.418	7.262	1.983	106.718
0.09	1.198	12.162	10.151	6.461	1.866	83.496
0.1	1.198	10.944	9.138	5.822	1.762	66.922
0.11	1.197	9.947	8.309	5.299	1.668	54.688
0.12	1.197	9.116	7.618	4.864	1.582	45.408
0.13	1.196	8.412	7.034	4.497	1.503	38.207
0.14	1.195	7.809	6.533	4.182	1.431	32.511
0.15	1.195	7.287	6.099	3.910	1.364	27.932
0.16	1.194	6.829	5.720	3.673	1.301	24.198
0.17	1.193	6.425	5.385	3.464	1.242	21.115
0.18	1.192	6.066	5.088	3.278	1.187	18.543
0.19	1.191	5.745	4.822	3.112	1.135	16.375
0.2	1.190	5.455	4.583	2.964	1.086	14.533
0.21	1.190	5.194	4.366	2.829	1.040	12.956
0.22	1.188	4.955	4.169	2.708	0.996	11.596
0.23	1.187	4.738	3.990	2.597	0.954	10.416
0.24	1.186	4.538	3.825	2.496	0.915	9.386
0.25	1.185	4.355	3.674	2.403	0.877	8.483
0.26	1.184	4.185	3.535	2.317	0.840	7.688
0.27	1.183	4.028	3.406	2.238	0.806	6.983
0.28	1.181	3.882	3.286	2.166	0.773	6.357
0.29	1.180	3.746	3.174	2.098	0.741	5.799
0.3	1.179	3.619	3.070	2.035	0.711	5.299

Table 18.42: FANNO LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	(s*–s)/R	$4C_fL_{max}/D$
0.31	1.177	3.500	2.973	1.977	0.681	4.851
0.32	1.176	3.389	2.882	1.922	0.653	4.447
0.33	1.174	3.284	2.796	1.871	0.626	4.082
0.34	1.173	3.185	2.716	1.823	0.600	3.752
0.35	1.171	3.092	2.640	1.778	0.575	3.452
0.36	1.170	3.004	2.568	1.736	0.551	3.180
0.37	1.168	2.921	2.501	1.696	0.528	2.932
0.38	1.166	2.842	2.437	1.659	0.506	2.705
0.39	1.165	2.767	2.376	1.623	0.485	2.498
0.4	1.163	2.696	2.318	1.590	0.464	2.308
0.41	1.161	2.628	2.264	1.559	0.444	2.134
0.42	1.159	2.563	2.212	1.529	0.425	1.974
0.43	1.157	2.502	2.162	1.501	0.406	1.827
0.44	1.155	2.443	2.114	1.474	0.388	1.692
0.45	1.153	2.386	2.069	1.449	0.371	1.566
0.46	1.151	2.333	2.026	1.425	0.354	1.451
0.47	1.149	2.281	1.985	1.402	0.338	1.344
0.48	1.147	2.231	1.945	1.380	0.322	1.245
0.49	1.145	2.184	1.907	1.359	0.307	1.154
0.5	1.143	2.138	1.871	1.340	0.293	1.069
0.51	1.141	2.094	1.836	1.321	0.279	0.990
0.52	1.138	2.052	1.802	1.303	0.265	0.917
0.53	1.136	2.011	1.770	1.286	0.252	0.850
0.54	1.134	1.972	1.739	1.270	0.239	0.787
0.55	1.132	1.934	1.709	1.255	0.227	0.728
0.56	1.129	1.898	1.680	1.240	0.215	0.674
0.57	1.127	1.862	1.653	1.226	0.204	0.623
0.58	1.124	1.828	1.626	1.213	0.193	0.576
0.59	1.122	1.795	1.600	1.200	0.183	0.532
0.6	1.119	1.763	1.575	1.188	0.172	0.491

Table 18.43: FANNO LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	(s*–s)/R	$4C_fL_{max}/D$
0.61	1.117	1.733	1.551	1.177	0.163	0.453
0.62	1.114	1.703	1.528	1.166	0.153	0.417
0.63	1.112	1.674	1.505	1.155	0.144	0.384
0.64	1.109	1.646	1.484	1.145	0.136	0.353
0.65	1.107	1.618	1.463	1.136	0.127	0.325
0.66	1.104	1.592	1.442	1.127	0.119	0.298
0.67	1.101	1.566	1.422	1.118	0.111	0.273
0.68	1.098	1.541	1.403	1.110	0.104	0.250
0.69	1.096	1.517	1.385	1.102	0.097	0.228
0.7	1.093	1.493	1.367	1.094	0.090	0.208
0.71	1.090	1.471	1.349	1.087	0.084	0.189
0.72	1.087	1.448	1.332	1.081	0.077	0.172
0.73	1.084	1.427	1.315	1.074	0.072	0.156
0.74	1.082	1.405	1.299	1.068	0.066	0.141
0.75	1.079	1.385	1.284	1.062	0.061	0.127
0.76	1.076	1.365	1.269	1.057	0.055	0.114
0.77	1.073	1.345	1.254	1.052	0.051	0.103
0.78	1.070	1.326	1.240	1.047	0.046	0.092
0.79	1.067	1.307	1.226	1.043	0.042	0.082
0.8	1.064	1.289	1.212	1.038	0.038	0.072
0.81	1.061	1.272	1.199	1.034	0.034	0.064
0.82	1.058	1.254	1.186	1.030	0.030	0.056
0.83	1.055	1.237	1.173	1.027	0.027	0.049
0.84	1.052	1.221	1.161	1.024	0.023	0.042
0.85	1.048	1.205	1.149	1.021	0.020	0.036
0.86	1.045	1.189	1.137	1.018	0.018	0.031
0.87	1.042	1.173	1.126	1.015	0.015	0.026
0.88	1.039	1.158	1.115	1.013	0.013	0.022
0.89	1.036	1.144	1.104	1.011	0.011	0.018
0.9	1.033	1.129	1.093	1.009	0.009	0.015

Table 18.44: FANNO LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	(s*–s)/R	$4C_fL_{max}/D$
0.91	1.029	1.115	1.083	1.007	0.007	0.012
0.92	1.026	1.101	1.073	1.006	0.006	0.009
0.93	1.023	1.088	1.063	1.004	0.004	0.007
0.94	1.020	1.074	1.053	1.003	0.003	0.005
0.95	1.017	1.061	1.044	1.002	0.002	0.003
0.96	1.013	1.049	1.035	1.001	0.001	0.002
0.97	1.010	1.036	1.026	1.001	0.001	0.001
0.98	1.007	1.024	1.017	1.000	0.000	0.000
0.99	1.003	1.012	1.008	1.000	0.000	0.000
1	1.000	1.000	1.000	1.000	0.000	0.000
1.01	0.997	0.988	0.992	1.000	0.000	0.000
1.02	0.993	0.977	0.984	1.000	0.000	0.000
1.03	0.990	0.966	0.976	1.001	0.001	0.001
1.04	0.987	0.955	0.968	1.001	0.001	0.002
1.05	0.983	0.944	0.960	1.002	0.002	0.003
1.06	0.980	0.934	0.953	1.003	0.003	0.004
1.07	0.976	0.923	0.946	1.004	0.004	0.005
1.08	0.973	0.913	0.939	1.005	0.005	0.007
1.09	0.970	0.903	0.932	1.006	0.006	0.008
1.1	0.966	0.894	0.925	1.008	0.008	0.010
1.11	0.963	0.884	0.918	1.010	0.010	0.012
1.12	0.959	0.875	0.912	1.011	0.011	0.014
1.13	0.956	0.865	0.905	1.013	0.013	0.016
1.14	0.952	0.856	0.899	1.015	0.015	0.018
1.15	0.949	0.847	0.893	1.017	0.017	0.021
1.16	0.946	0.838	0.887	1.020	0.020	0.023
1.17	0.942	0.830	0.881	1.022	0.022	0.026
1.18	0.939	0.821	0.875	1.025	0.025	0.028
1.19	0.935	0.813	0.869	1.028	0.027	0.031
1.2	0.932	0.804	0.863	1.030	0.030	0.034

Table 18.45: FANNO LINE FLOW TABLE (Continued)

M	T/T^*	p/p^*	ρ/ρ^*	p_o/p_o^*	$(s^*-s)/R$	$4C_fL_{max}/D$
1.3	0.897	0.728	0.812	1.066	0.064	0.065
1.31	0.893	0.722	0.808	1.071	0.068	0.068
1.32	0.890	0.715	0.803	1.075	0.072	0.072
1.33	0.886	0.708	0.799	1.080	0.077	0.075
1.34	0.883	0.701	0.794	1.084	0.081	0.079
1.35	0.879	0.695	0.790	1.089	0.085	0.082
1.36	0.876	0.688	0.786	1.094	0.090	0.086
1.37	0.872	0.682	0.781	1.099	0.094	0.089
1.38	0.869	0.676	0.777	1.104	0.099	0.093
1.39	0.866	0.669	0.773	1.109	0.104	0.096
1.4	0.862	0.663	0.769	1.115	0.109	0.100
1.41	0.859	0.657	0.765	1.120	0.114	0.103
1.42	0.855	0.651	0.762	1.126	0.119	0.107
1.43	0.852	0.645	0.758	1.132	0.124	0.111
1.44	0.848	0.640	0.754	1.138	0.129	0.114
1.45	0.845	0.634	0.750	1.144	0.134	0.118
1.46	0.841	0.628	0.747	1.150	0.140	0.121
1.47	0.838	0.623	0.743	1.156	0.145	0.125
1.48	0.834	0.617	0.740	1.163	0.151	0.129
1.49	0.831	0.612	0.736	1.169	0.157	0.132
1.5	0.828	0.606	0.733	1.176	0.162	0.136
1.51	0.824	0.601	0.729	1.183	0.168	0.140
1.52	0.821	0.596	0.726	1.190	0.174	0.143
1.53	0.817	0.591	0.723	1.197	0.180	0.147
1.54	0.814	0.586	0.720	1.204	0.186	0.151
1.55	0.811	0.581	0.717	1.212	0.192	0.154
1.56	0.807	0.576	0.714	1.219	0.198	0.158
1.57	0.804	0.571	0.710	1.227	0.204	0.162
1.58	0.800	0.566	0.707	1.234	0.211	0.165
1.59	0.797	0.561	0.704	1.242	0.217	0.169

Table 18.46: FANNO LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	(s*–s)/R	$4C_fL_{max}/D$
1.6	0.794	0.557	0.702	1.250	0.223	0.172
1.61	0.790	0.552	0.699	1.258	0.230	0.176
1.62	0.787	0.548	0.696	1.267	0.236	0.180
1.63	0.784	0.543	0.693	1.275	0.243	0.183
1.64	0.780	0.539	0.690	1.284	0.250	0.187
1.65	0.777	0.534	0.688	1.292	0.256	0.190
1.66	0.774	0.530	0.685	1.301	0.263	0.194
1.67	0.770	0.526	0.682	1.310	0.270	0.197
1.68	0.767	0.521	0.680	1.319	0.277	0.201
1.69	0.764	0.517	0.677	1.328	0.284	0.204
1.7	0.760	0.513	0.675	1.338	0.291	0.208
1.71	0.757	0.509	0.672	1.347	0.298	0.211
1.72	0.754	0.505	0.670	1.357	0.305	0.215
1.73	0.751	0.501	0.667	1.367	0.312	0.218
1.74	0.747	0.497	0.665	1.376	0.319	0.222
1.75	0.744	0.493	0.662	1.386	0.327	0.225
1.76	0.741	0.489	0.660	1.397	0.334	0.228
1.77	0.738	0.485	0.658	1.407	0.341	0.232
1.78	0.735	0.481	0.656	1.418	0.349	0.235
1.79	0.731	0.478	0.653	1.428	0.356	0.239
1.8	0.728	0.474	0.651	1.439	0.364	0.242
1.81	0.725	0.470	0.649	1.450	0.372	0.245
1.82	0.722	0.467	0.647	1.461	0.379	0.249
1.83	0.719	0.463	0.645	1.472	0.387	0.252
1.84	0.716	0.460	0.643	1.484	0.395	0.255
1.85	0.712	0.456	0.640	1.495	0.402	0.258
1.86	0.709	0.453	0.638	1.507	0.410	0.262
1.87	0.706	0.449	0.636	1.519	0.418	0.265
1.88	0.703	0.446	0.634	1.531	0.426	0.268
1.89	0.700	0.443	0.632	1.543	0.434	0.271

Table 18.47: FANNO LINE FLOW TABLE (Continued)

M	T/T^*	p/p^*	ρ/ρ^*	p_o/p_o^*	$(s^*-s)/R$	$4C_fL_{max}/D$
1.9	0.697	0.439	0.630	1.555	0.442	0.274
1.91	0.694	0.436	0.629	1.568	0.450	0.277
1.92	0.691	0.433	0.627	1.580	0.458	0.281
1.93	0.688	0.430	0.625	1.593	0.466	0.284
1.94	0.685	0.427	0.623	1.606	0.474	0.287
1.95	0.682	0.423	0.621	1.619	0.482	0.290
1.96	0.679	0.420	0.619	1.633	0.490	0.293
1.97	0.676	0.417	0.618	1.646	0.498	0.296
1.98	0.673	0.414	0.616	1.660	0.507	0.299
1.99	0.670	0.411	0.614	1.674	0.515	0.302
2	0.667	0.408	0.612	1.688	0.523	0.305
2.01	0.664	0.405	0.611	1.702	0.532	0.308
2.02	0.661	0.402	0.609	1.716	0.540	0.311
2.03	0.658	0.400	0.607	1.730	0.548	0.314
2.04	0.655	0.397	0.606	1.745	0.557	0.317
2.05	0.652	0.394	0.604	1.760	0.565	0.320
2.06	0.649	0.391	0.603	1.775	0.574	0.323
2.07	0.646	0.388	0.601	1.790	0.582	0.325
2.08	0.643	0.386	0.599	1.806	0.591	0.328
2.09	0.640	0.383	0.598	1.821	0.599	0.331
2.1	0.638	0.380	0.596	1.837	0.608	0.334
2.11	0.635	0.378	0.595	1.853	0.617	0.337
2.12	0.632	0.375	0.593	1.869	0.625	0.339
2.13	0.629	0.372	0.592	1.885	0.634	0.342
2.14	0.626	0.370	0.590	1.902	0.643	0.345
2.15	0.624	0.367	0.589	1.919	0.652	0.348
2.16	0.621	0.365	0.588	1.935	0.660	0.350
2.17	0.618	0.362	0.586	1.953	0.669	0.353
2.18	0.615	0.360	0.585	1.970	0.678	0.356
2.19	0.612	0.357	0.583	1.987	0.687	0.358

Table 18.48: FANNO LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	(s*–s)/R	$4C_fL_{max}/D$
2.2	0.610	0.355	0.582	2.005	0.696	0.361
2.21	0.607	0.353	0.581	2.023	0.705	0.364
2.22	0.604	0.350	0.579	2.041	0.713	0.366
2.23	0.602	0.348	0.578	2.059	0.722	0.369
2.24	0.599	0.345	0.577	2.078	0.731	0.371
2.25	0.596	0.343	0.576	2.096	0.740	0.374
2.26	0.594	0.341	0.574	2.115	0.749	0.376
2.27	0.591	0.339	0.573	2.134	0.758	0.379
2.28	0.588	0.336	0.572	2.154	0.767	0.381
2.29	0.586	0.334	0.571	2.173	0.776	0.384
2.3	0.583	0.332	0.569	2.193	0.785	0.386
2.31	0.580	0.330	0.568	2.213	0.794	0.389
2.32	0.578	0.328	0.567	2.233	0.803	0.391
2.33	0.575	0.326	0.566	2.254	0.813	0.393
2.34	0.573	0.323	0.565	2.274	0.822	0.396
2.35	0.570	0.321	0.564	2.295	0.831	0.398
2.36	0.568	0.319	0.562	2.316	0.840	0.401
2.37	0.565	0.317	0.561	2.338	0.849	0.403
2.38	0.563	0.315	0.560	2.359	0.858	0.405
2.39	0.560	0.313	0.559	2.381	0.868	0.408
2.4	0.558	0.311	0.558	2.403	0.877	0.410
2.41	0.555	0.309	0.557	2.425	0.886	0.412
2.42	0.553	0.307	0.556	2.448	0.895	0.414
2.43	0.550	0.305	0.555	2.471	0.904	0.417
2.44	0.548	0.303	0.554	2.494	0.914	0.419
2.45	0.545	0.301	0.553	2.517	0.923	0.421
2.46	0.543	0.300	0.552	2.540	0.932	0.423
2.47	0.540	0.298	0.551	2.564	0.942	0.426
2.48	0.538	0.296	0.550	2.588	0.951	0.428
2.49	0.536	0.294	0.549	2.612	0.960	0.430

Table 18.49: FANNO LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	(s*–s)/R	$4C_fL_{max}/D$
2.5	0.533	0.292	0.548	2.637	0.970	0.432
2.51	0.531	0.290	0.547	2.661	0.979	0.434
2.52	0.529	0.289	0.546	2.686	0.988	0.436
2.53	0.526	0.287	0.545	2.712	0.998	0.438
2.54	0.524	0.285	0.544	2.737	1.007	0.440
2.55	0.522	0.283	0.543	2.763	1.016	0.442
2.56	0.519	0.281	0.542	2.789	1.026	0.445
2.57	0.517	0.280	0.541	2.815	1.035	0.447
2.58	0.515	0.278	0.540	2.842	1.044	0.449
2.59	0.512	0.276	0.539	2.869	1.054	0.451
2.6	0.510	0.275	0.538	2.896	1.063	0.453
2.61	0.508	0.273	0.538	2.923	1.073	0.455
2.62	0.506	0.271	0.537	2.951	1.082	0.457
2.63	0.503	0.270	0.536	2.979	1.092	0.458
2.64	0.501	0.268	0.535	3.007	1.101	0.460
2.65	0.499	0.267	0.534	3.036	1.111	0.462
2.66	0.497	0.265	0.533	3.065	1.120	0.464
2.67	0.495	0.263	0.533	3.094	1.129	0.466
2.68	0.493	0.262	0.532	3.123	1.139	0.468
2.69	0.490	0.260	0.531	3.153	1.148	0.470
2.7	0.488	0.259	0.530	3.183	1.158	0.472
2.71	0.486	0.257	0.529	3.213	1.167	0.474
2.72	0.484	0.256	0.528	3.244	1.177	0.476
2.73	0.482	0.254	0.528	3.275	1.186	0.477
2.74	0.480	0.253	0.527	3.306	1.196	0.479
2.75	0.478	0.251	0.526	3.338	1.205	0.481
2.76	0.476	0.250	0.525	3.370	1.215	0.483
2.77	0.473	0.248	0.525	3.402	1.224	0.485
2.78	0.471	0.247	0.524	3.434	1.234	0.486
2.79	0.469	0.246	0.523	3.467	1.243	0.488

Table 18.50: FANNO LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	(s*–s)/R	$4C_fL_{max}/D$
2.8	0.467	0.244	0.522	3.500	1.253	0.490
2.81	0.465	0.243	0.522	3.534	1.262	0.491
2.82	0.463	0.241	0.521	3.567	1.272	0.493
2.83	0.461	0.240	0.520	3.601	1.281	0.495
2.84	0.459	0.239	0.520	3.636	1.291	0.497
2.85	0.457	0.237	0.519	3.671	1.300	0.498
2.86	0.455	0.236	0.518	3.706	1.310	0.500
2.87	0.453	0.235	0.518	3.741	1.319	0.502
2.88	0.451	0.233	0.517	3.777	1.329	0.503
2.89	0.449	0.232	0.516	3.813	1.338	0.505
2.9	0.447	0.231	0.516	3.850	1.348	0.507
2.91	0.445	0.229	0.515	3.887	1.358	0.508
2.92	0.444	0.228	0.514	3.924	1.367	0.510
2.93	0.442	0.227	0.514	3.961	1.377	0.511
2.94	0.440	0.226	0.513	3.999	1.386	0.513
2.95	0.438	0.224	0.512	4.038	1.396	0.514
2.96	0.436	0.223	0.512	4.076	1.405	0.516
2.97	0.434	0.222	0.511	4.115	1.415	0.518
2.98	0.432	0.221	0.510	4.155	1.424	0.519
2.99	0.430	0.219	0.510	4.194	1.434	0.521
3	0.429	0.218	0.509	4.235	1.443	0.522
3.01	0.427	0.217	0.509	4.275	1.453	0.524
3.02	0.425	0.216	0.508	4.316	1.462	0.525
3.03	0.423	0.215	0.507	4.357	1.472	0.527
3.04	0.421	0.214	0.507	4.399	1.481	0.528
3.05	0.420	0.212	0.506	4.441	1.491	0.530
3.06	0.418	0.211	0.506	4.483	1.500	0.531
3.07	0.416	0.210	0.505	4.526	1.510	0.532
3.08	0.414	0.209	0.504	4.570	1.519	0.534
3.09	0.412	0.208	0.504	4.613	1.529	0.535

Table 18.51: FANNO LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	(s*–s)/R	$4C_fL_{max}/D$
3.09	0.412	0.208	0.504	4.613	1.529	0.535
3.1	0.411	0.207	0.503	4.657	1.538	0.537
3.11	0.409	0.206	0.503	4.702	1.548	0.538
3.12	0.407	0.205	0.502	4.747	1.557	0.540
3.13	0.405	0.203	0.502	4.792	1.567	0.541
3.14	0.404	0.202	0.501	4.838	1.576	0.542
3.15	0.402	0.201	0.501	4.884	1.586	0.544
3.16	0.400	0.200	0.500	4.930	1.595	0.545
3.17	0.399	0.199	0.500	4.977	1.605	0.546
3.18	0.397	0.198	0.499	5.025	1.614	0.548
3.19	0.395	0.197	0.499	5.073	1.624	0.549
3.2	0.394	0.196	0.498	5.121	1.633	0.550
3.21	0.392	0.195	0.498	5.170	1.643	0.552
3.22	0.390	0.194	0.497	5.219	1.652	0.553
3.23	0.389	0.193	0.497	5.268	1.662	0.554
3.24	0.387	0.192	0.496	5.319	1.671	0.556
3.25	0.386	0.191	0.496	5.369	1.681	0.557
3.26	0.384	0.190	0.495	5.420	1.690	0.558
3.27	0.382	0.189	0.495	5.472	1.700	0.559
3.28	0.381	0.188	0.494	5.523	1.709	0.561
3.29	0.379	0.187	0.494	5.576	1.718	0.562
3.3	0.378	0.186	0.493	5.629	1.728	0.563
3.31	0.376	0.185	0.493	5.682	1.737	0.564
3.32	0.374	0.184	0.492	5.736	1.747	0.566
3.33	0.373	0.183	0.492	5.790	1.756	0.567
3.34	0.371	0.182	0.491	5.845	1.766	0.568
3.35	0.370	0.182	0.491	5.900	1.775	0.569
3.36	0.368	0.181	0.490	5.956	1.784	0.571
3.37	0.367	0.180	0.490	6.012	1.794	0.572
3.38	0.365	0.179	0.489	6.069	1.803	0.573

Table 18.52: FANNO LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	(s*–s)/R	$4C_fL_{max}/D$
3.39	0.364	0.178	0.489	6.126	1.813	0.574
3.4	0.362	0.177	0.489	6.184	1.822	0.575
3.41	0.361	0.176	0.488	6.242	1.831	0.576
3.42	0.359	0.175	0.488	6.301	1.841	0.578
3.43	0.358	0.174	0.487	6.360	1.850	0.579
3.44	0.356	0.174	0.487	6.420	1.859	0.580
3.45	0.355	0.173	0.486	6.480	1.869	0.581
3.46	0.354	0.172	0.486	6.541	1.878	0.582
3.47	0.352	0.171	0.486	6.602	1.887	0.583
3.48	0.351	0.170	0.485	6.664	1.897	0.584
3.49	0.349	0.169	0.485	6.727	1.906	0.585
3.5	0.348	0.169	0.484	6.790	1.915	0.586
3.51	0.346	0.168	0.484	6.853	1.925	0.588
3.52	0.345	0.167	0.484	6.917	1.934	0.589
3.53	0.344	0.166	0.483	6.982	1.943	0.590
3.54	0.342	0.165	0.483	7.047	1.953	0.591
3.55	0.341	0.164	0.482	7.113	1.962	0.592
3.56	0.339	0.164	0.482	7.179	1.971	0.593
3.57	0.338	0.163	0.482	7.246	1.980	0.594
3.58	0.337	0.162	0.481	7.313	1.990	0.595
3.59	0.335	0.161	0.481	7.381	1.999	0.596
3.6	0.334	0.161	0.481	7.450	2.008	0.597
3.61	0.333	0.160	0.480	7.519	2.017	0.598
3.62	0.331	0.159	0.480	7.589	2.027	0.599
3.63	0.330	0.158	0.479	7.659	2.036	0.600
3.64	0.329	0.158	0.479	7.730	2.045	0.601
3.65	0.327	0.157	0.479	7.802	2.054	0.602
3.66	0.326	0.156	0.478	7.874	2.064	0.603
3.67	0.325	0.155	0.478	7.947	2.073	0.604
3.68	0.324	0.155	0.478	8.020	2.082	0.605

Table 18.53: FANNO LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	(s*-s)/R	$4C_fL_{max}/D$
3.69	0.322	0.154	0.477	8.094	2.091	0.606
3.7	0.321	0.153	0.477	8.169	2.100	0.607
3.71	0.320	0.152	0.477	8.244	2.110	0.608
3.72	0.318	0.152	0.476	8.320	2.119	0.609
3.73	0.317	0.151	0.476	8.397	2.128	0.610
3.74	0.316	0.150	0.476	8.474	2.137	0.611
3.75	0.315	0.150	0.475	8.552	2.146	0.612
3.76	0.314	0.149	0.475	8.630	2.155	0.612
3.77	0.312	0.148	0.475	8.709	2.164	0.613
3.78	0.311	0.148	0.474	8.789	2.174	0.614
3.79	0.310	0.147	0.474	8.869	2.183	0.615
3.8	0.309	0.146	0.474	8.951	2.192	0.616
3.81	0.307	0.146	0.473	9.032	2.201	0.617
3.82	0.306	0.145	0.473	9.115	2.210	0.618
3.83	0.305	0.144	0.473	9.198	2.219	0.619
3.84	0.304	0.144	0.472	9.282	2.228	0.620
3.85	0.303	0.143	0.472	9.366	2.237	0.621
3.86	0.302	0.142	0.472	9.451	2.246	0.621
3.87	0.300	0.142	0.471	9.537	2.255	0.622
3.88	0.299	0.141	0.471	9.624	2.264	0.623
3.89	0.298	0.140	0.471	9.711	2.273	0.624
3.9	0.297	0.140	0.471	9.799	2.282	0.625
3.91	0.296	0.139	0.470	9.888	2.291	0.626
3.92	0.295	0.138	0.470	9.977	2.300	0.627
3.93	0.293	0.138	0.470	10.067	2.309	0.627
3.94	0.292	0.137	0.469	10.158	2.318	0.628
3.95	0.291	0.137	0.469	10.250	2.327	0.629
3.96	0.290	0.136	0.469	10.342	2.336	0.630
3.97	0.289	0.135	0.469	10.435	2.345	0.631
3.98	0.288	0.135	0.468	10.529	2.354	0.631

Table 18.54: FANNO LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	(s*–s)/R	$4C_fL_{max}/D$
3.99	0.287	0.134	0.468	10.623	2.363	0.632
4	0.286	0.134	0.468	10.719	2.372	0.633
4.01	0.285	0.133	0.467	10.815	2.381	0.634
4.02	0.284	0.132	0.467	10.912	2.390	0.635
4.03	0.282	0.132	0.467	11.009	2.399	0.635
4.04	0.281	0.131	0.467	11.108	2.408	0.636
4.05	0.280	0.131	0.466	11.207	2.417	0.637
4.06	0.279	0.130	0.466	11.307	2.425	0.638
4.07	0.278	0.130	0.466	11.408	2.434	0.639
4.08	0.277	0.129	0.466	11.509	2.443	0.639
4.09	0.276	0.128	0.465	11.611	2.452	0.640
4.1	0.275	0.128	0.465	11.715	2.461	0.641
4.11	0.274	0.127	0.465	11.819	2.470	0.642
4.12	0.273	0.127	0.464	11.923	2.479	0.642
4.13	0.272	0.126	0.464	12.029	2.487	0.643
4.14	0.271	0.126	0.464	12.135	2.496	0.644
4.15	0.270	0.125	0.464	12.243	2.505	0.645
4.16	0.269	0.125	0.463	12.351	2.514	0.645
4.17	0.268	0.124	0.463	12.460	2.523	0.646
4.18	0.267	0.124	0.463	12.570	2.531	0.647
4.19	0.266	0.123	0.463	12.680	2.540	0.647
4.2	0.265	0.123	0.463	12.792	2.549	0.648
4.21	0.264	0.122	0.462	12.904	2.558	0.649
4.22	0.263	0.122	0.462	13.017	2.566	0.650
4.23	0.262	0.121	0.462	13.131	2.575	0.650
4.24	0.261	0.121	0.462	13.246	2.584	0.651
4.25	0.260	0.120	0.461	13.362	2.592	0.652
4.26	0.259	0.120	0.461	13.479	2.601	0.652
4.27	0.258	0.119	0.461	13.597	2.610	0.653
4.28	0.257	0.119	0.461	13.715	2.618	0.654

Table 18.55: FANNO LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	(s*-s)/R	$4C_fL_{max}/D$
4.29	0.256	0.118	0.460	13.835	2.627	0.654
4.3	0.255	0.118	0.460	13.955	2.636	0.655
4.31	0.254	0.117	0.460	14.076	2.644	0.656
4.32	0.254	0.117	0.460	14.198	2.653	0.656
4.33	0.253	0.116	0.459	14.322	2.662	0.657
4.34	0.252	0.116	0.459	14.446	2.670	0.658
4.35	0.251	0.115	0.459	14.571	2.679	0.658
4.36	0.250	0.115	0.459	14.697	2.688	0.659
4.37	0.249	0.114	0.459	14.823	2.696	0.660
4.38	0.248	0.114	0.458	14.951	2.705	0.660
4.39	0.247	0.113	0.458	15.080	2.713	0.661
4.4	0.246	0.113	0.458	15.210	2.722	0.661
4.41	0.245	0.112	0.458	15.341	2.731	0.662
4.42	0.245	0.112	0.458	15.472	2.739	0.663
4.43	0.244	0.111	0.457	15.605	2.748	0.663
4.44	0.243	0.111	0.457	15.739	2.756	0.664
4.45	0.242	0.111	0.457	15.873	2.765	0.665
4.46	0.241	0.110	0.457	16.009	2.773	0.665
4.47	0.240	0.110	0.456	16.146	2.782	0.666
4.48	0.239	0.109	0.456	16.284	2.790	0.666
4.49	0.238	0.109	0.456	16.422	2.799	0.667
4.5	0.238	0.108	0.456	16.562	2.807	0.668
4.51	0.237	0.108	0.456	16.703	2.816	0.668
4.52	0.236	0.107	0.455	16.845	2.824	0.669
4.53	0.235	0.107	0.455	16.988	2.832	0.669
4.54	0.234	0.107	0.455	17.132	2.841	0.670
4.55	0.233	0.106	0.455	17.277	2.849	0.671
4.56	0.233	0.106	0.455	17.423	2.858	0.671
4.57	0.232	0.105	0.454	17.570	2.866	0.672
4.58	0.231	0.105	0.454	17.718	2.875	0.672

Table 18.56: FANNO LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	(s*-s)/R	$4C_fL_{max}/D$
4.59	0.230	0.105	0.454	17.867	2.883	0.673
4.6	0.229	0.104	0.454	18.018	2.891	0.673
4.61	0.229	0.104	0.454	18.169	2.900	0.674
4.62	0.228	0.103	0.454	18.322	2.908	0.675
4.63	0.227	0.103	0.453	18.476	2.916	0.675
4.64	0.226	0.102	0.453	18.630	2.925	0.676
4.65	0.225	0.102	0.453	18.786	2.933	0.676
4.66	0.225	0.102	0.453	18.943	2.941	0.677
4.67	0.224	0.101	0.453	19.101	2.950	0.677
4.68	0.223	0.101	0.452	19.261	2.958	0.678
4.69	0.222	0.101	0.452	19.421	2.966	0.678
4.7	0.221	0.100	0.452	19.583	2.975	0.679
4.71	0.221	0.100	0.452	19.746	2.983	0.679
4.72	0.220	0.099	0.452	19.910	2.991	0.680
4.73	0.219	0.099	0.452	20.075	2.999	0.681
4.74	0.218	0.099	0.451	20.241	3.008	0.681
4.75	0.218	0.098	0.451	20.408	3.016	0.682
4.76	0.217	0.098	0.451	20.577	3.024	0.682
4.77	0.216	0.097	0.451	20.747	3.032	0.683
4.78	0.215	0.097	0.451	20.918	3.041	0.683
4.79	0.215	0.097	0.451	21.090	3.049	0.684
4.8	0.214	0.096	0.450	21.264	3.057	0.684
4.81	0.213	0.096	0.450	21.438	3.065	0.685
4.82	0.213	0.096	0.450	21.614	3.073	0.685
4.83	0.212	0.095	0.450	21.792	3.082	0.686
4.84	0.211	0.095	0.450	21.970	3.090	0.686
4.85	0.210	0.095	0.450	22.150	3.098	0.687
4.86	0.210	0.094	0.449	22.331	3.106	0.687
4.87	0.209	0.094	0.449	22.513	3.114	0.688
4.88	0.208	0.094	0.449	22.696	3.122	0.688

APPENDIX: RAYLEIGH LINE FLOW TABLE
$k = 1.4$

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
0.01	0.00058	2.3997	4167.2500	1.2678	0.0005	26.9842
0.02	0.00230	2.3987	1042.2500	1.2675	0.0019	22.1347
0.03	0.00517	2.3970	463.5463	1.2671	0.0043	19.3006
0.04	0.00917	2.3946	261.0000	1.2665	0.0076	17.2927
0.05	0.01430	2.3916	167.2500	1.2657	0.0119	15.7383
0.06	0.02053	2.3880	116.3241	1.2647	0.0171	14.4712
0.07	0.02784	2.3836	85.6173	1.2636	0.0232	13.4030
0.08	0.03621	2.3787	65.6875	1.2623	0.0302	12.4808
0.09	0.04562	2.3731	52.0237	1.2608	0.0381	11.6705
0.1	0.05602	2.3669	42.2500	1.2591	0.0468	10.9487
0.11	0.06739	2.3600	35.0186	1.2573	0.0563	10.2989
0.12	0.07970	2.3526	29.5185	1.2554	0.0666	9.7088
0.13	0.09290	2.3445	25.2382	1.2533	0.0777	9.1690
0.14	0.10695	2.3359	21.8418	1.2510	0.0895	8.6724
0.15	0.12181	2.3267	19.1019	1.2486	0.1020	8.2131
0.16	0.13743	2.3170	16.8594	1.2461	0.1151	7.7865
0.17	0.15377	2.3067	15.0009	1.2434	0.1289	7.3889
0.18	0.17078	2.2959	13.4434	1.2406	0.1432	7.0169
0.19	0.18841	2.2845	12.1253	1.2377	0.1581	6.6681
0.2	0.20661	2.2727	11.0000	1.2346	0.1736	6.3402
0.21	0.22533	2.2604	10.0316	1.2314	0.1894	6.0312
0.22	0.24452	2.2477	9.1921	1.2281	0.2057	5.7395
0.23	0.26413	2.2345	8.4598	1.2247	0.2224	5.4636
0.24	0.28411	2.2209	7.8171	1.2213	0.2395	5.2023
0.25	0.30440	2.2069	7.2500	1.2177	0.2568	4.9545
0.26	0.32496	2.1925	6.7470	1.2140	0.2745	4.7193
0.27	0.34573	2.1777	6.2989	1.2102	0.2923	4.4956
0.28	0.36667	2.1626	5.8980	1.2064	0.3104	4.2828
0.29	0.38774	2.1472	5.5378	1.2025	0.3285	4.0802
0.3	0.40887	2.1314	5.2130	1.1985	0.3469	3.8870

Table 18.57: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
0.31	0.43004	2.1154	4.9191	1.1945	0.3653	3.7028
0.32	0.45119	2.0991	4.6523	1.1904	0.3837	3.5271
0.33	0.47228	2.0825	4.4095	1.1863	0.4021	3.3592
0.34	0.49327	2.0657	4.1877	1.1822	0.4206	3.1989
0.35	0.51413	2.0487	3.9847	1.1779	0.4389	3.0457
0.36	0.53482	2.0314	3.7984	1.1737	0.4572	2.8992
0.37	0.55529	2.0140	3.6269	1.1695	0.4754	2.7590
0.38	0.57553	1.9964	3.4688	1.1652	0.4935	2.6250
0.39	0.59549	1.9787	3.3228	1.1609	0.5113	2.4967
0.4	0.61515	1.9608	3.1875	1.1566	0.5290	2.3740
0.41	0.63448	1.9428	3.0620	1.1523	0.5465	2.2565
0.42	0.65346	1.9247	2.9454	1.1480	0.5638	2.1439
0.43	0.67205	1.9065	2.8368	1.1437	0.5808	2.0362
0.44	0.69025	1.8882	2.7355	1.1394	0.5975	1.9331
0.45	0.70804	1.8699	2.6409	1.1351	0.6139	1.8343
0.46	0.72538	1.8515	2.5525	1.1308	0.6301	1.7397
0.47	0.74228	1.8331	2.4696	1.1266	0.6459	1.6491
0.48	0.75871	1.8147	2.3918	1.1224	0.6614	1.5624
0.49	0.77466	1.7962	2.3187	1.1182	0.6765	1.4793
0.5	0.79012	1.7778	2.2500	1.1141	0.6914	1.3998
0.51	0.80509	1.7594	2.1853	1.1099	0.7058	1.3237
0.52	0.81955	1.7409	2.1243	1.1059	0.7199	1.2509
0.53	0.83351	1.7226	2.0667	1.1019	0.7336	1.1812
0.54	0.84695	1.7043	2.0122	1.0979	0.7470	1.1145
0.55	0.85987	1.6860	1.9607	1.0940	0.7599	1.0508
0.56	0.87227	1.6678	1.9120	1.0901	0.7725	0.9898
0.57	0.88416	1.6496	1.8658	1.0863	0.7847	0.9315
0.58	0.89552	1.6316	1.8219	1.0826	0.7965	0.8758
0.59	0.90637	1.6136	1.7803	1.0789	0.8079	0.8226
0.6	0.91670	1.5957	1.7407	1.0753	0.8189	0.7717

Table 18.58: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
0.61	0.92653	1.5780	1.7031	1.0717	0.8296	0.7232
0.62	0.93584	1.5603	1.6673	1.0682	0.8398	0.6770
0.63	0.94466	1.5428	1.6331	1.0648	0.8497	0.6328
0.64	0.95298	1.5253	1.6006	1.0615	0.8592	0.5908
0.65	0.96081	1.5080	1.5695	1.0582	0.8683	0.5507
0.66	0.96816	1.4908	1.5399	1.0550	0.8771	0.5126
0.67	0.97503	1.4738	1.5115	1.0519	0.8855	0.4763
0.68	0.98144	1.4569	1.4844	1.0489	0.8935	0.4419
0.69	0.98739	1.4401	1.4585	1.0460	0.9012	0.4091
0.7	0.99290	1.4235	1.4337	1.0431	0.9085	0.3781
0.71	0.99796	1.4070	1.4099	1.0403	0.9155	0.3486
0.72	1.00260	1.3907	1.3871	1.0376	0.9221	0.3207
0.73	1.00682	1.3745	1.3652	1.0350	0.9284	0.2943
0.74	1.01062	1.3585	1.3442	1.0325	0.9344	0.2694
0.75	1.01403	1.3427	1.3241	1.0301	0.9401	0.2459
0.76	1.01706	1.3270	1.3047	1.0278	0.9455	0.2237
0.77	1.01970	1.3114	1.2861	1.0255	0.9505	0.2028
0.78	1.02198	1.2961	1.2682	1.0234	0.9553	0.1832
0.79	1.02390	1.2809	1.2510	1.0213	0.9598	0.1649
0.8	1.02548	1.2658	1.2344	1.0193	0.9639	0.1477
0.81	1.02672	1.2510	1.2184	1.0175	0.9679	0.1316
0.82	1.02763	1.2362	1.2030	1.0157	0.9715	0.1167
0.83	1.02823	1.2217	1.1882	1.0140	0.9749	0.1028
0.84	1.02853	1.2073	1.1738	1.0124	0.9781	0.0900
0.85	1.02854	1.1931	1.1600	1.0109	0.9810	0.0781
0.86	1.02826	1.1791	1.1467	1.0095	0.9836	0.0672
0.87	1.02771	1.1652	1.1338	1.0082	0.9861	0.0573
0.88	1.02689	1.1515	1.1214	1.0070	0.9883	0.0482
0.89	1.02583	1.1380	1.1094	1.0059	0.9903	0.0400
0.9	1.02452	1.1246	1.0977	1.0049	0.9921	0.0327

Table 18.59: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
0.91	1.02297	1.1115	1.0865	1.0039	0.9937	0.0262
0.92	1.02120	1.0984	1.0756	1.0031	0.9951	0.0204
0.93	1.01922	1.0856	1.0651	1.0024	0.9963	0.0155
0.94	1.01702	1.0728	1.0549	1.0017	0.9973	0.0112
0.95	1.01463	1.0603	1.0450	1.0012	0.9981	0.0077
0.96	1.01205	1.0479	1.0354	1.0008	0.9988	0.0049
0.97	1.00929	1.0357	1.0262	1.0004	0.9993	0.0027
0.98	1.00636	1.0236	1.0172	1.0002	0.9997	0.0012
0.99	1.00326	1.0117	1.0085	1.0000	0.9999	0.0003
1	1.00000	1.0000	1.0000	1.0000	1.0000	0.0000
1.01	0.99659	0.9884	0.9918	1.0000	0.9999	0.0003
1.02	0.99304	0.9770	0.9838	1.0002	0.9997	0.0011
1.03	0.98936	0.9657	0.9761	1.0004	0.9994	0.0025
1.04	0.98554	0.9546	0.9686	1.0008	0.9989	0.0045
1.05	0.98161	0.9436	0.9613	1.0012	0.9984	0.0069
1.06	0.97755	0.9327	0.9542	1.0017	0.9977	0.0098
1.07	0.97339	0.9221	0.9473	1.0024	0.9969	0.0132
1.08	0.96913	0.9115	0.9406	1.0031	0.9960	0.0171
1.09	0.96477	0.9011	0.9340	1.0039	0.9950	0.0214
1.1	0.96031	0.8909	0.9277	1.0049	0.9939	0.0262
1.11	0.95577	0.8808	0.9215	1.0059	0.9927	0.0313
1.12	0.95115	0.8708	0.9155	1.0070	0.9915	0.0369
1.13	0.94645	0.8609	0.9096	1.0082	0.9901	0.0429
1.14	0.94169	0.8512	0.9039	1.0095	0.9887	0.0492
1.15	0.93685	0.8417	0.8984	1.0109	0.9872	0.0559
1.16	0.93196	0.8322	0.8930	1.0124	0.9856	0.0630
1.17	0.92701	0.8229	0.8877	1.0140	0.9840	0.0704
1.18	0.92200	0.8137	0.8826	1.0157	0.9823	0.0781
1.19	0.91695	0.8047	0.8776	1.0175	0.9805	0.0862
1.2	0.91185	0.7958	0.8727	1.0194	0.9787	0.0945

Table 18.60: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
1.21	0.90671	0.7870	0.8679	1.0214	0.9768	0.1032
1.22	0.90153	0.7783	0.8633	1.0235	0.9749	0.1121
1.23	0.89632	0.7697	0.8587	1.0257	0.9729	0.1214
1.24	0.89108	0.7613	0.8543	1.0279	0.9709	0.1308
1.25	0.88581	0.7529	0.8500	1.0303	0.9689	0.1406
1.26	0.88052	0.7447	0.8458	1.0328	0.9668	0.1506
1.27	0.87521	0.7366	0.8417	1.0354	0.9646	0.1609
1.28	0.86988	0.7287	0.8376	1.0380	0.9624	0.1713
1.29	0.86453	0.7208	0.8337	1.0408	0.9602	0.1821
1.3	0.85917	0.7130	0.8299	1.0437	0.9580	0.1930
1.31	0.85380	0.7054	0.8261	1.0466	0.9557	0.2041
1.32	0.84843	0.6978	0.8225	1.0497	0.9534	0.2155
1.33	0.84305	0.6904	0.8189	1.0528	0.9511	0.2270
1.34	0.83766	0.6830	0.8154	1.0561	0.9487	0.2388
1.35	0.83227	0.6758	0.8120	1.0594	0.9464	0.2507
1.36	0.82689	0.6686	0.8086	1.0629	0.9440	0.2628
1.37	0.82151	0.6616	0.8053	1.0664	0.9416	0.2750
1.38	0.81613	0.6546	0.8021	1.0701	0.9391	0.2875
1.39	0.81076	0.6478	0.7990	1.0738	0.9367	0.3001
1.4	0.80539	0.6410	0.7959	1.0777	0.9343	0.3128
1.41	0.80004	0.6344	0.7929	1.0816	0.9318	0.3257
1.42	0.79469	0.6278	0.7900	1.0856	0.9293	0.3387
1.43	0.78936	0.6213	0.7871	1.0898	0.9268	0.3519
1.44	0.78405	0.6149	0.7843	1.0940	0.9243	0.3652
1.45	0.77874	0.6086	0.7815	1.0983	0.9218	0.3787
1.46	0.77346	0.6024	0.7788	1.1028	0.9193	0.3922
1.47	0.76819	0.5962	0.7762	1.1073	0.9168	0.4059
1.48	0.76294	0.5902	0.7736	1.1120	0.9143	0.4197
1.49	0.75771	0.5842	0.7710	1.1167	0.9118	0.4336
1.5	0.75250	0.5783	0.7685	1.1215	0.9093	0.4476

Table 18.61: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
1.51	0.74732	0.5725	0.7661	1.1265	0.9068	0.4617
1.52	0.74215	0.5668	0.7637	1.1315	0.9042	0.4759
1.53	0.73701	0.5611	0.7613	1.1367	0.9017	0.4902
1.54	0.73189	0.5555	0.7590	1.1419	0.8992	0.5046
1.55	0.72680	0.5500	0.7568	1.1473	0.8967	0.5190
1.56	0.72173	0.5446	0.7545	1.1527	0.8942	0.5336
1.57	0.71669	0.5392	0.7524	1.1583	0.8917	0.5482
1.58	0.71168	0.5339	0.7502	1.1640	0.8892	0.5630
1.59	0.70669	0.5287	0.7481	1.1697	0.8867	0.5777
1.6	0.70174	0.5236	0.7461	1.1756	0.8842	0.5926
1.61	0.69680	0.5185	0.7441	1.1816	0.8817	0.6075
1.62	0.69190	0.5135	0.7421	1.1877	0.8792	0.6225
1.63	0.68703	0.5085	0.7402	1.1939	0.8768	0.6375
1.64	0.68219	0.5036	0.7383	1.2002	0.8743	0.6527
1.65	0.67738	0.4988	0.7364	1.2066	0.8718	0.6678
1.66	0.67259	0.4940	0.7345	1.2131	0.8694	0.6830
1.67	0.66784	0.4894	0.7327	1.2197	0.8670	0.6983
1.68	0.66312	0.4847	0.7310	1.2264	0.8645	0.7136
1.69	0.65843	0.4801	0.7292	1.2333	0.8621	0.7290
1.7	0.65377	0.4756	0.7275	1.2402	0.8597	0.7444
1.71	0.64914	0.4712	0.7258	1.2473	0.8573	0.7598
1.72	0.64455	0.4668	0.7242	1.2545	0.8549	0.7753
1.73	0.63999	0.4624	0.7226	1.2618	0.8526	0.7908
1.74	0.63545	0.4581	0.7210	1.2692	0.8502	0.8064
1.75	0.63095	0.4539	0.7194	1.2767	0.8478	0.8220
1.76	0.62649	0.4497	0.7178	1.2843	0.8455	0.8376
1.77	0.62205	0.4456	0.7163	1.2920	0.8432	0.8532
1.78	0.61765	0.4415	0.7148	1.2999	0.8409	0.8689
1.79	0.61328	0.4375	0.7134	1.3078	0.8386	0.8846
1.8	0.60894	0.4335	0.7119	1.3159	0.8363	0.9003

Table 18.62: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
1.81	0.60464	0.4296	0.7105	1.3241	0.8340	0.9161
1.82	0.60036	0.4257	0.7091	1.3324	0.8317	0.9318
1.83	0.59612	0.4219	0.7078	1.3409	0.8295	0.9476
1.84	0.59191	0.4181	0.7064	1.3494	0.8273	0.9634
1.85	0.58774	0.4144	0.7051	1.3581	0.8250	0.9792
1.86	0.58359	0.4107	0.7038	1.3669	0.8228	0.9951
1.87	0.57948	0.4071	0.7025	1.3758	0.8206	1.0109
1.88	0.57540	0.4035	0.7012	1.3849	0.8185	1.0268
1.89	0.57136	0.3999	0.7000	1.3940	0.8163	1.0426
1.9	0.56734	0.3964	0.6988	1.4033	0.8141	1.0585
1.91	0.56336	0.3930	0.6975	1.4127	0.8120	1.0744
1.92	0.55941	0.3895	0.6964	1.4222	0.8099	1.0903
1.93	0.55549	0.3862	0.6952	1.4319	0.8078	1.1062
1.94	0.55160	0.3828	0.6940	1.4417	0.8057	1.1221
1.95	0.54774	0.3795	0.6929	1.4516	0.8036	1.1380
1.96	0.54392	0.3763	0.6918	1.4616	0.8015	1.1539
1.97	0.54012	0.3731	0.6907	1.4718	0.7995	1.1698
1.98	0.53636	0.3699	0.6896	1.4821	0.7974	1.1858
1.99	0.53263	0.3667	0.6885	1.4925	0.7954	1.2017
2	0.52893	0.3636	0.6875	1.5031	0.7934	1.2176
2.01	0.52525	0.3606	0.6865	1.5138	0.7914	1.2335
2.02	0.52161	0.3575	0.6854	1.5246	0.7894	1.2494
2.03	0.51800	0.3545	0.6844	1.5356	0.7874	1.2653
2.04	0.51442	0.3516	0.6835	1.5467	0.7855	1.2812
2.05	0.51087	0.3487	0.6825	1.5579	0.7835	1.2971
2.06	0.50735	0.3458	0.6815	1.5693	0.7816	1.3130
2.07	0.50386	0.3429	0.6806	1.5808	0.7797	1.3288
2.08	0.50040	0.3401	0.6796	1.5924	0.7778	1.3447
2.09	0.49696	0.3373	0.6787	1.6042	0.7759	1.3606
2.1	0.49356	0.3345	0.6778	1.6162	0.7741	1.3764

Table 18.63: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
2.11	0.49018	0.3318	0.6769	1.6282	0.7722	1.3922
2.12	0.48684	0.3291	0.6760	1.6404	0.7704	1.4081
2.13	0.48352	0.3265	0.6752	1.6528	0.7685	1.4239
2.14	0.48023	0.3238	0.6743	1.6653	0.7667	1.4397
2.15	0.47696	0.3212	0.6735	1.6780	0.7649	1.4555
2.16	0.47373	0.3186	0.6726	1.6908	0.7631	1.4713
2.17	0.47052	0.3161	0.6718	1.7037	0.7614	1.4870
2.18	0.46734	0.3136	0.6710	1.7168	0.7596	1.5028
2.19	0.46418	0.3111	0.6702	1.7300	0.7579	1.5185
2.2	0.46106	0.3086	0.6694	1.7434	0.7561	1.5342
2.21	0.45796	0.3062	0.6686	1.7570	0.7544	1.5499
2.22	0.45488	0.3038	0.6679	1.7707	0.7527	1.5656
2.23	0.45184	0.3014	0.6671	1.7846	0.7510	1.5813
2.24	0.44882	0.2991	0.6664	1.7986	0.7493	1.5970
2.25	0.44582	0.2968	0.6656	1.8128	0.7477	1.6126
2.26	0.44285	0.2945	0.6649	1.8271	0.7460	1.6282
2.27	0.43990	0.2922	0.6642	1.8416	0.7444	1.6438
2.28	0.43698	0.2899	0.6635	1.8562	0.7428	1.6594
2.29	0.43409	0.2877	0.6628	1.8710	0.7411	1.6750
2.3	0.43122	0.2855	0.6621	1.8860	0.7395	1.6905
2.31	0.42838	0.2833	0.6614	1.9012	0.7380	1.7060
2.32	0.42555	0.2812	0.6607	1.9165	0.7364	1.7215
2.33	0.42276	0.2791	0.6601	1.9319	0.7348	1.7370
2.34	0.41998	0.2769	0.6594	1.9476	0.7333	1.7525
2.35	0.41723	0.2749	0.6588	1.9634	0.7317	1.7679
2.36	0.41451	0.2728	0.6581	1.9794	0.7302	1.7833
2.37	0.41181	0.2708	0.6575	1.9955	0.7287	1.7987
2.38	0.40913	0.2688	0.6569	2.0119	0.7272	1.8141
2.39	0.40647	0.2668	0.6563	2.0284	0.7257	1.8294
2.40	0.40384	0.2648	0.6557	2.0451	0.7242	1.8448

Table 18.64: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
2.41	0.40122	0.2628	0.6551	2.0619	0.7227	1.8601
2.42	0.39864	0.2609	0.6545	2.0789	0.7213	1.8754
2.43	0.39607	0.2590	0.6539	2.0962	0.7198	1.8906
2.44	0.39352	0.2571	0.6533	2.1136	0.7184	1.9059
2.45	0.39100	0.2552	0.6527	2.1311	0.7170	1.9211
2.46	0.38850	0.2534	0.6522	2.1489	0.7156	1.9363
2.47	0.38602	0.2515	0.6516	2.1669	0.7142	1.9514
2.48	0.38356	0.2497	0.6511	2.1850	0.7128	1.9666
2.49	0.38112	0.2479	0.6505	2.2033	0.7114	1.9817
2.5	0.37870	0.2462	0.6500	2.2218	0.7101	1.9968
2.51	0.37630	0.2444	0.6495	2.2405	0.7087	2.0118
2.52	0.37392	0.2427	0.6489	2.2594	0.7074	2.0269
2.53	0.37157	0.2409	0.6484	2.2785	0.7060	2.0419
2.54	0.36923	0.2392	0.6479	2.2978	0.7047	2.0569
2.55	0.36691	0.2375	0.6474	2.3173	0.7034	2.0718
2.56	0.36461	0.2359	0.6469	2.3370	0.7021	2.0868
2.57	0.36233	0.2342	0.6464	2.3569	0.7008	2.1017
2.58	0.36007	0.2326	0.6459	2.3770	0.6995	2.1166
2.59	0.35783	0.2310	0.6454	2.3972	0.6983	2.1314
2.6	0.35561	0.2294	0.6450	2.4177	0.6970	2.1463
2.61	0.35341	0.2278	0.6445	2.4384	0.6957	2.1611
2.62	0.35122	0.2262	0.6440	2.4593	0.6945	2.1758
2.63	0.34906	0.2246	0.6436	2.4805	0.6933	2.1906
2.64	0.34691	0.2231	0.6431	2.5018	0.6921	2.2053
2.65	0.34478	0.2216	0.6427	2.5233	0.6908	2.2200
2.66	0.34266	0.2201	0.6422	2.5451	0.6896	2.2347
2.67	0.34057	0.2186	0.6418	2.5671	0.6885	2.2493
2.68	0.33849	0.2171	0.6413	2.5892	0.6873	2.2640
2.69	0.33643	0.2156	0.6409	2.6117	0.6861	2.2786
2.7	0.33439	0.2142	0.6405	2.6343	0.6849	2.2931

Table 18.65: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
2.71	0.33236	0.2127	0.6401	2.6571	0.6838	2.3077
2.72	0.33035	0.2113	0.6397	2.6802	0.6826	2.3222
2.73	0.32836	0.2099	0.6392	2.7035	0.6815	2.3367
2.74	0.32638	0.2085	0.6388	2.7270	0.6804	2.3511
2.75	0.32442	0.2071	0.6384	2.7508	0.6793	2.3655
2.76	0.32248	0.2058	0.6380	2.7748	0.6781	2.3799
2.77	0.32055	0.2044	0.6376	2.7990	0.6770	2.3943
2.78	0.31864	0.2030	0.6372	2.8235	0.6760	2.4087
2.79	0.31674	0.2017	0.6369	2.8482	0.6749	2.4230
2.8	0.31486	0.2004	0.6365	2.8731	0.6738	2.4373
2.81	0.31299	0.1991	0.6361	2.8982	0.6727	2.4515
2.82	0.31114	0.1978	0.6357	2.9237	0.6717	2.4658
2.83	0.30931	0.1965	0.6354	2.9493	0.6706	2.4800
2.84	0.30749	0.1953	0.6350	2.9752	0.6696	2.4942
2.85	0.30568	0.1940	0.6346	3.0014	0.6685	2.5083
2.86	0.30389	0.1927	0.6343	3.0278	0.6675	2.5225
2.87	0.30211	0.1915	0.6339	3.0544	0.6665	2.5366
2.88	0.30035	0.1903	0.6336	3.0813	0.6655	2.5506
2.89	0.29860	0.1891	0.6332	3.1084	0.6645	2.5647
2.9	0.29687	0.1879	0.6329	3.1359	0.6635	2.5787
2.91	0.29515	0.1867	0.6325	3.1635	0.6625	2.5927
2.92	0.29344	0.1855	0.6322	3.1914	0.6615	2.6066
2.93	0.29175	0.1843	0.6319	3.2196	0.6606	2.6206
2.94	0.29007	0.1832	0.6315	3.2481	0.6596	2.6345
2.95	0.28841	0.1820	0.6312	3.2768	0.6586	2.6483
2.96	0.28675	0.1809	0.6309	3.3058	0.6577	2.6622
2.97	0.28512	0.1798	0.6306	3.3350	0.6568	2.6760
2.98	0.28349	0.1787	0.6303	3.3646	0.6558	2.6898
2.99	0.28188	0.1776	0.6299	3.3944	0.6549	2.7036
3.0	0.28028	0.1765	0.6296	3.4245	0.6540	2.7173

Table 18.66: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
3.1	0.26495	0.1660	0.6267	3.7408	0.6452	2.8532
3.11	0.26349	0.1651	0.6264	3.7741	0.6443	2.8666
3.12	0.26203	0.1641	0.6261	3.8076	0.6435	2.8800
3.13	0.26059	0.1631	0.6259	3.8415	0.6426	2.8934
3.14	0.25915	0.1621	0.6256	3.8756	0.6418	2.9068
3.15	0.25773	0.1612	0.6253	3.9101	0.6410	2.9201
3.16	0.25632	0.1602	0.6251	3.9449	0.6402	2.9334
3.17	0.25492	0.1593	0.6248	3.9800	0.6394	2.9467
3.18	0.25353	0.1583	0.6245	4.0154	0.6386	2.9599
3.19	0.25215	0.1574	0.6243	4.0511	0.6378	2.9732
3.2	0.25078	0.1565	0.6240	4.0871	0.6370	2.9863
3.21	0.24943	0.1556	0.6238	4.1235	0.6362	2.9995
3.22	0.24808	0.1547	0.6235	4.1602	0.6354	3.0127
3.23	0.24674	0.1538	0.6233	4.1972	0.6347	3.0258
3.24	0.24541	0.1529	0.6230	4.2345	0.6339	3.0389
3.25	0.24410	0.1520	0.6228	4.2721	0.6331	3.0519
3.26	0.24279	0.1511	0.6225	4.3101	0.6324	3.0649
3.27	0.24149	0.1503	0.6223	4.3485	0.6316	3.0780
3.28	0.24021	0.1494	0.6221	4.3871	0.6309	3.0909
3.29	0.23893	0.1486	0.6218	4.4261	0.6301	3.1039
3.3	0.23766	0.1477	0.6216	4.4655	0.6294	3.1168
3.31	0.23640	0.1469	0.6214	4.5052	0.6287	3.1297
3.32	0.23515	0.1461	0.6211	4.5452	0.6280	3.1426
3.33	0.23391	0.1452	0.6209	4.5856	0.6272	3.1554
3.34	0.23268	0.1444	0.6207	4.6263	0.6265	3.1683
3.35	0.23146	0.1436	0.6205	4.6674	0.6258	3.1810
3.36	0.23025	0.1428	0.6202	4.7089	0.6251	3.1938
3.37	0.22905	0.1420	0.6200	4.7507	0.6244	3.2066
3.38	0.22785	0.1412	0.6198	4.7929	0.6237	3.2193
3.39	0.22667	0.1404	0.6196	4.8354	0.6230	3.2320

Table 18.67: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
3.4	0.22549	0.1397	0.6194	4.8783	0.6224	3.2446
3.41	0.22432	0.1389	0.6192	4.9216	0.6217	3.2573
3.42	0.22317	0.1381	0.6190	4.9652	0.6210	3.2699
3.43	0.22201	0.1374	0.6187	5.0092	0.6203	3.2825
3.44	0.22087	0.1366	0.6185	5.0536	0.6197	3.2950
3.45	0.21974	0.1359	0.6183	5.0984	0.6190	3.3076
3.46	0.21861	0.1351	0.6181	5.1435	0.6184	3.3201
3.47	0.21750	0.1344	0.6179	5.1891	0.6177	3.3326
3.48	0.21639	0.1337	0.6177	5.2350	0.6171	3.3450
3.49	0.21529	0.1329	0.6175	5.2813	0.6164	3.3575
3.5	0.21419	0.1322	0.6173	5.3280	0.6158	3.3699
3.51	0.21311	0.1315	0.6172	5.3751	0.6152	3.3823
3.52	0.21203	0.1308	0.6170	5.4226	0.6145	3.3946
3.53	0.21096	0.1301	0.6168	5.4705	0.6139	3.4069
3.54	0.20990	0.1294	0.6166	5.5188	0.6133	3.4193
3.55	0.20885	0.1287	0.6164	5.5676	0.6127	3.4315
3.56	0.20780	0.1280	0.6162	5.6167	0.6121	3.4438
3.57	0.20676	0.1274	0.6160	5.6662	0.6115	3.4560
3.58	0.20573	0.1267	0.6158	5.7162	0.6109	3.4682
3.59	0.20470	0.1260	0.6157	5.7665	0.6103	3.4804
3.6	0.20369	0.1254	0.6155	5.8173	0.6097	3.4926
3.61	0.20268	0.1247	0.6153	5.8685	0.6091	3.5047
3.62	0.20167	0.1241	0.6151	5.9201	0.6085	3.5168
3.63	0.20068	0.1234	0.6150	5.9722	0.6080	3.5289
3.64	0.19969	0.1228	0.6148	6.0247	0.6074	3.5410
3.65	0.19871	0.1221	0.6146	6.0776	0.6068	3.5530
3.66	0.19773	0.1215	0.6144	6.1310	0.6062	3.5650
3.67	0.19677	0.1209	0.6143	6.1848	0.6057	3.5770
3.68	0.19581	0.1202	0.6141	6.2390	0.6051	3.5890
3.69	0.19485	0.1196	0.6139	6.2937	0.6046	3.6009

Table 18.68: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
3.7	0.19390	0.1190	0.6138	6.3488	0.6040	3.6128
3.71	0.19296	0.1184	0.6136	6.4044	0.6035	3.6247
3.72	0.19203	0.1178	0.6134	6.4605	0.6029	3.6366
3.73	0.19110	0.1172	0.6133	6.5170	0.6024	3.6485
3.74	0.19018	0.1166	0.6131	6.5739	0.6018	3.6603
3.75	0.18926	0.1160	0.6130	6.6314	0.6013	3.6721
3.76	0.18836	0.1154	0.6128	6.6893	0.6008	3.6838
3.77	0.18745	0.1148	0.6126	6.7476	0.6003	3.6956
3.78	0.18656	0.1143	0.6125	6.8065	0.5997	3.7073
3.79	0.18567	0.1137	0.6123	6.8658	0.5992	3.7190
3.8	0.18478	0.1131	0.6122	6.9256	0.5987	3.7307
3.81	0.18391	0.1126	0.6120	6.9858	0.5982	3.7424
3.82	0.18303	0.1120	0.6119	7.0466	0.5977	3.7540
3.83	0.18217	0.1114	0.6117	7.1078	0.5972	3.7656
3.84	0.18131	0.1109	0.6116	7.1696	0.5967	3.7772
3.85	0.18045	0.1103	0.6114	7.2318	0.5962	3.7888
3.86	0.17961	0.1098	0.6113	7.2945	0.5957	3.8003
3.87	0.17876	0.1093	0.6112	7.3578	0.5952	3.8118
3.88	0.17793	0.1087	0.6110	7.4215	0.5947	3.8233
3.89	0.17709	0.1082	0.6109	7.4858	0.5942	3.8348
3.9	0.17627	0.1077	0.6107	7.5505	0.5937	3.8463
3.91	0.17545	0.1071	0.6106	7.6158	0.5933	3.8577
3.92	0.17463	0.1066	0.6104	7.6816	0.5928	3.8691
3.93	0.17383	0.1061	0.6103	7.7479	0.5923	3.8805
3.94	0.17302	0.1056	0.6102	7.8147	0.5918	3.8918
3.95	0.17222	0.1051	0.6100	7.8820	0.5914	3.9032
3.96	0.17143	0.1046	0.6099	7.9499	0.5909	3.9145
3.97	0.17064	0.1041	0.6098	8.0184	0.5904	3.9258
3.98	0.16986	0.1036	0.6096	8.0873	0.5900	3.9371
3.99	0.16908	0.1031	0.6095	8.1568	0.5895	3.9483

Table 18.69: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
4	0.16831	0.1026	0.6094	8.2268	0.5891	3.9595
4.01	0.16754	0.1021	0.6092	8.2974	0.5886	3.9708
4.02	0.16678	0.1016	0.6091	8.3686	0.5882	3.9819
4.03	0.16602	0.1011	0.6090	8.4403	0.5878	3.9931
4.04	0.16527	0.1006	0.6089	8.5125	0.5873	4.0042
4.05	0.16453	0.1002	0.6087	8.5853	0.5869	4.0154
4.06	0.16378	0.0997	0.6086	8.6587	0.5864	4.0265
4.07	0.16305	0.0992	0.6085	8.7327	0.5860	4.0375
4.08	0.16231	0.0987	0.6084	8.8072	0.5856	4.0486
4.09	0.16159	0.0983	0.6082	8.8823	0.5852	4.0596
4.1	0.16086	0.0978	0.6081	8.9579	0.5847	4.0706
4.11	0.16014	0.0974	0.6080	9.0342	0.5843	4.0816
4.12	0.15943	0.0969	0.6079	9.1110	0.5839	4.0926
4.13	0.15872	0.0965	0.6078	9.1885	0.5835	4.1035
4.14	0.15802	0.0960	0.6076	9.2665	0.5831	4.1145
4.15	0.15732	0.0956	0.6075	9.3451	0.5827	4.1254
4.16	0.15662	0.0951	0.6074	9.4243	0.5823	4.1363
4.17	0.15593	0.0947	0.6073	9.5042	0.5818	4.1471
4.18	0.15524	0.0943	0.6072	9.5846	0.5814	4.1580
4.19	0.15456	0.0938	0.6071	9.6656	0.5810	4.1688
4.2	0.15388	0.0934	0.6070	9.7473	0.5807	4.1796
4.21	0.15321	0.0930	0.6068	9.8296	0.5803	4.1904
4.22	0.15254	0.0926	0.6067	9.9125	0.5799	4.2012
4.23	0.15187	0.0921	0.6066	9.9960	0.5795	4.2119
4.24	0.15121	0.0917	0.6065	10.0802	0.5791	4.2226
4.25	0.15056	0.0913	0.6064	10.1649	0.5787	4.2333
4.26	0.14990	0.0909	0.6063	10.2504	0.5783	4.2440
4.27	0.14926	0.0905	0.6062	10.3364	0.5779	4.2547
4.28	0.14861	0.0901	0.6061	10.4232	0.5776	4.2653
4.29	0.14797	0.0897	0.6060	10.5105	0.5772	4.2759

Table 18.70: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
4.3	0.14734	0.0893	0.6059	10.5985	0.5768	4.2865
4.31	0.14670	0.0889	0.6058	10.6872	0.5764	4.2971
4.32	0.14607	0.0885	0.6057	10.7766	0.5761	4.3077
4.33	0.14545	0.0881	0.6056	10.8666	0.5757	4.3182
4.34	0.14483	0.0877	0.6055	10.9572	0.5754	4.3287
4.35	0.14421	0.0873	0.6054	11.0486	0.5750	4.3392
4.36	0.14360	0.0869	0.6053	11.1406	0.5746	4.3497
4.37	0.14299	0.0865	0.6052	11.2333	0.5743	4.3602
4.38	0.14239	0.0862	0.6051	11.3267	0.5739	4.3706
4.39	0.14178	0.0858	0.6050	11.4208	0.5736	4.3810
4.4	0.14119	0.0854	0.6049	11.5155	0.5732	4.3914
4.41	0.14059	0.0850	0.6048	11.6110	0.5729	4.4018
4.42	0.14000	0.0847	0.6047	11.7072	0.5725	4.4122
4.43	0.13941	0.0843	0.6046	11.8040	0.5722	4.4225
4.44	0.13883	0.0839	0.6045	11.9016	0.5718	4.4328
4.45	0.13825	0.0836	0.6044	11.9999	0.5715	4.4432
4.46	0.13767	0.0832	0.6043	12.0989	0.5712	4.4534
4.47	0.13710	0.0828	0.6042	12.1987	0.5708	4.4637
4.48	0.13653	0.0825	0.6041	12.2991	0.5705	4.4740
4.49	0.13597	0.0821	0.6040	12.4003	0.5702	4.4842
4.5	0.13540	0.0818	0.6039	12.5023	0.5698	4.4944
4.51	0.13484	0.0814	0.6038	12.6049	0.5695	4.5046
4.52	0.13429	0.0811	0.6037	12.7083	0.5692	4.5148
4.53	0.13374	0.0807	0.6036	12.8125	0.5688	4.5249
4.54	0.13319	0.0804	0.6035	12.9174	0.5685	4.5351
4.55	0.13264	0.0800	0.6035	13.0231	0.5682	4.5452
4.56	0.13210	0.0797	0.6034	13.1295	0.5679	4.5553
4.57	0.13156	0.0794	0.6033	13.2367	0.5676	4.5654
4.58	0.13102	0.0790	0.6032	13.3446	0.5673	4.5754
4.59	0.13049	0.0787	0.6031	13.4534	0.5669	4.5855

Table 18.71: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
4.6	0.12996	0.0784	0.6030	13.5629	0.5666	4.5955
4.61	0.12943	0.0780	0.6029	13.6732	0.5663	4.6055
4.62	0.12891	0.0777	0.6029	13.7843	0.5660	4.6155
4.63	0.12839	0.0774	0.6028	13.8961	0.5657	4.6255
4.64	0.12787	0.0771	0.6027	14.0088	0.5654	4.6354
4.65	0.12736	0.0767	0.6026	14.1223	0.5651	4.6454
4.66	0.12685	0.0764	0.6025	14.2365	0.5648	4.6553
4.67	0.12634	0.0761	0.6024	14.3516	0.5645	4.6652
4.68	0.12583	0.0758	0.6024	14.4675	0.5642	4.6751
4.69	0.12533	0.0755	0.6023	14.5842	0.5639	4.6849
4.7	0.12483	0.0752	0.6022	14.7017	0.5636	4.6948
4.71	0.12434	0.0749	0.6021	14.8201	0.5633	4.7046
4.72	0.12384	0.0746	0.6020	14.9393	0.5630	4.7144
4.73	0.12335	0.0743	0.6020	15.0593	0.5628	4.7242
4.74	0.12286	0.0739	0.6019	15.1802	0.5625	4.7340
4.75	0.12238	0.0736	0.6018	15.3019	0.5622	4.7437
4.76	0.12190	0.0733	0.6017	15.4245	0.5619	4.7535
4.77	0.12142	0.0731	0.6016	15.5479	0.5616	4.7632
4.78	0.12094	0.0728	0.6016	15.6722	0.5613	4.7729
4.79	0.12047	0.0725	0.6015	15.7973	0.5611	4.7826
4.8	0.12000	0.0722	0.6014	15.9234	0.5608	4.7923
4.81	0.11953	0.0719	0.6013	16.0503	0.5605	4.8019
4.82	0.11906	0.0716	0.6013	16.1780	0.5602	4.8116
4.83	0.11860	0.0713	0.6012	16.3067	0.5600	4.8212
4.84	0.11814	0.0710	0.6011	16.4362	0.5597	4.8308
4.85	0.11768	0.0707	0.6010	16.5667	0.5594	4.8404
4.86	0.11722	0.0704	0.6010	16.6980	0.5592	4.8500
4.87	0.11677	0.0702	0.6009	16.8303	0.5589	4.8595
4.88	0.11632	0.0699	0.6008	16.9634	0.5586	4.8691
4.89	0.11587	0.0696	0.6008	17.0975	0.5584	4.8786

Table 18.72: RAYLEIGH LINE FLOW TABLE (Continued)

M	T/T*	p/p*	ρ/ρ^*	p_o/p_o^*	T_o/T_o^*	(s*–s)/R
4.9	0.11543	0.0693	0.6007	17.2325	0.5581	4.8881
4.91	0.11499	0.0691	0.6006	17.3684	0.5578	4.8976
4.92	0.11455	0.0688	0.6005	17.5052	0.5576	4.9071
4.93	0.11411	0.0685	0.6005	17.6430	0.5573	4.9165
4.94	0.11367	0.0682	0.6004	17.7817	0.5571	4.9259
4.95	0.11324	0.0680	0.6003	17.9213	0.5568	4.9354
4.96	0.11281	0.0677	0.6003	18.0619	0.5566	4.9448
4.97	0.11238	0.0675	0.6002	18.2035	0.5563	4.9542
4.98	0.11196	0.0672	0.6001	18.3460	0.5561	4.9635
4.99	0.11153	0.0669	0.6001	18.4895	0.5558	4.9729
5	0.11111	0.0667	0.6000	18.6339	0.5556	4.9822
5.01	0.11069	0.0664	0.5999	18.7793	0.5553	4.9916
5.02	0.11028	0.0662	0.5999	18.9257	0.5551	5.0009
5.03	0.10986	0.0659	0.5998	19.0731	0.5548	5.0102
5.04	0.10945	0.0656	0.5997	19.2215	0.5546	5.0194
5.05	0.10904	0.0654	0.5997	19.3708	0.5543	5.0287
5.06	0.10863	0.0651	0.5996	19.5212	0.5541	5.0379
5.07	0.10823	0.0649	0.5995	19.6726	0.5539	5.0472
5.08	0.10783	0.0646	0.5995	19.8250	0.5536	5.0564
5.09	0.10743	0.0644	0.5994	19.9784	0.5534	5.0656
5.1	0.10703	0.0641	0.5994	20.1328	0.5532	5.0748
5.11	0.10663	0.0639	0.5993	20.2882	0.5529	5.0839
5.12	0.10624	0.0637	0.5992	20.4447	0.5527	5.0931
5.13	0.10585	0.0634	0.5992	20.6022	0.5525	5.1022
5.14	0.10546	0.0632	0.5991	20.7608	0.5522	5.1113
5.15	0.10507	0.0629	0.5990	20.9204	0.5520	5.1205
5.16	0.10468	0.0627	0.5990	21.0811	0.5518	5.1295
5.17	0.10430	0.0625	0.5989	21.2428	0.5515	5.1386
5.18	0.10392	0.0622	0.5989	21.4056	0.5513	5.1477
5.19	0.10354	0.0620	0.5988	21.5695	0.5511	5.1567