Version AA/9

EGT2
ENGINEERING TRIPOS PART IIA

Wednesday 3 May 2023 9.30 to 12.40

Module 3A3

FLUID MECHANICS II

*Answer not more than **five** questions.*

All questions carry the same number of marks.

*The **approximate** percentage of marks allocated to each part of a question is indicated in the right margin.*

*Write your candidate number **not** your name on the cover sheet.*

STATIONERY REQUIREMENTS
Write on single-sided paper.
Use the graph paper for Q3.

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAM
CUED approved calculator allowed.
Attachments:
Compressible Flow Data Book (38 pages);
Engineering Data Book

10 minutes reading time is allowed for this paper at the start of the exam.

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

You may not remove any stationery from the Examination Room.

1 Figure 1 shows the position-time diagram for a piston impulsively started in an open-ended tube. The air in the tube is initially at rest at an ambient temperature and pressure of 288 K and 10^5 Pa respectively. Initially the piston is at rest. At time $t = 0$ the piston velocity rises instantaneously to 220 ms^{-1}. The piston velocity then remains constant.

(a) By using a frame of reference moving with the shock wave, express the ratio of densities on either side of the shock as a function of the piston and shock velocities. [20%]

(b) Using the result of part (a) and the normal shock tables, show that the velocity of the shock is approximately 497 ms^{-1}. Calculate the static temperature and pressure of the air in region 1 (see Fig. 1). [40%]

(c) When the shock wave reaches the open end of the tube a left running expansion wave is formed. Calculate the velocity and static temperature of the gas in region 2. You may make use of the Riemann invariant for a left running wave:

$$V + \frac{2a}{\gamma - 1}$$

where V and a represent the local flow and sound speed, respectively, and γ is the ratio of specific heat capacities. [20%]

(d) At time T the front of the expansion wave contacts the piston face. Calculate the location of the piston in the tube, as a percentage of the tube length L, at time T. [20%]

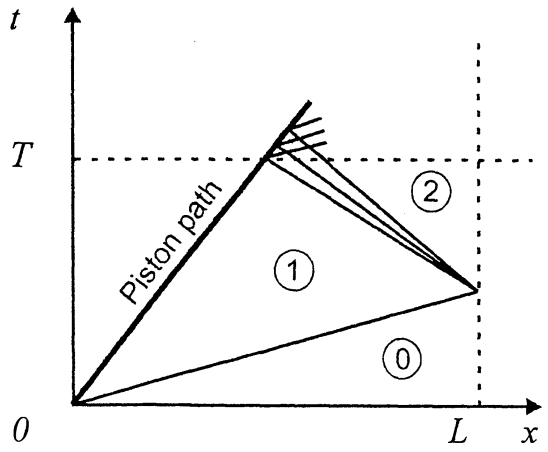


Fig. 1

2 The inlet of a convergent-divergent nozzle is connected to a large plenum of air at a stagnation pressure p_0. The nozzle exhausts to a second large plenum of pressure p_e. The stagnation pressure at the exit plane of the nozzle is p_{0e}. The flow through the nozzle is adiabatic and frictionless.

(a) Sketch the pressure distributions along the nozzle as p_e/p_0 is gradually reduced. Explain how p_{0e}/p_0 varies. If there is a 6.1% drop in stagnation pressure from nozzle inlet to exit, find the area of the nozzle relative to the area of the throat at which the shock is located. [40%]

(b) The ratio of the exit area to throat area of the nozzle is 1.2. The duct has the same drop in stagnation pressure as specified in part (a). Calculate the Mach number at the exit of the nozzle M_e and the pressure ratio p_e/p_0. [25%]

(c) The cross-sectional area of the divergent section of the nozzle varies linearly with distance downstream of the throat. The pressure ratio p_e/p_0 calculated in part (b) is altered so that the shock moves downstream by 20% of the length of the divergent section of the duct. Calculate the percentage change in p_e/p_0 from that calculated in part (b). [35%]

3 A lightweight supersonic jet aircraft is being developed to operate over a range of Mach numbers, $1.40 < M < 1.80$. Different designs of engine intake are under consideration. The first, sketched in Fig. 2a, is a conventional external compression design using a 9° wedge, designed such that the shock system is focused on the cowl lip at $M = 1.80$. As the development progresses, performance at $M = 1.40$ becomes more significant and it is proposed to replace the intake with a pitot type, sketched in Fig. 2b, incorporating a splitter plate to isolate the intake from the fuselage boundary layer. By removing the splitter plate, as sketched in Fig. 2c, it is found that the fuselage boundary layer forms a smooth curved ramp ahead of the intake and the pressure recovery in the lower half of the intake is improved compared with that of the design sketched in Fig. 2b.

(a) Draw carefully labelled sketches of the shock systems for all three intakes at $M = 1.40$. [60%]

(b) Using increments of $M = 0.1$, plot the pressure recovery of the intake, sketched in Fig. 2a, in terms of the ratio of stagnation pressure, over the range $1.40 < M < 1.80$. Use the graph paper provided [20%]

(c) Calculate the reduction in pressure recovery at $M = 1.40$ by changing from the intake sketched in Fig. 2a to that in Fig. 2b. [10%]

(d) Calculate the percentage of the reduction in pressure recovery calculated in part (c) regained by removing the splitter plate in the design sketched in Fig. 2c. Other than differences in stagnation pressure, you may assume the flow into the intake is uniform. [10%]

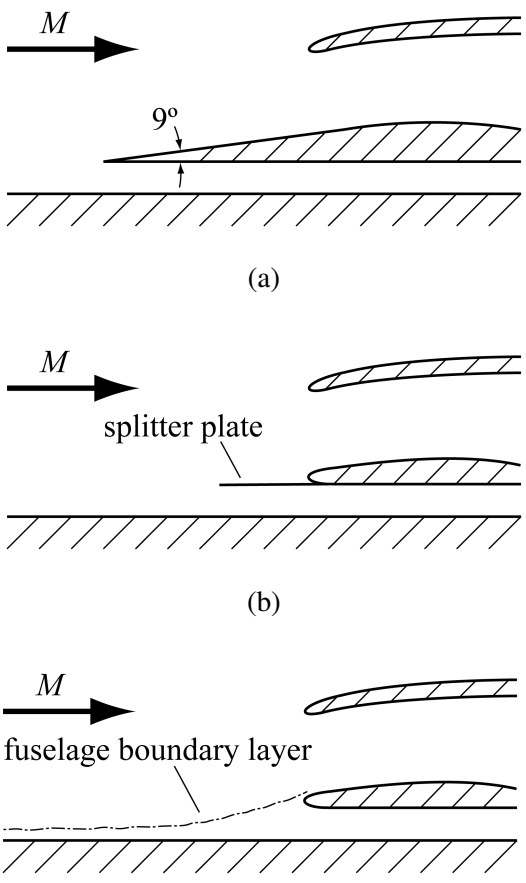


Fig. 2: (Not to scale)

4 An industrial air heater consists of a tube of constant cross-sectional area surrounded by an electrical heating element. Air enters the tube at a temperature of 120°C with a velocity of 150 ms^{-1}. Heat is supplied at a rate of 400 kJ per kg of air flowing. The effects of friction are negligible.

(a) Calculate the Mach number of the air at each end of the tube. [40%]

(b) Draw and label a $T - s$ (temperature-entropy) diagram to illustrate the process. Include the Rayleigh line on your diagram. [20%]

(c) The rate of heat addition is increased. Why is there a maximum rate of heat addition that can be accepted before the inlet conditions to the tube are found to change? Determine this maximum rate of heat addition. [40%]

5 Dry air enters a solid-walled channel at a supersonic Mach number, $M = 2.40$. The channel contains a constriction, sketched in Fig. 3. The floor of the channel turns through 10° at point A and then by a further 6° at point B, as shown in the figure. At point C the flow turns back to its original direction. There is a sharp corner of 16° at point D followed by a smooth curve in the floor between points D and E that returns the channel to its original direction. The flow in region 1 (upstream of A), region 2 (between points C and D) and in region three (downstream of E) is parallel to the flat roof of the channel and is uniform.

(a) Draw a carefully labelled sketch of the supersonic flow features in the channel. [40%]

(b) Calculate the Mach number in region 2. [10%]

(c) Calculate the static pressure in region 2 in terms of the incoming static pressure, p_1. [10%]

(d) Estimate the Mach number in region 3, stating your assumptions. [20%]

(e) Estimate the static pressure in region 3 in terms of the incoming static pressure, p_1, and briefly comment on your answer. [20%]

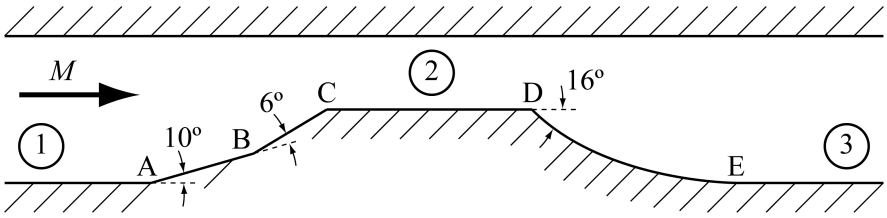


Fig. 3

6 Water, with thermal diffusivity α, flows between two parallel flat plates of length L and separated by a distance h. At steady state, the temperature is governed by

$$u\frac{\partial T}{\partial x} = \alpha\left(\frac{\partial^2 T}{\partial x^2} + \frac{\partial^2 T}{\partial y^2}\right).$$

The velocity in the x-direction, u, is uniform. The temperature distribution at the walls, $T(y = 0)$ and $T(y = h)$, and the inlet temperature $T(x = 0)$ are specified.

(a) The temperature profile is to be determined numerically using a uniform grid with spacing Δx and Δy. Show that using finite differences with second-order central difference estimates for second derivatives and a first-order forward estimate for the first derivative results in an update equation of the form,

$$T_i^{j+1} = \sigma T_{i+1}^j + (1 - 2\sigma - 2\gamma)T_i^j + \sigma T_{i-1}^j + \gamma T_i^{j+1} + \gamma T_i^{j-1} \quad (1)$$

where σ and γ are to be determined and (i, j) are integers that locate the grid point in the y and x direction, respectively. [30%]

(b) With reference to the nature/classification of the governing PDE, and the required boundary conditions, suggest why the problem is easier to solve numerically if thermal conduction in the x-direction can be neglected. [20%]

(c) Neglecting conduction of heat in the x-direction:

(i) By considering a sawtooth perturbation of small amplitude ϵ (the perturbation varies grid-point to grid-point from $+\epsilon$ to $-\epsilon$) determine the maximum step size for Δx for a stable, non-oscillatory, solution using Eq. 1. [25%]

(ii) The finite difference method is changed so that the approximation for the second derivative at grid point (i, j) is evaluated at grid point $(i, j + 1)$. Show that the resulting update equation is stable for all possible values of Δx and comment on the merits of using this rather unusual future estimate of the second derivative. [25%]

7 (a) The spatial derivative of temperature, $\partial T/\partial x$, is to be estimated with a finite difference scheme.

(i) For the central difference scheme

$$\frac{\partial T}{\partial x} = \frac{T_{j+1} - T_{j-1}}{2\Delta x},$$

show that the leading order error term is $O\left(\Delta x^2\right)$. [25%]

(ii) Using three equally-spaced grid points, find an expression for the highest order forward difference estimate of $\partial T/\partial x$. [25%]

(b) An axial turbine has four stages with repeating mean-line velocity triangles. The incoming swirl angle to the first stage is -30° in the absolute frame. The axial velocity is constant at 200 ms^{-1}, the flow coefficient is 0.5 and the turning of the rotor row in the relative frame is 110°. The combustion products have an isobaric specific heat capacity $c_p = 1.15\ \mathrm{kJ\,kg}^{-1}$ and a ratio of specific heat capacities $\gamma = 1.333$.

(i) Draw the velocity triangles and calculate the swirl angles in both absolute and relative frames. Calculate the work output of the entire machine per kg of air flowing through it. [35%]

(ii) If the stagnation temperature at inlet to the first row is 2000 K determine the exit Mach number of the first stator row. Explain how the span of the turbine blades must be varied through the machine to maintain the repeating stage condition. What will be the effect of this span variation on the Mach number at the exit of the last stator row? [15%]

8 A single stage centrifugal compressor is used to draw air through a vacuum cleaner. The meridional drawing is shown in Fig. 4 , indicating station numbers and dimensions. Stations 1 and 2 are at inlet and exit of the rotor, stations 2 and 3 are at inlet and exit of a vaneless diffuser through which moment of momentum is conserved.

(a) The power consumed by the compressor is 2 kW, the mass flow rate is 0.03 kgs^{-1}, the rotational speed is 90, 000 RPM and the total-total pressure ratio is 1.7. The stagnation temperature at the inlet is 288 K, the density at the outlet is 1 $\mathrm{kg\,m}^{-3}$ and there is zero inlet swirl. Calculate the:

(i) total-total isentropic efficiency [15%]

(ii) radial and tangential velocity components at machine exit [15%]

(iii) exit Mach number [15%]

(iv) total-static isentropic efficiency [15%]

(b) Which type of efficiency is the most appropriate metric of performance in this application and why? [15%]

(c) The turbomachinery design team propose two possible improvements to the design to increase performance. Either the speed of the rotor can be increased to 120,000 RPM, or vanes could be used in the diffuser to achieve an absolute exit yaw angle of 60°. By assuming that the compressor operates at the same power and mass flow rate, determine which of these two solutions is superior by comparing the exit velocities. Describe a drawback to its implementation in this application. Assume that the density at the outlet remains unchanged. [25%]

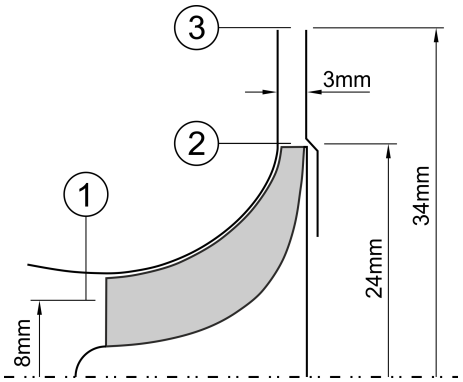


Fig. 4

END OF PAPER

Compressible Flow Data Book

for Part II of the Engineering Tripos

2009 Edition

Cambridge University Engineering Department

PERFECT GAS RELATIONS FOR COMPRESSIBLE FLOW

Ratios of stagnation to static quantities

$$\frac{T}{T_0} = \left(1 + \frac{\gamma - 1}{2} M^2\right)^{-1}$$

$$\frac{p}{p_0} = \left(1 + \frac{\gamma - 1}{2} M^2\right)^{-\frac{\gamma}{\gamma - 1}}$$

$$\frac{\rho}{\rho_0} = \left(1 + \frac{\gamma - 1}{2} M^2\right)^{-\frac{1}{\gamma - 1}}$$

Notes:

(1) $T_0 = const.$ in adiabatic flow with no shaft work

(2) If flow is isentropic, $p_0 = const.$ and $\rho_0 = const.$ when $T_0 = const.$

Mach number relations (see tables)

$$\frac{V}{\sqrt{c_p T_0}} = \sqrt{\gamma - 1}\, M \left(1 + \frac{\gamma - 1}{2} M^2\right)^{-\frac{1}{2}}$$

$$\frac{\dot{m}\sqrt{c_p T_0}}{A p_0} = \frac{\gamma}{\sqrt{\gamma - 1}} M \left(1 + \frac{\gamma - 1}{2} M^2\right)^{-\frac{1}{2}\left(\frac{\gamma + 1}{\gamma - 1}\right)}$$

$$\frac{\dot{m}\sqrt{c_p T_0}}{A p} = \frac{\gamma}{\sqrt{\gamma - 1}} M \left(1 + \frac{\gamma - 1}{2} M^2\right)^{\frac{1}{2}}$$

$$\frac{F}{\dot{m}\sqrt{c_p T_0}} = \frac{\sqrt{\gamma - 1}}{\gamma} \frac{1 + \gamma M^2}{M} \left(1 + \frac{\gamma - 1}{2} M^2\right)^{-\frac{1}{2}} \quad \text{where} \quad F = \left(p + \rho V^2\right) A$$

$$\frac{\frac{1}{2}\rho V^2}{p_0} = \frac{1}{2} \gamma M^2 \left(1 + \frac{\gamma - 1}{2} M^2\right)^{-\frac{\gamma}{\gamma - 1}}$$

ONE-DIMENSIONAL FLOW OF A PERFECT GAS

Isentropic flow

$$\frac{A}{A^*}=\frac{1}{M}\left\{\frac{2}{\gamma+1}\left(1+\frac{\gamma-1}{2}M^2\right)\right\}^{\frac{1}{2}\left(\frac{\gamma+1}{\gamma-1}\right)}$$

Adiabatic constant area flow

$$\frac{4c_f L_{\max}}{D}=\frac{1-M^2}{\gamma M^2}+\frac{\gamma+1}{2\gamma}\ln\left(\frac{(\gamma+1)M^2}{2\left(1+\frac{\gamma-1}{2}M^2\right)}\right)$$

Normal shock waves in perfect gases

$$VV_s=a^{*2}$$

$$M_s=\left(\frac{1+\frac{\gamma-1}{2}M^2}{\gamma M^2-\frac{\gamma-1}{2}}\right)^{\frac{1}{2}}$$

$$\frac{p_{0s}}{p_0}=\left(\frac{\frac{\gamma+1}{2}M^2}{1+\frac{\gamma-1}{2}M^2}\right)^{\frac{\gamma}{\gamma-1}}\left(\frac{2\gamma}{\gamma+1}M^2-\frac{\gamma-1}{\gamma+1}\right)^{\frac{1}{1-\gamma}}$$

$$\frac{p_s}{p}=1+\frac{2\gamma}{\gamma+1}\left(M^2-1\right)$$

$$\frac{p_{0s}}{p}=\left(\frac{\gamma+1}{2}M^2\right)^{\frac{\gamma}{\gamma-1}}\left(\frac{2\gamma}{\gamma+1}M^2-\frac{\gamma-1}{\gamma+1}\right)^{\frac{1}{1-\gamma}}$$

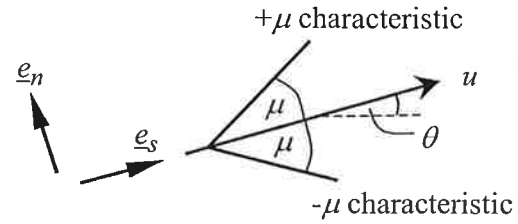
$$\frac{T_s}{T}=\frac{\gamma-1}{(\gamma+1)^2}\frac{2}{M^2}\left(1+\frac{\gamma-1}{2}M^2\right)\left(\frac{2\gamma}{\gamma-1}M^2-1\right)$$

$$\frac{\rho_s}{\rho}=\frac{(\gamma+1)M^2}{2\left(1+\frac{\gamma-1}{2}M^2\right)}$$

TWO DIMENSIONAL SUPERSONIC FLOW

Method of Characteristics for 2-D supersonic flow

Applicable to adiabatic (h_0 = constant)), isentropic flow



Mach Number $M = u/c$

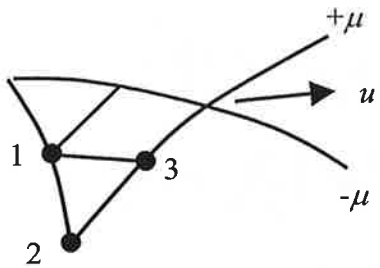
Mach angle $\mu = \sin^{-1}\left(\frac{1}{M}\right)$

Prandtl-Meyer function $\nu = \int_1^M \sqrt{M^2-1}\,\frac{du}{u}$

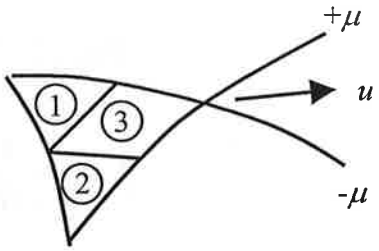
$$\nu = \sqrt{\frac{\gamma+1}{\gamma-1}}\tan^{-1}\sqrt{\frac{\gamma-1}{\gamma+1}\left(M^2-1\right)} - \tan^{-1}\sqrt{M^2-1} \quad \text{for a perfect gas}$$

Calculations

Lattice Method

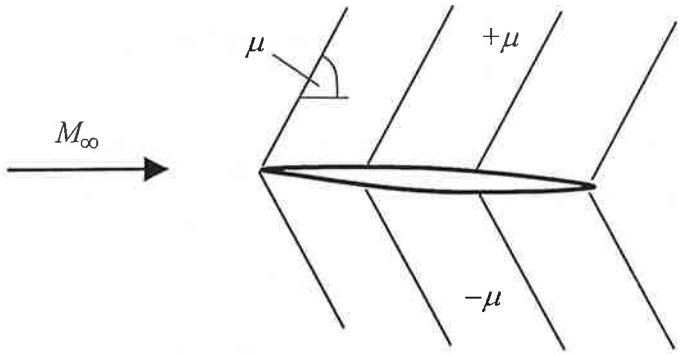


Field (or wave) method



$\nu_3 - \theta_3 = \nu_2 - \theta_2$	along $+\mu$	$\nu_3 + \theta_3 = \nu_1 + \theta_1$	across $+\mu$
$\nu_3 + \theta_3 = \nu_1 + \theta_1$	along $-\mu$	$\nu_3 - \theta_3 = \nu 2 - \theta_2$	across $-\mu$

Linearised Method of Characteristics (thin film theory)

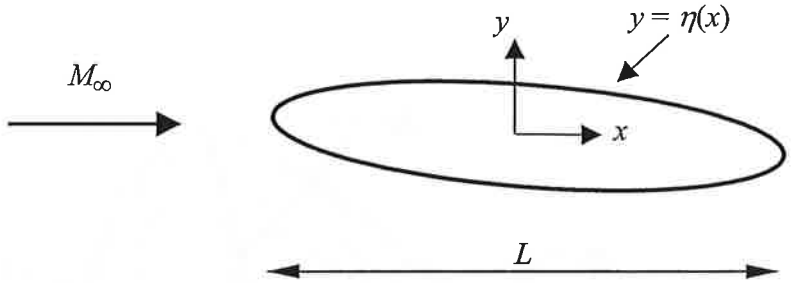


$$\mu \approx \sin^{-1}(1/M_\infty)$$

$$\Delta p \approx \pm \frac{\rho_\infty u_\infty^2 \Delta\theta}{\sqrt{M_\infty^2 - 1}} \qquad \text{across } \pm\mu \text{ waves}$$

Pressure coefficient $c_p = \dfrac{p - p_\infty}{\frac{1}{2}\rho_\infty u_\infty^2} = \pm \dfrac{2\theta}{\sqrt{M_\infty^2 - 1}}$ on upper/lower surface

Prandtl-Glauert rule for linearised potential flow past geometrically similar bodies



Pressure coefficient $c_p = \dfrac{p - p_\infty}{\frac{1}{2}\rho_\infty u_\infty^2}$

For geometrically similar bodies with $\dfrac{\eta}{L} = f\left(\dfrac{x}{L}\right)$ and $c_p(M_\infty = 0) = c_{p0}$,

$$c_p = \frac{c_{p0}}{\sqrt{1 - M_\infty^2}} \qquad \text{in subsonic flow}$$

$$c_p \propto \frac{1}{\sqrt{M_\infty^2 - 1}} \qquad \text{in supersonic flow}$$

Oblique Shock Relations (see tables)

$$\frac{p_2}{p_1} = 1 + \frac{2\gamma}{\gamma+1}\left(M_1^2 \sin^2\beta - 1\right)$$

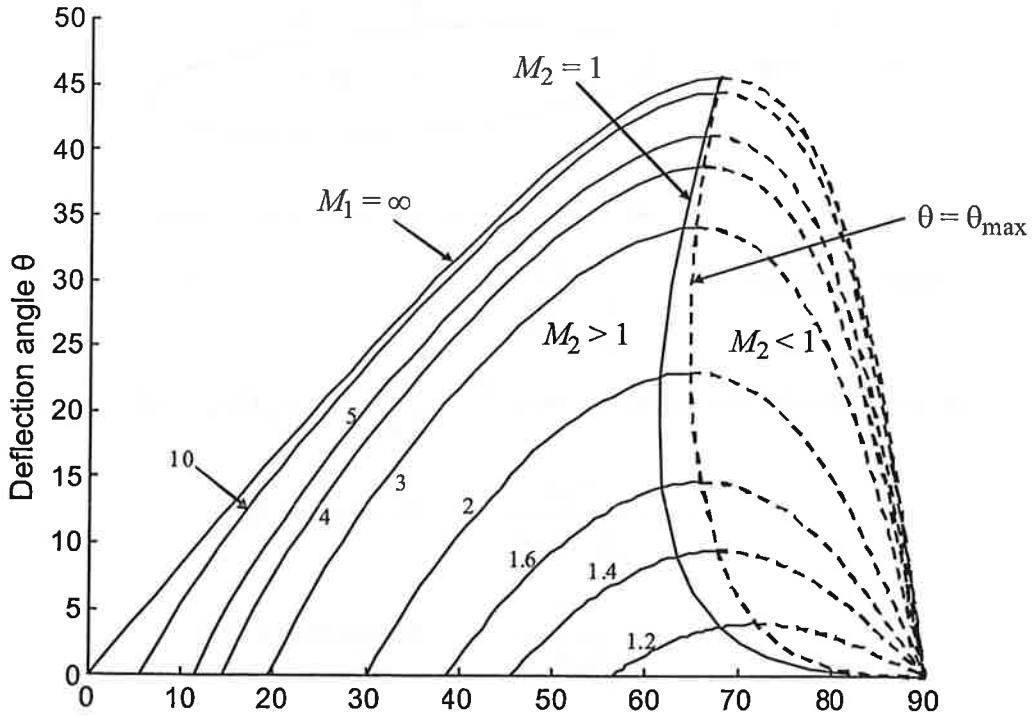
$$\frac{T_2}{T_1} = \frac{\gamma-1}{(\gamma+1)^2}\frac{2}{M_1^2\sin^2\beta}\left(1+\frac{\gamma-1}{2}M_1^2\sin^2\beta\right)\left(\frac{2\gamma}{\gamma-1}M_1^2\sin^2\beta - 1\right)$$

$$\frac{\rho_2}{\rho_1} = \frac{(\gamma+1)M_1^2\sin^2\beta}{2\left[1+\frac{\gamma-1}{2}M_1^2\sin^2\beta\right]}$$

$$M_2\sin(\beta-\theta) = \left[\frac{1+\frac{\gamma-1}{2}M_1^2\sin^2\beta}{\gamma M_1^2\sin^2\beta - \frac{\gamma-1}{2}}\right]^{\frac{1}{2}}$$

$$\frac{p_{02}}{p_{01}} = \left(\frac{\frac{\gamma+1}{2}M_1^2\sin^2\beta}{1+\frac{\gamma-1}{2}M_1^2\sin^2\beta}\right)^{\frac{\gamma}{\gamma-1}}\left(\frac{2\gamma}{\gamma+1}M_1^2\sin^2\beta - \frac{\gamma-1}{\gamma+1}\right)^{\frac{1}{1-\gamma}}$$

$$\tan\theta = \frac{2\cot\beta\left(M_1^2\sin^2\beta - 1\right)}{(\gamma+1)M_1^2 - 2\left(M_1^2\sin^2\beta - 1\right)}$$



GAS FLOW TABLES (γ=1.400): SUBSONIC FLOW

M	$\frac{T}{T_0}$	$\frac{p}{p_0}$	$\frac{\rho}{\rho_0}$	$\frac{V}{\sqrt{c_p T_0}}$	$\frac{\dot{m}\sqrt{c_p T_0}}{A p_0}$	$\frac{\dot{m}\sqrt{c_p T_0}}{A p}$	$\frac{F}{\dot{m}\sqrt{c_p T_0}}$	$\frac{4 c_f L_{\max}}{D}$	$\frac{\frac{1}{2}\rho V^2}{p_0}$
0.010	1.0000	0.9999	1.0000	0.0063	0.0221	0.0221	45.1813	7134.405	0.0001
0.020	0.9999	0.9997	0.9998	0.0126	0.0443	0.0443	22.5994	1778.450	0.0003
0.030	0.9998	0.9994	0.9996	0.0190	0.0664	0.0664	15.0761	787.0814	0.0006
0.040	0.9997	0.9989	0.9992	0.0253	0.0885	0.0886	11.3173	440.3522	0.0011
0.050	0.9995	0.9983	0.9988	0.0316	0.1105	0.1107	9.0644	280.0203	0.0017
0.060	0.9993	0.9975	0.9982	0.0379	0.1325	0.1329	7.5645	193.0311	0.0025
0.070	0.9990	0.9966	0.9976	0.0443	0.1545	0.1550	6.4947	140.6550	0.0034
0.080	0.9987	0.9955	0.9968	0.0506	0.1764	0.1772	5.6939	106.7182	0.0045
0.090	0.9984	0.9944	0.9960	0.0569	0.1983	0.1994	5.0723	83.4961	0.0056
0.100	0.9980	0.9930	0.9950	0.0632	0.2200	0.2216	4.5762	66.9216	0.0070
0.110	0.9976	0.9916	0.9940	0.0695	0.2417	0.2438	4.1714	54.6879	0.0084
0.120	0.9971	0.9900	0.9928	0.0758	0.2633	0.2660	3.8350	45.4080	0.0100
0.130	0.9966	0.9883	0.9916	0.0821	0.2849	0.2883	3.5513	38.2070	0.0117
0.140	0.9961	0.9864	0.9903	0.0884	0.3063	0.3105	3.3089	32.5113	0.0135
0.150	0.9955	0.9844	0.9888	0.0947	0.3276	0.3328	3.0996	27.9320	0.0155
0.160	0.9949	0.9823	0.9873	0.1009	0.3488	0.3551	2.9172	24.1978	0.0176
0.170	0.9943	0.9800	0.9857	0.1072	0.3699	0.3774	2.7569	21.1152	0.0198
0.180	0.9936	0.9776	0.9840	0.1135	0.3908	0.3997	2.6151	18.5427	0.0222
0.190	0.9928	0.9751	0.9822	0.1197	0.4116	0.4221	2.4889	16.3752	0.0246
0.200	0.9921	0.9725	0.9803	0.1260	0.4323	0.4445	2.3758	14.5333	0.0272
0.210	0.9913	0.9697	0.9783	0.1322	0.4528	0.4669	2.2740	12.9560	0.0299
0.220	0.9904	0.9668	0.9762	0.1385	0.4731	0.4893	2.1820	11.5961	0.0328
0.230	0.9895	0.9638	0.9740	0.1447	0.4933	0.5118	2.0985	10.4161	0.0357
0.240	0.9886	0.9607	0.9718	0.1509	0.5133	0.5343	2.0225	9.3865	0.0387
0.250	0.9877	0.9575	0.9694	0.1571	0.5332	0.5568	1.9530	8.4834	0.0419
0.260	0.9867	0.9541	0.9670	0.1633	0.5528	0.5794	1.8892	7.6876	0.0451
0.270	0.9856	0.9506	0.9645	0.1695	0.5723	0.6020	1.8306	6.9832	0.0485
0.280	0.9846	0.9470	0.9619	0.1757	0.5915	0.6246	1.7766	6.3572	0.0520
0.290	0.9835	0.9433	0.9592	0.1819	0.6106	0.6473	1.7267	5.7989	0.0555
0.300	0.9823	0.9395	0.9564	0.1881	0.6295	0.6700	1.6805	5.2993	0.0592
0.310	0.9811	0.9355	0.9535	0.1942	0.6481	0.6928	1.6377	4.8507	0.0629
0.320	0.9799	0.9315	0.9506	0.2003	0.6666	0.7156	1.5978	4.4467	0.0668
0.330	0.9787	0.9274	0.9476	0.2065	0.6848	0.7384	1.5608	4.0821	0.0707
0.340	0.9774	0.9231	0.9445	0.2126	0.7027	0.7613	1.5262	3.7520	0.0747
0.350	0.9761	0.9188	0.9413	0.2187	0.7205	0.7842	1.4939	3.4525	0.0788
0.360	0.9747	0.9143	0.9380	0.2248	0.7380	0.8072	1.4637	3.1801	0.0829
0.370	0.9733	0.9098	0.9347	0.2309	0.7553	0.8302	1.4354	2.9320	0.0872
0.380	0.9719	0.9052	0.9313	0.2369	0.7723	0.8532	1.4090	2.7054	0.0915
0.390	0.9705	0.9004	0.9278	0.2430	0.7891	0.8763	1.3841	2.4983	0.0959
0.400	0.9690	0.8956	0.9243	0.2490	0.8056	0.8995	1.3608	2.3085	0.1003
0.410	0.9675	0.8907	0.9207	0.2551	0.8219	0.9227	1.3388	2.1344	0.1048
0.420	0.9659	0.8857	0.9170	0.2611	0.8379	0.9460	1.3182	1.9744	0.1094
0.430	0.9643	0.8807	0.9132	0.2671	0.8536	0.9693	1.2988	1.8272	0.1140
0.440	0.9627	0.8755	0.9094	0.2730	0.8691	0.9927	1.2804	1.6915	0.1186
0.450	0.9611	0.8703	0.9055	0.2790	0.8843	1.0161	1.2632	1.5664	0.1234
0.460	0.9594	0.8650	0.9016	0.2850	0.8992	1.0396	1.2469	1.4509	0.1281
0.470	0.9577	0.8596	0.8976	0.2909	0.9138	1.0631	1.2315	1.3441	0.1329
0.480	0.9559	0.8541	0.8935	0.2968	0.9282	1.0867	1.2170	1.2453	0.1378
0.490	0.9542	0.8486	0.8894	0.3027	0.9423	1.1104	1.2033	1.1539	0.1426
0.500	0.9524	0.8430	0.8852	0.3086	0.9561	1.1341	1.1903	1.0691	0.1475

γ=1.400

M	$\frac{T}{T_0}$	$\frac{p}{p_0}$	$\frac{\rho}{\rho_0}$	$\frac{V}{\sqrt{c_p T_0}}$	$\frac{\dot{m}\sqrt{c_p T_0}}{A p_0}$	$\frac{\dot{m}\sqrt{c_p T_0}}{A p}$	$\frac{F}{\dot{m}\sqrt{c_p T_0}}$	$\frac{4 c_f L_{\max}}{D}$	$\frac{\frac{1}{2}\rho V^2}{p_0}$
0.510	0.9506	0.8374	0.8809	0.3145	0.9696	1.1579	1.1781	0.9904	0.1525
0.520	0.9487	0.8317	0.8766	0.3203	0.9828	1.1818	1.1665	0.9174	0.1574
0.530	0.9468	0.8259	0.8723	0.3262	0.9958	1.2057	1.1556	0.8496	0.1624
0.540	0.9449	0.8201	0.8679	0.3320	1.0084	1.2297	1.1452	0.7866	0.1674
0.550	0.9430	0.8142	0.8634	0.3378	1.0208	1.2538	1.1354	0.7281	0.1724
0.560	0.9410	0.8082	0.8589	0.3436	1.0328	1.2779	1.1261	0.6736	0.1774
0.570	0.9390	0.8022	0.8544	0.3493	1.0446	1.3021	1.1173	0.6229	0.1825
0.580	0.9370	0.7962	0.8498	0.3551	1.0561	1.3264	1.1090	0.5757	0.1875
0.590	0.9349	0.7901	0.8451	0.3608	1.0672	1.3507	1.1011	0.5317	0.1925
0.600	0.9328	0.7840	0.8405	0.3665	1.0781	1.3751	1.0937	0.4908	0.1976
0.610	0.9307	0.7778	0.8357	0.3722	1.0887	1.3996	1.0867	0.4527	0.2026
0.620	0.9286	0.7716	0.8310	0.3779	1.0990	1.4242	1.0800	0.4172	0.2076
0.630	0.9265	0.7654	0.8262	0.3835	1.1090	1.4489	1.0737	0.3841	0.2127
0.640	0.9243	0.7591	0.8213	0.3891	1.1186	1.4736	1.0678	0.3533	0.2177
0.650	0.9221	0.7528	0.8164	0.3948	1.1280	1.4984	1.0621	0.3246	0.2226
0.660	0.9199	0.7465	0.8115	0.4003	1.1371	1.5233	1.0568	0.2979	0.2276
0.670	0.9176	0.7401	0.8066	0.4059	1.1459	1.5483	1.0518	0.2730	0.2326
0.680	0.9153	0.7338	0.8016	0.4115	1.1544	1.5733	1.0471	0.2498	0.2375
0.690	0.9131	0.7274	0.7966	0.4170	1.1626	1.5984	1.0426	0.2282	0.2424
0.700	0.9107	0.7209	0.7916	0.4225	1.1705	1.6237	1.0384	0.2081	0.2473
0.710	0.9084	0.7145	0.7865	0.4280	1.1782	1.6490	1.0344	0.1895	0.2521
0.720	0.9061	0.7080	0.7814	0.4335	1.1855	1.6744	1.0307	0.1721	0.2569
0.730	0.9037	0.7016	0.7763	0.4389	1.1925	1.6999	1.0272	0.1561	0.2617
0.740	0.9013	0.6951	0.7712	0.4443	1.1993	1.7254	1.0239	0.1411	0.2664
0.750	0.8989	0.6886	0.7660	0.4497	1.2058	1.7511	1.0208	0.1273	0.2711
0.760	0.8964	0.6821	0.7609	0.4551	1.2119	1.7768	1.0179	0.1145	0.2758
0.770	0.8940	0.6756	0.7557	0.4605	1.2178	1.8027	1.0152	0.1026	0.2804
0.780	0.8915	0.6691	0.7505	0.4658	1.2234	1.8286	1.0126	0.0917	0.2849
0.790	0.8890	0.6625	0.7452	0.4711	1.2288	1.8547	1.0103	0.0816	0.2894
0.800	0.8865	0.6560	0.7400	0.4764	1.2338	1.8808	1.0081	0.0723	0.2939
0.810	0.8840	0.6495	0.7347	0.4817	1.2386	1.9070	1.0060	0.0638	0.2983
0.820	0.8815	0.6430	0.7295	0.4869	1.2431	1.9333	1.0041	0.0559	0.3026
0.830	0.8789	0.6365	0.7242	0.4921	1.2474	1.9598	1.0024	0.0488	0.3069
0.840	0.8763	0.6300	0.7189	0.4973	1.2514	1.9863	1.0008	0.0423	0.3112
0.850	0.8737	0.6235	0.7136	0.5025	1.2551	2.0129	0.9993	0.0363	0.3153
0.860	0.8711	0.6170	0.7083	0.5077	1.2585	2.0396	0.9979	0.0310	0.3195
0.870	0.8685	0.6106	0.7030	0.5128	1.2617	2.0665	0.9967	0.0261	0.3235
0.880	0.8659	0.6041	0.6977	0.5179	1.2646	2.0934	0.9956	0.0218	0.3275
0.890	0.8632	0.5977	0.6924	0.5230	1.2673	2.1204	0.9946	0.0179	0.3314
0.900	0.8606	0.5913	0.6870	0.5280	1.2698	2.1476	0.9937	0.0145	0.3352
0.910	0.8579	0.5849	0.6817	0.5331	1.2719	2.1748	0.9929	0.0115	0.3390
0.920	0.8552	0.5785	0.6764	0.5381	1.2739	2.2021	0.9922	0.0089	0.3427
0.930	0.8525	0.5721	0.6711	0.5431	1.2756	2.2296	0.9916	0.0067	0.3464
0.940	0.8498	0.5658	0.6658	0.5481	1.2770	2.2572	0.9911	0.0048	0.3499
0.950	0.8471	0.5595	0.6604	0.5530	1.2783	2.2848	0.9907	0.0033	0.3534
0.960	0.8444	0.5532	0.6551	0.5579	1.2793	2.3126	0.9903	0.0021	0.3569
0.970	0.8416	0.5469	0.6498	0.5628	1.2800	2.3405	0.9901	0.0011	0.3602
0.980	0.8389	0.5407	0.6445	0.5677	1.2806	2.3685	0.9899	0.0005	0.3635
0.990	0.8361	0.5345	0.6392	0.5725	1.2809	2.3966	0.9898	0.0001	0.3667
1.000	0.8333	0.5283	0.6339	0.5774	1.2810	2.4249	0.9897	0.0000	0.3698

GAS FLOW TABLES (γ=1.400): SUPERSONIC FLOW

M	$\frac{T}{T_0}$	$\frac{p}{p_0}$	$\frac{\rho}{\rho_0}$	$\frac{V}{\sqrt{c_pT_0}}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap_0}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap}$	$\frac{F}{\dot{m}\sqrt{c_pT_0}}$	$\frac{4c_fL_{max}}{D}$	$\frac{\frac{1}{2}\rho V^2}{p_0}$	M_s	$\frac{P_{0s}}{P_0}$	$\frac{P_s}{P}$ behind shock / ahead	$\frac{P_{0s}}{P}$	$\frac{T_s}{T}$	ν	M
1.010	0.8306	0.5221	0.6287	0.5821	1.2809	2.4532	0.9898	0.0001	0.3728	0.9901	1.0000	1.0235	1.9152	1.0066	0.04	1.010
1.020	0.8278	0.5160	0.6234	0.5869	1.2806	2.4817	0.9899	0.0005	0.3758	0.9805	1.0000	1.0471	1.9379	1.0132	0.13	1.020
1.030	0.8250	0.5099	0.6181	0.5917	1.2801	2.5103	0.9900	0.0010	0.3787	0.9712	1.0000	1.0711	1.9610	1.0198	0.23	1.030
1.040	0.8222	0.5039	0.6129	0.5964	1.2793	2.5390	0.9903	0.0018	0.3815	0.9620	0.9999	1.0952	1.9844	1.0263	0.35	1.040
1.050	0.8193	0.4979	0.6077	0.6011	1.2784	2.5678	0.9905	0.0027	0.3842	0.9531	0.9999	1.1196	2.0083	1.0328	0.49	1.050
1.060	0.8165	0.4919	0.6024	0.6058	1.2773	2.5967	0.9909	0.0038	0.3869	0.9444	0.9998	1.1442	2.0325	1.0393	0.64	1.060
1.070	0.8137	0.4860	0.5972	0.6104	1.2760	2.6258	0.9913	0.0051	0.3895	0.9360	0.9996	1.1691	2.0570	1.0458	0.80	1.070
1.080	0.8108	0.4800	0.5920	0.6151	1.2745	2.6549	0.9917	0.0066	0.3919	0.9277	0.9994	1.1941	2.0819	1.0522	0.97	1.080
1.090	0.8080	0.4742	0.5869	0.6197	1.2728	2.6842	0.9922	0.0082	0.3944	0.9196	0.9992	1.2195	2.1072	1.0586	1.15	1.090
1.100	0.8052	0.4684	0.5817	0.6243	1.2709	2.7136	0.9928	0.0099	0.3967	0.9118	0.9989	1.2450	2.1328	1.0649	1.34	1.100
1.110	0.8023	0.4626	0.5766	0.6288	1.2689	2.7432	0.9934	0.0118	0.3990	0.9041	0.9986	1.2708	2.1588	1.0713	1.53	1.110
1.120	0.7994	0.4568	0.5714	0.6333	1.2667	2.7728	0.9940	0.0138	0.4011	0.8966	0.9982	1.2968	2.1851	1.0776	1.74	1.120
1.130	0.7966	0.4511	0.5663	0.6379	1.2643	2.8026	0.9947	0.0159	0.4032	0.8892	0.9978	1.3231	2.2118	1.0840	1.94	1.130
1.140	0.7937	0.4455	0.5612	0.6423	1.2618	2.8325	0.9954	0.0182	0.4052	0.8820	0.9973	1.3495	2.2388	1.0903	2.16	1.140
1.150	0.7908	0.4398	0.5562	0.6468	1.2590	2.8626	0.9961	0.0205	0.4072	0.8750	0.9967	1.3763	2.2661	1.0966	2.38	1.150
1.160	0.7879	0.4343	0.5511	0.6512	1.2562	2.8927	0.9969	0.0230	0.4090	0.8682	0.9961	1.4032	2.2937	1.1029	2.61	1.160
1.170	0.7851	0.4287	0.5461	0.6556	1.2531	2.9230	0.9978	0.0255	0.4108	0.8615	0.9953	1.4304	2.3217	1.1092	2.84	1.170
1.180	0.7822	0.4232	0.5411	0.6600	1.2500	2.9534	0.9986	0.0281	0.4125	0.8549	0.9946	1.4578	2.3500	1.1154	3.07	1.180
1.190	0.7793	0.4178	0.5361	0.6644	1.2466	2.9840	0.9995	0.0309	0.4141	0.8485	0.9937	1.4855	2.3786	1.1217	3.31	1.190
1.200	0.7764	0.4124	0.5311	0.6687	1.2432	3.0147	1.0004	0.0336	0.4157	0.8422	0.9928	1.5133	2.4075	1.1280	3.56	1.200
1.210	0.7735	0.4070	0.5262	0.6730	1.2396	3.0455	1.0014	0.0365	0.4171	0.8360	0.9918	1.5415	2.4367	1.1343	3.81	1.210
1.220	0.7706	0.4017	0.5213	0.6773	1.2358	3.0764	1.0024	0.0394	0.4185	0.8300	0.9907	1.5698	2.4663	1.1405	4.06	1.220
1.230	0.7677	0.3964	0.5164	0.6816	1.2319	3.1075	1.0034	0.0424	0.4198	0.8241	0.9896	1.5984	2.4961	1.1468	4.31	1.230
1.240	0.7648	0.3912	0.5115	0.6858	1.2279	3.1387	1.0045	0.0455	0.4211	0.8183	0.9884	1.6272	2.5263	1.1531	4.57	1.240
1.250	0.7619	0.3861	0.5067	0.6901	1.2238	3.1700	1.0055	0.0486	0.4223	0.8126	0.9871	1.6563	2.5568	1.1594	4.83	1.250

γ=1.400

M	$\frac{T}{T_0}$	$\frac{p}{p_0}$	$\frac{\rho}{\rho_0}$	$\frac{V}{\sqrt{c_pT_0}}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap_0}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap}$	$\frac{F}{\dot{m}\sqrt{c_pT_0}}$	$\frac{4c_fL_{\max}}{D}$	$\frac{\frac{1}{2}\rho V^2}{p_0}$	M_s	$\frac{P_{0s}}{P_0}$	$\frac{P_s}{P}$	$\frac{P_{0s}}{P}$	$\frac{T_s}{T}$	ν	M
1.260	0.7590	0.3809	0.5019	0.6943	1.2195	3.2015	1.0066	0.0517	0.4233	0.8071	0.9857	1.6855	2.5875	1.1657	5.09	1.260
1.270	0.7561	0.3759	0.4971	0.6984	1.2152	3.2331	1.0077	0.0549	0.4244	0.8016	0.9842	1.7151	2.6186	1.1720	5.36	1.270
1.280	0.7532	0.3708	0.4923	0.7026	1.2107	3.2648	1.0089	0.0582	0.4253	0.7963	0.9827	1.7448	2.6500	1.1783	5.63	1.280
1.290	0.7503	0.3658	0.4876	0.7067	1.2061	3.2967	1.0100	0.0615	0.4262	0.7911	0.9811	1.7748	2.6816	1.1846	5.90	1.290
1.300	0.7474	0.3609	0.4829	0.7108	1.2014	3.3287	1.0112	0.0648	0.4270	0.7860	0.9794	1.8050	2.7136	1.1909	6.17	1.300
1.310	0.7445	0.3560	0.4782	0.7149	1.1965	3.3608	1.0124	0.0682	0.4277	0.7809	0.9776	1.8355	2.7459	1.1972	6.44	1.310
1.320	0.7416	0.3512	0.4736	0.7189	1.1916	3.3931	1.0136	0.0716	0.4283	0.7760	0.9758	1.8661	2.7784	1.2035	6.72	1.320
1.330	0.7387	0.3464	0.4690	0.7229	1.1866	3.4255	1.0149	0.0750	0.4289	0.7712	0.9738	1.8971	2.8112	1.2099	7.00	1.330
1.340	0.7358	0.3417	0.4644	0.7270	1.1815	3.4581	1.0161	0.0785	0.4294	0.7664	0.9718	1.9282	2.8444	1.2162	7.28	1.340
1.350	0.7329	0.3370	0.4598	0.7309	1.1763	3.4907	1.0174	0.0820	0.4299	0.7618	0.9697	1.9596	2.8778	1.2226	7.56	1.350
1.360	0.7300	0.3323	0.4553	0.7349	1.1710	3.5236	1.0187	0.0855	0.4303	0.7572	0.9676	1.9912	2.9115	1.2290	7.84	1.360
1.370	0.7271	0.3277	0.4508	0.7388	1.1656	3.5566	1.0200	0.0890	0.4306	0.7527	0.9653	2.0231	2.9455	1.2354	8.13	1.370
1.380	0.7242	0.3232	0.4463	0.7427	1.1601	3.5897	1.0213	0.0926	0.4308	0.7483	0.9630	2.0551	2.9798	1.2418	8.41	1.380
1.390	0.7213	0.3187	0.4418	0.7466	1.1546	3.6229	1.0226	0.0962	0.4310	0.7440	0.9607	2.0875	3.0144	1.2482	8.70	1.390
1.400	0.7184	0.3142	0.4374	0.7505	1.1490	3.6563	1.0240	0.0997	0.4311	0.7397	0.9582	2.1200	3.0492	1.2547	8.99	1.400
1.410	0.7155	0.3098	0.4330	0.7543	1.1433	3.6899	1.0253	0.1033	0.4312	0.7355	0.9557	2.1528	3.0844	1.2612	9.28	1.410
1.420	0.7126	0.3055	0.4287	0.7581	1.1375	3.7236	1.0267	0.1069	0.4312	0.7314	0.9531	2.1858	3.1198	1.2676	9.57	1.420
1.430	0.7097	0.3012	0.4244	0.7619	1.1317	3.7574	1.0281	0.1106	0.4311	0.7274	0.9504	2.2191	3.1555	1.2741	9.86	1.430
1.440	0.7069	0.2969	0.4201	0.7657	1.1258	3.7914	1.0295	0.1142	0.4310	0.7235	0.9476	2.2525	3.1915	1.2807	10.15	1.440
1.450	0.7040	0.2927	0.4158	0.7694	1.1198	3.8255	1.0308	0.1178	0.4308	0.7196	0.9448	2.2863	3.2278	1.2872	10.44	1.450
1.460	0.7011	0.2886	0.4116	0.7732	1.1138	3.8598	1.0323	0.1215	0.4306	0.7157	0.9420	2.3202	3.2643	1.2938	10.73	1.460
1.470	0.6982	0.2845	0.4074	0.7769	1.1077	3.8942	1.0337	0.1251	0.4303	0.7120	0.9390	2.3544	3.3011	1.3003	11.02	1.470
1.480	0.6954	0.2804	0.4032	0.7805	1.1016	3.9287	1.0351	0.1288	0.4299	0.7083	0.9360	2.3888	3.3382	1.3069	11.32	1.480
1.490	0.6925	0.2764	0.3991	0.7842	1.0954	3.9634	1.0365	0.1324	0.4295	0.7047	0.9329	2.4235	3.3756	1.3136	11.61	1.490
1.500	0.6897	0.2724	0.3950	0.7878	1.0891	3.9983	1.0379	0.1361	0.4290	0.7011	0.9298	2.4583	3.4133	1.3202	11.91	1.500

γ=1.400

M	$\frac{T}{T_0}$	$\frac{p}{p_0}$	$\frac{\rho}{\rho_0}$	$\frac{V}{\sqrt{c_pT_0}}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap_0}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap}$	$\frac{F}{\dot{m}\sqrt{c_pT_0}}$	$\frac{4c_fL_{\max}}{D}$	$\frac{\frac{1}{2}\rho V^2}{p_0}$	M_s	$\frac{P_{0s}}{P_0}$	$\frac{P_s}{P}$	$\frac{P_{0s}}{P}$	$\frac{T_s}{T}$	ν	M
1.510	0.6868	0.2685	0.3909	0.7914	1.0829	4.0333	1.0394	0.1397	0.4285	0.6976	0.9266	2.4935	3.4512	1.3269	12.20	1.510
1.520	0.6840	0.2646	0.3869	0.7950	1.0765	4.0684	1.0408	0.1433	0.4279	0.6941	0.9233	2.5288	3.4894	1.3336	12.49	1.520
1.530	0.6811	0.2608	0.3829	0.7986	1.0702	4.1037	1.0423	0.1470	0.4273	0.6907	0.9200	2.5644	3.5279	1.3403	12.79	1.530
1.540	0.6783	0.2570	0.3789	0.8021	1.0638	4.1392	1.0437	0.1506	0.4266	0.6874	0.9166	2.6002	3.5667	1.3470	13.09	1.540
1.550	0.6754	0.2533	0.3750	0.8057	1.0573	4.1748	1.0452	0.1543	0.4259	0.6841	0.9132	2.6363	3.6057	1.3538	13.38	1.550
1.560	0.6726	0.2496	0.3710	0.8092	1.0508	4.2105	1.0467	0.1579	0.4252	0.6809	0.9097	2.6725	3.6450	1.3606	13.68	1.560
1.570	0.6698	0.2459	0.3672	0.8126	1.0443	4.2464	1.0481	0.1615	0.4243	0.6777	0.9062	2.7091	3.6846	1.3674	13.97	1.570
1.580	0.6670	0.2423	0.3633	0.8161	1.0378	4.2825	1.0496	0.1651	0.4235	0.6746	0.9026	2.7458	3.7244	1.3742	14.27	1.580
1.590	0.6642	0.2388	0.3595	0.8195	1.0312	4.3187	1.0511	0.1688	0.4226	0.6715	0.8989	2.7828	3.7646	1.3811	14.56	1.590
1.600	0.6614	0.2353	0.3557	0.8230	1.0246	4.3551	1.0526	0.1724	0.4216	0.6684	0.8952	2.8200	3.8050	1.3880	14.86	1.600
1.610	0.6586	0.2318	0.3520	0.8263	1.0180	4.3916	1.0541	0.1760	0.4206	0.6655	0.8915	2.8575	3.8456	1.3949	15.16	1.610
1.620	0.6558	0.2284	0.3483	0.8297	1.0114	4.4282	1.0555	0.1795	0.4196	0.6625	0.8877	2.8951	3.8866	1.4018	15.45	1.620
1.630	0.6530	0.2250	0.3446	0.8331	1.0047	4.4651	1.0570	0.1831	0.4185	0.6596	0.8838	2.9331	3.9278	1.4088	15.75	1.630
1.640	0.6502	0.2217	0.3409	0.8364	0.9980	4.5020	1.0585	0.1867	0.4174	0.6568	0.8799	2.9712	3.9693	1.4158	16.04	1.640
1.650	0.6475	0.2184	0.3373	0.8397	0.9913	4.5392	1.0600	0.1902	0.4162	0.6540	0.8760	3.0096	4.0110	1.4228	16.34	1.650
1.660	0.6447	0.2151	0.3337	0.8430	0.9846	4.5765	1.0615	0.1938	0.4150	0.6512	0.8720	3.0482	4.0531	1.4299	16.63	1.660
1.670	0.6419	0.2119	0.3302	0.8462	0.9779	4.6139	1.0630	0.1973	0.4138	0.6485	0.8680	3.0871	4.0953	1.4369	16.93	1.670
1.680	0.6392	0.2088	0.3266	0.8495	0.9712	4.6515	1.0645	0.2008	0.4125	0.6458	0.8639	3.1261	4.1379	1.4440	17.22	1.680
1.690	0.6364	0.2057	0.3232	0.8527	0.9644	4.6892	1.0660	0.2043	0.4112	0.6431	0.8599	3.1655	4.1807	1.4512	17.52	1.690
1.700	0.6337	0.2026	0.3197	0.8559	0.9577	4.7272	1.0674	0.2078	0.4098	0.6405	0.8557	3.2050	4.2238	1.4583	17.81	1.700
1.710	0.6310	0.1996	0.3163	0.8591	0.9509	4.7652	1.0689	0.2113	0.4085	0.6380	0.8516	3.2448	4.2672	1.4655	18.10	1.710
1.720	0.6283	0.1966	0.3129	0.8622	0.9442	4.8035	1.0704	0.2147	0.4071	0.6355	0.8474	3.2848	4.3108	1.4727	18.40	1.720
1.730	0.6256	0.1936	0.3095	0.8654	0.9374	4.8418	1.0719	0.2182	0.4056	0.6330	0.8431	3.3251	4.3547	1.4800	18.69	1.730
1.740	0.6229	0.1907	0.3062	0.8685	0.9307	4.8804	1.0734	0.2216	0.4041	0.6305	0.8389	3.3655	4.3989	1.4873	18.98	1.740
1.750	0.6202	0.1878	0.3029	0.8716	0.9239	4.9191	1.0749	0.2250	0.4026	0.6281	0.8346	3.4063	4.4433	1.4946	19.27	1.750

γ=1.400

M	$\frac{T}{T_0}$	$\frac{p}{p_0}$	$\frac{\rho}{\rho_0}$	$\frac{V}{\sqrt{c_pT_0}}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap_0}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap}$	$\frac{F}{\dot{m}\sqrt{c_pT_0}}$	$\frac{4c_fL_{\max}}{D}$	$\frac{\frac{1}{2}\rho V^2}{p_0}$	M_s	$\frac{P_{0s}}{P_0}$	$\frac{P_s}{P}$	$\frac{P_{0s}}{P}$	$\frac{T_s}{T}$	ν	M
1.760	0.6175	0.1850	0.2996	0.8747	0.9172	4.9580	1.0764	0.2284	0.4011	0.6257	0.8302	3.4472	4.4880	1.5019	19.56	1.760
1.770	0.6148	0.1822	0.2964	0.8777	0.9104	4.9970	1.0779	0.2318	0.3996	0.6234	0.8259	3.4884	4.5330	1.5093	19.86	1.770
1.780	0.6121	0.1794	0.2931	0.8808	0.9037	5.0362	1.0793	0.2352	0.3980	0.6210	0.8215	3.5298	4.5782	1.5167	20.15	1.780
1.790	0.6095	0.1767	0.2900	0.8838	0.8970	5.0755	1.0808	0.2385	0.3964	0.6188	0.8171	3.5715	4.6237	1.5241	20.44	1.790
1.800	0.6068	0.1740	0.2868	0.8868	0.8902	5.1150	1.0823	0.2419	0.3947	0.6165	0.8127	3.6133	4.6695	1.5316	20.73	1.800
1.810	0.6041	0.1714	0.2837	0.8898	0.8835	5.1547	1.0838	0.2452	0.3931	0.6143	0.8082	3.6555	4.7155	1.5391	21.01	1.810
1.820	0.6015	0.1688	0.2806	0.8927	0.8768	5.1945	1.0852	0.2485	0.3914	0.6121	0.8038	3.6978	4.7618	1.5466	21.30	1.820
1.830	0.5989	0.1662	0.2776	0.8957	0.8701	5.2345	1.0867	0.2518	0.3897	0.6099	0.7993	3.7404	4.8084	1.5541	21.59	1.830
1.840	0.5963	0.1637	0.2745	0.8986	0.8634	5.2747	1.0882	0.2551	0.3879	0.6078	0.7948	3.7832	4.8552	1.5617	21.88	1.840
1.850	0.5936	0.1612	0.2715	0.9015	0.8568	5.3150	1.0896	0.2583	0.3862	0.6057	0.7902	3.8263	4.9023	1.5693	22.16	1.850
1.860	0.5910	0.1587	0.2686	0.9044	0.8501	5.3555	1.0911	0.2616	0.3844	0.6036	0.7857	3.8695	4.9497	1.5770	22.45	1.860
1.870	0.5884	0.1563	0.2656	0.9072	0.8435	5.3962	1.0926	0.2648	0.3826	0.6016	0.7811	3.9131	4.9973	1.5847	22.73	1.870
1.880	0.5859	0.1539	0.2627	0.9101	0.8368	5.4370	1.0940	0.2680	0.3808	0.5996	0.7765	3.9568	5.0452	1.5924	23.02	1.880
1.890	0.5833	0.1516	0.2598	0.9129	0.8302	5.4780	1.0955	0.2712	0.3790	0.5976	0.7720	4.0008	5.0934	1.6001	23.30	1.890
1.900	0.5807	0.1492	0.2570	0.9157	0.8237	5.5191	1.0969	0.2743	0.3771	0.5956	0.7674	4.0450	5.1418	1.6079	23.59	1.900
1.910	0.5782	0.1470	0.2542	0.9185	0.8171	5.5604	1.0984	0.2775	0.3753	0.5937	0.7627	4.0895	5.1905	1.6157	23.87	1.910
1.920	0.5756	0.1447	0.2514	0.9213	0.8106	5.6019	1.0998	0.2806	0.3734	0.5918	0.7581	4.1341	5.2394	1.6236	24.15	1.920
1.930	0.5731	0.1425	0.2486	0.9240	0.8041	5.6435	1.1012	0.2837	0.3715	0.5899	0.7535	4.1791	5.2886	1.6314	24.43	1.930
1.940	0.5705	0.1403	0.2459	0.9268	0.7976	5.6853	1.1027	0.2868	0.3696	0.5880	0.7488	4.2242	5.3381	1.6394	24.71	1.940
1.950	0.5680	0.1381	0.2432	0.9295	0.7911	5.7273	1.1041	0.2899	0.3677	0.5862	0.7442	4.2696	5.3878	1.6473	24.99	1.950
1.960	0.5655	0.1360	0.2405	0.9322	0.7846	5.7695	1.1055	0.2929	0.3657	0.5844	0.7395	4.3152	5.4378	1.6553	25.27	1.960
1.970	0.5630	0.1339	0.2378	0.9349	0.7782	5.8118	1.1069	0.2960	0.3638	0.5826	0.7349	4.3611	5.4881	1.6633	25.55	1.970
1.980	0.5605	0.1318	0.2352	0.9375	0.7718	5.8542	1.1084	0.2990	0.3618	0.5808	0.7302	4.4071	5.5386	1.6713	25.83	1.980
1.990	0.5580	0.1298	0.2326	0.9402	0.7655	5.8969	1.1098	0.3020	0.3598	0.5791	0.7255	4.4535	5.5894	1.6794	26.10	1.990
2.000	0.5556	0.1278	0.2300	0.9428	0.7591	5.9397	1.1112	0.3050	0.3579	0.5774	0.7209	4.5000	5.6404	1.6875	26.38	2.000

γ=1.400

M	$\frac{T}{T_0}$	$\frac{p}{p_0}$	$\frac{\rho}{\rho_0}$	$\frac{V}{\sqrt{c_pT_0}}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap_0}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap}$	$\frac{F}{\dot{m}\sqrt{c_pT_0}}$	$\frac{4c_fL_{\max}}{D}$	$\frac{\frac{1}{2}\rho V^2}{p_0}$	M_s	$\frac{P_{0s}}{P_0}$	$\frac{P_s}{P}$	$\frac{P_{0s}}{P}$	$\frac{T_s}{T}$	ν	M
2.010	0.5531	0.1258	0.2275	0.9454	0.7528	5.9827	1.1126	0.3080	0.3559	0.5757	0.7162	4.5468	5.6918	1.6956	26.66	2.010
2.020	0.5506	0.1239	0.2250	0.9480	0.7465	6.0258	1.1140	0.3109	0.3539	0.5740	0.7115	4.5938	5.7433	1.7038	26.93	2.020
2.030	0.5482	0.1220	0.2225	0.9506	0.7403	6.0692	1.1154	0.3138	0.3518	0.5723	0.7069	4.6411	5.7952	1.7120	27.20	2.030
2.040	0.5458	0.1201	0.2200	0.9531	0.7340	6.1126	1.1167	0.3168	0.3498	0.5707	0.7022	4.6885	5.8473	1.7203	27.48	2.040
2.050	0.5433	0.1182	0.2176	0.9557	0.7279	6.1563	1.1181	0.3197	0.3478	0.5691	0.6975	4.7363	5.8996	1.7285	27.75	2.050
2.060	0.5409	0.1164	0.2152	0.9582	0.7217	6.2001	1.1195	0.3225	0.3458	0.5675	0.6928	4.7842	5.9523	1.7369	28.02	2.060
2.070	0.5385	0.1146	0.2128	0.9607	0.7156	6.2441	1.1209	0.3254	0.3437	0.5659	0.6882	4.8324	6.0051	1.7452	28.29	2.070
2.080	0.5361	0.1128	0.2104	0.9632	0.7095	6.2883	1.1222	0.3282	0.3417	0.5643	0.6835	4.8808	6.0583	1.7536	28.56	2.080
2.090	0.5337	0.1111	0.2081	0.9657	0.7034	6.3326	1.1236	0.3310	0.3396	0.5628	0.6789	4.9295	6.1117	1.7620	28.83	2.090
2.100	0.5313	0.1094	0.2058	0.9681	0.6974	6.3772	1.1250	0.3339	0.3376	0.5613	0.6742	4.9783	6.1654	1.7705	29.10	2.100
2.110	0.5290	0.1077	0.2035	0.9706	0.6914	6.4218	1.1263	0.3366	0.3355	0.5598	0.6696	5.0275	6.2193	1.7789	29.36	2.110
2.120	0.5266	0.1060	0.2013	0.9730	0.6854	6.4667	1.1276	0.3394	0.3334	0.5583	0.6649	5.0768	6.2735	1.7875	29.63	2.120
2.130	0.5243	0.1043	0.1990	0.9754	0.6795	6.5117	1.1290	0.3422	0.3314	0.5568	0.6603	5.1264	6.3280	1.7960	29.90	2.130
2.140	0.5219	0.1027	0.1968	0.9778	0.6736	6.5569	1.1303	0.3449	0.3293	0.5554	0.6557	5.1762	6.3827	1.8046	30.16	2.140
2.150	0.5196	0.1011	0.1946	0.9802	0.6677	6.6023	1.1317	0.3476	0.3272	0.5540	0.6511	5.2263	6.4377	1.8132	30.43	2.150
2.160	0.5173	0.0996	0.1925	0.9825	0.6619	6.6478	1.1330	0.3503	0.3252	0.5525	0.6464	5.2765	6.4929	1.8219	30.69	2.160
2.170	0.5150	0.0980	0.1903	0.9849	0.6561	6.6936	1.1343	0.3530	0.3231	0.5511	0.6419	5.3271	6.5484	1.8306	30.95	2.170
2.180	0.5127	0.0965	0.1882	0.9872	0.6503	6.7395	1.1356	0.3556	0.3210	0.5498	0.6373	5.3778	6.6042	1.8393	31.21	2.180
2.190	0.5104	0.0950	0.1861	0.9895	0.6446	6.7855	1.1369	0.3583	0.3189	0.5484	0.6327	5.4288	6.6602	1.8481	31.47	2.190
2.200	0.5081	0.0935	0.1841	0.9918	0.6389	6.8318	1.1382	0.3609	0.3169	0.5471	0.6281	5.4800	6.7165	1.8569	31.73	2.200
2.210	0.5059	0.0921	0.1820	0.9941	0.6333	6.8782	1.1395	0.3635	0.3148	0.5457	0.6236	5.5315	6.7730	1.8657	31.99	2.210
2.220	0.5036	0.0906	0.1800	0.9964	0.6277	6.9248	1.1408	0.3661	0.3127	0.5444	0.6191	5.5831	6.8298	1.8746	32.25	2.220
2.230	0.5014	0.0892	0.1780	0.9986	0.6221	6.9715	1.1421	0.3687	0.3106	0.5431	0.6145	5.6351	6.8869	1.8835	32.51	2.230
2.240	0.4991	0.0878	0.1760	1.0009	0.6165	7.0185	1.1434	0.3712	0.3085	0.5418	0.6100	5.6872	6.9442	1.8924	32.76	2.240
2.250	0.4969	0.0865	0.1740	1.0031	0.6110	7.0656	1.1446	0.3738	0.3065	0.5406	0.6055	5.7396	7.0018	1.9014	33.02	2.250

γ=1.400

M	$\frac{T}{T_0}$	$\frac{p}{p_0}$	$\frac{\rho}{\rho_0}$	$\frac{V}{\sqrt{c_pT_0}}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap_0}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap}$	$\frac{F}{\dot{m}\sqrt{c_pT_0}}$	$\frac{4c_fL_{\max}}{D}$	$\frac{\frac{1}{2}\rho V^2}{p_0}$	M_s	$\frac{P_{0s}}{P_0}$	$\frac{P_s}{P}$	$\frac{P_{0s}}{P}$	$\frac{T_s}{T}$	ν	M
2.260	0.4947	0.0851	0.1721	1.0053	0.6056	7.1129	1.1459	0.3763	0.3044	0.5393	0.6011	5.7922	7.0597	1.9104	33.27	2.260
2.270	0.4925	0.0838	0.1702	1.0075	0.6002	7.1603	1.1472	0.3788	0.3023	0.5381	0.5966	5.8451	7.1178	1.9194	33.53	2.270
2.280	0.4903	0.0825	0.1683	1.0097	0.5948	7.2080	1.1484	0.3813	0.3003	0.5368	0.5921	5.8981	7.1762	1.9285	33.78	2.280
2.290	0.4881	0.0812	0.1664	1.0118	0.5894	7.2558	1.1497	0.3838	0.2982	0.5356	0.5877	5.9515	7.2348	1.9376	34.03	2.290
2.300	0.4859	0.0800	0.1646	1.0140	0.5841	7.3038	1.1509	0.3862	0.2961	0.5344	0.5833	6.0050	7.2937	1.9468	34.28	2.300
2.310	0.4837	0.0787	0.1628	1.0161	0.5788	7.3520	1.1521	0.3887	0.2941	0.5332	0.5789	6.0588	7.3528	1.9560	34.53	2.310
2.320	0.4816	0.0775	0.1609	1.0182	0.5736	7.4003	1.1534	0.3911	0.2920	0.5321	0.5745	6.1128	7.4122	1.9652	34.78	2.320
2.330	0.4794	0.0763	0.1592	1.0204	0.5684	7.4488	1.1546	0.3935	0.2900	0.5309	0.5702	6.1671	7.4719	1.9745	35.03	2.330
2.340	0.4773	0.0751	0.1574	1.0224	0.5632	7.4975	1.1558	0.3959	0.2879	0.5297	0.5658	6.2215	7.5319	1.9838	35.28	2.340
2.350	0.4752	0.0740	0.1556	1.0245	0.5581	7.5464	1.1570	0.3983	0.2859	0.5286	0.5615	6.2763	7.5920	1.9931	35.53	2.350
2.360	0.4731	0.0728	0.1539	1.0266	0.5530	7.5955	1.1582	0.4006	0.2839	0.5275	0.5572	6.3312	7.6525	2.0025	35.77	2.360
2.370	0.4709	0.0717	0.1522	1.0286	0.5480	7.6447	1.1595	0.4030	0.2818	0.5264	0.5529	6.3864	7.7132	2.0119	36.02	2.370
2.380	0.4688	0.0706	0.1505	1.0307	0.5430	7.6941	1.1606	0.4053	0.2798	0.5253	0.5486	6.4418	7.7742	2.0213	36.26	2.380
2.390	0.4668	0.0695	0.1488	1.0327	0.5380	7.7437	1.1618	0.4076	0.2778	0.5242	0.5444	6.4975	7.8354	2.0308	36.50	2.390
2.400	0.4647	0.0684	0.1472	1.0347	0.5331	7.7935	1.1630	0.4099	0.2758	0.5231	0.5401	6.5533	7.8969	2.0403	36.75	2.400
2.410	0.4626	0.0673	0.1456	1.0367	0.5282	7.8434	1.1642	0.4122	0.2738	0.5221	0.5359	6.6095	7.9587	2.0499	36.99	2.410
2.420	0.4606	0.0663	0.1439	1.0387	0.5233	7.8935	1.1654	0.4144	0.2718	0.5210	0.5317	6.6658	8.0207	2.0595	37.23	2.420
2.430	0.4585	0.0653	0.1424	1.0407	0.5185	7.9438	1.1665	0.4167	0.2698	0.5200	0.5276	6.7224	8.0830	2.0691	37.47	2.430
2.440	0.4565	0.0643	0.1408	1.0426	0.5137	7.9943	1.1677	0.4189	0.2678	0.5189	0.5234	6.7792	8.1455	2.0788	37.71	2.440
2.450	0.4544	0.0633	0.1392	1.0446	0.5090	8.0450	1.1689	0.4211	0.2658	0.5179	0.5193	6.8363	8.2083	2.0885	37.95	2.450
2.460	0.4524	0.0623	0.1377	1.0465	0.5043	8.0958	1.1700	0.4233	0.2639	0.5169	0.5152	6.8935	8.2713	2.0982	38.18	2.460
2.470	0.4504	0.0613	0.1362	1.0484	0.4996	8.1468	1.1712	0.4255	0.2619	0.5159	0.5111	6.9511	8.3346	2.1080	38.42	2.470
2.480	0.4484	0.0604	0.1346	1.0503	0.4950	8.1980	1.1723	0.4277	0.2599	0.5149	0.5071	7.0088	8.3982	2.1178	38.66	2.480
2.490	0.4464	0.0594	0.1332	1.0522	0.4904	8.2494	1.1734	0.4298	0.2580	0.5140	0.5030	7.0668	8.4620	2.1276	38.89	2.490
2.500	0.4444	0.0585	0.1317	1.0541	0.4858	8.3010	1.1746	0.4320	0.2561	0.5130	0.4990	7.1250	8.5261	2.1375	39.12	2.500

γ=1.400

M	$\frac{T}{T_0}$	$\frac{p}{p_0}$	$\frac{\rho}{\rho_0}$	$\frac{V}{\sqrt{c_pT_0}}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap_0}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap}$	$\frac{F}{\dot{m}\sqrt{c_pT_0}}$	$\frac{4c_fL_{\max}}{D}$	$\frac{\frac{1}{2}\rho V^2}{p_0}$	M_s	$\frac{P_{0s}}{P_0}$	$\frac{P_s}{P}$	$\frac{P_{0s}}{P}$	$\frac{T_s}{T}$	ν	M
2.510	0.4425	0.0576	0.1302	1.0560	0.4813	8.3527	1.1757	0.4341	0.2541	0.5120	0.4950	7.1835	8.5905	2.1474	39.36	2.510
2.520	0.4405	0.0567	0.1288	1.0578	0.4768	8.4046	1.1768	0.4362	0.2522	0.5111	0.4911	7.2421	8.6551	2.1574	39.59	2.520
2.530	0.4386	0.0559	0.1274	1.0597	0.4724	8.4567	1.1779	0.4383	0.2503	0.5102	0.4871	7.3011	8.7200	2.1674	39.82	2.530
2.540	0.4366	0.0550	0.1260	1.0615	0.4680	8.5090	1.1790	0.4404	0.2484	0.5092	0.4832	7.3602	8.7851	2.1774	40.05	2.540
2.550	0.4347	0.0542	0.1246	1.0633	0.4636	8.5615	1.1801	0.4425	0.2465	0.5083	0.4793	7.4196	8.8505	2.1875	40.28	2.550
2.560	0.4328	0.0533	0.1232	1.0651	0.4593	8.6141	1.1812	0.4445	0.2446	0.5074	0.4754	7.4792	8.9161	2.1976	40.51	2.560
2.570	0.4309	0.0525	0.1218	1.0669	0.4550	8.6670	1.1823	0.4466	0.2427	0.5065	0.4715	7.5391	8.9820	2.2077	40.74	2.570
2.580	0.4289	0.0517	0.1205	1.0687	0.4507	8.7200	1.1834	0.4486	0.2409	0.5056	0.4677	7.5991	9.0482	2.2179	40.96	2.580
2.590	0.4271	0.0509	0.1192	1.0705	0.4465	8.7732	1.1844	0.4506	0.2390	0.5047	0.4639	7.6595	9.1146	2.2281	41.19	2.590
2.600	0.4252	0.0501	0.1179	1.0722	0.4423	8.8265	1.1855	0.4526	0.2371	0.5039	0.4601	7.7200	9.1813	2.2383	41.41	2.600
2.610	0.4233	0.0493	0.1166	1.0740	0.4382	8.8801	1.1866	0.4546	0.2353	0.5030	0.4564	7.7808	9.2483	2.2486	41.64	2.610
2.620	0.4214	0.0486	0.1153	1.0757	0.4341	8.9338	1.1876	0.4565	0.2335	0.5022	0.4526	7.8418	9.3155	2.2590	41.86	2.620
2.630	0.4196	0.0478	0.1140	1.0774	0.4300	8.9877	1.1887	0.4585	0.2317	0.5013	0.4489	7.9031	9.3829	2.2693	42.09	2.630
2.640	0.4177	0.0471	0.1128	1.0791	0.4260	9.0418	1.1897	0.4604	0.2298	0.5005	0.4452	7.9645	9.4506	2.2797	42.31	2.640
2.650	0.4159	0.0464	0.1115	1.0808	0.4220	9.0961	1.1908	0.4624	0.2280	0.4996	0.4416	8.0263	9.5186	2.2902	42.53	2.650
2.660	0.4141	0.0457	0.1103	1.0825	0.4180	9.1506	1.1918	0.4643	0.2262	0.4988	0.4379	8.0882	9.5869	2.3006	42.75	2.660
2.670	0.4122	0.0450	0.1091	1.0842	0.4141	9.2052	1.1928	0.4662	0.2245	0.4980	0.4343	8.1504	9.6554	2.3111	42.97	2.670
2.680	0.4104	0.0443	0.1079	1.0859	0.4102	9.2601	1.1939	0.4681	0.2227	0.4972	0.4307	8.2128	9.7241	2.3217	43.19	2.680
2.690	0.4086	0.0436	0.1067	1.0875	0.4063	9.3151	1.1949	0.4700	0.2209	0.4964	0.4271	8.2755	9.7931	2.3323	43.40	2.690
2.700	0.4068	0.0430	0.1056	1.0892	0.4025	9.3703	1.1959	0.4718	0.2192	0.4956	0.4236	8.3383	9.8624	2.3429	43.62	2.700
2.710	0.4051	0.0423	0.1044	1.0908	0.3987	9.4257	1.1969	0.4737	0.2174	0.4949	0.4201	8.4015	9.9319	2.3536	43.84	2.710
2.720	0.4033	0.0417	0.1033	1.0924	0.3949	9.4812	1.1979	0.4755	0.2157	0.4941	0.4166	8.4648	10.0017	2.3642	44.05	2.720
2.730	0.4015	0.0410	0.1022	1.0941	0.3912	9.5370	1.1989	0.4773	0.2140	0.4933	0.4131	8.5284	10.0718	2.3750	44.27	2.730
2.740	0.3998	0.0404	0.1010	1.0957	0.3875	9.5929	1.1999	0.4791	0.2123	0.4926	0.4097	8.5922	10.1421	2.3858	44.48	2.740
2.750	0.3980	0.0398	0.0999	1.0973	0.3838	9.6490	1.2009	0.4809	0.2106	0.4918	0.4062	8.6563	10.2127	2.3966	44.69	2.750

γ=1.400

M	$\frac{T}{T_0}$	$\frac{p}{p_0}$	$\frac{\rho}{\rho_0}$	$\frac{V}{\sqrt{c_pT_0}}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap_0}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap}$	$\frac{F}{\dot{m}\sqrt{c_pT_0}}$	$\frac{4c_fL_{\max}}{D}$	$\frac{\frac{1}{2}\rho V^2}{p_0}$	M_s	$\frac{P_{0s}}{P_0}$	$\frac{P_s}{P}$	$\frac{P_{0s}}{P}$	$\frac{T_s}{T}$	ν	M
2.760	0.3963	0.0392	0.0989	1.0988	0.3802	9.7053	1.2019	0.4827	0.2089	0.4911	0.4028	8.7205	10.2835	2.4074	44.91	2.760
2.770	0.3945	0.0386	0.0978	1.1004	0.3766	9.7618	1.2029	0.4845	0.2072	0.4903	0.3994	8.7851	10.3546	2.4183	45.12	2.770
2.780	0.3928	0.0380	0.0967	1.1020	0.3730	9.8185	1.2038	0.4863	0.2055	0.4896	0.3961	8.8498	10.4259	2.4292	45.33	2.780
2.790	0.3911	0.0374	0.0957	1.1035	0.3695	9.8753	1.2048	0.4880	0.2039	0.4889	0.3928	8.9148	10.4975	2.4402	45.54	2.790
2.800	0.3894	0.0368	0.0946	1.1051	0.3660	9.9324	1.2058	0.4898	0.2022	0.4882	0.3895	8.9800	10.5694	2.4512	45.75	2.800
2.810	0.3877	0.0363	0.0936	1.1066	0.3625	9.9896	1.2067	0.4915	0.2006	0.4875	0.3862	9.0455	10.6415	2.4622	45.95	2.810
2.820	0.3860	0.0357	0.0926	1.1081	0.3591	10.0470	1.2077	0.4932	0.1990	0.4868	0.3829	9.1111	10.7139	2.4733	46.16	2.820
2.830	0.3844	0.0352	0.0916	1.1096	0.3557	10.1046	1.2086	0.4949	0.1973	0.4861	0.3797	9.1771	10.7865	2.4844	46.37	2.830
2.840	0.3827	0.0347	0.0906	1.1111	0.3523	10.1624	1.2095	0.4966	0.1957	0.4854	0.3765	9.2432	10.8594	2.4955	46.57	2.840
2.850	0.3810	0.0341	0.0896	1.1126	0.3490	10.2204	1.2105	0.4983	0.1941	0.4847	0.3733	9.3096	10.9326	2.5067	46.78	2.850
2.860	0.3794	0.0336	0.0886	1.1141	0.3457	10.2785	1.2114	0.5000	0.1926	0.4840	0.3701	9.3762	11.0060	2.5179	46.98	2.860
2.870	0.3777	0.0331	0.0877	1.1156	0.3424	10.3368	1.2123	0.5016	0.1910	0.4833	0.3670	9.4431	11.0797	2.5292	47.19	2.870
2.880	0.3761	0.0326	0.0867	1.1171	0.3392	10.3954	1.2132	0.5033	0.1894	0.4827	0.3639	9.5101	11.1536	2.5405	47.39	2.880
2.890	0.3745	0.0321	0.0858	1.1185	0.3359	10.4541	1.2142	0.5049	0.1879	0.4820	0.3608	9.5775	11.2278	2.5518	47.59	2.890
2.900	0.3729	0.0317	0.0849	1.1199	0.3328	10.5130	1.2151	0.5065	0.1863	0.4814	0.3577	9.6450	11.3022	2.5632	47.79	2.900
2.910	0.3712	0.0312	0.0840	1.1214	0.3296	10.5720	1.2160	0.5081	0.1848	0.4807	0.3547	9.7128	11.3770	2.5746	47.99	2.910
2.920	0.3696	0.0307	0.0831	1.1228	0.3265	10.6313	1.2169	0.5097	0.1833	0.4801	0.3517	9.7808	11.4519	2.5861	48.19	2.920
2.930	0.3681	0.0302	0.0822	1.1242	0.3234	10.6908	1.2178	0.5113	0.1818	0.4795	0.3487	9.8491	11.5271	2.5976	48.39	2.930
2.940	0.3665	0.0298	0.0813	1.1256	0.3203	10.7504	1.2187	0.5129	0.1803	0.4788	0.3457	9.9175	11.6026	2.6091	48.59	2.940
2.950	0.3649	0.0293	0.0804	1.1270	0.3173	10.8102	1.2195	0.5145	0.1788	0.4782	0.3428	9.9863	11.6784	2.6206	48.78	2.950
2.960	0.3633	0.0289	0.0796	1.1284	0.3143	10.8702	1.2204	0.5160	0.1773	0.4776	0.3398	10.0552	11.7544	2.6322	48.98	2.960
2.970	0.3618	0.0285	0.0787	1.1298	0.3113	10.9304	1.2213	0.5176	0.1758	0.4770	0.3369	10.1244	11.8306	2.6439	49.18	2.970
2.980	0.3602	0.0281	0.0779	1.1312	0.3083	10.9908	1.2222	0.5191	0.1744	0.4764	0.3340	10.1938	11.9072	2.6555	49.37	2.980
2.990	0.3587	0.0276	0.0770	1.1325	0.3054	11.0514	1.2230	0.5206	0.1729	0.4758	0.3312	10.2635	11.9839	2.6673	49.56	2.990
3.000	0.3571	0.0272	0.0762	1.1339	0.3025	11.1122	1.2239	0.5222	0.1715	0.4752	0.3283	10.3333	12.0610	2.6790	49.76	3.000

GAS FLOW TABLES (γ=1.333): SUBSONIC FLOW

M	$\frac{T}{T_0}$	$\frac{p}{p_0}$	$\frac{\rho}{\rho_0}$	$\frac{V}{\sqrt{c_p T_0}}$	$\frac{\dot{m}\sqrt{c_p T_0}}{A p_0}$	$\frac{\dot{m}\sqrt{c_p T_0}}{A p}$	$\frac{F}{\dot{m}\sqrt{c_p T_0}}$	$\frac{4 c_f L_{\max}}{D}$	$\frac{\frac{1}{2}\rho V^2}{p_0}$
0.010	1.0000	0.9999	1.0000	0.0058	0.0231	0.0231	43.2958	7493.200	0.0001
0.020	0.9999	0.9997	0.9998	0.0115	0.0462	0.0462	21.6560	1868.007	0.0003
0.030	0.9999	0.9994	0.9996	0.0173	0.0693	0.0693	14.4464	826.7890	0.0006
0.040	0.9997	0.9989	0.9992	0.0231	0.0923	0.0924	10.8442	462.6179	0.0011
0.050	0.9996	0.9983	0.9988	0.0288	0.1153	0.1155	8.6851	294.2161	0.0017
0.060	0.9994	0.9976	0.9982	0.0346	0.1383	0.1386	7.2475	202.8455	0.0024
0.070	0.9992	0.9967	0.9976	0.0404	0.1612	0.1618	6.2222	147.8292	0.0033
0.080	0.9989	0.9957	0.9968	0.0461	0.1841	0.1849	5.4546	112.1800	0.0042
0.090	0.9987	0.9946	0.9960	0.0519	0.2069	0.2080	4.8587	87.7848	0.0054
0.100	0.9983	0.9934	0.9950	0.0577	0.2297	0.2312	4.3831	70.3719	0.0066
0.110	0.9980	0.9920	0.9940	0.0634	0.2523	0.2544	3.9949	57.5186	0.0080
0.120	0.9976	0.9905	0.9928	0.0692	0.2749	0.2775	3.6724	47.7680	0.0095
0.130	0.9972	0.9888	0.9916	0.0749	0.2974	0.3007	3.4003	40.2012	0.0111
0.140	0.9967	0.9870	0.9903	0.0807	0.3197	0.3239	3.1678	34.2155	0.0129
0.150	0.9963	0.9851	0.9888	0.0864	0.3420	0.3471	2.9670	29.4027	0.0148
0.160	0.9958	0.9831	0.9873	0.0921	0.3641	0.3704	2.7920	25.4777	0.0168
0.170	0.9952	0.9810	0.9857	0.0979	0.3861	0.3936	2.6383	22.2372	0.0189
0.180	0.9946	0.9787	0.9840	0.1036	0.4080	0.4169	2.5022	19.5326	0.0211
0.190	0.9940	0.9763	0.9822	0.1093	0.4298	0.4402	2.3809	17.2536	0.0235
0.200	0.9934	0.9738	0.9803	0.1150	0.4514	0.4635	2.2724	15.3166	0.0260
0.210	0.9927	0.9711	0.9783	0.1207	0.4728	0.4869	2.1747	13.6578	0.0285
0.220	0.9920	0.9684	0.9762	0.1264	0.4941	0.5102	2.0863	12.2273	0.0312
0.230	0.9913	0.9655	0.9740	0.1321	0.5152	0.5336	2.0061	10.9859	0.0340
0.240	0.9905	0.9625	0.9717	0.1378	0.5362	0.5570	1.9330	9.9026	0.0370
0.250	0.9897	0.9594	0.9694	0.1435	0.5569	0.5805	1.8662	8.9522	0.0400
0.260	0.9889	0.9562	0.9669	0.1492	0.5775	0.6040	1.8049	8.1146	0.0431
0.270	0.9880	0.9529	0.9644	0.1549	0.5979	0.6275	1.7486	7.3731	0.0463
0.280	0.9871	0.9494	0.9618	0.1605	0.6181	0.6510	1.6966	6.7140	0.0496
0.290	0.9862	0.9459	0.9591	0.1662	0.6380	0.6746	1.6486	6.1261	0.0530
0.300	0.9852	0.9422	0.9563	0.1718	0.6578	0.6982	1.6042	5.5998	0.0565
0.310	0.9843	0.9384	0.9534	0.1775	0.6774	0.7218	1.5629	5.1272	0.0601
0.320	0.9832	0.9346	0.9505	0.1831	0.6967	0.7455	1.5245	4.7016	0.0638
0.330	0.9822	0.9306	0.9475	0.1887	0.7158	0.7692	1.4888	4.3173	0.0675
0.340	0.9811	0.9265	0.9444	0.1943	0.7347	0.7929	1.4555	3.9693	0.0714
0.350	0.9800	0.9224	0.9412	0.1999	0.7533	0.8167	1.4244	3.6535	0.0753
0.360	0.9789	0.9181	0.9379	0.2055	0.7717	0.8405	1.3953	3.3663	0.0793
0.370	0.9777	0.9137	0.9346	0.2111	0.7898	0.8644	1.3680	3.1046	0.0834
0.380	0.9765	0.9093	0.9311	0.2167	0.8077	0.8883	1.3425	2.8655	0.0875
0.390	0.9753	0.9047	0.9276	0.2223	0.8253	0.9122	1.3185	2.6469	0.0917
0.400	0.9741	0.9001	0.9241	0.2278	0.8427	0.9362	1.2959	2.4466	0.0960
0.410	0.9728	0.8954	0.9204	0.2334	0.8598	0.9603	1.2747	2.2627	0.1003
0.420	0.9715	0.8906	0.9167	0.2389	0.8766	0.9843	1.2548	2.0937	0.1047
0.430	0.9701	0.8857	0.9130	0.2444	0.8932	1.0085	1.2360	1.9382	0.1091
0.440	0.9688	0.8807	0.9091	0.2499	0.9095	1.0326	1.2183	1.7949	0.1136
0.450	0.9674	0.8757	0.9052	0.2554	0.9255	1.0569	1.2016	1.6627	0.1182
0.460	0.9660	0.8706	0.9012	0.2609	0.9412	1.0811	1.1858	1.5405	0.1228
0.470	0.9645	0.8654	0.8972	0.2664	0.9567	1.1055	1.1710	1.4276	0.1274
0.480	0.9631	0.8601	0.8931	0.2718	0.9718	1.1299	1.1569	1.3231	0.1321
0.490	0.9616	0.8548	0.8890	0.2773	0.9867	1.1543	1.1436	1.2263	0.1368
0.500	0.9600	0.8494	0.8847	0.2827	1.0012	1.1788	1.1310	1.1365	0.1415

γ=1.333

M	$\frac{T}{T_0}$	$\frac{p}{p_0}$	$\frac{\rho}{\rho_0}$	$\frac{V}{\sqrt{c_p T_0}}$	$\frac{\dot{m}\sqrt{c_p T_0}}{A p_0}$	$\frac{\dot{m}\sqrt{c_p T_0}}{A p}$	$\frac{F}{\dot{m}\sqrt{c_p T_0}}$	$\frac{4 c_f L_{\max}}{D}$	$\frac{\frac{1}{2}\rho V^2}{p_0}$
0.510	0.9585	0.8439	0.8805	0.2881	1.0155	1.2033	1.1192	1.0532	0.1463
0.520	0.9569	0.8384	0.8761	0.2935	1.0295	1.2279	1.1079	0.9759	0.1511
0.530	0.9553	0.8328	0.8717	0.2989	1.0431	1.2526	1.0973	0.9041	0.1559
0.540	0.9537	0.8271	0.8673	0.3043	1.0565	1.2773	1.0872	0.8373	0.1608
0.550	0.9520	0.8214	0.8628	0.3097	1.0696	1.3021	1.0777	0.7752	0.1656
0.560	0.9504	0.8157	0.8583	0.3150	1.0823	1.3269	1.0687	0.7174	0.1705
0.570	0.9487	0.8099	0.8537	0.3204	1.0948	1.3518	1.0601	0.6636	0.1754
0.580	0.9470	0.8040	0.8490	0.3257	1.1069	1.3768	1.0520	0.6136	0.1803
0.590	0.9452	0.7981	0.8443	0.3310	1.1188	1.4018	1.0444	0.5669	0.1852
0.600	0.9434	0.7921	0.8396	0.3363	1.1303	1.4269	1.0371	0.5235	0.1901
0.610	0.9417	0.7861	0.8348	0.3416	1.1415	1.4521	1.0303	0.4830	0.1950
0.620	0.9398	0.7801	0.8300	0.3469	1.1524	1.4773	1.0238	0.4452	0.1999
0.630	0.9380	0.7740	0.8252	0.3521	1.1630	1.5026	1.0176	0.4101	0.2048
0.640	0.9362	0.7679	0.8203	0.3573	1.1733	1.5280	1.0118	0.3773	0.2096
0.650	0.9343	0.7618	0.8153	0.3626	1.1833	1.5534	1.0063	0.3467	0.2145
0.660	0.9324	0.7556	0.8104	0.3678	1.1930	1.5789	1.0011	0.3183	0.2194
0.670	0.9305	0.7494	0.8054	0.3729	1.2023	1.6045	0.9962	0.2918	0.2242
0.680	0.9285	0.7431	0.8003	0.3781	1.2114	1.6301	0.9916	0.2671	0.2290
0.690	0.9266	0.7368	0.7953	0.3833	1.2201	1.6559	0.9872	0.2441	0.2338
0.700	0.9246	0.7306	0.7902	0.3884	1.2285	1.6817	0.9831	0.2227	0.2386
0.710	0.9226	0.7242	0.7850	0.3935	1.2367	1.7075	0.9792	0.2028	0.2433
0.720	0.9205	0.7179	0.7799	0.3986	1.2445	1.7335	0.9755	0.1843	0.2480
0.730	0.9185	0.7116	0.7747	0.4037	1.2520	1.7595	0.9721	0.1671	0.2527
0.740	0.9164	0.7052	0.7695	0.4088	1.2592	1.7856	0.9688	0.1512	0.2574
0.750	0.9144	0.6988	0.7643	0.4139	1.2661	1.8118	0.9658	0.1364	0.2620
0.760	0.9123	0.6924	0.7590	0.4189	1.2727	1.8381	0.9629	0.1227	0.2666
0.770	0.9102	0.6860	0.7537	0.4239	1.2790	1.8644	0.9603	0.1100	0.2711
0.780	0.9080	0.6796	0.7484	0.4289	1.2850	1.8908	0.9578	0.0983	0.2756
0.790	0.9059	0.6732	0.7431	0.4339	1.2907	1.9174	0.9554	0.0875	0.2800
0.800	0.9037	0.6668	0.7378	0.4389	1.2961	1.9440	0.9533	0.0776	0.2844
0.810	0.9015	0.6603	0.7325	0.4438	1.3013	1.9706	0.9513	0.0685	0.2888
0.820	0.8993	0.6539	0.7271	0.4487	1.3061	1.9974	0.9494	0.0601	0.2930
0.830	0.8971	0.6475	0.7217	0.4536	1.3107	2.0243	0.9477	0.0524	0.2973
0.840	0.8949	0.6411	0.7164	0.4585	1.3149	2.0512	0.9461	0.0454	0.3015
0.850	0.8926	0.6346	0.7110	0.4634	1.3189	2.0782	0.9446	0.0391	0.3056
0.860	0.8904	0.6282	0.7056	0.4683	1.3226	2.1053	0.9433	0.0333	0.3097
0.870	0.8881	0.6218	0.7002	0.4731	1.3260	2.1326	0.9420	0.0281	0.3137
0.880	0.8858	0.6154	0.6948	0.4779	1.3292	2.1599	0.9409	0.0235	0.3176
0.890	0.8835	0.6090	0.6893	0.4827	1.3321	2.1873	0.9399	0.0193	0.3215
0.900	0.8812	0.6026	0.6839	0.4875	1.3347	2.2147	0.9390	0.0156	0.3253
0.910	0.8788	0.5963	0.6785	0.4923	1.3370	2.2423	0.9383	0.0124	0.3291
0.920	0.8765	0.5899	0.6731	0.4970	1.3391	2.2700	0.9376	0.0096	0.3328
0.930	0.8741	0.5836	0.6676	0.5018	1.3410	2.2978	0.9370	0.0072	0.3364
0.940	0.8717	0.5773	0.6622	0.5065	1.3425	2.3256	0.9365	0.0052	0.3400
0.950	0.8694	0.5710	0.6568	0.5111	1.3439	2.3536	0.9360	0.0035	0.3435
0.960	0.8670	0.5647	0.6514	0.5158	1.3449	2.3817	0.9357	0.0022	0.3469
0.970	0.8646	0.5585	0.6459	0.5205	1.3458	2.4098	0.9354	0.0012	0.3502
0.980	0.8621	0.5522	0.6405	0.5251	1.3464	2.4381	0.9353	0.0005	0.3535
0.990	0.8597	0.5460	0.6351	0.5297	1.3467	2.4664	0.9351	0.0001	0.3567
1.000	0.8573	0.5398	0.6297	0.5343	1.3468	2.4949	0.9351	0.0000	0.3598

GAS FLOW TABLES (γ=1.333): SUPERSONIC FLOW

M	$\frac{T}{T_0}$	$\frac{p}{p_0}$	$\frac{\rho}{\rho_0}$	$\frac{V}{\sqrt{c_p T_0}}$	$\frac{\dot{m}\sqrt{c_p T_0}}{A p_0}$	$\frac{\dot{m}\sqrt{c_p T_0}}{A p}$	$\frac{F}{\dot{m}\sqrt{c_p T_0}}$	$\frac{4 c_f L_{\max}}{D}$	$\frac{\frac{1}{2}\rho V^2}{p_0}$
1.010	0.8548	0.5337	0.6243	0.5389	1.3467	2.5234	0.9351	0.0001	0.3628
1.020	0.8524	0.5276	0.6189	0.5434	1.3464	2.5521	0.9352	0.0005	0.3658
1.030	0.8499	0.5215	0.6136	0.5479	1.3458	2.5809	0.9354	0.0011	0.3687
1.040	0.8474	0.5154	0.6082	0.5525	1.3450	2.6097	0.9356	0.0019	0.3715
1.050	0.8449	0.5093	0.6028	0.5569	1.3440	2.6387	0.9359	0.0029	0.3743
1.060	0.8424	0.5033	0.5975	0.5614	1.3428	2.6678	0.9363	0.0042	0.3769
1.070	0.8399	0.4974	0.5922	0.5659	1.3414	2.6970	0.9367	0.0056	0.3795
1.080	0.8374	0.4914	0.5869	0.5703	1.3397	2.7263	0.9371	0.0071	0.3820
1.090	0.8349	0.4855	0.5816	0.5747	1.3379	2.7557	0.9376	0.0089	0.3845
1.100	0.8323	0.4796	0.5763	0.5791	1.3359	2.7852	0.9381	0.0108	0.3868
1.110	0.8298	0.4738	0.5710	0.5835	1.3337	2.8148	0.9387	0.0128	0.3891
1.120	0.8272	0.4680	0.5658	0.5878	1.3313	2.8446	0.9394	0.0150	0.3913
1.130	0.8247	0.4622	0.5605	0.5922	1.3287	2.8744	0.9401	0.0173	0.3934
1.140	0.8221	0.4565	0.5553	0.5965	1.3259	2.9043	0.9408	0.0197	0.3954
1.150	0.8195	0.4508	0.5501	0.6008	1.3229	2.9344	0.9415	0.0223	0.3974
1.160	0.8170	0.4452	0.5449	0.6050	1.3198	2.9646	0.9424	0.0250	0.3993
1.170	0.8144	0.4396	0.5398	0.6093	1.3165	2.9949	0.9432	0.0277	0.4011
1.180	0.8118	0.4340	0.5347	0.6135	1.3131	3.0253	0.9441	0.0306	0.4028
1.190	0.8092	0.4285	0.5295	0.6177	1.3094	3.0558	0.9450	0.0335	0.4044
1.200	0.8066	0.4230	0.5245	0.6219	1.3057	3.0864	0.9459	0.0366	0.4060
1.210	0.8040	0.4176	0.5194	0.6261	1.3017	3.1172	0.9469	0.0397	0.4075
1.220	0.8014	0.4122	0.5143	0.6302	1.2976	3.1481	0.9479	0.0429	0.4089
1.230	0.7988	0.4068	0.5093	0.6344	1.2934	3.1791	0.9489	0.0462	0.4102
1.240	0.7962	0.4015	0.5043	0.6385	1.2890	3.2102	0.9500	0.0495	0.4115
1.250	0.7936	0.3963	0.4994	0.6426	1.2845	3.2414	0.9511	0.0529	0.4127
1.260	0.7909	0.3911	0.4944	0.6466	1.2798	3.2727	0.9522	0.0564	0.4138
1.270	0.7883	0.3859	0.4895	0.6507	1.2751	3.3042	0.9533	0.0599	0.4148
1.280	0.7857	0.3808	0.4846	0.6547	1.2701	3.3358	0.9545	0.0634	0.4158
1.290	0.7830	0.3757	0.4798	0.6587	1.2651	3.3675	0.9557	0.0670	0.4167
1.300	0.7804	0.3706	0.4749	0.6627	1.2599	3.3993	0.9569	0.0707	0.4175
1.310	0.7778	0.3657	0.4701	0.6667	1.2547	3.4313	0.9581	0.0744	0.4182
1.320	0.7751	0.3607	0.4654	0.6706	1.2493	3.4633	0.9594	0.0781	0.4189
1.330	0.7725	0.3558	0.4606	0.6746	1.2438	3.4955	0.9606	0.0819	0.4195
1.340	0.7698	0.3510	0.4559	0.6785	1.2382	3.5279	0.9619	0.0857	0.4200
1.350	0.7672	0.3462	0.4512	0.6824	1.2325	3.5603	0.9632	0.0895	0.4205
1.360	0.7646	0.3414	0.4465	0.6862	1.2266	3.5929	0.9645	0.0934	0.4209
1.370	0.7619	0.3367	0.4419	0.6901	1.2207	3.6256	0.9659	0.0973	0.4212
1.380	0.7593	0.3320	0.4373	0.6939	1.2147	3.6584	0.9672	0.1012	0.4215
1.390	0.7566	0.3274	0.4328	0.6977	1.2086	3.6914	0.9686	0.1051	0.4216
1.400	0.7540	0.3229	0.4282	0.7015	1.2025	3.7245	0.9700	0.1091	0.4218
1.410	0.7513	0.3183	0.4237	0.7053	1.1962	3.7577	0.9714	0.1130	0.4218
1.420	0.7487	0.3139	0.4192	0.7090	1.1899	3.7910	0.9728	0.1170	0.4218
1.430	0.7460	0.3094	0.4148	0.7127	1.1835	3.8245	0.9742	0.1210	0.4217
1.440	0.7434	0.3051	0.4104	0.7164	1.1770	3.8581	0.9756	0.1250	0.4216
1.450	0.7407	0.3007	0.4060	0.7201	1.1704	3.8918	0.9771	0.1290	0.4214
1.460	0.7381	0.2965	0.4017	0.7238	1.1638	3.9257	0.9785	0.1331	0.4212
1.470	0.7354	0.2922	0.3974	0.7275	1.1571	3.9597	0.9800	0.1371	0.4209
1.480	0.7328	0.2880	0.3931	0.7311	1.1504	3.9938	0.9815	0.1411	0.4205
1.490	0.7301	0.2839	0.3888	0.7347	1.1435	4.0281	0.9829	0.1452	0.4201
1.500	0.7275	0.2798	0.3846	0.7383	1.1367	4.0625	0.9844	0.1492	0.4196

γ=1.333

M	$\frac{T}{T_0}$	$\frac{p}{p_0}$	$\frac{\rho}{\rho_0}$	$\frac{V}{\sqrt{c_pT_0}}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap_0}$	$\frac{\dot{m}\sqrt{c_pT_0}}{Ap}$	$\frac{F}{\dot{m}\sqrt{c_pT_0}}$	$\frac{4c_fL_{\max}}{D}$	$\frac{\frac{1}{2}\rho V^2}{p_0}$
1.510	0.7248	0.2758	0.3804	0.7419	1.1298	4.0970	0.9859	0.1532	0.4191
1.520	0.7222	0.2718	0.3763	0.7454	1.1228	4.1317	0.9874	0.1573	0.4185
1.530	0.7195	0.2678	0.3722	0.7489	1.1158	4.1665	0.9889	0.1613	0.4178
1.540	0.7169	0.2639	0.3681	0.7524	1.1087	4.2014	0.9905	0.1654	0.4171
1.550	0.7143	0.2600	0.3641	0.7559	1.1016	4.2365	0.9920	0.1694	0.4164
1.560	0.7116	0.2562	0.3600	0.7594	1.0945	4.2717	0.9935	0.1734	0.4156
1.570	0.7090	0.2524	0.3561	0.7629	1.0873	4.3070	0.9950	0.1775	0.4147
1.580	0.7064	0.2487	0.3521	0.7663	1.0801	4.3425	0.9966	0.1815	0.4138
1.590	0.7038	0.2450	0.3482	0.7697	1.0729	4.3782	0.9981	0.1855	0.4129
1.600	0.7011	0.2414	0.3443	0.7731	1.0656	4.4139	0.9997	0.1895	0.4119
1.610	0.6985	0.2378	0.3405	0.7765	1.0583	4.4498	1.0012	0.1935	0.4109
1.620	0.6959	0.2343	0.3367	0.7799	1.0510	4.4859	1.0028	0.1975	0.4098
1.630	0.6933	0.2308	0.3329	0.7832	1.0436	4.5220	1.0043	0.2015	0.4087
1.640	0.6907	0.2273	0.3291	0.7865	1.0363	4.5584	1.0059	0.2055	0.4075
1.650	0.6881	0.2239	0.3254	0.7898	1.0289	4.5948	1.0075	0.2094	0.4063
1.660	0.6855	0.2206	0.3217	0.7931	1.0215	4.6314	1.0090	0.2134	0.4051
1.670	0.6829	0.2172	0.3181	0.7964	1.0141	4.6682	1.0106	0.2173	0.4038
1.680	0.6803	0.2139	0.3145	0.7996	1.0066	4.7051	1.0122	0.2213	0.4025
1.690	0.6777	0.2107	0.3109	0.8028	0.9992	4.7421	1.0137	0.2252	0.4011
1.700	0.6751	0.2075	0.3074	0.8061	0.9918	4.7793	1.0153	0.2291	0.3997
1.710	0.6726	0.2044	0.3039	0.8093	0.9843	4.8166	1.0169	0.2330	0.3983
1.720	0.6700	0.2012	0.3004	0.8124	0.9769	4.8541	1.0184	0.2369	0.3968
1.730	0.6674	0.1982	0.2969	0.8156	0.9694	4.8917	1.0200	0.2407	0.3953
1.740	0.6649	0.1951	0.2935	0.8187	0.9620	4.9294	1.0216	0.2446	0.3938
1.750	0.6623	0.1922	0.2901	0.8218	0.9545	4.9673	1.0232	0.2484	0.3922
1.760	0.6597	0.1892	0.2868	0.8249	0.9471	5.0054	1.0247	0.2522	0.3906
1.770	0.6572	0.1863	0.2835	0.8280	0.9396	5.0435	1.0263	0.2560	0.3890
1.780	0.6546	0.1834	0.2802	0.8311	0.9322	5.0819	1.0279	0.2598	0.3874
1.790	0.6521	0.1806	0.2770	0.8341	0.9248	5.1204	1.0294	0.2636	0.3857
1.800	0.6496	0.1778	0.2737	0.8372	0.9173	5.1590	1.0310	0.2673	0.3840
1.810	0.6471	0.1751	0.2706	0.8402	0.9099	5.1978	1.0326	0.2711	0.3822
1.820	0.6445	0.1723	0.2674	0.8432	0.9025	5.2367	1.0341	0.2748	0.3805
1.830	0.6420	0.1697	0.2643	0.8461	0.8951	5.2758	1.0357	0.2785	0.3787
1.840	0.6395	0.1670	0.2612	0.8491	0.8878	5.3150	1.0373	0.2822	0.3769
1.850	0.6370	0.1644	0.2581	0.8521	0.8804	5.3544	1.0388	0.2858	0.3751
1.860	0.6345	0.1619	0.2551	0.8550	0.8731	5.3939	1.0404	0.2895	0.3732
1.870	0.6320	0.1593	0.2521	0.8579	0.8658	5.4336	1.0419	0.2931	0.3714
1.880	0.6295	0.1568	0.2491	0.8608	0.8585	5.4734	1.0435	0.2967	0.3695
1.890	0.6271	0.1544	0.2462	0.8636	0.8512	5.5134	1.0450	0.3003	0.3676
1.900	0.6246	0.1520	0.2433	0.8665	0.8439	5.5535	1.0466	0.3039	0.3656
1.910	0.6221	0.1496	0.2404	0.8693	0.8367	5.5938	1.0481	0.3074	0.3637
1.920	0.6197	0.1472	0.2376	0.8722	0.8295	5.6342	1.0497	0.3110	0.3617
1.930	0.6172	0.1449	0.2348	0.8750	0.8223	5.6748	1.0512	0.3145	0.3598
1.940	0.6148	0.1426	0.2320	0.8778	0.8152	5.7155	1.0527	0.3180	0.3578
1.950	0.6123	0.1404	0.2292	0.8805	0.8081	5.7564	1.0543	0.3215	0.3558
1.960	0.6099	0.1382	0.2265	0.8833	0.8010	5.7974	1.0558	0.3249	0.3537
1.970	0.6075	0.1360	0.2238	0.8860	0.7939	5.8386	1.0573	0.3284	0.3517
1.980	0.6051	0.1338	0.2212	0.8888	0.7869	5.8800	1.0588	0.3318	0.3497
1.990	0.6026	0.1317	0.2185	0.8915	0.7799	5.9215	1.0603	0.3352	0.3476
2.000	0.6002	0.1296	0.2159	0.8942	0.7729	5.9631	1.0619	0.3386	0.3455

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
1.05	0.558	79.937	1.0803	1.0567	1.0223	0.9845	0.99995
1.10	1.515	76.297	1.1658	1.1157	1.0449	0.9711	0.99963
1.15	2.000	67.003	1.1408	1.0986	1.0384	1.0434	0.99977
	2.671	73.822	1.2565	1.1767	1.0678	0.9598	0.99879
	2.000	81.173	1.3399	1.2316	1.0880	0.9007	0.99745
1.20	2.000	61.050	1.1197	1.0841	1.0329	1.1113	0.99985
	3.944	71.977	1.3525	1.2397	1.0910	0.9502	0.99720
	2.000	83.861	1.4941	1.3297	1.1237	0.8551	0.99344
1.25	2.000	56.844	1.1110	1.0780	1.0306	1.1696	0.99988
	4.000	61.986	1.2541	1.1752	1.0672	1.0721	0.99882
	5.286	70.540	1.4539	1.3045	1.1146	0.9423	0.99468
	4.000	79.385	1.5944	1.3913	1.1459	0.8525	0.98975
	2.000	85.211	1.6435	1.4210	1.1566	0.8209	0.98763
1.30	2.000	53.474	1.1065	1.0749	1.0294	1.2244	0.99989
	4.000	57.423	1.2334	1.1613	1.0621	1.1398	0.99906
	6.000	63.459	1.4113	1.2775	1.1048	1.0274	0.99585
	6.662	69.395	1.5608	1.3709	1.1386	0.9359	0.99108
	6.000	75.372	1.6793	1.4423	1.1643	0.8636	0.98598
	4.000	81.649	1.7634	1.4917	1.1822	0.8118	0.98169
	2.000	86.058	1.7957	1.5103	1.1889	0.7918	0.97990
1.35	2.000	50.634	1.1042	1.0733	1.0287	1.2774	0.99990
	4.000	53.965	1.2238	1.1549	1.0596	1.1994	0.99916
	6.000	58.232	1.3702	1.2512	1.0952	1.1089	0.99682
	8.000	66.914	1.6327	1.4145	1.1543	0.9543	0.98812
	8.048	68.470	1.6732	1.4387	1.1630	0.9307	0.98627
	8.000	70.023	1.7114	1.4613	1.1712	0.9085	0.98440
	6.000	78.660	1.8774	1.5569	1.2058	0.8111	0.97506
	4.000	83.028	1.9283	1.5854	1.2163	0.7807	0.97182
	2.000	86.644	1.9523	1.5988	1.2211	0.7662	0.97023
1.40	2.000	48.173	1.1030	1.0725	1.0284	1.3295	0.99990
	4.000	51.117	1.2189	1.1516	1.0584	1.2553	0.99921
	6.000	54.633	1.3539	1.2406	1.0913	1.1737	0.99717
	8.000	59.367	1.5263	1.3496	1.1309	1.0744	0.99235
	9.427	67.716	1.7912	1.5077	1.1880	0.9266	0.98016
1.40	8.000	75.893	1.9842	1.6163	1.2276	0.8184	0.96806
	6.000	80.485	2.0575	1.6562	1.2423	0.7762	0.96286
	4.000	83.988	2.0949	1.6763	1.2497	0.7545	0.96009
	2.000	87.075	2.1140	1.6865	1.2535	0.7432	0.95865
1.45	2.000	46.004	1.1028	1.0723	1.0284	1.3808	0.99990
	4.000	48.679	1.2169	1.1503	1.0579	1.3091	0.99923
	6.000	51.755	1.3463	1.2357	1.0895	1.2325	0.99733
	8.000	55.517	1.5000	1.3333	1.1250	1.1460	0.99325
	10.000	61.046	1.7114	1.4613	1.1712	1.0317	0.98440
	10.785	67.097	1.9147	1.5779	1.2135	0.9235	0.97269
	10.000	72.994	2.0764	1.6664	1.2461	0.8366	0.96147
	8.000	78.197	2.1836	1.7232	1.2672	0.7777	0.95324
	6.000	81.733	2.2355	1.7501	1.2774	0.7485	0.94905
	4.000	84.702	2.2653	1.7654	1.2832	0.7316	0.94659
	2.000	87.406	2.2812	1.7736	1.2862	0.7225	0.94526
1.50	2.000	44.065	1.1030	1.0725	1.0284	1.4316	0.99990
	4.000	46.543	1.2165	1.1500	1.0578	1.3615	0.99923
	6.000	49.326	1.3433	1.2337	1.0888	1.2879	0.99739
	8.000	52.571	1.4887	1.3263	1.1224	1.2079	0.99362
	10.000	56.679	1.6662	1.4345	1.1615	1.1144	0.98660
	12.000	64.359	1.9668	1.6068	1.2241	0.9607	0.96925
	12.113	66.589	2.0439	1.6489	1.2396	0.9213	0.96385
	12.000	68.790	2.1147	1.6869	1.2537	0.8849	0.95860
	10.000	75.995	2.3046	1.7855	1.2908	0.7854	0.94329
	8.000	79.712	2.3746	1.8207	1.3042	0.7476	0.93725
	6.000	82.662	2.4155	1.8410	1.3121	0.7250	0.93363
	4.000	85.256	2.4404	1.8533	1.3168	0.7112	0.93141
	2.000	87.668	2.4540	1.8599	1.3194	0.7035	0.93018
1.55	2.000	42.315	1.1036	1.0729	1.0286	1.4821	0.99990
	4.000	44.642	1.2173	1.1505	1.0580	1.4130	0.99923
	6.000	47.214	1.3430	1.2336	1.0887	1.3414	0.99739
	8.000	50.131	1.4845	1.3236	1.1215	1.2651	0.99375
	10.000	53.598	1.6491	1.4243	1.1578	1.1804	0.98738
	12.000	58.240	1.8597	1.5469	1.2022	1.0758	0.97615
	13.403	66.171	2.1787	1.7206	1.2663	0.9198	0.95362
	12.000	73.688	2.4151	1.8408	1.3120	0.8014	0.93367
	10.000	77.804	2.5112	1.8877	1.3302	0.7515	0.92496
	8.000	80.825	2.5650	1.9136	1.3404	0.7229	0.91995
	6.000	83.385	2.5991	1.9298	1.3468	0.7045	0.91673
	4.000	85.699	2.6205	1.9399	1.3508	0.6928	0.91470
	2.000	87.879	2.6324	1.9455	1.3531	0.6862	0.91356

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
1.60	2.000	40.724	1.1046	1.0736	1.0289	1.5323	0.99990
	4.000	42.931	1.2189	1.1516	1.0584	1.4638	0.99921
	6.000	45.344	1.3446	1.2346	1.0891	1.3934	0.99736
	8.000	48.030	1.4843	1.3236	1.1215	1.3195	0.99376
	10.000	51.116	1.6430	1.4207	1.1565	1.2397	0.98766
	12.000	54.889	1.8320	1.5311	1.1965	1.1483	0.97781
	14.000	60.537	2.0974	1.6777	1.2502	1.0232	0.95990
	14.652	65.828	2.3192	1.7929	1.2936	0.9188	0.94204
	14.000	70.895	2.5000	1.8824	1.3281	0.8320	0.92598
	12.000	75.900	2.6428	1.9504	1.3550	0.7611	0.91256
	10.000	79.102	2.7132	1.9831	1.3682	0.7250	0.90574
	8.000	81.691	2.7576	2.0035	1.3764	0.7018	0.90139
	6.000	83.967	2.7870	2.0168	1.3819	0.6862	0.89848
	4.000	86.061	2.8059	2.0254	1.3854	0.6761	0.89660
	2.000	88.054	2.8166	2.0302	1.3873	0.6703	0.89554
1.65	2.000	39.267	1.1058	1.0744	1.0292	1.5823	0.99990
	4.000	41.377	1.2212	1.1531	1.0590	1.5140	0.99919
	6.000	43.665	1.3475	1.2365	1.0898	1.4444	0.99730
	8.000	46.181	1.4869	1.3252	1.1221	1.3720	0.99367
	10.000	49.007	1.6429	1.4206	1.1565	1.2952	0.98766
	12.000	52.312	1.8224	1.5257	1.1945	1.2104	0.97837
	14.000	56.541	2.0441	1.6490	1.2396	1.1090	0.96384
	15.855	65.547	2.4653	1.8655	1.3215	0.9184	0.92915
	14.000	73.864	2.7642	2.0065	1.3776	0.7782	0.90073
	12.000	77.411	2.8587	2.0491	1.3951	0.7317	0.89132
	10.000	80.102	2.9157	2.0744	1.4056	0.7029	0.88557
	8.000	82.389	2.9539	2.0911	1.4126	0.6833	0.88169
	6.000	84.446	2.9798	2.1024	1.4174	0.6697	0.87904
	4.000	86.364	2.9968	2.1097	1.4205	0.6607	0.87730
	2.000	88.200	3.0065	2.1139	1.4222	0.6556	0.87631
1.70	2.000	37.927	1.1072	1.0754	1.0295	1.6320	0.99989
	4.000	39.957	1.2239	1.1550	1.0597	1.5638	0.99916
	6.000	42.145	1.3514	1.2390	1.0907	1.4946	0.99722
	8.000	44.528	1.4914	1.3280	1.1231	1.4232	0.99353
	10.000	47.167	1.6466	1.4228	1.1573	1.3482	0.98750
	12.000	50.168	1.8216	1.5252	1.1943	1.2674	0.97841
	14.000	53.771	2.0273	1.6399	1.2362	1.1757	0.96504
	16.000	58.794	2.2999	1.7831	1.2898	1.0569	0.94369
	17.012	65.319	2.6171	1.9383	1.3502	0.9185	0.91502
	16.000	71.426	2.8629	2.0510	1.3959	0.8077	0.89090
	14.000	75.670	2.9984	2.1104	1.4208	0.7439	0.87713
	12.000	78.555	3.0722	2.1421	1.4342	0.7080	0.86953
	10.000	80.906	3.1208	2.1626	1.4431	0.6838	0.86450
	8.000	82.965	3.1544	2.1767	1.4492	0.6667	0.86100
1.70	6.000	84.848	3.1778	2.1865	1.4534	0.6547	0.85856
	4.000	86.619	3.1933	2.1929	1.4562	0.6467	0.85695
	2.000	88.325	3.2021	2.1965	1.4578	0.6421	0.85602
1.75	2.000	36.689	1.1087	1.0765	1.0300	1.6816	0.99989
	4.000	38.651	1.2271	1.1571	1.0605	1.6133	0.99913
	6.000	40.756	1.3561	1.2421	1.0918	1.5441	0.99713
	8.000	43.034	1.4973	1.3317	1.1244	1.4733	0.99334
	10.000	45.531	1.6529	1.4266	1.1586	1.3995	0.98721
	12.000	48.319	1.8263	1.5279	1.1953	1.3210	0.97814
	14.000	51.547	2.0245	1.6384	1.2357	1.2348	0.96524
	16.000	55.589	2.2652	1.7654	1.2831	1.1329	0.94660
	18.000	62.944	2.6670	1.9617	1.3595	0.9645	0.91023
	18.121	65.134	2.7745	2.0112	1.3795	0.9189	0.89972
	18.000	67.269	2.8728	2.0554	1.3977	0.8766	0.88991
	16.000	73.757	3.1267	2.1651	1.4441	0.7635	0.86389
	14.000	76.988	3.2251	2.2060	1.4620	0.7175	0.85362
	12.000	79.465	3.2868	2.2312	1.4731	0.6878	0.84714
	10.000	81.570	3.3295	2.2484	1.4808	0.6669	0.84266
	8.000	83.451	3.3598	2.2606	1.4862	0.6518	0.83947
	6.000	85.190	3.3811	2.2691	1.4901	0.6409	0.83722
	4.000	86.838	3.3954	2.2748	1.4926	0.6337	0.83571
	2.000	88.432	3.4036	2.2780	1.4941	0.6295	0.83485
1.80	2.000	35.538	1.1104	1.0776	1.0304	1.7312	0.99988
	4.000	37.444	1.2306	1.1594	1.0613	1.6624	0.99909
	6.000	39.481	1.3615	1.2455	1.0931	1.5932	0.99701
	8.000	41.673	1.5044	1.3360	1.1260	1.5225	0.99310
	10.000	44.057	1.6611	1.4315	1.1604	1.4494	0.98683
	12.000	46.686	1.8345	1.5326	1.1970	1.3725	0.97766
	14.000	49.661	2.0295	1.6411	1.2367	1.2896	0.96489
	16.000	53.198	2.2568	1.7611	1.2815	1.1958	0.94729
	18.000	57.995	2.5516	1.9072	1.3379	1.0766	0.92120
	19.183	64.987	2.9376	2.0839	1.4096	0.9195	0.88335
	18.000	71.424	3.2297	2.2079	1.4628	0.7956	0.85313
	16.000	75.324	3.3707	2.2650	1.4882	0.7327	0.83832
	14.000	78.020	3.4505	2.2965	1.5025	0.6958	0.82990
	12.000	80.214	3.5041	2.3174	1.5121	0.6703	0.82423
	10.000	82.128	3.5424	2.3322	1.5189	0.6518	0.82018
	8.000	83.865	3.5702	2.3428	1.5239	0.6381	0.81725
	6.000	85.485	3.5899	2.3503	1.5274	0.6283	0.81516
	4.000	87.028	3.6032	2.3554	1.5298	0.6216	0.81376
	2.000	88.525	3.6108	2.3583	1.5311	0.6178	0.81295

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
1.85	2.000	34.466	1.1121	1.0788	1.0309	1.7805	0.99988
	4.000	36.323	1.2343	1.1619	1.0623	1.7114	0.99905
	6.000	38.302	1.3672	1.2492	1.0945	1.6418	0.99689
	8.000	40.424	1.5123	1.3409	1.1278	1.5711	0.99284
	10.000	42.717	1.6709	1.4373	1.1625	1.4983	0.98638
	12.000	45.223	1.8453	1.5388	1.1992	1.4224	0.97701
	14.000	48.014	2.0395	1.6465	1.2387	1.3415	0.96417
	16.000	51.232	2.2607	1.7631	1.2822	1.2524	0.94697
	18.000	55.227	2.5275	1.8956	1.3333	1.1476	0.92345
	20.000	62.099	2.9519	2.0902	1.4123	0.9818	0.88189
	20.198	64.872	3.1062	2.1565	1.4404	0.9205	0.86601
	20.000	67.544	3.2437	2.2136	1.4653	0.8648	0.85167
	18.000	73.440	3.5019	2.3165	1.5117	0.7560	0.82446
	16.000	76.511	3.6090	2.3576	1.5308	0.7085	0.81314
	14.000	78.861	3.6772	2.3833	1.5429	0.6773	0.80593
	12.000	80.844	3.7252	2.4011	1.5514	0.6548	0.80088
	10.000	82.606	3.7601	2.4140	1.5576	0.6381	0.79719
	8.000	84.222	3.7858	2.4234	1.5622	0.6257	0.79449
	6.000	85.740	3.8042	2.4301	1.5655	0.6166	0.79255
	4.000	87.193	3.8167	2.4346	1.5677	0.6105	0.79124
	2.000	88.606	3.8239	2.4373	1.5689	0.6069	0.79048
1.90	2.000	33.466	1.1140	1.0801	1.0314	1.8298	0.99987
	4.000	35.279	1.2382	1.1646	1.0633	1.7600	0.99901
	6.000	37.209	1.3735	1.2533	1.0959	1.6901	0.99675
	8.000	39.272	1.5209	1.3463	1.1297	1.6191	0.99254
	10.000	41.490	1.6818	1.4438	1.1649	1.5464	0.98586
	12.000	43.898	1.8582	1.5460	1.2019	1.4709	0.97624
	14.000	46.550	2.0530	1.6538	1.2414	1.3913	0.96319
	16.000	49.544	2.2718	1.7688	1.2844	1.3052	0.94605
	18.000	53.095	2.5263	1.8951	1.3331	1.2077	0.92356
	20.000	57.900	2.8557	2.0477	1.3946	1.0835	0.89162
	21.167	64.783	3.2805	2.2286	1.4720	0.9216	0.84781
	20.000	71.057	3.6012	2.3546	1.5294	0.7935	0.81397
	18.000	74.861	3.7578	2.4131	1.5572	0.7274	0.79744
	16.000	77.463	3.8466	2.4455	1.5729	0.6884	0.78810
	14.000	79.565	3.9068	2.4671	1.5836	0.6611	0.78178
	12.000	81.383	3.9504	2.4826	1.5913	0.6409	0.77721
	10.000	83.020	3.9828	2.4940	1.5970	0.6257	0.77383
	8.000	84.534	4.0068	2.5024	1.6012	0.6142	0.77133
	6.000	85.965	4.0241	2.5084	1.6042	0.6058	0.76953
	4.000	87.338	4.0359	2.5125	1.6063	0.6001	0.76830
	2.000	88.677	4.0428	2.5149	1.6075	0.5967	0.76759

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
1.95	2.000	32.528	1.1160	1.0815	1.0319	1.8790	0.99987
	4.000	34.304	1.2424	1.1674	1.0643	1.8085	0.99896
	6.000	36.191	1.3801	1.2575	1.0975	1.7380	0.99660
	8.000	38.204	1.5302	1.3521	1.1318	1.6666	0.99221
	10.000	40.360	1.6938	1.4509	1.1674	1.5938	0.98528
	12.000	42.688	1.8726	1.5542	1.2049	1.5185	0.97535
	14.000	45.230	2.0693	1.6625	1.2446	1.4396	0.96200
	16.000	48.059	2.2879	1.7770	1.2875	1.3553	0.94470
	18.000	51.320	2.5368	1.9001	1.3351	1.2622	0.92258
	20.000	55.381	2.8378	2.0397	1.3913	1.1520	0.89342
	22.000	62.860	3.3464	2.2553	1.4838	0.9655	0.84087
	22.092	64.716	3.4603	2.3003	1.5043	0.9229	0.82885
	22.000	66.523	3.5655	2.3410	1.5231	0.8829	0.81774
	20.000	72.926	3.8872	2.4601	1.5801	0.7555	0.78384
	18.000	75.964	4.0086	2.5030	1.6015	0.7045	0.77114
	16.000	78.253	4.0857	2.5297	1.6151	0.6710	0.76313
	14.000	80.165	4.1401	2.5484	1.6246	0.6467	0.75750
	12.000	81.849	4.1804	2.5620	1.6317	0.6283	0.75335
	10.000	83.381	4.2106	2.5722	1.6370	0.6142	0.75024
	8.000	84.808	4.2333	2.5798	1.6409	0.6036	0.74791
	6.000	86.163	4.2497	2.5853	1.6438	0.5957	0.74623
	4.000	87.467	4.2609	2.5890	1.6458	0.5904	0.74508
	2.000	88.741	4.2674	2.5912	1.6469	0.5872	0.74441
2.00	2.000	31.647	1.1180	1.0829	1.0324	1.9280	0.99986
	4.000	33.390	1.2468	1.1702	1.0654	1.8568	0.99891
	6.000	35.241	1.3871	1.2620	1.0991	1.7856	0.99644
	8.000	37.210	1.5400	1.3581	1.1339	1.7138	0.99186
	10.000	39.314	1.7066	1.4584	1.1702	1.6405	0.98464
	12.000	41.575	1.8884	1.5631	1.2081	1.5651	0.97437
	14.000	44.029	2.0876	1.6724	1.2483	1.4866	0.96064
	16.000	46.731	2.3076	1.7870	1.2913	1.4034	0.94304
	18.000	49.785	2.5546	1.9086	1.3384	1.3131	0.92092
	20.000	53.423	2.8429	2.0420	1.3922	1.2102	0.89291
	22.000	58.457	3.2228	2.2051	1.4616	1.0760	0.85385
	22.974	64.669	3.6458	2.3715	1.5373	0.9243	0.80926
	22.000	70.332	3.9714	2.4899	1.5950	0.8017	0.77503
	20.000	74.270	4.1570	2.5541	1.6276	0.7278	0.75576
	18.000	76.862	4.2589	2.5883	1.6454	0.6854	0.74529
	16.000	78.921	4.3277	2.6110	1.6574	0.6558	0.73827
	14.000	80.684	4.3777	2.6274	1.6662	0.6337	0.73319
	12.000	82.257	4.4153	2.6396	1.6727	0.6168	0.72939
	10.000	83.700	4.4438	2.6487	1.6777	0.6037	0.72652
	8.000	85.052	4.4653	2.6556	1.6815	0.5937	0.72436
	6.000	86.339	4.4810	2.6606	1.6842	0.5864	0.72278
	4.000	87.582	4.4917	2.6640	1.6861	0.5813	0.72171
	2.000	88.798	4.4979	2.6660	1.6871	0.5783	0.72108

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$	M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
2.05	2.000	30.816	1.1200	1.0843	1.0330	1.9771	0.99985	2.10	4.000	87.778	4.9706	2.8097	1.7691	0.5648	0.67494
	4.000	32.532	1.2512	1.1732	1.0665	1.9050	0.99885		2.000	88.894	4.9764	2.8113	1.7701	0.5622	0.67438
	6.000	34.350	1.3943	1.2666	1.1008	1.8330	0.99627								
	8.000	36.281	1.5502	1.3644	1.1362	1.7605	0.99148								
	10.000	38.341	1.7201	1.4664	1.1730	1.6868	0.98396	2.15	2.000	29.293	1.1243	1.0872	1.0341	2.0749	0.99984
	12.000	40.547	1.9053	1.5726	1.2116	1.6111	0.97330		4.000	30.960	1.2606	1.1794	1.0688	2.0008	0.99874
	14.000	42.928	2.1076	1.6831	1.2522	1.5326	0.95914		6.000	32.725	1.4094	1.2763	1.1043	1.9271	0.99590
	16.000	45.528	2.3300	1.7983	1.2956	1.4500	0.94112		8.000	34.596	1.5719	1.3777	1.1410	1.8529	0.99065
	18.000	48.428	2.5774	1.9195	1.3427	1.3614	0.91878		10.000	36.584	1.7490	1.4833	1.1791	1.7778	0.98246
	20.000	51.785	2.8600	2.0497	1.3953	1.2630	0.89120		12.000	38.702	1.9417	1.5929	1.2190	1.7011	0.97093
	22.000	56.032	3.2057	2.1980	1.4585	1.1444	0.85565		14.000	40.971	2.1518	1.7065	1.2610	1.6221	0.95574
	23.814	64.638	3.8367	2.4419	1.5712	0.9257	0.78913		16.000	43.422	2.3813	1.8241	1.3055	1.5397	0.93666
	22.000	72.193	4.2777	2.5946	1.6487	0.7626	0.74336		18.000	46.104	2.6337	1.9461	1.3533	1.4527	0.91343
	20.000	75.324	4.4215	2.6416	1.6738	0.7056	0.72876		20.000	49.106	2.9150	2.0740	1.4055	1.3588	0.88564
	18.000	77.614	4.5107	2.6700	1.6894	0.6688	0.71981		22.000	52.618	3.2384	2.2115	1.4644	1.2534	0.85222
	16.000	79.498	4.5734	2.6898	1.7003	0.6422	0.71356		24.000	57.217	3.6452	2.3712	1.5372	1.1223	0.80932
	14.000	81.138	4.6199	2.7043	1.7084	0.6219	0.70894		25.376	64.616	4.2352	2.5804	1.6413	0.9289	0.74772
	12.000	82.617	4.6553	2.7152	1.7145	0.6062	0.70545		24.000	71.164	4.6641	2.7180	1.7160	0.7794	0.70458
	10.000	83.983	4.6824	2.7236	1.7192	0.5939	0.70278		22.000	74.564	4.8442	2.7725	1.7472	0.7122	0.68703
	8.000	85.269	4.7029	2.7299	1.7228	0.5846	0.70077		20.000	76.920	4.9500	2.8037	1.7656	0.6709	0.67689
	6.000	86.497	4.7179	2.7344	1.7254	0.5776	0.69930		18.000	78.817	5.0234	2.8249	1.7782	0.6413	0.66994
	4.000	87.685	4.7283	2.7376	1.7272	0.5728	0.69829		16.000	80.444	5.0776	2.8405	1.7876	0.6188	0.66484
	2.000	88.849	4.7343	2.7394	1.7282	0.5700	0.69770		14.000	81.896	5.1191	2.8523	1.7947	0.6012	0.66097
									12.000	83.224	5.1512	2.8613	1.8003	0.5874	0.65798
									10.000	84.464	5.1761	2.8683	1.8046	0.5765	0.65568
2.10	2.000	30.033	1.1222	1.0858	1.0335	2.0260	0.99984		8.000	85.639	5.1951	2.8736	1.8078	0.5680	0.65392
	4.000	31.723	1.2558	1.1763	1.0676	1.9530	0.99880		6.000	86.767	5.2091	2.8775	1.8103	0.5617	0.65263
	6.000	33.513	1.4017	1.2714	1.1025	1.8801	0.99609		4.000	87.862	5.2187	2.8802	1.8119	0.5574	0.65174
	8.000	35.412	1.5608	1.3709	1.1386	1.8069	0.99108		2.000	88.936	5.2244	2.8818	1.8129	0.5548	0.65122
	10.000	37.433	1.7342	1.4746	1.1760	1.7325	0.98324								
	12.000	39.592	1.9230	1.5825	1.2152	1.6564	0.97216								
	14.000	41.912	2.1290	1.6944	1.2565	1.5777	0.95750	2.20	2.000	28.592	1.1266	1.0888	1.0347	2.1237	0.99983
	16.000	44.430	2.3547	1.8107	1.3004	1.4954	0.93899		4.000	30.238	1.2654	1.1826	1.0700	2.0485	0.99867
	18.000	47.210	2.6041	1.9322	1.3478	1.4078	0.91626		6.000	31.981	1.4173	1.2813	1.1061	1.9738	0.99569
	20.000	50.365	2.8848	2.0607	1.3999	1.3122	0.88870		8.000	33.827	1.5832	1.3845	1.1435	1.8987	0.99020
	22.000	54.169	3.2152	2.2019	1.4602	1.2019	0.85466		10.000	35.785	1.7641	1.4921	1.1823	1.8228	0.98165
	24.000	59.767	3.6739	2.3820	1.5424	1.0493	0.80628		12.000	37.869	1.9611	1.6036	1.2229	1.7454	0.96964
	24.614	64.621	4.0332	2.5116	1.6058	0.9273	0.76858		14.000	40.095	2.1756	1.7190	1.2656	1.6657	0.95387
	24.000	69.104	4.3238	2.6098	1.6568	0.8245	0.73867		16.000	42.489	2.4095	1.8380	1.3109	1.5831	0.93417
	22.000	73.521	4.5644	2.6870	1.6987	0.7345	0.71445		18.000	45.092	2.6658	1.9611	1.3593	1.4963	0.91035
	20.000	76.189	4.6852	2.7244	1.7197	0.6870	0.70251		20.000	47.975	2.9494	2.0891	1.4118	1.4035	0.88215
	18.000	78.257	4.7652	2.7488	1.7336	0.6543	0.69468		22.000	51.277	3.2704	2.2245	1.4701	1.3013	0.84887
	16.000	80.001	4.8232	2.7662	1.7436	0.6299	0.68906		24.000	55.356	3.6552	2.3750	1.5390	1.1805	0.80826
	14.000	81.539	4.8669	2.7792	1.7512	0.6111	0.68484		26.000	62.695	4.2918	2.5992	1.6512	0.9795	0.74193
	12.000	82.938	4.9006	2.7892	1.7570	0.5964	0.68162		26.103	64.620	4.4426	2.6484	1.6775	0.9305	0.72663
	10.000	84.237	4.9264	2.7968	1.7615	0.5849	0.67914		26.000	66.480	4.5807	2.6921	1.7015	0.8849	0.71283
	8.000	85.463	4.9461	2.8025	1.7649	0.5760	0.67726		24.000	72.560	4.9728	2.8103	1.7695	0.7490	0.67473
	6.000	86.638	4.9606	2.8068	1.7674	0.5694	0.67588		22.000	75.420	5.1222	2.8531	1.7953	0.6936	0.66068

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
2.20	20.000	77.549	5.2175	2.8799	1.8117	0.6568	0.65185
	18.000	79.308	5.2856	2.8987	1.8234	0.6296	0.64562
	16.000	80.839	5.3369	2.9127	1.8323	0.6086	0.64096
	14.000	82.216	5.3764	2.9235	1.8391	0.5921	0.63739
	12.000	83.483	5.4073	2.9318	1.8444	0.5789	0.63462
	10.000	84.670	5.4313	2.9382	1.8485	0.5686	0.63247
	8.000	85.798	5.4497	2.9431	1.8517	0.5605	0.63083
	6.000	86.883	5.4633	2.9468	1.8540	0.5545	0.62962
	4.000	87.938	5.4727	2.9493	1.8556	0.5503	0.62879
	2.000	88.973	5.4782	2.9507	1.8565	0.5479	0.62830
2.25	2.000	27.926	1.1288	1.0903	1.0353	2.1725	0.99982
	4.000	29.555	1.2703	1.1859	1.0712	2.0962	0.99861
	6.000	31.277	1.4254	1.2864	1.1080	2.0203	0.99548
	8.000	33.102	1.5949	1.3916	1.1461	1.9443	0.98973
	10.000	35.034	1.7798	1.5011	1.1856	1.8674	0.98079
	12.000	37.088	1.9812	1.6147	1.2270	1.7891	0.96827
	14.000	39.277	2.2004	1.7319	1.2705	1.7088	0.95189
	16.000	41.623	2.4392	1.8527	1.3166	1.6257	0.93152
	18.000	44.161	2.7000	1.9770	1.3657	1.5388	0.90703
	20.000	46.948	2.9871	2.1055	1.4187	1.4466	0.87829
	22.000	50.091	3.3085	2.2400	1.4770	1.3464	0.84486
	24.000	53.837	3.6830	2.3854	1.5440	1.2318	0.80532
	26.000	59.122	4.1839	2.5632	1.6323	1.0792	0.75298
	26.795	64.633	4.6556	2.7153	1.7145	0.9321	0.70542
	26.000	69.627	5.0238	2.8250	1.7783	0.8115	0.66991
	24.000	73.634	5.2707	2.8946	1.8209	0.7254	0.64698
	22.000	76.145	5.4009	2.9301	1.8433	0.6775	0.63519
	20.000	78.098	5.4884	2.9534	1.8583	0.6441	0.62739
	18.000	79.744	5.5523	2.9703	1.8693	0.6189	0.62175
	16.000	81.192	5.6011	2.9830	1.8776	0.5993	0.61749
	14.000	82.504	5.6391	2.9929	1.8842	0.5836	0.61418
	12.000	83.716	5.6688	3.0006	1.8893	0.5711	0.61161
	10.000	84.856	5.6921	3.0065	1.8932	0.5612	0.60960
	8.000	85.942	5.7100	3.0111	1.8963	0.5535	0.60806
	6.000	86.988	5.7233	3.0145	1.8986	0.5477	0.60692
	4.000	88.007	5.7324	3.0168	1.9002	0.5437	0.60614
	2.000	89.008	5.7378	3.0182	1.9011	0.5413	0.60568
2.30	2.000	27.294	1.1311	1.0919	1.0359	2.2212	0.99981
	4.000	28.906	1.2753	1.1892	1.0724	2.1437	0.99854
	6.000	30.611	1.4336	1.2916	1.1099	2.0667	0.99526
	8.000	32.415	1.6068	1.3988	1.1487	1.9896	0.98923
	10.000	34.326	1.7959	1.5104	1.1890	1.9117	0.97989
	12.000	36.354	2.0019	1.6260	1.2311	1.8325	0.96684
	14.000	38.510	2.2261	1.7452	1.2755	1.7514	0.94982
2.30	16.000	40.816	2.4701	1.8678	1.3224	1.6676	0.92872
	18.000	43.299	2.7360	1.9936	1.3724	1.5804	0.90351
	20.000	46.007	3.0276	2.1230	1.4261	1.4885	0.87413
	22.000	49.026	3.3514	2.2573	1.4847	1.3894	0.84035
	24.000	52.536	3.7216	2.3998	1.5508	1.2788	0.80125
	26.000	57.077	4.1819	2.5625	1.6319	1.1425	0.75319
	27.454	64.653	4.8739	2.7813	1.7524	0.9338	0.68417
	26.000	71.264	5.3682	2.9212	1.8377	0.7743	0.63813
	24.000	74.512	5.5649	2.9736	1.8714	0.7060	0.62065
	22.000	76.770	5.6817	3.0039	1.8915	0.6635	0.61049
	20.000	78.582	5.7631	3.0246	1.9054	0.6328	0.60352
	18.000	80.133	5.8238	3.0399	1.9158	0.6092	0.59838
	16.000	81.509	5.8705	3.0515	1.9238	0.5906	0.59445
	14.000	82.764	5.9071	3.0606	1.9301	0.5757	0.59139
	12.000	83.928	5.9360	3.0677	1.9350	0.5638	0.58899
	10.000	85.026	5.9586	3.0732	1.9389	0.5543	0.58712
	8.000	86.074	5.9761	3.0775	1.9419	0.5469	0.58568
	6.000	87.085	5.9890	3.0807	1.9441	0.5413	0.58461
	4.000	88.070	5.9980	3.0828	1.9456	0.5374	0.58387
	2.000	89.039	6.0033	3.0841	1.9465	0.5352	0.58344
2.35	2.000	26.692	1.1334	1.0935	1.0365	2.2698	0.99980
	4.000	28.289	1.2804	1.1926	1.0736	2.1911	0.99846
	6.000	29.979	1.4420	1.2970	1.1118	2.1129	0.99502
	8.000	31.765	1.6189	1.4062	1.1513	2.0346	0.98872
	10.000	33.657	1.8124	1.5199	1.1924	1.9557	0.97895
	12.000	35.662	2.0232	1.6376	1.2354	1.8755	0.96534
	14.000	37.790	2.2526	1.7589	1.2807	1.7934	0.94765
	16.000	40.060	2.5021	1.8833	1.3285	1.7089	0.92580
	18.000	42.497	2.7736	2.0108	1.3794	1.6212	0.89981
	20.000	45.140	3.0705	2.1413	1.4339	1.5291	0.86971
	22.000	48.059	3.3981	2.2759	1.4931	1.4308	0.83542
	24.000	51.393	3.7677	2.4168	1.5590	1.3227	0.79639
	26.000	55.500	4.2092	2.5717	1.6367	1.1954	0.75038
	28.000	62.973	4.9459	2.8024	1.7648	0.9810	0.67729
	28.082	64.679	5.0977	2.8462	1.7911	0.9354	0.66296
	28.000	66.328	5.2377	2.8855	1.8152	0.8927	0.65000
	26.000	72.454	5.6907	3.0062	1.8930	0.7474	0.60972
	24.000	75.251	5.8587	3.0486	1.9218	0.6895	0.59544
	22.000	77.317	5.9657	3.0750	1.9401	0.6510	0.58653
	20.000	79.014	6.0423	3.0936	1.9532	0.6224	0.58024
	18.000	80.483	6.1001	3.1075	1.9631	0.6002	0.57554
	16.000	81.798	6.1451	3.1182	1.9707	0.5826	0.57191
	14.000	83.001	6.1806	3.1266	1.9768	0.5683	0.56907
	12.000	84.122	6.2087	3.1332	1.9816	0.5569	0.56683
	10.000	85.182	6.2308	3.1384	1.9854	0.5478	0.56508
	8.000	86.195	6.2479	3.1424	1.9883	0.5406	0.56372

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
2.35	6.000	87.174	6.2606	3.1453	1.9904	0.5353	0.56272
	4.000	88.129	6.2694	3.1474	1.9919	0.5315	0.56203
	2.000	89.068	6.2745	3.1486	1.9928	0.5293	0.56162
2.40	2.000	26.120	1.1358	1.0951	1.0371	2.3184	0.99979
	4.000	27.702	1.2856	1.1960	1.0749	2.2383	0.99839
	6.000	29.377	1.4505	1.3023	1.1138	2.1589	0.99478
	8.000	31.149	1.6314	1.4137	1.1540	2.0794	0.98818
	10.000	33.023	1.8292	1.5295	1.1959	1.9994	0.97797
	12.000	35.007	2.0450	1.6495	1.2398	1.9181	0.96377
	14.000	37.112	2.2798	1.7729	1.2860	1.8350	0.94538
	16.000	39.351	2.5351	1.8993	1.3348	1.7497	0.92274
	18.000	41.748	2.8128	2.0285	1.3866	1.6613	0.89592
	20.000	44.336	3.1155	2.1604	1.4421	1.5689	0.86505
	22.000	47.174	3.4480	2.2955	1.5021	1.4709	0.83015
	24.000	50.371	3.8196	2.4357	1.5682	1.3644	0.79093
	26.000	54.184	4.2521	2.5861	1.6442	1.2426	0.74598
	28.000	59.656	4.8382	2.7707	1.7462	1.0779	0.68761
	28.681	64.710	5.3269	2.9100	1.8305	0.9370	0.64187
	28.000	69.291	5.7130	3.0119	1.8968	0.8201	0.60781
	26.000	73.400	6.0048	3.0845	1.9468	0.7260	0.58331
	24.000	75.889	6.1539	3.1203	1.9722	0.6751	0.57121
	22.000	77.803	6.2534	3.1436	1.9892	0.6397	0.56329
	20.000	79.402	6.3260	3.1605	2.0016	0.6129	0.55758
	18.000	80.800	6.3816	3.1732	2.0111	0.5919	0.55326
	16.000	82.059	6.4251	3.1831	2.0185	0.5751	0.54990
	14.000	83.217	6.4596	3.1909	2.0244	0.5615	0.54726
	12.000	84.299	6.4870	3.1971	2.0290	0.5505	0.54517
	10.000	85.324	6.5087	3.2019	2.0327	0.5416	0.54352
	8.000	86.306	6.5254	3.2057	2.0356	0.5348	0.54225
	6.000	87.255	6.5379	3.2085	2.0377	0.5296	0.54131
	4.000	88.182	6.5466	3.2104	2.0392	0.5260	0.54065
	2.000	89.094	6.5517	3.2115	2.0400	0.5238	0.54027
2.45	2.000	25.572	1.1381	1.0968	1.0377	2.3670	0.99978
	4.000	27.143	1.2908	1.1994	1.0762	2.2855	0.99831
	6.000	28.805	1.4591	1.3078	1.1157	2.2048	0.99453
	8.000	30.563	1.6440	1.4212	1.1567	2.1241	0.98761
	10.000	32.422	1.8463	1.5393	1.1994	2.0428	0.97695
	12.000	34.388	2.0672	1.6615	1.2442	1.9603	0.96215
	14.000	36.472	2.3078	1.7871	1.2914	1.8762	0.94302
	16.000	38.685	2.5692	1.9156	1.3412	1.7898	0.91955
	18.000	41.047	2.8532	2.0466	1.3941	1.7006	0.89187
	20.000	43.588	3.1623	2.1800	1.4506	1.6077	0.86018
	22.000	46.358	3.5007	2.3160	1.5115	1.5097	0.82459
	24.000	49.445	3.8759	2.4560	1.5781	1.4042	0.78502
2.45	26.000	53.045	4.3053	2.6037	1.6535	1.2861	0.74055
	28.000	57.780	4.8455	2.7729	1.7475	1.1385	0.68691
	29.253	64.744	5.5614	2.9727	1.8708	0.9386	0.62095
	28.000	70.828	6.0810	3.1029	1.9598	0.7837	0.57709
	26.000	74.185	6.3161	3.1582	1.9999	0.7082	0.55836
	24.000	76.446	6.4516	3.1891	2.0230	0.6623	0.54787
	22.000	78.236	6.5451	3.2101	2.0389	0.6294	0.54076
	20.000	79.752	6.6146	3.2254	2.0508	0.6042	0.53555
	18.000	81.089	6.6682	3.2372	2.0599	0.5842	0.53157
	16.000	82.299	6.7105	3.2464	2.0671	0.5681	0.52845
	14.000	83.416	6.7442	3.2536	2.0728	0.5550	0.52599
	12.000	84.462	6.7710	3.2594	2.0774	0.5444	0.52403
	10.000	85.455	6.7923	3.2640	2.0810	0.5359	0.52249
	8.000	86.408	6.8088	3.2675	2.0838	0.5292	0.52129
	6.000	87.331	6.8211	3.2701	2.0859	0.5242	0.52041
	4.000	88.232	6.8296	3.2719	2.0873	0.5207	0.51979
	2.000	89.119	6.8346	3.2730	2.0882	0.5186	0.51943
2.50	2.000	25.050	1.1405	1.0984	1.0384	2.4155	0.99977
	4.000	26.609	1.2961	1.2029	1.0775	2.3326	0.99822
	6.000	28.259	1.4679	1.3133	1.1177	2.2505	0.99427
	8.000	30.005	1.6568	1.4289	1.1595	2.1685	0.98703
	10.000	31.851	1.8639	1.5493	1.2031	2.0859	0.97589
	12.000	33.802	2.0900	1.6737	1.2488	2.0022	0.96046
	14.000	35.866	2.3364	1.8015	1.2969	1.9169	0.94057
	16.000	38.057	2.6042	1.9322	1.3478	1.8295	0.91625
	18.000	40.389	2.8949	2.0652	1.4018	1.7394	0.88767
	20.000	42.890	3.2109	2.2002	1.4594	1.6458	0.85510
	22.000	45.602	3.5558	2.3373	1.5213	1.5475	0.81877
	24.000	48.600	3.9361	2.4775	1.5887	1.4426	0.77871
	26.000	52.036	4.3657	2.6235	1.6641	1.3268	0.73441
	28.000	56.335	4.8844	2.7844	1.7542	1.1888	0.68317
	29.797	64.782	5.8014	3.0342	1.9120	0.9402	0.60027
	28.000	71.949	6.4249	3.1831	2.0185	0.7573	0.54992
	26.000	74.856	6.6273	3.2282	2.0529	0.6928	0.53460
	24.000	76.939	6.7526	3.2555	2.0742	0.6509	0.52537
	22.000	78.625	6.8414	3.2744	2.0893	0.6201	0.51894
	20.000	80.070	6.9082	3.2885	2.1007	0.5962	0.51417
	18.000	81.353	6.9602	3.2994	2.1095	0.5770	0.51048
	16.000	82.518	7.0014	3.3080	2.1165	0.5616	0.50759
	14.000	83.598	7.0343	3.3148	2.1221	0.5489	0.50528
	12.000	84.612	7.0607	3.3202	2.1266	0.5387	0.50345
	10.000	85.576	7.0816	3.3245	2.1301	0.5304	0.50200
	8.000	86.502	7.0979	3.3278	2.1329	0.5240	0.50088
	6.000	87.400	7.1100	3.3303	2.1350	0.5191	0.50005
	4.000	88.277	7.1184	3.3320	2.1364	0.5157	0.49947
	2.000	89.142	7.1234	3.3330	2.1372	0.5137	0.49913

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
2.55	2.000	24.550	1.1429	1.1001	1.0390	2.4639	0.99976
	4.000	26.099	1.3015	1.2065	1.0788	2.3796	0.99814
	6.000	27.739	1.4768	1.3189	1.1198	2.2961	0.99399
	8.000	29.474	1.6699	1.4367	1.1623	2.2128	0.98642
	10.000	31.307	1.8817	1.5593	1.2067	2.1288	0.97479
	12.000	33.244	2.1133	1.6861	1.2534	2.0438	0.95871
	14.000	35.293	2.3656	1.8162	1.3025	1.9573	0.93803
	16.000	37.463	2.6399	1.9490	1.3545	1.8687	0.91283
	18.000	39.770	2.9378	2.0840	1.4097	1.7776	0.88333
	20.000	42.236	3.2611	2.2207	1.4685	1.6832	0.84985
	22.000	44.899	3.6130	2.3591	1.5315	1.5845	0.81272
	24.000	47.822	3.9995	2.4998	1.5999	1.4797	0.77209
	26.000	51.130	4.4319	2.6449	1.6756	1.3655	0.72772
	28.000	55.131	4.9401	2.8007	1.7638	1.2334	0.67784
	30.000	61.449	5.6866	3.0051	1.8923	1.0385	0.61007
	30.317	64.823	6.0466	3.0946	1.9539	0.9418	0.57989
	30.000	67.966	6.3519	3.1664	2.0060	0.8568	0.55557
	28.000	72.844	6.7595	3.2569	2.0754	0.7364	0.52487
	26.000	75.440	6.9402	3.2952	2.1061	0.6793	0.51190
	24.000	77.380	7.0575	3.3195	2.1260	0.6405	0.50368
	22.000	78.978	7.1423	3.3368	2.1404	0.6115	0.49783
	20.000	80.360	7.2068	3.3499	2.1514	0.5887	0.49343
	18.000	81.594	7.2575	3.3600	2.1600	0.5703	0.49002
	16.000	82.720	7.2978	3.3680	2.1668	0.5554	0.48732
	14.000	83.766	7.3301	3.3744	2.1723	0.5432	0.48517
	12.000	84.750	7.3561	3.3795	2.1767	0.5333	0.48345
	10.000	85.688	7.3767	3.3835	2.1802	0.5253	0.48209
	8.000	86.590	7.3927	3.3866	2.1829	0.5190	0.48104
	6.000	87.464	7.4047	3.3890	2.1849	0.5142	0.48025
	4.000	88.320	7.4131	3.3906	2.1864	0.5109	0.47971
	2.000	89.163	7.4180	3.3916	2.1872	0.5090	0.47939
2.60	2.000	24.071	1.1454	1.1017	1.0396	2.5123	0.99975
	4.000	25.611	1.3070	1.2100	1.0801	2.4265	0.99805
	6.000	27.241	1.4858	1.3245	1.1218	2.3416	0.99371
	8.000	28.966	1.6831	1.4445	1.1651	2.2568	0.98579
	10.000	30.789	1.8998	1.5695	1.2105	2.1715	0.97365
	12.000	32.714	2.1369	1.6986	1.2580	2.0852	0.95690
	14.000	34.749	2.3955	1.8311	1.3082	1.9973	0.93541
	16.000	36.901	2.6767	1.9662	1.3613	1.9075	0.90930
	18.000	39.185	2.9817	2.1032	1.4177	1.8152	0.87884
	20.000	41.621	3.3126	2.2417	1.4778	1.7199	0.84443
	22.000	44.242	3.6723	2.3814	1.5421	1.6205	0.80645
	24.000	47.102	4.0658	2.5229	1.6116	1.5157	0.76520
	26.000	50.305	4.5028	2.6675	1.6880	1.4025	0.72060
	28.000	54.088	5.0067	2.8201	1.7754	1.2744	0.67151
	30.000	59.352	5.6706	3.0010	1.8896	1.1062	0.61145

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
2.60	30.814	64.866	6.2972	3.1538	1.9967	0.9433	0.55984
	30.000	69.778	6.7777	3.2609	2.0785	0.8111	0.52354
	28.000	73.590	7.0906	3.3263	2.1317	0.7189	0.50138
	26.000	75.955	7.2555	3.3596	2.1596	0.6673	0.49015
	24.000	77.778	7.3665	3.3815	2.1785	0.6311	0.48276
	22.000	79.299	7.4481	3.3974	2.1923	0.6035	0.47742
	20.000	80.626	7.5108	3.4095	2.2029	0.5817	0.47336
	18.000	81.815	7.5602	3.4189	2.2113	0.5641	0.47020
	16.000	82.906	7.5997	3.4264	2.2180	0.5497	0.46768
	14.000	83.922	7.6316	3.4324	2.2234	0.5378	0.46566
	12.000	84.879	7.6572	3.4372	2.2277	0.5282	0.46405
	10.000	85.792	7.6775	3.4411	2.2312	0.5204	0.46277
	8.000	86.671	7.6934	3.4440	2.2338	0.5143	0.46178
	6.000	87.524	7.7053	3.4462	2.2359	0.5096	0.46104
	4.000	88.359	7.7135	3.4478	2.2372	0.5064	0.46053
	2.000	89.183	7.7184	3.4487	2.2381	0.5045	0.46022
2.65	2.000	23.613	1.1479	1.1034	1.0403	2.5607	0.99973
	4.000	25.144	1.3124	1.2136	1.0814	2.4734	0.99796
	6.000	26.766	1.4950	1.3302	1.1239	2.3869	0.99341
	8.000	28.482	1.6966	1.4525	1.1680	2.3007	0.98514
	10.000	30.295	1.9182	1.5798	1.2142	2.2139	0.97247
	12.000	32.210	2.1610	1.7113	1.2628	2.1262	0.95502
	14.000	34.232	2.4260	1.8462	1.3141	2.0370	0.93270
	16.000	36.368	2.7141	1.9835	1.3683	1.9459	0.90566
	18.000	38.632	3.0267	2.1226	1.4259	1.8524	0.87423
	20.000	41.043	3.3657	2.2630	1.4873	1.7560	0.83884
	22.000	43.627	3.7335	2.4042	1.5529	1.6559	0.80000
	24.000	46.433	4.1347	2.5465	1.6237	1.5507	0.75806
	26.000	49.549	4.5776	2.6911	1.7010	1.4380	0.71313
	28.000	53.164	5.0815	2.8416	1.7883	1.3126	0.66448
	30.000	57.877	5.7097	3.0110	1.8963	1.1576	0.60809
	31.288	64.910	6.5531	3.2118	2.0403	0.9447	0.54016
	30.000	70.983	7.1564	3.3397	2.1428	0.7814	0.49687
	28.000	74.230	7.4211	3.3922	2.1877	0.7039	0.47918
	26.000	76.415	7.5742	3.4216	2.2137	0.6565	0.46930
	24.000	78.138	7.6801	3.4415	2.2316	0.6224	0.46262
	22.000	79.592	7.7589	3.4562	2.2449	0.5962	0.45771
	20.000	80.870	7.8200	3.4674	2.2553	0.5752	0.45396
	18.000	82.020	7.8684	3.4763	2.2634	0.5582	0.45101
	16.000	83.079	7.9073	3.4833	2.2700	0.5442	0.44866
	14.000	84.066	7.9387	3.4890	2.2753	0.5327	0.44677
	12.000	84.998	7.9640	3.4935	2.2796	0.5234	0.44526
	10.000	85.888	7.9841	3.4972	2.2830	0.5158	0.44406
	8.000	86.746	7.9999	3.5000	2.2857	0.5098	0.44312
	6.000	87.579	8.0116	3.5021	2.2877	0.5053	0.44242

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
2.65	4.000	88.396	8.0198	3.5035	2.2891	0.5021	0.44194
	2.000	89.200	8.0247	3.5044	2.2899	0.5003	0.44165
2.70	2.000	23.173	1.1503	1.1051	1.0409	2.6090	0.99972
	4.000	24.696	1.3179	1.2172	1.0827	2.5201	0.99786
	6.000	26.311	1.5042	1.3360	1.1260	2.4321	0.99311
	8.000	28.019	1.7102	1.4605	1.1709	2.3444	0.98446
	10.000	29.824	1.9369	1.5902	1.2180	2.2561	0.97125
	12.000	31.728	2.1855	1.7241	1.2676	2.1669	0.95309
	14.000	33.739	2.4569	1.8614	1.3199	2.0763	0.92991
	16.000	35.862	2.7523	2.0010	1.3754	1.9838	0.90191
	18.000	38.109	3.0727	2.1423	1.4343	1.8890	0.86948
	20.000	40.496	3.4200	2.2845	1.4970	1.7915	0.83311
	22.000	43.049	3.7964	2.4273	1.5641	1.6905	0.79337
	24.000	45.809	4.2059	2.5706	1.6362	1.5848	0.75072
	26.000	48.852	4.6560	2.7155	1.7146	1.4723	0.70538
	28.000	52.334	5.1626	2.8645	1.8022	1.3488	0.65692
	30.000	56.687	5.7730	3.0271	1.9071	1.2018	0.60268
	31.741	64.956	6.8143	3.2687	2.0847	0.9462	0.52090
	30.000	71.913	7.5186	3.4110	2.2042	0.7587	0.47286
	28.000	74.790	7.7529	3.4551	2.2439	0.6907	0.45808
	26.000	76.828	7.8967	3.4814	2.2682	0.6468	0.44930
	24.000	78.466	7.9983	3.4997	2.2854	0.6145	0.44321
	22.000	79.862	8.0748	3.5133	2.2984	0.5893	0.43870
	20.000	81.095	8.1345	3.5238	2.3085	0.5691	0.43522
	18.000	82.210	8.1821	3.5321	2.3165	0.5527	0.43247
	16.000	83.238	8.2204	3.5388	2.3230	0.5391	0.43027
	14.000	84.199	8.2515	3.5441	2.3282	0.5279	0.42850
	12.000	85.109	8.2765	3.5484	2.3324	0.5188	0.42708
	10.000	85.978	8.2965	3.5518	2.3358	0.5114	0.42595
	8.000	86.816	8.3121	3.5545	2.3385	0.5056	0.42506
	6.000	87.631	8.3238	3.5565	2.3404	0.5012	0.42441
	4.000	88.430	8.3319	3.5579	2.3418	0.4981	0.42395
	2.000	89.218	8.3367	3.5587	2.3426	0.4962	0.42368
2.75	2.000	22.750	1.1528	1.1068	1.0415	2.6573	0.99971
	4.000	24.267	1.3236	1.2209	1.0841	2.5667	0.99776
	6.000	25.873	1.5135	1.3417	1.1280	2.4772	0.99279
	8.000	27.575	1.7239	1.4686	1.1738	2.3879	0.98377
	10.000	29.372	1.9558	1.6007	1.2219	2.2982	0.96999
	12.000	31.269	2.2104	1.7371	1.2724	2.2074	0.95109
	14.000	33.269	2.4885	1.8768	1.3259	2.1153	0.92704
	16.000	35.381	2.7912	2.0188	1.3826	2.0213	0.89806
	18.000	37.612	3.1197	2.1622	1.4429	1.9253	0.86461
	20.000	39.980	3.4757	2.3063	1.5070	1.8265	0.82724
	22.000	42.504	3.8610	2.4506	1.5755	1.7245	0.78659

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
2.75	24.000	45.225	4.2794	2.5951	1.6490	1.6181	0.74319
	26.000	48.206	4.7375	2.7404	1.7288	1.5056	0.69739
	28.000	51.579	5.2490	2.8886	1.8171	1.3832	0.64896
	30.000	55.674	5.8507	3.0466	1.9204	1.2416	0.59611
	32.000	62.549	6.7812	3.2616	2.0791	1.0209	0.52329
	32.173	65.002	7.0807	3.3243	2.1300	0.9476	0.50207
	32.000	67.323	7.3448	3.3773	2.1748	0.8812	0.48420
	30.000	72.678	7.8741	3.4773	2.2644	0.7401	0.45066
	28.000	75.285	8.0870	3.5154	2.3004	0.6789	0.43799
	26.000	77.202	8.2233	3.5393	2.3235	0.6378	0.43010
	24.000	78.766	8.3214	3.5561	2.3400	0.6071	0.42454
	22.000	80.110	8.3960	3.5688	2.3526	0.5829	0.42037
	20.000	81.303	8.4545	3.5786	2.3625	0.5634	0.41714
	18.000	82.386	8.5014	3.5864	2.3704	0.5474	0.41457
	16.000	83.387	8.5392	3.5927	2.3768	0.5343	0.41251
	14.000	84.324	8.5699	3.5978	2.3820	0.5234	0.41085
	12.000	85.212	8.5948	3.6019	2.3862	0.5145	0.40951
	10.000	86.062	8.6146	3.6051	2.3895	0.5072	0.40845
	8.000	86.882	8.6301	3.6077	2.3922	0.5015	0.40762
	6.000	87.680	8.6418	3.6096	2.3941	0.4972	0.40700
	4.000	88.462	8.6499	3.6109	2.3955	0.4942	0.40656
	2.000	89.234	8.6547	3.6117	2.3963	0.4924	0.40631
2.80	2.000	22.344	1.1553	1.1085	1.0422	2.7056	0.99969
	4.000	23.854	1.3292	1.2246	1.0854	2.6133	0.99766
	6.000	25.455	1.5230	1.3476	1.1302	2.5222	0.99246
	8.000	27.150	1.7379	1.4768	1.1768	2.4313	0.98304
	10.000	28.940	1.9751	1.6113	1.2257	2.3399	0.96869
	12.000	30.830	2.2357	1.7502	1.2774	2.2476	0.94903
	14.000	32.822	2.5205	1.8923	1.3320	2.1540	0.92409
	16.000	34.923	2.8309	2.0367	1.3900	2.0585	0.89411
	18.000	37.141	3.1677	2.1822	1.4516	1.9610	0.85962
	20.000	39.490	3.5324	2.3283	1.5172	1.8610	0.82123
	22.000	41.990	3.9271	2.4743	1.5872	1.7578	0.77965
	24.000	44.676	4.3550	2.6200	1.6622	1.6506	0.73549
	26.000	47.604	4.8219	2.7658	1.7434	1.5379	0.68919
	28.000	50.887	5.3398	2.9135	1.8328	1.4163	0.64070
	30.000	54.786	5.9387	3.0683	1.9355	1.2783	0.58877
	32.000	60.433	6.7529	3.2555	2.0743	1.0909	0.52535
	32.587	65.050	7.3524	3.3788	2.1761	0.9490	0.48369
	32.000	69.211	7.8278	3.4689	2.2566	0.8307	0.45348
	30.000	73.328	8.2272	3.5399	2.3241	0.7243	0.42988
	28.000	75.728	8.4241	3.5735	2.3574	0.6684	0.41882
	26.000	77.543	8.5544	3.5952	2.3794	0.6296	0.41169
	24.000	79.042	8.6495	3.6108	2.3954	0.6002	0.40659
	22.000	80.339	8.7224	3.6227	2.4077	0.5769	0.40273
	20.000	81.496	8.7800	3.6319	2.4174	0.5580	0.39971

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
2.80	18.000	82.550	8.8262	3.6393	2.4252	0.5425	0.39731
	16.000	83.525	8.8637	3.6453	2.4316	0.5297	0.39538
	14.000	84.440	8.8942	3.6501	2.4367	0.5191	0.39382
	12.000	85.308	8.9188	3.6540	2.4409	0.5103	0.39256
	10.000	86.140	8.9385	3.6571	2.4442	0.5033	0.39156
	8.000	86.943	8.9540	3.6595	2.4468	0.4977	0.39078
	6.000	87.725	8.9656	3.6613	2.4487	0.4935	0.39019
	4.000	88.492	8.9737	3.6626	2.4501	0.4905	0.38978
	2.000	89.248	8.9784	3.6633	2.4509	0.4887	0.38954
2.85	2.000	21.954	1.1579	1.1103	1.0429	2.7537	0.99968
	4.000	23.457	1.3349	1.2283	1.0868	2.6598	0.99755
	6.000	25.052	1.5325	1.3535	1.1323	2.5670	0.99213
	8.000	26.742	1.7520	1.4850	1.1798	2.4744	0.98230
	10.000	28.526	1.9946	1.6220	1.2297	2.3815	0.96735
	12.000	30.410	2.2613	1.7634	1.2824	2.2876	0.94692
	14.000	32.394	2.5532	1.9080	1.3382	2.1923	0.92105
	16.000	34.486	2.8712	2.0547	1.3974	2.0953	0.89006
	18.000	36.692	3.2165	2.2025	1.4604	1.9964	0.85451
	20.000	39.025	3.5904	2.3505	1.5275	1.8950	0.81511
	22.000	41.505	3.9948	2.4982	1.5991	1.7906	0.77258
	24.000	44.160	4.4325	2.6451	1.6757	1.6825	0.72766
	26.000	47.042	4.9089	2.7916	1.7585	1.5692	0.68081
	28.000	50.247	5.4345	2.9391	1.8490	1.4481	0.63219
	30.000	53.992	6.0344	3.0917	1.9518	1.3127	0.58089
	32.000	59.037	6.8013	3.2659	2.0825	1.1407	0.52183
	32.984	65.097	7.6294	3.4320	2.2230	0.9503	0.46580
	32.000	70.389	8.2421	3.5425	2.3266	0.8001	0.42903
	30.000	73.893	8.5802	3.5995	2.3837	0.7107	0.41030
	28.000	76.127	8.7648	3.6295	2.4149	0.6588	0.40050
	26.000	77.855	8.8902	3.6495	2.4360	0.6220	0.39402
	24.000	79.297	8.9827	3.6640	2.4516	0.5938	0.38933
	22.000	80.552	9.0543	3.6751	2.4637	0.5713	0.38574
	20.000	81.676	9.1110	3.6838	2.4733	0.5530	0.38294
	18.000	82.702	9.1567	3.6908	2.4810	0.5379	0.38069
	16.000	83.655	9.1938	3.6964	2.4872	0.5253	0.37888
	14.000	84.549	9.2241	3.7010	2.4923	0.5150	0.37741
	12.000	85.399	9.2486	3.7047	2.4964	0.5064	0.37623
	10.000	86.213	9.2683	3.7077	2.4998	0.4995	0.37528
	8.000	87.001	9.2836	3.7100	2.5023	0.4940	0.37454
	6.000	87.768	9.2952	3.7117	2.5043	0.4899	0.37399
	4.000	88.520	9.3033	3.7129	2.5057	0.4870	0.37360
	2.000	89.262	9.3080	3.7136	2.5065	0.4853	0.37338
2.90	2.000	21.578	1.1604	1.1120	1.0435	2.8019	0.99966
	4.000	23.076	1.3406	1.2320	1.0882	2.7062	0.99744

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
2.90	6.000	24.666	1.5421	1.3594	1.1344	2.6117	0.99178
	8.000	26.350	1.7663	1.4933	1.1828	2.5175	0.98153
	10.000	28.129	2.0143	1.6328	1.2336	2.4229	0.96597
	12.000	30.007	2.2873	1.7767	1.2874	2.3273	0.94475
	14.000	31.985	2.5863	1.9238	1.3444	2.2304	0.91794
	16.000	34.069	2.9123	2.0729	1.4050	2.1318	0.88591
	18.000	36.264	3.2663	2.2229	1.4694	2.0313	0.84930
	20.000	38.584	3.6496	2.3729	1.5380	1.9285	0.80886
	22.000	41.044	4.0638	2.5222	1.6112	1.8229	0.76540
	24.000	43.672	4.5119	2.6704	1.6896	1.7138	0.71969
	26.000	46.515	4.9984	2.8177	1.7739	1.5999	0.67230
	28.000	49.655	5.5328	2.9652	1.8659	1.4788	0.62347
	30.000	53.274	6.1364	3.1161	1.9692	1.3453	0.57262
	32.000	57.931	6.8791	3.2824	2.0957	1.1827	0.51624
	33.363	65.145	7.9116	3.4841	2.2708	0.9516	0.44840
	32.000	71.287	8.6350	3.6085	2.3930	0.7771	0.40736
	30.000	74.392	8.9347	3.6565	2.4435	0.6985	0.39175
	28.000	76.490	9.1095	3.6836	2.4730	0.6500	0.38301
	26.000	78.142	9.2307	3.7020	2.4934	0.6149	0.37709
	24.000	79.533	9.3212	3.7156	2.5087	0.5878	0.37275
	22.000	80.750	9.3915	3.7260	2.5205	0.5660	0.36942
	20.000	81.843	9.4475	3.7343	2.5300	0.5482	0.36680
	18.000	82.845	9.4928	3.7409	2.5376	0.5335	0.36469
	16.000	83.775	9.5296	3.7462	2.5438	0.5212	0.36299
	14.000	84.651	9.5597	3.7506	2.5489	0.5111	0.36161
	12.000	85.484	9.5842	3.7541	2.5530	0.5027	0.36049
	10.000	86.283	9.6038	3.7570	2.5563	0.4959	0.35960
	8.000	87.055	9.6191	3.7592	2.5588	0.4906	0.35890
	6.000	87.808	9.6306	3.7608	2.5608	0.4865	0.35838
	4.000	88.546	9.6387	3.7620	2.5621	0.4836	0.35802
	2.000	89.275	9.6434	3.7626	2.5629	0.4819	0.35780
2.95	2.000	21.216	1.1630	1.1138	1.0442	2.8500	0.99965
	4.000	22.708	1.3464	1.2357	1.0895	2.7526	0.99732
	6.000	24.294	1.5518	1.3654	1.1366	2.6563	0.99142
	8.000	25.974	1.7807	1.5017	1.1858	2.5604	0.98074
	10.000	27.749	2.0343	1.6437	1.2377	2.4640	0.96454
	12.000	29.621	2.3137	1.7901	1.2925	2.3668	0.94252
	14.000	31.593	2.6199	1.9396	1.3507	2.2682	0.91475
	16.000	33.670	2.9540	2.0911	1.4126	2.1679	0.88168
	18.000	35.856	3.3169	2.2434	1.4785	2.0658	0.84398
	20.000	38.164	3.7098	2.3954	1.5487	1.9615	0.80249
	22.000	40.607	4.1344	2.5464	1.6236	1.8546	0.75809
	24.000	43.211	4.5930	2.6959	1.7037	1.7444	0.71160
	26.000	46.018	5.0902	2.8441	1.7898	1.6297	0.66366
	28.000	49.102	5.6343	2.9916	1.8833	1.5085	0.61460
	30.000	52.618	6.2438	3.1414	1.9876	1.3762	0.56404

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
2.95	32.000	56.997	6.9741	3.3023	2.1119	1.2199	0.50950
	33.726	65.193	8.1990	3.5350	2.3194	0.9528	0.43150
	32.000	72.020	9.0188	3.6696	2.4577	0.7585	0.38752
	30.000	74.838	9.2917	3.7112	2.5037	0.6877	0.37416
	28.000	76.821	9.4585	3.7359	2.5318	0.6420	0.36628
	26.000	78.407	9.5762	3.7530	2.5516	0.6084	0.36086
	24.000	79.752	9.6649	3.7657	2.5666	0.5821	0.35684
	22.000	80.935	9.7342	3.7755	2.5782	0.5610	0.35374
	20.000	82.000	9.7896	3.7834	2.5875	0.5437	0.35128
	18.000	82.978	9.8345	3.7896	2.5951	0.5293	0.34931
	16.000	83.889	9.8712	3.7947	2.6013	0.5173	0.34771
	14.000	84.747	9.9012	3.7989	2.6063	0.5074	0.34641
	12.000	85.563	9.9255	3.8023	2.6104	0.4992	0.34536
	10.000	86.348	9.9450	3.8050	2.6137	0.4925	0.34452
	8.000	87.106	9.9604	3.8071	2.6163	0.4872	0.34386
	6.000	87.845	9.9719	3.8087	2.6182	0.4832	0.34336
	4.000	88.571	9.9799	3.8098	2.6196	0.4804	0.34302
	2.000	89.288	9.9847	3.8104	2.6204	0.4788	0.34282
3.00	2.000	20.867	1.1656	1.1155	1.0449	2.8981	0.99963
	4.000	22.355	1.3522	1.2395	1.0909	2.7988	0.99721
	6.000	23.936	1.5616	1.3714	1.1387	2.7008	0.99105
	8.000	25.611	1.7953	1.5101	1.1888	2.6031	0.97993
	10.000	27.383	2.0545	1.6546	1.2417	2.5050	0.96308
	12.000	29.251	2.3404	1.8036	1.2977	2.4060	0.94022
	14.000	31.218	2.6540	1.9556	1.3571	2.3056	0.91148
	16.000	33.288	2.9964	2.1095	1.4204	2.2037	0.87734
	18.000	35.467	3.3685	2.2641	1.4878	2.1000	0.83855
	20.000	37.764	3.7713	2.4181	1.5596	1.9941	0.79602
	22.000	40.192	4.2064	2.5708	1.6362	1.8858	0.75068
	24.000	42.775	4.6761	2.7216	1.7181	1.7744	0.70340
	26.000	45.552	5.1844	2.8706	1.8060	1.6589	0.65491
	28.000	48.586	5.7388	3.0184	1.9012	1.5374	0.60560
	30.000	52.014	6.3559	3.1673	2.0067	1.4059	0.55526
	32.000	56.182	7.0810	3.3244	2.1300	1.2541	0.50205
	34.000	63.673	8.2682	3.5470	2.3310	1.0029	0.42755
	34.073	65.241	8.4917	3.5848	2.3688	0.9540	0.41510
	34.000	66.749	8.6971	3.6186	2.4035	0.9083	0.40406
	32.000	72.642	9.3988	3.7271	2.5217	0.7428	0.36908
	30.000	75.239	9.6517	3.7638	2.5643	0.6779	0.35743
	28.000	77.126	9.8121	3.7865	2.5913	0.6345	0.35029
	26.000	78.652	9.9268	3.8024	2.6106	0.6022	0.34530
	24.000	79.956	10.0139	3.8144	2.6253	0.5768	0.34157
	22.000	81.106	10.0824	3.8237	2.6368	0.5563	0.33868
	20.000	82.147	10.1373	3.8311	2.6460	0.5394	0.33638
	18.000	83.103	10.1819	3.8371	2.6536	0.5253	0.33453
	16.000	83.996	10.2184	3.8420	2.6597	0.5136	0.33302

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
3.00	14.000	84.837	10.2483	3.8459	2.6647	0.5038	0.33180
	12.000	85.638	10.2726	3.8491	2.6688	0.4958	0.33081
	10.000	86.408	10.2921	3.8517	2.6721	0.4892	0.33001
	8.000	87.154	10.3074	3.8537	2.6747	0.4841	0.32939
	6.000	87.881	10.3190	3.8553	2.6766	0.4801	0.32892
	4.000	88.594	10.3270	3.8563	2.6779	0.4774	0.32860
	2.000	89.299	10.3318	3.8569	2.6787	0.4757	0.32841
3.05	2.000	20.530	1.1681	1.1173	1.0455	2.9462	0.99962
	4.000	22.014	1.3581	1.2433	1.0923	2.8450	0.99708
	6.000	23.591	1.5716	1.3774	1.1409	2.7451	0.99066
	8.000	25.263	1.8100	1.5186	1.1919	2.6457	0.97909
	10.000	27.031	2.0749	1.6656	1.2458	2.5458	0.96158
	12.000	28.895	2.3674	1.8171	1.3029	2.4450	0.93788
	14.000	30.859	2.6886	1.9717	1.3636	2.3429	0.90814
	16.000	32.923	3.0394	2.1281	1.4282	2.2392	0.87292
	18.000	35.095	3.4208	2.2848	1.4972	2.1338	0.83303
	20.000	37.382	3.8338	2.4408	1.5707	2.0263	0.78944
	22.000	39.797	4.2796	2.5952	1.6490	1.9166	0.74317
	24.000	42.361	4.7607	2.7474	1.7328	1.8039	0.69513
	26.000	45.110	5.2806	2.8973	1.8226	1.6874	0.64608
	28.000	48.102	5.8462	3.0455	1.9196	1.5654	0.59649
	30.000	51.455	6.4722	3.1938	2.0265	1.4345	0.54630
	32.000	55.456	7.1967	3.3478	2.1497	1.2858	0.49412
	34.000	61.505	8.2161	3.5380	2.3222	1.0765	0.43052
	34.407	65.288	8.7895	3.6335	2.4190	0.9552	0.39922
	34.000	68.742	9.2596	3.7064	2.4983	0.8514	0.37570
	32.000	73.184	9.7779	3.7817	2.5856	0.7291	0.35180
	30.000	75.604	10.0154	3.8146	2.6255	0.6689	0.34151
	28.000	77.406	10.1703	3.8355	2.6516	0.6276	0.33501
	26.000	78.880	10.2825	3.8505	2.6705	0.5965	0.33040
	24.000	80.145	10.3683	3.8617	2.6849	0.5719	0.32694
	22.000	81.267	10.4361	3.8705	2.6963	0.5518	0.32423
	20.000	82.284	10.4906	3.8776	2.7055	0.5353	0.32208
	18.000	83.221	10.5350	3.8833	2.7129	0.5215	0.32034
	16.000	84.095	10.5714	3.8879	2.7190	0.5100	0.31892
	14.000	84.921	10.6012	3.8917	2.7240	0.5005	0.31777
	12.000	85.709	10.6255	3.8948	2.7281	0.4926	0.31683
	10.000	86.466	10.6450	3.8973	2.7314	0.4861	0.31608
	8.000	87.199	10.6603	3.8992	2.7340	0.4810	0.31549
	6.000	87.914	10.6719	3.9007	2.7359	0.4772	0.31505
	4.000	88.617	10.6799	3.9017	2.7373	0.4744	0.31474
	2.000	89.310	10.6847	3.9023	2.7381	0.4728	0.31456
3.10	2.000	20.205	1.1707	1.1190	1.0462	2.9942	0.99960
	4.000	21.684	1.3640	1.2471	1.0937	2.8911	0.99696

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
3.10	6.000	23.258	1.5815	1.3835	1.1431	2.7894	0.99027
	8.000	24.927	1.8249	1.5271	1.1950	2.6881	0.97822
	10.000	26.692	2.0956	1.6767	1.2499	2.5864	0.96004
	12.000	28.554	2.3949	1.8308	1.3081	2.4837	0.93546
	14.000	30.513	2.7236	1.9879	1.3701	2.3798	0.90473
	16.000	32.574	3.0831	2.1467	1.4362	2.2743	0.86841
	18.000	34.739	3.4740	2.3057	1.5067	2.1672	0.82741
	20.000	37.017	3.8973	2.4637	1.5819	2.0581	0.78278
	22.000	39.421	4.3543	2.6198	1.6621	1.9468	0.73556
	24.000	41.968	4.8470	2.7733	1.7477	1.8329	0.68676
	26.000	44.692	5.3788	2.9241	1.8395	1.7154	0.63718
	28.000	47.646	5.9563	3.0727	1.9385	1.5928	0.58731
	30.000	50.935	6.5922	3.2205	2.0470	1.4620	0.53722
	32.000	54.800	7.3197	3.3723	2.1705	1.3157	0.48586
	34.000	60.205	8.2768	3.5485	2.3325	1.1241	0.42706
	34.726	65.335	9.0925	3.6810	2.4701	0.9564	0.38385
	34.000	69.872	9.7174	3.7732	2.5754	0.8203	0.35449
	32.000	73.661	10.1577	3.8339	2.6495	0.7171	0.33553
	30.000	75.938	10.3831	3.8636	2.6874	0.6607	0.32634
	28.000	77.666	10.5334	3.8831	2.7126	0.6212	0.32040
	26.000	79.091	10.6435	3.8971	2.7311	0.5911	0.31614
	24.000	80.324	10.7282	3.9077	2.7454	0.5671	0.31291
	22.000	81.419	10.7954	3.9161	2.7567	0.5476	0.31038
	20.000	82.413	10.8496	3.9228	2.7658	0.5314	0.30836
	18.000	83.331	10.8938	3.9282	2.7732	0.5179	0.30672
	16.000	84.189	10.9301	3.9327	2.7793	0.5067	0.30539
	14.000	85.001	10.9599	3.9363	2.7843	0.4973	0.30430
	12.000	85.775	10.9842	3.9393	2.7884	0.4895	0.30341
	10.000	86.520	11.0037	3.9416	2.7917	0.4832	0.30270
	8.000	87.242	11.0190	3.9435	2.7942	0.4781	0.30215
	6.000	87.945	11.0306	3.9449	2.7962	0.4743	0.30173
	4.000	88.637	11.0387	3.9458	2.7975	0.4716	0.30144
	2.000	89.321	11.0434	3.9464	2.7983	0.4701	0.30127
3.15	2.000	19.891	1.1734	1.1208	1.0469	3.0421	0.99958
	4.000	21.366	1.3699	1.2510	1.0951	2.9371	0.99683
	6.000	22.937	1.5915	1.3896	1.1453	2.8336	0.98986
	8.000	24.603	1.8399	1.5357	1.1981	2.7304	0.97734
	10.000	26.366	2.1166	1.6878	1.2540	2.6267	0.95846
	12.000	28.225	2.4226	1.8445	1.3134	2.5222	0.93300
	14.000	30.181	2.7592	2.0042	1.3767	2.4165	0.90123
	16.000	32.238	3.1273	2.1654	1.4443	2.3092	0.86382
	18.000	34.398	3.5279	2.3266	1.5163	2.2003	0.82172
	20.000	36.668	3.9617	2.4866	1.5933	2.0895	0.77603
	22.000	39.061	4.4302	2.6444	1.6753	1.9767	0.72789
	24.000	41.594	4.9349	2.7992	1.7629	1.8613	0.67833
	26.000	44.296	5.4793	2.9510	1.8567	1.7427	0.62820

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
3.15	28.000	47.216	6.0688	3.1000	1.9577	1.6194	0.57808
	30.000	50.449	6.7158	3.2475	2.0680	1.4886	0.52806
	32.000	54.201	7.4487	3.3975	2.1924	1.3441	0.47738
	34.000	59.196	8.3736	3.5650	2.3489	1.1632	0.42162
	35.033	65.382	9.4008	3.7274	2.5221	0.9575	0.36898
	34.000	70.719	10.1474	3.8325	2.6478	0.7974	0.33596
	32.000	74.089	10.5396	3.8839	2.7137	0.7064	0.32016
	30.000	76.244	10.7550	3.9111	2.7499	0.6531	0.31190
	28.000	77.906	10.9014	3.9292	2.7745	0.6152	0.30644
	26.000	79.289	11.0097	3.9424	2.7927	0.5860	0.30248
	24.000	80.490	11.0936	3.9524	2.8068	0.5627	0.29947
	22.000	81.560	11.1602	3.9604	2.8180	0.5436	0.29710
	20.000	82.535	11.2142	3.9668	2.8270	0.5278	0.29520
	18.000	83.436	11.2583	3.9720	2.8344	0.5145	0.29366
	16.000	84.279	11.2945	3.9762	2.8405	0.5035	0.29240
	14.000	85.076	11.3243	3.9797	2.8455	0.4942	0.29138
	12.000	85.838	11.3486	3.9825	2.8496	0.4865	0.29054
	10.000	86.571	11.3682	3.9848	2.8529	0.4803	0.28987
	8.000	87.281	11.3835	3.9866	2.8555	0.4754	0.28935
	6.000	87.976	11.3951	3.9879	2.8574	0.4716	0.28895
	4.000	88.657	11.4032	3.9889	2.8588	0.4690	0.28867
	2.000	89.330	11.4080	3.9894	2.8596	0.4674	0.28851
3.20	2.000	19.587	1.1760	1.1226	1.0475	3.0901	0.99957
	4.000	21.059	1.3759	1.2548	1.0965	2.9831	0.99670
	6.000	22.628	1.6017	1.3958	1.1475	2.8776	0.98944
	8.000	24.292	1.8552	1.5443	1.2013	2.7725	0.97642
	10.000	26.052	2.1377	1.6990	1.2582	2.6670	0.95684
	12.000	27.909	2.4507	1.8583	1.3188	2.5605	0.93048
	14.000	29.863	2.7952	2.0206	1.3834	2.4528	0.89766
	16.000	31.915	3.1723	2.1842	1.4524	2.3437	0.85914
	18.000	34.071	3.5828	2.3476	1.5261	2.2329	0.81591
	20.000	36.335	4.0273	2.5095	1.6048	2.1205	0.76919
	22.000	38.718	4.5073	2.6690	1.6888	2.0061	0.72014
	24.000	41.238	5.0245	2.8252	1.7784	1.8893	0.66984
	26.000	43.920	5.5816	2.9780	1.8743	1.7695	0.61919
	28.000	46.811	6.1840	3.1274	1.9774	1.6454	0.56880
	30.000	49.994	6.8427	3.2747	2.0895	1.5144	0.51885
	32.000	53.651	7.5832	3.4233	2.2152	1.3711	0.46873
	34.000	58.350	8.4906	3.5846	2.3686	1.1976	0.41516
	35.327	65.428	9.7141	3.7727	2.5748	0.9585	0.35463
	34.000	71.408	10.5657	3.8872	2.7181	0.7791	0.31914
	32.000	74.475	10.9242	3.9320	2.7783	0.6967	0.30560
	30.000	76.526	11.1314	3.9570	2.8131	0.6461	0.29812
	28.000	78.130	11.2746	3.9739	2.8372	0.6096	0.29310
	26.000	79.475	11.3814	3.9864	2.8551	0.5812	0.28942
	24.000	80.646	11.4644	3.9959	2.8690	0.5585	0.28660

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
3.20	22.000	81.694	11.5307	4.0035	2.8802	0.5398	0.28438
	20.000	82.649	11.5844	4.0096	2.8892	0.5243	0.28260
	18.000	83.533	11.6285	4.0146	2.8966	0.5113	0.28115
	16.000	84.363	11.6647	4.0187	2.9026	0.5004	0.27996
	14.000	85.147	11.6945	4.0220	2.9076	0.4913	0.27899
	12.000	85.897	11.7188	4.0247	2.9117	0.4837	0.27820
	10.000	86.619	11.7385	4.0269	2.9150	0.4776	0.27757
	8.000	87.320	11.7539	4.0286	2.9176	0.4727	0.27707
	6.000	88.003	11.7655	4.0299	2.9196	0.4690	0.27669
	4.000	88.675	11.7736	4.0308	2.9209	0.4664	0.27643
	2.000	89.340	11.7784	4.0313	2.9217	0.4649	0.27628
3.25	2.000	19.293	1.1786	1.1244	1.0482	3.1380	0.99955
	4.000	20.762	1.3818	1.2586	1.0979	3.0290	0.99656
	6.000	22.328	1.6119	1.4019	1.1498	2.9215	0.98902
	8.000	23.990	1.8704	1.5530	1.2044	2.8145	0.97549
	10.000	25.749	2.1590	1.7103	1.2624	2.7070	0.95518
	12.000	27.604	2.4791	1.8722	1.3242	2.5986	0.92789
	14.000	29.556	2.8318	2.0370	1.3901	2.4889	0.89402
	16.000	31.606	3.2179	2.2030	1.4607	2.3779	0.85437
	18.000	33.757	3.6384	2.3687	1.5360	2.2653	0.81004
	20.000	36.016	4.0940	2.5326	1.6165	2.1511	0.76227
	22.000	38.390	4.5858	2.6937	1.7024	2.0350	0.71232
	24.000	40.898	5.1156	2.8513	1.7941	1.9168	0.66129
	26.000	43.563	5.6858	3.0049	1.8922	1.7958	0.61015
	28.000	46.426	6.3015	3.1548	1.9974	1.6707	0.55950
	30.000	49.566	6.9727	3.3020	2.1116	1.5394	0.50960
	32.000	53.141	7.7223	3.4494	2.2387	1.3970	0.45998
	34.000	57.616	8.6213	3.6062	2.3907	1.2287	0.40809
	35.610	65.473	10.0327	3.8170	2.6285	0.9596	0.34078
	34.000	71.993	10.9786	3.9386	2.7875	0.7636	0.30361
	32.000	74.827	11.3120	3.9783	2.8434	0.6878	0.29180
	30.000	76.787	11.5124	4.0014	2.8771	0.6396	0.28499
	28.000	78.339	11.6529	4.0173	2.9007	0.6043	0.28035
	26.000	79.649	11.7584	4.0291	2.9184	0.5767	0.27692
	24.000	80.793	11.8408	4.0382	2.9322	0.5545	0.27429
	22.000	81.819	11.9067	4.0454	2.9433	0.5362	0.27220
	20.000	82.757	11.9604	4.0513	2.9523	0.5210	0.27052
	18.000	83.626	12.0044	4.0560	2.9596	0.5082	0.26916
	16.000	84.442	12.0407	4.0599	2.9657	0.4974	0.26804
	14.000	85.214	12.0705	4.0631	2.9707	0.4885	0.26712
	12.000	85.953	12.0949	4.0658	2.9748	0.4810	0.26637
	10.000	86.665	12.1145	4.0679	2.9781	0.4750	0.26577
	8.000	87.356	12.1300	4.0695	2.9807	0.4702	0.26530
	6.000	88.030	12.1417	4.0707	2.9827	0.4665	0.26495
	4.000	88.693	12.1498	4.0716	2.9840	0.4639	0.26470
	2.000	89.348	12.1547	4.0721	2.9848	0.4624	0.26455
3.30	2.000	19.009	1.1812	1.1262	1.0489	3.1858	0.99953
	4.000	20.475	1.3880	1.2626	1.0993	3.0748	0.99642
	6.000	22.039	1.6222	1.4082	1.1520	2.9653	0.98858
	8.000	23.699	1.8859	1.5617	1.2076	2.8563	0.97453
	10.000	25.457	2.1807	1.7216	1.2666	2.7468	0.95347
	12.000	27.310	2.5078	1.8861	1.3296	2.6364	0.92526
	14.000	29.261	2.8688	2.0536	1.3970	2.5248	0.89031
	16.000	31.308	3.2640	2.2219	1.4690	2.4118	0.84954
	18.000	33.456	3.6947	2.3898	1.5460	2.2974	0.80409
	20.000	35.710	4.1617	2.5557	1.6284	2.1813	0.75527
	22.000	38.077	4.6655	2.7184	1.7163	2.0636	0.70444
	24.000	40.573	5.2081	2.8773	1.8101	1.9439	0.65272
	26.000	43.222	5.7918	3.0318	1.9103	1.8215	0.60108
	28.000	46.062	6.4212	3.1822	2.0178	1.6955	0.55020
	30.000	49.163	7.1057	3.3294	2.1342	1.5638	0.50034
	32.000	52.667	7.8658	3.4758	2.2630	1.4218	0.45116
	34.000	56.963	8.7622	3.6291	2.4144	1.2575	0.40064
	35.882	65.518	10.3564	3.8602	2.6829	0.9606	0.32741
	34.000	72.501	11.3896	3.9873	2.8565	0.7502	0.28914
	32.000	75.148	11.7036	4.0230	2.9092	0.6797	0.27869
	30.000	77.029	11.8983	4.0445	2.9418	0.6336	0.27247
	28.000	78.535	12.0364	4.0595	2.9650	0.5993	0.26817
	26.000	79.812	12.1408	4.0706	2.9825	0.5725	0.26497
	24.000	80.932	12.2227	4.0793	2.9963	0.5507	0.26251
	22.000	81.938	12.2884	4.0862	3.0073	0.5328	0.26055
	20.000	82.859	12.3420	4.0918	3.0163	0.5178	0.25896
	18.000	83.714	12.3860	4.0964	3.0236	0.5052	0.25767
	16.000	84.517	12.4223	4.1001	3.0297	0.4946	0.25662
	14.000	85.278	12.4523	4.1032	3.0348	0.4858	0.25575
	12.000	86.007	12.4767	4.1057	3.0389	0.4785	0.25504
	10.000	86.708	12.4964	4.1077	3.0422	0.4725	0.25448
	8.000	87.390	12.5120	4.1093	3.0448	0.4677	0.25403
	6.000	88.056	12.5237	4.1105	3.0467	0.4641	0.25369
	4.000	88.710	12.5319	4.1114	3.0481	0.4616	0.25346
	2.000	89.357	12.5367	4.1119	3.0489	0.4601	0.25332
3.35	2.000	18.734	1.1839	1.1280	1.0496	3.2336	0.99951
	4.000	20.197	1.3940	1.2664	1.1007	3.1206	0.99628
	6.000	21.759	1.6326	1.4144	1.1543	3.0090	0.98812
	8.000	23.418	1.9015	1.5704	1.2108	2.8980	0.97354
	10.000	25.175	2.2025	1.7330	1.2709	2.7865	0.95172
	12.000	27.028	2.5370	1.9002	1.3351	2.6741	0.92257
	14.000	28.976	2.9061	2.0701	1.4038	2.5604	0.88654
	16.000	31.022	3.3109	2.2410	1.4774	2.4454	0.84462
	18.000	33.167	3.7520	2.4110	1.5562	2.3290	0.79804
	20.000	35.416	4.2303	2.5788	1.6404	2.2112	0.74822
	22.000	37.776	4.7466	2.7431	1.7303	2.0917	0.69650

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
3.35	24.000	40.264	5.3024	2.9033	1.8263	1.9704	0.64409
	26.000	42.898	5.8998	3.0588	1.9288	1.8468	0.59200
	28.000	45.716	6.5433	3.2097	2.0386	1.7198	0.54090
	30.000	48.782	7.2416	3.3568	2.1573	1.5874	0.49109
	32.000	52.225	8.0134	3.5024	2.2880	1.4458	0.44232
	34.000	56.375	8.9114	3.6528	2.4396	1.2844	0.39294
	36.000	63.380	10.2976	3.8524	2.6730	1.0339	0.32979
	36.143	65.562	10.6853	3.9023	2.7382	0.9616	0.31454
	36.000	67.623	11.0286	3.9446	2.7958	0.8957	0.30180
	34.000	72.950	11.8006	4.0338	2.9255	0.7384	0.27557
	32.000	75.444	12.0992	4.0662	2.9755	0.6723	0.26624
	30.000	77.255	12.2891	4.0863	3.0074	0.6279	0.26053
	28.000	78.719	12.4252	4.1004	3.0302	0.5946	0.25653
	26.000	79.965	12.5287	4.1110	3.0476	0.5684	0.25355
	24.000	81.062	12.6102	4.1193	3.0612	0.5471	0.25124
	22.000	82.050	12.6758	4.1259	3.0722	0.5295	0.24939
	20.000	82.956	12.7293	4.1313	3.0812	0.5148	0.24790
	18.000	83.798	12.7734	4.1357	3.0886	0.5024	0.24668
	16.000	84.588	12.8098	4.1393	3.0947	0.4920	0.24568
	14.000	85.339	12.8398	4.1422	3.0997	0.4832	0.24486
	12.000	86.057	12.8644	4.1446	3.1038	0.4760	0.24420
	10.000	86.750	12.8842	4.1466	3.1072	0.4701	0.24366
	8.000	87.422	12.8998	4.1481	3.1098	0.4654	0.24324
	6.000	88.080	12.9116	4.1493	3.1118	0.4618	0.24292
	4.000	88.726	12.9198	4.1501	3.1131	0.4593	0.24270
	2.000	89.365	12.9246	4.1506	3.1140	0.4578	0.24256
3.40	2.000	18.467	1.1866	1.1298	1.0502	3.2814	0.99949
	4.000	19.928	1.4001	1.2704	1.1022	3.1662	0.99613
	6.000	21.488	1.6430	1.4207	1.1565	3.0527	0.98766
	8.000	23.147	1.9173	1.5793	1.2140	2.9395	0.97253
	10.000	24.902	2.2245	1.7444	1.2752	2.8260	0.94995
	12.000	26.755	2.5664	1.9143	1.3407	2.7115	0.91981
	14.000	28.702	2.9440	2.0868	1.4108	2.5958	0.88269
	16.000	30.746	3.3583	2.2600	1.4860	2.4788	0.83962
	18.000	32.889	3.8100	2.4322	1.5665	2.3604	0.79194
	20.000	35.133	4.2998	2.6019	1.6526	2.2407	0.74110
	22.000	37.489	4.8289	2.7679	1.7446	2.1195	0.68851
	24.000	39.967	5.3980	2.9293	1.8428	1.9966	0.63546
	26.000	42.588	6.0096	3.0857	1.9476	1.8716	0.58292
	28.000	45.386	6.6675	3.2370	2.0598	1.7435	0.53162
	30.000	48.422	7.3802	3.3842	2.1808	1.6105	0.48186
	32.000	51.810	8.1645	3.5290	2.3135	1.4690	0.43348
	34.000	55.838	9.0673	3.6771	2.4659	1.3098	0.38509
	36.000	61.914	10.3308	3.8568	2.6786	1.0874	0.32845
	36.393	65.605	11.0193	3.9435	2.7943	0.9625	0.30214
	36.000	68.960	11.5817	4.0093	2.8887	0.8560	0.28269

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
3.40	34.000	73.352	12.2131	4.0783	2.9946	0.7279	0.26279
	32.000	75.717	12.4992	4.1080	3.0426	0.6653	0.25440
	30.000	77.467	12.6849	4.1268	3.0738	0.6225	0.24914
	28.000	78.891	12.8193	4.1402	3.0963	0.5902	0.24542
	26.000	80.110	12.9221	4.1503	3.1135	0.5646	0.24263
	24.000	81.185	13.0033	4.1582	3.1271	0.5437	0.24046
	22.000	82.156	13.0688	4.1645	3.1381	0.5264	0.23872
	20.000	83.047	13.1224	4.1697	3.1471	0.5119	0.23732
	18.000	83.876	13.1665	4.1739	3.1545	0.4997	0.23617
	16.000	84.656	13.2030	4.1774	3.1606	0.4894	0.23522
	14.000	85.396	13.2331	4.1802	3.1657	0.4808	0.23445
	12.000	86.105	13.2578	4.1826	3.1698	0.4736	0.23381
	10.000	86.789	13.2777	4.1844	3.1731	0.4678	0.23330
	8.000	87.453	13.2934	4.1859	3.1757	0.4632	0.23290
	6.000	88.103	13.3052	4.1870	3.1777	0.4596	0.23260
	4.000	88.741	13.3135	4.1878	3.1791	0.4572	0.23239
	2.000	89.372	13.3184	4.1883	3.1799	0.4557	0.23227
3.45	2.000	18.209	1.1892	1.1316	1.0509	3.3292	0.99947
	4.000	19.668	1.4063	1.2743	1.1036	3.2118	0.99597
	6.000	21.226	1.6536	1.4270	1.1588	3.0962	0.98718
	8.000	22.884	1.9331	1.5881	1.2172	2.9809	0.97149
	10.000	24.639	2.2468	1.7559	1.2796	2.8653	0.94812
	12.000	26.491	2.5962	1.9284	1.3463	2.7486	0.91701
	14.000	28.438	2.9823	2.1035	1.4178	2.6309	0.87878
	16.000	30.481	3.4063	2.2791	1.4946	2.5118	0.83456
	18.000	32.621	3.8688	2.4535	1.5769	2.3915	0.78577
	20.000	34.863	4.3706	2.6251	1.6649	2.2698	0.73391
	22.000	37.213	4.9123	2.7926	1.7590	2.1468	0.68049
	24.000	39.683	5.4951	2.9552	1.8595	2.0224	0.62680
	26.000	42.292	6.1211	3.1125	1.9666	1.8960	0.57385
	28.000	45.073	6.7941	3.2644	2.0813	1.7667	0.52235
	30.000	48.080	7.5215	3.4115	2.2047	1.6329	0.47267
	32.000	51.420	8.3194	3.5558	2.3397	1.4914	0.42466
	34.000	55.344	9.2294	3.7018	2.4932	1.3339	0.37715
	36.000	60.903	10.4358	3.8705	2.6962	1.1265	0.32424
	36.635	65.647	11.3584	3.9837	2.8512	0.9634	0.29020
	36.000	69.850	12.0718	4.0633	2.9709	0.8302	0.26708
	34.000	73.716	12.6278	4.1211	3.0642	0.7184	0.25074
	32.000	75.970	12.9035	4.1485	3.1104	0.6589	0.24313
	30.000	77.665	13.0858	4.1662	3.1410	0.6175	0.23828
	28.000	79.054	13.2189	4.1789	3.1633	0.5860	0.23481
	26.000	80.246	13.3210	4.1885	3.1804	0.5609	0.23220
	24.000	81.302	13.4020	4.1961	3.1939	0.5404	0.23016
	22.000	82.256	13.4675	4.2021	3.2049	0.5234	0.22852
	20.000	83.134	13.5211	4.2071	3.2139	0.5091	0.22719
	18.000	83.951	13.5654	4.2111	3.2213	0.4971	0.22611

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
3.45	16.000	84.720	13.6020	4.2145	3.2275	0.4869	0.22521
	14.000	85.451	13.6322	4.2172	3.2325	0.4784	0.22448
	12.000	86.151	13.6570	4.2195	3.2367	0.4714	0.22388
	10.000	86.826	13.6770	4.2213	3.2400	0.4656	0.22340
	8.000	87.482	13.6928	4.2227	3.2427	0.4610	0.22302
	6.000	88.125	13.7047	4.2238	3.2447	0.4575	0.22273
	4.000	88.756	13.7130	4.2245	3.2461	0.4551	0.22253
	2.000	89.379	13.7180	4.2250	3.2469	0.4536	0.22241
3.50	2.000	17.958	1.1920	1.1335	1.0516	3.3769	0.99945
	4.000	19.415	1.4125	1.2783	1.1050	3.2574	0.99582
	6.000	20.972	1.6642	1.4333	1.1611	3.1396	0.98669
	8.000	22.629	1.9491	1.5970	1.2205	3.0222	0.97044
	10.000	24.384	2.2693	1.7675	1.2839	2.9044	0.94626
	12.000	26.236	2.6262	1.9426	1.3519	2.7856	0.91415
	14.000	28.182	3.0211	2.1202	1.4249	2.6657	0.87481
	16.000	30.225	3.4549	2.2982	1.5033	2.5445	0.82942
	18.000	32.363	3.9283	2.4747	1.5874	2.4222	0.77952
	20.000	34.602	4.4421	2.6482	1.6774	2.2986	0.72668
	22.000	36.947	4.9969	2.8173	1.7737	2.1739	0.67245
	24.000	39.410	5.5936	2.9811	1.8764	2.0478	0.61813
	26.000	42.009	6.2345	3.1392	1.9860	1.9199	0.56478
	28.000	44.774	6.9227	3.2916	2.1032	1.7894	0.51313
	30.000	47.755	7.6654	3.4388	2.2291	1.6549	0.46353
	32.000	51.053	8.4777	3.5825	2.3664	1.5131	0.41586
	34.000	54.888	9.3968	3.7268	2.5214	1.3570	0.36917
	36.000	60.090	10.5715	3.8879	2.7191	1.1594	0.31891
	36.867	65.689	11.7027	4.0229	2.9090	0.9643	0.27872
	36.000	70.545	12.5396	4.1121	3.0494	0.8105	0.25324
	34.000	74.048	13.0455	4.1623	3.1342	0.7098	0.23934
	32.000	76.207	13.3126	4.1877	3.1790	0.6529	0.23241
	30.000	77.851	13.4920	4.2044	3.2090	0.6128	0.22791
	28.000	79.207	13.6238	4.2165	3.2311	0.5820	0.22468
	26.000	80.375	13.7255	4.2256	3.2481	0.5574	0.22223
	24.000	81.413	13.8064	4.2329	3.2617	0.5373	0.22031
	22.000	82.352	13.8719	4.2387	3.2727	0.5205	0.21877
	20.000	83.216	13.9256	4.2435	3.2817	0.5065	0.21751
	18.000	84.022	13.9700	4.2474	3.2891	0.4946	0.21649
	16.000	84.781	14.0067	4.2506	3.2952	0.4846	0.21564
	14.000	85.503	14.0371	4.2532	3.3003	0.4762	0.21494
	12.000	86.194	14.0620	4.2554	3.3045	0.4692	0.21438
	10.000	86.862	14.0822	4.2572	3.3079	0.4635	0.21392
	8.000	87.510	14.0980	4.2585	3.3105	0.4590	0.21356
	6.000	88.145	14.1100	4.2596	3.3125	0.4555	0.21329
	4.000	88.769	14.1184	4.2603	3.3139	0.4531	0.21310
	2.000	89.386	14.1234	4.2607	3.3148	0.4516	0.21298

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
3.55	2.000	17.715	1.1947	1.1353	1.0523	3.4246	0.99943
	4.000	19.170	1.4187	1.2822	1.1065	3.3029	0.99566
	6.000	20.726	1.6748	1.4396	1.1634	3.1829	0.98619
	8.000	22.383	1.9653	1.6059	1.2238	3.0633	0.96935
	10.000	24.138	2.2920	1.7791	1.2883	2.9433	0.94435
	12.000	25.989	2.6566	1.9569	1.3576	2.8224	0.91123
	14.000	27.936	3.0603	2.1370	1.4321	2.7003	0.87077
	16.000	29.977	3.5040	2.3174	1.5121	2.5771	0.82424
	18.000	32.115	3.9887	2.4961	1.5980	2.4526	0.77322
	20.000	34.352	4.5148	2.6714	1.6901	2.3271	0.71939
	22.000	36.692	5.0827	2.8419	1.7885	2.2005	0.66437
	24.000	39.149	5.6937	3.0069	1.8935	2.0727	0.60946
	26.000	41.738	6.3495	3.1659	2.0056	1.9434	0.55575
	28.000	44.488	7.0535	3.3187	2.1254	1.8117	0.50395
	30.000	47.447	7.8120	3.4660	2.2539	1.6762	0.45445
	32.000	50.705	8.6392	3.6092	2.3937	1.5342	0.40714
	34.000	54.463	9.5691	3.7520	2.5504	1.3790	0.36118
	36.000	59.399	10.7262	3.9075	2.7450	1.1885	0.31299
	37.091	65.729	12.0520	4.0612	2.9676	0.9651	0.26768
	36.000	71.121	12.9969	4.1576	3.1261	0.7943	0.24063
	34.000	74.353	13.4667	4.2021	3.2048	0.7018	0.22854
	32.000	76.427	13.7265	4.2257	3.2483	0.6473	0.22221
	30.000	78.025	13.9033	4.2415	3.2779	0.6083	0.21803
	28.000	79.351	14.0342	4.2530	3.2998	0.5782	0.21501
	26.000	80.497	14.1355	4.2618	3.3168	0.5541	0.21271
	24.000	81.517	14.2163	4.2687	3.3303	0.5343	0.21090
	22.000	82.442	14.2819	4.2743	3.3413	0.5178	0.20944
	20.000	83.294	14.3358	4.2789	3.3503	0.5039	0.20826
	18.000	84.090	14.3804	4.2827	3.3578	0.4922	0.20729
	16.000	84.839	14.4173	4.2858	3.3640	0.4823	0.20649
	14.000	85.552	14.4478	4.2883	3.3691	0.4740	0.20583
	12.000	86.235	14.4729	4.2904	3.3733	0.4671	0.20529
	10.000	86.895	14.4931	4.2921	3.3767	0.4615	0.20485
	8.000	87.537	14.5091	4.2934	3.3794	0.4570	0.20451
	6.000	88.165	14.5212	4.2944	3.3814	0.4535	0.20425
	4.000	88.782	14.5296	4.2951	3.3828	0.4511	0.20407
	2.000	89.392	14.5346	4.2956	3.3836	0.4497	0.20397
3.60	2.000	17.479	1.1973	1.1371	1.0530	3.4722	0.99940
	4.000	18.932	1.4250	1.2862	1.1079	3.3482	0.99549
	6.000	20.488	1.6857	1.4461	1.1657	3.2260	0.98567
	8.000	22.144	1.9816	1.6149	1.2271	3.1043	0.96824
	10.000	23.899	2.3149	1.7907	1.2927	2.9821	0.94241
	12.000	25.751	2.6873	1.9711	1.3633	2.8590	0.90827
	14.000	27.698	3.0999	2.1538	1.4393	2.7347	0.86667
	16.000	29.740	3.5540	2.3366	1.5210	2.6092	0.81895
	18.000	31.876	4.0498	2.5174	1.6088	2.4827	0.76685

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
3.60	20.000	34.110	4.5883	2.6945	1.7029	2.3552	0.71207
	22.000	36.448	5.1699	2.8666	1.8035	2.2267	0.65625
	24.000	38.898	5.7953	3.0327	1.9109	2.0973	0.60079
	26.000	41.478	6.4663	3.1924	2.0255	1.9664	0.54674
	28.000	44.215	7.1862	3.3457	2.1479	1.8335	0.49483
	30.000	47.153	7.9610	3.4930	2.2791	1.6971	0.44543
	32.000	50.376	8.8038	3.6357	2.4215	1.5547	0.39847
	34.000	54.066	9.7460	3.7772	2.5802	1.4002	0.35321
	36.000	58.793	10.8943	3.9283	2.7733	1.2149	0.30670
	37.306	65.769	12.4065	4.0985	3.0271	0.9660	0.25708
	36.000	71.617	13.4496	4.2005	3.2019	0.7805	0.22897
	34.000	74.634	13.8916	4.2405	3.2760	0.6945	0.21831
	32.000	76.633	14.1452	4.2626	3.3184	0.6420	0.21249
	30.000	78.190	14.3199	4.2776	3.3477	0.6041	0.20861
	28.000	79.487	14.4500	4.2885	3.3695	0.5746	0.20578
	26.000	80.614	14.5512	4.2969	3.3864	0.5510	0.20362
	24.000	81.617	14.6320	4.3036	3.3999	0.5315	0.20191
	22.000	82.528	14.6976	4.3090	3.4109	0.5152	0.20054
	20.000	83.369	14.7517	4.3134	3.4200	0.5015	0.19942
	18.000	84.154	14.7965	4.3170	3.4275	0.4899	0.19849
	16.000	84.894	14.8336	4.3200	3.4337	0.4801	0.19774
	14.000	85.599	14.8643	4.3225	3.4388	0.4719	0.19711
	12.000	86.275	14.8895	4.3245	3.4430	0.4651	0.19660
	10.000	86.928	14.9099	4.3262	3.4465	0.4595	0.19619
	8.000	87.562	14.9260	4.3274	3.4491	0.4551	0.19586
	6.000	88.184	14.9381	4.3284	3.4512	0.4517	0.19562
	4.000	88.794	14.9466	4.3291	3.4526	0.4493	0.19545
	2.000	89.398	14.9517	4.3295	3.4534	0.4479	0.19535
3.65	2.000	17.250	1.2001	1.1390	1.0537	3.5198	0.99938
	4.000	18.701	1.4312	1.2902	1.1094	3.3936	0.99532
	6.000	20.256	1.6964	1.4524	1.1680	3.2691	0.98515
	8.000	21.913	1.9980	1.6239	1.2304	3.1451	0.96710
	10.000	23.668	2.3381	1.8024	1.2972	3.0207	0.94042
	12.000	25.520	2.7183	1.9854	1.3691	2.8953	0.90525
	14.000	27.468	3.1402	2.1707	1.4466	2.7688	0.86248
	16.000	29.509	3.6043	2.3558	1.5300	2.6412	0.81364
	18.000	31.645	4.1117	2.5387	1.6196	2.5125	0.76044
	20.000	33.878	4.6628	2.7176	1.7158	2.3830	0.70470
	22.000	36.212	5.2580	2.8911	1.8187	2.2527	0.64814
	24.000	38.658	5.8984	3.0584	1.9286	2.1215	0.59212
	26.000	41.230	6.5849	3.2189	2.0457	1.9891	0.53777
	28.000	43.954	7.3210	3.3726	2.1707	1.8549	0.48578
	30.000	46.873	8.1124	3.5199	2.3047	1.7176	0.43650
	32.000	50.064	8.9714	3.6622	2.4497	1.5746	0.38990
	34.000	53.694	9.9271	3.8025	2.6107	1.4207	0.34529
	36.000	58.251	11.0727	3.9499	2.8033	1.2394	0.30022

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
3.65	37.513	65.808	12.7662	4.1349	3.0874	0.9668	0.24688
	36.000	72.054	13.9006	4.2413	3.2775	0.7684	0.21810
	34.000	74.894	14.3206	4.2776	3.3478	0.6877	0.20859
	32.000	76.827	14.5690	4.2984	3.3894	0.6371	0.20324
	30.000	78.345	14.7420	4.3126	3.4183	0.6000	0.19962
	28.000	79.617	14.8713	4.3231	3.4400	0.5712	0.19697
	26.000	80.723	14.9723	4.3311	3.4569	0.5480	0.19493
	24.000	81.712	15.0533	4.3376	3.4705	0.5287	0.19332
	22.000	82.610	15.1191	4.3427	3.4815	0.5127	0.19202
	20.000	83.440	15.1734	4.3470	3.4906	0.4992	0.19096
	18.000	84.215	15.2184	4.3505	3.4981	0.4877	0.19009
	16.000	84.947	15.2557	4.3534	3.5043	0.4781	0.18937
	14.000	85.644	15.2866	4.3558	3.5095	0.4699	0.18878
	12.000	86.313	15.3120	4.3577	3.5137	0.4632	0.18829
	10.000	86.959	15.3325	4.3593	3.5172	0.4576	0.18790
	8.000	87.587	15.3487	4.3606	3.5199	0.4532	0.18759
	6.000	88.201	15.3609	4.3615	3.5219	0.4499	0.18736
	4.000	88.807	15.3695	4.3622	3.5234	0.4475	0.18720
	2.000	89.405	15.3746	4.3625	3.5242	0.4461	0.18710
3.70	2.000	17.027	1.2029	1.1408	1.0544	3.5674	0.99936
	4.000	18.478	1.4377	1.2942	1.1108	3.4388	0.99515
	6.000	20.032	1.7073	1.4589	1.1703	3.3121	0.98461
	8.000	21.688	2.0146	1.6330	1.2337	3.1858	0.96594
	10.000	23.444	2.3615	1.8141	1.3017	3.0591	0.93840
	12.000	25.297	2.7496	1.9998	1.3749	2.9315	0.90218
	14.000	27.246	3.1808	2.1877	1.4539	2.8026	0.85825
	16.000	29.287	3.6554	2.3751	1.5391	2.6728	0.80824
	18.000	31.423	4.1745	2.5600	1.6306	2.5420	0.75395
	20.000	33.653	4.7382	2.7406	1.7289	2.4105	0.69731
	22.000	35.985	5.3474	2.9156	1.8341	2.2783	0.64001
	24.000	38.426	6.0027	3.0840	1.9464	2.1453	0.58349
	26.000	40.991	6.7053	3.2452	2.0662	2.0114	0.52883
	28.000	43.704	7.4580	3.3993	2.1940	1.8758	0.47677
	30.000	46.605	8.2664	3.5467	2.3307	1.7375	0.42765
	32.000	49.768	9.1422	3.6886	2.4785	1.5940	0.38140
	34.000	53.344	10.1123	3.8277	2.6418	1.4404	0.33742
	36.000	57.760	11.2596	3.9721	2.8346	1.2623	0.29362
	37.713	65.847	13.1309	4.1705	3.1485	0.9675	0.23710
	36.000	72.443	14.3517	4.2802	3.3530	0.7577	0.20791
	34.000	75.135	14.7539	4.3136	3.4203	0.6814	0.19937
	32.000	77.009	14.9979	4.3332	3.4612	0.6324	0.19442
	30.000	78.492	15.1693	4.3467	3.4899	0.5962	0.19104
	28.000	79.740	15.2983	4.3567	3.5115	0.5680	0.18855
	26.000	80.828	15.3992	4.3644	3.5283	0.5451	0.18664
	24.000	81.802	15.4802	4.3706	3.5419	0.5261	0.18512
	22.000	82.688	15.5463	4.3756	3.5530	0.5103	0.18389

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
3.70	20.000	83.507	15.6008	4.3797	3.5621	0.4969	0.18289
	18.000	84.274	15.6460	4.3831	3.5696	0.4856	0.18206
	16.000	84.998	15.6836	4.3859	3.5759	0.4760	0.18138
	14.000	85.687	15.7147	4.3882	3.5811	0.4680	0.18082
	12.000	86.348	15.7402	4.3901	3.5854	0.4613	0.18035
	10.000	86.988	15.7609	4.3916	3.5889	0.4558	0.17998
	8.000	87.610	15.7772	4.3928	3.5916	0.4515	0.17969
	6.000	88.219	15.7896	4.3937	3.5937	0.4481	0.17947
	4.000	88.817	15.7982	4.3944	3.5951	0.4458	0.17932
	2.000	89.411	15.8033	4.3947	3.5960	0.4444	0.17922
3.75	2.000	16.810	1.2055	1.1426	1.0551	3.6149	0.99933
	4.000	18.260	1.4440	1.2982	1.1123	3.4840	0.99497
	6.000	19.814	1.7184	1.4654	1.1727	3.3550	0.98405
	8.000	21.470	2.0312	1.6420	1.2370	3.2264	0.96476
	10.000	23.227	2.3849	1.8258	1.3062	3.0974	0.93634
	12.000	25.081	2.7813	2.0142	1.3808	2.9674	0.89905
	14.000	27.030	3.2217	2.2046	1.4614	2.8363	0.85397
	16.000	29.072	3.7069	2.3943	1.5482	2.7042	0.80280
	18.000	31.207	4.2379	2.5813	1.6417	2.5712	0.74744
	20.000	33.438	4.8148	2.7637	1.7422	2.4376	0.68987
	22.000	35.767	5.4382	2.9401	1.8497	2.3034	0.63185
	24.000	38.204	6.1086	3.1095	1.9645	2.1688	0.57486
	26.000	40.762	6.8272	3.2714	2.0869	2.0333	0.51996
	28.000	43.464	7.5969	3.4259	2.2175	1.8964	0.46786
	30.000	46.350	8.4228	3.5733	2.3572	1.7570	0.41888
	32.000	49.486	9.3159	3.7148	2.5078	1.6129	0.37300
	34.000	53.014	10.3013	3.8529	2.6736	1.4594	0.32964
	36.000	57.310	11.4538	3.9947	2.8672	1.2839	0.28696
	37.906	65.884	13.5007	4.2052	3.2105	0.9683	0.22770
	36.000	72.794	14.8041	4.3176	3.4287	0.7481	0.19834
	34.000	75.361	15.1917	4.3484	3.4936	0.6755	0.19061
	32.000	77.180	15.4318	4.3669	3.5338	0.6280	0.18602
	30.000	78.631	15.6021	4.3798	3.5623	0.5926	0.18286
	28.000	79.856	15.7307	4.3894	3.5838	0.5649	0.18053
	26.000	80.927	15.8316	4.3968	3.6007	0.5423	0.17872
	24.000	81.887	15.9128	4.4028	3.6143	0.5237	0.17728
	22.000	82.762	15.9792	4.4076	3.6254	0.5080	0.17612
	20.000	83.572	16.0339	4.4115	3.6345	0.4948	0.17517
	18.000	84.330	16.0794	4.4148	3.6422	0.4836	0.17439
	16.000	85.045	16.1172	4.4175	3.6485	0.4741	0.17374
	14.000	85.727	16.1485	4.4198	3.6537	0.4662	0.17321
	12.000	86.382	16.1743	4.4216	3.6580	0.4595	0.17277
	10.000	87.016	16.1951	4.4231	3.6615	0.4541	0.17242
	8.000	87.632	16.2116	4.4242	3.6643	0.4498	0.17214
	6.000	88.235	16.2240	4.4251	3.6663	0.4465	0.17193
	4.000	88.829	16.2327	4.4257	3.6678	0.4441	0.17178

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
3.75	2.000	89.416	16.2379	4.4261	3.6687	0.4428	0.17169
3.80	2.000	16.600	1.2083	1.1445	1.0558	3.6624	0.99931
	4.000	18.048	1.4503	1.3022	1.1137	3.5291	0.99479
	6.000	19.602	1.7294	1.4718	1.1750	3.3978	0.98349
	8.000	21.258	2.0480	1.6511	1.2404	3.2669	0.96355
	10.000	23.016	2.4088	1.8377	1.3108	3.1354	0.93423
	12.000	24.872	2.8134	2.0288	1.3867	3.0031	0.89586
	14.000	26.821	3.2631	2.2216	1.4688	2.8697	0.84963
	16.000	28.864	3.7592	2.4137	1.5575	2.7353	0.79728
	18.000	31.000	4.3021	2.6026	1.6530	2.6001	0.74088
	20.000	33.229	4.8923	2.7867	1.7556	2.4644	0.68241
	22.000	35.556	5.5299	2.9644	1.8654	2.3283	0.62373
	24.000	37.989	6.2157	3.1348	1.9828	2.1919	0.56627
	26.000	40.542	6.9510	3.2975	2.1080	2.0548	0.51113
	28.000	43.234	7.7378	3.4523	2.2414	1.9166	0.45902
	30.000	46.105	8.5816	3.5997	2.3840	1.7761	0.41022
	32.000	49.218	9.4923	3.7408	2.5375	1.6313	0.36471
	34.000	52.702	10.4940	3.8780	2.7060	1.4778	0.32194
	36.000	56.894	11.6543	4.0175	2.9009	1.3044	0.28030
	38.000	64.192	13.4871	4.2039	3.2082	1.0293	0.22804
	38.092	65.921	13.8756	4.2390	3.2733	0.9690	0.21868
	38.000	67.568	14.2269	4.2696	3.3321	0.9133	0.21066
	36.000	73.114	15.2586	4.3536	3.5048	0.7394	0.18932
	34.000	75.572	15.6341	4.3822	3.5676	0.6701	0.18228
	32.000	77.342	15.8710	4.3997	3.6073	0.6238	0.17802
	30.000	78.762	16.0402	4.4120	3.6356	0.5892	0.17506
	28.000	79.967	16.1687	4.4212	3.6571	0.5619	0.17286
	26.000	81.022	16.2697	4.4284	3.6740	0.5397	0.17116
	24.000	81.969	16.3512	4.4341	3.6876	0.5213	0.16980
	22.000	82.833	16.4178	4.4387	3.6988	0.5058	0.16870
	20.000	83.634	16.4729	4.4426	3.7080	0.4927	0.16780
	18.000	84.383	16.5186	4.4457	3.7156	0.4816	0.16706
	16.000	85.092	16.5567	4.4484	3.7220	0.4723	0.16644
	14.000	85.767	16.5882	4.4505	3.7273	0.4644	0.16594
	12.000	86.415	16.6141	4.4523	3.7316	0.4578	0.16552
	10.000	87.043	16.6352	4.4537	3.7351	0.4524	0.16518
	8.000	87.653	16.6518	4.4549	3.7379	0.4481	0.16492
	6.000	88.251	16.6643	4.4557	3.7400	0.4448	0.16472
	4.000	88.839	16.6731	4.4563	3.7414	0.4426	0.16458
	2.000	89.421	16.6783	4.4567	3.7423	0.4412	0.16450
3.85	2.000	16.395	1.2110	1.1463	1.0564	3.7099	0.99928
	4.000	17.843	1.4568	1.3063	1.1152	3.5741	0.99460
	6.000	19.396	1.7405	1.4783	1.1773	3.4404	0.98291
	8.000	21.053	2.0650	1.6603	1.2438	3.3071	0.96231

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
3.85	10.000	22.812	2.4328	1.8495	1.3153	3.1734	0.93209
	12.000	24.668	2.8456	2.0432	1.3927	3.0386	0.89264
	14.000	26.619	3.3050	2.2386	1.4764	2.9028	0.84523
	16.000	28.664	3.8121	2.4330	1.5668	2.7661	0.79172
	18.000	30.799	4.3670	2.6239	1.6643	2.6287	0.73428
	20.000	33.028	4.9706	2.8097	1.7691	2.4909	0.67493
	22.000	35.353	5.6230	2.9887	1.8814	2.3529	0.61558
	24.000	37.783	6.3245	3.1601	2.0013	2.2146	0.55770
	26.000	40.330	7.0764	3.3234	2.1293	2.0760	0.50236
	28.000	43.014	7.8808	3.4785	2.2656	1.9364	0.45026
	30.000	45.871	8.7425	3.6259	2.4111	1.7948	0.40167
	32.000	48.961	9.6715	3.7666	2.5677	1.6493	0.35654
	34.000	52.407	10.6904	3.9030	2.7390	1.4957	0.31434
	36.000	56.508	11.8605	4.0404	2.9355	1.3239	0.27366
	38.000	62.939	13.5472	4.2095	3.2183	1.0767	0.22655
	38.272	65.956	14.2556	4.2721	3.3369	0.9697	0.21003
	38.000	68.733	14.8512	4.3214	3.4366	0.8764	0.19738
	36.000	73.407	15.7160	4.3883	3.5814	0.7314	0.18079
	34.000	75.770	16.0813	4.4150	3.6425	0.6649	0.17436
	32.000	77.495	16.3155	4.4316	3.6816	0.6198	0.17039
	30.000	78.888	16.4839	4.4433	3.7098	0.5859	0.16762
	28.000	80.072	16.6122	4.4522	3.7313	0.5591	0.16555
	26.000	81.112	16.7135	4.4591	3.7482	0.5372	0.16394
	24.000	82.047	16.7952	4.4646	3.7619	0.5190	0.16266
	22.000	82.901	16.8622	4.4691	3.7731	0.5037	0.16162
	20.000	83.692	16.9175	4.4728	3.7823	0.4907	0.16076
	18.000	84.434	16.9636	4.4758	3.7900	0.4798	0.16006
	16.000	85.136	17.0019	4.4784	3.7964	0.4705	0.15947
	14.000	85.804	17.0337	4.4805	3.8017	0.4627	0.15899
	12.000	86.447	17.0598	4.4822	3.8061	0.4561	0.15859
	10.000	87.068	17.0810	4.4836	3.8097	0.4508	0.15827
	8.000	87.674	17.0978	4.4847	3.8125	0.4465	0.15802
	6.000	88.266	17.1104	4.4855	3.8146	0.4433	0.15783
	4.000	88.849	17.1193	4.4861	3.8161	0.4410	0.15770
	2.000	89.426	17.1245	4.4865	3.8169	0.4397	0.15762
3.90	2.000	16.196	1.2138	1.1482	1.0571	3.7573	0.99926
	4.000	17.642	1.4633	1.3104	1.1167	3.6191	0.99441
	6.000	19.196	1.7517	1.4849	1.1797	3.4830	0.98232
	8.000	20.854	2.0821	1.6694	1.2472	3.3473	0.96105
	10.000	22.614	2.4570	1.8614	1.3200	3.2111	0.92990
	12.000	24.472	2.8783	2.0578	1.3987	3.0739	0.88935
	14.000	26.424	3.3474	2.2557	1.4840	2.9357	0.84077
	16.000	28.469	3.8655	2.4523	1.5763	2.7967	0.78611
	18.000	30.605	4.4329	2.6452	1.6758	2.6570	0.72761
	20.000	32.834	5.0501	2.8326	1.7828	2.5171	0.66743
	22.000	35.157	5.7171	3.0129	1.8975	2.3771	0.60746

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
3.90	24.000	37.584	6.4345	3.1853	2.0201	2.2371	0.54918
	26.000	40.126	7.2035	3.3492	2.1508	2.0968	0.49366
	28.000	42.802	8.0258	3.5046	2.2901	1.9558	0.44158
	30.000	45.646	8.9059	3.6519	2.4387	1.8131	0.39322
	32.000	48.716	9.8536	3.7923	2.5983	1.6668	0.34848
	34.000	52.126	10.8901	3.9278	2.7726	1.5130	0.30686
	36.000	56.149	12.0723	4.0633	2.9710	1.3425	0.26706
	38.000	62.087	13.6897	4.2224	3.2421	1.1106	0.22309
	38.445	65.991	14.6407	4.3043	3.4014	0.9704	0.20173
	38.000	69.501	15.4023	4.3647	3.5289	0.8527	0.18658
	36.000	73.678	16.1768	4.4218	3.6584	0.7240	0.17273
	34.000	75.956	16.5334	4.4468	3.7181	0.6600	0.16682
	32.000	77.640	16.7653	4.4626	3.7569	0.6160	0.16313
	30.000	79.006	16.9330	4.4738	3.7849	0.5828	0.16052
	28.000	80.172	17.0613	4.4823	3.8064	0.5563	0.15857
	26.000	81.199	17.1629	4.4890	3.8234	0.5347	0.15705
	24.000	82.121	17.2449	4.4943	3.8371	0.5168	0.15583
	22.000	82.966	17.3122	4.4986	3.8483	0.5016	0.15485
	20.000	83.749	17.3680	4.5022	3.8576	0.4888	0.15404
	18.000	84.483	17.4143	4.5052	3.8654	0.4780	0.15337
	16.000	85.177	17.4529	4.5076	3.8718	0.4688	0.15281
	14.000	85.840	17.4850	4.5097	3.8772	0.4610	0.15235
	12.000	86.477	17.5113	4.5114	3.8816	0.4545	0.15198
	10.000	87.093	17.5327	4.5127	3.8852	0.4492	0.15167
	8.000	87.693	17.5496	4.5138	3.8880	0.4450	0.15143
	6.000	88.280	17.5623	4.5146	3.8901	0.4418	0.15125
	4.000	88.858	17.5713	4.5151	3.8916	0.4395	0.15113
	2.000	89.430	17.5766	4.5155	3.8925	0.4382	0.15105
3.95	2.000	16.001	1.2166	1.1500	1.0578	3.8047	0.99923
	4.000	17.447	1.4697	1.3144	1.1182	3.6641	0.99421
	6.000	19.001	1.7630	1.4915	1.1821	3.5255	0.98171
	8.000	20.660	2.0992	1.6786	1.2506	3.3874	0.95977
	10.000	22.422	2.4815	1.8734	1.3246	3.2486	0.92768
	12.000	24.280	2.9112	2.0724	1.4048	3.1090	0.88602
	14.000	26.234	3.3902	2.2727	1.4917	2.9684	0.83626
	16.000	28.281	3.9194	2.4716	1.5858	2.8270	0.78046
	18.000	30.417	4.4992	2.6664	1.6874	2.6851	0.72095
	20.000	32.646	5.1304	2.8554	1.7967	2.5430	0.65992
	22.000	34.969	5.8125	3.0370	1.9139	2.4010	0.59933
	24.000	37.393	6.5462	3.2103	2.0391	2.2591	0.54068
	26.000	39.929	7.3323	3.3748	2.1727	2.1172	0.48503
	28.000	42.598	8.1726	3.5304	2.3149	1.9748	0.43302
	30.000	45.431	9.0717	3.6778	2.4666	1.8310	0.38488
	32.000	48.483	10.0386	3.8178	2.6294	1.6838	0.34053
	34.000	51.859	11.0931	3.9524	2.8067	1.5299	0.29949
	36.000	55.812	12.2888	4.0863	3.0073	1.3604	0.26054

Oblique Shock Tables ($\gamma = 1.4$)

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
3.95	38.000	61.406	13.8667	4.2383	3.2718	1.1389	0.21889
	38.612	66.026	15.0309	4.3358	3.4667	0.9711	0.19376
	38.000	70.101	15.9275	4.4038	3.6167	0.8345	0.17703
	36.000	73.928	16.6412	4.4541	3.7361	0.7172	0.16509
	34.000	76.131	16.9904	4.4776	3.7945	0.6554	0.15965
	32.000	77.777	17.2203	4.4927	3.8330	0.6125	0.15620
	30.000	79.120	17.3877	4.5035	3.8609	0.5798	0.15375
	28.000	80.268	17.5161	4.5117	3.8824	0.5537	0.15191
	26.000	81.281	17.6179	4.5181	3.8994	0.5324	0.15047
	24.000	82.192	17.7003	4.5232	3.9132	0.5147	0.14932
	22.000	83.028	17.7680	4.5274	3.9245	0.4997	0.14838
	20.000	83.803	17.8241	4.5309	3.9339	0.4870	0.14761
	18.000	84.529	17.8708	4.5338	3.9417	0.4762	0.14698
	16.000	85.218	17.9097	4.5362	3.9482	0.4671	0.14645
	14.000	85.874	17.9420	4.5381	3.9536	0.4594	0.14601
	12.000	86.505	17.9686	4.5398	3.9581	0.4530	0.14566
	10.000	87.116	17.9902	4.5411	3.9617	0.4477	0.14537
	8.000	87.711	18.0072	4.5421	3.9645	0.4435	0.14514
	6.000	88.294	18.0201	4.5429	3.9667	0.4404	0.14497
	4.000	88.868	18.0291	4.5434	3.9682	0.4381	0.14485
	2.000	89.435	18.0345	4.5438	3.9691	0.4368	0.14478
4.00	2.000	15.813	1.2194	1.1519	1.0586	3.8521	0.99920
	4.000	17.258	1.4763	1.3185	1.1196	3.7089	0.99401
	6.000	18.812	1.7743	1.4980	1.1844	3.5679	0.98110
	8.000	20.471	2.1166	1.6879	1.2540	3.4273	0.95845
	10.000	22.234	2.5061	1.8853	1.3293	3.2860	0.92542
	12.000	24.095	2.9445	2.0870	1.4109	3.1439	0.88264
	14.000	26.050	3.4334	2.2898	1.4994	3.0009	0.83170
	16.000	28.098	3.9741	2.4909	1.5954	2.8570	0.77474
	18.000	30.236	4.5667	2.6877	1.6991	2.7128	0.71422
	20.000	32.464	5.2116	2.8782	1.8107	2.5686	0.65240
	22.000	34.786	5.9090	3.0611	1.9304	2.4246	0.59123
	24.000	37.208	6.6592	3.2352	2.0583	2.2809	0.53224
	26.000	39.740	7.4625	3.4002	2.1947	2.1374	0.47648
	28.000	42.402	8.3215	3.5561	2.3401	1.9935	0.42453
	30.000	45.224	9.2397	3.7034	2.4949	1.8485	0.37666
	32.000	48.258	10.2259	3.8430	2.6609	1.7006	0.33272
	34.000	51.605	11.2995	3.9768	2.8413	1.5463	0.29223
	36.000	55.495	12.5100	4.1091	3.0444	1.3776	0.25409
	38.000	60.827	14.0647	4.2556	3.3049	1.1637	0.21432
	38.774	66.059	15.4261	4.3665	3.5329	0.9717	0.18613
	38.000	70.601	16.4407	4.4403	3.7026	0.8196	0.16833
	36.000	74.161	17.1095	4.4855	3.8144	0.7109	0.15785
	34.000	76.297	17.4525	4.5076	3.8718	0.6511	0.15282
	32.000	77.908	17.6808	4.5220	3.9099	0.6090	0.14959
	30.000	79.227	17.8479	4.5324	3.9379	0.5769	0.14729

M_1	θ	β	$\frac{p_2}{p_1}$	$\frac{\rho_2}{\rho_1}$	$\frac{T_2}{T_1}$	M_2	$\frac{p_{02}}{p_{01}}$
4.00	28.000	80.359	17.9765	4.5402	3.9594	0.5513	0.14555
	26.000	81.359	18.0787	4.5464	3.9765	0.5302	0.14419
	24.000	82.261	18.1615	4.5514	3.9903	0.5126	0.14310
	22.000	83.087	18.2296	4.5555	4.0017	0.4978	0.14221
	20.000	83.854	18.2861	4.5588	4.0111	0.4852	0.14148
	18.000	84.574	18.3331	4.5616	4.0190	0.4746	0.14087
	16.000	85.256	18.3723	4.5639	4.0255	0.4655	0.14037
	14.000	85.907	18.4049	4.5659	4.0310	0.4579	0.13996
	12.000	86.533	18.4317	4.5674	4.0355	0.4515	0.13962
	10.000	87.139	18.4535	4.5687	4.0391	0.4463	0.13934
	8.000	87.730	18.4707	4.5697	4.0420	0.4421	0.13912
	6.000	88.307	18.4837	4.5705	4.0442	0.4390	0.13896
	4.000	88.876	18.4928	4.5710	4.0457	0.4367	0.13885
	2.000	89.439	18.4982	4.5713	4.0466	0.4354	0.13878