EO 20-1-2J

ROYAL CANADIAN AIR FORCE

CONVERSION TABLES

ISSUED ON AUTHORITY OF THE CHIEF OF THE AIR STAFF

11 APR 55

LIST OF RCAF REVISIONS

DATE	PAGE NO	DATE	PAGE NO

INTRODUCTION

1 This EO has been prepared to provide a ready reference for converting units of measurement from one type to another, and defining basic laws and terms pertaining to the operation of aircraft instruments. The following information has been included:-

(a) The basic information and conversion Tables for units of measurement of height and airspeed.

(b) Tables for computing true height and true airspeed.

(c) Temperature conversion Tables.

(d) Conversion Tables for units of length, weight, time, area and volume.

(e) Electrical and miscellaneous definitions and basic laws.

(f) Miscellaneous Tables.

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PART 1

ALTITUDE PRESSURE TABLES

THE ATMOSPHERE

1 The earth's atmosphere is a relatively thin layer of gases (mainly nitrogen and oxygen) which surrounds the earth, revolves with it, and becomes more and more diffuse with increase in altitude. The approximate depth of this layer is 50 miles. Water vapour is also present in the atmosphere in variable amounts, the percentage being dependent on the meteorological conditions, the locality and the height above the earth's surface.

2 Each of the gases which composes the atmosphere possess weight, and therefore, air has weight. If the weight of a column of air 1" square and extending to the top of the atmosphere were measured on the earth's surface, the weight in pounds would be approximately 14.7. The word approximate is used because the pressure varies from day to day. or even from hour to hour, and with the location.

MEASUREMENT OF ATMOSPHERIC PRESSURE

3 If a glass tube about 36" long and sealed at one end is completely filled with mercury and inverted in a bowl of mercury without allowing any air to enter, only a little of the mercury in the tube will run into the bowl; that is to say, the mercury column will drop a few inches and then remain stationary. This is because the pressure of the atmosphere acting on the surface of the mercury in the bowl is sufficiently great to support most of the mercury in the tube. If the pressure were to fall, the mercury in the tube would also fall and vice versa. Thus, this simple piece of apparatus if erected and left alone, will indicate at any time the pressure of the atmosphere in terms of the height of the column of mercury. The name of such an instrument is a barometer.

BAROMETERS

4 To determine true atmospheric pressure from a barometer, the column of mercury

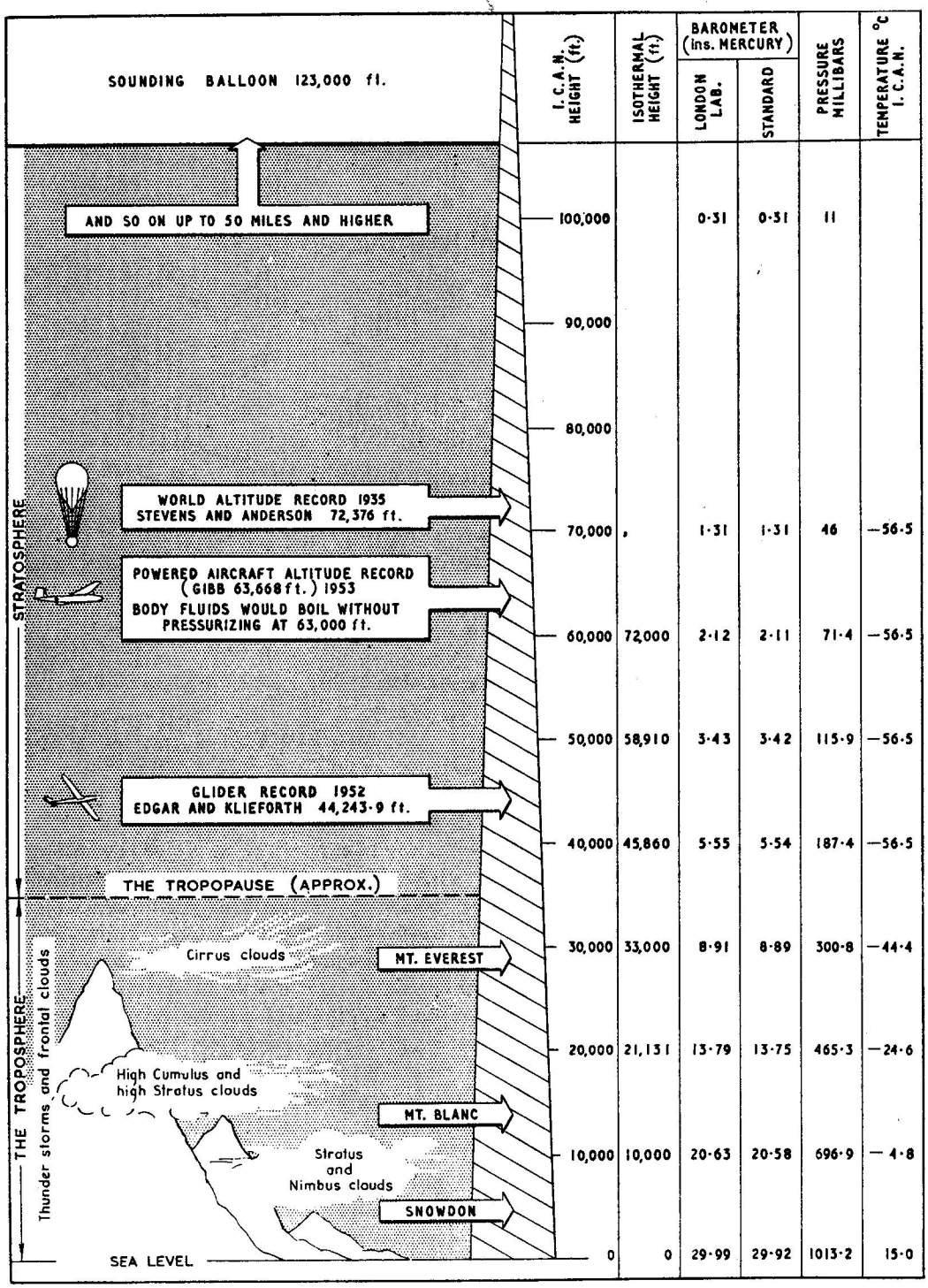


Figure 1-1 The Atmosphere

must be measured from the surface of the mercury in the reservoir to the top of the domed surface or meniscus of the mercury at the top of the column. (The space above the mercury in the tube is known as the Torricellian vacuum). As the surface of the mercury in the cistern must vary with the height of the column, and to ensure that the correct height is being measured, some allowance must be made for the variations of this datum line. Three systems have been devised and are known as the Fortin, Newman and Kew.

The Fortin Barometer

5 This barometer has a fixed scale graduated in true inches, the mercury level in the reservoir being adjusted to a fixed zero before reading. In this type, the base of the cistern is made of leather, and may be raised or lowered by an adjusting screw, thus the level of the mercury may be adjusted to the FIDUCIAL point, which is the fixed zero of the scale.

The Newman Barometer

6 This barometer has a rigid reservoir with an adjustable scale graduated in true inches. The fiducial point of the scale is set to the level of the mercury in the reservoir before reading.

The Kew Barometer

7 The Kew barometer has a rigid reservoir and a fixed scale graduated in CONTRACTED INCHES, which automatically allows for the change in level of the mercury in the reservoir. Example of contracted inches 7/8" on scale actually represents a change of 1" of mercury.

READING THE BAROMETER

8 The height of the column of mercury that atmospheric pressure will support at mean sea level is approximately 29.92". As temperature and gravity will affect the readings of a barometer, certain standard conditions must exist before one barometer can be compared with another or calibrated correctly. A temperature standard is also necessary to provide for:-

(a) Expansion and contraction of glass tube.

(b) Changes in density of mercury. A gravity correction is necessary because it is the force of gravity that gives a substance its weight. A body weighs more at the North Pole than at the equator. The two standard conditions laid down are known as "Standard Conditions" and "London Laboratory Conditions", see para 16.

ANEROID BAROMETER

9 Owing to the lack of portability of the mercurial barometer, the aneroid barometer was introduced. (Aneroid means without liquid).

10 An aneroid box is employed, which consists of a metal capsule corrugated for flexibility and strength, exhausted of air, and usually made of German silver. It is mounted on a base plate and prevented from collapsing by a spring (called the C spring) which extends over the top of the box.

11 When the atmospheric pressure increases, the sides of the capsule are pressed together against the action of the spring; when the pressure decreases, the elasticity of the spring causes the box to expand. The movements of the box and spring are magnified by a system of levers, and communicated to a pointer by a fusee chain which indicates on a dial calibrated in inches or other units to correspond with the readings of a mercurial barometer. The hair spring is to keep the chain tight. Altimeters are actually modified aneroid barometers using a system of levers and pinions, U spring and invar pins rather than the fusee chain, C spring and steel strips.

12 No gravity corrections are necessary for the aneroid barometer but it is slightly affected by temperature changes and to compensate for this, there are several methods.

(a) In Cheaper Models - A small quantity of air is often left inside the capsule. The action of the air is as follows:-

(1) As the temperature increases, the C spring weakens tending to allow the capsule to contract. At the same time, the air expands, causing the sides of the capsule to extend slightly thus giving a rougn compensation

(b) In More Expensive Models - The wide range of temperature changes to which the instrument is subjected causes an increase or decrease in the elasticity of the capsule and C spring which would cause them to move a small amount independent of the change in pressure. Compensation for this is effected by soldering a small steel strip to the magnifying lever. With a decrease in temperature, the capsule is opened a small amount due to the increased spring tension, and the magnifying lever is moved up. The magnifying lever and its steel insert both contract with the decrease in temperature, and as their co-efficients of expansion differ, the brass lever shrinks more than its steel insert, and the lever is warped, the transmitting end moving downwards. The warping of the lever is so adjusted that there is no scale deflection of the pointer for any changes of temperature.

MOISTURE IN THE ATMOSPHERE

13 Moisture is present in the atmosphere in various forms such as water vapour, mist fog, rain, snow, hail, etc. As the temperature of the air is increased, its ability to hold moisture is increased. The following terms are used in connection with moisture in the atmosphere.

(a) Unsaturated Air - Is air that does not contain all the moisture it can hold at a given temperature.

(b) Saturated Air - Is air that does contain all the moisture it can hold at a given temperature.

(c) Dew-Point - Is the temperature at which vapour in the air begins to condense.

(d) Vapour Content or Actual Humidity - Is the amount of water vapour actually present in the air at a given temperature.

(e) Vapour Capacity - Is the maximum amount of water vapour that a unit volume of air can hold at a given temperature.

RELATIVE HUMIDITY

14 Relative humidity is the ratio of the amount of water vapour actually present in the air to the amount it could hold at that temperature. Relative humidity is expressed as a percent. It may be found thus:-

$$\text{Relative Humidity} = \frac{\text{Vapour Content}}{\text{Vapour Capacity}} \times 100$$

For example, it the air holds only half the water vapour it could hold at a certain temperature, the relative humidity is said to be 50%.

MEAN SEA LEVEL

15 Mean sea level is the average level of the sea as calculated from a long series of observations obtained at equal intervals of time.

16 In order that some standard of comparison may exist for calibration purposes, the following two sets of conditions are laid down:-

(a) Standard Conditions - The average atmospheric pressure for a latitude of 45° and a temperature of 0°C at mean sea level is 29.921" of mercury.

(b) London Laboratory Condition - The average atmospheric pressure for a latitude of 51 1/2° and a temperature of 16.67°C at mean sea level is 29.994 inches of mercury.

17 The atmospheric pressure changes with height, the pressure becoming less as height increases. The atmospheric pressure at any particular height is variable, and therefore it is not possible to state what pressure corresponds to a given height, without taking direct measurement of the various factors at and up to that height. Pressure variations affect the height readings of an altimeter, and temperature variations affect the density of the air, and thus the pressure.

18 Since temperature is continually varying at different heights, a number of laws have been devised for determining temperature at a given altitude. Two laws are in current use at present, known respectively as the Isothermal and the ICAN Laws, the latter being the more widely used.

THE ISOTHERMAL LAW

19 This law is based on the assumption that

the temperature at all heights is 10°C. This law makes no attempt to approximate the actual average temperature and therefore is not widely used in the service.

THE ICAN LAW

20 The letters ICAN are an abbreviation of International Commission for Aerial Navigation which was a convention set up to clarify certain aspects of aerial navigation, and which defined and adopted "an international standard atmosphere". This definition forms the basis of the ICAN calibration law, which states:-

> The temperature falls uniformly at the rate of 1.98°C per 1,000 feet of altitude, from 15°C on the ground to -56.5°C at 36,090 feet above which it remains constant.

21 Altimeters calibrated to the ICAN Law indicate, within reasonable limits, the correct altitude without needing any additional temperature correction, however, for really accurate readings, temperature corrections are still necessary.

UNITED STATES (US) STANDARD PRESSURE-ALTITUDE TABLES

22 The US Standard Pressure-Altitude Tables are the same as those adopted by the International Commission for Aerial Navigation (ICAN).

23 Units of measurement most commonly used in the service for indicating atmospheric pressure are "inches of mercury" and "millibars". Using Standard Conditions, the atmospheric pressure at sea level is 29.921" of mercury and 1013.25 millibars. Tables 1 and 2 list the equivalent atmospheric pressure in inches of mercury and millibars for the heights shown, Table 3 lists the temperatures and pressures for heights shown.

NOTE

> The meteorological unit of atmospheric pressure is the BAR which is equal to a pressure of one million dynes (one megadyne) per sq. cm. The millibar is the thousandth part of a bar and is therefore equal to a pressure of 1,000 dynes per sq.cm. A dyne is a force that gives a 1 gm. weight an acceleration of 1 cm. per sec. 29.92 inches of mercury is equivalent to 1013.2 mbs.

PRESSURE CONVERSION TABLES

24 Tables 4 to 9 inclusive cover conversion tables for centimeters of water, inches of water, centimeters of mercury, inches of mercury, millibars, and pounds per square inch respectively.

25 These tables have been computed, using the following factors:-

1" of water	2.54 cm. of water
1" of mercury	13.57" of water
1 cm. of mercury	0.394" of mercury
1 cm. of water	0.981 millibars
1" of mercury	0.490 lbs. per sq. in.

26 The relationship of millibars has been calculated for London Laboratory Conditions, i.e., lat. 51 1/2°; temp. 16.67° C, at mean sea level. The correction involved is in the order of 0.07" of mercury to 1,000 millibars as between 51 1/2° latitude, 16.67° C and 45° latitude, 0° C.

27 A graph, see Figure 1-2, provides any reference for converting inches of mercury to millibars and vice versa in the range required for setting barometric pressure on altimeter sub scales. This graph has been computed for Standard Conditions.

DETERMINING TRUE ALTITUDE

28 Two sets of scales are provided for determining true altitude, one using mean temperatures, the other using flight temperatures.

29 To determine true altitude using mean temperatures, refer to Table 10 and proceed as follows:-

(a) Put a straight edge from the sea level temperature on scale t_o to the flight temperature on scale t_h. Make a mark where it goes across the mean temperature on scale t_m. Put the straight edge from this mark to the altitude

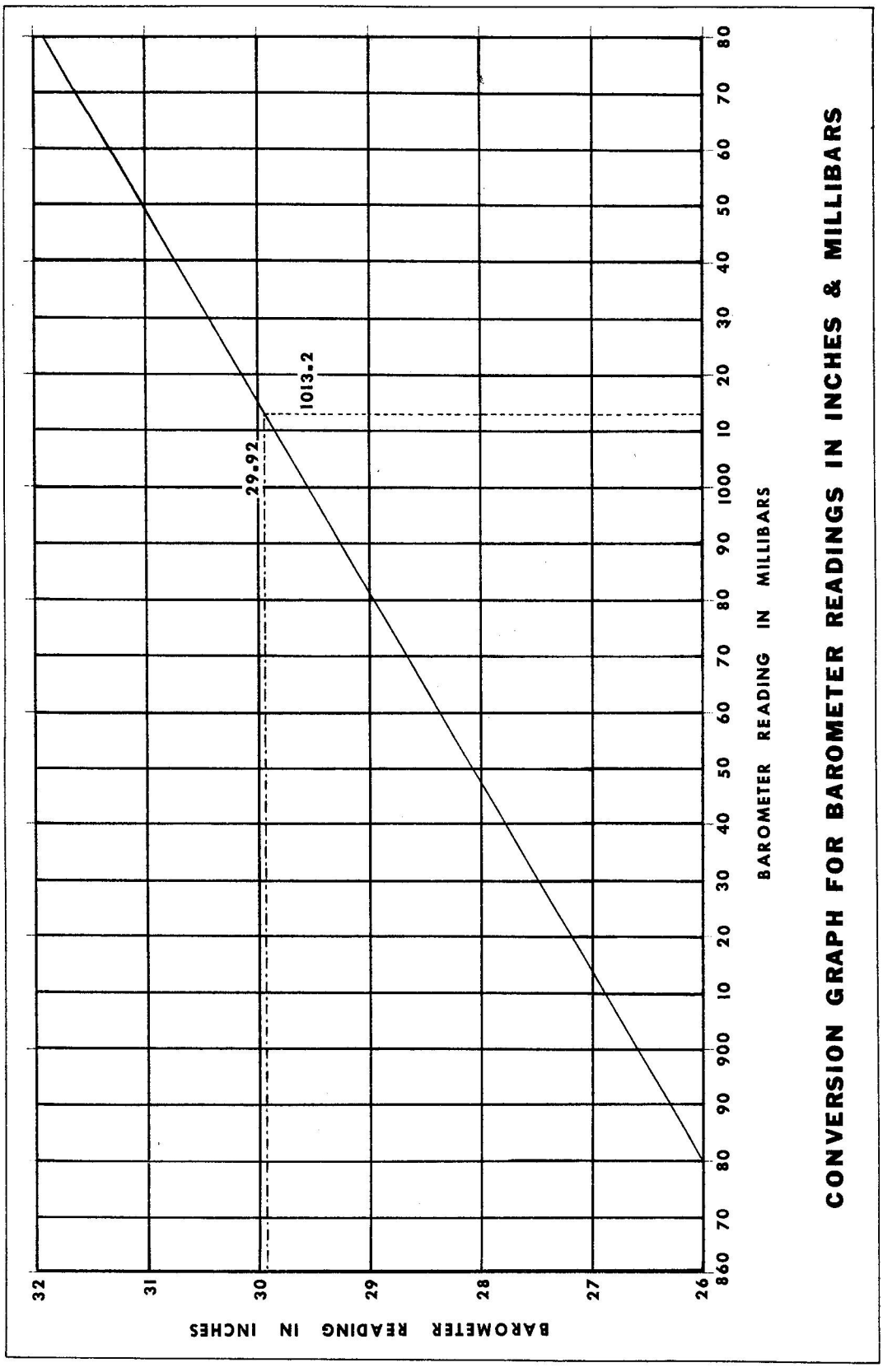

CONVERSION GRAPH FOR BAROMETER READINGS IN INCHES & MILLIBARS
BAROMETER READING IN MILLIBARS
BAROMETER READING IN INCHES
1013.2
29.92
32
31
30
29
28
27
26
860 70 80 90 900 10 20 30 40 50 60 70 80 90 1000 10 20 30 40 50 60 70 80

Figure 1-2

TABLE 1

ALTITUDE-PRESSURE TABLE - FEET-INCHES

Altitude in Feet, Pressure in Inches of Mercury (O C)

P Inches	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.8	80,522	80,262	80,005	79,751	79,501	79,253	79,008	78,766	78,526	78,289
0.9	78,056	77,825	77,596	77,369	77,145	76,924	76,705	76,488	76,273	76,060
1.0	75,850	75,641	75,435	75,231	75,029	74,828	74,629	74,433	74,238	74,045
1.1	73,854	73,665	73,477	73,291	73,107	72,924	72,743	72,563	72,384	72,207
1.2	72,032	71,858	71,686	71,515	71,346	71,178	71,011	70,845	70,681	70,518
1.3	70,357	70,196	70,037	69,879	69,722	69,566	69,411	69,258	69,106	68,955
1.4	68,805	68,656	68,508	68,361	68,215	68,070	67,926	67,784	67,642	67,501
1.5	67,361	67,221	67,082	66,945	66,809	66,674	66,539	66,405	66,272	66,140
1.6	66,009	65,879	65,749	65,620	65,492	65,365	65,239	65,113	64,988	64,864
1.7	64,740	64,617	64,495	64,374	64,253	64,133	64,014	63,895	63,777	63,660
1.8	63,543	63,427	63,311	63,196	63,082	62,969	62,856	62,744	62,632	62,521
1.9	62,411	62,301	62,191	62,082	61,974	61,867	61,760	61,654	61,548	61,442
2.0	61,337	61,232	61,128	61,025	60,922	60,820	60,618	60,617	60,516	60,416
2.1	60,315	60,215	60,116	60,018	59,920	59,823	59,726	59,629	59,533	59,437
2.2	59,341	59,246	59,152	59,058	58,964	58,871	58,778	58,686	58,594	58,502
2.3	58,411	58,320	58,229	58,139	58,049	57,960	57,871	57,782	57,694	57,606
2.4	57,519	57,432	57,345	57,259	57,173	57,088	57,003	56,918	56,833	56,749
2.5	56,665	56,581	56,498	56,415	56,332	56,250	56,168	56,086	56,005	55,924
2.6	55,844	55,763	55,683	55,603	55,524	55,445	55,366	55,287	55,209	55,131
2.7	55,053	54,975	54,898	54,821	54,745	54,669	54,593	54,517	54,442	54,367
2.8	54,292	54,217	54,143	54,069	53,995	53,921	53,848	53,775	53,702	53,629
2.9	53,557	53,485	53,413	53,341	53,270	53,199	53,127	53,057	52,987	52,917
3.0	52,847	52,777	52,707	52,638	52,570	52,501	52,432	52,364	52,926	52,228
3.1	52,161	52,093	52,026	51,959	51,892	51,826	51,759	51,693	51,627	51,561
3.2	51,496	51,430	51,365	51,300	51,235	51,171	51,107	51,043	50,979	50,916
3.3	50,852	50,789	50,726	50,663	50,600	50,537	50,475	50,413	50,351	50,290
3.4	50,228	50,167	50,104	50,044	49,982	49,922	49,862	49,801	49,741	49,680
3.5	49,620	49,561	49,501	49,442	49,382	49,323	49,264	49,206	49,147	49,089
3.6	49,030	48,972	48,915	48,857	48,799	48,741	48,684	48,627	48,570	48,513
3.7	48,456	48,400	48,344	48,288	48,232	48,175	48,120	48,065	48,009	47,954
3.8	47,898	47,843	47,789	47,734	47,679	47,624	47,570	47,516	47,462	47,408
3.9	47,354	47,301	47,248	47,194	47,141	47,088	47,035	46,982	46,930	46,877
4.0	46,824	46,772	46,720	46,668	46,616	46,564	46,513	46,461	46,410	46,358
4.1	46,307	46,256	46,206	46,155	46,104	46,053	46,003	45,953	45,903	45,853
4.2	45,803	45,753	45,704	45,654	45,605	45,555	45,506	45,458	45,408	45,359
4.3	45,310	45,262	45,213	45,165	45,117	45,068	45,020	44,973	44,925	44,877
4.4	44,829	44,782	44,734	44,687	44,640	44,592	44,546	499	44,452	44,405
4.5	44,358	44,312	44,266	44,220	44,173	44,127	44,081	44,036	43,990	43,944
4.6	43,898	43,853	43,808	43,762	43,717	43,672	43,627	43,582	537	492
4.7	448	43,403	43,359	43,315	43,270	43,226	43,182	43,138	43,094	43,050
4.8	43,007	42,963	42,920	42,876	42,833	42,790	42,747	42,704	42,661	42,618
4.9	42,575	532	490	447	42,404	42,362	42,320	42,278	42,236	42,193
5.0	42,151	42,110	42,068	42,026	41,985	41,943	41,902	41,861	41,819	41,778
5.1	41,737	41,696	41,655	41,614	573	532	492	451	411	370
5.2	41,330	41,290	41,250	41,210	41,170	41,130	41,090	41,050	41,011	40,971
5.3	40,931	40,892	40,853	40.813	40,774	40,735	40,696	40,657	40,618	579
5.4	540	502	463	425	386	40,347	40,309	40,271	40,233	40,195
5.5	40,156	40,118	40,080	40,043	40,005	39,967	39,929	39,892	39,854	39,816
5.6	39,779	39,742	39,704	39,667	39,630	593	556	519	482	445
5.7	408	372	39,335	39,298	39,262	39,225	39,189	39,153	39,117	39,080
5.8	39,044	39,008	38,972	38,936	38.900	38,864	38,829	38,793	38,757	38,722
5.9	38.686	38,651	615	580	545	509	474	439	404	369

TABLE 1 (Cont'd)

ALTITUDE-PRESSURE TABLE - FEET-INCHES

Altitude in Feet, Pressure in Inches of Mercury (OC)

P Inches	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
6.0	38,334	38,300	38,265	38,230	38,200	38,161	38,126	38,092	38,057	38,023
6.1	37,989	37,954	37,920	37,886	37,852	37,818	37,784	37,750	37,716	37,682
6.2	648	615	581	547	514	480	447	413	380	346
6.3	37,313	37,280	37,247	37,214	37,181	37,147	37,115	37,082	37,049	37,016
6.4	36,983	36,951	36,918	36,886	36,853	36,820	36,788	36,756	36,723	36,691
6.5	659	627	595	563	531	498	467	435	403	371
6.6	339	36,308	36,276	36,245	36,213	36,181	36,150	36,119	36,087	36,056
6.7	36,024	35,993	35,962	35,931	35,900	35,869	35,838	35,807	35,776	35,745
6.8	35,714	683	653	622	591	560	530	499	469	438
6.9	408	378	347	317	35,287	35,257	35,227	35,197	35,167	35,136
7.0	35,106	35,077	35,047	35,017	34,987	34,957	34,927	34,898	34,868	34,838
7.1	34,809	34,779	34,749	34,720	690	661	631	602	573	543
7.2	514	485	455	426	397	368	339	310	34,281	34,251
7.3	34,222	34,194	34,165	34,136	34,107	34,078	34,049	34,020	33,992	33,963
7.4	33,934	33,906	33,877	33,848	33,820	33,791	33,763	33,734	706	678
7.5	649	621	593	564	536	508	480	452	424	395
7.6	367	339	311	283	33,255	33,227	33,200	33,172	33,144	33,116
7.7	33,088	33,061	33,033	33,005	32,978	32,950	32,922	32,895	32,867	32,840
7.8	32,812	32,785	32,758	32,730	703	676	648	621	594	567
7.9	539	512	485	458	431	404	377	350	323	296
8.0	269	32,242	32,215	32,188	32,161	32,135	32,108	32,081	32,054	32,028
8.1	32,001	31,975	31,948	31,921	31,895	31,868	31,842	31,815	31,789	31,763
8.2	31,736	710	684	657	631	605	578	552	526	500
8.3	474	448	422	396	370	344	318	292	266	31,240
8.4	31,214	31,188	31,163	31,137	31,111	31,085	31,060	31,034	31,008	30,983
8.5	30,957	30,931	30,906	30,880	30,855	30,829	30,804	30,778	30,753	728
8.6	702	677	652	626	601	576	550	525	500	475
8.7	449	424	399	374	349	324	299	274	249	30,224
8.8	30,199	30,174	30,149	30,125	30,100	30,075	30,050	30,025	30,001	29,976
8.9	29,951	29,927	29,902	29,877	29,853	29,828	29,804	29,779	29,755	730
9.0	706	681	657	633	608	584	560	535	511	487
9.1	462	438	414	390	366	342	317	293	269	245
9.2	29,221	29,197	29,173	29,149	29,125	29,101	29,077	29,053	29,029	29,005
9.3	28,982	28,958	28,934	28,910	28,887	28,863	28,839	28,816	28,792	28,768
9.4	745	721	698	674	650	627	603	580	556	533
9.5	510	486	463	439	416	393	369	346	323	300
9.6	276	253	230	28,207	28,184	28,161	28,138	28,115	28,092	28,069
9.7	28,046	28,023	28,000	27,977	27,954	27,931	27,908	27,885	27,862	27,839
9.8	27,816	27,794	27,771	748	725	702	680	657	634	612
9.9	589	566	544	521	499	476	453	431	408	386
10.0	363	341	318	296	274	251	229	27,206	27,184	27,162
10.1	27,140	117	095	073	050	028	006	26,984	26,962	26,940
10.2	26,917	895	873	851	829	807	785	763	741	719
10.3	697	676	654	632	610	588	566	544	523	501
10.4	479	457	436	27,414	27,392	27,371	27,349	327	306	284
10.5	262	27,241	27,219	26,198	26,176	26,155	26,133	26,112	26,090	26,069
10.6	26,048	26,026	26,005	25,984	25,962	25,941	25,919	25,898	25,877	25,856
10.7	25,834	25,813	25,792	771	749	728	707	686	665	644
10.8	622	601	580	559	538	517	496	475	454	433
10.9	412	391	370	350	329	308	287	266	245	224

TABLE 1 (Cont'd)

ALTITUDE-PRESSURE TABLE - FEET-INCHES

Altitude in Feet, Pressure in Inches of Mercury (O C)

P Inches	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
11.0	25,204	25,183	25,162	25,141	25,121	25,100	25,079	25,059	25,038	25,017
11.1	24,996	24,976	24,955	24,935	24,914	24,894	24,873	24,852	24,832	24,811
11.2	791	770	750	730	709	689	668	648	628	607
11.3	587	567	546	526	506	486	465	445	425	405
11.4	384	364	344	324	304	284	263	243	223	203
11.5	24,183	24,163	24,143	24,123	24,103	24,083	24,063	24,043	24,023	24,003
11.6	23,983	23,963	23,944	23,924	23,904	23,884	23,864	23,844	23,824	23,805
11.7	785	765	745	726	706	686	666	647	627	607
11.8	588	568	549	529	509	490	470	451	431	412
11.9	392	373	353	334	314	295	275	256	237	217
12.0	198	23,178	23,159	23,140	23,121	23,101	23,082	23,063	23,043	23,024
12.1	23,005	22,986	22,966	22,947	22,928	22,909	22,890	22,870	22,851	22,832
12.2	22,813	794	775	756	737	618	698	679	660	641
12.3	622	603	584	565	547	528	509	490	471	452
12.4	433	414	395	377	358	339	320	301	282	264
12.5	245	226	207	189	22,170	22,151	22,133	22,114	22,095	22,077
12.6	22,058	22,040	22,021	22,002	21,984	21,965	21,947	21,928	21,910	21,891
12.7	21,872	21,854	21,836	21,817	799	780	762	743	725	706
12.8	688	670	651	633	615	596	578	560	542	523
12.9	505	487	469	450	432	414	396	377	359	341
13.0	323	305	287	268	250	232	214	196	21,178	21,160
13.1	21,142	21,124	21,106	21,088	21,070	21,052	21,034	21,016	20,998	20,980
13.2	20,962	20,944	20,926	20,908	20,890	20,873	20,855	20,837	819	801
13.3	783	765	748	730	712	694	677	659	641	623
13.4	605	588	570	552	535	517	499	482	464	446
13.5	429	411	394	376	358	341	323	306	288	271
13.6	253	236	218	201	183	20,166	20,149	20,131	20,114	20,096
13.7	20,079	20,061	20,044	20,027	20,009	19,992	19,975	19,957	19,940	19,922
13.8	19,905	19,888	19,871	19,853	19,836	819	802	784	767	750
13.9	733	715	698	681	664	647	630	613	595	578
14.0	561	544	527	510	493	476	459	442	425	408
14.1	391	374	357	340	323	306	289	272	255	238
14.2	221	204	187	170	19,154	19,137	19,120	19,103	19,086	19,069
14.3	19,052	19,036	19,019	19,002	18,985	18,969	18,952	18,935	18,918	18,902
14.4	18,885	18,868	18,852	18,835	818	802	785	768	752	735
14.5	718	702	685	668	652	635	619	602	586	569
14.6	553	536	520	503	487	470	454	437	421	404
14.7	388	371	355	339	322	306	289	273	257	240
14.8	224	208	191	175	18,159	18,142	18,126	18,110	18,093	18,077
14.9	18,061	18,045	18,028	18,012	17,996	17,980	17,963	17,947	17,931	17,915
14.0	17,899	17,882	17,866	17,850	834	818	802	786	770	754
15.1	737	721	705	689	673	657	641	625	609	593
15.2	577	561	545	529	513	497	481	465	449	433
15.3	417	402	386	370	354	338	322	306	290	275
15.4	259	243	227	211	196	180	164	17,148	17,132	17,117
15.5	17,101	17,085	17,069	17,054	17,038	17,022	17,007	16,991	16,975	16,959
15.6	16,944	16,928	16,912	16,897	16,881	16,866	16,850	834	819	803
15.7	787	772	756	741	725	710	694	679	663	648
15.8	632	617	601	586	570	555	539	524	508	493
15.9	477	462	447	431	416	400	385	370	354	339

TABLE 1 (Cont'd)

ALTITUDE-PRESSURE TABLE - FEET-INCHES

Altitude in Feet, Pressure in Inches of Mercury (O C)

P Inches	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
16.0	324	308	293	278	262	247	232	216	201	186
16.1	171	155	16,140	16,125	16,110	16,094	16,079	16,064	16,049	16,034
16.2	16,018	16,003	15,988	15,973	15,958	15,943	15,927	15,912	15,897	15,882
16.3	15,867	15,852	837	822	806	791	776	761	746	731
16.4	716	701	686	671	656	641	626	611	596	581
16.5	566	551	536	521	506	491	476	461	446	431
16.6	416	402	387	372	357	342	327	312	298	283
16.7	268	253	238	224	209	194	179	164	150	15,135
16.8	15,120	15,105	15,091	15,076	15,061	15,047	15,032	15,017	15,002	14,988
16.9	14,973	14,958	14,944	14,929	14,914	14,900	14,885	14,870	14,856	841
17.0	826	812	797	783	768	753	739	724	710	695
17.1	681	666	652	637	622	608	594	579	564	550
17.2	536	521	507	492	478	463	449	434	420	406
17.3	391	377	362	348	334	319	305	291	276	262
17.4	247	233	219	204	190	176	162	147	14,133	14,119
17.5	14,104	14,090	14,076	14,062	14,047	14,033	14,019	14,005	13,990	13,976
17.6	13,962	13,948	13,943	13,919	13,905	13,891	13,877	13,863	849	834
17.7	820	806	792	778	764	750	736	722	707	693
17.8	679	665	651	637	623	609	595	581	567	553
17.9	539	525	511	497	483	469	455	441	427	413
18.0	399	385	371	357	343	329	315	301	287	274
18.1	260	246	232	218	204	190	176	163	149	13,135
18.2	13,121	13,107	13,094	13,080	13,066	13,052	13,038	13,025	13,011	12,997
18.3	12,983	12,970	12,956	12,942	12,928	12,915	12,901	12,887	12,872	860
18.4	846	832	819	805	791	778	764	750	736	723
18.5	709	695	682	668	655	641	627	614	600	587
18.6	573	559	546	532	519	505	492	478	464	451
18.7	437	424	410	397	383	370	356	343	329	316
18.8	302	289	275	262	249	235	222	208	195	181
18.9	168	155	141	12,128	12,114	12,101	12,088	12,074	12,061	12,048
19.0	12,034	12,021	12,008	11,994	11,981	11,968	11,954	11,941	11,928	11,914
19.1	11,901	11,888	11,874	861	848	835	821	808	795	781
19.2	768	755	742	729	715	702	689	676	663	649
19.3	636	623	610	597	584	570	557	544	531	518
19.4	505	491	478	465	452	439	426	413	400	387
19.5	374	360	347	334	321	308	295	282	269	256
19.6	243	230	217	204	191	178	165	152	139	11,126
19.7	11,113	11,100	11,087	11,074	11,061	11,048	11,035	11,023	11,010	10,997
19.8	10,984	10,971	10,958	10,945	10,932	10,919	10,906	10,894	10,881	868
19.9	855	842	829	816	804	791	778	765	752	739
20.0	726	714	701	688	675	662	650	637	624	611
20.1	599	586	573	560	548	535	522	509	497	484
20.2	471	459	446	433	421	408	395	383	370	357
20.3	344	332	319	307	294	281	269	256	243	231
20.4	218	206	193	180	168	155	143	130	10,117	10,105
20.5	10,092	10,080	10,067	10,055	10,042	10,030	10,017	10,005	9,992	9,980
20.6	9,967	9,955	9,942	9,930	9,917	9,905	9,892	9,880	9,867	9,855
20.7	9,842	9,830	9,817	9,805	9,793	9,780	9,768	9,755	9,743	9,730
20.8	9,718	9,706	9,693	9,681	9,668	9,656	9,644	9,631	9,619	9,607
20.9	9,594	9,582	9,570	9,557	9,545	9,532	9,520	9,508	9,495	9,483

TABLE 1 (Cont'd)

ALTITUDE-PRESSURE TABLE - FEET-INCHES

Altitude in Feet, Pressure in Inches of Mercury (O C)

P Inches	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
21.0	9,471	9,458	9,446	9,434	9,422	9,409	9,397	9,385	9,372	9,360
21.1	9,348	9,336	9,323	9,311	9,299	9,287	9,274	9,262	9,250	9,238
21.2	9,225	9,213	9,201	9,189	9,176	9,164	9,152	9,140	9,128	9,116
21.3	9,103	9,091	9,079	9,067	9,055	9,043	9,030	9,018	9,006	8,994
21.4	8,982	8,970	8,958	8,946	8,933	8,921	8,909	8,897	8,885	8,873
21.5	8,861	8,849	8,837	8,825	8,813	8,801	8,789	8,776	8,764	8,752
21.6	8,740	8,728	8,716	8,704	8,692	8,680	8,668	8,656	8,644	8,632
21.7	8,620	8,608	8,596	8,584	8,572	8,560	8,548	8,536	8,524	8,512
21.8	8,500	8,489	8,477	8,465	8,453	8,441	8,429	8,417	8,405	8,393
21.9	8,381	8,369	8,357	8,346	8,334	8,322	8,310	8,298	8,286	8,274
22.0	8,262	8,250	8,239	8,227	8,215	8,203	8,191	8,179	8,168	8,156
22.1	8,144	8,132	8,120	8,109	8,097	8,085	8,073	8,061	8,050	8.038
22.2	8,026	8,014	8,003	7,991	7,979	7,967	7,956	7,944	7,932	7,920
22.3	7,909	7,897	7,885	7,873	7,862	7,850	7,838	7,827	7,815	7,803
22.4	7,791	7,780	7,768	7,756	7,745	7,733	7,721	7,710	7,698	7,686
22.5	7,675	7,663	7,652	7,640	7,628	7,617	7,605	7,593	7,582	7,570
22.6	7,559	7,547	7,535	7,524	7,512	7,501	7,489	7,478	7,466	7,454
22.7	7,443	7,431	7,420	7,408	7,397	7,385	7,374	7,362	7,350	7,339
22.8	7,327	7,316	7,304	7,293	7,281	7,270	7,258	7,247	7,235	7,224
22.9	7,212	7,201	7,189	7,178	7,167	7,155	7,144	7,132	7,121	7,109
23.0	7,098	7,086	7,075	7,064	7,052	7,041	7,029	7,018	7,006	6,995
23.1	6,984	6,972	6,961	6,949	6,938	6,927	6,915	6,904	6,893	6,881
23.2	6,870	6,858	6,847	6,836	6,824	6,813	6,802	6,790	6,779	6,768
23.3	6,756	6,745	6,734	6,722	6,711	6,700	6,688	6,677	6,666	6,655
23.4	6,643	6,632	6,621	6,610	6,598	6,587	6,576	6,564	6,553	6,542
23.5	6,531	6,519	6,508	6,497	6,486	6,475	6,463	6,452	6,441	6,430
23.6	6,418	6,407	6,396	6,385	6,374	6,363	6,351	6,340	6,329	6,318
23.7	6,307	6,296	6,284	6,273	6,262	6,251	6,240	6,229	6,218	6,206
23.8	6,195	6,184	6,173	6,162	6,154	6,140	6,129	6,118	6,106	6,095
23.9	6,084	6,073	6,062	6,051	6,040	6,029	6,018	6,007	5,996	5,985
24.0	5,974	5,962	5,951	5,940	5,929	5,918	5,907	5,896	5,885	5,874
24.1	5,863	5,852	5,841	5,830	5,819	5,808	5,797	5,786	5,775	5,764
24.2	5,753	5,742	5,731	5,720	5,709	5,698	5,687	5,676	5,666	5,655
24.3	5,644	5,633	5,622	5,611	5,600	5,589	5,578	5,567	5,555	5,545
24.4	5,534	5,524	5,513	5,502	5,491	5,480	5,469	5,458	5,447	5,436
24.5	5,425	5,415	5,404	5,393	5,382	5,371	5,360	5,350	5,339	5,328
24.6	5,317	5,306	5,295	5,285	5,274	5,263	5,252	5,241	5,230	5,220
24.7	5,209	5,198	5,187	5,176	5,166	5,155	5,144	5,133	5,123	5,112
24.8	5,101	5,090	5,080	5,069	5,058	5,047	5,037	5,026	5,015	5,004
24.9	4,994	4,983	4,972	4,961	4,951	4,940	4,929	4,919	4,908	4,897
25.0	4,886	4,876	4,865	4,854	4,844	4,833	4,822	4,812	4,801	4,790
25.1	4,780	4,769	4,758	4,748	4,737	4,726	4,716	4,705	4,695	4,684
25.2	4,673	4,663	4,652	4,642	4,631	4,620	4,610	4,599	4,588	4,578
25.3	4,567	4,557	4,546	4,536	4,525	4,514	4,504	4,493	4,483	4,472
25.4	4,462	4,451	4,440	4,430	4,419	4,409	4,398	4,388	4,377	4,367
25.5	4,356	4,346	4,335	4,325	4,314	4,304	4,293	4,283	4,272	4,262
25.6	4,251	4,241	4,230	4,220	4,209	4,199	4,188	4,178	4,167	4,157
25.7	4,146	4,136	4,125	4,115	4,105	4,094	4,084	4,073	4,063	4,052
25.8	4,042	4,032	4,021	4,011	4,000	3,990	3,980	3,969	3,959	3,948
25.9	3,938	3,928	3,917	3,907	3,896	3,886	3,876	3,865	3,855	3,845

TABLE I (Cont'd)

ALTITUDE-PRESSURE TABLE - FEET-INCHES

Altitude in Feet, Pressure in Inches of Mercury (O C)

P Inches	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
26.0	3,834	3,824	3,814	3,803	3,793	3,782	3,772	3,762	3,751	3,741
26.1	3,731	3,720	3,710	3,700	3,689	3,679	3,669	3,659	3,648	3,638
26.2	3,628	3,617	3,607	3,597	3,586	3,576	3,566	3,556	3,545	3,535
26.3	3,525	3,515	3,504	3,494	3,484	3,474	3,463	3,453	3,443	3,433
26.4	3,422	3,412	3,402	3,392	3,382	3,371	3,361	3,351	3,341	3,331
26.5	3,320	3,310	3,300	3,290	3,279	3,269	3,259	3,249	3,239	3,229
26.6	3,218	3,208	3,198	3,188	3,178	3,168	3,157	3,147	3,137	3,127
26.7	3,117	3,107	3,097	3,086	3,076	3,066	3,056	3,046	3,036	3,026
26.8	3,016	3,005	2,995	2,985	2,975	2,965	2,955	2,945	2,935	2,925
26.9	2,915	2,905	2,895	2,884	2,874	2,864	2,854	2,844	2,834	2,824
27.0	2,814	2,804	2,794	2,784	2,774	2,764	2,754	2,744	2,734	2,724
27.1	2,714	2,704	2,694	2,684	2,674	2,664	2,654	2,644	2,634	2,624
27.2	2,614	2,604	2,594	2,584	2,574	2,564	2,554	2,544	2,534	2,524
27.3	2,514	2,504	2,494	2,484	2,474	2,464	2,454	2,444	2,434	2,425
27.4	2,415	2,405	2,395	2,385	2,375	2,365	2,355	2,345	2,335	2,325
27.5	2,315	2,306	2,296	2,286	2,276	2,266	2,256	2,246	2,236	2,226
27.6	2,217	2,207	2,197	2,187	2,177	2,167	2,158	2,148	2,138	2,128
27.7	2,118	2,108	2,098	2,089	2,079	2,069	2,059	2,049	2,040	2,030
27.8	2,020	2,010	2,000	1,990	1,981	1,971	1,961	1,951	1,942	1,932
27.9	1,922	1,912	1,902	1,893	1,883	1,873	1,863	1,854	1,844	1,834
28.0	1,824	1,814	1,805	1,795	1,785	1,776	1,766	1,756	1,746	1,737
28.1	1,727	1,717	1,707	1,698	1,688	1,678	1,668	1,659	1,649	1,639
28.2	1,630	1,620	1,610	1,601	1,591	1,581	1,572	1,562	1,552	1,542
28.3	1,533	1,523	1,513	1,504	1,494	1,484	1,475	1,465	1,456	1,446
28.4	1,436	1,427	1,417	1,407	1,398	1,388	1,378	1,369	1,359	1,350
28.5	1,340	1,330	1,321	1,311	1,302	1,292	1,282	1,273	1,263	1,254
28.6	1,244	1,234	1,225	1,215	1,206	1,196	1,186	1,177	1,167	1,158
28.7	1,148	1,139	1,129	1,120	1,110	1,100	1,091	1,081	1,072	1,062
28.8	1,053	1,043	1,034	1,024	1,015	1,005	995	986	976	967
28.9	957	948	938	929	919	910	900	891	881	872
29.0	863	853	844	834	825	815	806	796	787	777
29.1	768	758	749	739	730	721	711	702	692	683
29.2	673	664	655	645	636	626	617	607	598	589
29.3	579	570	560	551	542	532	523	514	504	495
29.4	485	476	467	457	448	439	429	420	410	401
29.5	392	382	373	364	354	345	335	326	317	307
29.6	298	289	280	270	261	252	242	233	224	215
29.7	205	196	187	177	168	159	149	140	131	122
29.8	112	103	94	85	75	66	57	47	38	29
29.9	20	10	1	-8	-17	-26	-36	-45	-54	-63
30.0	-73	-82	-91	-100	-110	-119	-128	-137	-146	-156
30.1	-165	-174	-183	-192	-202	-211	-220	-229	-238	-248
30.2	-257	-266	-275	-284	-293	-303	-312	-321	-330	-339
30.3	-348	-358	-367	-376	-385	-394	-403	-412	-421	-431
30.4	-440	-449	-458	-467	-476	-485	-494	-504	-513	-522
30.5	-531	-540	-549	-558	-567	-576	-585	-594	-604	-613
30.6	-622	-631	-640	-649	-658	-667	-676	-685	-694	-703
30.7	-712	-721	-730	-740	-749	-758	-767	-776	-785	-794
30.8	-803	-812	-821	-830	-839	-848	-857	-866	-875	-884
30.9	-893	-902	-911	-920	-929	-938	-947	-956	-965	-974
31.0	-983	-992	-1,001	-1,010	-1,019	-1,028	-1,037	-1,046	-1,055	-1,064

TABLE 2

ALTITUDE-PRESSURE TABLE - FEET-MILLIBARS

Altitude in Feet, Pressure in Millibars

Pressure Millibars	0	1	2	3	4	5	6	7	8	9
10	101389	99393	97573	95896	94346	92899	91548	90279	89082	87950
20	86876	85854	84880	83950	83059	82204	81383	80592	79832	79099
30	78386	77700	77035	76392	75766	75159	74569	73996	73437	72894
40	72363	71846	71341	70850	70367	69897	69437	68986	68545	68114
50	67691	67277	66870	66470	66079	65695	65318	64947	64583	64226
60	63873	63527	63187	62852	62522	62198	61878	61563	61253	60947
70	60646	60438	60056	59768	59483	59202	58924	58651	58381	58114
80	57850	57590	57333	57079	56828	56580	56335	56093	55854	55617
90	55383	55152	54924	54697	54474	54252	54032	53815	53601	53388
100	53178	52969	52763	52559	52357	52157	51958	51761	51566	51374
110	51182	50993	50805	50619	50433	50251	50071	49891	49713	49536
120	49360	49187	49014	48844	48674	48506	48339	48173	48009	47846
130	47685	47525	47365	47207	47050	46895	46740	46587	46434	46283
140	46133	45984	45836	45690	45543	45399	45255	45111	44970	44829
150	44689	44550	44411	44274	44138	44002	43867	43734	43601	43469
160	43337	43207	43077	42948	42820	42693	42566	42440	42315	42191
170	42067	41944	41822	41701	41580	41460	41341	41222	41104	40987
180	40870	40754	40639	40525	40411	40297	40184	40072	39961	39850
190	39739	39629	39520	39411	39303	39195	39088	38981	38875	38769
200	38664	38560	38456	38353	38250	38148	38046	37945	37844	37744
210	37644	37544	37445	37347	37249	37151	37054	36957	36861	36765
220	36669	36575	36480	36386	36292	36199	36106	36014	35922	35830
230	35739	35648	35557	35467	35377	35288	35199	35110	35022	34934
240	34846	34759	34672	34585	34498	34412	34326	34240	34154	34069
250	33984	33900	33815	33731	33647	33564	33481	33398	33315	33232
260	33150	33068	32986	32905	32823	32743	32662	32581	32501	32421
270	32341	32262	32182	32103	32024	31946	31867	31789	31711	31634
280	31556	31479	31402	31325	31249	31172	31096	31021	30945	30869
290	30794	30719	30644	30570	30495	30421	30347	30273	30199	30126
300	30052	29979	29907	29834	29762	29690	29618	29546	29474	29403
310	29331	29260	29189	29118	29048	28977	28907	28837	28767	28697
320	28628	28559	28489	28420	28351	28283	28214	28146	28078	28011
330	27943	27875	27807	27740	27673	27606	27539	27473	27406	27340
340	27273	27207	27141	27076	27010	26945	26879	26814	26749	26685
350	26620	26555	26491	26427	26363	26299	26235	26172	26108	26045
360	25982	25919	25856	25793	25730	25668	25606	25544	25482	25420
370	25358	25296	25234	25173	25112	25051	24990	24929	24868	24807
380	24747	24687	24627	24567	24507	24447	24387	24328	24268	24209
390	24150	24091	24032	23973	23914	23855	23797	23739	23680	23622
400	23564	23506	23449	23391	23333	23276	23218	23161	23104	23047
410	22900	22934	22877	22821	22764	22708	22652	22596	22540	22484
420	22428	22372	22316	22261	22206	22151	22095	22040	21986	21931
430	21876	21821	21767	21713	21658	21604	21550	21496	21442	21388
440	21335	21281	21228	21174	21121	21068	21015	20962	20909	20856
450	20804	20751	20698	20645	20593	20541	20489	20437	20385	20333
460	20281	20229	20178	20126	20075	20024	19973	19921	19870	19819
470	19769	19718	19667	19616	19566	19515	19465	19414	19364	19314
480	19264	19214	19165	19115	19065	19015	18966	18917	18867	18818
490	18769	18720	18670	18621	18573	18524	18475	18426	18378	18330
500	18281	18233	18185	18136	18088	18040	17993	17945	17897	17849

TABLE 2 (Cont'd)

ALTITUDE-PRESSURE TABLE - FEET-MILLIBARS

Altitude in Feet, Pressure in Millibars

Pressure Millibars	0	1	2	3	4	5	6	7	8	9
510	17802	17754	17706	17659	17612	17564	17517	17470	17423	17376
520	17329	17282	17235	17189	17142	17096	17049	17003	16956	16910
530	16864	16818	16772	16726	16680	16634	16589	16543	16497	16452
540	16406	16361	16316	16270	16225	16180	16135	16090	16045	16000
550	15955	15911	15866	15821	15777	15732	15688	15644	15599	15555
560	15511	15467	15423	15379	15335	15291	15247	15203	15160	15116
570	15073	15029	14986	14943	14899	14856	14813	14770	14726	14683
580	14641	14598	14555	14510	14470	14427	14384	14342	14300	14257
590	14214	14172	14130	14088	14046	14004	13962	13920	13878	13836
600	13795	13753	13711	13670	13628	13587	13545	13504	13463	13422
610	13380	13339	13298	13257	13216	13175	13134	13093	13052	13012
620	12972	12931	12890	12850	12809	12769	12728	12688	12648	12608
630	12568	12528	12488	12448	12408	12368	12328	12288	12248	12209
640	12169	12130	12090	12051	12011	11972	11932	11893	11854	11815
650	11776	11737	11698	11659	11620	11581	11542	11503	11464	11426
660	11387	11349	11310	11271	11233	11195	11156	11118	11079	11041
670	11003	10965	10927	10889	10851	10813	10775	10737	10699	10661
680	10624	10586	10548	10510	10473	10435	10398	10360	10323	10286
690	10249	10211	10174	10137	10100	10063	10026	9989	9952	9915
700	9878	9841	9805	9768	9732	9695	9659	9622	9585	9548
710	9512	9476	9440	9403	9367	9331	9295	9258	9222	9186
720	9150	9114	9079	9043	9007	8970	8934	8899	8864	8828
730	8792	8757	8721	8685	8650	8615	8579	8544	8509	8473
740	8438	8403	8368	8333	8298	8262	8227	8192	8158	8123
750	8088	8053	8018	7983	7949	7914	7880	7815	7810	7776
760	7742	7707	7672	7638	7604	7570	7535	7501	7467	7433
770	7398	7364	7330	7296	7262	7229	7195	7161	7127	7094
780	7060	7026	6992	6958	6925	6891	6857	6823	6791	6757
790	6724	6690	6657	6624	6590	6557	6524	6491	6458	6425
800	6392	6359	6326	6293	6260	6227	6194	6161	6128	6096
810	6063	6030	5998	5965	5932	5900	5867	5835	5802	5769
820	5737	5705	5672	5640	5608	5576	5543	5511	5479	5447
830	5415	5383	5351	5319	5287	5255	5223	5191	5159	5127
840	5069	5064	5032	5000	4969	4937	4905	4874	4842	4811
850	4779	4748	4716	4685	4654	4622	4591	4560	4528	4497
860	4466	4435	4404	4373	4342	4311	4280	4249	4218	4187
870	4156	4125	4094	4063	4032	4002	3971	3940	3910	3879
880	3848	3818	3787	3757	3726	3696	3665	3635	3604	3574
890	3544	3513	3483	3453	3423	3393	3362	3332	3302	3272
900	3242	3212	3182	3152	3122	3092	3062	3032	3002	2973
910	2943	2913	2883	2854	2824	2794	2765	2735	2705	2676
920	2646	2617	2587	2558	2529	2499	2470	2441	2411	2382
930	2352	2323	2294	2265	2236	2206	2177	2148	2119	2090
940	2061	2032	2003	1974	1945	1916	1887	1859	1830	1801
950	1772	1743	1715	1686	1657	1629	1600	1572	1543	1514
960	1486	1458	1429	1400	1372	1344	1315	1287	1259	1230
970	1202	1174	1145	1117	1089	1061	1033	1005	976	948
980	920	892	865	836	808	780	752	724	697	669
990	641	613	585	558	530	502	474	447	419	391
1000	364.	336	309	281	254	226	199	171	144	117
1010	89	62	34	7	-20	-48	-75	-102	-129	-156
1020	-183	-210	-238	-265	-292	-319	-346	-373	-400	-427
1030	-454	-481	-508	-535	-562	-589	-615	-642	-669	-696
1040	-722	-749	-776	-803	-830	-856	-883	-909	-936	-963
1050	-989	-1016	-1042	-1069	-1095	-1121	-1148	-1174	-1200	-1226
1060	-1252	-1278	-1304	-1331	-1357	-1384	-1410	-1437	-1463	-1490
1070	-1516									

TABLE 3

ALTITUDE-PRESSURE-TEMPERATURE TABLE

Altitude, feet	Pressure		Temperature °C	Mean Temperature °C
	in. Hg.	mm Hg.		
-1,000	31.02	787.9	17.0	16.0
-500	30.47	773.8	16.0	15.5
0	29.921	760.0	15.0	15.0
500	29.38	746.4	14.0	14.5
1,000	28.86	732.9	13.0	14.0
1,500	28.33	719.7	12.0	13.5
2,000	27.82	706.6	11.0	13.0
2,500	27.31	693.8	10.0	12.5
3,000	26.81	681.1	9.1	12.0
3,500	26.32	668.6	8.1	11.5
4,000	25.84	656.3	7.1	11.0
4,500	25.36	644.2	6.1	10.5
5,000	24.89	632.3	5.1	10.0
5,500	24.43	620.6	4.1	9.5
6,000	23.98	609.0	3.1	9.0
6,500	23.53	597.6	2.1	8.5
7,000	23.09	586.4	1.1	8.0
7,500	22.65	575.3	0.1	7.5
8,000	22.22	564.4	-0.8	7.0
8,500	21.80	553.7	-1.8	6.5
9,000	21.38	543.2	-2.8	6.0
9,500	20.98	532.8	-3.8	5.5
10,000	20.58	522.6	-4.8	5.0
10,500	20.18	512.5	-5.8	4.5
11,000	19.79	502.6	-6.8	4.0
11,500	19.40	492.8	-7.8	3.5
12,000	19.03	483.3	-8.8	2.9
12,500	18.65	473.8	-9.8	2.4
13,000	18.29	464.5	-10.8	1.9
13,500	17.93	455.4	-11.7	1.4
14,000	17.57	446.4	-12.7	0.9
14,500	17.22	437.5	-13.7	0.4
15,000	16.88	428.8	-14.7	-0.1
15,500	16.54	420.2	-15.7	-0.6
16,000	16.21	411.8	-16.7	-1.2
16,500	15.89	403.5	-17.7	-1.7
17,000	15.56	395.3	-18.7	-2.2
17,500	15.25	387.3	-19.7	-2.7
18,000	14.94	379.4	-20.7	-3.2
18,500	14.63	371.7	-21.7	-3.7
19,000	14.33	364.0	-22.6	-4.3
19,500	14.04	356.5	-23.6	-4.8

TABLE 3 (Cont'd)

ALTITUDE-PRESSURE-TEMPERATURE TABLE

Altitude, feet	Pressure		Temperature °C	Mean Temperature °C
	in. Hg.	mm Hg.		
20,000	13.75	349.1	-24.6	-5.3
20,500	13.46	341.9	-25.6	-5.8
21,000	13.18	334.7	-26.6	-6.3
21,500	12.90	327.7	-27.6	-6.9
22,000	12.63	320.8	-28.6	-7.4
22,500	12.36	314.1	-29.6	-7.9
23,000	12.10	307.4	-30.6	-8.4
23,500	11.84	300.9	-31.6	-9.0
24,000	11.59	294.4	-32.5	-9.5
24,500	11.34	288.1	-33.5	-10.0
25,000	11.10	281.9	-34.5	-10.5
25,500	10.86	275.8	-35.5	-11.1
26,000	10.62	269.8	-36.5	-11.6
26,500	10.39	263.9	-37.5	-12.1
27,000	10.16	258.1	-38.5	-12.7
27,500	9.94	252.5	-39.5	-13.2
28,000	9.72	246.9	-40.5	-13.7
28,500	9.50	241.4	-41.5	-14.3
29,000	9.29	236.0	-42.5	-14.8
29,500	9.08	230.7	-43.4	-15.3
30,000	8.88	225.6	-44.4	-15.9
30,500	8.68	220.5	-45.4	-16.4
31,000	8.48	215.5	-46.4	-16.9
31,500	8.29	210.6	-47.4	-17.5
32,000	8.10	205.8	-48.4	-18.0
32,500	7.91	201.0	-49.4	-18.6
33,000	7.73	196.4	-50.4	-19.1
33,500	7.55	191.8	-51.4	-19.6
34,000	7.38	187.4	-52.4	-20.2
34,500	7.20	183.0	-53.4	-20.7
35,000	7.04	178.7	-54.3	-21.3
35,332	6.93	175.9	-55.0	-21.6
35,500	6.87	174.5	-55.0	-21.8
36,000	6.71	170.4	-55.0	-22.3
36,500	6.55	166.4	-55.0	-22.8
37,000	6.39	162.4	-55.0	-23.3
37,500	6.24	158.6	-55.0	-23.8
38,000	6.10	154.9	-55.0	-24.3
38,500	5.95	151.2	-55.0	-24.8
39,000	5.81	147.6	-55.0	-25.2
39,500	5.68	144.1	-55.0	-25.6

TABLE 3 (Cont'd)

ALTITUDE-PRESSURE-TEMPERATURE TABLE

Altitude, feet	Pressure		Temperature °C	Mean Temperature °C
	in. Hg.	mm Hg.		
40,000	5.54	140.7	-55.0	-26.0
40,500	5.41	137.4	-55.0	-26.4
41,000	5.28	134.2	-55.0	-26.8
41,500	5.16	131.0	-55.0	-27.2
42.000	5.04	127.9	-55.0	-27.6
42,500	4.92	124.9	-55.0	-28.0
43,000	4.80	122.0	-55.0	-28.3
43,500	4.69	119.1	-55.0	-28.6
44,000	4.58	116.3	-55.0	-29.0
44,500	4.47	113.5	-55.0	-29.3
45,000	4.36	110.8	-55.0	-29.6
45,500	4.26	108.2	-55.0	-29.9
46,000	4.16	105.7	-55.0	-30.2
46,500	4.06	103.2	-55.0	-30.5
47,000	3.97	100.7	-55.0	-30.8
47,500	3.873	98.38	-55.0	-31.1
48,000	3.781	96.05	-55.0	-31.4
48,500	3.693	93.79	-55.0	-31.7
49,000	3.605	91.57	-55.0	-31.9
49,500	3.520	89.41	-55.0	-32.2
50,000	3.436	87.30	-55.0	-32.4
51,000	3.276	83.22	-55	
52,000	3.124	79.34	-55	
53,000	2.978	75.64	-55	
54,000	2.839	72.12	-55	
55,000	2.707	68.76	-55	
56,000	2.581	65.55	-55	
57,000	2.460	62.49	-55	
58,000	2.346	59.58	-55	
59,000	2.236	56.80	-55	
60,000	2.132	54.15	-55	
61,000	2.033	51.63	-55	
62,000	1.938	49.22	-55	
63,000	1.847	46.92	-55	
64,000	1.761	44.73	-55	
65,000	1.679	42.65	-55	
66,000	1.601	40.66	-55	
67,000	1.526	38.76	-55	
68,000	1.455	36.95	-55	
69,000	1.387	35.23	-55	

TABLE 3 (Cont'd)

ALTITUDE-PRESSURE-TEMPERATURE TABLE

Altitude, feet	Pressure		Temperature °C	Mean Temperature °C
	in. Hg.	mm Hg.		
70,000	1.322	33.59	-55	
71,000	1.261	32.02	-55	
72,000	1.202	30.53	-55	
73,000	1.146	29.10	-55	
74,000	1.093	27.75	-55	
75,000	1.041	26.45	-55	
76,000	0.993	25.22	-55	
77,000	0.946	24.04	-55	
78,000	0.902	22.92	-55	
79,000	0.860	21.85	-55	
80,000	0.820	20.83	-55	

TABLE 4

1	2	3	4	5	6
Cm. of Water	Cm. of Mercury	In. of Water	In. of Mercury	Lb. per Sq. In.	Millibars
	= 0.0737 (column 1)	= 0.394 (column 1)	= 0.029 (column 1)	= 0.014 (column 1)	= 0.981 (column 1)
0.1	0.01	0.04	0.00	0.00	0.1
0.2	0.01	0.08	0.01	0.00	0.2
0.3	0.02	0.12	0.01	0.00	0.3
0.4	0.03	0.16	0.01	0.01	0.4
0.5	0.04	0.20	0.01	0.01	0.5
1.0	0.07	0.39	0.03	0.01	1.0
1.5	0.11	0.59	0.04	0.02	1.5
2.0	0.15	0.79	0.06	0.03	2.0
2.5	0.18	0.98	0.07	0.04	2.5
3.0	0.22	1.18	0.09	0.04	2.9
3.5	0.26	1.38	0.10	0.05	3.4
4.0	0.29	1.57	0.12	0.06	3.9
4.5	0.33	1.77	0.13	0.06	4.4
5.0	0.37	1.97	0.15	0.07	4.9
5.5	0.41	2.17	0.16	0.08	5.4
6.0	0.44	2.36	0.17	0.09	5.9
6.5	0.48	2.56	0.19	0.09	6.4
7.0	0.52	2.76	0.20	0.10	6.9
7.5	0.55	2.95	0.22	0.11	7.4
8.0	0.59	3.15	0.23	0.11	7.8
8.5	0.63	3.35	0.25	0.12	8.3
9.0	0.66	3.54	0.26	0.13	8.8
9.5	0.70	3.74	0.28	0.14	9.3
10.0	0.74	3.94	0.29	0.14	9.8
10.5	0.77	4.1	0.3	0.1	10.3
11.0	0.81	4.3	0.3	0.2	10.8
11.5	0.85	4.5	0.3	0.2	11.3
12.0	0.88	4.7	0.3	0.2	11.8
12.5	0.92	4.9	0.4	0.2	12.3
13.0	0.96	5.1	0.4	0.2	12.8
13.5	0.99	5.3	0.4	0.2	13.2
14.0	1.03	5.5	0.4	0.2	13.7
14.5	1.07	5.7	0.4	0.2	14.2
15.0	1.11	5.9	0.4	0.2	14.7
16.0	1.18	6.3	0.5	0.2	15.7
17.0	1.25	6.7	0.5	0.2	16.7
18.0	1.33	7.1	0.5	0.3	17.7
19.0	1.40	7.5	0.6	0.3	18.6
20.0	1.47	7.9	0.6	0.3	19.6
25.0	1.84	9.8	0.7	0.4	24.5
30.0	2.21	11.8	0.9	0.4	29.4
35.0	2.58	13.8	1.0	0.5	34.3
40.0	2.95	15.7	1.2	0.6	39.2
45.0	3.32	17.7	1.3	0.6	44.1
50.0	3.68	19.7	1.5	0.7	49.1
60.0	4.42	23.6	1.7	0.9	58.9
70.0	5.16	27.6	2.0	1.0	68.7
80.0	5.90	31.5	2.3	1.1	78.5
90.0	6.63	35.4	2.6	1.3	88.3
100.0	7.37	39.4	2.9	1.4	98.1

EXAMPLES:

1. To convert 67.3 cm. of water to cm. of mercury:-

Cm. of water	Cm. of mercury
60.0	4.42
7.0	0.52
0.3	0.02
67.3	4.96

2. To convert 89.8 cm. of water to millibars:-

Cm. of water	Millibars
80.0	78.5
9.5	9.3
0.3	0.3
89.8	88.1

TABLE 5

1	2	3	4	5	6
In. of Water	Cm. of Water	Cm. of Mercury	In. of Mercury	Lb. per Sq. In.	Millibars
	= 2.54 (column 1)	= 0.187 (column 1)	= 0.0737 (column 1)	= 0.036 (column 1)	= 2.492 (column 1)
0.1	0.25	0.02	0.01	0.00	0.2
0.2	0.51	0.04	0.01	0.01	0.5
0.3	0.76	0.06	0.02	0.01	0.7
0.4	1.02	0.07	0.03	0.01	1.0
0.5	1.27	0.09	0.04	0.02	1.2
1.0	2.5	0.19	0.07	0.04	2.5
1.5	3.8	0.28	0.11	0.05	3.7
2.0	5.1	0.37	0.15	0.07	5.0
2.5	6.3	0.47	0.18	0.09	6.2
3.0	7.6	0.56	0.22	0.11	7.5
3.5	8.9	0.66	0.26	0.13	8.7
4.0	10.2	0.75	0.29	0.14	10.0
4.5	11.4	0.84	0.33	0.16	11.2
5.0	12.7	0.94	0.37	0.18	12.5
5.5	14.0	1.03	0.41	0.20	13.7
6.0	15.2	1.12	0.44	0.22	15.0
6.5	16.5	1.22	0.48	0.23	16.2
7.0	17.8	1.31	0.52	0.25	17.4
7.5	19.0	1.40	0.55	0.27	18.7
8.0	20.3	1.50	0.59	0.29	19.9
8.5	21.6	1.59	0.63	0.31	21.2
9.0	22.9	1.68	0.66	0.33	22.4
9.5	24.1	1.78	0.70	0.34	23.7
10.0	25.4	1.87	0.74	0.36	24.9
10.5	26.7	2.0	0.77	0.4	26.2
11.0	27.9	2.1	0.81	0.4	27.4
11.5	29.2	2.2	0.85	0.4	28.7
12.0	30.5	2.2	0.88	0.4	29.9
12.5	31.7	2.3	0.92	0.5	31.1
13.0	33.0	2.4	0.96	0.5	32.4
13.5	34.3	2.5	0.99	0.5	33.6
14.0	35.6	2.6	1.03	0.5	34.9
14.5	36.8	2.7	1.07	0.5	36.1
15.0	38.1	2.8	1.11	0.5	37.4
16.0	41	3.0	1.18	0.6	39.9
17.0	43	3.2	1.25	0.6	42.4
18.0	46	3.4	1.33	0.7	44.9
19.0	48	3.6	1.40	0.7	47.3
20.0	51	3.7	1.47	0.7	49.8
25.0	63	4.7	1.84	0.9	62.3
30.0	76	5.6	2.21	1.1	74.8
35.0	89	6.6	2.58	1.3	87.2
40.0	102	7.5	2.95	1.4	99.7
45.0	114	8.4	3.32	1.6	112.1
50.0	127	9.4	3.68	1.8	124.6
60.0	152	11.2	4.42	2.2	149.5
70.0	178	13.1	5.16	2.5	174.4
80.0	203	15.0	5.90	2.9	199.3
90.0	229	16.8	6.63	3.3	224.3
100.0	254	18.7	7.37	3.6	249.2
200.0	508	37	14.7	7	498
300.0	762	56	22.1	11	748
400.0	1016	75	29.5	14	997

EXAMPLE:

1. To convert 128.3 in. of water to in. of mercury:-

In. of water	In. of mercury
100.0	7.37
25.0	1.84
3.0	0.22
0.3	0.02
128.3	9.45

TABLE 6

1	2	3	4	5	6
Cm. of Mercury	In. of Mercury	Cm. of Water	In. of Water	Lb. per Sq. In.	Millibars London Lab. Cond.
	= 0.394 (column 1)	= 13.57 (column 1)	= 5.34 (column 1)	= 0.193 (column 1)	= 13.31 (column 1)
0.01	0.00	0.14	0.05	0.00	0.1
0.02	0.01	0.27	0.11	0.00	0.3
0.03	0.01	0.41	0.16	0.01	0.4
0.04	0.02	0.54	0.21	0.01	0.5
0.05	0.02	0.68	0.27	0.01	0.7
0.10	0.04	1.36	0.53	0.02	1.3
0.15	0.06	2.04	0.80	0.03	2.0
0.20	0.08	2.71	1.07	0.04	2.7
0.25	0.10	3.39	1.34	0.05	3.3
0.30	0.12	4.07	1.60	0.06	4.0
0.35	0.14	4.75	1.87	0.07	4.7
0.40	0.16	5.43	2.14	0.08	5.3
0.45	0.18	6.11	2.40	0.09	6.0
0.50	0.20	6.78	2.67	0.10	6.7
1.00	0.39	13.6	5.3	0.19	13.3
2.00	0.79	27.1	10.7	0.39	26.6
3.00	1.18	40.7	16.0	0.58	39.9
4.00	1.57	54.3	21.4	0.77	53.2
5.00	1.97	67.8	26.7	0.97	66.6
6.00	2.36	81.4	32.1	1.16	79.9
7.00	2.76	95.0	37.4	1.35	93.2
8.00	3.15	108.6	42.7	1.54	106.5
9.00	3.54	122.1	48.1	1.74	119.8
10.00	3.94	135.7	53.4	1.93	133.1
15.0	5.9	204	80	2.9	200
20.0	7.9	271	107	3.9	266
25.0	9.8	339	134	4.8	333
30.0	11.8	407	160	5.8	399
35.0	13.8	475	187	6.8	466
40.0	15.7	543	214	7.7	532
45.0	17.7	611	240	8.7	599
50.0	19.7	678	267	9.7	666
60.0	23.6	814	321	11.6	799
70.0	27.6	950	374	13.5	932
80.0	31.5	1086	427	15.4	1065
90.0	35.4	1221	481	17.4	1198
100.0	39.4	1357	534	19.3	1331

EXAMPLE:

1. To convert 8.77 cm. of mercury to millibars:-

Cm. of mercury	Millibars
8.00	106.5
0.50	6.7
0.20	2.7
0.05	0.7
0.02	0.3
8.77	116.9

TABLE 7

1	2	3	4	5	6
In. of Mercury	In. of Water	Cm. of Mercury	Cm. of Water	Lb. per Sq. In.	Millibars
	= 13.57 (column 1)	= 2.54 (column 1)	= 34.47 (column 1)	= 0.490 (column 1)	= 33.813 (column 1)
0.01	0.14	0.03	0.34	0.00	0.3
0.02	0.27	0.05	0.69	0.01	0.7
0.03	0.41	0.08	1.03	0.01	1.0
0.04	0.54	0.10	1.38	0.02	1.4
0.05	0.68	0.13	1.72	0.02	1.7
0.10	1.36	0.25	3.45	0.05	3.4
0.20	2.71	0.51	6.89	0.10	6.8
0.30	4.07	0.76	10.34	0.15	10.1
0.40	5.43	1.02	13.79	0.20	13.5
0.50	6.78	1.27	17.23	0.25	16.9
0.60	8.14	1.52	20.68	0.29	20.3
0.70	9.50	1.78	24.13	0.34	23.7
0.80	10.86	2.03	27.57	0.39	27.1
0.90	12.21	2.29	31.02	0.44	30.4
1.00	13.57	2.54	34.47	0.49	33.8
2.00	27.1	5.1	68.9	0.98	67.6
3.00	40.7	7.6	103.4	1.47	101.4
4.00	54.3	10.2	137.9	1.96	135.3
5.00	67.8	12.7	172.3	2.45	169.1
6.00	81.4	15.2	206.8	2.94	202.9
7.00	95.0	17.8	241.3	3.43	236.7
8.00	108.6	20.3	275.7	3.92	270.5
9.00	122.1	22.9	310.2	4.41	304.3
10.00	135.7	25.4	344.7	4.90	338.1
11.0	149	28	379	5.4	371.9
12.0	163	30	414	5.9	405.8
13.0	176	33	448	6.4	439.6
14.0	190	36	483	6.9	473.4
15.0	204	38	517	7.4	507.2
16.0	217	41	551	7.8	541.0
17.0	231	43	586	8.3	574.8
18.0	244	46	620	8.8	608.6
19.0	258	48	655	9.3	642.4
20.0	271	51	689	9.8	676.3
21.0	285	53	724	10.3	710.1
22.0	299	56	758	10.8	743.9
23.0	312	58	793	11.3	777.7
24.0	326	61	827	11.8	811.5
25.0	339	63	862	12.3	845.3
26.0		66		12.7	879.1
27.0		69		13.2	912.9
28.0		71		13.7	946.8
29.0		74		14.2	980.6
30.0		76		14.7	1014.4
31.0		79		15.2	1048.2
32.0		81		15.7	1082.0
33.0		84		16.2	1115.8
34.0		86		16.7	1149.6
35.0		89		17.2	1183.4

EXAMPLES:

1. To convert 25.31 in. of mercury to lb. per sq. in. :-

In. of mercury	Lb. per sq. in.
25.0	12.3
0.30	0.15
0.01	0.00
25.31	12.45

2. To convert 8.53 in. of mercury to millibars:-

In. of mercury	Millibars
8.00	270.5
0.50	16.9
0.03	1.0
8.53	288.4

TABLE 8

1	2	3	4	5	6
Millibars	In. of Mercury	Cm. of Mercury	Cm. of Water	In. of Water	Lb. per Sq. In.
	= 0.02957 (column 1)	= 0.0751 (column 1)	= 1.019 (column 1)	= 0.401 (column 1)	= 0.0145 (column 1)
0.1	0.00	0.01	0.10	0.04	0.00
0.2	0.01	0.02	0.20	0.08	0.00
0.3	0.01	0.02	0.31	0.12	0.00
0.4	0.01	0.03	0.41	0.16	0.01
0.5	0.01	0.04	0.51	0.20	0.01
1.0	0.03	0.08	1.02	0.40	0.01
2.0	0.06	0.15	2.04	0.80	0.03
3.0	0.09	0.23	3.06	1.20	0.04
4.0	0.12	0.30	4.08	1.61	0.06
5.0	0.15	0.38	5.10	2.01	0.07
6.0	0.18	0.45	6.12	2.41	0.09
7.0	0.21	0.53	7.14	2.81	0.10
8.0	0.24	0.60	8.15	3.21	0.12
9.0	0.27	0.68	9.17	3.61	0.13
10.0	0.30	0.75	10.19	4.01	0.14
20.0	0.59	1.50	20.4	8.0	0.29
30.0	0.89	2.25	30.6	12.0	0.44
40.0	1.18	3.00	40.8	16.1	0.58
50.0	1.48	3.76	51.0	20.1	0.72
60.0	1.77	4.51	61.2	24.1	0.87
70.0	2.07	5.26	71.4	28.1	1.02
80.0	2.37	6.01	81.5	32.1	1.16
90.0	2.66	6.76	91.7	36.1	1.30
100.0	2.96	7.51	101.9	40.1	1.45
150.0	4.44	11.3	153	60	2.2
200.0	5.91	15.0	204	80	2.9
250.0	7.39	18.8	255	100	3.6
300.0	8.87	22.5	306	120	4.4
350.0	10.35	26.3	357	140	5.1
400.0	11.83	30.0	408	161	5.8
450.0	13.31	33.8	459	181	6.5
500.0	14.78	37.6	510	201	7.2
600.0	17.74	45.1	612	241	8.7
700.0	20.70	52.6	714	281	10.2
800.0	23.66	60.1	815	321	11.6
900.0	26.61	67.6	917	361	13.0
1000.0	29.57	75.1	1019	401	14.5
1100.0	32.53	82.6	1121	441	16.0
1200.0	35.48	90.1	1223	482	17.4

EXAMPLE:

1. To convert 978.3 millibars to cm. of mercury:-

Millibars	Cm. of mercury
900.0	67.6
70.0	5.26
8.0	0.60
0.3	0.02
978.3	73.48

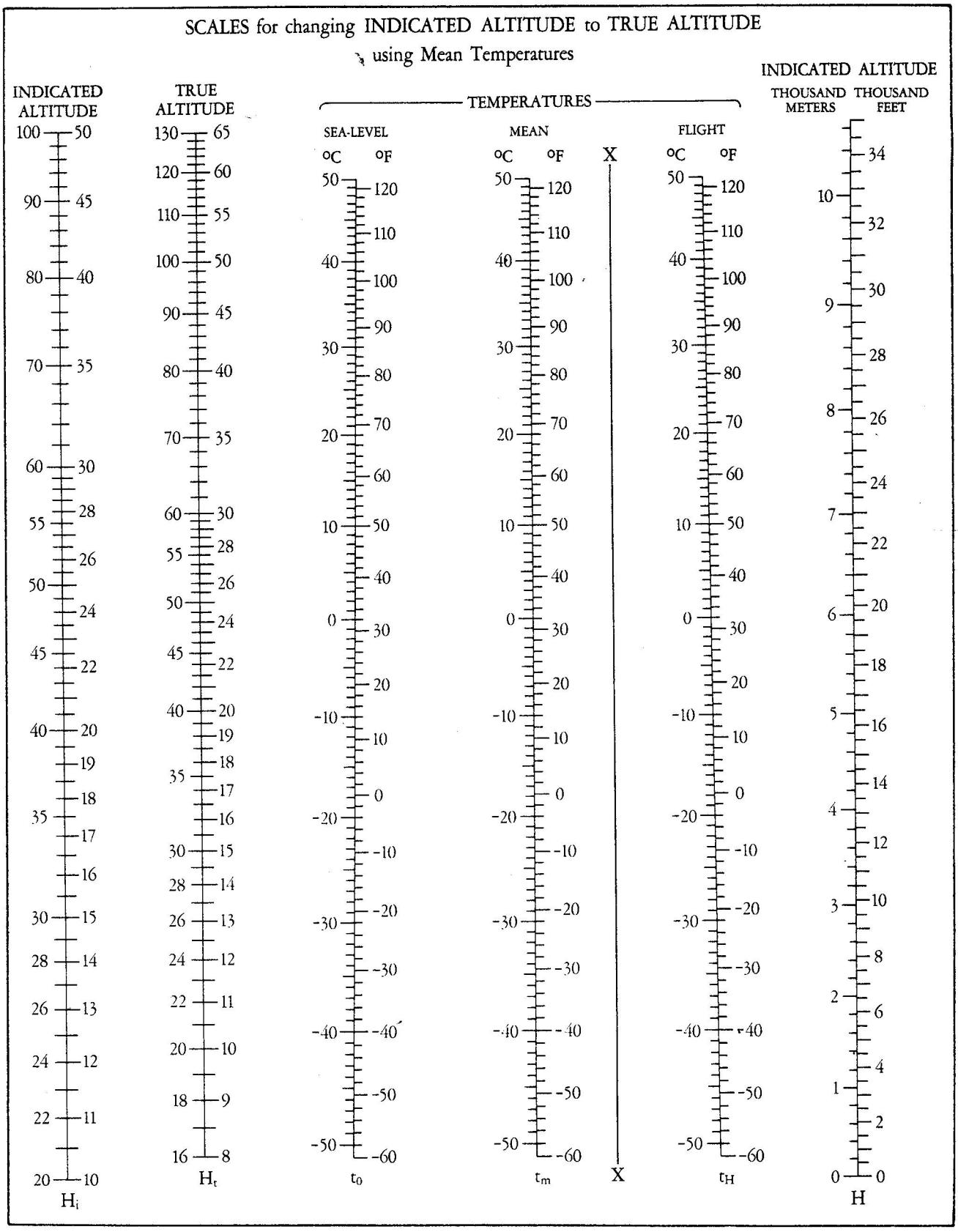
TABLE 9

1	2	3	4	5	6
Lb. per Sq. In.	In. of Mercury	Cm. of Mercury	In. of Water	Cm. of Water	Millibars
	= 2.04 (column 1)	= 5.18 (column 1)	= 27.7 (column 1)	= 70.3 (column 1)	= 69.0 (column 1)
1/4	0.5	1.3	7.0	17.6	17
1/2	1.0	2.6	14.0	35.2	34
3/4	1.5	3.9	21.0	52.7	52
1	2.0	5.2	27.5	70.3	69
1 1/4	2.5	6.5	34.5	88	86
1 1/2	3.1	7.8	41.5	105	103
1 3/4	3.6	9.1	48.5	123	121
2	4.1	10.4	55.5	141	138
3	6.1	15.5	83.0	211	207
4	8.2	20.7	110.5	281	276
5	10.2	25.9	138.5	352	345
6	12.2	31.1	166.0	422	414
7	14.3	36.3	194.0	492	483
8	16.3	41.4	221.5	562	552
9	18.4	46.6	249.0	633	621
10	20.4	51.8	277.0	703	690
11	22.4	57.0			759
12	24.5	62.2			828
13	26.5	67.4			897
14	28.6	72.5			966
15	30.6	77.7			1035
16	32.6	82.9			1104
17	34.7	88.1			1172
18	36.7	93.3			1241
19	38.8	98.4			1310
20	40.8	103.6			1379

EXAMPLE:

1. To convert 4 3/4 lb. per sq.in. to millibars:-

Lb. per sq.in.	Millibars
4	276
3/4	52
4 3/4	328


SCALES for changing INDICATED ALTITUDE to TRUE ALTITUDE
using Mean Temperatures
INDICATED ALTITUDE
TRUE ALTITUDE
TEMPERATURES
SEA-LEVEL
MEAN
FLIGHT
°C °F
INDICATED ALTITUDE
THOUSAND METERS
THOUSAND FEET
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SCALES for changing INDICATED ALTITUDE to TRUE ALTITUDE
using Flight Temperatures

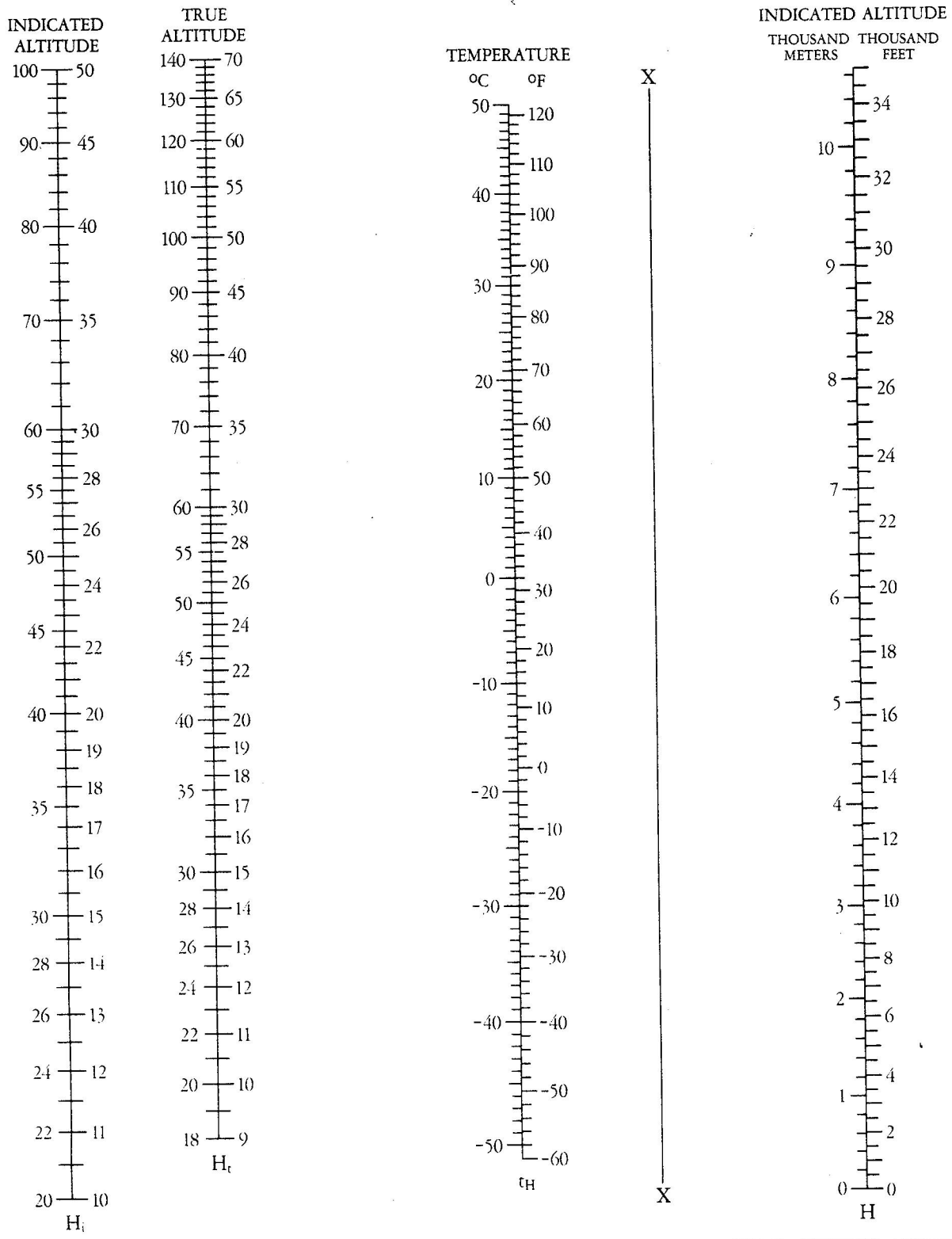


Table 11

on scale H and make a mark where it goes across line X-X. Put the straight edge from this mark to the indicated altitude on scale H_i. Where it goes across scale H_t is the true altitude.

(b) To use altitude over the ground and temperature at the ground in place of sea-level values, put the straight edge from the ground temperature on scale t_o to the flight temperature on scale t_h. Make a mark where it goes across the mean temperature on scale t_m. Put the straight edge from this mark to a point on scale H equal to flight altitude (over the ground) plus twice the ground altitude, and make a mark where the straight edge goes across line X-X. Put the straight edge from this mark to the indicated altitude (over the ground) on scale H_i. Where it goes across scale H_t is the true altitude (over the ground).

(c) Use the right side of scale H_i with the right side of scale H_t, and the left side of scale H_i with the left side of scale H_t. The numbers on these scales may be used for any altitude units, for example; 35 may be used for 350 meters, 3,500 feet, 3,500 meters or 35,000 feet.

30 To determine true altitude using flight temperatures, refer to Table 11 and proceed as follows:-

(a) Put a straight edge from the temperature on scale t_h to the altitude (over sea-level) on scale H and make a mark where it goes across line X-X. Put the straight edge from this mark to the indicated altitude (over the ground) on scale H_i. Where it goes across scale H_t is the true altitude (over the ground).

(b) Use the right side of scale H_i with the right side of scale H_t, and the left side of scale H_i with the left side of scale H_t. The numbers on these scales may be used for any altitude units, for example; 35 may be used for 350 meters, 3,500 feet, 3,500 meters or 35,000 feet.

PART 2

TABLE OF CONTENTS

PART 2

AIRSPEED PRESSURE TABLES

MANOMETERS

1 The three types of fluid most commonly used in manometers for calibration of airspeed indicators, are water, mercury and bromo-benzine. Their densities are as follows:-

(a) Water - 1 gm per cc.

(b) Mercury - 13.6 gm per cc.

(c) Bromo-benzine - 1.5 gms per cc.

NOTE

Density - The weight per unit volume (Density = $\frac{\text{weight}}{\text{volume}}$ expressed as gms per cc (or lbs. per cu.ft - English System).

Specific Gravity - A ratio which the weight for a given volume of a body bears to the weight of an equal volume of water

$$\text{Sp.G.} = \frac{\text{Weight of Body}}{\text{Weight of equal volume of water}}$$

Specific Gravity is expressed as a number only, that is Sp.G. of mercury is "13.6". (Using the English System, Sp.G. is determined by dividing the density by 62.5 since one cubic foot of water weighs 62.5 lbs.).

SPEED OF SOUND IN AIR

2 The speed of sound depends on the temperature and density of the air. The speed increases by 2 ft. per second for each degree Centigrade rise in temperature. The speed decreases as the air becomes less dense. The speed of sound at sea level (29.92" hg) and a temperature of 15° C is 761.07 mph.

MACH. NUMBER

3 The Mach. number of an aircraft is defined as the ratio of its true airspeed to the velocity of sound in the air in which it is flying. It is of importance to the pilot because there is a limiting value of Mach. number for a given type of aircraft which may not be exceeded without a dangerous aerodynamic condition arising. The purpose of the machmeter or mach. airspeed indicator, therefore, is to give a continuous indication of the ratio of true airspeed to the speed of sound in the case of machmeters, and to indicate the maximum airspeed at which an aircraft may be flown in the case

TABLE 12

Indicated Mach No.	Rectified ASI Reading in Knots at Static Pressure Corresponding to Height Shown in ICAN Ft.						
	Sea Level	1,000 ft.	2,000 ft.	10,000 ft.	20,000 ft.	30,000 ft.	40,000 ft.
0.50	330	324	319	277	228	184	146
0.60	396	390	383	333	275	223	177
0.62	410	403	396	345	285	231	183
0.64	423	416	409	356	294	239	189
0.66	436	429	422	367	304	247	196
0.68	449	442	435	379	314	255	202
0.70	462	455	448	391	324	263	209
0.72	476	468	461	402	334	271	216
0.74	489	481	474	414	344	279	222
0.76	502	494	486	426	353	287	229
0.78	515	507	499	437	364	296	235
0.80	528	520	512	449	374	304	242
0.82	542	534	525	461	384	313	249
0.84	555	547	538	473	394	321	256
0.86	568	560	551	485	404	330	263
0.90	594	586	577	509	425	347	277
1.00				569	478	391	313

TABLE 13

TABLE OF DIFFERENTIAL PRESSURES FOR AIR SPEEDS

STANDARD PRESSURE VALUES - The standard pressure values used in computing Table 13 are 29.9212 inches of mercury, 407.200 inches of water, and 14.6960 pounds per square inch. These pressures correspond to mercury at 0°C (32°F) water at approximately 15.8°C (60.4°F) and acceleration due to gravity of 980.665 cm/sec^2. When manometers are used under other temperature and gravity conditions, the necessary corrections shall be made.

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
.000000	.00000	.000000	0	.000000	.00000	.000000
.000024	.00065	.000048	1	.000036	.00049	.000018
.000094	.00261	.000192	2	.000145	.00197	.000071
.000212	.00587	.000432	3	.000325	.00443	.000160
.000377	.01044	.000767	4	.000578	.00787	.000284
.000589	.01631	.001199	5	.000904	.01230	.000444
.000848	.02349	.001726	6	.001302	.01771	.000639
.001154	.03198	.002350	7	.001772	.02411	.000870
.001507	.04177	.003069	8	.002314	.03149	.001137
.001908	.05286	.003884	9	.002929	.03986	.001439
.002355	.06526	.004795	10	.003616	.04921	.001776
.002850	.07897	.005803	11	.004375	.05954	.002149
.003392	.09398	.006906	12	.005207	.07086	.002557
.003981	.11030	.008105	13	.006111	.08316	.003001
.004617	.12792	.009400	14	.007087	.09645	.003481
.005300	.14685	.010790	15	.008136	.11072	.003996
.006030	.16708	.012277	16	.009257	.12598	.004547
.006808	.18863	.013860	17	.010451	.14222	.005133
.007632	.21147	.015539	18	.011717	.15945	.005755
.008504	.23563	.017314	19	.013055	.17766	.006412
.009423	.26109	.019185	20	.014465	.19686	.007105
.010389	.28786	.021152	21	.015948	.21704	.007833
.011402	.31593	.023215	22	.017504	.23821	.008597
.012463	.34532	.025374	23	.019131	.26036	.009397
.013570	.37601	.027629	24	.020832	.28350	.010232
.014725	.40801	.029980	25	.022604	.30762	.011102
.015927	.44131	.032428	26	.024449	.33273	.012008
.017176	.47593	.034971	27	.026367	.35883	.012950
.018473	.51185	.037611	28	.028357	.38591	.013928
.019817	.54908	.040347	29	.030419	.41398	.014941

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
.021208	.58762	.043179	30	.032554	.44303	.015989
.022646	.62747	.046107	31	.034761	.47307	.017073
.024131	.66863	.049131	32	.037041	.50409	.018193
.025664	.71110	.052252	33	.039393	.53611	.019348
.027244	.75488	.055469	34	.041818	.56911	.020539
.028871	.79997	.058782	35	.044316	.60310	.021766
.030546	.84637	.062191	36	.046886	.63807	.023028
.032268	.89408	.065697	37	.049528	.67403	.024326
.034037	.94310	.069299	38	.052243	.71098	.025660
.035853	.99343	.072998	39	.055031	.74892	.027029
.037717	1.0451	.076793	40	.057891	.78784	.028434
.039629	1.0980	.080684	41	.060824	.82776	.029874
.041587	1.1523	.084672	42	.063829	.86866	.031350
.043593	1.2079	.088756	43	.066908	.91055	.032862
.045647	1.2648	.092937	44	.070058	.95343	.034410
.047748	1.3230	.09721	45	.073282	.9973	.035993
.049896	1.3825	.10159	46	.076578	1.0422	.037612
.052092	1.4434	.10606	47	.079947	1.0880	.039266
.054335	1.5055	.11063	48	.083389	1.1348	.040957
.056625	1.5690	.11529	49	.086903	1.1827	.042683
.058964	1.6338	.12005	50	.090490	1.2315	.044445
.061349	1.6999	.12491	51	.094150	1.2813	.046242
.063782	1.7673	.12986	52	.097883	1.3321	.048076
.066263	1.8360	.13491	53	.101688	1.3839	.049945
.068792	1.9061	.14006	54	.105566	1.4367	.051850
.071367	1.9775	.14530	55	.10952	1.4904	.053790
.073991	2.0502	.15065	56	.11354	1.5452	.055767
.076662	2.1242	.15608	57	.11764	1.6010	.057779
.079381	2.1995	.16162	58	.12181	1.6577	.059827
.082147	2.2761	.16725	59	.12605	1.7154	.061911
.084961	2.3541	.17298	60	.13037	1.7742	.064031
.087823	2.4334	.17881	61	.13476	1.8339	.066186
.090732	2.5140	.18473	62	.13922	1.8946	.068378
.093689	2.5960	.19075	63	.14375	1.9563	.070605
.096694	2.6792	.19687	64	.14836	2.0191	.072868

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
.09975	2.7638	.20309	65	.15304	2.0828	.075168
.10285	2.8497	.20940	66	.15780	2.1475	.077503
.10600	2.9369	.21581	67	.16262	2.2132	.079874
.10919	3.0255	.22232	68	.16752	2.2798	.082280
.11244	3.1154	.22892	69	.17250	2.3475	.084723
.11573	3.2066	.23562	70	.17754	2.4162	.087202
.11907	3.2991	.24242	71	.18266	2.4859	.089757
.12245	3.3930	.24932	72	.18786	2.5566	.092267
.12589	3.4882	.25631	73	.19312	2.6282	.094854
.12937	3.5847	.26341	74	.19846	2.7009	.097477
.13291	3.6826	.27060	75	.20388	2.7746	.10014
.13649	3.7818	.27788	76	.20936	2.8492	.10283
.14011	3.8823	.28527	77	.21492	2.9249	.10556
.14379	3.9841	.29275	78	.22056	3.0016	.10833
.14751	4.0873	.30034	79	.22626	3.0792	.11113
.15128	4.1918	.30802	80	.23204	3.1579	.11397
.15510	4.2977	.31579	81	.23790	3.2376	.11685
.15897	4.4048	.32367	82	.24383	3.3182	.11976
.16289	4.5134	.33164	83	.24983	3.3999	.12270
.16685	4.6232	.33971	84	.25590	3.4826	.12569
.17087	4.7344	.34788	85	.26205	3.5663	.12871
.17493	4.8469	.35615	86	.26827	3.6509	.13176
.17904	4.9608	.36452	87	.27457	3.7366	.13486
.18319	5.0760	.37299	88	.28094	3.8233	.13798
.18740	5.1925	.38155	89	.28738	3.9110	.14115
.19165	5.3104	.39021	90	.29390	3.9997	.14435
.19596	5.4296	.39897	91	.30049	4.0894	.14759
.20031	5.5502	.40783	92	.30715	4.1801	.15086
.20471	5.6721	.41679	93	.31386	4.2718	.15417
.20916	5.7954	.42585	94	.32070	4.3645	.15752
.21365	5.9200	.43500	95	.32759	4.4582	.16090
.21820	6.0459	.44426	96	.33455	4.5529	.16432
.22279	6.1732	.45361	97	.34158	4.6487	.16777
.22744	6.3019	.46306	98	.34869	4.7454	.17126
.23213	6.4319	.47262	99	.35588	4.8431	.17479

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
.23684	6.5632	.48227	100	.36313	4.9419	.17836
.24168	6.6959	.49202	101	.37046	5.0417	.18196
.24647	6.8299	.50187	102	.37787	5.1425	.18559
.25138	6.9653	.51181	103	.38535	5.2442	.18927
.25632	7.1021	.52186	104	.39290	5.3470	.19298
.26130	7.2402	.53201	105	.40053	5.4509	.19672
.26633	7.3796	.54226	106	.40823	5.5557	.20051
.27142	7.5204	.55260	107	.41601	5.6615	.20433
.27655	7.6626	.56305	108	.42386	5.7684	.20818
.28173	7.8061	.57360	109	.43179	5.8762	.21208
.28695	7.9510	.58424	110	.43979	5.9851	.21601
.29223	8.0973	.59499	111	.44786	6.0950	.21997
.29756	8.2449	.60584	112	.45601	6.2059	.22397
.30294	8.3938	.61678	113	.46424	6.3179	.22801
.30836	8.5442	.62783	114	.47254	6.4308	.23209
.31384	8.6958	.63897	115	.48091	6.5448	.23620
.31936	8.8489	.65022	116	.48936	6.6597	.24035
.32493	9.0033	.66157	117	.49788	6.7757	.24454
.33056	9.1591	.67302	118	.50648	6.8928	.24876
.33623	9.3163	.86456	119	.51516	7.0108	.25302
.34195	9.4748	.69621	120	.52390	7.1299	.25732
.34772	9.6347	.70796	121	.53273	7.2499	.26165
.35354	9.7960	.71981	122	.54163	7.3710	.26602
.35941	9.9586	.73176	123	.55060	7.4932	.27043
.36533	10.1226	.74381	124	.55965	7.6163	.27488
.37130	10.288	.75597	125	.56877	7.7405	.27936
.37732	10.455	.76822	126	.57797	7.8657	.28387
.38339	10.623	.78058	127	.58725	7.9919	.28843
.38950	10.792	.79303	128	.59660	8.1191	.29302
.39567	10.963	.80559	129	.60602	8.2474	.29765
.40189	11.136	.81825	130	.61552	8.3767	.30232
.40816	11.309	.83101	131	.62510	8.5070	.30702
.41447	11.484	.84387	132	.63475	8.6384	.31176
.42084	11.661	.85684	133	.64448	8.7708	.31654
.42726	11.839	.86990	134	.65428	8.9042	.32135

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
.43373	12.018	.88307	135	.66416	9.0386	.32621
.44024	12.198	.89634	136	.67419	9.1741	.33110
.44681	12.380	.90971	137	.68415	9.3106	.33602
.45343	12.564	.92319	138	.69425	9.4481	.34099
.46010	12.748	.93674	139	.70443	9.5867	.34599
.46682	12.935	.95044	140	.71469	9.7263	.35103
.47358	13.122	.96422	141	.72503	9.8669	.35610
.48040	13.311	.97810	142	.73544	10.0086	.36121
.48727	13.501	.99209	143	.74592	10.1513	.36636
.49419	13.693	1.00618	144	.75648	10.2951	.37155
.50116	13.886	1.0204	145	.76712	10.440	.37678
.50818	14.081	1.0347	146	.77784	10.586	.38204
.51525	14.277	1.0491	147	.78863	10.733	.38734
.52238	14.474	1.0636	148	.79950	10.880	.39268
.52955	14.673	1.0782	149	.81044	11.029	.39805
.53677	14.873	1.0929	150	.82146	11.179	.40347
.54405	15.075	1.1077	151	.83256	11.330	.40892
.55137	15.278	1.1226	152	.84373	11.482	.41441
.55875	15.482	1.1376	153	.85498	11.636	.41993
.56618	15.688	1.1527	154	.86631	11.790	.42549
.57365	15.895	1.1680	155	.87772	11.945	.43110
.58118	16.104	1.1833	156	.88920	12.101	.43673
.58876	16.314	1.1987	157	.90075	12.258	.44241
.59639	16.525	1.2143	158	.91239	12.417	.44813
.60408	16.738	1.2299	159	.92410	12.576	.45388
.61181	16.952	1.2457	160	.93589	12.737	.45967
.61960	17.168	1.2615	161	.94776	12.898	.46500
.62743	17.385	1.2775	162	.95970	13.061	.47136
.63522	17.604	1.2935	163	.97172	13.224	.47727
.64326	17.824	1.3097	164	.98382	13.398	.48321
.65125	18.045	1.3259	165	.9960	13.555	.48919
.65929	18.268	1.3483	166	1.0082	13.721	.49521
.66739	18.492	1.3588	167	1.0206	13.829	.50126
.67553	18.718	1.3754	168	1.0330	14.058	.50736
.68373	18.945	1.3921	169	1.0455	14.228	.51349

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
.69198	19.173	1.4089	170	1.0580	14.399	.51966
.70028	19.403	1.4258	171	1.0707	14.571	.52587
.70863	19.635	1.4428	172	1.0834	14.744	.53212
.71704	19.868	1.4599	173	1.0962	14.918	.53840
.72549	20.102	1.4771	174	1.1091	15.093	.54473
.73400	20.338	1.4944	175	1.1220	15.270	.55109
.74256	20.575	1.5119	176	1.1351	15.447	.55749
.75118	20.814	1.5294	177	1.1482	15.625	.56393
.75984	21.054	1.5470	178	1.1613	15.805	.57040
.76856	21.295	1.5648	179	1.1746	15.985	.57692
.77733	21.538	1.5827	180	1.1880	16.167	.58347
.78615	21.783	1.6006	181	1.2014	16.350	.59007
.79503	22.029	1.6187	182	1.2149	16.533	.59670
.80396	22.276	1.6369	183	1.2285	16.718	.60337
.81294	22.525	1.6551	184	1.2421	16.904	.61008
.82197	22.775	1.6735	185	1.2559	17.091	.61682
.83106	23.027	1.6920	186	1.2697	17.279	.62361
.84020	23.280	1.7106	187	1.2836	17.468	.63043
.84939	23.535	1.7294	188	1.2975	17.658	.63730
.85863	23.971	1.7482	189	1.3116	17.850	.64420
.86793	24.049	1.7671	190	1.3257	18.042	.65114
.87728	24.308	1.7862	191	1.3399	18.235	.65812
.88668	24.568	1.8053	192	1.3542	18.430	.66514
.89614	24.830	1.8246	193	1.3686	18.625	.67220
.90565	25.094	1.8439	194	1.3831	18.822	.67929
.91521	25.359	1.8634	195	1.3976	19.020	.68643
.92483	25.625	1.8830	196	1.4122	19.219	.69361
.93450	25.893	1.9027	197	1.4269	19.418	.70082
.94423	26.163	1.9225	198	1.4416	19.619	.70807
.95400	26.434	1.9424	199	1.4565	19.822	.71537
.96383	26.706	1.9624	200	1.4714	20.025	.72270
.97372	26.980	1.9825	201	1.4864	20.229	.73007
.98366	27.255	2.0027	202	1.5015	20.434	.73748
.99365	27.532	2.0231	203	1.5167	20.641	.74493
1.00370	27.811	2.0435	204	1.5319	20.848	.75242

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
1.0138	28.091	2.0641	205	1.5473	21.057	.75995
1.0240	28.372	2.0848	206	1.5627	21.266	.76751
1.0342	28.655	2.1056	207	1.5782	21.477	.77512
1.0444	28.939	2.1265	208	1.5937	21.689	.78277
1.0547	29.225	2.1475	209	1.6094	21.902	.79045
1.0651	29.312	2.1686	210	1.6251	22.116	.79818
1.0755	29.801	2.1898	211	1.6409	22.331	.80595
1.0868	30.092	2.2111	212	1.6568	22.548	.81375
1.0966	30.384	2.2326	213	1.6728	22.765	.82160
1.1071	30.677	2.2542	214	1.6888	22.983	.82948
1.1178	30.972	2.2758	215	1.7050	23.203	.83741
1.1285	31.268	2.2976	216	1.7212	23.424	.84537
1.1392	31.566	2.3195	217	1.7375	23.645	.85337
1.1500	31.866	2.3415	218	1.7539	23.868	.86142
1.1609	32.167	2.3636	219	1.7703	24.092	.86950
1.1718	32.469	2.3859	220	1.7869	24.317	.87763
1.1828	32.773	2.4082	221	1.8035	24.544	.88579
1.1938	33.079	2.4307	222	1.8202	24.771	.89400
1.2049	33.386	2.4532	223	1.8370	24.999	.90224
1.2161	33.695	2.4759	224	1.8538	25.229	.91053
1.2273	34.005	2.4987	225	1.8708	25.460	.91885
1.2385	34.317	2.5216	226	1.8878	25.692	.92722
1.2498	34.630	2.5446	227	1.9049	25.924	.93562
1.2612	34.945	2.5678	228	1.9221	26.158	.94407
1.2726	35.261	2.5910	229	1.9394	26.394	.95255
1.2841	35.579	2.6144	230	1.9568	26.630	.96108
1.2956	35.899	2.6378	231	1.9742	26.867	.96965
1.3072	36.220	2.6614	232	1.9917	27.106	.97826
1.3188	36.542	2.6851	233	2.0093	27.345	.98691
1.3305	36.866	2.7090	234	2.0270	27.586	.99559
1.3423	37.192	2.7329	235	2.0448	27.828	1.0043
1.3541	37.519	2.7569	236	2.0627	28.071	1.0131
1.3660	37.848	2.7811	237	2.0806	28.315	1.0219
1.3779	38.179	2.8054	238	2.0986	28.560	1.0308
1.3899	38.510	2.8298	239	2.1167	28.807	1.0397

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
1.4019	38.844	2.8543	240	2.1349	29.054	1.0486
1.4140	39.179	2.8789	241	2.1532	29.303	1.0576
1.4261	39.516	2.9036	242	2.1716	29.553	1.0666
1.4383	39.854	2.9285	243	2.1900	29.804	1.0756
1.4506	40.194	2.9535	244	2.2085	30.056	1.0847
1.4629	40.555	2.9785	245	2.2271	30.309	1.0939
1.4753	40.878	3.0037	246	2.2458	30.564	1.1030
1.4877	41.223	3.0291	247	2.2646	30.819	1.1123
1.5002	41.569	3.0545	248	2.2835	31.076	1.1215
1.5128	41.917	3.0800	249	2.3024	31.334	1.1308
1.5254	42.266	3.1057	250	2.3214	31.592	1.1402
1.5381	42.617	3.1315	251	2.3405	31.853	1.1496
1.5508	42.969	3.1574	252	2.3597	32.114	1.1590
1.5636	43.324	3.1834	253	2.3790	32.376	1.1685
1.5764	43.679	3.2096	254	2.3984	32.640	1.1780
1.5893	44.037	3.2558	255	2.4178	32.904	1.1875
1.6023	44.396	3.2622	256	2.4374	33.170	1.1971
1.6153	44.756	3.2887	257	2.4570	33.437	1.2068
1.6283	45.118	3.3153	258	2.4767	33.705	1.2164
1.6415	45.482	3.3420	259	2.4965	33.975	1.2262
1.6547	45.847	3.3689	260	2.5164	34.245	1.2359
1.6679	46.215	3.3959	261	2.5363	34.517	1.2457
1.6812	46.583	3.4229	262	2.5564	34.790	1.2556
1.6946	46.953	3.4502	263	2.5765	35.064	1.2655
1.7080	47.325	3.4775	264	2.5967	35.339	1.2754
1.7215	47.699	3.5049	265	2.6170	35.614	1.2854
1.7350	48.074	3.5325	266	2.6374	35.893	1.2954
1.7486	48.451	3.5602	267	2.6579	36.171	1.3054
1.7623	48.829	3.5880	268	2.6784	36.451	1.3153
1.7760	49.209	3.6159	269	2.6991	36.732	1.3257
1.7898	49.591	3.6440	270	2.7198	37.014	1.3359
1.8036	49.974	3.6721	271	2.7406	37.298	1.3461
1.8175	50.359	3.7004	272	2.7615	37.582	1.3564
1.8314	50.746	3.7288	273	2.7825	37.868	1.3667
1.8455	51.134	3.7574	274	2.8036	38.155	1.3770

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
1.8595	51.524	3.7860	275	2.8248	38.443	1.3874
1.8737	51.916	3.8148	276	2.8460	38.732	1.3979
1.8879	52.309	3.8437	277	2.8674	39.022	1.4083
1.9021	52.704	3.8727	278	2.8888	39.314	1.4189
1.9164	53.101	3.9019	279	2.9103	39.607	1.4294
1.9308	53.499	3.9211	280	2.9319	39.901	1.4400
1.9452	53.899	3.9605	281	2.9536	40.196	1.4507
1.9597	54.301	3.9900	282	2.9754	40.492	1.4614
1.9743	54.704	4.0179	283	2.9973	40.790	1.4721
1.9889	55.109	4.0494	284	3.0192	41.089	1.4829
2.0036	55.516	4.0793	285	3.0412	41.389	1.4937
2.0183	55.924	4.1093	286	3.0634	41.690	1.5046
2.0331	56.334	4.1395	287	3.0856	41.992	1.5155
2.0480	56.746	4.1697	288	3.1079	42.296	1.5265
2.0629	57.159	4.2001	289	3.1303	42.600	1.5375
2.0779	57.575	4.2306	290	3.1528	42.906	1.5485
2.0929	57.991	4.2612	291	3.1753	43.214	1.5596
2.1080	58.410	4.2920	292	3.1980	43.522	1.5707
2.1232	58.830	4.3229	293	3.2208	43.832	1.5819
2.1384	59.252	4.3539	294	3.2436	44.142	1.5931
2.1537	59.676	4.3850	295	3.2665	44.454	1.6044
2.1691	60.101	4.4163	296	3.2895	44.768	1.6157
2.1845	60.528	4.4476	297	3.3126	45.082	1.6270
2.2000	60.957	4.4791	298	3.3358	45.398	1.6384
2.2155	61.388	4.5108	299	3.3591	45.715	1.6491
2.2511	61.820	4.5425	300	3.3825	46.033	1.6613
2.2468	62.254	4.5744	301	3.4060	46.352	1.6729
2.2625	62.690	4.6065	302	3.4295	46.673	1.6844
2.2783	63.127	4.6386	303	3.4532	46.994	1.6960
2.2941	63.566	4.6709	304	3.4769	47.317	1.7077
2.3100	64.007	4.7033	305	3.5007	47.642	1.7194
2.3260	64.450	4.7358	306	3.5246	47.967	1.7311
2.3421	64.894	4.7685	307	3.5486	48.294	1.7429
2.3582	65.341	4.8013	308	3.5727	48.622	1.7548
2.3743	65.789	4.8342	309	3.5969	48.951	1.7667

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
2.3906	66.238	4.8672	310	3.6212	49.281	1.7786
2.4069	66.690	4.9004	311	3.6456	49.613	1.7905
2.4232	67.143	4.9337	312	3.6700	49.946	1.8026
2.4396	67.598	4.9671	313	3.6946	50.280	1.8146
2.4561	68.055	5.0007	314	3.7192	50.615	1.8267
2.4727	68.513	5.0344	315	3.7440	50.952	1.8389
2.4893	68.974	5.0682	316	3.7688	51.290	1.8511
2.5060	69.436	5.1022	317	3.7937	51.629	1.8633
2.5227	69.900	5.1362	318	3.8187	51.969	1.8756
2.5395	70.365	5.1705	319	3.8438	52.311	1.8879
2.5564	70.833	5.2048	320	3.8690	52.654	1.9003
2.5733	71.302	5.2393	321	3.8943	52.998	1.9127
2.5903	71.773	5.2739	322	3.9197	53.343	1.9252
2.6074	72.246	5.3086	323	3.9451	53.690	1.9377
2.6245	72.720	5.3455	324	3.9707	54.038	1.9502
2.6417	73.197	5.3785	325	3.9964	54.387	1.9628
2.6590	73.675	5.4137	326	4.0221	54.737	1.9755
2.6763	74.155	5.4489	327	4.0480	55.089	1.9882
2.6937	74.637	5.4844	328	4.0739	55.442	2.0009
2.7111	75.121	5.5199	329	4.0999	55.796	2.0137
2.7287	75.606	5.5556	330	4.1260	56.152	2.0265
2.7462	76.093	5.5914	331	4.1523	56.508	2.0394
2.7639	76.583	5.6273	332	4.1786	56.867	2.0523
2.7816	77.074	5.6634	333	4.2050	57.226	2.0653
2.7994	77.566	5.6996	334	4.2315	57.587	2.0783
2.8173	78.051	5.7360	335	4.2581	57.948	2.0914
2.8352	78.558	5.7724	336	4.2848	58.312	2.1045
2.8532	79.056	5.8091	337	4.3115	58.676	2.1176
2.8712	79.556	5.8458	338	4.3384	59.042	2.1308
2.8893	80.058	5.8827	339	4.3654	59.409	2.1441
2.9075	80.562	5.9197	340	4.3925	59.777	2.1574
2.9258	81.068	5.9569	341	4.4196	60.147	2.1707
2.9441	81.575	5.9942	342	4.4469	60.518	2.1841
2.9625	82.085	6.0316	343	4.4742	60.890	2.1975
2.9809	82.596	6.0692	344	4.5017	61.264	2.2110

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
2.9995	83.109	6.1069	345	4.5292	61.638	2.2246
3.0180	83.625	6.1448	346	4.5569	62.015	2.2381
3.0367	84.142	6.1828	347	4.5846	62.392	2.2518
3.0554	84.660	6.2209	348	4.6124	62.771	2.2654
3.0742	85.181	6.2591	349	4.6403	63.151	2.2791
3.0931	85.704	6.2975	350	4.6684	63.532	2.2929
3.1120	86.228	6.3361	351	4.6965	63.915	2.3067
3.1310	86.755	6.3748	352	4.7247	64.299	2.3206
3.1501	87.283	6.4136	353	4.7530	64.684	2.3345
3.1692	87.813	6.4526	354	4.7814	65.071	2.3484
3.1884	88.345	6.4917	355	4.8099	65.459	2.3624
3.2077	88.879	6.5309	356	4.8385	65.848	2.3765
3.2270	89.415	6.5703	357	4.8672	66.239	2.3906
3.2464	89.953	6.6098	358	4.8960	66.631	2.4047
3.2659	90.493	6.6495	359	4.9249	67.240	2.4189
3.2855	91.035	6.6893	360	4.9539	67.418	2.4332
3.3051	91.579	6.7292	361	4.9830	67.814	2.4474
3.3248	92.124	6.7693	362	5.0122	68.212	2.4618
3.3446	92.672	6.8095	363	5.0415	68.610	2.4762
3.3644	93.221	6.8499	364	5.0709	69.010	2.4906
3.3843	93.773	6.8904	365	5.1004	69.411	2.5051
3.4043	94.326	6.9311	366	5.1300	69.814	2.5196
3.4243	94.881	6.9719	367	5.1596	70.218	2.5342
3.4444	95.438	7.0129	368	5.1894	70.623	2.5488
3.4646	95.998	7.0539	369	5.2193	71.030	2.5635
3.4848	96.559	7.0952	370	5.2493	71.438	2.5782
3.5052	97.122	7.1366	371	5.2794	71.847	2.5930
3.5256	97.687	7.1781	372	5.3096	72.258	2.6078
3.5460	98.254	7.2198	373	5.3398	72.670	2.6227
3.5666	98.823	7.2616	374	5.3702	73.084	2.6376
3.5872	99.394	7.3055	375	5.4007	73.498	2.6526
3.6079	99.968	7.3456	376	5.4313	73.915	2.6676
3.6286	100.543	7.3879	377	5.4620	74.332	2.6827
3.6494	101.120	7.4303	378	5.4927	74.751	2.6978
3.6703	101.699	7.4729	379	5.5236	75.171	2.7130

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
3.6913	102.280	7.5155	380	5.5546	75.593	2.7282
3.7124	102.863	7.5584	381	5.5857	76.016	2.7434
3.7335	103.448	7.6014	382	5.6169	76.440	2.7588
3.7547	104.035	7.6445	383	5.6482	76.866	2.7741
3.7759	104.624	7.6878	384	5.6795	77.293	2.7895
3.7973	105.215	7.7312	385	5.7110	77.722	2.8050
3.8187	105.808	7.7748	386	5.7426	78.152	2.8205
3.8401	106.403	7.8186	387	5.7743	78.583	2.8361
3.8617	107.001	7.8624	388	5.8061	79.016	2.8517
3.8833	107.600	7.9065	389	5.8380	79.450	2.8674
3.9050	108.201	7.9507	390	5.8700	79.885	2.8831
3.9268	108.804	7.9950	391	5.9021	80.322	2.8989
3.9486	109.410	8.0395	392	5.9343	80.761	2.9147
3.9706	110.017	8.0841	393	5.9666	81.200	2.9306
3.9926	110.627	8.1289	394	5.9990	81.641	2.9465
4.0146	111.238	8.1738	395	6.0316	82.084	2.9624
4.0368	111.852	8.2189	396	6.0642	82.528	2.9785
4.0590	112.468	8.2642	397	6.0969	82.973	2.9945
4.0813	113.086	8.3096	398	6.1297	83.420	3.0107
4.1037	113.705	8.3551	399	6.1627	83.868	3.0268
4.1261	114.327	8.4008	400	6.1957	84.318	3.0431
4.1486	114.951	8.4467	401	6.2288	84.769	3.0593
4.1712	115.578	8.4927	402	6.2621	85.221	3.0757
4.1939	116.206	8.5388	403	6.2954	85.675	3.0920
4.2167	116.836	8.5852	404	6.3289	86.130	3.1085
4.2395	117.469	8.6316	405	6.3624	86.587	3.1250
4.2624	118.103	8.6783	406	6.3961	87.045	3.1415
4.2854	118.740	8.7250	407	6.4299	87.505	3.1581
4.3084	119.379	8.7720	408	6.4638	87.966	3.1747
4.3315	120.019	8.8191	409	6.4977	88.428	3.1914
4.3548	120.663	8.8663	410	6.5318	88.892	3.2081
4.3780	121.308	8.9137	411	6.5660	89.357	3.2249
4.4014	121.955	8.9613	412	6.6003	89.824	3.2418
4.4248	122.604	9.0090	413	6.6347	90.292	3.2587
4.4484	123.256	9.0569	414	6.6692	90.762	3.2756

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
4.4719	123.910	9.1049	415	6.7038	91.233	3.2926
4.4956	124.366	9.1531	416	6.7386	91.706	3.3087
4.5194	125.224	9.2015	417	6.7734	92.180	3.3268
4.5432	125.884	9.2500	418	6.8083	92.655	3.3440
4.5671	126.546	9.2987	419	6.8434	93.132	3.3612
4.5911	127.211	9.3475	420	6.8785	93.611	3.3784
4.6152	127.878	9.3965	421	6.9138	94.091	3.3958
4.6393	128.547	9.4456	422	6.9492	94.572	3.4131
4.6635	129.218	9.4950	423	6.9847	95.055	3.4306
4.6878	129.891	9.5444	424	7.0203	95.539	3.4480
4.7122	130.566	9.5941	425	7.0560	96.025	3.4656
4.7366	131.244	9.6439	426	7.0918	96.512	3.4832
4.7612	131.924	9.6938	427	7.1277	97.001	3.5008
4.7838	132.606	9.7439	428	7.1637	97.491	3.5185
4.8105	133.290	9.7942	429	7.1998	97.983	3.5362
4.8353	133.977	9.8447	430	7.2361	98.476	3.5540
4.8601	134.666	9.8953	431	7.2724	98.971	3.5719
4.8851	135.359	9.9461	432	7.3089	99.467	3.5898
4.9101	136.050	9.9970	433	7.3433	99.965	3.6078
4.9352	136.745	10.0481	434	7.3821	100.464	3.6258
4.9604	137.443	10.0994	435	7.4189	100.965	3.6439
4.9856	138.143	10.1508	436	7.4558	101.467	3.6625
5.0110	138.845	10.2024	437	7.4929	101.971	3.6802
5.0364	139.550	10.2542	438	7.5300	102.476	3.6984
5.0619	140.256	10.3061	439	7.5672	102.983	3.7167
5.0875	140.965	10.3582	440	7.6046	103.491	3.7350
5.1132	141.677	10.4105	441	7.6420	104.001	3.7534
5.1389	142.390	10.4629	442	7.6796	104.512	3.7719
5.1647	143.106	10.5155	443	7.7173	105.025	3.7904
5.1507	143.824	10.5682	444	7.7551	105.540	3.8090
5.2167	144.544	10.6212	445	7.7930	106.055	3.8276
5.2427	145.267	10.6743	446	7.8310	106.573	3.8463
5.2689	145.992	10.7276	447	7.8691	107.092	3.8650
5.2952	146.719	10.7810	448	7.9074	107.612	3.8832
5.3215	147.449	10.8346	449	7.9458	108.134	3.9026

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
5.3479	148.181	10.8884	450	7.9842	108.638	3.9215
5.3744	148.915	10.9423	451	8.0228	109.183	3.9405
5.4010	149.632	10.9965	452	8.0615	109.710	3.9595
5.4277	150.391	11.0508	453	8.1003	110.238	3.9785
5.4544	151.132	11.1052	454	8.1393	110.268	3.9977
5.4812	151.875	11.1599	455	8.1785	111.299	4.0168
5.5082	152.621	11.2147	456	8.2175	111.832	4.0361
5.5352	153.370	11.2697	457	8.2567	112.367	4.0554
5.5623	154.120	11.3248	458	8.2961	112.903	4.0747
5.5894	154.873	11.3801	459	8.3396	113.440	4.0941
5.6167	155.629	11.4356	460	8.3752	113.979	4.1136
5.6440	156.386	11.4913	461	8.4150	114.520	4.1331
5.6715	157.146	11.5472	462	8.4548	115.063	4.1526
5.6990	157.909	11.6032	463	8.4948	115.606	4.1723
5.7266	158.674	11.6594	464	8.5349	116.152	4.1920
5.7543	159.441	11.7158	465	8.5751	116.699	4.2117
5.7821	160.211	11.7723	466	8.6154	117.248	4.2315
5.8099	160.983	11.8291	467	8.6558	117.798	4.2514
5.8379	161.757	11.8860	468	8.6964	118.350	4.2713
5.8659	162.534	11.9431	469	8.7370	118.903	4.2913
5.8940	163.313	12.0003	470	8.7778	119.458	4.3113
5.9222	164.095	12.0578	471	8.8187	120.015	4.3314
5.9505	164.879	12.1154	472	8.8598	120.373	4.3515
5.9789	165.666	12.1732	473	8.9009	121.133	4.3717
6.0074	166.455	12.2311	474	8.9421	121.694	4.3920
6.0360	167.246	12.2893	475	8.9835	122.257	4.4123
6.0646	168.040	12.3476	476	9.0250	122.822	4.4327
6.0934	168.836	12.4062	477	9.0666	123.388	4.4531
6.1222	169.633	12.4649	478	9.1084	123.956	4.4736
6.1511	170.437	12.5237	479	9.1502	124.526	4.4942
6.1801	171.240	12.5828	480	9.1922	125.097	4.5148
6.2092	172.047	12.6420	481	9.2343	125.670	4.5355
6.2384	172.855	12.7015	482	9.2765	126.244	4.5562
6.2677	173.666	12.7611	483	9.3188	126.821	4.5770
6.2971	174.480	12.8209	484	9.3613	127.398	4.5979

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
6.3265	175.296	12.8808	485	9.4038	127.978	4.6188
6.3561	176.115	12.9410	486	9.4465	128.559	4.6397
6.3857	176.936	13.0013	487	9.4893	129.141	4.6608
6.4154	177.760	13.0619	488	9.5323	129.726	4.6818
6.4452	178.586	13.1226	489	9.5753	130.312	4.7030
6.4752	179.413	13.1833	490	9.6185	130.899	4.7242
6.5052	180.246	13.2446	491	9.6618	131.488	4.7455
6.5353	181.080	13.3058	492	9.7052	132.079	4.7668
6.5654	181.917	13.3673	493	9.7488	132.672	4.7882
6.5957	182.756	13.4289	494	9.7925	133.266	4.8096
6.6261	183.597	13.4908	495	9.8363	133.862	4.8311
6.6566	184.441	13.5528	496	9.8802	134.460	4.8527
6.6871	185.288	13.6150	497	9.9242	135.059	4.8743
6.7178	186.137	13.6774	498	9.9684	135.660	4.8960
6.7485	186.989	13.7400	499	10.0126	136.263	4.9178
6.7793	187.843	13.8028	500	10.0571	136.867	4.9396
6.8103	188.700	13.8658	501	10.1016	137.473	4.9613
6.8413	189.560	13.9289	502	10.1463	138.081	4.9834
6.8724	190.422	13.9923	503	10.1910	138.691	5.0054
6.9036	191.287	14.0558	504	10.2359	139.302	5.0275
6.9349	192.154	14.1195	505	10.2810	139.915	5.0496
6.9663	193.024	14.1835	506	10.3261	140.529	5.0718
6.9978	193.897	14.2476	507	10.3714	141.145	5.0940
7.0294	194.772	14.3119	508	10.4168	141.763	5.1163
7.0611	195.650	14.3764	509	10.4624	142.383	5.1387
7.0929	196.330	14.4411	510	10.5080	143.005	5.1611
7.1247	197.413	14.5060	511	10.5538	143.628	5.1836
7.1567	198.299	14.5711	512	10.5997	144.253	5.2061
7.1888	199.188	14.6364	513	10.6458	144.879	5.2287
7.2209	200.079	14.7019	514	10.6919	145.508	5.2514
7.						
7.2532	200.973	14.7676	515	10.7382	146.138	5.2742
7.2855	201.869	14.8334	516	10.7847	146.769	5.2970
7.3180	202.769	14.8995	517	10.8312	147.403	5.3198
7.3305	203.670	14.9658	518	10.8779	148.038	5.3428
7.3832	204.575	15.0323	519	10.9247	148.675	5.3657

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Water	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
7.4159	205.482	15.0989	520	10.9717	149.314	5.3888
7.4488	206.392	15.1658	521	11.0187	149.955	5.4119
7.4817	207.305	15.2329	522	11.0659	150.597	5.4351
7.5148	208.221	15.3001	523	11.1132	151.241	5.4583
7.5479	209.139	15.3676	524	11.1607	151.887	5.4817
7.5811	210.060	15.4353	525	11.2083	152.534	5.5050
7.6145	210.983	15.5031	526	11.2560	153.184	5.5285
7.6479	211.910	15.5712	527	11.3039	153.835	5.5520
7.6814	212.839	15.6395	528	11.3518	154.488	5.5795
7.7151	213.771	15.7080	529	11.3999	155.143	5.9992
7.7488	214.705	15.7766	530	11.4482	155.799	5.6229
7.7826	215.643	15.8455	531	11.4966	156.497	5.6466
7.8166	216.583	15.9146	532	11.5451	157.118	5.6704
7.8506	217.526	15.9839	533	11.5937	157.779	5.6943
7.8847	218.472	16.0534	534	11.6425	158.443	5.7183
7.9190	219.421	16.1231	535	11.6914	159.109	5.7423
7.9533	220.372	16.1930	536	11.7404	159.776	5.7664
7.9877	221.326	16.2631	537	11.7896	160.445	5.7905
8.0223	222.283	16.3335	538	11.8389	161.116	5.8147
8.0569	223.243	16.4040	539	11.8883	161.789	5.8390
8.0917	224.206	16.4747	540	11.9378	162.463	5.8634
8.1265	225.171	16.5457	541	11.9875	163.139	5.8878
8.1615	226.140	16.6168	542	12.0374	163.818	5.9122
8.1965	227.111	16.6882	543	12.0873	164.498	5.9368
8.2317	228.085	16.7598	544	12.1375	165.180	5.9614
8.2669	229.062	16.8316	545	12.1877	165.683	5.9861
8.3023	230.042	16.9035	546	12.2381	166.549	6.0108
8.3378	231.024	16.9758	547	12.2886	167.236	6.0356
8.3733	232.010	17.0482	548	12.3392	167.923	6.0605
8.4090	232.998	17.1208	549	12.3900	168.616	6.0854
8.4448	233.990	17.1937	550	12.4409	169.309	6.1104
8.4807	234.984	17.2667	551	12.4920	170.004	6.1353
8.5167	235.981	17.3400	552	12.5432	170.701	6.1607
8.5527	236.981	17.4135	553	12.5945	171.399	6.1839
8.5889	237.984	17.4872	554	12.6465	172.100	6.2111

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
8.6252	238.990	17.5611	555	12.6975	172.802	6.2365
8.6617	239.999	17.6352	556	12.7493	173.506	6.2619
8.6982	241.011	17.7096	557	12.8012	174.212	6.2874
8.7348	242.026	17.7841	558	12.8532	174.920	6.3129
8.7715	243.044	17.8589	559	12.9053	175.630	6.3385
8.						
8.8084	244.064	17.9339	560	12.9576	176.361	6.3642
8.8453	245.088	18.0091	561	13.0101	177.055	6.3900
8.8824	246.115	18.0846	562	13.0628	177.770	6.4158
8.9195	247.144	18.1602	563	13.1153	178.488	6.4417
8.9568	248.177	18.2361	564	13.1682	179.207	6.4677
8.9942	249.212	18.3122	565	13.2212	179.928	6.4937
9.0317	250.251	18.3885	566	13.2743	180.651	6.5190
9.0692	251.293	18.4651	567	13.3276	181.376	6.5459
9.1069	252.337	18.5418	568	13.3801	182.103	6.5722
9.1448	253.385	18.6100	569	13.4346	182.832	6.5985
9.1827	254.436	18.6960	570	13.4883	183.563	6.6249
9.2207	255.489	18.7735	571	13.5421	184.296	6.6513
9.2589	256.546	18.8511	572	13.5961	185.030	6.6778
9.2971	257.606	18.9290	573	13.6502	185.767	6.7044
9.3355	258.669	19.0071	574	13.7045	186.505	6.7310
9.3739	259.735	19.0854	575	13.7589	187.246	6.7578
9.4125	260.804	19.1640	576	13.8134	187.988	6.7846
9.4512	261.876	19.2428	577	13.8681	188.733	6.8114
9.4900	262.952	19.3218	578	13.9230	189.479	6.8384
9.5289	264.030	19.4010	579	13.9780	190.227	6.8654
9.5680	265.111	19.4805	580	14.0331	190.978	6.8925
9.6071	266.196	19.5602	581	14.0884	191.730	6.9196
9.6464	267.284	19.6401	582	14.1438	192.484	6.9468
9.6857	268.374	19.7203	583	14.1994	192.240	6.9741
9.7252	269.468	19.8006	584	14.2551	193.998	7.0015
9.7648	270.566	19.8813	585	14.3109	194.758	7.0289
9.8045	271.666	19.9621	586	14.3669	195.521	7.0564
9.8443	272.769	20.0432	587	14.4231	196.285	7.0840
9.8843	273.876	20.1245	588	14.4794	197.051	7.1116
9.9243	274.986	20.2060	589	14.5358	197.819	7.1394

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
9.9645	276.098	20.2878	590	14.5924	198.589	7.1672
10.0048	277.215	20.3698	591	14.6491	199.361	7.1950
10.0452	278.334	20.4521	592	14.7060	200.135	7.2230
10.0857	279.456	20.5346	593	14.7630	200.912	7.2510
10.1263	280.582	20.6173	594	14.8202	201.690	7.2791
10.1671	281.711	20.7002	595	14.8776	202.470	7.3072
10.2079	282.843	20.7834	596	14.9350	203.252	7.3354
10.2489	283.979	20.8668	597	14.9927	204.036	7.3638
10.2900	285.117	20.9505	598	15.0504	204.823	7.3921
10.3312	286.259	21.0344	599	15.1084	205.611	7.4206
10.3725	287.404	21.1186	600	15.1665	206.401	7.4491
10.4140	288.553	21.2030	601	15.2247	207.194	7.4777
10.4555	289.704	21.2876	602	15.2831	207.988	7.5064
10.4972	290.859	21.3724	603	15.3416	208.785	7.5351
10.5390	292.018	21.4576	604	15.4003	209.584	7.5639
10.5809	293.179	21.5429	605	15.4591	210.384	7.5928
10.6230	294.344	21.6285	606	15.5181	211.187	7.6218
10.6651	295.512	21.7143	607	15.5772	211.992	7.6509
10.7074	296.684	21.8004	608	15.6365	212.799	7.6800
10.7498	297.858	21.8867	609	15.6960	213.608	7.7092
10.7923	299.036	21.9733	610	15.7556	214.419	7.7384
10.8350	300.218	22.0601	611	15.8153	215.232	7.7678
10.8777	301.403	22.1472	612	15.8752	216.047	7.7972
10.9206	302.591	22.2345	613	15.9353	216.864	7.8267
10.9636	303.782	22.3220	614	15.9955	217.684	7.8563
11.0067	304.977	22.4098	615	16.0558	218.505	7.8859
11.0500	306.176	22.4979	616	16.1164	219.329	7.9157
11.0934	307.377	22.5862	617	16.1770	220.155	7.9455
11.1369	308.582	22.6747	618	16.2379	220.983	7.9753
11.1805	309.791	22.7635	619	16.2985	221.813	8.0053
11.2242	311.003	22.8526	620	16.3600	222.645	8.0353
11.2681	312.218	22.9419	621	16.4213	223.479	8.0654
11.3121	313.437	23.0315	622	16.4828	224.315	8.0956
11.3562	314.659	23.1213	623	16.5444	225.154	8.1259
11.4004	315.885	23.2113	624	16.6062	225.995	8.1562

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
11.4448	317.114	23.3016	625	16.6681	226.837	8.1866
11.4892	318.346	23.3922	626	16.7302	227.682	8.2171
11.5338	319.582	23.4830	627	16.7924	228.530	8.2477
11.5786	320.822	23.5741	628	16.8548	229.379	8.2784
11.6234	322.065	23.6654	629	16.9174	230.230	8.3091
11.6684	323.311	23.7570	630	16.9801	231.084	8.3399
11.7135	324.561	23.8489	631	17.0430	231.940	8.3708
11.7588	325.815	23.9410	632	17.0161	232.798	8.4018
11.8042	327.072	24.0334	633	17.1693	233.658	8.4328
11.8496	328.333	24.1260	634	17.2326	234.520	8.4639
11.8953	329.597	24.2189	635	17.2962	235.385	8.4951
11.9410	330.864	24.3120	636	17.3598	236.252	8.5264
11.9869	332.136	24.4054	637	17.4237	237.120	8.5578
12.0329	333.410	24.4991	638	17.4877	237.992	8.5892
12.0790	334.689	24.5930	639	17.5519	238.865	8.6207
12.1253	335.971	24.6872	640	17.6162	239.741	8.6523
12.1717	337.256	24.7817	641	17.6807	240.618	8.6840
12.2182	338.545	24.8764	642	17.7454	241.498	8.7158
12.2649	339.838	24.9714	643	17.8102	242.361	8.7476
12.3117	341.134	25.0667	644	17.8752	243.265	8.7795
12.3586	342.434	25.1622	645	17.9404	244.152	8.8115
12.4056	343.738	25.2580	646	18.0057	245.041	8.8436
12.4528	345.045	25.3540	647	18.0712	245.932	8.8758
12.5001	346.356	25.4504	648	18.1368	246.825	8.9080
12.5476	347.671	25.5470	649	18.2026	247.721	8.9403
12.5951	348.989	25.6438	650	18.2686	248.619	8.9728
			651	18.3348	249.519	9.0052
			652	18.4011	250.422	9.0378
			653	18.4676	251.327	9.0705
			654	18.5342	252.234	9.1032
			655	18.6010	253.143	9.1360
			656	18.6680	254.055	9.1689
			657	18.7352	254.968	9.2019
			658	18.8025	255.885	9.2350
			659	18.8700	256.803	9.2681

TABLE 13 (Cont'd)

Differential Pressures For Knots				Differential Pressures For MPH		
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
			660	18.9376	257.724	9.3014
			661	19.0055	258.647	9.3347
			662	19.0735	259.573	9.3681
			663	19.1417	260.500	9.4016
			664	19.2100	261.430	9.4351
			665	19.2785	262.363	9.4688
			666	19.3472	263.297	9.5025
			667	19.4160	264.235	9.5363
			668	19.4851	265.174	9.5702
			669	19.5543	266.116	9.6042
			670	19.6237	267.060	9.6383
			671	19.6932	268.006	9.6724
			672	19.7629	268.955	9.7067
			673	19.8328	269.906	9.7410
			674	19.9029	270.860	9.7754
			675	19.9731	271.816	9.8099
			676	20.0435	272.774	9.8445
			677	20.1141	273.735	9.8792
			678	20.1849	274.698	9.9140
			679	20.2559	275.664	9.9488
			680	20.3270	276.631	9.9837
			681	20.3983	277.602	10.0188
			682	20.4698	278.575	10.0539
			683	20.5414	279.550	10.0891
			684	20.6132	280.527	10.1243
			685	20.6853	281.507	10.1597
			686	20.7574	282.490	10.1952
			687	20.8298	283.475	10.2307
			688	20.9024	284.462	10.2663
			689	20.9751	285.452	10.3021
			690	21.0480	286.444	10.3379
			691	21.1211	287.438	10.3738
			692	21.1943	288.436	10.4097
			693	21.2678	289.435	10.4458
			694	21.3414	290.437	10.4820

TABLE 13 (Cont'd)

Differential Pressures For Knots			Differential Pressures For MPH			
Pounds Per Square Inch	Inches of Water	Inches of Mercury	Calibrated Air Speed	Inches of Mercury	Inches of Water	Pounds Per Square Inch
			695	21.4152	291.442	10.5182
			696	21.4892	292.449	10.5546
			697	21.5634	293.458	10.5910
			698	21.6378	294.470	10.6275
			699	21.7123	295.485	10.6642
			700	21.7870	296.502	10.7009
			701	21.8620	297.521	10.7376
			702	21.9371	298.543	10.7745
			703	22.0123	299.568	10.8115
			704	22.0878	300.595	10.8486
			705	22.1635	301.624	10.8857
			706	22.2393	302.656	10.9230
			707	22.3153	303.691	10.9603
			708	22.3915	304.728	10.9978
			709	22.4679	305.768	11.0353
			710	22.5445	306.810	11.0729
			711	22.6213	307.855	11.1106
			712	22.6983	308.903	11.1484
			713	22.7754	309.953	11.1863
			714	22.8528	311.005	11.2243
			715	22.9303	312.060	11.2624
			716	23.0080	313.118	11.3005
			717	23.0859	314.178	11.3388
			718	23.1640	315.241	11.3772
			719	23.2423	316.307	11.4156
			720	23.3208	317.375	11.4542
			721	23.3995	318.446	11.4928
			722	23.4784	319.519	11.5316
			723	23.5574	320.595	11.5704
			724	23.6367	321.673	11.6093
			725	23.7161	322.755	11.6483
			726	23.7958	323.839	11.6875
			727	23.8756	324.925	11.7267
			728	23.9556	326.014	11.7660
			729	24.0359	327.106	11.8054
			730	24.1163	328.201	11.8449
			731	24.1969	329.298	11.8845
			732	24.2777	330.398	11.9242
			733	24.3587	331.500	11.9640
			734	24.4400	332.605	12.0039

TABLE 14

CONVERSION OF STATUTE TO NAUTICAL MILES

Statute Miles	Nautical Miles									
	0	1	2	3	4	5	6	7	8	9
0	.00	.87	1.74	2.61	3.47	4.34	5.21	6.08	6.95	7.82
10	8.68	9.55	10.42	11.29	12.16	13.03	13.89	14.76	15.63	16.50
20	17.37	18.24	19.10	19.97	20.84	21.71	22.58	23.45	24.31	25.18
30	26.05	26.92	27.79	28.66	29.53	30.39	31.26	32.13	33.00	33.87
40	34.74	35.60	36.47	37.34	38.21	39.08	39.95	40.81	41.68	42.55
50	43.42	44.29	45.16	46.02	46.89	47.76	48.63	49.50	50.37	51.24
60	52.10	52.97	53.84	54.71	55.58	56.45	57.31	58.18	59.05	59.92
70	60.79	61.66	62.52	63.39	64.26	65.13	66.00	66.87	67.73	68.60
80	69.47	70.34	71.21	72.08	72.94	73.81	74.68	75.55	76.42	77.29
90	78.16	79.02	79.89	80.76	81.63	82.50	83.37	84.23	85.10	85.97
100	86.84	87.71	88.58	89.44	90.31	91.18	92.05	92.92	93.79	94.65
110	95.52	96.39	97.26	98.13	99.00	99.87	100.73	101.60	102.47	103.34
120	104.21	105.08	105.94	106.81	107.68	108.55	109.42	110.29	111.15	112.02
130	112.89	113.76	114.63	115.50	116.36	117.23	118.10	118.97	119.84	120.71
140	121.57	122.44	123.31	124.18	125.05	125.92	126.79	127.65	128.52	129.39
150	130.26	131.13	132.00	132.86	133.73	134.60	135.47	136.34	137.21	138.07
160	138.94	139.81	140.68	141.55	142.42	143.28	144.15	145.02	145.89	146.76
170	147.63	148.50	149.36	150.23	151.10	151.97	152.84	153.71	154.57	155.44
180	156.31	157.18	158.05	158.92	159.78	160.65	161.52	162.39	163.26	164.13
190	164.99	165.86	166.73	167.60	168.47	169.34	170.20	171.07	171.94	172.81
200	173.68	174.55	175.42	176.28	177.15	178.02	178.89	179.76	180.63	181.49
210	182.36	183.23	184.10	184.97	185.84	186.70	187.57	188.44	189.31	190.18
220	191.05	191.91	192.78	193.65	194.52	195.39	196.26	197.13	197.99	198.86
230	199.73	200.60	201.47	202.34	203.20	204.07	204.94	205.81	206.68	207.55
240	208.41	209.29	210.15	211.02	211.89	212.76	213.62	214.49	215.36	216.23
250	217.10	217.97	218.83	219.70	220.57	221.44	222.31	223.18	224.05	224.91
260	225.78	226.65	227.52	228.39	229.26	230.12	230.99	231.86	232.73	233.60
270	234.47	235.33	236.20	237.07	237.94	238.81	239.68	240.54	241.41	242.28
280	243.15	244.02	244.89	245.76	246.62	247.49	248.36	249.23	250.10	250.97
290	251.83	252.70	253.57	254.44	255.31	256.18	257.04	257.91	258.78	259.65
300	260.52	261.39	262.25	263.12	263.99	264.86	265.73	266.60	267.46	268.33
310	269.20	270.07	270.94	271.81	272.68	273.54	274.41	275.28	276.15	277.02
320	277.89	278.75	279.62	280.49	281.36	282.23	283.10	283.96	284.83	285.70
330	286.57	287.44	288.31	289.17	290.04	290.91	291.78	292.65	293.52	294.39
340	295.25	296.12	296.99	297.86	298.73	299.60	300.46	301.33	302.20	303.07
350	303.94	304.81	305.67	306.54	307.41	308.28	309.15	310.02	310.88	311.75
360	312.62	313.49	314.36	315.23	316.09	316.96	317.83	318.70	319.57	320.44
370	321.31	322.17	323.04	323.91	324.78	325.65	326.52	327.38	328.25	329.12
380	329.99	330.86	331.73	332.59	333.46	334.33	335.20	336.07	336.94	337.80
390	338.67	339.54	340.41	341.28	342.15	343.02	343.88	344.75	345.62	346.49
400	347.36	348.23	249.09	349.96	350.83	351.70	352.57	353.44	354.30	355.17
410	356.04	356.91	357.78	358.65	359.51	360.38	361.25	362.12	362.99	363.86
420	364.72	365.59	366.46	367.33	368.20	369.07	369.94	370.80	371.67	372.54
430	373.41	374.28	375.15	376.01	376.88	377.75	378.62	379.49	380.36	381.22
440	382.09	382.96	383.83	384.70	385.57	386.43	387.30	388.17	389.04	389.91
450	390.78	391.65	392.51	393.38	394.25	395.12	395.99	396.86	397.72	398.59
460	399.46	400.33	401.20	402.07	402.93	403.80	404.67	405.54	406.41	407.28
470	408.14	409.01	409.88	410.75	411.62	412.49	413.35	414.22	415.09	415.96
480	416.83	417.70	418.57	419.43	420.30	421.17	422.04	422.91	423.78	424.64
490	425.51	426.38	427.25	428.12	428.99	429.85	430.72	431.59	432.46	433.33

Stat. Miles	Naut. Miles	Stat. Miles	Naut. Miles	Stat. Miles	Naut. Miles	Stat. Miles	Naut. Miles	Stat. Miles	Naut. Miles
500	434.20	1500	1302.59	2500	2170.98	3500	3039.37	4500	3907.77
1000	868.39	2000	1736.78	3000	2605.18	4000	3473.57	5000	4341.96

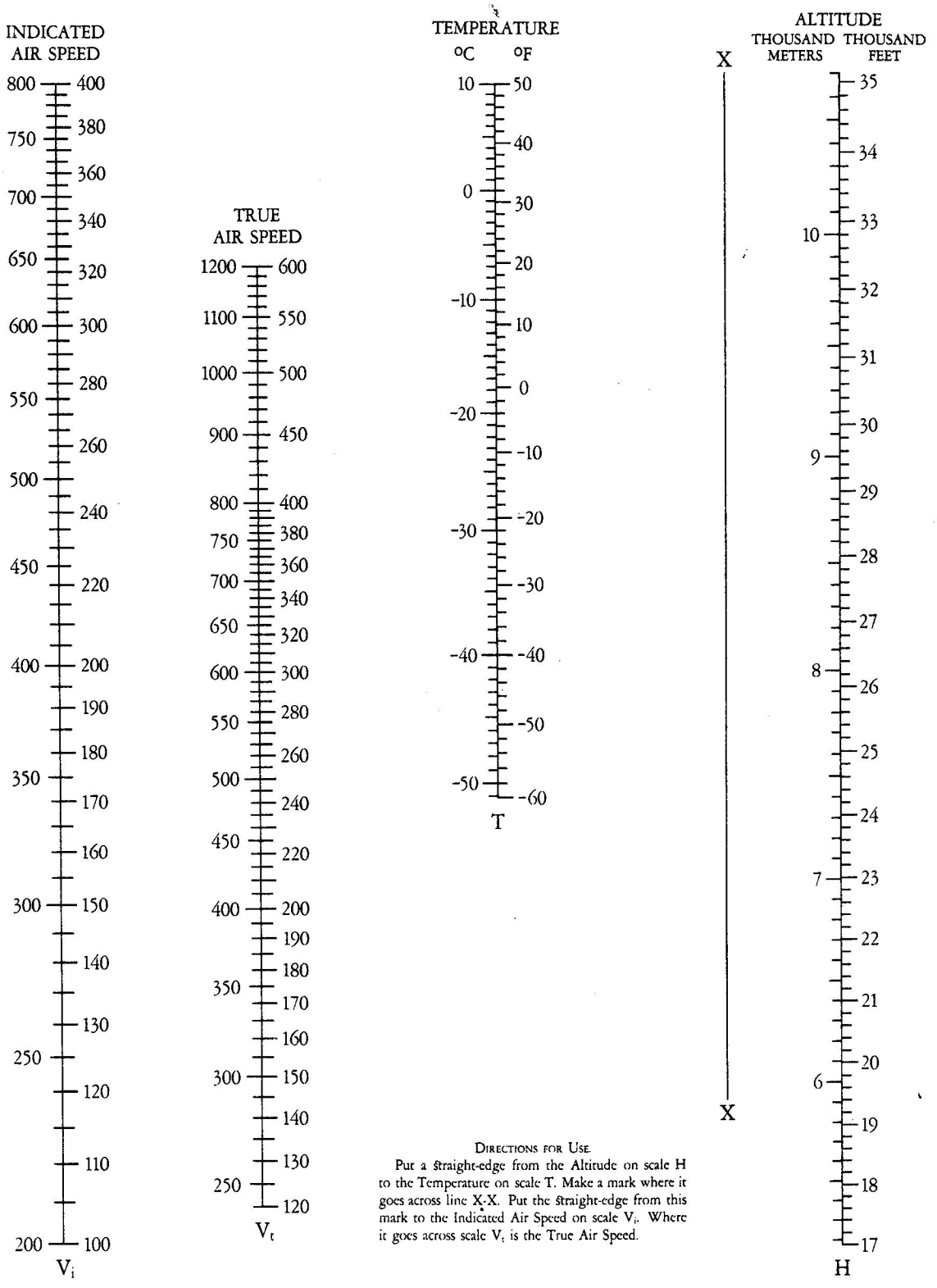
TABLE 15

CONVERSION OF NAUTICAL TO STATUTE MILES

Nautical Miles	Statute Miles									
	0	1	2	3	4	5	6	7	8	9
0	.00	1.15	2.30	3.45	4.61	5.76	6.91	8.06	9.21	10.36
10	11.52	12.47	13.82	14.97	16.12	17.27	18.42	19.58	20.73	21.88
20	23.03	24.18	25.33	26.49	27.64	28.79	29.94	31.09	32.24	33.40
30	34.55	35.70	36.85	38.00	39.15	40.30	41.46	42.61	43.76	44.91
40	46.06	47.21	48.37	49.52	50.67	51.82	52.97	54.12	55.27	56.43
50	57.58	58.73	59.88	61.03	62.18	63.34	64.49	65.64	66.79	67.94
60	69.09	70.24	71.40	72.55	73.70	74.85	76.00	77.15	78.31	79.46
70	80.61	81.76	82.91	84.06	85.21	86.37	87.52	88.67	89.82	90.97
80	92.12	93.28	94.43	95.58	96.73	97.88	99.03	100.19	101.34	102.49
90	103.64	104.79	105.94	107.09	108.25	109.40	110.55	111.70	112.85	114.00
100	115.16	116.31	117.46	118.61	119.76	120.91	122.06	123.22	124.37	125.52
110	126.67	127.82	128.97	130.13	131.28	132.43	133.58	134.73	135.88	137.03
120	138.19	139.34	140.49	141.64	142.79	143.94	145.10	146.25	147.40	148.55
130	149.70	150.85	152.00	153.16	154.31	155.46	156.61	157.76	158.91	160.07
140	161.22	162.37	163.52	164.67	165.85	166.98	168.13	169.28	170.43	171.58
150	172.73	173.88	175.04	176.19	177.34	178.49	179.64	180.79	181.95	183.10
160	184.25	185.40	186.55	187.70	188.85	190.01	191.16	192.31	193.46	194.61
170	195.76	196.92	198.07	199.22	200.37	201.52	202.67	203.82	204.98	206.13
180	207.28	208.43	209.58	210.73	211.89	213.04	214.19	215.34	216.49	217.64
190	218.80	219.95	221.10	222.25	223.40	224.55	225.70	226.86	228.01	229.16
200	230.31	231.46	232.61	233.77	234.92	236.07	237.22	238.37	239.52	240.67
210	241.83	242.98	244.13	245.28	246.43	247.58	248.74	249.89	251.04	252.19
220	253.34	254.49	255.64	256.80	257.95	259.10	260.25	261.40	262.55	263.71
230	264.86	266.01	267.16	268.31	269.46	270.61	271.77	272.92	274.07	275.22
240	276.37	277.52	278.68	279.83	280.98	282.13	283.28	284.43	285.59	286.74
250	287.89	289.04	290.19	291.34	292.49	293.65	294.80	295.95	297.10	298.25
260	299.40	300.56	301.71	302.86	304.01	305.16	306.31	307.46	308.62	309.77
270	310.92	312.07	313.22	314.37	315.53	316.68	317.83	318.98	320.13	321.28
280	322.43	323.59	324.74	325.89	327.04	328.19	329.34	330.50	331.65	332.80
290	333.95	335.10	336.25	337.41	338.56	339.71	340.86	342.01	343.16	344.31
300	345.47	346.62	347.77	348.92	350.07	351.22	352.38	353.53	354.68	355.83
310	356.98	358.13	359.28	360.44	361.59	362.74	363.89	365.04	366.19	367.35
320	368.50	369.65	370.80	371.95	373.10	374.25	375.41	376.56	377.71	378.86
330	380.01	381.16	382.32	383.47	384.62	385.77	386.92	388.07	389.22	390.38
340	391.53	392.68	393.83	394.98	396.13	397.29	398.44	399.59	400.74	401.89
350	403.04	404.20	405.35	406.50	407.65	408.80	409.95	411.10	412.26	413.41
360	414.56	415.71	416.86	418.01	419.17	420.32	421.47	422.62	423.77	424.92
370	426.07	427.23	428.38	429.53	430.68	431.83	432.98	434.14	435.29	436.44
380	437.59	438.74	439.89	441.04	442.20	443.35	444.50	445.65	446.80	447.95
390	449.11	450.26	451.41	452.56	453.71	454.86	456.01	457.17	458.32	459.47
400	460.62	461.77	462.92	464.08	465.23	466.38	467.53	468.68	469.83	470.99
410	472.14	473.29	474.44	475.59	476.74	477.89	479.05	480.20	481.35	482.50
420	483.65	484.80	485.96	487.11	488.26	489.41	490.56	491.71	492.86	494.02
430	495.17	496.32	497.47	498.62	499.77	500.93	502.08	503.23	504.38	505.53
440	506.68	507.83	508.99	510.14	511.29	512.44	513.59	514.74	515.90	517.05
450	518.20	519.35	520.50	521.65	522.81	523.96	525.11	526.26	527.41	528.56
460	529.71	530.87	532.02	533.17	534.32	535.47	536.62	537.78	538.93	540.08
470	541.23	542.38	543.53	544.68	545.84	546.99	548.14	549.29	550.44	551.59
480	552.75	553.90	555.05	556.20	557.35	558.50	559.65	560.81	561.96	563.11
490	564.26	565.41	566.56	567.72	568.87	570.02	571.17	572.32	573.47	574.62

Naut. Miles	Stat. Miles	Naut. Miles	Stat. Miles	Naut. Miles	Stat. Miles	Naut. Miles	Stat. Miles	Naut. Miles	Stat. Miles
500	575.78	1500	1727.23	2500	2878.85	3500	4030.44	4500	5181.99
1000	1151.55	2000	2303.11	3000	3454.66	4000	4606.21	5000	5757.77

SCALES for changing INDICATED AIR SPEED to TRUE AIR SPEED

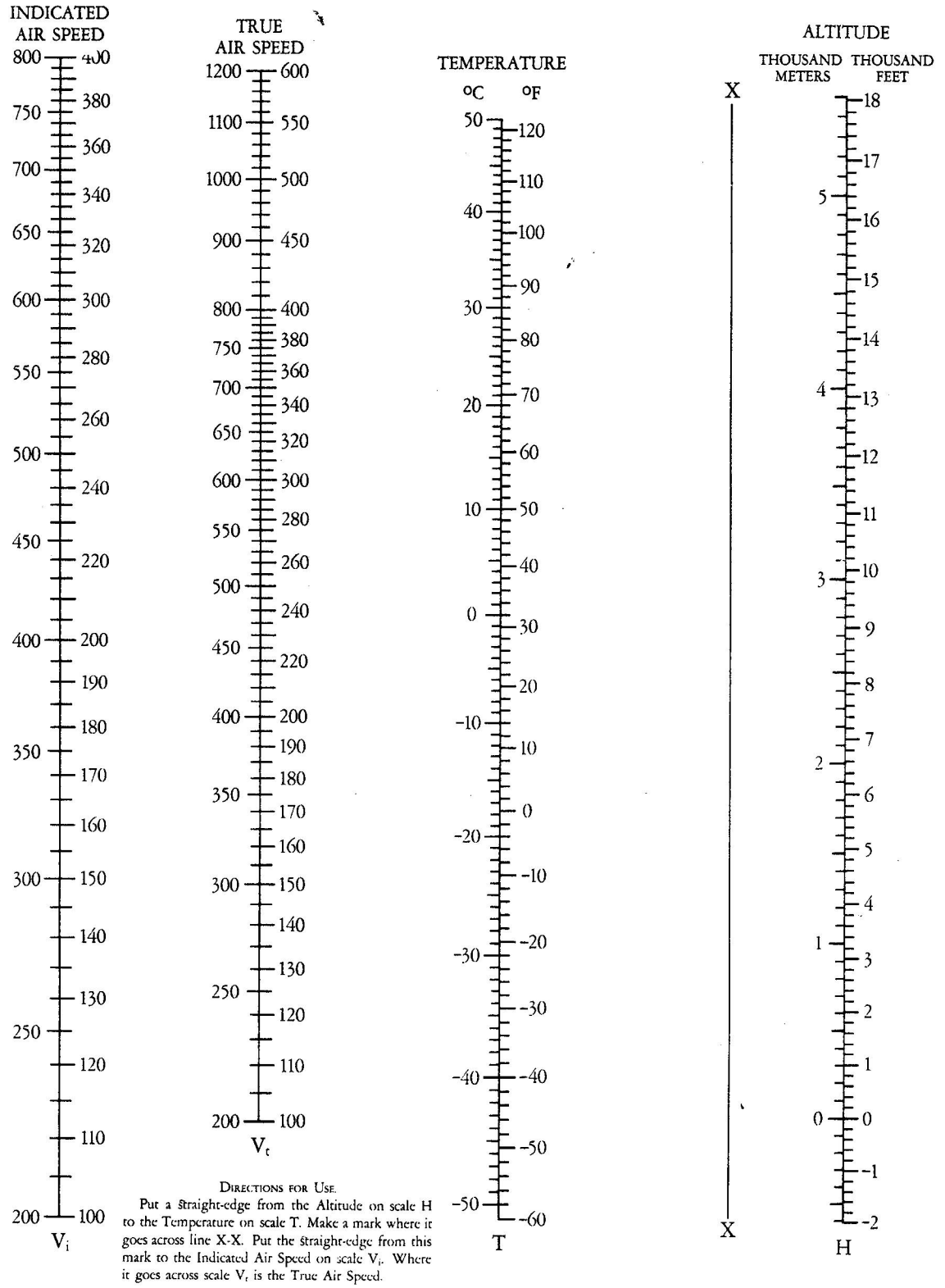


DIRECTIONS FOR USE.

Put a straight-edge from the Altitude on scale H to the Temperature on scale T. Make a mark where it goes across line X-X. Put the straight-edge from this mark to the Indicated Air Speed on scale V_i. Where it goes across scale V_t is the True Air Speed.

Table 16

SCALES for changing INDICATED AIR SPEED to TRUE AIR SPEED



DIRECTIONS FOR USE.

Put a straight-edge from the Altitude on scale H to the Temperature on scale T. Make a mark where it goes across line X-X. Put the straight-edge from this mark to the Indicated Air Speed on scale V_i. Where it goes across scale V_t is the True Air Speed.

Table 17

of mach. airspeed indicators provided the correct mach. number is set on the instrument.

4 Table 12 lists the maximum airspeeds in knots for mach. settings and heights as shown.

CONVERSION OF NAUTICAL MILES TO STATUTE MILES

5 Table 13 lists miles per hour and knots in whole numbers showing the equivalent differential pressure in inches of water, inches of mercury and pounds per square inch.

6 Table 14 gives the equivalent in nautical miles (knots) of whole numbers of statute miles (mph) to an accuracy of two decimal places for the range 0 to 500 by intervals of 1, and thence to 5,000 by intervals of 500. Table 15 gives the equivalent in statute miles (mph) of whole numbers of nautical miles (knots) for the range 0 to 500 by intervals of 1, and thence to 5,000 by intervals of 500.

7 These conversion tables have been calculated on the basis of the following definitions:-

(a) 1 nautical mile = 6,080 ft.

(b) 1 statute mile = 5,280 ft.

8 If, for any reason, a higher degree of accuracy is required than that given in Tables 14 and 15, or if desired equivalent is not given in the tables, the reader may readily perform the calculation as follows:-

(a) If it is desired to express statute miles in terms of nautical miles, multiply by

$$\frac{5,280}{6,080} \text{ i.e. by } \frac{33}{38}$$

(b) If it is desired to express nautical miles in terms of statute miles, multiply by

$$\frac{6,080}{5,280} \text{ i.e. by } \frac{38}{33}$$

CHANGING INDICATED AIRSPEED TO TRUE AIRSPEED

9 The relation between true airspeed (the speed at which the aircraft is, in fact, going through the air) and the indicated airspeed (the reading on the airspeed indicator, after correction for instrument and pitot-static tube errors) is:-

$$V_t = V_i \sqrt{\frac{T_h + K}{T_s + K} \times \frac{P_s}{P_h}}$$

Where:

V_t is true airspeed
V_i the indicated airspeed
T_s the normal (standard) temperature: 59°F or 15°C
P_s the normal (standard) pressure: 29.92" or 760 mm of mercury
T_h the air temperature at the flight altitude
P_h the air pressure at the flight altitude
K a fixed quantity whose value is 459.4 for temperature in °F and 273 for temperature in °C.

10 The system of scales in Tables 16 and 17 is based on this relation. Altitude is given in feet (to 18,000) and in meters (to 5,500), temperatures in °F and C in Table 16. In Table 17, altitudes are given from 17,000 to 35,000 feet and from 5,200 to 10,700 meters.

11 To determine true airspeed, refer to Tables 16 and 17 and proceed as follows:-

(a) Put a straight edge from the altitude on scale H to the temperature on scale T. Make a mark where it goes across line X-X. Put the straight edge from this mark to the indicated airspeed on scale V_i. Where it goes across scale V_t is the true airspeed.

(b) Use right side of scale H_i with right side of scale H_t, and left side of scale H_i with left side of scale H_t. Numbers on these scales may be used for any speed units, e.g., 300 may be used for 300 mph. 300 knots, or 300 km ph.

PART 3

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PART 3

TEMPERATURE TABLES

CENTIGRADE AND FAHRENHEIT

1 The temperature scale most commonly used in the service is the Centigrade scale in which the difference in temperature between the freezing and boiling points of water is divided into 100 equal divisions or degrees, the freezing point being 0°C and the boiling point 100°C. The Fahrenheit scale is used extensively for domestic purposes and is divided into 180° between the freezing and boiling points of water, the freezing point being 32°F and the boiling point 212°F.

2 Temperature readings may be converted from degrees Centigrade to degrees Fahrenheit and degrees Fahrenheit to degrees Centigrade using either of the following sets of formulae:-

(a) $C = (°F - 32) \times \frac{5}{9}$

$F = (°C \times \frac{9}{5}) + 32$

(b) $9C = 5F - 160$

$5F = 9C + 160$

3 Table 18 is a conversion table for Centigrade to Fahrenheit and vice versa and consists of three parts. Part A shows the equivalent number of degrees in Centigrade or Fahrenheit for whole numbers 1 to 10. Part B gives the equivalent temperature indication in degrees Centigrade or Fahrenheit for whole numbers from between -459.4 to +1000. Part C gives a quick visual comparison between temperature readings in degrees Fahrenheit and Centigrade from -25 to +100 degrees Centigrade.

KELVIN OR ABSOLUTE SCALE

4 The Kelvin or Absolute scale is used in the temperature volume relation of gases. As compared to solids and liquids, gases are unique in that the co-efficient of volume expansion is the same for all gases. The co-efficient of volume expansion of gases is 1/273 per °C, where the original volume of the gas is measured at 0°C.

5 If the volume of a given weight of gas is 273 cu.ft. at 0°C and the temperature is raised 1°, the volume increases by 1/273 to 274 cu.ft. If cooled to -10°C, the volume decreases by 10/273 to 263 cu.ft. If this rate of contraction continued, a gas cooled to -273°C would occupy no volume at all. This is a theoretical consideration and impossible in fact, but does indicate the impossibility of any temperature lower than -273°C. this temperature is called "absolute zero".

6 If absolute zero is assigned the value of 0 (instead of -273) and the value of each degree is the same as for the Centigrade temperature scale, then a temperature of 0°C becomes 273° absolute, 100°C becomes 373° absolute, 560°C becomes 833° absolute, -20°C becomes 253° absolute, etc. To change Centigrade temperature readings to the absolute scale, add 273.

CENTIGRADE - FAHRENHEIT CONVERSION TABLE

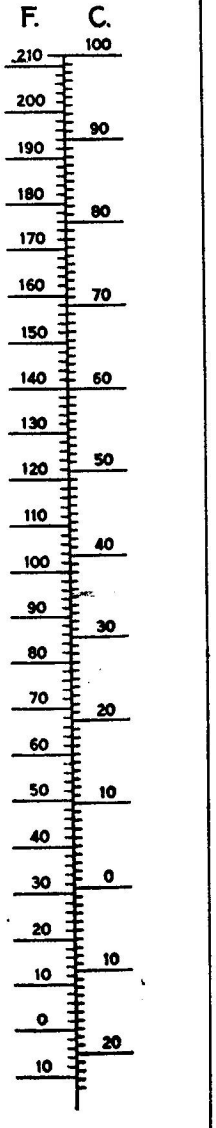
Bold face numbers in center columns between light face columns refer to the temperature (C. or F.), which is to be converted into the other scale. Equivalents of degrees Fahrenheit in degrees Centigrade will be found in the *left hand* light face columns under C.

Equivalents of degrees Centigrade in degrees Fahrenheit will be found in the *right hand* columns under C.

INTERPOLATION FACTORS

C.		F.	C.		F.
0.56	1	1.8	3.33	6	10.8
1.11	2	3.6	3.89	7	12.6
1.67	3	5.4	4.44	8	14.4
2.22	4	7.2	5.00	9	16.2
2.78	5	9.0	5.56	10	18.0

for a Quick Visual Comparison



—459.4 to 0			0 to 100						100 to 1000					
C.		F.	C.		F.	C.		F.	C.		F.	C.		F.
—273	—459.4		—17.8	0	32	10.0	50	122.0	38	100	212	260	500	932
—268	—450		—17.2	1	33.8	10.6	51	123.8	43	110	230	266	510	950
—262	—440		—16.7	2	35.6	11.1	52	125.6	49	120	248	271	520	968
—257	—430		—16.1	3	37.4	11.7	53	127.4	54	130	266	277	530	986
—251	—420		—15.6	4	39.2	12.2	54	129.2	60	140	284	282	540	1004
—246	—410		—15.0	5	41.0	12.8	55	131.0	66	150	302	288	550	1022
—240	—400		—14.4	6	42.8	13.3	56	132.8	71	160	320	293	560	1040
—234	—390		—13.9	7	44.6	13.9	57	134.6	77	170	338	299	570	1058
—229	—380		—13.3	8	46.4	14.4	58	136.4	82	180	356	304	580	1076
—223	—370		—12.8	9	48.2	15.0	59	138.2	88	190	374	310	590	1094
—218	—360		—12.2	10	50.0	15.6	60	140.0	93	200	392	316	600	1112
—212	—350		—11.7	11	51.8	16.1	61	141.8	99	210	410	321	610	1130
—207	—340		—11.1	12	53.6	16.7	62	143.6	100	212	413	327	620	1148
—201	—330		—10.6	13	55.4	17.2	63	145.4	104	220	428	332	630	1166
—196	—320		—10.0	14	57.2	17.8	64	147.2	110	230	446	338	640	1184
—190	—310		— 9.44	15	59.0	18.3	65	149.0	116	240	464	343	650	1202
—184	—300		— 8.89	16	60.8	18.9	66	150.8	121	250	482	349	660	1220
—179	—290		— 8.33	17	62.6	19.4	67	152.6	127	260	500	354	670	1238
—173	—280		— 7.78	18	64.4	20.0	68	154.4	132	270	518	360	680	1256
—169	—273	—459.4	— 7.22	19	66.2	20.6	69	156.2	138	280	536	366	690	1274
—168	—270	—454	— 6.67	20	68.0	21.1	70	158.0	143	290	554	371	700	1292
—162	—260	—436	— 6.11	21	69.8	21.7	71	159.8	149	300	572	377	710	1310
—157	—250	—418	— 5.56	22	71.6	22.2	72	161.6	154	310	590	382	720	1328
—151	—240	—400	— 5.00	23	73.4	22.8	73	163.4	160	320	608	388	730	1346
—146	—230	—382	— 4.44	24	75.2	23.3	74	165.2	166	330	626	393	740	1364
—140	—220	—364	— 3.89	25	77.0	23.9	75	167.0	171	340	644	399	750	1382
—134	—210	—346	— 3.33	26	78.8	24.4	76	168.8	177	350	662	404	760	1400
—129	—200	—328	— 2.78	27	80.6	25.0	77	170.6	182	360	680	410	770	1418
—123	—190	—310	— 2.22	28	82.4	25.6	78	172.4	188	370	698	416	780	1436
—118	—180	—292	— 1.67	29	84.2	26.1	79	174.2	193	380	716	421	790	1454
—112	—170	—274	— 1.11	30	86.0	26.7	80	176.0	199	390	734	427	800	1472
—107	—160	—256	— 0.56	31	87.8	27.2	81	177.8	204	400	752	432	810	1490
—101	—150	—238	0	32	89.6	27.8	82	179.6	210	410	770	438	820	1508
— 95.6	—140	—220	0.56	33	91.4	28.3	83	181.4	216	420	788	443	830	1526
— 90.0	—130	—202	1.11	34	93.2	28.9	84	183.2	221	430	806	449	840	1544
— 84.4	—120	—184	1.67	35	95.0	29.4	85	185.0	227	440	824	454	850	1562
— 78.9	—110	—166	2.22	36	96.8	30.0	86	186.8	232	450	842	460	860	1580
— 73.3	—100	—148	2.78	37	98.6	30.6	87	188.6	238	460	860	466	870	1598
— 67.8	— 90	—130	3.33	38	100.4	31.1	88	190.4	243	470	878	471	880	1616
— 62.2	— 80	—112	3.89	39	102.2	31.7	89	192.2	249	480	896	477	890	1634
— 56.7	— 70	— 94	4.44	40	104.0	32.2	90	194.0	254	490	914	482	900	1652
— 51.1	— 60	— 76	5.00	41	105.8	32.8	91	195.8				488	910	1670
— 45.6	— 50	— 58	5.56	42	107.6	33.3	92	197.6				493	920	1688
— 40.0	— 40	— 40	6.11	43	109.4	33.9	93	199.4				499	930	1706
— 34.4	— 30	— 22	6.67	44	111.2	34.4	94	201.2				504	940	1724
— 28.9	— 20	— 4	7.22	45	113.0	35.0	95	203.0				510	950	1742
— 23.3	— 10	14	7.78	46	114.8	35.6	96	204.8				516	960	1760
— 17.8	0	32	8.33	47	116.6	36.1	97	206.6				521	970	1778
			8.89	48	118.4	36.7	98	208.4				527	980	1796
			9.44	49	120.2	37.2	99	210.2				532	990	1814
						37.8	100	212.0				538	1000	1832

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PART 4

MEASUREMENT TABLES

ENGLISH AND METRIC SYSTEMS

1 The two systems of measurement which are in widespread use today are the English and Metric systems. The English system uses the foot (length), pound (weight) and second (time). The Metric or CGS system uses the centimeter (length) gram (mass) and second (time). Table 19 lists the units used in the English and Metric systems for the measurement of length, weight (mass), time, area and volume. The right-hand column shows the equivalent of the English system in the Metric system and vice versa.

TABLE 19

Quantity	English System	Metric System	Equivalents
	FOOT	CENTIMETER	
Length	1 foot = 12 inches 1 yard = 3 feet 1 mile = 5280 feet	1 centimeter = 10 millimeters 1 decimeter = 10 centimeters 1 meter = 100 centimeters 1 kilometer = 1000 meters	1 in = 2.54 cm 1 ft = 30.5 cm 1 meter = 39.37 in 1 km = 0.62 miles
	POUND	GRAM	
Weight (Mass)	1 pound = 16 ounces 1 ton = 2000 pounds	1 gram = 1000 milligrams 1 kilogram = 1000 grams	1 lb = 453.6 g 1 kg = 2.2 lb
	SECOND	SECOND	
Time	1 second = $\frac{1}{86,400}$ of average solar day	Same as English System	Same for both
Area	1 sq ft = 144 sq in 1 sq yd = 9 sq ft	1 sq cm = 100 sq mm 1 sq m = 10,000 sq cm	1 sq in = 6.45 sq cm 1 sq ft = 928.8 sq cm
Volume	1 cu ft = 1728 cu in 1 gallon = 277.274 cu in 1 gallon = 4 quarts	1 cu m = 1,000,000 cc 1 litre = 1,000 cc	1 cu ft = 28.35 liters 1 litre = .882 qt

MISCELLANEOUS MEASUREMENTS

2 Miscellaneous measurements are as follows:-

(a) Angstrom = $1X10^{-4}$ microns.

(b) Chain = 66 ft.

(c) Circular Mil= 5.0671×10^{-6} sq.cm or 0.7854 sq.mil.

(d) Degree latitude varies from 68.7 statute miles at the Equator to 69.41 at the Pole.

(e) 1 Dram = 27.34375 grains.

(f) 1 Fathom = 6 ft.

(g) 1 Furlong = 660 ft.

(h) 1 Gram = 980.665 dynes.

(j) 1 Hectare = 2.47106 acres.

(k) 1 Imperial Gallon = 277.274 cu. in. = 4.537 litres.

(l) 1 League = 3 miles.

(m) 1 Micron = 0.001 cm.

(n) 1 Ounce = 16 drams.

(p) 1 Pound = 7,000 grains.

(q) 1 Rod = 16 1/2 ft.

(r) 1 US gallon = 231 cu. in = .83 Imp. gals = 3.8 litres.

MENSURATION OF SURFACES AND SOLIDS

3 Surfaces and solids are measured as follows:-

(a) Circumference of a circle = diameter x 3.1416 = πd.

(b) Area of a triangle =base x perpendicular ÷ 2.

(c) Area of square or oblong = length x breadth.

(d) Area of a circle = radius^2 x 3.1416 πr^2.

(e) Area of sector of a circle =length of arc x radius ÷2.

(f) Area of any right-lined figure of four or more unequal sides is found by dividing it into triangles, finding the area of each and adding together.

(g) Area of an ellipse = long axis x short axis x 0.7854.

(h) Surface of a prism or cylinder = (area of two ends) + (length x perimeter).

(j) Surface of cone or pyramid = 1/2 (slant height x perimeter of base) + area of base.

(k) Surface of a cube = sum of areas on all sides.

(l) Surface of a sphere = square of diameter x 3.1416.

(m) Cubic content of prism or cylinder = area of base x height.

(n) Cubic content of pyramid or cone = 1/3 (area of base x perpendicular height).

(p) Cubic content of cube = length x height x depth.

(q) Cubic content of sphere = cube of diameter x 0.5236.

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PART 5

BASIC LAWS AND DEFINITIONS

MISCELLANEOUS LAWS AND DEFINITIONS

1 Miscellaneous laws and definitions are as follows:-

Archimedes' Principle	A body immersed in a liquid is bouyed up by a force equal to the weight of the liquid displaced.
Ambient Temperature	The temperature of the surrounding medium, i.e., air which comes in contact with the parts of the apparatus.
Bernoullis' Principle	The pressure of a fluid (liquid or gas) decreases at points where the speed of the fluid increases.
Boyle's Law	When the temperature remains constant, the volume of a confined gas varies inversely as its pressure.
British Thermal Unit	(a) The amount of heat needed to raise 1 lb. of water 1°F.
	(b) 252.2 calories.
	(c) 778 ft. - pounds.
	(d) 1055 joules.
Calory, gram	(a) 4.186 joules.
	(b) 4.186×10^7 ergs.
Charle's Law	If the pressure on a gas remains constant, the volume of the gas is directly proportional to the absolute temperature.
Declination or Dip	The angle between the compass needle and the horizontal.

Density	Quantity per unit volume or area.
Deviation	The angle between magnetic north and compass north.
Diopter	A unit of refracted power equal to that of a lens whose principal focal distance is one meter.
Dyne	The dyne is the force which produces an acceleration of one centimeter per second per second when applied to a mass of one gram; 1 dyne 0.0010197 gms.
Erg	0.0010197 gr. cm.
Foot-Pound	(a) 1.35582×10^7 ergs. (b) 1.35582 joules.
Horsepower	(a) One horsepower is equal to 33,000 ft. lbs of work per minute or 550 ft. lbs. per second. (b) 42.418 BTU. (c) 745.7 Watts.
Isoclinics	Lines drawn on charts or maps joining points of equal magnetic dip.
Isogonics	Lines drawn on charts or maps joining points of equal variation.
Light Year	5.88×10^{12} miles.
Magnetic Meridian	The direction of the axis of a freely-suspended magnetic needle influenced only by the earth's magnetic field.
Newton's Law of Gravitation	Every body in the universe attracts every other body with a force that is directly proportional to the product of the masses (weights) of the two bodies and inversely proportional to the square of the distance between their centers.
Newton's Laws of Motion	1. If a body is not acted upon by an unbalanced force, it continues at rest if it is at rest, or it continues to move uniformly in a straight line if it is already moving. 2. Acceleration produced by a given force is inversely proportional to the weight of the body. 3. Every force is accompanied by an equal and opposite re-acting force.
Pascal's Law	Pressure applied to any part of a confined liquid or gas is transmitted with undiminished intensity to every other part.

Prism	In optics, a prism is any transparent medium having plane surfaces, usually inclined to each other.
Relative Humidity	The percent of saturation of air with water vapour.
Reticle	A net of fine lines, such as wire, placed in the focus of the objective of a telescope.
Specific Heat	The ratio between the amount of heat absorbed by a substance and the heat absorbed by water for the same weight and same temperature rise.
Specific Weight	Specific weight is determined by comparing the weight of a definite volume of a given material with the weight of the same volume of water.
Variation	The horizontal angle between the direction of the geographic north and the direction of the local magnetic meridian.

ELECTRICAL LAWS AND DEFINITIONS

2 Electrical laws and definitions are as follows:-

Alternating Current	Current that continually changes in magnitude and periodically reverses in direction.
Alternator	An a-c generator.
Ampere	Unit of electrical current equal to a coulomb per second.
Ampere Hour	Unit of electrical energy used in rating storage batteries; the product of amperes and hours; 3600 coulombs.
Ampere Turn	Unit of magnetizing force; the product of amperes and turns; 1.2566 gilberts.
Amplitude	In connection with alternating current, the maximum value of the displacement from the zero position.
Apparent Power	Product of volts and amperes in a-c circuits where the current and voltage are out of phase.
Armature	The rotating part of a d-c motor or generator.
Atom	One of the minute particles of which the universe is composed; a natural group of electrons and protons.
Average Value	For a half cycle of a sine curve the average is equal to .636 times the maximum.
Capacitance	Property of a circuit which opposes any change of voltage.
Capacitive Reactance	The effect of capacitance in opposing the flow of alternating or pulsating current.

Capacitor	A device for inserting the property of capacitance in a circuit; two or more conductors separated by a di-electric.
Candle Power (spherical)	One candle power is equal to 12.566 lumens.
Cell	A combination of electrodes and electrolyte which converts chemical energy into electrical energy.
Circuit	A closed path or mesh of closed paths usually including a source of EMF.
Circuit Breaker	A device for opening a closed circuit automatically in case of overload.
Collector Rings	Means of conveying current to or from rotating parts of a-c machinery.
Commutation	The process of converting alternating current which flows in the armature of d-c generators to direct current.
Commutator	The part of d-c rotating machinery which makes electrical contact with the brushes and connects the armature conductors to the electrical circuit.
Commutator Ripple	The small pulsations which take place in the voltage and current of d-c generators.
Condenser	See capacitor.
Conductance	Property of a circuit which determines its ability to allow current flow; the reciprocal of resistance.
Coulomb	Unit used for measuring quantity of electrical charge; equal to the charge of 6.28×10^{18} electrons.
Coupling	Term used to represent the means by which energy is transferred from one circuit to another.
Current	Gradual drift of free electrons along a conductor.
Cycle	A complete set of recurrent values as one complete positive alternation and one complete negative alternation of an alternating current; usually represented by the sine curve.
Dielectric	Material which will not conduct an electric current.
Dielectric Constant	Ratio of the capacitance of a capacitor with a dielectric between the plates to the capacitance of the same capacitor with a vacuum between the plates.
Direct Current	Current which is constant in magnitude and direction.

Effective Value	The value of alternating voltage or current which has the same effect as the corresponding value of direct voltage or current; for the sine curve the effective value is 0.707 times the maximum value.
Electricity	One of the fundamental quantities in nature consisting of elementary particles, electrons, and protons which is manifested as a force of attraction or repulsion, and also in work that can be performed when electrons are caused to move; a material agency which when in motion exhibits magnetic, chemical, and thermal effects and when at rest is accompanied by an interplay of forces between associated localities in which it is present.
Electrode	The solid conductors of a cell or battery which are placed in contact with the liquid; conductor which makes electrical contact with a gas or liquid.
Electrolyte	The liquid in a battery or other electrochemical device.
Electromagnet	Temporary magnet which is constructed by winding a number of turns of insulated wire about an iron core.
Electromotive force	Difference of electrical potential or pressure measured in volts.
Electron	One of the ultimate sub-divisions of matter having about 1/1845 of the mass of a hydrogen atom (carrying a negative charge of electricity); one of the negative particles of an atom.
Excitor	Small generator for supplying direct current to an alternators field windings.
Farad	Unit of capacitance equal to the amount of capacitance present when 1 volt can store one coulomb of electricity.
Faraday's Law	If a conductor cuts or is cut by a magnetic field an emf is induced in that conductor.
Field of Force	Region in space filled with force which spreads out in all directions and will act through a vacuum.
Fleming's Right Hand Rule for Generators (Direction of Induced Current)	Extend the thumb, forefinger, and center finger of the right hand at right angles to each other. If the thumb points in the direction in which the conductor moves through the field, and the forefinger points in the direction of the magnetic lines of force (toward the south pole) then the center finger points in the direction of the flow of current in the conductor (conventional flow).

Fleming's Left Hand Rule for Motors (Direction of Motion of Conductor)	Extend the thumb, the forefinger and middle finger of the left hand at right angles to one another. Now turn the hand in such a position that the first finger points in the direction of the lines of force and the second finger in the direction of current in the conductor; then the thumb will point in the direction of the conductor.
Flux	Magnetic field which is established in a magnetic circuit.
Foot Candle	Unit of illumination equal to 10.764 lumens/sq.cm.
Frequency	In alternating current the number of cycles per second.
Fuse	A circuit protecting device which makes use of a substance which has a low melting point.
Gauss	Unit of magnetic field strength equal to 0.7958 amp.turns/cm. or 2.0213 amp turns/inch.
Generator	A device for converting mechanical energy into electrical energy.
Gilbert	Unit of magnetic pressure equal to 0.7958 amp turns.
Henry	Unit of inductance; the inductance present which will cause 1 volt to be induced if the current changes at the rate of 1 ampere per second.
Hypotenuse	The side opposite the 90° angle of a right angle triangle.
Hysteresis	A lagging or retardation of the effect when the forces acting upon a body are changed; encountered both in magnetic and dielectric phenomena.
Impedence	The total opposition to the flow of alternating or pulsating current.
Inductance	Property of a circuit which opposes a change in current.
Induction	The act or process of producing voltage by the relative motion of a magnetic field and a conductor.
Inductive Reactance	The opposition to the flow of alternating or pulsating current due to the inductance of the circuit.
Instantaneous Value	When a value is continually varying with respect to time a value at any particular instant is known as the instantaneous value.
Insulator	A medium which will not conduct electricity.
Joule	Unit of energy or work equal to a watt second.

Kilowatt	Unit of power equal to 1,000 watts.
Kilowatt Hour	Unit of electrical energy; equal to kilowatts multiplied by hours.
Lambert	One lambert is equal to 2.054 candles.
Leakage	Term used to express current loss through imperfect insulators.
Lenz's Law	An induced current always flows in such a direction that its magnetism opposes the motion or the change that induced it.
Line of Force	A path through space along which a field of force acts and shown by a line on a sketch.
Lumen	Unit of luminous flux equal to 0.001496 watts.
Magnetic Pole	Region where the majority of magnetic lines of force leave or enter the magnet.
Magnetism	The property of the molecules of certain substances, as iron, by virtue of which tney may store energy in the form of a field of force and is due to the motion of the electrons in the atoms of the substance; a manifestation of energy due to the motion of a dielectric field of force.
Magnetmotive Force	The force which is necessary to establish flux in a magnetic circuit or to magnetize an unmagnetized specimen.
Matter	Anything which has weight and occupies space.
Maximum Value	The greatest instantaneous value of an alternating voltage or current.
Megohms	Unit of resistance equal to one million ohms.
Microfarad	Unit of capacitance equal to one-millionth of a farad.
Molecule	A small natural particle of matter usually composed of two or more atoms.
Mutual Inductance	Inductance associated with more than one circuit.
Network	Special type of electrical circuit which cannot be classified in terms of series and parallel parts.
Oersted	The unit of reluctance or magnetic resistance, being the reluctance offered by a cubic centimeter of vacuum.

Ohm	The electrical resistance of a column of mercury 106.3 cm. long and 1 sq. mm. in cross section area, maintained at a temperature of 0°C is equal to 1 ohm.
Peak Value	Same as maximum value.
Period	The time required for the completion of one cycle.
Permanent Magnet	Piece of steel or alloy which has its molecules lined up such that a magnetic field exists without the application of a magnetizing force.
Permeability	Reciprocal of reluctance; a measure of the ease with which flux can be established in the magnetic circuit; a ratio of the flux produced by a current-carrying coil with a core to one without a core.
Phase	The portion of a whole period which has elapsed since the thing in question passed through its zero position in a positive direction.
Potential	A characteristic of a point in an electric field or circuit indicated by the work necessary to bring a unit positive charge to it from infinity; the degree of electrification as referred to some standard as that of the earth.
Potential Difference	The arithmetical difference between two electrical potentials.
Power Factor	Ratio of true power to apparent power; equal to the cosine of the phase angle between the voltage and current.
Practical Units of Electrical Measurement	Micro - 0.000001 or 10^{-6}) Milli - 0.001 or 10^{-3}) times the fundamental unit Kilo - 1000 or 10^{3}) Meg - 1,000,000 or 10^{6})
Proton	The positive particle of an atom.
Pulsating Direct Current	Current which varies in magnitude but not in direction.
Rectifier	Device for changing alternating current to pulsating direct current.
Relay	Device for controlling electrical circuits from a remote position; a magnetic switch.
Reluctance	The opposition to magnetic flux.
Resistance	The opposition to the flow of electric current.
Rheostat	A variable resistance for limiting the current in a circuit.

Right Hand Thumb Rule (Direction of Current Flow)	Grasp the wire with the right hand so that the thumb points in the direction of current flow, then the fingers will curl around the wire in the direction of the magnetic field (conventional current flow).
Right Hand Thumb Rule (To Determine North Pole of an Electro-magnet)	Grasp the coil of the electromagnet with the right hand so that the fingers curl in the direction of current flow; then the thumb will point to the north pole of the electromagnet (conventional current flow).
Self-Inductance	Inductance associated with but one circuit.
Sine of an Angle	One of the trigonometric functions of an angle; in connection with a right angle triangle the ratio of the side opposite the angle to the hypotenuse.
Sine Curve	The graph obtained by plotting the sine of an angle against degrees.
Solenoid	A tubular coil for the production of a magnetic field; electromagnet with a core which is free to move in and out.
Stator	The part of an a-c generator or motor which has the stationary winding on it.
Switch	A device for opening or closing an electrical circuit.
Synchronous	Having the same period and phase.
Transformer	A device for stepping up or stepping down current or voltage in an a-c circuit.
True Power	The actual power consumed by an a-c circuit and equal to I^2R; expression used to distinguish from apparent power.
Volt	Unit of potential, potential difference, emf, or electrical pressure; the electromotive force required to drive a current of one ampere through a resistance of 1 ohm.
Voltage Regulator	Device used in connection with generators to keep the voltage constant as load or speed is changed.
Watt	Unit of electrical power; equal to a joule per second.

PART 6

MISCELLANEOUS TABLES

1 Table 20 lists the squares and square roots for whole numbers from 1 to 120.

TABLE 20

MATHEMATICAL TABLE OF SQUARES AND SQUARE ROOTS

n	n^2	$\sqrt{n}$	n	n^2	$\sqrt{n}$	n	n^2	$\sqrt{n}$
1	1	1.	41	1681	6.4031	81	6561	9.0000
2	4	1.414	42	1764	6.4807	82	6724	9.0554
3	9	1.732	43	1849	6.5574	83	6889	9.1104
4	16	2.000	44	1936	6.6332	84	7056	9.1652
5	25	2.236	45	2025	6.7082	85	7225	9.2195
6	36	2.449	46	2116	6.7823	86	7396	9.2736
7	49	2.646	47	2209	6.8557	87	7569	9.3274
8	64	2.828	48	2304	6.9282	88	7744	9.3808
9	81	3.000	49	2401	7.0000	89	7921	9.4340
10	100	3.162	50	2500	7.0711	90	8100	9.4868
11	121	3.3166	51	2601	7.1414	91	8281	9.5394
12	144	3.4641	52	2704	7.2111	92	8464	9.5917
13	169	3.6056	53	2809	7.2801	93	8649	9.6437
14	196	3.7417	54	2916	7.3485	94	8836	9.6954
15	225	3.8730	55	3025	7.4162	95	9025	9.7468
16	256	4.0000	56	3136	7.4833	96	9216	9.7980
17	289	4.1231	57	3249	7.5498	97	9409	9.8489
18	324	4.2426	58	3364	7.6158	98	9604	9.8995
19	361	4.3589	59	3481	7.6811	99	9801	9.9499
20	400	4.4721	60	3600	7.7460	100	10000	10.0000
21	441	4.5826	61	3721	7.8102	101	10201	10.0499
22	484	4.6904	62	3844	7.8740	102	10404	10.0995
23	529	4.7958	63	3969	7.9373	103	10609	10.1489
24	576	4.8990	64	4096	8.0000	104	10816	10.1980
25	625	5.0000	65	4225	8.0623	105	11025	10.2470
26	676	5.0990	66	4356	8.1240	106	11236	10.2956
27	729	5.1962	67	4489	8.1854	107	11449	10.3441
28	784	5.2915	68	4624	8.2462	108	11664	10.3923
29	841	5.3852	69	4761	8.3066	109	11881	10.4403
30	900	5.4772	70	4900	8.3666	110	12100	10.4881
31	961	5.5678	71	5041	8.4261	111	12321	10.5357
32	1024	5.6569	72	5184	8.4853	112	12544	10.5830
33	1089	5.7446	73	5329	8.5440	113	12769	10.6301
34	1156	5.8310	74	5476	8.6023	114	12996	10.6771
35	1225	5.9161	75	5625	8.6603	115	13225	10.7238
36	1296	6.0000	76	5776	8.7178	116	13456	10.7703
37	1369	6.0828	77	5929	8.7750	117	13689	10.8167
38	1444	6.1644	78	6084	8.8318	118	13924	10.8628
39	1521	6.2450	79	6241	8.8882	119	14161	10.9087
40	1600	6.3246	80	6400	8.9443	120	14400	10.9545

2 Table 21 lists diameters and tap drill sizes for screw sizes shown.

TABLE 21

BASIC THREAD DIMENSIONS AND TAP DRILL SIZES

NC Size and Threads Per Inch	NF Size and Threads Per Inch	Major Dia. Inches	Pitch Dia. Inches	Minor Dia. Inches	Tap Drill To Give 75%	Decimal Equivalent of Tap Drill
	0 x 80	.0600	.0519	.0438	3/64"	.0469
	1 x 72	.0730	.0640	.0550	53	.0595
1 x 64		.0730	.0629	.0527	53	.0595
	2 x 64	.0860	.0759	.0657	50	.0700
2 x 56		.0860	.0744	.0628	50	.0700
	3 x 56	.0990	.0874	.0758	45	.0820
3 x 48		.0990	.0855	.0719	47	.0785
	4 x 48	.1120	.0985	.0849	42	.0935
4 x 40		.1120	.0958	.0795	43	.0890
	5 x 44	.1250	.1102	.0955	37	.1040
5 x 40		.1250	.1088	.0925	38	.1015
	6 x 40	.1380	.1218	.1075	33	.1130
6 x 32		.1380	.1177	.0974	36	.1065
	8 x 36	.1640	.1460	.1279	29	.1360
8 x 32		.1640	.1437	.1234	29	.1360
	10 x 32	.1900	.1697	.1494	21	.1590
10 x 24		.1900	.1629	.1359	25	.1495
	12 x 28	.2160	.1928	.1696	14	.1820
12 x 24		.2160	.1889	.1619	16	.1770
	1/4 x 28	.2500	.2268	.2036	3	.2130
1/4 x 20		.2500	.2175	.1850	7	.2010
	5/16 x 24	.3125	.2854	.2584	I	.2720
5/16 x 18		.3125	.2764	.2403	F	.2570
	3/8 x 24	.3750	.3479	.3209	Q	.3320
3/8 x 16		.3750	.3344	.2938	5/16	.3125
	7/16 x 20	.4375	.4050	.3725	25/64	.3906
7/16 x 14		.4375	.3911	.3447	U	.3680
	1/2 x 20	.5000	.4675	.4350	29/64	.4531
1/2 x 13		.5000	.4500	.4001	27/64	.4219
	9/16 x 18	.5625	.5264	.4903	33/64	.5156
9/16 x 12		.5625	.5084	.4542	31/64	.4844
	5/8 x 18	.6250	.5889	.5528	37/64	.5781
5/8 x 11		.6250	.5660	.5069	17/32	.5312
	3/4 x 16	.7500	.7094	.6688	11/16	.6875
3/4 x 10		.7500	.6850	.6201	21/32	.6562
	7/8 x 14	.8750	.8286	.7822	13/16	.8125
7/8 x 9		.8750	.8028	.7307	49/64	.7656
	1 x 14	1.0000	.9536	.9072	15/16	.9375
1 x 8		1.0000	.9188	.8376	7/8	.8750

3 Table 22 is for use when timing vertical speed indicators. It will assist in checking the timing in seconds against the rate of climb in feet per minute.

TABLE 22

TIME	TEST RATE							TIME	TEST RATE						
	500	1000	1500	2000	3000	4000	5000		500	1000	1500	2000	3000	4000	5000
54.0	556	1111	1667	2222	3333	4444	5556	57.5	522	1043	1565	2087	3130	4174	5217
.1	555	1109	1664	2218	3327	4436	5545	.6	521	1042	1562	2083	3125	4167	5208
.2	554	1107	1661	2214	3321	4428	5535	.7	520	1040	1560	2080	3120	4160	5199
.3	552	1105	1657	2210	3315	4420	5525	.8	519	1038	1557	2076	3114	4152	5190
.4	551	1103	1654	2206	3309	4412	5515	.9	518	1036	1554	2073	3109	4145	5181
54.5	550	1101	1651	2202	3303	4404	5505	58.0	517	1034	1552	2069	3103	4138	5172
.6	549	1099	1648	2198	3297	4396	5495	.1	516	1033	1549	2065	3098	4131	5164
.7	548	1097	1645	2194	3291	4388	5484	.2	515	1031	1546	2062	3093	4124	5155
.8	547	1095	1642	2190	3285	4380	5474	.3	515	1029	1544	2058	3087	4117	5146
.9	546	1093	1639	2186	3279	4372	5464	.4	514	1027	1541	2055	3082	4110	5137
55.0	545	1091	1635	2182	3273	4364	5455	58.5	513	1026	1538	2051	3077	4103	5128
.1	544	1089	1633	2178	3267	4356	5445	.6	512	1024	1536	2048	3972	4096	5119
.2	543	1087	1630	2174	3261	4348	5435	.7	511	1022	1533	2044	3066	4089	5111
.3	542	1085	1627	2170	3255	4340	5425	.8	510	1020	1530	2041	3061	4082	5102
.4	542	1083	1625	2166	3249	4332	5415	.9	509	1019	1528	2037	3056	4075	5094
55.5	541	1081	1622	2162	3243	4324	5405	59.0	508	1017	1525	2034	3051	4068	5085
.6	540	1079	1619	2158	3237	4317	5396	.1	508	1015	1523	2030	3046	4061	5076
.7	539	1077	1616	2154	3232	4309	5386	.2	507	1014	1520	2027	3041	4054	5068
.8	538	1075	1613	2151	3226	4301	5376	.3	506	1012	1518	2024	3035	4047	5059
.9	537	1073	1610	2147	3220	4293	5367	.4	505	1010	1515	2020	3030	4040	5051
56.0	536	1071	1607	2143	3214	4286	5357	59.5	504	1008	1513	2017	3025	4034	5042
.1	535	1070	1604	2139	3208	4278	5348	.6	503	1007	1510	2013	3020	4027	5034
.2	534	1068	1601	2135	3203	4270	5338	.7	503	1005	1508	2010	3015	4020	5025
.3	533	1065	1599	2131	3197	4263	5329	.8	502	1003	1505	2007	3010	4013	5017
.4	532	1064	1596	2128	3191	4255	5319	.9	501	1002	1503	2003	3005	4007	5008
56.5	531	1062	1593	2124	3186	4248	5310	60.0	500	1000	1500	2000	3000	4000	5000
.6	530	1060	1590	2120	3180	4240	5300	.1	499	998	1498	1997	2995	3993	4992
.7	529	1058	1587	2116	3175	4233	5291	.2	498	997	1495	1993	2990	3987	4983
.8	528	1056	1585	2113	3169	4225	5282	.3	498	995	1493	1990	2985	3981	4975
.9	527	1054	1582	2109	3163	4218	5272	.4	497	993	1490	1987	2980	3974	4967
57.0	526	1053	1579	2105	3158	4211	5263	60.5	496	992	1488	1983	2975	3967	4959
.1	525	1051	1576	2102	3152	4203	5254	.6	495	990	1485	1980	2970	3960	4950
.2	524	1049	1573	2098	3147	4196	5245	.7	494	988	1483	1977	2965	3954	4942
.3	524	1047	1571	2094	3141	4188	5236	.8	493	987	1480	1974	2961	3947	4934
.4	523	1045	1568	2091	3136	4181	5226	.9	493	985	1478	1970	2956	3941	4926

TABLE 22 (Cont'd)

TIME	TEST RATE						
	500	1000	1500	2000	3000	4000	5000
61.0	492	984	1475	1967	2951	3934	4918
.1	491	982	1473	1964	2946	3928	4910
.2	490	980	1471	1961	2941	3922	4902
.3	489	979	1468	1958	2936	3915	4894
.4	489	977	1466	1954	2932	3909	4886
61.5	488	976	1463	1951	2927	3902	4878
.6	487	974	1461	1948	2922	3896	4870
.7	486	972	1459	1945	2917	3890	4862
.8	485	971	1456	1942	2913	3883	4854
.9	485	969	1454	1939	2908	3877	4847
62.0	484	968	1452	1935	2903	3871	4839
.1	483	966	1449	1932	2899	3865	4831
.2	482	965	1447	1929	2894	3858	4823
.3	482	963	1445	1926	2889	3852	4815
.4	481	962	1442	1923	2885	3846	4808
62.5	480	960	1440	1920	2880	3840	4800
.6	479	958	1438	1917	2875	3834	4792
.7	478	957	1435	1914	2871	3828	4785
.8	478	955	1433	1911	2866	3822	4777
.9	477	954	1431	1908	2862	3816	4769
63.0	476	952	1429	1905	2857	3810	4752
.1	475	951	1426	1902	2853	3803	4754
.2	475	949	1424	1899	2848	3797	4747
.3	474	948	1422	1896	2844	3791	4739
.4	473	946	1420	1893	2839	3785	4732
63.5	472	945	1417	1890	2835	3780	4724
.6	472	943	1415	1887	2830	3774	4717
.7	471	942	1413	1884	2826	3768	4710
.8	470	940	1411	1881	2821	3762	4702
.9	469	939	1408	1878	3817	3756	4695

TIME	TEST RATE						
	500	1000	1500	2000	3000	4000	5000
64.0	469	938	1406	1875	2813	3750	4688
.1	438	936	1404	1872	2808	3744	4680
.2	467	935	1402	1869	2804	3738	4673
.3	467	933	1400	1866	2799	3733	4656
.4	466	932	1398	1863	2795	3727	4658
64.5	465	930	1395	1860	2791	3721	4651
.6	464	929	1393	1858	2786	3715	4644
.7	464	927	1391	1855	2782	3709	4637
.8	463	926	1389	1852	2778	3704	4630
.9	462	924	1387	1849	2773	3698	4622
65.0	452	923	1385	1846	2769	3692	4615
.1	461	922	1382	1843	2765	3687	4608
.2	460	920	1380	1840	2731	3681	4601
.3	459	919	1378	1838	2757	3675	4594
.4	459	917	1376	1835	2752	3670	4587
65.5	458	916	1374	1832	2748	3664	4580
.6	457	916	1372	1829	2744	3659	4573
.7	457	913	1370	1826	2740	3653	4566
.8	456	912	1368	1824	2736	3647	4559
.9	455	910	1366	1821	2731	3642	4552
66.0	455	909	1364	1818	2727	3636	4545