

SERVICE MANUAL

CARS AND VANS

P

(8)

Part 13

TABLES

Export Service Department

AKTIEBOLAGET

VOLVO

GÖTEBORG . SWEDEN

Index (8)

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Comparison between different units

Conversion from -- to

Unit to be converted	Result	Multiply by	Unit to be converted	Result	Multiply by
LENGTH			WEIGHT		
Millimetre (mm)	Inch	0.0394	Gram (g)	Ounce (oz.)	0.035
Inch (in.)	Millimetre	25.4	Ounce (oz.)	Gram (g)	28.35
Metre (m)	Foot (ft.)	3.281	Kilogram (kg)	Pound (lb.)	2.205
Foot (ft.)	Metre (m)	0.305	Pound (lb.)	Kilogram (kg)	0.454
Metre (m)	Yard (yd.)	1.094	Ton (metric)	US ton (short ton = 2000 lb.)	1.102
Yard (yd.)	Metre (m)	0.915	US ton	Ton (metric)	0.907
Kilometre (km)	Mile	0.621	Ton (metric)	Ton (long ton = 2240 lb.)	0.984
Mile	Kilometre (km)	1.609	Long ton	Ton (metric)	1.016
AREA			PRESSURE		
Square centimetre (sq. cm.)	Square inch (sq. in.)	0.155	Kilogram/square centimetre (Kg./sq. cm.)	Pounds/square inch (lb./sq. in.)	14.223
Square inch (sq. in.)	Square centimetre (sq. cm.)	6.452	Pounds/square inch (lb./sq. in.)	Kilogram/square centimetre (kg./sq. cm.)	0.0703
Square metre (sq. m.)	Square yard (sq. yd.)	1.196	Kilogram/square metre (kg/sq. m.)	Pounds/square foot (lb./sq. ft.)	0.205
Square yard (sq. yd.)	Square metre (sq. m.)	0.837	Pounds/square foot (lb./sq. ft.)	Kilogram/square metre (kg/sq. m.)	4.883
Square kilometre (sq. km.)	Square mile (sq. mile)	0.396	TORQUE		
Square mile (sq. mile)	Square kilometre (sq. km.)	2.590	Kilogram-metre (kgm)	Pound-foot (lb.ft.)	7.235
Square kilometre (sq. km.)	Acre	247.1	Pound-foot (lb.ft.)	Kilogram-metre (kgm)	0.138
Acre	Square kilometre (sq. km.)	0.00405	SPEED		
CUBIC MEASURE			Metre/second	Foot/minute (ft./min.)	196.9
Cubic centimetre (c. c.)	Cubic inch (cu. in.)	0.061	Foot/minute (ft./min.)	Metre second	0.005
Cubic inch (cu. in.)	Cubic centimetre (c. c.)	16.383	Kilometre/hour (km. p. h.)	Mile/hour (m. p. h.)	0.621
Cubic metre (cu. m.)	Cubic foot (cu. ft.)	35.314	Mile/hour (m. p. h.)	Kilometre/hour (km. p. h.)	1.609
Cubic foot (cu. ft.)	Cubic metre (cu. m.)	0.028	FUEL CONSUMPTION		
Cubic metre (cu. m.)	Cubic yard (cu. yd.)	1.308	Litre/10 kilometres	$\frac{23.53}{\text{Mile/US gallon}}$	
Cubic yard (cu. yd.)	Cubic metre (cu. m.)	0.765	Mile/US gallon (m. p. g.)	$\frac{23.53}{\text{Litre/10 kilometres}}$	
Litre (l)	Cubic inch (cu. in.)	61.023	Litre/10 kilometres	$\frac{28.25}{\text{Mile/Imp. gallon}}$	
Cubic inch (cu. in.)	Litre (l)	0.016	Mile/Imp. gallons	$\frac{28.25}{\text{Litre/10 kilometres}}$	
Litre (l)	US gallon	0.264	MISCELLANEOUS		
US gallon	Litre (l)	3.785	Kilocalory (kcal)	British Thermal Unit (B.T.U.)	3.968
Litre (l)	Imp. gallon	0.220	British Thermal Unit (B.T.U.)	Kilocalory (kcal)	0.252
Imp. gallon	Litre (l)	5.545			
Pint	Gallon	0.125			
Gallon	Pint	8			
Quart	Gallon	0.25			
Gallon	Quart	4			

Conversion table inches to millimetres

Rounded-off values from 1/64" to 10"

Inches		0"	1"	2"	3"	4"	5"	6"	7"	8"	9"
		Millimetres									
0"	0"	—	25,400	50,800	76,200	101,600	127,000	152,400	177,800	203,200	228,600
1/64"	0,015625"	0,397	25,797	51,197	76,597	101,997	127,397	152,797	178,197	203,597	228,997
2/64"	0,03125"	0,794	26,194	51,594	76,994	102,394	127,794	153,194	178,594	203,994	229,394
3/64"	0,046875"	1,191	26,591	51,991	77,391	102,791	128,191	153,591	178,991	204,391	229,791
4/64"	0,0625"	1,588	26,988	52,388	77,788	103,188	128,588	153,988	179,388	204,788	230,188
5/64"	0,078125"	1,984	27,384	52,784	78,184	103,584	128,984	154,384	179,784	205,184	230,584
6/64"	0,09375"	2,381	27,781	53,181	78,581	103,981	129,381	154,781	180,181	205,581	230,981
7/64"	0,109375"	2,778	28,178	53,578	78,978	104,378	129,778	155,178	180,578	205,978	231,378
8/64"	0,125"	3,175	28,575	53,975	79,375	104,775	130,175	155,575	180,975	206,375	231,775
9/64"	0,140625"	3,572	28,972	54,372	79,772	105,172	130,572	155,972	181,372	206,772	232,172
10/64"	0,15625"	3,969	29,369	54,769	80,169	105,569	130,969	156,369	181,769	207,169	232,569
11/64"	0,171875"	4,366	29,766	55,166	80,566	105,966	131,366	156,766	182,166	207,566	232,966
12/64"	0,1875"	4,762	30,162	55,562	80,962	106,362	131,762	157,162	182,562	207,962	233,362
13/64"	0,203125"	5,159	30,559	55,959	81,359	106,759	132,159	157,559	182,959	208,359	233,759
14/64"	0,21875"	5,556	30,956	56,356	81,756	107,156	132,556	157,956	183,356	208,756	234,156
15/64"	0,234375"	5,953	31,353	56,753	82,153	107,553	132,953	158,353	183,753	209,153	234,553
16/64"	0,25"	6,350	31,750	57,150	82,550	107,950	133,350	158,750	184,150	209,550	234,950
17/64"	0,265625"	6,747	32,147	57,547	82,947	108,347	133,747	159,147	184,547	209,947	235,347
18/64"	0,28125"	7,144	32,544	57,944	83,344	108,744	134,144	159,544	184,944	210,344	235,744
19/64"	0,296875"	7,541	32,941	58,341	83,741	109,141	134,541	159,941	185,341	210,741	236,141
20/64"	0,3125"	7,938	33,338	58,738	84,138	109,538	134,938	160,338	185,738	211,138	236,538
21/64"	0,328125"	8,334	33,734	59,134	84,534	109,934	135,334	160,734	186,134	211,534	236,934
22/64"	0,34375"	8,731	34,131	59,531	84,931	110,331	135,731	161,131	186,531	211,931	237,331
23/64"	0,359375"	9,128	34,528	59,928	85,328	110,728	136,128	161,528	186,928	212,328	237,728
24/64"	0,375"	9,525	34,925	60,325	85,725	111,125	136,525	161,925	187,325	212,725	238,125
25/64"	0,390625"	9,922	35,322	60,722	86,122	111,522	136,922	162,322	187,722	213,122	238,522
26/64"	0,40625"	10,319	35,719	61,119	86,519	111,919	137,319	162,719	188,119	213,519	238,919
27/64"	0,421875"	10,716	36,116	61,516	86,916	112,316	137,716	163,116	188,516	213,916	239,316
28/64"	0,4375"	11,112	36,512	61,912	87,312	112,712	138,112	163,512	188,912	214,312	239,712
29/64"	0,453125"	11,509	36,909	62,309	87,709	113,109	138,509	163,909	189,309	214,709	240,109
30/64"	0,46875"	11,906	37,306	62,706	88,106	113,506	138,906	164,306	189,706	215,106	240,506
31/64"	0,484375"	12,303	37,703	63,103	88,503	113,903	139,303	164,703	190,103	215,503	240,903
32/64"	0,5"	12,700	38,100	63,500	88,900	114,300	139,700	165,100	190,500	215,900	241,300
33/64"	0,515625"	13,097	38,497	63,897	89,297	114,697	140,097	165,497	190,897	216,297	241,697
34/64"	0,53125"	13,494	38,894	64,294	89,694	115,094	140,494	165,894	191,294	216,694	242,094
35/64"	0,546875"	13,891	39,291	64,691	90,091	115,491	140,891	166,291	191,691	217,091	242,491
36/64"	0,5625"	14,288	39,688	65,088	90,488	115,888	141,288	166,688	192,088	217,488	242,888
37/64"	0,578125"	14,684	40,084	65,484	90,884	116,284	141,684	167,084	192,484	217,884	243,284
38/64"	0,59375"	15,081	40,481	65,881	91,281	116,681	142,081	167,481	192,881	218,281	243,681
39/64"	0,609375"	15,478	40,878	66,278	91,678	117,078	142,478	167,878	193,278	218,678	244,078
40/64"	0,625"	15,875	41,275	66,675	92,075	117,475	142,875	168,275	193,675	219,075	244,475
41/64"	0,640625"	16,272	41,672	67,072	92,472	117,872	143,272	168,672	194,072	219,472	244,872
42/64"	0,65625"	16,669	42,069	67,469	92,869	118,269	143,669	169,069	194,469	219,869	245,269
43/64"	0,671875"	17,066	42,466	67,866	93,266	118,666	144,066	169,466	194,866	220,266	245,666
44/64"	0,6875"	17,462	42,862	68,262	93,662	119,062	144,462	169,862	195,262	220,662	246,062
45/64"	0,703125"	17,859	43,259	68,659	94,059	119,459	144,859	170,259	195,659	221,059	246,459
46/64"	0,71875"	18,256	43,656	69,056	94,456	119,856	145,256	170,656	196,056	221,456	246,856
47/64"	0,734375"	18,653	44,053	69,453	94,853	120,253	145,653	171,053	196,453	221,853	247,253
48/64"	0,75"	19,050	44,450	69,850	95,250	120,650	146,050	171,450	196,850	222,250	247,650
49/64"	0,765625"	19,447	44,847	70,247	95,647	121,047	146,447	171,847	197,247	222,647	248,047
50/64"	0,78125"	19,844	45,244	70,644	96,044	121,444	146,844	172,244	197,644	223,044	248,444
51/64"	0,796875"	20,241	45,641	71,041	96,441	121,841	147,241	172,641	198,041	223,441	248,841
52/64"	0,8125"	20,638	46,038	71,438	96,838	122,238	147,638	173,038	198,438	223,838	249,238
53/64"	0,828125"	21,034	46,434	71,834	97,234	122,634	148,034	173,434	198,834	224,234	249,634
54/64"	0,84375"	21,431	46,831	72,231	97,631	123,031	148,431	173,831	199,231	224,631	250,031
55/64"	0,859375"	21,828	47,228	72,628	98,028	123,428	148,828	174,228	199,628	225,028	250,428
56/64"	0,875"	22,225	47,625	73,025	98,425	123,825	149,225	174,625	200,025	225,425	250,825
57/64"	0,890625"	22,622	48,022	73,422	98,822	124,222	149,622	175,022	200,422	225,822	251,222
58/64"	0,90625"	23,019	48,419	73,819	99,219	124,619	150,019	175,419	200,819	226,219	251,619
59/64"	0,921875"	23,416	48,816	74,216	99,616	125,016	150,416	175,816	201,216	226,616	252,016
60/64"	0,9375"	23,812	49,212	74,612	100,012	125,412	150,812	176,212	201,612	227,012	252,412
61/64"	0,953125"	24,209	49,609	75,009	100,409	125,809	151,209	176,609	202,009	227,409	252,809
62/64"	0,96875"	24,606	50,006	75,406	100,806	126,206	151,606	177,006	202,406	227,806	253,206
63/64"	0,984375"	25,003	50,403	75,803	101,203	126,603	152,003	177,403	202,803	228,203	253,603

Conversion table inches to millimetres

Exact values from 0.0001" to 10"

Inches	0"	0,001"	0,002"	0,003"	0,004"	0,005"	0,006"	0,007"	0,008"	0,009"
	Millimetres									
0"	—	0,02540	0,05080	0,07620	0,10160	0,12700	0,15240	0,17780	0,20320	0,22860
0,0001"	0,00254	0,02794	0,05334	0,07874	0,10414	0,12954	0,15494	0,18034	0,20574	0,23114
0,0002"	0,00508	0,03048	0,05588	0,08128	0,10668	0,13208	0,15748	0,18288	0,20828	0,23368
0,0003"	0,00762	0,03302	0,05842	0,08382	0,10922	0,13462	0,16002	0,18542	0,21082	0,23622
0,0004"	0,01016	0,03556	0,06096	0,08636	0,11176	0,13716	0,16256	0,18796	0,21336	0,23876
0,0005"	0,01270	0,03810	0,06350	0,08890	0,11430	0,13970	0,16510	0,19050	0,21590	0,24130
0,0006"	0,01524	0,04064	0,06604	0,09144	0,11684	0,14224	0,16764	0,19304	0,21844	0,24384
0,0007"	0,01778	0,04318	0,06858	0,09398	0,11938	0,14478	0,17018	0,19558	0,22098	0,24638
0,0008"	0,02032	0,04572	0,07112	0,09652	0,12192	0,14732	0,17272	0,19812	0,22352	0,24892
0,0009"	0,02286	0,04826	0,07366	0,09906	0,12446	0,14986	0,17526	0,20066	0,22606	0,25146

Inches	0"	0,01"	0,02"	0,03"	0,04"	0,05"	0,06"	0,07"	0,08"	0,09"
	Millimetres									
0"	—	0,2540	0,5080	0,7620	1,0160	1,2700	1,5240	1,7780	2,0320	2,2860
0,001"	0,0254	0,2794	0,5334	0,7874	1,0414	1,2954	1,5494	1,8034	2,0574	2,3114
0,002"	0,0508	0,3048	0,5588	0,8128	1,0668	1,3208	1,5748	1,8288	2,0828	2,3368
0,003"	0,0762	0,3302	0,5842	0,8382	1,0922	1,3462	1,6002	1,8542	2,1082	2,3622
0,004"	0,1016	0,3556	0,6096	0,8636	1,1176	1,3716	1,6256	1,8796	2,1336	2,3876
0,005"	0,1270	0,3810	0,6350	0,8890	1,1430	1,3970	1,6510	1,9050	2,1590	2,4130
0,006"	0,1524	0,4064	0,6604	0,9144	1,1684	1,4224	1,6764	1,9304	2,1844	2,4384
0,007"	0,1778	0,4318	0,6858	0,9398	1,1938	1,4478	1,7018	1,9558	2,2098	2,4638
0,008"	0,2032	0,4572	0,7112	0,9652	1,2192	1,4732	1,7272	1,9812	2,2352	2,4892
0,009"	0,2286	0,4826	0,7366	0,9906	1,2446	1,4986	1,7526	2,0066	2,2606	2,5146

Inches	0"	0,1"	0,2"	0,3"	0,4"	0,5"	0,6"	0,7"	0,8"	0,9"
	Millimetres									
0"	—	2,540	5,080	7,620	10,160	12,700	15,240	17,780	20,320	22,860
0,01"	0,254	2,794	5,334	7,874	10,414	12,954	15,494	18,034	20,574	23,114
0,02"	0,508	3,048	5,588	8,128	10,668	13,208	15,748	18,288	20,828	23,368
0,03"	0,762	3,302	5,842	8,382	10,922	13,462	16,002	18,542	21,082	23,622
0,04"	1,016	3,556	6,096	8,636	11,176	13,716	16,256	18,796	21,336	23,876
0,05"	1,270	3,810	6,350	8,890	11,430	13,970	16,510	19,050	21,590	24,130
0,06"	1,524	4,064	6,604	9,144	11,684	14,224	16,764	19,304	21,844	24,384
0,07"	1,778	4,318	6,858	9,398	11,938	14,478	17,018	19,558	22,098	24,638
0,08"	2,032	4,572	7,112	9,652	12,192	14,732	17,272	19,812	22,352	24,892
0,09"	2,286	4,826	7,366	9,906	12,446	14,986	17,526	20,066	22,606	25,146

Inches	0"	1"	2"	3"	4"	5"	6"	7"	8"	9"
	Millimetres									
0"	—	25,40	50,80	76,20	101,60	127,00	152,40	177,80	203,20	228,60
0,1"	2,54	27,94	53,34	78,74	104,14	129,54	154,94	180,34	205,74	231,14
0,2"	5,08	30,48	55,88	81,28	106,68	132,08	157,48	182,88	208,28	233,68
0,3"	7,62	33,02	58,42	83,82	109,22	134,62	160,02	185,42	210,82	236,22
0,4"	10,16	35,56	60,96	86,36	111,76	137,16	162,56	187,96	213,36	238,76
0,5"	12,70	38,10	63,50	88,90	114,30	139,70	165,10	190,50	215,90	241,30
0,6"	15,24	40,64	66,04	91,44	116,84	142,24	167,64	193,04	218,44	243,84
0,7"	17,78	43,18	68,58	93,98	119,38	144,78	170,18	195,58	220,98	246,38
0,8"	20,32	45,72	71,12	96,52	121,92	147,32	172,72	198,12	223,52	248,92
0,9"	22,86	48,26	73,66	99,06	124,46	149,86	175,26	200,66	226,06	251,46

Conversion table millimetres to inches

Rounded-off values from 0.001 mm to 100 mm

Millimetres	0	0,01	0,02	0,03	0,04	0,05	0,06	0,07	0,08	0,09
	Inches									
0		0,00039	0,00079	0,00118	0,00157	0,00197	0,00236	0,00276	0,00315	0,00354
0,001	0,00004	0,00043	0,00083	0,00122	0,00161	0,00201	0,00240	0,00280	0,00319	0,00358
0,002	0,00008	0,00047	0,00087	0,00126	0,00165	0,00205	0,00244	0,00283	0,00323	0,00362
0,003	0,00012	0,00051	0,00091	0,00130	0,00169	0,00209	0,00248	0,00287	0,00327	0,00366
0,004	0,00016	0,00055	0,00094	0,00134	0,00173	0,00213	0,00252	0,00291	0,00331	0,00370
0,005	0,00020	0,00059	0,00098	0,00138	0,00177	0,00217	0,00256	0,00295	0,00335	0,00374
0,006	0,00024	0,00063	0,00102	0,00142	0,00181	0,00220	0,00260	0,00299	0,00339	0,00378
0,007	0,00028	0,00067	0,00106	0,00146	0,00185	0,00224	0,00264	0,00303	0,00343	0,00382
0,008	0,00031	0,00071	0,00110	0,00150	0,00189	0,00228	0,00268	0,00307	0,00346	0,00386
0,009	0,00035	0,00075	0,00114	0,00154	0,00193	0,00232	0,00272	0,00311	0,00350	0,00390

Millimetres	0	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9
	Inches									
0	—	0,00394	0,00787	0,01181	0,01575	0,01969	0,02362	0,02756	0,03150	0,03543
0,01	0,00039	0,00433	0,00827	0,01220	0,01614	0,02008	0,02402	0,02795	0,03189	0,03583
0,02	0,00079	0,00472	0,00866	0,01260	0,01654	0,02047	0,02441	0,02835	0,03228	0,03622
0,03	0,00118	0,00512	0,00906	0,01299	0,01693	0,02087	0,02480	0,02874	0,03268	0,03661
0,04	0,00157	0,00551	0,00945	0,01339	0,01732	0,02126	0,02520	0,02913	0,03307	0,03701
0,05	0,00197	0,00591	0,00984	0,01378	0,01772	0,02165	0,02559	0,02953	0,03346	0,03740
0,06	0,00236	0,00630	0,01024	0,01417	0,01811	0,02205	0,02598	0,02992	0,03386	0,03780
0,07	0,00276	0,00669	0,01063	0,01457	0,01850	0,02244	0,02638	0,03031	0,03425	0,03819
0,08	0,00315	0,00709	0,01102	0,01496	0,01890	0,02283	0,02677	0,03071	0,03465	0,03858
0,09	0,00354	0,00748	0,01142	0,01535	0,01929	0,02323	0,02717	0,03110	0,03504	0,03898

Millimetres	0	1	2	3	4	5	6	7	8	9
	Inches									
0	—	0,03937	0,07874	0,11811	0,15748	0,19685	0,23622	0,27559	0,31496	0,35433
0,1	0,00394	0,04331	0,08268	0,12205	0,16142	0,20079	0,24016	0,27953	0,31890	0,35827
0,2	0,00787	0,04724	0,08661	0,12598	0,16535	0,20472	0,24409	0,28346	0,32283	0,36220
0,3	0,01181	0,05118	0,09055	0,12992	0,16929	0,20866	0,24803	0,28740	0,32677	0,36614
0,4	0,01575	0,05512	0,09449	0,13386	0,17323	0,21260	0,25197	0,29134	0,33071	0,37008
0,5	0,01969	0,05906	0,09843	0,13780	0,17717	0,21654	0,25591	0,29528	0,33465	0,37402
0,6	0,02362	0,06299	0,10236	0,14173	0,18110	0,22047	0,25984	0,29921	0,33858	0,37795
0,7	0,02756	0,06693	0,10630	0,14567	0,18504	0,22441	0,26378	0,30315	0,34252	0,38189
0,8	0,03150	0,07087	0,11024	0,14961	0,18898	0,22835	0,26772	0,30709	0,34646	0,38583
0,9	0,03543	0,07480	0,11417	0,15354	0,19291	0,23228	0,27165	0,31102	0,35039	0,38976

Millimetres	0	10	20	30	40	50	60	70	80	90
	Inches									
0	—	0,39370	0,78740	1,18110	1,57480	1,96850	2,36220	2,75591	3,14961	3,54331
1	0,03937	0,43307	0,82677	1,22047	1,61417	2,00787	2,40157	2,79528	3,18898	3,58268
2	0,07874	0,47244	0,86614	1,22984	1,65354	2,04724	2,44094	2,83465	3,22835	3,62205
3	0,11811	0,51181	0,90551	1,29921	1,69291	2,08661	2,48031	2,87402	3,26772	3,66142
4	0,15748	0,55118	0,94488	1,33858	1,73228	2,12598	2,51969	2,91339	3,30709	3,70079
5	0,19685	0,59055	0,98425	1,37795	1,77165	2,16535	2,55906	2,95276	3,34646	3,74016
6	0,23622	0,62992	1,02362	1,41732	1,81102	2,20472	2,59843	2,99213	3,38583	3,77953
7	0,27559	0,66929	1,06299	1,45669	1,85039	2,24409	2,63780	3,03150	3,42520	3,81890
8	0,31496	0,70866	1,10236	1,49606	1,88976	2,28346	2,67717	3,07087	3,46457	3,85827
9	0,35433	0,74803	1,14173	1,53543	1,92913	2,32283	2,71654	3,11024	3,50394	3,89764

Conversion table pounds/square inch to kilograms/sq. cm

1 lb./sq. in. = 0.0703 kg/sq. cm

lb/sq. in.	0	1	2	3	4	5	6	7	8	9
	0,00	0,07	0,14	0,21	0,28	0,35	0,42	0,49	0,56	0,63
1	0,70	0,77	0,84	0,91	0,98	1,06	1,13	1,20	1,27	1,34
2	1,41	1,48	1,55	1,62	1,69	1,76	1,83	1,90	1,97	2,04
3	2,11	2,18	2,25	2,32	2,39	2,46	2,53	2,60	2,67	2,74
4	2,81	2,88	2,95	3,02	3,09	3,16	3,23	3,30	3,38	3,45
5	3,52	3,59	3,66	3,73	3,80	3,87	3,94	4,01	4,08	4,15
6	4,22	4,29	4,36	4,43	4,50	4,57	4,64	4,71	4,78	4,85
7	4,92	4,99	5,06	5,13	5,20	5,27	5,34	5,41	5,48	5,55
8	5,63	5,70	5,77	5,84	5,91	5,98	6,05	6,12	6,19	6,26
9	6,33	6,40	6,47	6,54	6,61	6,68	6,75	6,82	6,89	6,96
10	7,03	7,10	7,17	7,24	7,31	7,38	7,45	7,52	7,59	7,66
11	7,73	7,80	7,87	7,95	8,02	8,09	8,16	8,23	8,30	8,37
12	8,44	8,51	8,58	8,65	8,72	8,79	8,86	8,93	9,00	9,07
13	9,14	9,21	9,28	9,35	9,42	9,49	9,56	9,63	9,70	9,77
14	9,84	9,91	9,98	10,05	10,12	10,20	10,27	10,34	10,41	10,48
15	10,55	10,62	10,69	10,76	10,83	10,90	10,97	11,04	11,11	11,18
16	11,25	11,32	11,39	11,46	11,53	11,60	11,67	11,74	11,81	11,88
17	11,95	12,02	12,09	12,16	12,23	12,30	12,37	12,44	12,52	12,59
18	12,66	12,73	12,80	12,87	12,94	13,01	13,08	13,15	13,22	13,29
19	13,36	13,43	13,50	13,57	13,64	13,71	13,78	13,85	13,92	13,99
20	14,06	14,13	14,20	14,27	14,34	14,41	14,48	14,55	14,62	14,69
21	14,76	14,84	14,91	14,98	15,05	15,12	15,19	15,26	15,33	15,40
22	15,47	15,54	15,61	15,68	15,75	15,82	15,89	15,96	16,03	16,10
23	16,17	16,24	16,31	16,38	16,45	16,52	16,59	16,66	16,73	16,80
24	16,87	16,94	17,01	17,09	17,16	17,23	17,30	17,37	17,44	17,51
25	17,58	17,65	17,72	17,79	17,86	17,93	18,00	18,07	18,14	18,21
26	18,28	18,35	18,42	18,49	18,56	18,63	18,70	18,77	18,84	18,91
27	18,98	19,05	19,12	19,19	19,26	19,33	19,41	19,48	19,55	19,62
28	19,69	19,76	19,83	19,90	19,97	20,04	20,11	20,18	20,25	20,32
29	20,39	20,46	20,53	20,60	20,67	20,74	20,81	20,88	20,95	21,02
30	21,09	21,16	21,23	21,30	21,37	21,44	21,51	21,58	21,65	21,72
31	21,79	21,86	21,93	22,00	22,07	22,14	22,21	22,29	22,36	22,43
32	22,50	22,57	22,64	22,71	22,78	22,85	22,92	22,99	23,06	23,13
33	23,20	23,27	23,34	23,41	23,48	23,55	23,62	23,69	23,76	23,83
34	23,90	23,97	24,04	24,11	24,18	24,25	24,32	24,39	24,47	24,54
35	24,61	24,68	24,75	24,82	24,89	24,96	25,03	25,10	25,17	25,24
36	25,31	25,38	25,45	25,52	25,59	25,66	25,73	25,80	25,87	25,94
37	26,01	26,08	26,15	26,22	26,29	26,36	26,43	26,50	26,57	26,64
38	26,72	26,79	26,86	26,93	27,00	27,07	27,14	27,21	27,28	27,35
39	27,42	27,49	27,56	27,63	27,70	27,77	27,84	27,91	27,98	28,05
40	28,12	28,19	28,26	28,33	28,40	28,47	28,54	28,61	28,68	28,75

Conversion table kilograms/sq. cm to pounds/square inch

1 kg/sq. cm = 1.422 lb./sq. in.

Kg/cm ²	0	0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9
	0	1,422	2,845	4,267	5,689	7,112	8,534	9,956	11,379	12,801
1	14,223	15,646	17,068	18,490	19,913	21,335	22,757	24,180	25,602	27,024
2	28,447	29,869	31,291	32,714	34,136	35,559	36,981	38,403	39,826	41,248
3	42,670	44,093	45,515	46,937	48,360	49,782	51,204	52,627	54,049	55,471
4	56,894	58,316	59,738	61,161	62,583	64,005	65,428	66,850	68,272	69,695
5	71,117	72,539	73,962	75,384	76,806	78,229	79,651	81,073	82,496	83,918
6	85,340	86,763	88,185	89,607	91,030	92,452	93,874	95,297	96,719	98,141
7	99,564	100,986	102,408	103,831	105,253	106,676	108,098	109,520	110,943	112,365
8	113,787	115,210	116,632	118,054	119,477	120,899	122,321	123,744	125,166	126,588
9	128,011	129,433	130,855	132,278	133,700	135,122	136,545	137,967	139,389	140,812
10	142,234	143,656	145,079	146,501	147,923	149,346	150,768	152,190	153,613	155,035
11	156,457	157,880	159,302	160,724	162,147	163,569	164,991	166,414	167,836	169,258
12	170,681	172,103	173,525	174,948	176,370	177,793	179,215	180,637	182,060	183,482
13	184,904	186,327	187,749	189,171	190,594	192,016	193,438	194,861	196,283	197,705
14	199,128	200,550	201,974	203,395	204,817	206,239	207,662	209,084	210,506	211,929
15	213,351	214,773	216,196	217,618	219,040	220,463	221,885	223,307	224,730	226,152
16	227,574	228,997	230,419	231,841	233,264	234,686	236,108	237,531	238,953	240,375
17	241,798	243,220	244,642	246,065	247,487	248,910	250,332	251,754	253,177	254,599
18	256,021	257,444	258,866	260,288	261,711	263,133	264,555	265,978	267,400	268,822
19	270,245	271,667	273,089	274,512	275,934	277,356	278,779	280,201	281,623	283,046
20	284,468	285,890	287,313	288,735	290,157	291,580	293,002	294,424	295,847	297,269
21	298,691	300,114	301,536	302,958	304,381	305,803	307,225	308,648	310,070	311,492
22	312,915	314,337	315,759	317,182	318,604	320,027	321,449	322,871	324,294	325,716
23	327,138	328,561	329,983	331,405	332,828	334,250	335,672	337,095	338,517	339,939
24	341,362	342,784	344,206	345,629	347,051	348,473	349,896	351,318	352,740	354,163
25	355,585	357,007	358,430	359,852	361,274	362,697	364,119	365,541	366,963	368,386

British weights to kilograms

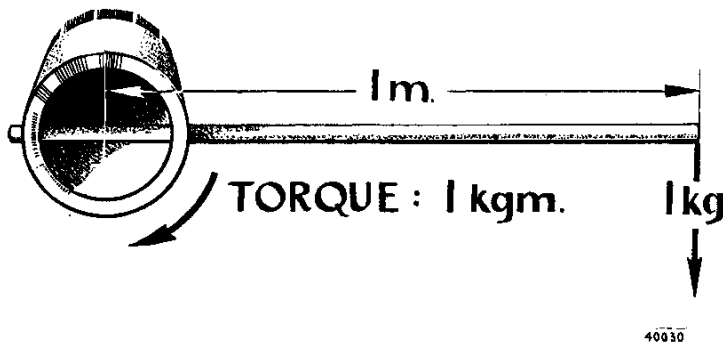
	1 ounce (oz)	=	0,028 kg
16 ounces	= 1 pound (lb)	=	0,454 "
28 pounds	= 1 quarter (qr)	=	12,70 "
4 quarters	= 1 hundredweight (cwt)	=	50,80 "
20 hundredweights	= 1 ton	=	1016,05 "

British weight	kg	British weight	kg
1 oz	0,028	9 "	114,30
2 ozs	0,057	10 "	127,00
3 "	0,085	11 "	139,70
4 "	0,113	12 "	152,40
5 "	0,142	13 "	165,10
6 "	0,170	14 "	177,80
7 "	0,198	15 "	190,50
8 "	0,227		
9 "	0,255		
10 "	0,283		
11 "	0,312	1 cwt	50,80
12 "	0,340	2 cwts	101,60
13 "	0,369	3 "	152,41
14 "	0,397	4 "	203,21
15 "	0,425	5 "	254,01
		6 "	304,81
		7 "	355,61
		8 "	406,42
1 lb	0,454	9 "	457,22
2 lbs	0,907	10 "	508,02
3 "	1,361	11 "	558,82
4 "	1,814	12 "	609,62
5 "	2,268	13 "	660,43
6 "	2,722	14 "	711,23
7 "	3,175	15 "	762,03
8 "	3,629		
9 "	4,082		
10 "	4,536		
11 "	4,989		
12 "	5,443	1 ton	1016,05
13 "	5,897	2 tons	2032,10
14 "	6,350	3 "	3048,15
15 "	6,804	4 "	4064,20
		5 "	5080,25
		6 "	6096,30
		7 "	7112,35
		8 "	8128,40
1 qr	12,70	9 "	9144,45
2 qrs	25,40	10 "	10160,50
3 "	38,10	11 "	11176,55
4 "	50,80	12 "	12192,60
5 "	63,50	13 "	13208,65
6 "	76,20	14 "	14224,70
7 "	88,90	15 "	15240,75
8 "	101,60		

Pounds to kilograms

1 lb. = 0.454 kg

Lbs	0	1	2	3	4	5	6	7	8	9
0	0,000	0,454	0,907	1,361	1,814	2,268	2,722	3,175	3,629	4,082
10	4,536	4,990	5,443	5,897	6,350	6,804	7,257	7,711	8,165	8,618
20	9,072	9,525	9,979	10,433	10,886	11,340	11,793	12,247	12,701	13,154
30	13,608	14,061	14,515	14,969	15,422	15,876	16,329	16,783	17,237	17,690
40	18,144	18,597	19,051	19,504	19,958	20,412	20,865	21,319	21,772	22,226
50	22,680	23,133	23,587	24,040	24,494	24,948	25,401	25,855	26,308	26,762
60	27,216	27,669	28,123	28,576	29,030	29,484	29,937	30,391	30,844	31,298
70	31,752	32,205	32,659	33,112	33,566	34,019	34,473	34,927	35,380	35,834
80	36,287	36,741	37,195	37,648	38,102	38,555	39,009	39,463	39,916	40,370
90	40,823	41,277	41,731	42,184	42,638	43,091	43,545	43,999	44,452	44,906
100	45,359	45,813	46,266	46,720	47,174	47,627	48,081	48,534	48,988	49,442
110	49,895	50,349	50,802	51,256	51,710	52,163	52,617	53,070	53,524	53,978
120	54,431	54,885	55,338	55,792	56,246	56,699	57,153	57,606	58,060	58,513
130	58,967	59,421	59,874	60,328	60,781	61,235	61,689	62,142	62,596	63,049
140	63,503	63,957	64,410	64,864	65,317	65,771	66,225	66,678	67,132	67,585
150	68,039	68,493	68,946	69,400	69,853	70,307	70,761	71,214	71,668	72,121
160	72,575	73,028	73,482	73,936	74,389	74,843	75,296	75,750	76,204	76,657
170	77,111	77,564	78,018	78,472	78,925	79,379	79,832	80,286	80,740	81,193
180	81,647	82,100	82,554	83,008	83,461	83,915	84,368	84,822	85,275	85,729
190	86,183	86,636	87,090	87,543	87,997	88,451	88,904	89,358	89,811	90,265
200	90,719	91,172	91,626	92,079	92,533	92,987	93,440	93,894	94,347	94,801
210	95,255	95,708	96,162	96,615	97,069	97,522	97,976	98,430	98,883	99,337
220	99,790	100,244	100,698	101,151	101,605	102,058	102,512	102,966	103,419	103,873
230	104,326	104,780	105,234	105,687	106,141	106,594	107,048	107,502	107,955	108,409
240	108,862	109,316	109,770	110,223	110,677	111,130	111,584	112,037	112,491	112,945
250	113,398	113,852	114,305	114,759	115,213	115,666	116,120	116,573	117,027	117,481
260	117,934	118,388	118,841	119,295	119,749	120,202	120,656	121,109	121,563	122,017
270	122,470	122,924	123,377	123,831	124,284	124,738	125,192	125,645	126,099	126,552
280	127,006	127,460	127,913	128,367	128,820	129,274	129,728	130,181	130,635	131,088
290	131,542	131,996	132,449	132,903	133,356	133,810	134,264	134,717	135,171	135,624
300	136,078	136,531	136,985	137,439	137,892	138,346	138,799	139,253	139,707	140,160



Torque

A twisting force is called torque and is measured in kgm and poundfeet.

If a force of 1 kg is exerted on a lever which is 1 m long, a torque of 1 kgm is obtained.

In this way the power required to tighten a nut or bolt can be reckoned out as a torque. In the same way the twisting force which can be obtained on the crankshaft in an engine can be called torque and can be calculated in kgm.

Kilogram-metres to pound-feet

1 kgm = 7.233 lb. ft.

Kgm	0	1	2	3	4	5	6	7	8	9
0	0.00	7.23	14.47	21.70	28.93	36.17	43.40	50.63	57.86	65.10
10	72.33	79.56	86.80	94.03	101.26	108.50	115.73	122.96	130.19	137.43
20	144.66	151.89	159.13	166.36	173.59	180.83	188.06	195.29	202.52	209.76
30	216.99	224.22	231.46	238.69	245.92	253.16	260.39	267.62	274.85	282.09
40	289.32	296.55	303.79	311.02	318.25	325.49	332.72	339.95	347.18	354.42
50	361.65	368.88	376.12	383.35	390.58	397.82	405.05	412.28	419.51	426.75
60	433.98	441.21	448.45	455.68	462.91	470.15	477.38	484.61	491.84	499.08
70	506.31	513.54	520.78	528.01	535.24	542.48	549.71	556.94	564.17	571.41
80	578.64	585.87	593.11	600.34	607.57	614.81	622.04	629.27	636.50	643.74
90	650.97	658.20	665.44	672.67	679.90	687.14	694.37	701.60	708.83	716.07
100	723.30	730.53	737.77	745.00	752.23	759.47	766.70	773.93	781.16	788.40

Pound-feet to kilogram-metres

1 lb. ft. = 0.13825 kgm

lb. ft.	0	1	2	3	4	5	6	7	8	9
0	0.00	0.14	0.28	0.41	0.55	0.69	0.83	0.97	1.11	1.24
10	1.38	1.52	1.66	1.80	1.94	2.07	2.21	2.35	2.49	2.63
20	2.77	2.90	3.04	3.18	3.32	3.46	3.59	3.73	3.87	4.01
30	4.15	4.29	4.42	4.56	4.70	4.84	4.98	5.12	5.25	5.39
40	5.53	5.67	5.81	5.94	6.08	6.22	6.36	6.50	6.64	6.77
50	6.91	7.05	7.19	7.33	7.47	7.60	7.74	7.88	8.02	8.16
60	8.30	8.43	8.57	8.71	8.85	8.99	9.12	9.26	9.40	9.54
70	9.68	9.82	9.95	10.09	10.23	10.37	10.51	10.65	10.78	10.92
80	11.06	11.20	11.34	11.47	11.61	11.75	11.89	12.03	12.17	12.30
90	12.44	12.58	12.72	12.86	13.00	13.13	13.27	13.41	13.55	13.69
100	13.83	13.96	14.10	14.24	14.38	14.52	14.65	14.79	14.93	15.07

Temperature conversion table — Fahrenheit- Centigrade

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
-40	-40,0	-19	-2,2	+2	+35,6	+23	+73,4	+44	+111,2	+65	+149,0	+86	+186,8	+107	+224,6
-39	-38,2	-18	-0,4	+3	+37,4	+24	+75,2	+45	+113,0	+66	+150,8	+87	+188,6	+108	+226,4
-38	-36,4	-17	+1,4	+4	+39,2	+25	+77,0	+46	+114,8	+67	+152,6	+88	+190,4	+109	+228,2
-37	-34,6	-16	+3,2	+5	+41,0	+26	+78,8	+47	+116,6	+68	+154,4	+89	+192,2	+110	+230,0
-36	-32,8	-15	+5,0	+6	+42,8	+27	+80,6	+48	+118,4	+69	+156,2	+90	+194,0	+111	+231,8
-35	-31,0	-14	+6,8	+7	+44,6	+28	+82,4	+49	+120,2	+70	+158,0	+91	+195,8	+112	+233,6
-34	-29,2	-13	+8,6	+8	+46,4	+29	+84,2	+50	+122,0	+71	+159,8	+92	+197,6	+113	+235,4
-33	-27,4	-12	+10,4	+9	+48,2	+30	+86,0	+51	+123,8	+72	+161,6	+93	+199,4	+114	+237,2
-32	-25,6	-11	+12,2	+10	+50,0	+31	+87,8	+52	+125,6	+73	+163,4	+94	+201,2	+115	+239,0
-31	-23,8	-10	+14,0	+11	+51,8	+32	+89,6	+53	+127,4	+74	+165,2	+95	+203,2	+116	+240,8
-30	-22,0	-9	+15,8	+12	+53,6	+33	+91,4	+54	+129,2	+75	+167,0	+96	+204,8	+117	+242,6
-29	-20,2	-8	+17,6	+13	+55,4	+34	+93,2	+55	+131,0	+76	+168,8	+97	+206,6	+118	+244,4
-28	-18,4	-7	+19,4	+14	+57,2	+35	+95,0	+56	+132,8	+77	+170,6	+98	+208,4	+119	+246,2
-27	-16,6	-6	+21,2	+15	+59,0	+36	+96,8	+57	+134,6	+78	+172,4	+99	+210,2	+120	+248,0
-26	-14,8	-5	+23,0	+16	+60,8	+37	+98,6	+58	+136,4	+79	+174,2	+100	+212,0	+125	+257,0
-25	-13,0	-4	+24,8	+17	+62,6	+38	+100,4	+59	+138,2	+80	+176,0	+101	+213,8	+130	+266,0
-24	-11,2	-3	+26,6	+18	+64,4	+39	+102,2	+60	+140,0	+81	+177,8	+102	+215,6	+135	+275,0
-23	-9,4	-2	+28,4	+19	+66,2	+40	+104,0	+61	+141,8	+82	+179,6	+103	+217,4	+140	+284,0
-22	-7,6	-1	+30,2	+20	+68,0	+41	+105,8	+62	+143,6	+83	+181,4	+104	+219,2	+145	+293,0
-21	-5,8	0	+32,0	+21	+69,8	+42	+107,6	+63	+145,4	+84	+183,2	+105	+221,0	+150	+302,0
-20	-4,0	+1	+33,8	+22	+71,6	+43	+109,4	+64	+147,2	+85	+185,0	+106	+222,8	-	-

Formulae

Below we give a few useful mathematical formulae which you will find of assistance.

<p>AREA Area of a circle = $3.142 \times r^2 (\pi r^2)$ Circumference of a circle = $3.142 \times \text{diam} (\pi d)$</p>	<p>SPECIFIC GRAVITY Specific gravity = $\frac{\text{absolute gravity}}{\text{volume}}$</p>
<p>SPEED Speed = $\frac{\text{Distance}}{\text{Time}}$ km. p. h. = metres per second $\times 3.6$ metres per second = $\frac{\text{km. p. h.}}{3.6}$</p>	<p>ELECTRICAL Output (DC) = voltage \times current Current = $\frac{\text{voltage}}{\text{resistance}}$ Cable resistance in ohms = $\frac{\text{specific resistance} \times \text{length in metres}}{\text{transverse area in sq. mm.}}$</p>
<p>FUEL CONSUMPTION Litres per mile = $\frac{28.25}{\text{miles/Imp. gall.}} = \frac{23.52}{\text{miles/US gall.}}$ Miles per Imp. gall = $\frac{28.25}{\text{litres/10 km}}$</p>	<p>OUTPUT Metric horse power = $\frac{\text{kgm/sec}}{75} = \frac{\text{kilowatt (kw)}}{0.736}$</p>
<p>TEMPERATURE Degrees Fahrenheit = $\frac{\text{Degrees Centigrade} \times 9}{5} + 32$</p>	<p>Degrees Centigrade = $\frac{(\text{Degrees Fahrenheit} - 32) \times 5}{9}$</p>
<p>PRESSURE Technical atmosphere (at) = $\frac{\text{kg/cm}^2}{1.033} = \frac{\text{cm water column (vp)}}{1000} = \frac{\text{mm mercury column Hg}}{735.5}$ Physical atmosphere (Atm) = $\frac{\text{kg/cm}^2}{1.033} = \frac{\text{cm vp}}{1033} = \frac{\text{mm Hg}}{760}$ Miles per US gallon = $\frac{23.52}{\text{litres/mile}}$</p>	

Anti-freeze mediums - freezing and boiling points

$$\text{Volume percent} = \frac{\text{quantity of anti-freeze medium} \times 100}{\text{cooling system capacity}}$$

$$\text{Quantity of anti-freeze medium} = \frac{\text{volume percent} \times \text{cooling system capacity}}{100}$$

Volume-percent	Specific gravity			Freezing point °C (°F)			Boiling point °C (°F)		
	Methylated spirit	Glycol	Glycerine	Methylated spirit	Glycol	Glycerine	Methylated spirit	Glycol	Glycerine
10	0,988	1,012	1,026	-3	-4	-2	+92	+101	+101
20	0,975	1,027	1,052	-8	-9	-7	+88	+102	+102
30	0,964	1,041	1,078	-14	-15	-12	+87	+103	+103
40	0,954	1,055	1,104	-23	-24	-19	+84	+104	+104
50	0,933	1,068	1,130	-31	-37	-27	+83	+106	+105
60	0,913	1,077	1,156	-39	-56	-37	+82	+110	+108

With the aid of the following table one can easily decide the amount of anti-freeze medium which is required to the prevailing temperature. The table does not give exact values in certain extreme cases but the values obtained are sufficiently accurate.

Example: Cooling system capacity 16 litres.

An anti-freeze medium, which is frost-proof down to -20°C is required. Place a ruler on the diagram as shown in the dotted line and you will see that in these circumstances you will require. $5\frac{3}{4}$ litres glycol or 6 „ methyated spirit.

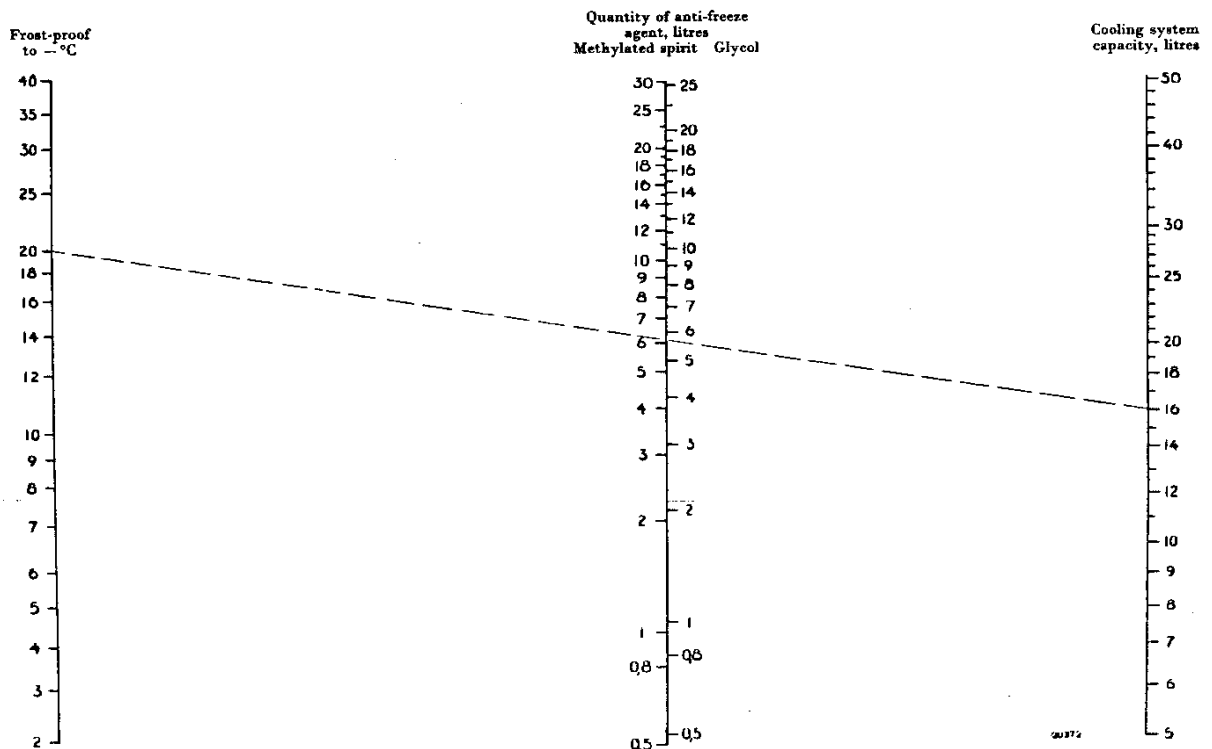


Diagram to determine vehicle speed

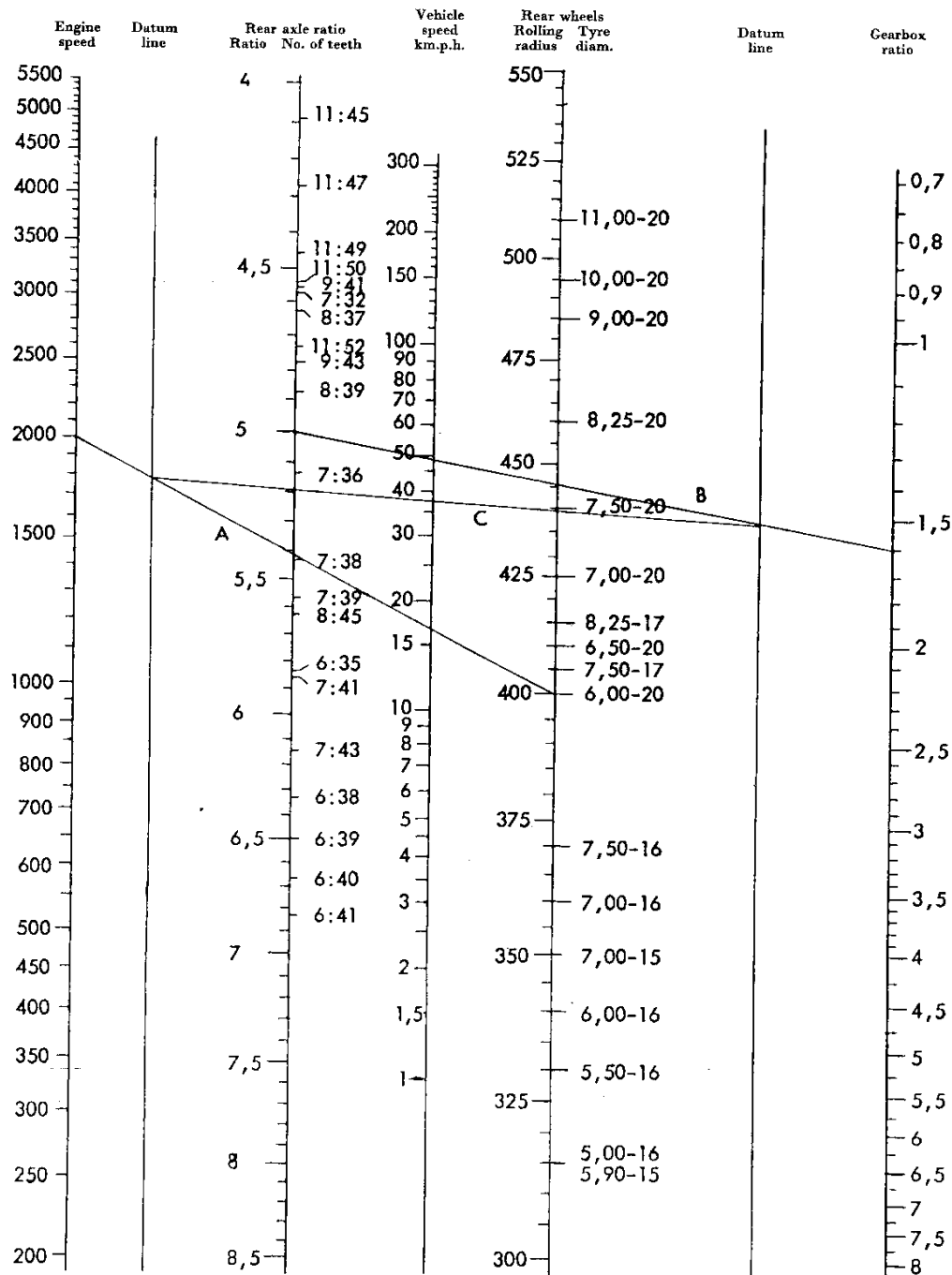
The speed of the vehicle is shown in km.p.h. as a function of the engine r.p.m., the rolling radius of the rear wheels in millimetres, the ratio of the rear axle and the ratio of the gearbox. When the figure is read off it is assumed that the engine is sufficiently powerful, i.e. the tractive effort is greater than the resistance to movement.

For example:

Given: Engine speed 2000 r.p.m., tyre size 6.00 — 20", rear axle ratio 5.00:1, gearbox ratio 1.6:1.

To determine: Vehicle speed.

Take a line A from the engine speed of 2000 to the tyre size of 6.00 — 20". Then take a line B from the rear axle ratio 5 to the gearbox ratio 1.6. Finally connect the intersection points on the datum lines with the lines A and B by using a third line C. Read off the speed at the point where line C intersects the speed scale. In this case the vehicle speed in question will be 38 km.p.h.



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