

Custom Racks, Pinions & Gears

DECIMAL EQUIVALENTS

NOM. SIZE	M/M	DECIMAL	NOM. SIZE	M/M	DECIMAL	NOM. SIZE	M/M	DECIMAL	NOM. SIZE	M/M	DECIMAL
--	.1	.0039	45	--	.0820	5	--	.2055	7/16	--	.4375
--	.2	.0079	44	--	.0860	4	--	.2090	29/64	--	.4531
--	.3	.0118	43	--	.0890	3	--	.2130	15/32	--	.4687
80	--	.0135	42	--	.0935	7/32	--	.2187	--	12.	.4724
79	--	.0145	3/32	--	.0937	2	--	.2210	31/64	--	.4844
1/64	--	.0156	41	--	.0960	1	--	.2280	1/2	--	.5000
--	.4	.0157	40	--	.0980	A	--	.2340	--	13.	.5118
78	--	.0160	39	--	.0995	15/64	--	.2344	33/64	--	.5156
77	--	.0180	38	--	.1015	--	6.	.2362	17/32	--	.5312
--	.5	.0197	37	--	.1040	B	--	.2380	35/64	--	.5469
76	--	.0200	36	--	.1065	C	--	.2420	--	14.	.5512
75	--	.0210	7/64	--	.1094	D	--	.2460	9/16	--	.5625
74	--	.0225	35	--	.1100	1/4	--	.2500	37/64	--	.5781
--	.6	.0236	34	--	.1110	E	--	.2500	--	15.	.5906
73	--	.0240	33	--	.1130	F	--	.2570	19/32	--	.5937
72	--	.0250	32	--	.1160	G	--	.2610	39/64	--	.6094
71	--	.0260	--	3.	.1181	17/64	--	.2656	5/8	--	.6250
--	.7	.0276	31	--	.1200	H	--	.2660	--	16.	.6299
70	--	.0280	1/8	--	.1250	I	--	.2720	41/64	--	.6406
69	--	.0292	30	--	.1285	--	7.	.2756	21/32	--	.6562
68	--	.0310	29	--	.1360	J	--	.2770	--	17.	.6693
1/32	--	.0312	28	--	.1405	K	--	.2810	43/64	--	.6719
--	.8	.0315	9/64	--	.1406	9/32	--	.2812	11/16	--	.6875
67	--	.0320	27	--	.1440	L	--	.2900	45/64	--	.7031
66	--	.0330	26	--	.1470	M	--	.2950	--	18.	.7087
65	--	.0350	25	--	.1495	19/64	--	.2969	23/32	--	.7187
--	.9	.0354	24	--	.1520	N	--	.3020	47/64	--	.7344
64	--	.0360	23	--	.1540	5/16	--	.3125	--	19.	.7480
63	--	.0370	5/32	--	.1562	--	8.	.3150	3/4	--	.7500
62	--	.0380	22	--	.1570	O	--	.3160	49/64	--	.7656
61	--	.0390	--	4.	.1575	P	--	.3230	25/32	--	.7812
--	1.	.0394	21	--	.1590	21/64	--	.3281	--	20.	.7874
60	--	.0400	20	--	.1610	Q	--	.3320	51/64	--	.7969
59	--	.0410	19	--	.1660	R	--	.3390	13/16	--	.8125
58	--	.0420	18	--	.1695	11/32	--	.3437	--	21.	.8268
57	--	.0430	11/64	--	.1719	S	--	.3480	53/64	--	.8281
56	--	.0465	17	--	.1730	--	9.	.3543	27/32	--	.8437
3/64	--	.0469	16	--	.1770	T	--	.3580	55/64	--	.8594
55	--	.0520	15	--	.1800	23/64	--	.3594	--	22.	.8661
54	--	.0550	14	--	.1820	U	--	.3680	7/8	--	.8750
53	--	.0595	13	--	.1850	3/8	--	.3750	57/64	--	.8906
1/16	--	.0625	3/16	--	.1875	V	--	.3770	--	23.	.9055
52	--	.0635	12	--	.1890	W	--	.3860	29/32	--	.9062
51	--	.0670	11	--	.1910	25/64	--	.3906	59/64	--	.9219
50	--	.0700	10	--	.1935	--	10.	.3937	15/16	--	.9375
49	--	.0730	9	--	.1960	X	--	.3970	--	24.	.9449
48	--	.0760	--	5.	.1968	Y	--	.4040	61/64	--	.9531
5/64	--	.0781	8	--	.1990	13/32	--	.4062	31/32	--	.9687
47	--	.0785	7	--	.2010	Z	--	.4130	--	25.	.9842
--	2.	.0787	13/64	--	.2031	27/64	--	.4219	63/64	--	.9844
46	--	.0810	6	--	.2040	--	11.	.4331	1	25.4	1.0000

STANDARD KEYWAYS AND SETSCREWS

Diameter of Shaft	Keyway Width x Depth	Diameter of Setscrew	Diameter of Shaft	Keyway Width x Depth	Diameter of Setscrew
5/16" - 7/16"	3/32" x 3/64"	3/16"	2 5/16" - 2 3/4"	5/8" x 5/16"	5/8"
1/2" - 9/16"	1/8" x 1/16"	3/16"	2 13/16" - 3 1/4"	3/4" x 3/8"	3/4"
5/8" - 7/8"	3/16" x 3/32"	1/4"	3 5/16" - 3 3/4"	7/8" x 7/16"	3/4"
15/16" - 1 1/4"	1/4" x 1/8"	1/4"	3 13/16" - 4 1/2"	1" x 1/2"	3/4"
1 5/16" - 1 3/8"	5/16" x 5/32"	5/16"	4 9/16" - 5 1/2"	1 1/4" x 7/16"	3/4"
1 7/16" - 1 3/4"	3/8" x 3/16"	3/8"	5 9/16" - 6 1/2"	1 1/2" x 1/2"	1"
1 13/16" - 2 1/4"	1/2" x 1/4"	1/2"	6 9/16" - 7 1/2"	1 3/4" x 5/8"	1"
			7 9/16" - 8 15/16"	2" x 3/4"	1"

TAP DRILL SIZES 75% FULL THREAD

Nominal Size	Thread Series	Tap Drill Size	Nominal Size	Thread Series	Tap Drill Size
1/4-20	NC	7	3/4-16	NF	11/16
1/4-28	NF	3	7/8-9	NC	49/64
5/16-18	NC	F	7/8-14	NF	13/16
5/16-24	NF	I			
			1-8	NC	7/8
3/8-16	NC	5/16	1-14	NF	15/16
3/8-24	NF	Q	1 1/8-7	NC	63/64
7/16-14	NC	U	1 1/8-12	NF	1 3/64
7/16-20	NF	25/64			
			1 1/4-7	NC	1 7/64
1/2-13	NC	27/64	1 1/4-12	NF	1 11/64
1/2-20	NF	29/64	1 3/8-6	NC	1 7/32
9/16-12	NC	31/64	1 3/8-12	NF	1 19/64
9/16-18	NF	33/64			
			1 1/2-6	NC	1 11/32
5/8-11	NC	17/32	1 1/2-12	NF	1 27/64
5/8-18	NF	37/64	1 5/8-5 1/2	NS	1 29/64
11/16-11	NS	19/32			
11/16-16	NS	5/8	1 3/4-5	NC	1 9/16
			1 7/8-5	NS	1 11/16
3/4-10	NC	21/32	2-4 1/2	NC	1

COMMON CONVERSION FACTORS

MULTIPLY..... BY	TO OBTAIN	MULTIPLY..... BY	TO OBTAIN		
Atmospheres	14.7	psi	Feet of water	0.433	psi
Atmospheres	29.9	Ins. of Mercury	Feet of water	0.884	inches of Hg.
B.T.U.	0.0003929	H.P. hr.	Foot pounds/min.	3.0303 x 10 ⁻⁵	Horsepower
Centimeters	0.3937	inches	Gallons	3,785.43	cubic cm.
Centistokes	0.001552	in. ² /sec.	Gallons	231.0	cubic in.
Cubic centimeters	0.06102	cu. in.	Gallons	0.83268	gallon (Imp.)
Cubic centimeters	0.0002642	gallons (liq.)	Horsepower	550.0	ft. lbs./sec.
Cubic feet	1728.00	cubic in.	Inches of Hg.	0.489	psi
Cubic inches	0.004329	gallons	psi	0.06804	atmospheres
Cubic inches	16.387	cubic cm.	psi	2.04179	inches of Hg.
Dynes	2.24809 x 10 ⁻⁶	pounds	psi	2.31	feet of water
Dynes/sq. cm.	1.45038 x 10 ⁻⁵	psi			

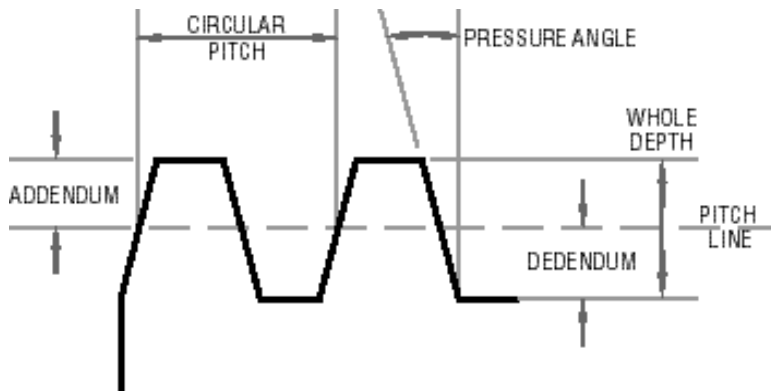


Custom Racks, Pinions and Gears for Industrial Applications

GEAR TOOTH SIZE - GENERAL INFORMATION

DIAMETRICAL				
Diam. Pitch	Circular Pitch	Add.	Ded.	Whole Depth
3	1.0471975	.3333	.3857	.7190
3 1/2	.8975979	.2857	.3306	.6163
4	.7853981	.2500	.2893	.5393
5	.6283185	.2000	.2314	.4314
6	.5235987	.1667	.1929	.3595
7	.4487989	.1429	.1653	.3082
8	.3926990	.1250	.1446	.2696
9	.3490658	.1111	.1286	.2397
10	.3141593	.1000	.1157	.2157
11	.2855993	.0909	.1052	.1961
12	.2617993	.0833	.0964	.1798
13	.2416609	.0769	.0890	.1659
14	.2243994	.0714	.0827	.1541
15	.2094395	.0667	.0771	.1438
16	.1963495	.0625	.0723	.1348
17	.1847995	.0588	.0681	.1269
18	.1745329	.0556	.0643	.1198
19	.1653469	.0526	.0609	.1135
20	.1570796	.0500	.0620	.1120
22	.1427996	.0455	.0565	.1020
24	.1308996	.0417	.0520	.0937
26	.1208304	.0385	.0482	.0866
28	.1121997	.0357	.0449	.0805
30	.1047197	.0333	.0420	.0753
32	.0981747	.0313	.0395	.0708
36	.0872664	.0278	.0353	.0631
40	.0785398	.0250	.0320	.0570
44	.0713998	.0227	.0293	.0520
48	.0654498	.0208	.0270	.0470

MODULE									
Module Millimeters	Diametral Pitch	Circular Pitch		Addendum		Dedendum		Whole Depth	
	Inches	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters
0.5	50.8	0.0618	1.5708	0.0197	0.5	0.0246	0.6250	0.0443	1.1250
0.6	42.3333	0.0742	1.885	0.0236	0.6	0.0295	0.7500	0.0531	1.3500
0.75	33.8666	0.0927	2.3562	0.0295	0.75	0.0369	0.9375	0.0664	1.6875
0.8	31.75	0.0989	2.5132	0.0315	0.8	0.0394	1.0000	0.0709	1.8000
1.0	25.4	0.1236	3.1416	0.0394	1.0	0.0492	1.2500	0.0886	2.2500
1.25	20.32	0.1546	3.927	0.0492	1.25	0.0615	1.5625	0.1107	2.8125
1.5	16.9333	0.1855	4.7124	0.0591	1.5	0.0738	1.8750	0.1329	3.3750
1.75	14.5142	0.2164	5.4978	0.0689	1.75	0.0861	2.1875	0.1550	3.9375
2.0	12.7	0.2473	6.2832	0.0787	2.0	0.0984	2.5000	0.1771	4.5000
2.25	11.2888	0.2782	7.0686	0.0886	2.25	0.1107	2.8125	0.1993	5.0625
2.50	10.16	0.3092	7.854	0.0984	2.5	0.1230	3.1250	0.2214	5.6250
2.75	9.2363	0.3401	8.6394	0.1083	2.75	0.1353	3.4375	0.2436	6.1875
3.0	8.4666	0.3710	9.4248	0.1181	3.0	0.1476	3.7500	0.2657	6.7500
3.25	7.8153	0.4019	10.2102	0.1280	3.25	0.1599	4.0625	0.2879	7.3125
3.5	7.2571	0.4328	10.9956	0.1378	3.5	0.1722	4.3750	0.3100	7.8750
3.75	6.7733	0.4638	11.781	0.1476	3.75	0.1845	4.6875	0.3321	8.4375
4.0	6.35	0.4947	12.5664	0.1575	4.0	0.1969	5.0000	0.3544	9.0000
4.25	5.9764	0.5256	13.3518	0.1673	4.25	0.2092	5.3125	0.3765	9.5625
4.5	5.6444	0.5565	14.1372	0.1772	4.5	0.2215	5.6250	0.3987	10.1250
4.75	5.3473	0.5875	14.9226	0.1870	4.75	0.2338	5.9375	0.4208	10.6875
5.0	5.08	0.6184	15.708	0.1969	5.0	0.2461	6.2500	0.4430	11.2500
5.25	4.838	0.6493	16.4934	0.2067	5.25	0.2584	6.5625	0.4651	11.8125
5.5	4.6181	0.6802	17.2788	0.2156	5.5	0.2707	6.8750	0.4872	12.3750
5.75	4.4174	0.7111	18.0642	0.2264	5.75	0.2830	7.1875	0.5094	12.9375
6.0	4.2333	0.7421	18.8496	0.2362	6.0	0.2953	7.5000	0.5315	13.5000
6.25	4.064	0.7730	19.635	0.2461	6.25	0.3076	7.8125	0.5537	14.0625
6.50	3.9076	0.8039	20.4204	0.2559	6.5	0.3199	8.1250	0.5758	14.6250
6.75	3.7629	0.8348	21.2058	0.2657	6.75	0.3322	8.4375	0.5979	15.1875
7.0	3.6285	0.8657	21.9912	0.2756	7.0	0.3445	8.7500	0.6201	15.7500
7.25	3.5034	0.8967	22.7766	0.2854	7.25	0.3568	9.0625	0.6422	16.3125
7.5	3.3866	0.9276	23.562	0.2953	7.5	0.3691	9.3750	0.6644	16.8750
7.75	3.2774	0.9585	24.3474	0.3051	7.75	0.3814	9.6875	0.6865	17.4375
8.0	3.175	0.9894	25.1328	0.3150	8.0	0.3937	10.0000	0.7088	18.0000
8.25	3.0787	1.0204	25.9182	0.3248	8.25	0.4060	10.3125	0.7308	18.5625



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GEAR FORMULAS

Outside Diameter

$A = (N + 2)/P$
 Add 2 to the number of teeth and divide the sum by the diametral pitch.

Outside Diameter

$A = PD + (2a)$
 Add two times the addendum to the pitch diameter.

Diametral Pitch

$DP = N/PD$
 Divide the number of teeth by the pitch diameter.

Number of Teeth

$N = PD * DP$
 Multiply the pitch diameter by the diametral pitch.

Pitch Diameter

$PD = A - (2a)$
 Subtract two times the addendum from the outside diameter.

Addendum

$a = 1/DP$
 Divide one by the diametral pitch.

Where

A = Outside Diameter
 a = Addendum
 DP = Diametral Pitch (pitch)
 N = Number of Teeth
 PD = Pitch Diameter