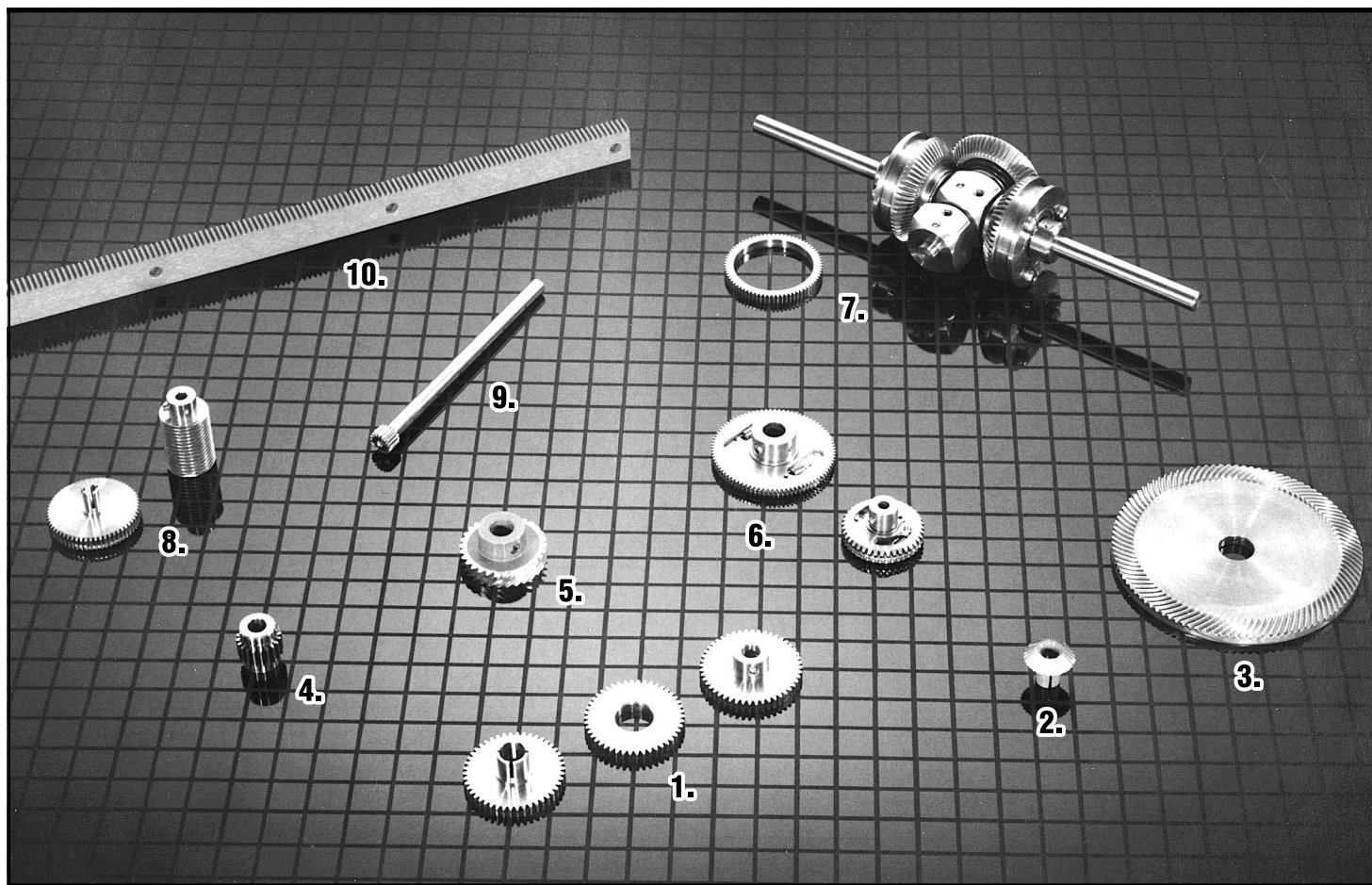




Whether the application is to transfer motion or transmit power, PIC Design has the complete range of gearing needed to fulfill any application requirement. Standard gears and assemblies are available for operation on parallel and right-angle shafts, linear motion applications can also be satisfied.

PIC Design Gears — A Brief Overview

1. Spur Gears

Designed and manufactured to mount on parallel shafts. Available in (inch) Diametral Pitch and (metric) Modules.

2. Miter & Bevel Gears

Designed and manufactured to operate on intersecting shafts positioned at a right angle.

3. Spiral Gears

Designed to operate at right angles with the

pinion able to be mounted to mesh with any part of the 360° of the gear.

4. Cluster Gears

Spur gears manufactured to be mounted on a shaft and another gear to be mounted on the cluster for use in multiple gear ratios in a gear box.

5. Helical Gears

Designed with a 45° Helix angle to operate on parallel or right angle shafts.

6. Anti-Backlash Gears

Two independent gears mounted to same hub with a spring between the two providing a constant full-tooth engagement with the mating spur gear, thereby eliminating backlash in the mesh. Available in Spur, Worm and Miter Gears.

7. Differential

Used in application with one input shaft driving two output shafts at right angles to the input.

8. Worm & Worm Wheels

High ratios attainable in a single reduction with shafts at right angles to each other in limited space.

9. Pinion Shafts

Designed to be either supported by bearings or pressed into hollow shaft to operate with spur gear mounted on parallel shaft.

10. Racks

A gear with the teeth in a straight line, which produces linear motion when meshed with a circular spur gear.

TECHNICAL SECTION

Tooth Proportions and Formulas for Spur Gears

To Find:		English (Inches)	Metric (Millimeters)
Formulas	Circular Pitch (p)	$p = \frac{\pi D}{N} \text{ or } \frac{\pi d}{n}$	$p = \pi M \text{ or } \pi \frac{D}{N}$
	Pitch Diameter Pinion (d)	$\frac{n}{P}$	nM
	Pitch Diameter Gear (D)	$\frac{N}{P}$	NM
	Outside Diameter Pinion (d _o)	$\frac{n + 2}{P}$	(n + 2)M
	Outside Diameter Gear (D _o)	$\frac{N + 2}{P}$	(N + 2)M
	Center Distance (C)	$\frac{N + n}{2P}$	$\frac{(N + n)M}{2}$
Tooth Proportions	Addendum (a)	$\frac{1.000}{P}$	M
	Dedendum (b)	$\frac{1.200}{P} + 0.002 \text{ (min.)}$	M + c = 1.16M
	Working Depth (h _w)	$\frac{2.000}{P}$	2.000M
	Whole Depth (h _t)	$\frac{2.200}{P} + 0.002 \text{ (min.)}$	2.16M
	Clearance (c) (Standard)	$\frac{0.200}{P} + 0.002 \text{ (min.)}$	.1M to .3M (.166M typically)
	Tooth Thickness (t) at Pitch Diameter	$t = \frac{1.5708}{P}$	$t = \frac{\pi M}{2}$

The tooth proportions and formulas for Spur Gears for both inch (Diametral Pitch) and metric (Module) enable the designer or engineer to design the appropriate spur gear for a particular application.

Where P = Diametral Pitch
M = Module (Metric)
n = Number of Pinion Teeth
N = Number of Gear Teeth

Conversions

$$\text{Diametral Pitch (P)} = \frac{25.4}{M}$$

$$\text{Module (M)} = \frac{25.4}{P}$$

$$\text{Millimeters (mm)} = \frac{\text{Inches}}{.03937} = 25.4 \text{ Inches}$$

$$\text{Inches} = .03937 \text{ mm} = \frac{\text{mm}}{25.4}$$

TOOTH-TO-TOOTH AND TOTAL COMPOSITE TOLERANCE

AGMA Standards for Inch, DIN Standards for Metric

The AGMA and DIN Fine-Pitch Gear Tolerances for inch and metric spur gears will assist the designer in selecting the AGMA or DIN quality level that will satisfy a particular application.

AGMA FINE-PITCH GEAR TOLERANCES

PIC Quality Number	AGMA Quality Number	Number of Teeth and Pitch Diameter	Diametral Pitch Range	Tooth-to-Tooth Composite Tolerance	Total Composite Tolerance
Std.	10*	Up to 20 Teeth Incl.	20 to 200	.0007	.0010
		Over 20 Teeth Up to 1.999"	20 to 200	.0005	.0010
		Over 20 Teeth 2" to 3.999"	20 to 200	.0005	.0012
		Over 20 Teeth 4" and over	20 to 200	.0005	.0014
—Q12	12**	Up to 20 Teeth Incl.	20 to 200	.0004	.0005
		Over 20 Teeth Up to 1.999"	20 to 200	.0003	.0005
		Over 20 Teeth 2" to 3.999"	20 to 200	.0003	.0006
		Over 20 Teeth 4" and over	20 to 200	.0003	.0007
—Q14	14***	Up to 20 Teeth Incl.	20 to 200	.00019	.00027
		Over 20 Teeth Up to 1.999"	20 to 200	.00014	.00027
		Over 20 Teeth 2" to 3.999"	20 to 200	.00014	.00032
		Over 20 Teeth 4" and over	20 to 200	.00014	.00037

* AGMA 10 Similar to Old PIC Standard Prec. 1

** AGMA 12 Similar to Old PIC Standard Prec. 2

*** AGMA 14 Similar to Old PIC Standard Prec. 3

DIN FINE-PITCH GEAR TOLERANCES

PIC Quality Number	DIN Quality Number	Pitch Diameter	Metric Module Range	Tooth-to-Tooth Composite Tolerance μm	Total Composite Tolerance μm
T7 Std.	7	Up to 12mm	Up to 0.6 Module	7	20
		Over 12 to 50mm		9	25
		Over 50 to 100mm		10	28
		Over 100mm		11	32
T6	6	Up to 12mm	Over 0.6 Module	8	22
		Over 12 to 50mm		10	28
		Over 50 to 100mm		11	32
		Over 100mm		12	36
T5	5	Up to 12mm	Up to 0.6 Module	5	14
		Over 12 to 50mm		5.5	16
		Over 50 to 100mm		6	18
		Over 100mm		7	20
T5	5	Up to 12mm	Over 0.6 Module	5.5	16
		Over 12 to 50mm		6	18
		Over 50 to 100mm		7	20
		Over 100mm		8	22
T5	5	Over 50 to 100mm	Up to 0.6 Module	3.5	10
		Up to 12mm		4	11
		Over 12 to 50mm		4.5	12
		Over 50 to 100mm		5	14
T5	5	Over 100mm	Over 0.6 Module	5	16
		Over 100mm		5	16

TECHNICAL SECTION

Table of Pitch Diameters

The Pitch Diameter Tables will enable the designer or engineer to find the pitch diameter of the spur gear using the Diametral Pitch and the number of teeth. To find the Outside Diameter, add Two Teeth to the Number of Teeth and use Pitch Diameter for Outside Diameter.

Example: 72 Diametral Pitch

88 Teeth

Pitch Diameter = 1.2222"

Outside Diameter (Pitch Diameter for 90 Teeth) = 1.2500

	DIAMETRAL PITCH						
	32	48	64	72	80	96	120
18	0.5625	0.3750	0.2812	0.2500	0.2250	0.1875	0.1500
19	0.5937	0.3958	0.2969	0.2639	0.2375	0.1979	0.1583
20	0.6250	0.4167	0.3125	0.2778	0.2500	0.2083	0.1667
21	0.6562	0.4375	0.3281	0.2917	0.2625	0.2187	0.1750
22	0.6875	0.4583	0.3437	0.3056	0.2750	0.2292	0.1833
23	0.7187	0.4792	0.3594	0.3194	0.2875	0.2396	0.1917
24	0.7500	0.5000	0.3750	0.3333	0.3000	0.2500	0.2000
25	0.7812	0.5208	0.3906	0.3472	0.3125	0.2604	0.2083
26	0.8125	0.5417	0.4062	0.3611	0.3250	0.2708	0.2167
27	0.8437	0.5625	0.4219	0.3750	0.3375	0.2812	0.2250
28	0.8750	0.5833	0.4375	0.3889	0.3500	0.2917	0.2333
29	0.9062	0.6042	0.4531	0.4028	0.3625	0.3021	0.2417
30	0.9375	0.6250	0.4687	0.4167	0.3750	0.3125	0.2500
31	0.9687	0.6458	0.4844	0.4306	0.3875	0.3229	0.2583
32	1.0000	0.6667	0.5000	0.4444	0.4000	0.3333	0.2667
33	1.0312	0.6875	0.5156	0.4583	0.4125	0.3437	0.2750
34	1.0625	0.7083	0.5312	0.4722	0.4250	0.3542	0.2833
35	1.0937	0.7292	0.5469	0.4861	0.4375	0.3646	0.2917
36	1.1250	0.7500	0.5625	0.5000	0.4500	0.3750	0.3000
37	1.1562	0.7708	0.5781	0.5139	0.4625	0.3854	0.3083
38	1.1875	0.7917	0.5937	0.5278	0.4750	0.3958	0.3167
39	1.2187	0.8125	0.6094	0.5417	0.4875	0.4062	0.3250
40	1.2500	0.8333	0.6250	0.5556	0.5000	0.4167	0.3333
41	1.2812	0.8542	0.6406	0.5694	0.5125	0.4271	0.3417
42	1.3125	0.8750	0.6562	0.5833	0.5250	0.4375	0.3500
43	1.3437	0.8958	0.6719	0.5972	0.5375	0.4479	0.3583
44	1.3750	0.9167	0.6875	0.6111	0.5500	0.4583	0.3667
45	1.4062	0.9375	0.7031	0.6250	0.5625	0.4687	0.3750
46	1.4375	0.9583	0.7187	0.6389	0.5750	0.4792	0.3833
47	1.4687	0.9792	0.7344	0.6528	0.5875	0.4896	0.3917
48	1.5000	1.0000	0.7500	0.6667	0.6000	0.5000	0.4000
49	1.5312	1.0208	0.7656	0.6806	0.6125	0.5104	0.4083
50	1.5625	1.0417	0.7812	0.6944	0.6250	0.5208	0.4167
51	1.5937	1.0625	0.7969	0.7083	0.6375	0.5312	0.4250
52	1.6250	1.0833	0.8125	0.7222	0.6500	0.5417	0.4333
53	1.6562	1.1042	0.8281	0.7361	0.6625	0.5521	0.4417
54	1.6875	1.1250	0.8437	0.7500	0.6750	0.5625	0.4500
55	1.7187	1.1458	0.8594	0.7639	0.6875	0.5729	0.4583
56	1.7500	1.1667	0.8750	0.7778	0.7000	0.5833	0.4667
57	1.7812	1.1875	0.8906	0.7917	0.7125	0.5937	0.4750
58	1.8125	1.2083	0.9062	0.8056	0.7250	0.6042	0.4833
59	1.8437	1.2292	0.9219	0.8194	0.7375	0.6146	0.4917
60	1.8750	1.2500	0.9375	0.8333	0.7500	0.6250	0.5000
61	1.9062	1.2708	0.9531	0.8472	0.7625	0.6354	0.5083
62	1.9375	1.2917	0.9687	0.8611	0.7750	0.6458	0.5167
63	1.9687	1.3125	0.9844	0.8750	0.7875	0.6562	0.5250
64	2.0000	1.3333	1.0000	0.8889	0.8000	0.6667	0.5333
65	2.0312	1.3542	1.0156	0.9028	0.8125	0.6771	0.5417
66	2.0625	1.3750	1.0312	0.9167	0.8250	0.6875	0.5500
67	2.0937	1.3958	1.0469	0.9306	0.8375	0.6979	0.5583
68	2.1250	1.4167	1.0625	0.9444	0.8500	0.7083	0.5667
69	2.1562	1.4375	1.0781	0.9583	0.8625	0.7187	0.5750
70	2.1875	1.4583	1.0937	0.9722	0.8750	0.7292	0.5833
71	2.2187	1.4792	1.1094	0.9861	0.8875	0.7396	0.5917
72	2.2500	1.5000	1.1250	1.0000	0.9000	0.7500	0.6000
73	2.2812	1.5208	1.1406	1.0139	0.9125	0.7604	0.6083
74	2.3125	1.5417	1.1562	1.0278	0.9250	0.7708	0.6167
75	2.3437	1.5625	1.1719	1.0417	0.9375	0.7812	0.6250
76	2.3750	1.5833	1.1875	1.0556	0.9500	0.7917	0.6333
77	2.4062	1.6042	1.2031	1.0694	0.9625	0.8021	0.6417
78	2.4375	1.6250	1.2187	1.0833	0.9750	0.8125	0.6500
79	2.4687	1.6458	1.2344	1.0972	0.9875	0.8229	0.6583
80	2.5000	1.6667	1.2500	1.1111	1.0000	0.8333	0.6667

	DIAMETRAL PITCH						
	32	48	64	72	80	96	120
81	2.5312	1.6875	1.2656	1.1250	1.0125	0.8437	0.6750
82	2.5625	1.7083	1.2812	1.1389	1.0250	0.8542	0.6833
83	2.5937	1.7292	1.2969	1.1528	1.0375	0.8646	0.6917
84	2.6250	1.7500	1.3125	1.1667	1.0500	0.8750	0.7000
85	2.6562	1.7708	1.3281	1.1806	1.0625	0.8854	0.7083
86	2.6875	1.7917	1.3437	1.1944	1.0750	0.8958	0.7167
87	2.7187	1.8125	1.3594	1.2083	1.0875	0.9062	0.7250
88	2.7500	1.8333	1.3750	1.2222	1.1000	0.9167	0.7333
89	2.7812	1.8542	1.3906	1.2361	1.1125	0.9271	0.7417
90	2.8125	1.8750	1.4062	1.2500	1.1250	0.9375	0.7500
91	2.8437	1.8958	1.4219	1.2639	1.1375	0.9479	0.7583
92	2.8750	1.9167	1.4375	1.2778	1.1500	0.9583	0.7667
93	2.9062	1.9375	1.4531	1.2917	1.1625	0.9687	0.7750
94	2.9375	1.9583	1.4687	1.3056	1.1750	0.9792	0.7833
95	2.9687	1.9792	1.4844	1.3194	1.1875	0.9896	0.7917
96	3.0000	2.0000	1.5000	1.3333	1.2000	1.0000	0.8000
97	3.0312	2.0208	1.5156	1.3472	1.2125	1.0104	0.8083
98	3.0625	2.0417	1.5312	1.3611	1.2250	1.0208	0.8167
99	3.0937	2.0625	1.5469	1.3750	1.2375	1.0312	0.8250
100	3.1250	2.0833	1.5625	1.3889	1.2500	1.0417	0.8333
101	3.1562	2.1042	1.5781	1.4028	1.2625	1.0521	0.8417
102	3.1875	2.1250	1.5937	1.4167	1.2750	1.0625	0.8500
103	3.2187	2.1458	1.6094	1.4306	1.2875	1.0729	0.8583
104	3.2500	2.1667	1.6250	1.4444	1.3000	1.0833	0.8667
105	3.2812	2.1875	1.6406	1.4583	1.3125	1.0937	0.8750
106	3.3125	2.2083	1.6562	1.4722	1.3250	1.1042	0.8833
107	3.3437	2.2292	1.6719	1.4861	1.3375	1.1146	0.8917
108	3.3750	2.2500	1.6875	1.5000	1.3500	1.1250	0.9000
109	3.4062	2.2708	1.7031	1.5139	1.3625	1.1354	0.9083
110	3.4375	2.2917	1.7187	1.5278	1.3750	1.1458	0.9167
111	3.4687	2.3125	1.7344	1.5417	1.3875	1.1562	0.9250
112	3.5000	2.3333	1.7500	1.5556	1.4000	1.1667	0.9333
113	3.5312	2.3542	1.7656	1.5694	1.4125	1.1771	0.9417
114	3.5625	2.3750	1.7812	1.5833	1.4250	1.1875	0.9500
115	3.5937	2.3958	1.7969	1.5972	1.4375	1.1979	0.9583
116	3.6250	2.4167	1.8125	1.6111	1.4500	1.2083	0.9667
117	3.6562	2.4375	1.8281	1.6250	1.4625	1.2187	0.9750
118	3.6875	2.4583	1.8437	1.6389	1.4750	1.2292	0.9833
119	3.7187	2.4792	1.8594	1.6528	1.4875	1.2396	0.9917
120	3.7500	2.5000	1.8750	1.6667	1.5000	1.2500	1.0000
121	3.7812	2.5208	1.8906	1.6806	1.5125	1.2604	1.0083
122	3.8125	2.5417	1.9062	1.6944	1.5250	1.2708	1.0167
123	3.8437	2.5625	1.9219	1.7083	1.5375	1.2812	1.0250
124	3.8750	2.5833	1.9375	1.7222	1.5500	1.2917	1.0333
125	3.9062	2.6042	1.9531	1.7361	1.5625	1.3021	1.0417
126	3.9375	2.6250	1.9687	1.7500	1.5750	1.3125	1.0500
127	3.9687	2.6458	1.9844	1.7639	1.5875	1.3229	1.0583
128	4.0000	2.6667	2.0000	1.7778	1.6000	1.3333	1.0667
129	4.0312	2.6875	2.0156	1.7917	1.6125	1.3437	1.0750
130	4.0625	2.7083	2.0312	1.8056	1.6250	1.3542	1.0833
131	4.0937	2.7292	2.0469	1.8194	1.6375	1.3646	1.0917
132	4.1250	2.7500	2.0625	1.8333	1.6500	1.3750	1.1000
133	4.1562	2.7708	2.0781	1.8472	1.6625	1.3854	1.1083
134	4.1875	2.7917	2.0937	1.8611	1.6750	1.3958	1.1167
135	4.2187	2.8125	2.1094	1.8750	1.6875	1.4062	1.1250
136	4.2500	2.8333	2.1250	1.8889	1.7000	1.4167	1.1333
137	4.2812	2.8542	2.1406	1.9028	1.7125	1.4271	1.1417
138	4.3125	2.8750	2.1562	1.9167	1.7250	1.4375	1.1500
139	4.3437	2.8958	2.1719	1.9306	1.7375	1.4479	1.1583
140	4.3750	2.9167	2.1875	1.9444	1.7500	1.4583	1.1667
141	4.4062	2.9375	2.2031	1.9583	1.7625	1.4687	1.1750
142	4.4375	2.9583	2.2187	1.9722	1.7750	1.4792	1.1833
143	4.4687	2.9792	2.2344	1.9861	1.7875	1.4896	1.1917

	DIAMETRAL PITCH						
	32	48	64	72	80	96	120
144	4.5000	3.0000	2.2500	2.0000	1.8000	1.5000	1.2000
145	4.5312	3.0208	2.2656	2.0139	1.8125	1.5104	1.2083
146	4.5625	3.0417	2.2812	2.0278	1.8250	1.5208	1.2167
147	4.5937	3.0625	2.2969	2.0417	1.8375	1.5312	1.2250
148	4.6250	3.0833	2.3125	2.0556	1.8500	1.5417	1.2333
149	4.6562	3.1042	2.3281	2.0694	1.8625	1.5521	1.2417
150	4.6875	3.1250	2.3437	2.0833	1.8750	1.5625	1.2500
151	4.7187	3.1458	2.3594	2.0972	1.8875	1.5729	1.2583
152	4.7500	3.1667	2.3750	2.1111	1.9000	1.5833	1.2667
153	4.7812	3.1875	2.3906	2.1250	1.9125	1.5937	1.2750
154	4.8125	3.2083	2.4062	2.1389	1.9250	1.6042	1.2833
155	4.8437	3.2292	2.4219	1.1528	1.9375	1.6146	1.2917
156	4.8750	3.2500	2.4375	2.1667	1.9500	1.6250	1.3000
157	4.9062	3.2708	2.4531	2.1806	1.9625	1.6354	1.3083
158	4.9375	3.2917	2.4687	2.1944	1.9750	1.6458	1.3167
159	4.9687	3.3125	2.4844	2.2083	1.9875	1.6562	1.3250
160	5.0000	3.3333	2.5000	2.2222	2.0000	1.6667	1.3333
161	5.0312	3.3542	2.5156	2.2361	2.0125	1.6771	1.3417
162	5.0625	3.3750	2.5312	2.2500	2.0250	1.6875	1.3500
163	5.0937	3.3958	2.5469	2.2639	2.0375	1.6979	1.3583
164	5.1250	3.4167	2.5625	2.2778	2.0500	1.7083	1.3667
165	5.1562	3.4375	2.5781	2.2917	2.0625	1.7187	1.3750
166	5.1875	3.4583	2.5937	2.3056	2.0750	1.7292	1.3833
167	5.2187	3.4792	2.6094	2.3194	2.0875	1.7396	1.3917
168	5.2500	3.5000	2.6250	2.3333	2.1000	1.7500	1.4000
169	5.2812	3.5208	2.6406	2.3472	2.1125	1.7604	1.4083
170	5.3125	3.5417	2.6562	2.3611	2.1250	1.7708	1.4167
171	5.3437	3.5625	2.6719	2.3750	2.1375	1.7812	1.4250
172	5.3750	3.5833	2.6875	2.3889	2.1500	1.7917	1.4333
173	5.4062	3.6042	2.7031	2.4028	2.1625	1.8021	1.4417
174	5.4375	3.6250	2.7187	2.4167	2.1750	1.8125	1.4500
175	5.4687	3.6458	2.7344	2.4306	2.1875	1.8229	1.4583
176	5.5000	3.6667	2.7500	2.4444	2.2000	1.8333	1.4667
177	5.5312	3.6875	2.7656	2.4583	2.2125	1.8437	1.4750
178	5.5625	3.7083	2.7812	2.4722	2.2250	1.8542	1.4833
179	5.5937	3.7292	2.7969	2.4861	2.2375	1.8646	1.4917
180	5.6250	3.7500	2.8125	2.5000	2.2500	1.8750	1.5000
181	5.6562	3.7708	2.8281	2.5139	2.2625	1.8854	1.5083
182	5.6875	3.7917	2.8437	2.5278	2.2750	1.8958	1.5167
183	5.7187	3.8125	2.8594	2.5417	2.2875	1.9062	1.5250
184	5.7500	3.8333	2.8750	2.5556	2.3000	1.9167	1.5333
185	5.7812	3.8542	2.8906	2.5694	2.3125	1.9271	1.5417
186	5.8125	3.8750	2.9062	2.5833	2.3250	1.9375	1.5500
187	5.8437	3.8958	2.9219	2.5972	2.3375	1.9479	1.5583
188	5.8750	3.9167	2.9375	2.6111	2.3500	1.9583	1.5667
189	5.9062	3.9375	2.9531	2.6250	2.3625	1.9687	1.5750
190	5.9375	3.9583	2.9687	2.6389	2.3750	1.9792	1.5833
191	5.9687	3.9792	2.9844	2.6528	2.3875	1.9896	1.5917
192	6.0000	4.0000	3.0000	2.6667	2.4000	2.0000	1.6000
193	6.0312	4.0208	3.0156	2.6806	2.4125	2.0104	1.6083
194	6.0625	4.0417	3.0312	2.6944	2.4250	2.0208	1.6167
195	6.0937	4.0625	3.0469	2.7083	2.4375	2.0312	1.6250
196	6.1250	4.0833	3.0625	2.7222	2.4500	2.0417	1.6333
197	6.1562	4.1042	3.0781	2.7361	2.4625	2.0521	1.6417
198	6.1875	4.1250	3.0937	2.7500	2.4750	2.0625	1.6500
199	6.2187	4.1458	3.1094	2.7639	2.4875	2.0729	1.6583
200	6.2500	4.1667	3.1250	2.7778	2.5000	2.0833	1.6667
201	6.2812	4.1875	3.1406	2.7917	2.5125	2.0937	1.6750
202	6.3125	4.2083	3.1562	2.8056	2.5250	2.1042	1.6833
203	6.3437	4.2292	3.1719	2.8194	2.5375	2.1146	1.6917
204	6.3750	4.2500	3.1875	2.8333	2.5500	2.1250	1.7000
205	6.4062	4.2708	3.2031	2.8472	2.5625	2.1354	1.7083
206	6.4375	4.2917	3.2187	2.8611	2.5750	2.1458	1.7167

SPUR GEAR INDEX

Odd Series — Stainless Steel

Even Series — Aluminum

*Bronze
instead of Aluminum

INCH SPUR GEAR INDEX

Diametral Pitch	Face Width (inches)	Bore (inches)	Hub Style	Series No.	Page No.
20	3/8	3/8	Pin	G77 & G78*	12-5
24	1/8	1/4	Split	H23 & H24	12-7
		3/8	Hubless	J21 & J22	
	3/16	3/16	Pin	G57 & G58	12-6
	1/4	1/4	Pin	G41 & G42	
	3/8	3/8	Pin	G79 & G80*	12-6
1/10th Cir. Pitch	3/16	1/4	Pin	G75	12-5
	1/4		Pin	G83	12-5
32	1/8	1/4	Split	H25 & H26	12-9
		3/8	Hubless	J23 & J24	
	3/16	3/16	Pin	G59 & G60	12-8
	1/4	1/4	Pin	G43 & G44	
	3/8	3/8	Pin	G81 & G82*	12-8
48	1/8	1/8	Pin	G61 & G62	12-10
			Split	H55 & H56	12-12
		3/16	Pin	G1 & G2	12-10
			Split	H57 & H58	12-12
		1/4	Pin	G3 & G4	12-10
			Split	H1 & H2	12-12
		3/8	Hubless	J1 & J2	12-12
	3/16	3/16	Pin	G5 & G6	12-11
		1/4	Pin	G7 & G8	

METRIC SPUR GEAR INDEX

Module	Face Width (MM)	Bore (MM)	Hub Style	Series No.	Page No.
.25	1.58	9.525	Hubless	MHS1 & MHS2	12-52
	2.38	3	Pin	MSG3 & MSG4	
	3.18		Split	MSG35 & MSG36	
.30	3.18	3	Pin	MSG5 & MSG6	12-53
			Split	MSG37 & MSG38	
		9.525	Hubless	MHS3 & MHS4	
.40	3.18	3	Pin	MSG7 & MSG8	12-54
		4	Pin	MSG9 & MSG10	12-54
			Split	MSG39 & MSG40	12-56
		6	Pin	MSG11 & MSG12	12-55
			Split	MSG41 & MSG42	12-56
		9.525	Hubless	MHS5 & MHS6	12-56
	4.76	6	Pin	MSG13 & MSG14	12-55
.50	3.18	3	Pin	MSG15 & MSG16	12-57
		4	Pin	MSG17 & MSG18	12-57
			Split	MSG43 & MSG44	12-59
		6	Pin	MSG19 & MSG20	12-58
			Split	MSG45 & MSG46	12-59
		9.525	Hubless	MHS7 & MHS8	12-59
	4.76	6	Pin	MSG21 & MSG22	12-58
.60	4.76	6	Pin	MSG23 & MSG24	12-60
.70	4.76	6	Pin	MSG25 & MSG26	12-61
.80	3.18	6	Split	MSG47 & MSG48	12-62
	4.76	9.52	Hubless	MHS9 & MHS10	
		6	Pin	MSG27 & MSG28	12-62
	9.52	10	Pin	MSG29 & MSG30	12-63
1.0	3.18	6	Split	MSG49 & MSG50	12-64
		9.52	Hubless	MHS11 & MHS12	
	4.76	6	Pin	MSG31 & MSG32	12-64
	9.52	10	Pin	MSG33 & MSG34	12-63

INCH SPUR GEAR INDEX

Diametral Pitch	Face Width (inches)	Bore (inches)	Hub Style	Series No.	Page No.
64	1/8	1/8	Pin	G9 & G10	12-13
			Split	H47 & H48	12-15
		3/16	Pin	G11 & G12	12-13
			Split	H3 & H4	12-15
		1/4	Pin	G13 & G14	12-13
			Split	H49 & H50	12-15
		3/8	Hubless	J3 & J4	12-15
	3/16	3/16	Pin	G15 & G16	12-14
		1/4	Pin	G17 & G18	
72	1/8	1/8	Pin	G19 & G20	12-16
			Split	G21 & G22	12-16
				H5 & H6	12-18
		1/4	Split	H59 & H60	12-18
		3/8	Hubless	J5 & J6	12-18
	3/16	3/16	Pin	G23 & G24	12-17
		1/4	Pin	G25 & G26	
80	1/8	1/8	Pin	G45 & G46	12-19
		3/16	Pin	G47 & G48	
		3/8	Hubless	J25 & J26	
96	1/16	1/8	Pin	G51 & G52	12-20
		3/8	Hubless	J27 & J28	12-21
	3/32	1/8	Pin	G27 & G28	12-20
	1/8	1/8	Pin	G29 & G30	12-20
			Split	H7 & H8	12-21
		3/8	Hubless	J7 & J8	12-21
120	1/16	1/8	Pin	G55 & G56	12-22
	3/32	1/8	Pin	G35 & G36	12-22
	1/8	3/8	Hubless	J9 & J10	12-22

GEAR MATERIALS

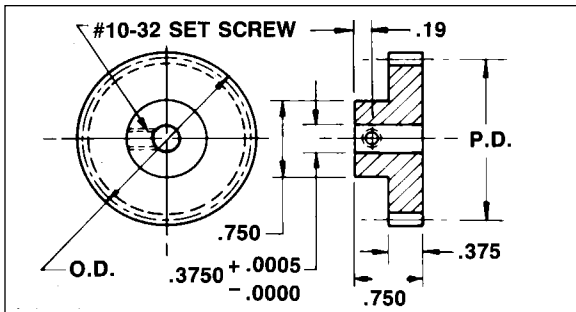
Materials stated on the gear drawings are the commonly referred to designations (303, 2024-T4). This provides the designer with a ready reference for properties such as corrosion resistance, weight, yield and tensile strength. Detailed specifications are summarized in the following table.

Catalog Part Designation	Aluminum	Stainless Steel
Spur, Helical, Bevel & Worm: CO, CN, F, G, H, J	2024-T4/T351 (Bar)	303 (Bar)
MHS, MSG, Q (2, 4, 6, 8, 10, 12)		
Racks: AG	2024-T4 (Bar)	416
Anti-backlash: P (2, 3, 4, 12, 13, 14, 22, 24, 26) P (20, 30, 40) P (5, 6, 7, 15, 16, 17, 21, 23, 25) P (50, 60, 70)	2024-T3 (Sheet) 2024-T4/T351 (Bar)	303 (Sheet) 303 (Bar)

For Cut Nylon and Delrin, See Pages 12-26 through 12-30.

SPUR GEAR-20 PITCH — $\frac{3}{8}$ " Face Width ■ 20° Pressure Angle

Pin Hub — $\frac{3}{8}$ " Bore



AGMA Quality Number 10-C	Tooth-to-Tooth Composite	Total Composite
Up to 20 Teeth Inclusive	.0007	.0010
Over 20 Teeth—up to 1.999" P.D.	.0005	.0010
Over 20 Teeth—2" to 2.999" P.D.	.0005	.0012
Over 20 Teeth—4" P.D. and over	.0005	.0014

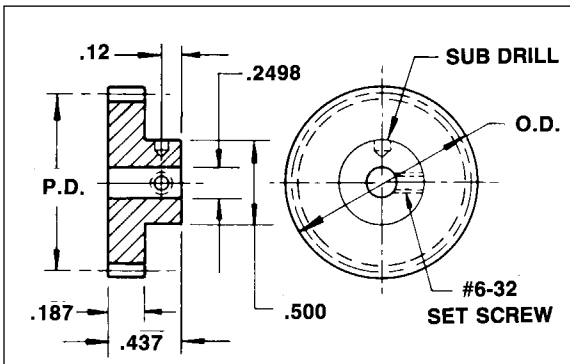
"C"—BACKLASH DESIGNATION.

Provides .0005 to .001 tooth thinning at pitch line. Allows operation on theoretical centers.

Gear Data			#303 STAINLESS STEEL	BRONZE Alloy 464
No. Teeth	P.D.	O.D.	Part No.	Part No.
18	.9000	1.000	G77-18	G78-18
20	1.0000	1.100	G77-20	G78-20
24	1.2000	1.300	G77-24	G78-24
28	1.4000	1.500	G77-28	G78-28
30	1.5000	1.600	G77-30	G78-30
36	1.8000	1.900	G77-36	G78-36
40	2.0000	2.100	G77-40	G78-40
48	2.4000	2.500	G77-48	G78-48
56	2.8000	2.900	G77-56	G78-56
60	3.0000	3.100	G77-60	G78-60
72	3.6000	3.700	G77-72	G78-72
80	4.0000	4.100	G77-80	G78-80
84	4.2000	4.300	G77-84	G78-84
96	4.8000	4.900	G77-96	G78-96
100	5.0000	5.100	G77-100	G78-100

SPUR GEAR $\frac{1}{10}$ th CIR. PITCH — $\frac{3}{16}$ " Face Width ■ 20° Pressure Angle

Pin Hub — $\frac{1}{4}$ " Bore



Tolerances	Q10	Q12	Q14
Bore	+ .0005 - .0000	+ .0003 - .0000	+ .0002 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

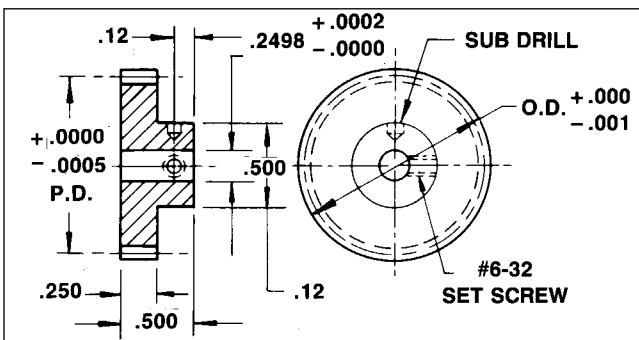
Material: 303 Stainless Steel

No. Teeth	P.D.	O.D.	Part No.
20	.6366	.700	G75-20
40	1.2732	1.337	G75-40

To order AGMA 13 Gears, add Q13 to Cat. No.

SPUR GEAR $\frac{1}{10}$ th CIR. PITCH — $\frac{1}{4}$ " Face Width ■ 20° Pressure Angle

AGMA Quality No. 13 ■ Pin Hub — $\frac{1}{4}$ " Bore



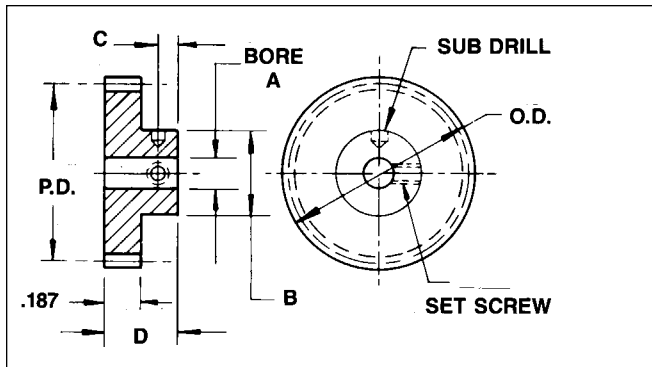
AGMA Quality No. 13	Tooth-to-Tooth Composite	Total Composite
20 Teeth	.0003	.0004
40 Teeth	.0002	.0004

No. Teeth	P.D.	O.D.	Part No.
20	.6366	.700	G83-20
40	1.2732	1.337	G83-40

Material: Stainless Steel 17-4PH
Heat Treated to RC42 Minimum

SPUR GEAR-24 PITCH — $\frac{3}{16}$ " Face Width ■ 20° Pressure Angle

Pin Hub — $\frac{3}{16}$ ", $\frac{1}{4}$ " Bores



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Dimen.	Bore	
	$\frac{3}{16}$	$\frac{1}{4}$
A	.1873	.2498
B	.375	.500
C	.11	.12
D	.406	.437
Set Screw	#4-40	#6-32

Tolerances	Q10	Q12	Q14
Bore	+ .0005 - .0000	+ .0003 - .0000	+ .0002 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

To order AGMA 12 Gears, add — Q12 to Part No.
To order AGMA 14 Gears, add — Q14 to Part No.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.

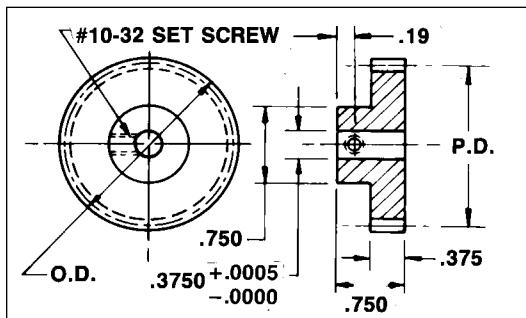
EXAMPLE: G57-45 and G57-48 are in the above table. For a 59 Tooth Gear, Specify Part Number G57-59.

Gear Data			Stainless Steel Part No. Bore Size		Aluminum Part No. Bore Size	
No. Teeth	P.D.	O.D.	.1873	.2498	.1873	.2498
12	.5000	.583	G57-12	—	G58-12	—
13	.5418	.625	G57-13	—	G58-13	—
14	.5833	.667	G57-14	—	G58-14	—
15	.6250	.708	G57-15	G41-15	G58-15	G42-15
16	.6667	.750	G57-16	G41-16	G58-16	G42-16
18	.7500	.833	G57-18	G41-18	G58-18	G42-18
20	.8333	.917	G57-20	G41-20	G58-20	G42-20
22	.9167	1.000	G57-22	G41-22	G58-22	G42-22
24	1.0000	1.083	G57-24	G41-24	G58-24	G42-24
27	1.1250	1.208	G57-27	G41-27	G58-27	G42-27
30	1.2500	1.333	G57-30	G41-30	G58-30	G42-30
36	1.5000	1.583	G57-36	G41-36	G58-36	G42-36
39	1.6250	1.708	G57-39	G41-39	G58-39	G42-39
42	1.7500	1.833	G57-42	G41-42	G58-42	G42-42
45	1.8750	1.958	G57-45	G41-45	G58-45	G42-45
48	2.0000	2.083	G57-48	G41-48	G58-48	G42-48
54	2.2500	2.333	G57-54	G41-54	G58-54	G42-54
60	2.5000	2.583	G57-60	G41-60	G58-60	G42-60
63	2.6250	2.708	G57-63	G41-63	G58-63	G42-63
66	2.7500	2.833	G57-66	G41-66	G58-66	G42-66
69	2.8750	2.958	G57-69	G41-69	G58-69	G42-69
72	3.0000	3.083	G57-72	G41-72	G58-72	G42-72
75	3.1250	3.208	G57-75	G41-75	G58-75	G42-75
78	3.2500	3.333	—	G41-78	—	G42-78
81	3.3750	3.458	—	G41-81	—	G42-81
84	3.5000	3.583	—	G41-84	—	G42-84
87	3.6250	3.708	—	G41-87	—	G42-87
90	3.7500	3.833	—	G41-90	—	G42-90
93	3.8750	3.958	—	G41-93	—	G42-93
96	4.0000	4.083	—	G41-96	—	G42-96
99	4.1250	4.208	—	G41-99	—	G42-99

Other Size Bores Available, Consult Factory.

SPUR GEAR-24 PITCH — $\frac{3}{8}$ " Face Width ■ 20° Pressure Angle

Pin Hub — $\frac{3}{8}$ " Bore



TOLERANCES

AGMA Quality Number 10-C	Tooth-to-Tooth Composite	Total Composite
Up to 20 Teeth Inclusive	.0007	.0010
Over 20 Teeth—up to 1.999" P.D.	.0005	.0010
Over 20 Teeth—2" to 2.999" P.D.	.0005	.0012
Over 20 Teeth—4" P.D. and over	.0005	.0014

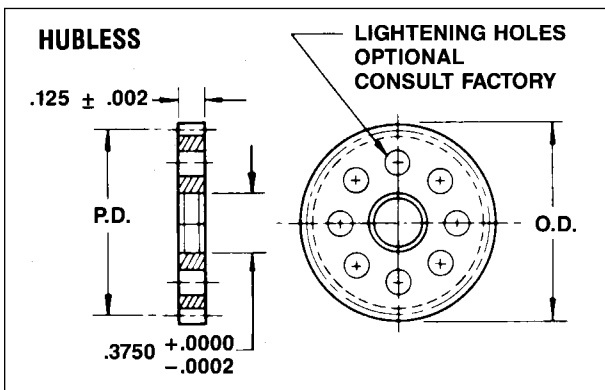
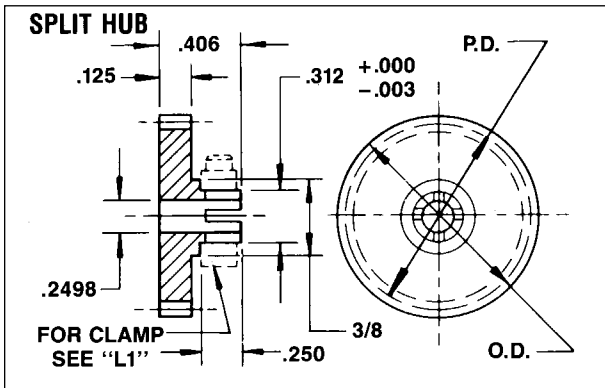
"C"—BACKLASH DESIGNATION.

Provides .0005 to .001 tooth thinning at pitch line. Allows operation on theoretical centers.

Gear Data			#303 STAINLESS STEEL	BRONZE Alloy 464
No. Teeth	P.D.	O.D.	Part No.	Part No.
24	1.0000	1.083	G79-24	G80-24
28	1.1667	1.250	G79-28	G80-28
30	1.2500	1.333	G79-30	G80-30
36	1.5000	1.583	G79-36	G80-36
40	1.6667	1.750	G79-40	G80-40
48	2.0000	2.083	G79-48	G80-48
56	2.3333	2.417	G79-56	G80-56
60	2.5000	2.583	G79-60	G80-60
72	3.0000	3.083	G79-72	G80-72
80	3.3333	3.417	G79-80	G80-80
96	4.0000	4.083	G79-96	G80-96
112	4.6667	4.750	G79-112	G80-112
120	5.0000	5.083	G79-120	G80-120

SPUR GEAR-24 PITCH — 1/8" Face Width ■ 20° Pressure Angle

Split Hub - 1/4" Bores — Hubless 3/8" Bore



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Gear Data			Stainless Steel Part No.		Aluminum Part No.	
No. Teeth	P.D.	O.D.	Split Hub	Hubless	Split Hub	Hubless
12	.5000	.583	H23-12	—	H24-12	—
13	.5418	.625	H23-13	—	H24-13	—
14	.5833	.667	H23-14	—	H24-14	—
15	.6250	.708	H23-15	J21-15	H24-15	J22-15
16	.6667	.750	H23-16	J21-16	H24-16	J22-16
17	.7083	.792	H23-17	J21-17	H24-17	J22-17
18	.7500	.833	H23-18	J21-18	H24-18	J22-18
19	.7917	.875	H23-19	J21-19	H24-19	J22-19
20	.8333	.917	H23-20	J21-20	H24-20	J22-20
21	.8750	.958	H23-21	J21-21	H24-21	J22-21
22	.9167	1.000	H23-22	J21-22	H24-22	J22-22
23	.9583	1.042	H23-23	J21-23	H24-23	J22-23
24	1.0000	1.083	H23-24	J21-24	H24-24	J22-24
27	1.1250	1.208	H23-27	J21-27	H24-27	J22-27
30	1.2500	1.333	H23-30	J21-30	H24-30	J22-30
33	1.3750	1.458	H23-33	J21-33	H24-33	J22-33
36	1.5000	1.583	H23-36	J21-36	H24-36	J22-36
39	1.6250	1.708	H23-39	J21-39	H24-39	J22-39
42	1.7500	1.833	H23-42	J21-42	H24-42	J22-42
45	1.8750	1.958	H23-45	J21-45	H24-45	J22-45
48	2.0000	2.083	H23-48	J21-48	H24-48	J22-48
51	2.1250	2.208	H23-51	J21-51	H24-51	J22-51
54	2.2500	2.333	H23-54	J21-54	H24-54	J22-54
57	2.3750	2.458	H23-57	J21-57	H24-57	J22-57
60	2.5000	2.583	H23-60	J21-60	H24-60	J22-60
72	3.000	3.083	—	J21-72	—	J22-72
78	3.2500	3.333	—	J21-78	—	J22-78
84	3.5000	3.583	—	J21-84	—	J22-84
90	3.7500	3.833	—	J21-90	—	J22-90
96	4.0000	4.083	—	J21-96	—	J22-96
99	4.1250	4.208	—	J21-99	—	J22-99

Other Size Bores Available, Consult Factory.

For Gear Hubs See Pages 12-65 & 12-66

Tolerances	Q10	Q12	Q14
Bore	+ .0005 - .0000	+ .0003 - .0000	+ .0002 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

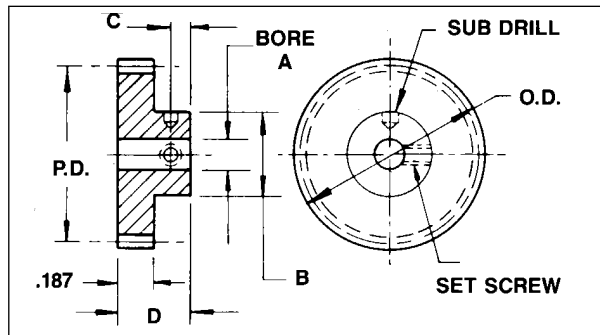
To order AGMA 12 Gears, add — Q12 to Part No.
To order AGMA 14 Gears, add — Q14 to Part No.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the gear number.
EXAMPLE: J21-45 and J21-48 are in the above table. For a 49 Tooth Gear, Specify Part Number J21-49.

SPUR GEAR-32 PITCH — $\frac{3}{16}$ " Face Width ■ 20° Pressure Angle

Pin Hub — $\frac{3}{16}$ ", $\frac{1}{4}$ " Bores



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Dimen.	Bore	
	$\frac{3}{16}$	$\frac{1}{4}$
A	.1873	.2498
B	.375	.500
C	.11	.12
D	.406	.437
Set Screw	#4-40	#6-32

Tolerances	Q10	Q12	Q14
Bore	+ .0005 - .0000	+ .0003 - .0000	+ .0002 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

To order AGMA 12 Gears, add — Q12 to Part No.
To order AGMA 14 Gears, add — Q14 to Part No.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

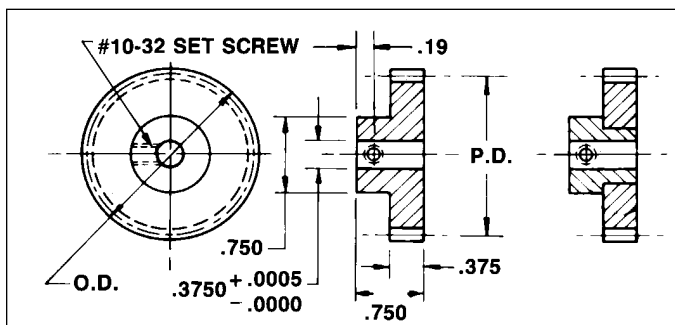
For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.
EXAMPLE: G59-40 and G59-48 are in the above table. For a 59 Tooth Gear, Specify Part Number G59-59.

Gear Data			Stainless Steel Part No. Bore Size		Aluminum Part No. Bore Size	
No. Teeth	P.D.	O.D.	.1873	.2498	.1873	.2498
15	.4688	.531	G59-15	—	G60-15	—
16	.5000	.563	G59-16	—	G60-16	—
17	.5313	.594	G59-17	—	G60-17	—
18	.5625	.625	G59-18	—	G60-18	—
20	.6250	.688	G59-20	—	G60-20	—
22	.6875	.750	G59-22	G43-22	G60-22	G44-22
24	.7500	.813	G59-24	G43-24	G60-24	G44-24
26	.8125	.875	G59-26	G43-26	G60-26	G44-26
28	.8750	.938	G59-28	G43-28	G60-28	G44-28
30	.9375	1.000	G59-30	G43-30	G60-30	G44-30
32	1.0000	1.063	G59-32	G43-32	G60-32	G44-32
34	1.0625	1.125	G59-34	G43-34	G60-34	G44-34
36	1.1250	1.188	G59-36	G43-36	G60-36	G44-36
38	1.1875	1.250	G59-38	G43-38	G60-38	G44-38
40	1.2500	1.313	G59-40	G43-40	G60-40	G44-40
44	1.3750	1.438	G59-44	G43-44	G60-44	G44-44
48	1.5000	1.563	G59-48	G43-48	G60-48	G44-48
52	1.6250	1.688	G59-52	G43-52	G60-52	G44-52
56	1.7500	1.813	G59-56	G43-56	G60-56	G44-56
60	1.8750	1.938	G59-60	G43-60	G60-60	G44-60
64	2.0000	2.063	G59-64	G43-64	G60-64	G44-64
68	2.1250	2.188	G59-68	G43-68	G60-68	G44-68
72	2.2500	2.313	G59-72	G43-72	G60-72	G44-72
80	2.5000	2.563	G59-80	G43-80	G60-80	G44-80
84	2.6250	2.688	G59-84	G43-84	G60-84	G44-84
88	2.7500	2.813	G59-88	G43-88	G60-88	G44-88
92	2.8750	2.938	G59-92	G43-92	G60-92	G44-92
96	3.0000	3.063	G59-96	G43-96	G60-96	G44-96
100	3.1250	3.188	G59-100	G43-100	G60-100	G44-100
104	3.2500	3.313	G59-104	G43-104	G60-104	G44-104
108	3.3750	3.438	G59-108	G43-108	G60-108	G44-108
112	3.5000	3.563	G59-112	G43-112	G60-112	G44-112
116	3.6250	3.688	G59-116	G44-116	G60-116	G44-116
120	3.7500	3.813	G59-120	G43-120	G60-120	G44-120
128	4.0000	4.063	G59-128	G43-128	G60-128	G44-128

Other Size Bores Available, Consult Factory.

SPUR GEAR-32 PITCH — $\frac{3}{8}$ " Face Width ■ 20° Pressure Angle

Pin Hub — $\frac{3}{8}$ " Bore



TOLERANCES

AGMA Quality Number 10-C	Tooth-to-Tooth Composite	Total Composite
Up to 20 Teeth Inclusive	.0007	.0010
Over 20 Teeth—up to 1.999" P.D.	.0005	.0010
Over 20 Teeth—2" to 2.999" P.D.	.0005	.0012
Over 20 Teeth—4" P.D. and over	.0005	.0014

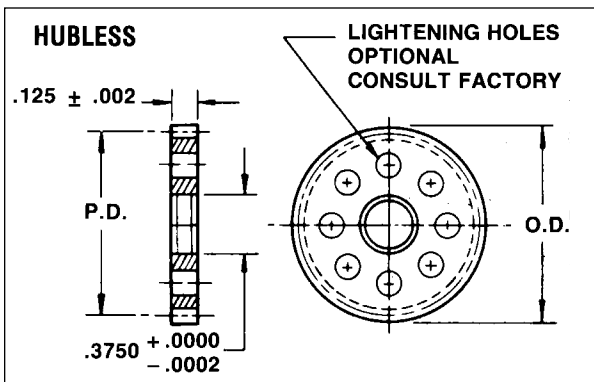
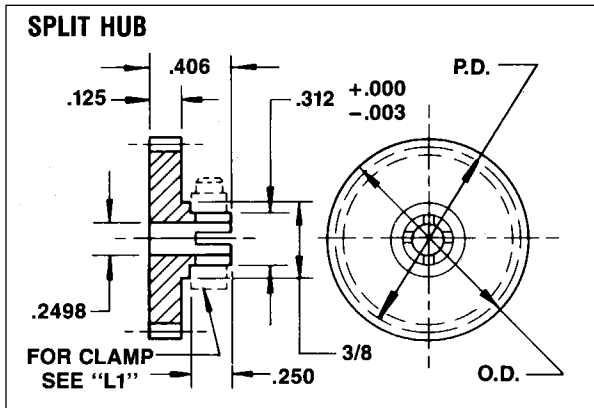
"C"—BACKLASH DESIGNATION.

Provides .0005 to .001 tooth thinning at pitch line. Allows operation on theoretical centers.

Gear Data			#303 STAINLESS STEEL	BRONZE Alloy 464
No. Teeth	P.D.	O.D.	Part No.	Part No.
28	.8750	.938	G81-28	G82-28
30	.9375	1.000	G81-30	G82-30
32	1.0000	1.063	G81-32	G82-32
36	1.1250	1.188	G81-36	G82-36
40	1.2500	1.313	G81-40	G82-40
48	1.5000	1.563	G81-48	G82-48
56	1.7500	1.813	G81-56	G82-56
60	1.8750	1.938	G81-60	G82-60
64	2.0000	2.063	G81-64	G82-64
72	2.2500	2.313	G81-72	G82-72
80	2.5000	2.563	G81-80	G82-80
96	3.0000	3.063	G81-96	G82-96
112	3.5000	3.563	G81-112	G82-112
128	4.0000	4.063	G81-128	G82-128
144	4.5000	4.563	G81-144	G82-144
160	5.0000	5.063	G81-160	G82-160

SPUR GEAR-32 PITCH — 1/8" Face Width ■ 20° Pressure Angle

Split Hub - 1/4" Bores — Hubless 3/8" Bore



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Gear Data			Stainless Steel Part No.		Aluminum Part No.	
No. Teeth	P.D.	O.D.	Split Hub	Hubless	Split Hub	Hubless
15	.4688	.531	H25-15	—	H26-15	—
16	.5000	.563	H25-16	—	H26-16	—
17	.5313	.594	H25-17	—	H26-17	—
18	.5625	.625	H25-18	—	H26-18	—
19	.5938	.656	H25-19	J23-19	H26-19	J24-19
20	.6250	.688	H25-20	J23-20	H26-20	J24-20
22	.6875	.750	H25-22	J23-22	H26-22	J24-22
24	.7500	.813	H25-24	J23-24	H26-24	J24-24
26	.8125	.875	H25-26	J23-26	H26-26	J24-26
28	.8750	.938	H25-28	J23-28	H26-28	J24-28
30	.9375	1.000	H25-30	J23-30	H26-30	J24-30
32	1.0000	1.063	H25-32	J23-32	H26-32	J24-32
36	1.1250	1.188	H25-36	J23-36	H26-36	J24-36
40	1.2500	1.313	H25-40	J23-40	H26-40	J24-40
48	1.5000	1.563	H25-48	J23-48	H26-48	J24-48
56	1.7500	1.813	H25-56	J23-56	H26-56	J24-56
64	2.0000	2.063	H25-64	J23-64	H26-64	J24-64
72	2.2500	2.313	H25-72	J23-72	H26-72	J24-72
80	2.5000	2.563	H25-80	J23-80	H26-80	J24-80
88	2.7500	2.813	H25-88	J23-88	H26-88	J24-88
96	3.0000	3.063	H25-96	J23-96	H26-96	J24-96
112	3.5000	3.563	H25-112	J23-112	H26-112	J24-112
127	3.9688	4.031	H25-127	J23-127	H26-127	J24-127
128	4.0000	4.063	H25-128	J23-128	H26-128	J24-128
132	4.1250	4.188	H25-132	J23-132	H26-132	J24-132

Other Size Bores Available. Consult Factory.

For Gear Hubs See Pages 12-65 & 12-66

Tolerances	Q10	Q12	Q14
Bore	+ .0005 - .0000	+ .0003 - .0000	+ .0002 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

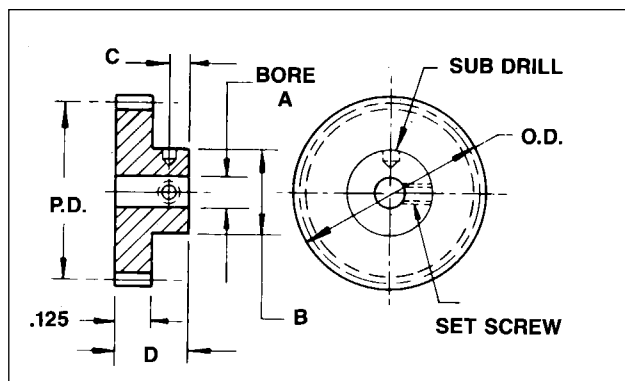
To order AGMA 12 Gears, add — Q12 to Part No.
To order AGMA 14 Gears, add — Q14 to Part No.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the gear number.
EXAMPLE: J23-40 and J23-48 are in the above table. For a 49 Tooth Gear, Specify Part Number J23-49.

SPUR GEAR-48 PITCH — 1/8" Face Width ■ 20° Pressure Angle

Pin Hub — 1/8", 3/16", 1/4" Bores



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Dimen.	Bore		
	1/8	3/16	1/4
A	.1248	.1873	.2498
B	.312	.375	.500
C	.09	.11	.12
D	.312	.343	.375
Set Screw	#2-56	#4-40	#6-32

Tolerances	Q10	Q12	Q14
Bore	+ .0005 - .0000	+ .0003 - .0000	+ .0002 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

To order AGMA 12 Gears, add — Q12 to Part No.
To order AGMA 14 Gears, add — Q14 to Part No.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number

EXAMPLE:

G3-40 and G3-48 are in the above table. For a 59 Tooth Gear. Specify Part Number G3-59.

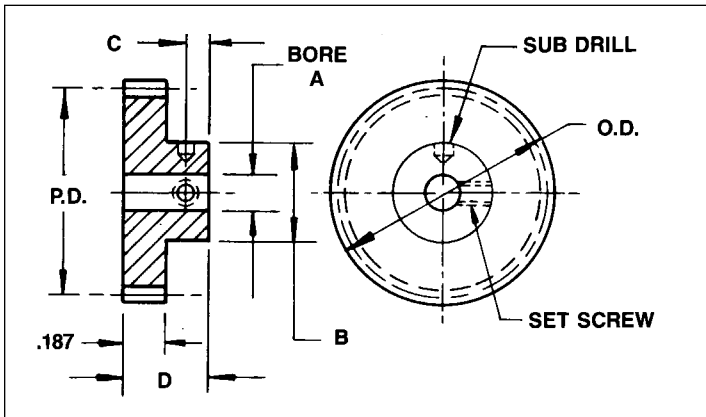
Gear Data			Stainless Steel			Aluminum		
			Part No. Bore Size			Part No. Bore Size		
No. Teeth	P.D.	O.D.	.1248	.1873	.2498	.1248	.1873	.2498
18	.3750	.417	G61-18	G1-18*	—	G62-18	G2-18*	—
19	.3958	.438	G61-19	G1-19*	—	G62-19	G2-19*	—
20	.4166	.458	G61-20	G1-20*	G3-20*	G62-20	G2-20*	G4-20*
21	.4375	.479	G61-21	G1-21	G3-21*	G62-21	G2-21	G4-21*
22	.4583	.500	G61-22	G1-22	G3-22*	G62-22	G2-22	G4-22*
23	.4791	.521	G61-23	G1-23	G3-23*	G62-23	G2-23	G4-23*
24	.5000	.542	G61-24	G1-24	G3-24*	G62-24	G2-24	G4-24*
25	.5208	.563	G61-25	G1-25	G3-25*	G62-25	G2-25	G4-25*
26	.5416	.583	G61-26	G1-26	G3-26*	G62-26	G2-26	G4-26*
27	.5625	.604	G61-27	G1-27	G3-27	G62-27	G2-27	G4-27
28	.5833	.625	G61-28	G1-28	G3-28	G62-28	G2-28	G4-28
29	.6041	.646	G61-29	G1-29	G3-29	G62-29	G2-29	G4-29
30	.6250	.667	G61-30	G1-30	G3-30	G62-30	G2-30	G4-30
32	.6666	.708	G61-32	G1-32	G3-32	G62-32	G2-32	G4-32
34	.7083	.750	G61-34	G1-34	G3-34	G62-34	G2-34	G4-34
36	.7500	.792	G61-36	G1-36	G3-36	G62-36	G2-36	G4-36
38	.7916	.833	G61-38	G1-38	G3-38	G62-38	G2-38	G4-38
40	.8333	.875	G61-40	G1-40	G3-40	G62-40	G2-40	G4-40
42	.8750	.917	G61-42	G1-42	G3-42	G62-42	G2-42	G4-42
44	.9166	.958	G61-44	G1-44	G3-44	G62-44	G2-44	G4-44
46	.9583	1.000	G61-46	G1-46	G3-46	G62-46	G2-46	G4-46
48	1.0000	1.042	G61-48	G1-48	G3-48	G62-48	G2-48	G4-48
50	1.0416	1.083	G61-50	G1-50	G3-50	G62-50	G2-50	G4-50
55	1.1458	1.188	G61-55	G1-55	G3-55	G62-55	G2-55	G4-55
56	1.1666	1.208	G61-56	G1-56	G3-56	G62-56	G2-56	G4-56
60	1.2500	1.292	G61-60	G1-60	G3-60	G62-60	G2-60	G4-60
64	1.3333	1.375	G61-64	G1-64	G3-64	G62-64	G2-64	G4-64
65	1.3541	1.396	G61-65	G1-65	G3-65	G62-65	G2-65	G4-65
70	1.4583	1.500	G61-70	G1-70	G3-70	G62-70	G2-70	G4-70
72	1.5000	1.542	G61-72	G1-72	G3-72	G62-72	G2-72	G4-72
75	1.5625	1.604	G61-75	G1-75	G3-75	G62-75	G2-75	G4-75
80	1.6666	1.708	G61-80	G1-80	G3-80	G62-80	G2-80	G4-80
84	1.7500	1.792	G61-84	G1-84	G3-84	G62-84	G2-84	G4-84
85	1.7708	1.813	G61-85	G1-85	G3-85	G62-85	G2-85	G4-85
90	1.8750	1.917	G61-90	G1-90	G3-90	G62-90	G2-90	G4-90
92	1.9166	1.958	G61-92	G1-92	G3-92	G62-92	G2-92	G4-92
95	1.9791	2.021	G61-95	G1-95	G3-95	G62-95	G2-95	G4-95
96	2.0000	2.042	G61-96	G1-96	G3-96	G62-96	G2-96	G4-96
100	2.0833	2.125	G61-100	G1-100	G3-100	G62-100	G2-100	G4-100
102	2.1250	2.167	G61-102	G1-102	G3-102	G62-102	G2-102	G4-102
105	2.1875	2.229	G61-105	G1-105	G3-105	G62-105	G2-105	G4-105
108	2.2500	2.292	—	G1-108	G3-108	—	G2-108	G4-108
110	2.2917	2.333	—	G1-110	G3-110	—	G2-110	G4-110
115	2.3958	2.438	—	G1-115	G3-115	—	G2-115	G4-115
120	2.5000	2.542	—	G1-120	G3-120	—	G2-120	G4-120
126	2.6250	2.667	—	G1-126	G3-126	—	G2-126	G4-126
127	2.6458	2.688	—	G1-127	G3-127	—	G2-127	G4-127
132	2.7500	2.792	—	G1-132	G3-132	—	G2-132	G4-132
138	2.8750	2.917	—	G1-138	G3-138	—	G2-138	G4-138
144	3.0000	3.042	—	G1-144	G3-144	—	G2-144	G4-144
150	3.1250	3.167	—	G1-150	G3-150	—	G2-150	G4-150
156	3.2500	3.292	—	—	G3-156	—	—	G4-156
162	3.3750	3.417	—	—	G3-162	—	—	G4-162
168	3.5000	3.542	—	—	G3-168	—	—	G4-168
174	3.6250	3.667	—	—	G3-174	—	—	G4-174
180	3.7500	3.792	—	—	G3-180	—	—	G4-180
186	3.8750	3.917	—	—	G3-186	—	—	G4-186
192	4.0000	4.042	—	—	G3-192	—	—	G4-192
198	4.1250	4.167	—	—	G3-198	—	—	G4-198

Other Size Bores Available, Consult Factory.

*Hob cuts into hub

SPUR GEAR-48 PITCH — 3/16" Face Width ■ 20° Pressure Angle

Pin Hub — 3/16", 1/4" Bores



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Dimen.	Bore	
	3/16	1/4
A	.1873	.2498
B	.375	.500
C	.11	.12
D	.406	.437
Set Screw	#4-40	#6-32

Tolerances	Q10	Q12	Q14
Bore	+ .0005 - .0000	+ .0003 - .0000	+ .0002 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

To order AGMA 12 Gears, add — Q12 to Part No.
To order AGMA 14 Gears, add — Q14 to Part No.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

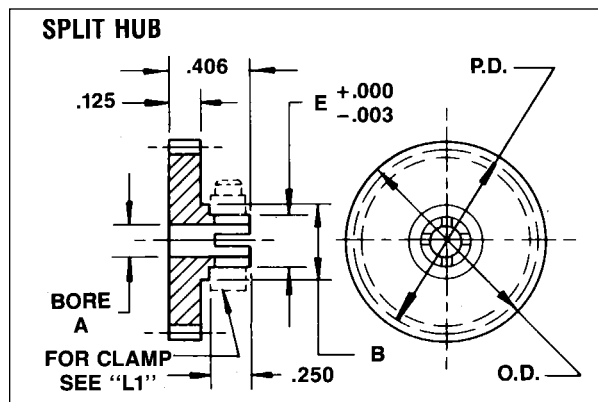
For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.
EXAMPLE: G5-40 and G5-48 are in the above table. For a 59 Tooth Gear, Specify Part Number G5-59.

Gear Data			Stainless Steel Part No. Bore Size		Aluminum Part No. Bore Size	
No. Teeth	P.D.	O.D.	.1873	.2498	.1873	.2498
21	.4375	.479	G5-21	—	G6-21	—
22	.4583	.500	G5-22	—	G6-22	—
23	.4791	.521	G5-23	—	G6-23	—
24	.5000	.542	G5-24	—	G6-24	—
25	.5208	.563	G5-25	—	G6-25	—
26	.5416	.583	G5-26	—	G6-26	—
27	.5625	.604	G5-27	G7-27	G6-27	G8-27
28	.5833	.625	G5-28	G7-28	G6-28	G8-28
29	.6041	.646	G5-29	G7-29	G6-29	G8-29
30	.6250	.667	G5-30	G7-30	G6-30	G8-30
32	.6666	.708	G5-32	G7-32	G6-32	G8-32
34	.7083	.750	G5-34	G7-34	G6-34	G8-34
36	.7500	.792	G5-36	G7-36	G6-36	G8-36
38	.7916	.833	G5-38	G7-38	G6-38	G8-38
40	.8333	.875	G5-40	G7-40	G6-40	G8-40
42	.8750	.917	G5-42	G7-42	G6-42	G8-42
44	.9166	.958	G5-44	G7-44	G6-44	G8-44
46	.9583	1.000	G5-46	G7-46	G6-46	G8-46
48	1.0000	1.042	G5-48	G7-48	G6-48	G8-48
50	1.0416	1.083	G5-50	G7-50	G6-50	G8-50
55	1.1458	1.188	G5-55	G7-55	G6-55	G8-55
56	1.1666	1.208	G5-56	G7-56	G6-56	G8-56
60	1.2500	1.292	G5-60	G7-60	G6-60	G8-60
64	1.3333	1.375	G5-64	G7-64	G6-64	G8-64
65	1.3541	1.396	G5-65	G7-65	G6-65	G8-65
70	1.4583	1.500	G5-70	G7-70	G6-70	G8-70
72	1.5000	1.542	G5-72	G7-72	G6-72	G8-72
75	1.5625	1.604	G5-75	G7-75	G6-75	G8-75
80	1.6666	1.708	G5-80	G7-80	G6-80	G8-80
84	1.7500	1.792	G5-84	G7-84	G6-84	G8-84
85	1.7708	1.813	G5-85	G7-85	G6-85	G8-85
90	1.8750	1.917	G5-90	G7-90	G6-90	G8-90
92	1.9166	1.958	G5-92	G7-92	G6-92	G8-92
95	1.9791	2.021	G5-95	G7-95	G6-95	G8-95
96	2.0000	2.042	G5-96	G7-96	G6-96	G8-96
100	2.0833	2.125	G5-100	G7-100	G6-100	G8-100
102	2.1250	2.167	G5-102	G7-102	G6-102	G8-102
105	2.1875	2.229	G5-105	G7-105	G6-105	G8-105
108	2.2500	2.292	G5-108	G7-108	G6-108	G8-108
110	2.2917	2.333	G5-110	G7-110	G6-110	G8-110
115	2.3958	2.438	G5-115	G7-115	G6-115	G8-115
120	2.5000	2.542	G5-120	G7-120	G6-120	G8-120
126	2.6250	2.667	G5-126	G7-126	G6-126	G8-126
127	2.6458	2.688	G5-127	G7-127	G6-127	G8-127
132	2.7500	2.792	G5-132	G7-132	G6-132	G8-132
138	2.8750	2.917	G5-138	G7-138	G6-138	G8-138
144	3.0000	3.042	G5-144	G7-144	G6-144	G8-144
150	3.1250	3.167	G5-150	G7-150	G6-150	G8-150
156	3.2500	3.292	G5-156	G7-156	G6-156	G8-156
162	3.3750	3.417	G5-162	G7-162	G6-162	G8-162
168	3.5000	3.542	G5-168	G7-168	G6-168	G8-168
174	3.6250	3.667	G5-174	G7-174	G6-174	G8-174
180	3.7500	3.792	G5-180	G7-180	G6-180	G8-180
186	3.8750	3.917	G5-186	G7-186	G6-186	G8-186
192	4.0000	4.042	G5-192	G7-192	G6-192	G8-192
198	4.1250	4.167	—	G7-198	—	G8-198

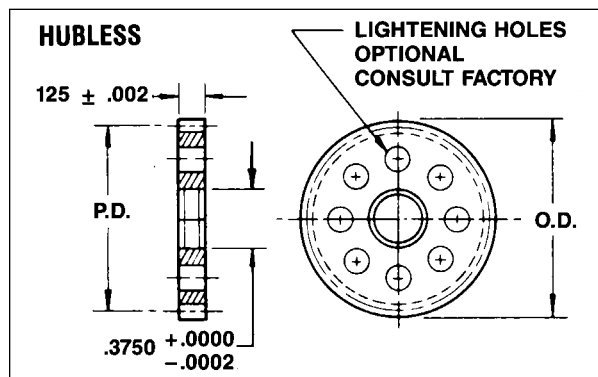
Other Size Bores Available. Consult Factory.

SPUR GEAR-48 PITCH — 1/8" Face Width ■ 20° Pressure Angle

Split Hub — 1/8", 3/16", 1/4" Bores ■ Hubless 3/8" Bore



Dimen.	Bore		
	1/8	3/16	1/4
A	.1248	.1873	.2498
B	1/4	5/16	3/8
E	.188	.250	.312



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Tolerances	Q10	Q12	Q14
Bore	+ .0005 - .0000	+ .0003 - .0000	+ .0002 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

Gear Data			Stainless Steel Part No. Bore Size				Aluminum Part No. Bore Size			
No. Teeth	P.D.	O.D.	Split Hub			Hubless	Split Hub			Hubless
			.1248	.1873	.2498	.3750	.1248	.1873	.2498	.3750
16	.3333	.375	H55-16	—	—	—	H56-16	—	—	—
17	.3541	.396	H55-17	—	—	—	H56-17	—	—	—
18	.3750	.417	H55-18	H57-18	—	—	H56-18	H58-18	—	—
19	.3958	.438	H55-19	H57-19	—	—	H56-19	H58-19	—	—
20	.4166	.458	H55-20	H57-20	—	—	H56-20	H58-20	—	—
21	.4375	.479	H55-21	H57-21	H1-21	—	H56-21	H58-21	H2-21	—
22	.4583	.500	H55-22	H57-22	H1-22	—	H56-22	H58-22	H2-22	—
23	.4791	.521	H55-23	H57-23	H1-23	—	H56-23	H58-23	H2-23	—
24	.5000	.542	H55-24	H57-24	H1-24	—	H56-24	H58-24	H2-24	—
25	.5208	.563	H55-25	H57-25	H1-25	—	H56-25	H58-25	H2-25	—
26	.5416	.583	H55-26	H57-26	H1-26	—	H56-26	H58-26	H2-26	—
27	.5625	.604	H55-27	H57-27	H1-27	—	H56-27	H58-27	H2-27	—
28	.5833	.625	H55-28	H57-28	H1-28	—	H56-28	H58-28	H2-28	—
29	.6041	.646	H55-29	H57-29	H1-29	J1-29	H56-29	H58-29	H2-29	J2-29
30	.6250	.667	H55-30	H57-30	H1-30	J1-30	H56-30	H58-30	H2-30	J2-30
32	.6666	.708	H55-32	H57-32	H1-32	J1-32	H56-32	H58-32	H2-32	J2-32
34	.7083	.750	H55-34	H57-34	H1-34	J1-34	H56-34	H58-34	H2-34	J2-34
36	.7500	.792	H55-36	H57-36	H1-36	J1-36	H56-36	H58-36	H2-36	J2-36
38	.7916	.833	H55-38	H57-38	H1-38	J1-38	H56-38	H58-38	H2-38	J2-38
40	.8333	.875	H55-40	H57-40	H1-40	J1-40	H56-40	H58-40	H2-40	J2-40
42	.8750	.917	H55-42	H57-42	H1-42	J1-42	H56-42	H58-42	H2-42	J2-42
44	.9166	.958	H55-44	H57-44	H1-44	J1-44	H56-44	H58-44	H2-44	J2-44
46	.9583	1.000	H55-46	H57-46	H1-46	J1-46	H56-46	H58-46	H2-46	J2-46
48	1.0000	1.042	H55-48	H57-48	H1-48	J1-48	H56-48	H58-48	H2-48	J2-48
50	1.0416	1.083	H55-50	H57-50	H1-50	J1-50	H56-50	H58-50	H2-50	J2-50
55	1.1458	1.188	H55-55	H57-55	H1-55	J1-55	H56-55	H58-55	H2-55	J2-55
56	1.1666	1.208	H55-56	H57-56	H1-56	J1-56	H56-56	H58-56	H2-56	J2-56
60	1.2500	1.292	H55-60	H57-60	H1-60	J1-60	H56-60	H58-60	H2-60	J2-60
66	1.3750	1.417	H55-66	H57-66	H1-66	J1-66	H56-66	H58-66	H2-66	J2-66
72	1.5000	1.542	H55-72	H57-72	H1-72	J1-72	H56-72	H58-72	H2-72	J2-72
78	1.6250	1.667	H55-78	H57-78	H1-78	J1-78	H56-78	H58-78	H2-78	J2-78
84	1.7500	1.792	H55-84	H57-84	H1-84	J1-84	H56-84	H58-84	H2-84	J2-84
90	1.8750	1.917	H55-90	H57-90	H1-90	J1-90	H56-90	H58-90	H2-90	J2-90
96	2.0000	2.042	H55-96	H57-96	H1-96	J1-96	H56-96	H58-96	H2-96	J2-96
102	2.1250	2.167	H55-102	H57-102	H1-102	J1-102	H56-102	H58-102	H2-102	J2-102
108	2.2500	2.292	H55-108	H57-108	H1-108	J1-108	H56-108	H58-108	H2-108	J2-108
114	2.3750	2.417	H55-114	H57-114	H1-114	J1-114	H56-114	H58-114	H2-114	J2-114
120	2.5000	2.542	H55-120	H57-120	H1-120	J1-120	H56-120	H58-120	H2-120	J2-120
127	2.6458	2.688	H55-127	H57-127	H1-127	J1-127	H56-127	H58-127	H2-127	J2-127
132	2.7500	2.792	H55-132	H57-132	H1-132	J1-132	H56-132	H58-132	H2-132	J2-132
144	3.0000	3.042	H55-144	H57-144	H1-144	J1-144	H56-144	H58-144	H2-144	J2-144
156	3.2500	3.292	H55-156	H57-156	H1-156	J1-156	H56-156	H58-156	H2-156	J2-156
168	3.5000	3.542	H55-168	H57-168	H1-168	J1-168	H56-168	H58-168	H2-168	J2-168
180	3.7500	3.792	H55-180	H57-180	H1-180	J1-180	H56-180	H58-180	H2-180	J2-180
192	4.0000	4.042	H55-192	H57-192	H1-192	J1-192	H56-192	H58-192	H2-192	J2-192

Other Size Bores Available, Consult Factory.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.

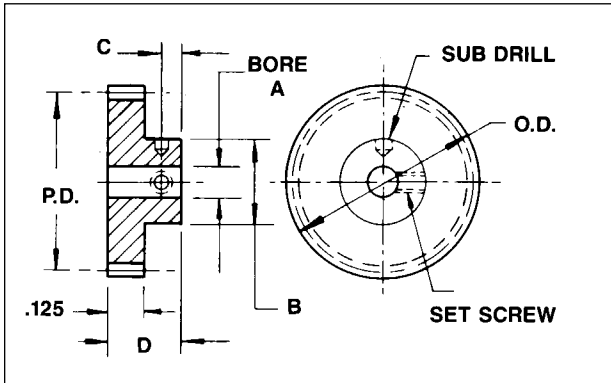
EXAMPLE: H57-40 and H57-48 are in the above table. For a 59 Tooth Gear, Specify Part Number H57-59.

For Gear Hubs See Pages 12-65 & 12-66

To order AGMA 12 Gears, add — Q12 to Part No.
To order AGMA 14 Gears, add — Q14 to Part No.

SPUR GEAR-64 PITCH — 1/8" Face Width ■ 20° Pressure Angle

Pin Hub — 1/8", 3/16", 1/4" Bores



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Dimen.	Bore		
	1/8	3/16	1/4
A	.1248	.1873	.2498
B	.312	.375	.500
C	.09	.11	.12
D	.312	.343	.375
Set Screw	#2-56	#4-40	#6-32

Tolerances	Q10	Q12	Q14
Bore	+.0005 -.0000	+.0003 -.0000	+.0002 -.0000
Pitch Diameter	+.000 -.001	+.0000 -.0007	+.0000 -.0005
Outside Diameter	+.000 -.002	+.0000 -.0015	+.000 -.001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

To order AGMA 12 Gears, add - Q12 to Part No.
To order AGMA 14 Gears, add - Q14 to Part No.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.

EXAMPLE:

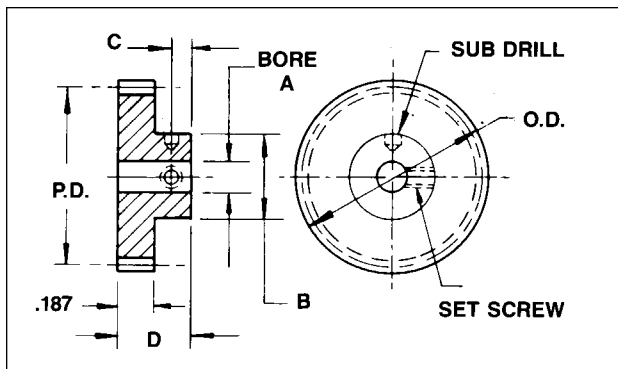
G13-40 and G13-48 are in the above table. For a 59 Tooth Gear, Specify Part Number G13-59.

Gear Data			Stainless Steel Part No. Bore Size			Aluminum Part No. Bore Size		
No. Teeth	P.D.	O.D.	.1248	.1873	.2498	.1248	.1873	.2498
23	.3593	.391	G9-23	—	—	G10-23	—	—
24	.3750	.406	G9-24	—	—	G10-24	—	—
25	.3906	.422	G9-25	—	—	G10-25	—	—
26	.4062	.438	G9-26	—	—	G10-26	—	—
27	.4218	.453	G9-27	G11-27	—	G10-27	G12-27	—
28	.4375	.469	G9-28	G11-28	—	G10-28	G12-28	—
29	.4531	.484	G9-29	G11-29	—	G10-29	G12-29	—
30	.4687	.500	G9-30	G11-30	—	G10-30	G12-30	—
32	.5000	.531	G9-32	G11-32	—	G10-32	G12-32	—
34	.5312	.563	G9-34	G11-34	—	G10-34	G12-34	—
36	.5625	.594	G9-36	G11-36	G13-36	G10-36	G12-36	G14-36
38	.5937	.625	G9-38	G11-38	G13-38	G10-38	G12-38	G14-38
40	.6250	.656	G9-40	G11-40	G13-40	G10-40	G12-40	G14-40
42	.6562	.688	G9-42	G11-42	G13-42	G10-42	G12-42	G14-42
44	.6875	.719	G9-44	G11-44	G13-44	G10-44	G12-44	G14-44
46	.7187	.750	G9-46	G11-46	G13-46	G10-46	G12-46	G14-46
48	.7500	.781	G9-48	G11-48	G13-48	G10-48	G12-48	G14-48
50	.7812	.813	G9-50	G11-50	G13-50	G10-50	G12-50	G14-50
55	.8593	.891	G9-55	G11-55	G13-55	G10-55	G12-55	G14-55
56	.8750	.906	G9-56	G11-56	G13-56	G10-56	G12-56	G14-56
60	.9375	.969	G9-60	G11-60	G13-60	G10-60	G12-60	G14-60
64	1.0000	1.031	G9-64	G11-64	G13-64	G10-64	G12-64	G14-64
65	1.0156	1.047	G9-65	G11-65	G13-65	G10-65	G12-65	G14-65
70	1.0937	1.125	G9-70	G11-70	G13-70	G10-70	G12-70	G14-70
72	1.1250	1.156	G9-72	G11-72	G13-72	G10-72	G12-72	G14-72
75	1.1718	1.203	G9-75	G11-75	G13-75	G10-75	G12-75	G14-75
80	1.2500	1.281	G9-80	G11-80	G13-80	G10-80	G12-80	G14-80
84	1.3125	1.344	G9-84	G11-84	G13-84	G10-84	G12-84	G14-84
85	1.3281	1.359	G9-85	G11-85	G13-85	G10-85	G12-85	G14-85
88	1.3750	1.406	G9-88	G11-88	G13-88	G10-88	G12-88	G14-88
90	1.4062	1.438	G9-90	G11-90	G13-90	G10-90	G12-90	G14-90
92	1.4375	1.469	G9-92	G11-92	G13-92	G10-92	G12-92	G14-92
95	1.4843	1.516	G9-95	G11-95	G13-95	G10-95	G12-95	G14-95
96	1.5000	1.531	G9-96	G11-96	G13-96	G10-96	G12-96	G14-96
100	1.5625	1.594	G9-100	G11-100	G13-100	G10-100	G12-100	G14-100
104	1.6250	1.656	G9-104	G11-104	G13-104	G10-104	G12-104	G14-104
105	1.6406	1.672	G9-105	G11-105	G13-105	G10-105	G12-105	G14-105
112	1.7500	1.781	G9-112	G11-112	G13-112	G10-112	G12-112	G14-112
120	1.8750	1.906	G9-120	G11-120	G13-120	G10-120	G12-120	G14-120
127	1.9843	2.016	G9-127	G11-127	G13-127	G10-127	G12-127	G14-127
128	2.0000	2.031	G9-128	G11-128	G13-128	G10-128	G12-128	G14-128
136	2.1250	2.156	G9-136	G11-136	G13-136	G10-136	G12-136	G14-136
144	2.2500	2.281	—	G11-144	G13-144	—	G12-144	G14-144
152	2.3750	2.406	—	G11-152	G13-152	—	G12-152	G14-152
160	2.5000	2.531	—	G11-160	G13-160	—	G12-160	G14-160
168	2.6250	2.656	—	G11-168	G13-168	—	G12-168	G14-168
176	2.7500	2.781	—	G11-176	G13-176	—	G12-176	G14-176
184	2.8750	2.906	—	G11-184	G13-184	—	G12-184	G14-184
192	3.0000	3.031	—	G11-192	G13-192	—	G12-192	G14-192
200	3.1250	3.156	—	G11-200	G13-200	—	G12-200	G14-200
208	3.2500	3.281	—	—	G13-208	—	—	G14-208
216	3.3750	3.406	—	—	G13-216	—	—	G14-216
224	3.5000	3.531	—	—	G13-224	—	—	G14-224
232	3.6250	3.656	—	—	G13-232	—	—	G14-232
240	3.7500	3.781	—	—	G13-240	—	—	G14-240
248	3.8750	3.906	—	—	G13-248	—	—	G14-248
256	4.0000	4.031	—	—	G13-256	—	—	G14-256
264	4.1250	4.156	—	—	G13-264	—	—	G14-264

Other Size Bores Available. Consult Factory.

SPUR GEAR-64 PITCH — $\frac{3}{16}$ " Face Width ■ 20° Pressure Angle

Pin Hub — $\frac{3}{16}$ ", $\frac{1}{4}$ " Bores



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Dimen.	Bore	
	$\frac{3}{16}$	$\frac{1}{4}$
A	.1873	.2498
B	.375	.500
C	.11	.12
D	.406	.437
Set Screw	#4-40	#6-32

Tolerances	Q10	Q12	Q14
Bore	+ .0005 - .0000	+ .0003 - .0000	+ .0002 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

To order AGMA 12 Gears, add - Q12 to Part No.
To order AGMA 14 Gears, add - Q14 to Part No.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

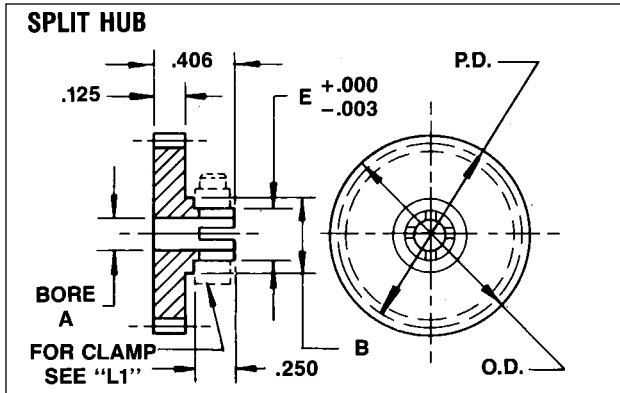
For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.
EXAMPLE: G17-40 and G17-48 are in the above table. For a 59 Tooth Gear, Specify Part Number G17-59.

Gear Data			Stainless Steel Part No. Bore Size		Aluminum Part No. Bore Size	
No. Teeth	P.D.	O.D.	.1873	.2498	.1873	.2498
27	.4218	.453	G15-27	—	G16-27	—
28	.4375	.469	G15-28	—	G16-28	—
29	.4531	.484	G15-29	—	G16-29	—
30	.4687	.500	G15-30	G17-30	G16-30	—
32	.5000	.531	G15-32	G17-32	G16-32	—
34	.5312	.563	G15-34	G17-34	G16-34	G18-34
36	.5625	.594	G15-36	G17-36	G16-36	G18-36
38	.5937	.625	G15-38	G17-38	G16-38	G18-38
40	.6250	.656	G15-40	G17-40	G16-40	G18-40
42	.6562	.688	G15-42	G17-42	G16-42	G18-42
44	.6875	.719	G15-44	G17-44	G16-44	G18-44
46	.7187	.750	G15-46	G17-46	G16-46	G18-46
48	.7500	.781	G15-48	G17-48	G16-48	G18-48
50	.7812	.813	G15-50	G17-50	G16-50	G18-50
55	.8593	.891	G15-55	G17-55	G16-55	G18-55
56	.8750	.906	G15-56	G17-56	G16-56	G18-56
60	.9375	.969	G15-60	G17-60	G16-60	G18-60
64	1.0000	1.031	G15-64	G17-64	G16-64	G18-64
65	1.0156	1.047	G15-65	G17-65	G16-65	G18-65
70	1.0937	1.125	G15-70	G17-70	G16-70	G18-70
72	1.1250	1.156	G15-72	G17-72	G16-72	G18-72
75	1.1718	1.203	G15-75	G17-75	G16-75	G18-75
80	1.2500	1.281	G15-80	G17-80	G16-80	G18-80
84	1.3125	1.344	G15-84	G17-84	G16-84	G18-84
85	1.3281	1.359	G15-85	G17-85	G16-85	G18-85
88	1.3750	1.406	G15-88	G17-88	G16-88	G18-88
90	1.4062	1.438	G15-90	G17-90	G16-90	G18-90
92	1.4375	1.469	G15-92	G17-92	G16-92	G18-92
95	1.4843	1.516	G15-95	G17-95	G16-95	G18-95
96	1.5000	1.531	G15-96	G17-96	G16-96	G18-96
100	1.5625	1.594	G15-100	G17-100	G16-100	G18-100
104	1.6250	1.656	G15-104	G17-104	G16-104	G18-104
105	1.6406	1.672	G15-105	G17-105	G16-105	G18-105
112	1.7500	1.781	G15-112	G17-112	G16-112	G18-112
120	1.8750	1.906	G15-120	G17-120	G16-120	G18-120
127	1.9843	2.016	G15-127	G17-127	G16-127	G18-127
128	2.0000	2.031	G15-128	G17-128	G16-128	G18-128
136	2.1250	2.156	G15-136	G17-136	G16-136	G18-136
144	2.2500	2.281	G15-144	G17-144	G16-144	G18-144
152	2.3750	2.406	G15-152	G17-152	G16-152	G18-152
160	2.5000	2.531	G15-160	G17-160	G16-160	G18-160
168	2.6250	2.656	G15-168	G17-168	G16-168	G18-168
176	2.7500	2.781	G15-176	G17-176	G16-176	G18-176
184	2.8750	2.906	G15-184	G17-184	G16-184	G18-184
192	3.0000	3.031	G15-192	G17-192	G16-192	G18-192
200	3.1250	3.156	G15-200	G17-200	G16-200	G18-200
208	3.2500	3.281	G15-208	G17-208	G16-208	G18-208
216	3.3750	3.406	G15-216	G17-216	G16-216	G18-216
224	3.5000	3.531	G15-224	G17-224	G16-224	G18-224
232	3.6250	3.656	G15-232	G17-232	G16-232	G18-232
240	3.7500	3.781	G15-240	G17-240	G16-240	G18-240
248	3.8750	3.906	G15-248	G17-248	G16-248	G18-248
256	4.0000	4.031	G15-256	G17-256	G16-256	G18-256

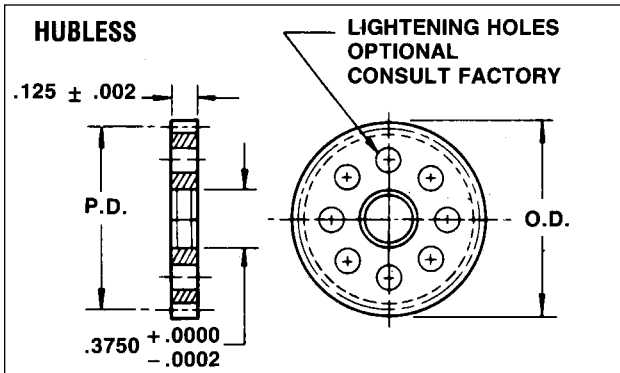
Other Size Bores Available. Consult Factory.

SPUR GEAR-64 PITCH — 1/8" Face Width ■ 20° Pressure Angle

Split Hub — 1/8", 3/16", 1/4" Bores ■ Hubless 3/8" Bore



Dimen.	Bore		
	1/8	3/16	1/4
A	.1248	.1873	.2498
B	1/4	5/16	3/8
E	.188	.250	.312



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Tolerances	Q10	Q12	Q14
Bore (Split Hub)	+0.0005 -0.0000	+0.0003 -0.0000	+0.0002 -0.0000
Pitch Diameter	+0.000 -0.001	+0.0000 -0.0007	+0.0000 -0.0005
Outside Diameter	+0.000 -0.002	+0.0000 -0.0015	+0.000 -0.001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

Gear Data			Stainless Steel Part No. Bore Size				Aluminum Part No. Bore Size			
			Split Hub		Hubless		Split Hub		Hubless	
No. Teeth	P.D.	O.D.	.1248	.1873	.2498	.3750	.1248	.1873	.2498	.3750
19	.2969	.328	H47-19	—	—	—	H48-19	—	—	—
20	.3125	.344	H47-20	—	—	—	H48-20	—	—	—
21	.3281	.359	H47-21	—	—	—	H48-21	—	—	—
22	.3437	.375	H47-22	—	H49-22	—	H48-22	—	—	—
23	.3593	.391	H47-23	H3-23	H49-23	—	H48-23	H4-23	—	—
24	.3750	.406	H47-24	H3-24	H49-24	—	H48-24	H4-24	—	—
25	.3906	.422	H47-25	H3-25	H49-25	—	H48-25	H4-25	—	—
26	.4062	.438	H47-26	H3-26	H49-26	—	H48-26	H4-26	—	—
27	.4218	.453	H47-27	H3-27	H49-27	—	H48-27	H4-27	H50-27	—
28	.4375	.469	H47-28	H3-28	H49-28	—	H48-28	H4-28	H50-28	—
29	.4531	.484	H47-29	H3-29	H49-29	—	H48-29	H4-29	H50-29	—
30	.4687	.500	H47-30	H3-30	H49-30	—	H48-30	H4-30	H50-30	—
32	.5000	.531	H47-32	H3-32	H49-32	—	H48-32	H4-32	H50-32	—
34	.5312	.563	H47-34	H3-34	H49-34	—	H48-34	H4-34	H50-34	—
36	.5625	.594	H47-36	H3-36	H49-36	—	H48-36	H4-36	H50-36	—
38	.5937	.625	H47-38	H3-38	H49-38	J3-38	H48-38	H4-38	H50-38	J4-38
40	.6250	.656	H47-40	H3-40	H49-40	J3-40	H48-40	H4-40	H50-40	J4-40
42	.6562	.688	H47-42	H3-42	H49-42	J3-42	H48-42	H4-42	H50-42	J4-42
44	.6875	.719	H47-44	H3-44	H49-44	J3-44	H48-44	H4-44	H50-44	J4-44
46	.7187	.750	H47-46	H3-46	H49-46	J3-46	H48-46	H4-46	H50-46	J4-46
48	.7500	.781	H47-48	H3-48	H49-48	J3-48	H48-48	H4-48	H50-48	J4-48
50	.7812	.813	H47-50	H3-50	H49-50	J3-50	H48-50	H4-50	H50-50	J4-50
55	.8593	.891	H47-55	H3-55	H49-55	J3-55	H48-55	H4-55	H50-55	J4-55
56	.8750	.906	H47-56	H3-56	H49-56	J3-56	H48-56	H4-56	H50-56	J4-56
60	.9375	.969	H47-60	H3-60	H49-60	J3-60	H48-60	H4-60	H50-60	J4-60
64	1.0000	1.031	H47-64	H3-64	H49-64	J3-64	H48-64	H4-64	H50-64	J4-64
72	1.1250	1.156	H47-72	H3-72	H49-72	J3-72	H48-72	H4-72	H50-72	J4-72
80	1.2500	1.281	H47-80	H3-80	H49-80	J3-80	H48-80	H4-80	H50-80	J4-80
88	1.3750	1.406	H47-88	H3-88	H49-88	J3-88	H48-88	H4-88	H50-88	J4-88
96	1.5000	1.531	H47-96	H3-96	H49-96	J3-96	H48-96	H4-96	H50-96	J4-96
104	1.6250	1.656	H47-104	H3-104	H49-104	J3-104	H48-104	H4-104	H50-104	J4-104
112	1.7500	1.781	H47-112	H3-112	H49-112	J3-112	H48-112	H4-112	H50-112	J4-112
120	1.8750	1.906	H47-120	H3-120	H49-120	J3-120	H48-120	H4-120	H50-120	J4-120
127	1.9843	2.016	—	—	H49-127	J3-127	—	—	H50-127	J4-127
128	2.0000	2.031	—	—	H49-128	J3-128	—	—	H50-128	J4-128
136	2.1250	2.156	—	—	H49-136	J3-136	—	—	H50-136	J4-136
144	2.2500	2.281	—	—	H49-144	J3-144	—	—	H50-144	J4-144
160	2.5000	2.531	—	—	H49-160	J3-160	—	—	H50-160	J4-160
176	2.7500	2.781	—	—	H49-176	J3-176	—	—	H50-176	J4-176
192	3.0000	3.031	—	—	H49-192	J3-192	—	—	H50-192	J4-192
208	3.2500	3.281	—	—	H49-208	J3-208	—	—	H50-208	J4-208
224	3.5000	3.531	—	—	H49-224	J3-224	—	—	H50-224	J4-224
240	3.7500	3.781	—	—	H49-240	J3-240	—	—	H50-240	J4-240

Other Size Bores Available, Consult Factory.

For Gear Hubs See Pages 12-65 & 12-66

To order AGMA 12 Gears, add — Q12 to Part No.
To order AGMA 14 Gears, add — Q14 to Part No.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

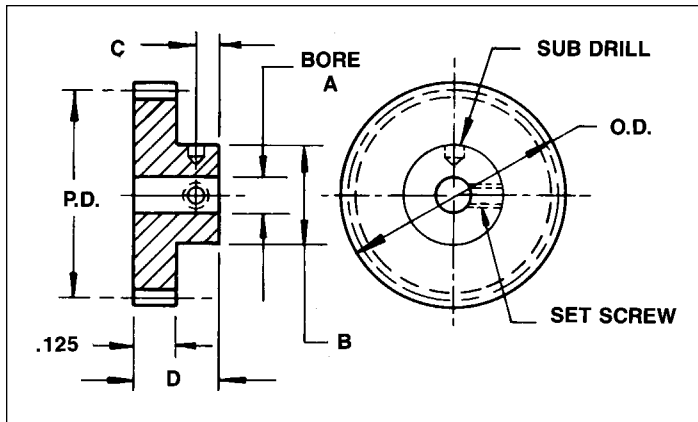
For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.

EXAMPLE:

H49-40 and H49-48 are in the above table. For a 59 Tooth Gear, Specify Part Number H49-59.

SPUR GEAR-72 PITCH — 1/8" Face Width ■ 20° Pressure Angle

Pin Hub — 1/8", 3/16" Bores



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Dimen.	Bore	
	1/8	3/16
A	.1248	.1873
B	.312	.375
C	.09	.11
D	.312	.343
Set Screw	#2-56	#4-40

Tolerances	Q10	Q12	Q14
Bore	+ .0005 - .0000	+ .0003 - .0000	+ .0002 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

To order AGMA 12 Gears, add — Q12 to Part No.
To order AGMA 14 Gears, add — Q14 to Part No.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

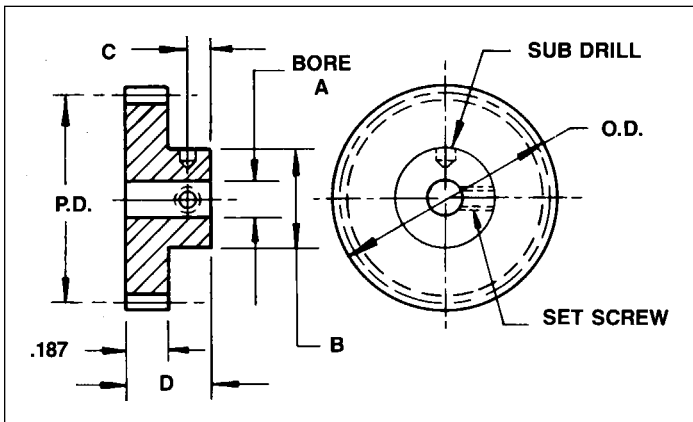
For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.
EXAMPLE: G19-40 and G19-48 are in the above table. For a 59 Tooth Gear, Specify Part Number G19-59.

Gear Data			Stainless Steel Part No. Bore Size		Aluminum Part No. Bore Size	
No. Teeth	P.D.	O.D.	.1248	.1873	.1248	.1873
26	.3610	.389	G19-26	—	G20-26	—
27	.3750	.403	G19-27	—	G20-27	—
28	.3888	.417	G19-28	—	G20-28	—
30	.4166	.444	G19-30	G21-30	G20-30	G22-30
32	.4444	.472	G19-32	G21-32	G20-32	G22-32
34	.4722	.500	G19-34	G21-34	G20-34	G22-34
36	.5000	.528	G19-36	G21-36	G20-36	G22-36
38	.5277	.556	G19-38	G21-38	G20-38	G22-38
40	.5555	.583	G19-40	G21-40	G20-40	G22-40
42	.5833	.611	G19-42	G21-42	G20-42	G22-42
44	.6111	.639	G19-44	G21-44	G20-44	G22-44
45	.6250	.653	G19-45	G21-45	G20-45	G22-45
46	.6388	.667	G19-46	G21-46	G20-46	G22-46
48	.6666	.694	G19-48	G21-48	G20-48	G22-48
50	.6944	.722	G19-50	G21-50	G20-50	G22-50
54	.7500	.778	G19-54	G21-54	G20-54	G22-54
55	.7638	.792	G19-55	G21-55	G20-55	G22-55
56	.7777	.806	G19-56	G21-56	G20-56	G22-56
60	.8333	.861	G19-60	G21-60	G20-60	G22-60
63	.8750	.903	G19-63	G21-63	G20-63	G22-63
64	.8888	.917	G19-64	G21-64	G20-64	G22-64
70	.9722	1.000	G19-70	G21-70	G20-70	G22-70
72	1.0000	1.028	G19-72	G21-72	G20-72	G22-72
75	1.0416	1.069	G19-75	G21-75	G20-75	G22-75
80	1.1111	1.139	G19-80	G21-80	G20-80	G22-80
81	1.1250	1.153	G19-81	G21-81	G20-81	G22-81
84	1.1666	1.194	G19-84	G21-84	G20-84	G22-84
85	1.1805	1.208	G19-85	G21-85	G20-85	G22-85
90	1.2500	1.278	G19-90	G21-90	G20-90	G22-90
92	1.2777	1.306	G19-92	G21-92	G20-92	G22-92
95	1.3194	1.347	G19-95	G21-95	G20-95	G22-95
96	1.3333	1.361	G19-96	G22-96	G20-96	G22-96
99	1.3750	1.403	G19-99	G21-99	G20-99	G22-99
100	1.3888	1.417	G19-100	G21-100	G20-100	G22-100
105	1.4583	1.486	G19-105	G21-105	G20-105	G22-105
108	1.5000	1.528	G19-108	G21-108	G20-108	G22-108
110	1.5277	1.556	G19-110	G21-110	G20-110	G22-110
117	1.6249	1.653	G19-117	G21-117	G20-117	G22-117
120	1.6666	1.694	G19-120	G21-120	G20-120	G22-120
126	1.7499	1.778	G19-126	G21-126	G20-126	G22-126
127	1.7638	1.792	G19-127	G21-127	G20-127	G22-127
130	1.8055	1.833	G19-130	G21-130	G20-130	G22-130
135	1.8749	1.903	G19-135	G21-135	G20-135	G22-135
140	1.9444	1.972	G19-140	G21-140	G20-140	G22-140
144	2.0000	2.028	G19-144	G21-144	G20-144	G22-144
150	2.0833	2.111	G19-150	G21-150	G20-150	G22-150
153	2.1249	2.153	G19-153	G21-153	G20-153	G22-153
160	2.2222	2.250	—	G21-160	—	G22-160
162	2.2499	2.278	—	G21-162	—	G22-162
180	2.5000	2.528	—	G21-180	—	G22-180
198	2.7499	2.778	—	G21-198	—	G22-198
216	3.0000	3.028	—	G21-216	—	G22-216

Other Size Bores Available. Consult Factory.

SPUR GEAR-72 PITCH — 3/16" Face Width ■ 20° Pressure Angle

Pin Hub — 3/16", 1/4" Bores



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Dimen.	Bore	
	3/16	1/4
A	.1873	.2498
B	.375	.500
C	.11	.12
D	.406	.437
Set Screw	#4-40	#6-32

Tolerances	Q10	Q12	Q14
Bore	+ .0005 - .0000	+ .0003 - .0000	+ .0002 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

To order AGMA 12 Gears, add — Q12 to Part No.
To order AGMA 14 Gears, add — Q14 to Part No.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.

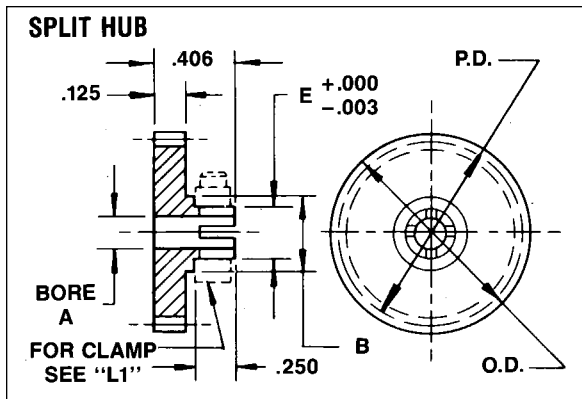
EXAMPLE: G23-40 and G23-48 are in the above table. For a 59 Tooth Gear, Specify Part Number G23-59.

Gear Data			Stainless Steel Part No. Bore Size		Aluminum Part No. Bore Size	
No. Teeth	P.D.	O.D.	.1873	.2498	.1873	.2498
30	.4166	.444	G23-30	—	G24-30	—
32	.4444	.472	G23-32	—	G24-32	—
34	.4722	.500	G23-34	—	G24-34	—
36	.5000	.528	G23-36	—	G24-36	—
38	.5277	.556	G23-38	—	G24-38	—
40	.5555	.583	G23-40	G25-40	G24-40	G26-40
42	.5833	.611	G23-42	G25-42	G24-42	G26-42
44	.6111	.639	G23-44	G25-44	G24-44	G26-44
45	.6250	.653	G23-45	G25-45	G24-45	G26-45
46	.6388	.667	G23-46	G25-46	G24-46	G26-46
48	.6666	.694	G23-48	G25-48	G24-48	G26-48
50	.6944	.722	G23-50	G25-50	G24-50	G26-50
54	.7500	.778	G23-54	G25-54	G24-54	G26-54
55	.7638	.792	G23-55	G25-55	G24-55	G26-55
56	.7777	.806	G23-56	G25-56	G24-56	G26-56
60	.8333	.861	G23-60	G25-60	G24-60	G26-60
63	.8750	.903	G23-63	G25-63	G24-63	G26-63
64	.8888	.917	G23-64	G25-64	G24-64	G26-64
70	.9722	1.000	G23-70	G25-70	G24-70	G26-70
72	1.0000	1.028	G23-72	G25-72	G24-72	G26-72
75	1.0416	1.069	G23-75	G25-75	G24-75	G26-75
80	1.1111	1.139	G23-80	G25-80	G24-80	G26-80
81	1.1250	1.153	G23-81	G25-81	G24-81	G26-81
84	1.1666	1.194	G23-84	G25-84	G24-84	G26-84
85	1.1805	1.208	G23-85	G25-85	G24-85	G26-85
90	1.2500	1.278	G23-90	G25-90	G24-90	G26-90
92	1.2777	1.306	G23-92	G25-92	G24-92	G26-92
95	1.3194	1.347	G23-95	G25-95	G24-95	G26-95
96	1.3333	1.361	G23-96	G25-96	G24-96	G26-96
99	1.3750	1.403	G23-99	G25-99	G24-99	G26-99
100	1.3888	1.417	G23-100	G25-100	G24-100	G26-100
105	1.4583	1.486	G23-105	G25-105	G24-105	G26-105
108	1.5000	1.528	G23-108	G25-108	G24-108	G26-108
110	1.5277	1.556	G23-110	G25-110	G24-110	G26-110
117	1.6249	1.653	G23-117	G25-117	G24-117	G26-117
120	1.6666	1.694	G23-120	G25-120	G24-120	G26-120
126	1.7499	1.778	G23-126	G25-126	G24-126	G26-126
127	1.7638	1.792	G23-127	G25-127	G24-127	G26-127
130	1.8055	1.833	G23-130	G25-130	G24-130	G26-130
135	1.8749	1.903	G23-135	G25-135	G24-135	G26-135
140	1.9444	1.972	G23-140	G25-140	G24-140	G26-140
144	2.0000	2.028	G23-144	G25-144	G24-144	G26-144
150	2.0833	2.111	G23-150	G25-150	G24-150	G26-150
153	2.1249	2.153	G23-153	G25-153	G24-153	G26-153
160	2.2222	2.250	G23-160	G25-160	G24-160	G26-160
162	2.2499	2.278	G23-162	G25-162	G24-162	G26-162
180	2.5000	2.528	G23-180	G25-180	G24-180	G26-180
198	2.7499	2.778	G23-198	G25-198	G24-198	G26-198
216	3.0000	3.028	G23-216	G25-216	G24-216	G26-216
234	3.2500	3.278	G23-234	G25-234	G24-234	G26-234
252	3.5000	3.528	G23-252	G25-252	G24-252	G26-252
270	3.7500	3.778	G23-270	G25-270	G24-270	G26-270
288	4.0000	4.028	G23-288	G25-288	G24-288	G26-288

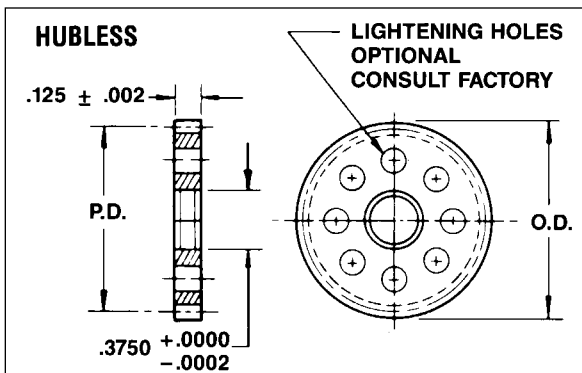
Other Size Bores Available. Consult Factory.

SPUR GEAR-72 PITCH — 1/8" Face Width ■ 20° Pressure Angle

Split Hub — 3/16", 1/4" Bores ■ Hubless 3/8" Bore



Dimen.	Bore	
	3/16	1/4
A	.1873	.2498
B	5/16	3/8
E	.250	.312



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Gear Data			Stainless Steel Part No. Bore Size			Aluminum Part No. Bore Size		
			Split Hub		Hubless	Split Hub		Hubless
No. Teeth	P.D.	O.D.	.1873	.2498	.3750	.1873	.2498	.3750
29	.4027	.431	H5-29	—	—	H6-29	—	—
30	.4166	.444	H5-30	—	—	H6-30	—	—
32	.4444	.472	H5-32	—	—	H6-32	—	—
34	.4722	.500	H5-34	—	—	H6-34	—	—
36	.5000	.528	H5-36	H59-36	—	H6-36	H60-36	—
38	.5277	.556	H5-38	H59-38	—	H6-38	H60-38	—
40	.5555	.583	H5-40	H59-40	—	H6-40	H60-40	—
42	.5833	.611	H5-42	H59-42	—	H6-42	H60-42	—
45	.6250	.653	H5-45	H59-45	J5-45	H6-45	H60-45	J6-45
54	.7500	.778	H5-54	H59-54	J5-54	H6-54	H60-54	J6-54
63	.8750	.903	H5-63	H59-63	J5-63	H6-63	H60-63	J6-63
72	1.0000	1.028	H5-72	H59-72	J5-72	H6-72	H60-72	J6-72
81	1.1250	1.153	H5-81	H59-81	J5-81	H6-81	H60-81	J6-81
90	1.2500	1.278	H5-90	H59-90	J5-90	H6-90	H60-90	J6-90
99	1.3750	1.403	H5-99	H59-99	J5-99	H6-99	H60-99	J6-99
108	1.5000	1.528	H5-108	H59-108	J5-108	H6-108	H60-108	J6-108
117	1.6249	1.653	H5-117	H59-117	J5-117	H6-117	H60-117	J6-117
126	1.7499	1.778	H5-126	H59-126	J5-126	H6-126	H60-126	J6-126
127	1.7683	1.792	H5-127	H59-127	J5-127	H6-127	H60-127	J6-127
135	1.8749	1.903	H5-135	H59-135	J5-135	H6-135	H60-135	J6-135
144	2.0000	2.028	H5-144	H59-144	J5-144	H6-144	H60-144	J6-144
153	2.1249	2.153	H5-153	H59-153	J5-153	H6-153	H60-153	J6-153
162	2.2499	2.278	H5-162	H59-162	J5-162	H6-162	H60-162	J6-162
171	2.3749	2.403	H5-171	H59-171	J5-171	H6-171	H60-171	J6-171
180	2.5000	2.528	H5-180	H59-180	J5-180	H6-180	H60-180	J6-180
189	2.6249	2.653	H5-189	H59-189	J5-189	H6-189	H60-189	J6-189
198	2.7499	2.778	H5-198	H59-198	J5-198	H6-198	H60-198	J6-198
207	2.8750	2.903	H5-207	H59-207	J5-207	H6-207	H60-207	J6-207
216	3.0000	3.028	H5-216	H59-216	J5-216	H6-216	H60-216	J6-216
234	3.2500	3.278	—	—	J5-234	—	—	J6-234
252	3.5000	3.528	—	—	J5-252	—	—	J6-252
270	3.7500	3.778	—	—	J5-270	—	—	J6-270
288	4.0000	4.028	—	—	J5-288	—	—	J6-288
297	4.1250	4.153	—	—	J5-297	—	—	J6-297

Other Size Bores Available, Consult Factory.

For Gear Hubs See Pages 12-65 & 12-66

Tolerances	Q10	Q12	Q14
Bore	+ .0005 - .0000	+ .0003 - .0000	+ .0002 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

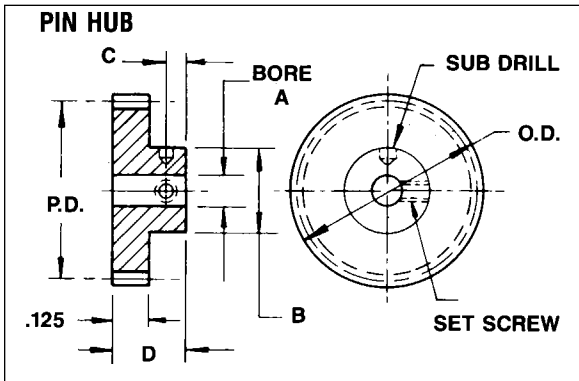
To order AGMA 12 Gears, add — Q12 to Part No.
To order AGMA 14 Gears, add — Q14 to Part No.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

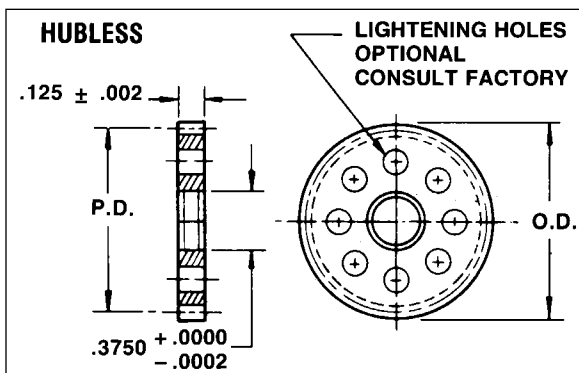
For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.
EXAMPLE: H59-40 and H59-45 are in the above table. For a 59 Tooth Gear, Specify Part Number H59-59.

SPUR GEAR-80 PITCH — 1/8" Face Width ■ 20° Pressure Angle

Pin Hub — 1/8", 3/16" Bores ■ Hubless 3/8" Bore



Dimen.	Bore	
	1/8	3/16
A	.1248	.1873
B	.312	.375
C	.09	.11
D	.312	.343
Set Screw	#2-56	#4-40



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Tolerances	Q10	Q12	Q14
Bore	+ .0005 - .0000	+ .0003 - .0000	+ .0002 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

To order AGMA 12 Gears, add — Q12 to Part No.
To order AGMA 14 Gears, add — Q14 to Part No.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.

EXAMPLE: G47-40 and G47-50 are in the above table. For a 59 Tooth Gear, Specify Part Number G47-59.

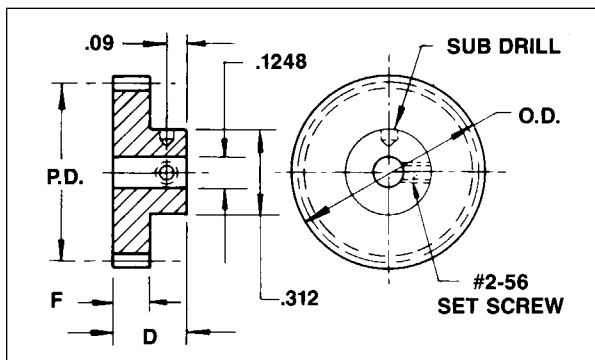
Gear Data			Stainless Steel Part No. Bore Size			Aluminum Part No. Bore Size		
			Pin Hub		Hubless	Pin Hub		Hubless
No. Teeth	P.D.	O.D.	.1248	.1873	.3750	.1248	.1873	.3750
30	.3750	.400	G45-30	—	—	G46-30	—	—
32	.4000	.425	G45-32	—	—	G46-32	—	—
34	.4250	.450	G45-34	—	—	G46-34	—	—
35	.4375	.463	G45-35	—	—	G46-35	—	—
36	.4500	.475	G45-36	—	—	G46-36	—	—
38	.4750	.500	G45-38	G47-38	—	G46-38	G48-38	—
40	.5000	.525	G45-40	G47-40	—	G46-40	G48-40	—
42	.5250	.550	G45-42	G47-42	—	G46-42	G48-42	—
44	.5500	.575	G45-44	G47-44	—	G46-44	G48-44	—
45	.5625	.588	G45-45	G47-45	—	G46-45	G48-45	—
50	.6250	.650	G45-50	G47-50	J25-50	G46-50	G48-50	J26-50
55	.6875	.713	G45-55	G47-55	J25-55	G46-55	G48-55	J26-55
60	.7500	.775	G45-60	G47-60	J25-60	G46-60	G48-60	J26-60
65	.8125	.838	G45-65	G47-65	J25-65	G46-65	G48-65	J26-65
70	.8750	.900	G45-70	G47-70	J25-70	G46-70	G48-70	J26-70
75	.9375	.963	G45-75	G47-75	J25-75	G46-75	G48-75	J26-75
80	1.0000	1.025	G45-80	G47-80	J25-80	G46-80	G48-80	J26-80
85	1.0625	1.088	G45-85	G47-85	J25-85	G46-85	G48-85	J26-85
90	1.1250	1.150	G45-90	G47-90	J25-90	G46-90	G48-90	J26-90
100	1.2500	1.275	G45-100	G47-100	J25-100	G46-100	G48-100	J26-100
110	1.3750	1.400	G45-110	G47-110	J25-110	G46-110	G48-110	J26-110
120	1.5000	1.525	G45-120	G47-120	J25-120	G46-120	G48-120	J26-120
127	1.5875	1.613	G45-127	G47-127	J25-127	G46-127	G48-127	J26-127
130	1.6250	1.650	G45-130	G47-130	J25-130	G46-130	G48-130	J26-130
140	1.7500	1.775	G45-140	G47-140	J25-140	G46-140	G48-140	J26-140
150	1.8750	1.900	—	G47-150	J25-150	—	G48-150	J26-150
160	2.0000	2.025	—	G47-160	J25-160	—	G48-160	J26-160
170	2.1250	2.150	—	G47-170	J25-170	—	G48-170	J26-170
180	2.2500	2.275	—	G47-180	J25-180	—	G48-180	J26-180
190	2.3750	2.400	—	G47-190	J25-190	—	G48-190	J26-190
200	2.5000	2.525	—	G47-200	J25-200	—	G48-200	J26-200
220	2.7500	2.775	—	—	J25-220	—	—	J26-220

Other Size Bores Available, Consult Factory.

For Gear Hubs See Pages 12-65 & 12-66

SPUR GEAR-96 PITCH — 1/16", 3/32", 1/8" Face Width ■ 20° Pressure Angle

Pin Hub — 1/8" Bore



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Dimen.	Face Width		
	1/16	3/32	1/8
D	.250	.281	.312
F	.062	.093	.125

Tolerances	Q10	Q12	Q14
Bore	+ .0005 - .0000	+ .0003 - .0000	+ .0002 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

To order AGMA 12 Gears, add - Q12 to Part No.
To order AGMA 14 Gears, add - Q14 to Part No.

Gear Data			Stainless Steel Part No. Face Width			Aluminum Part No. Face Width		
No. Teeth	P.D.	O.D.	1/16"	3/32"	1/8"	1/16"	3/32"	1/8"
34	.3541	.375	G51-34	G27-34	G29-34	G52-34	G28-34	G30-34
36	.3750	.396	G51-36	G27-36	G29-36	G52-36	G28-36	G30-36
38	.3958	.417	G51-38	G27-38	G29-38	G52-38	G28-38	G30-38
40	.4166	.438	G51-40	G27-40	G29-40	G52-40	G28-40	G30-40
44	.4583	.479	G51-44	G27-44	G29-44	G52-44	G28-44	G30-44
46	.4791	.500	G51-46	G27-46	G29-46	G52-46	G28-46	G30-46
48	.5000	.521	G51-48	G27-48	G29-48	G52-48	G28-48	G30-48
50	.5208	.542	G51-50	G27-50	G29-50	G52-50	G28-50	G30-50
52	.5416	.563	G51-52	G27-52	G29-52	G52-52	G28-52	G30-52
54	.5625	.583	G51-54	G27-54	G29-54	G52-54	G28-54	G30-54
56	.5833	.604	G51-56	G27-56	G29-56	G52-56	G28-56	G30-56
58	.6041	.625	G51-58	G27-58	G29-58	G52-58	G28-58	G30-58
60	.6250	.646	G51-60	G27-60	G29-60	G52-60	G28-60	G30-60
64	.6666	.688	G51-64	G27-64	G29-64	G52-64	G28-64	G30-64
72	.7500	.771	G51-72	G27-72	G29-72	G52-72	G28-72	G30-72
84	.8750	.896	G51-84	G27-84	G29-84	G52-84	G28-84	G30-84
96	1.0000	1.021	G51-96	G27-96	G29-96	G52-96	G28-96	G30-96
100	1.0416	1.063	G51-100	G27-100	G29-100	G52-100	G28-100	G30-100
108	1.1250	1.146	—	G27-108	G29-108	—	G28-108	G30-108
120	1.2500	1.271	—	—	G29-120	—	—	G30-120
127	1.3229	1.344	—	—	G29-127	—	—	G30-127
132	1.3750	1.396	—	—	G29-132	—	—	G30-132
144	1.5000	1.521	—	—	G29-144	—	—	G30-144
156	1.6250	1.646	—	—	G29-156	—	—	G30-156
168	1.7500	1.771	—	—	G29-168	—	—	G30-168
180	1.8750	1.896	—	—	G29-180	—	—	G30-180
192	2.0000	2.021	—	—	G29-192	—	—	G30-192
213	2.2187	2.240	—	—	G29-213	—	—	G30-213

Other Size Bores Available, Consult Factory.

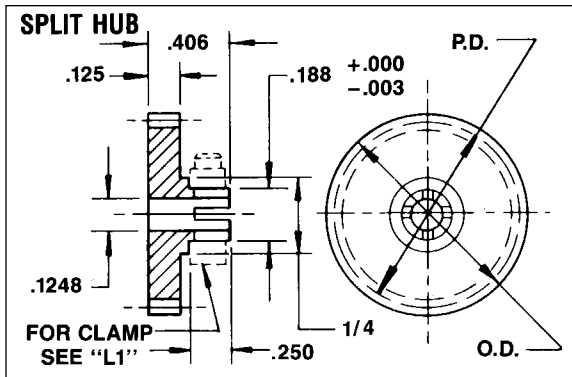
FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.

EXAMPLE: G29-40 and G29-48 are in the above table. For a 59 Tooth Gear, Specify Part Number G29-59.

SPUR GEAR-96 PITCH — 1/8" Face Width ■ 20° Pressure Angle

Split Hub — 1/8" Bore



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Tolerances	Q10	Q12	Q14
Bore	+ .0005 - .0000	+ .0003 - .0000	+ .0002 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

To order AGMA 12 Gears, add — Q12 to Part No.
To order AGMA 14 Gears, add — Q14 to Part No.

Gear Data			Stainless Steel Part No.	Aluminum Part No.
No. Teeth	P.D.	O.D.		
32	.3333	.354	H7-32	H8-32
34	.3541	.375	H7-34	H8-34
35	.3645	.385	H7-35	H8-35
36	.3750	.396	H7-36	H8-36
38	.3958	.417	H7-38	H8-38
40	.4166	.438	H7-40	H8-40
44	.4583	.479	H7-44	H8-44
48	.5000	.521	H7-48	H8-48
50	.5208	.542	H7-50	H8-50
52	.5416	.563	H7-52	H8-52
54	.5625	.583	H7-54	H8-54
56	.5833	.604	H7-56	H8-56
58	.6041	.625	H7-58	H8-58
60	.6250	.646	H7-60	H8-60
64	.6666	.688	H7-64	H8-64
72	.7500	.771	H7-72	H8-72
84	.8750	.896	H7-84	H8-84
96	1.0000	1.021	H7-96	H8-96
100	1.0416	1.063	H7-100	H8-100
108	1.1250	1.146	H7-108	H8-108

Other Size Bores Available, Consult Factory.

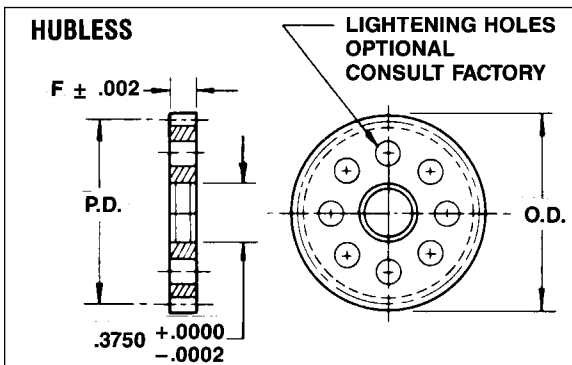
FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.

EXAMPLE: H7-40 and H7-48 are in the above table. For a 59 Tooth Gear, Specify Part Number H7-59.

SPUR GEAR-96 PITCH — 1/16", 1/8" Face Width ■ 20° Pressure Angle

Hubless — 3/8" Bore



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Tolerances	Q10	Q12	Q14
Pitch Diameter	+ .000 - .001	+ .0000 - .0007	+ .0000 - .0005
Outside Diameter	+ .000 - .002	+ .0000 - .0015	+ .000 - .001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

To order AGMA 12 Gears, add — Q12 to Part No.
To order AGMA 14 Gears, add — Q14 to Part No.

Gear Data			Stainless Steel Part No. Face Width		Aluminum Part No. Face Width	
No. Teeth	P.D.	O.D.	1/16"	1/8"	1/16"	1/8"
58	.6041	.625	J27-58	J7-58	J28-58	J8-58
59	.6145	.635	J27-59	J7-59	J28-59	J8-59
60	.6250	.646	J27-60	J7-60	J28-60	J8-60
61	.6354	.656	J27-61	J7-61	J28-61	J8-61
62	.6458	.667	J27-62	J7-62	J28-62	J8-62
63	.6562	.677	J27-63	J7-63	J28-63	J8-63
64	.6666	.688	J27-64	J7-64	J28-64	J8-64
65	.6770	.698	J27-65	J7-65	J28-65	J8-65
66	.6875	.708	J27-66	J7-66	J28-66	J8-66
72	.7500	.771	J27-72	J7-72	J28-72	J8-72
84	.8750	.896	J27-84	J7-84	J28-84	J8-84
96	1.0000	1.021	J27-96	J7-96	J28-96	J8-96
100	1.0416	1.063	J27-100	J7-100	J28-100	J8-100
108	1.1250	1.146	J27-108	J7-108	J28-108	J8-108
116	1.2083	1.229	J27-116	J7-116	J28-116	J8-116
120	1.2500	1.271	J27-120	J7-120	J28-120	J8-120
127	1.3229	1.344	J27-127	J7-127	J28-127	J8-127
132	1.3750	1.396	J27-132	J7-132	J28-132	J8-132
144	1.5000	1.521	J27-144	J7-144	J28-144	J8-144
156	1.6250	1.646	J27-156	J7-156	J28-156	J8-156
168	1.7500	1.771	J27-168	J7-168	J28-168	J8-168
180	1.8750	1.896	J27-180	J7-180	J28-180	J8-180
192	2.0000	2.021	J27-192	J7-192	J28-192	J8-192
216	2.2500	2.271	J27-216	J7-216	J28-216	J8-216
228	2.3750	2.396	J27-228	J7-228	J28-228	J8-228
240	2.5000	2.521	—	J7-240	—	J8-240
264	2.7500	2.771	—	J7-264	—	J8-264
288	3.0000	3.021	—	J7-288	—	J8-288
336	3.5000	3.521	—	J7-336	—	J8-336
384	4.0000	4.021	—	J7-384	—	J8-384

Other Size Bores Available, Consult Factory.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:

For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the gear number.

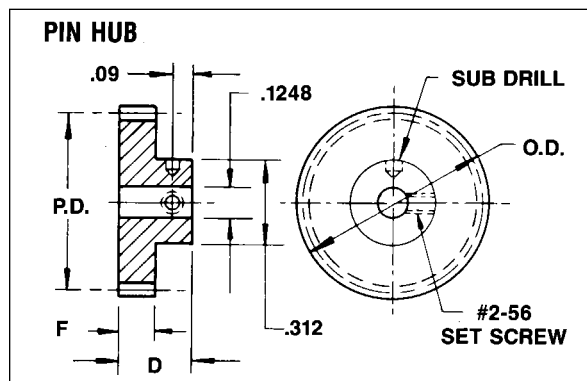
EXAMPLE: J7-58 and J7-66 are in the above table. For a 71 Tooth Gear, Specify Part Number J7-71.

For Gear Hubs See Pages 12-65 & 12-66

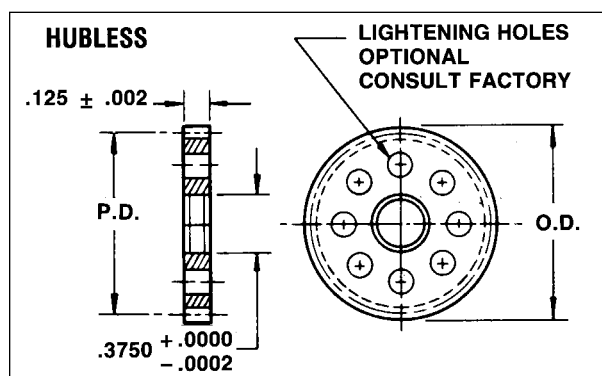
Dimen.	Face Width	
	1/16	1/8
F	.062	.125

SPUR GEAR-120 PITCH — 1/16", 3/32", 1/8" Face Width ■ 20° Pressure Angle

Pin Hub — 1/8" Bore ■ Hubless 3/8" Bore



Dimen.	Face Width	
	1/16	3/32
D	.250	.281
F	.062	.093



Material: 303 Stainless Steel
2024-T4 Aluminum
(Anodized Before Cutting)

Tolerances	Q10	Q12	Q14
Bore	+.0005 -.0000	+.0003 -.0000	+.0002 -.0000
Pitch Diameter	+.000 -.001	+.0000 -.0007	+.0000 -.0005
Outside Diameter	+.000 -.002	+.0000 -.0015	+.000 -.001
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2		
Tooth to Tooth Tolerance			

To order AGMA 12 Gears, add — Q12 to Part No.
To order AGMA 14 Gears, add — Q14 to Part No.

FOR SPECIAL SPUR GEARS ORDER AS FOLLOWS:
For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.
EXAMPLE: G35-42 and G35-48 are in the above table. For a 59 Tooth Gear, Specify Part Number G35-59.

Gear Data			Stainless Steel Part No. Face Width			Aluminum Part No. Face Width		
			Pin Hub		Hubless	Pin Hub		Hubless
No. Teeth	P.D.	O.D.	1/16"	3/32"	1/8"	1/16"	3/32"	1/8"
42	.3500	.367	G55-42	G35-42	—	G56-42	G36-42	—
45	.3750	.392	G55-45	G35-45	—	G56-45	G36-45	—
48	.4000	.417	G55-48	G35-48	—	G56-48	G36-48	—
54	.4500	.467	G55-54	G35-54	—	G56-54	G36-54	—
60	.5000	.517	G55-60	G35-60	—	G56-60	G36-60	—
66	.5500	.567	G55-66	G35-66	—	G56-66	G36-66	—
72	.6000	.617	G55-72	G35-72	J9-72	G56-72	G36-72	J10-72
78	.6500	.667	G55-78	G35-78	J9-78	G56-78	G36-78	J10-78
84	.7000	.717	G55-84	G35-84	J9-84	G56-84	G36-84	J10-84
90	.7500	.767	G55-90	G35-90	J9-90	G56-90	G36-90	J10-90
96	.8000	.817	G55-96	G35-96	J9-96	G56-96	G36-96	J10-96
102	.8500	.867	G55-102	G35-102	J9-102	G56-102	G36-102	J10-102
108	.9000	.917	G55-108	G35-108	J9-108	G56-108	G36-108	J10-108
114	.9500	.967	G55-114	G35-114	J9-114	G56-114	G36-114	J10-114
120	1.0000	1.017	G55-120	G35-120	J9-120	G56-120	G36-120	J10-120
126	1.0500	1.067	G55-126	G35-126	J9-126	G56-126	G36-126	J10-126
127	1.0583	1.075	G55-127	G35-127	J9-127	G56-127	G36-127	J10-127
132	1.1000	1.117	G55-132	G35-132	J9-132	G56-132	G36-132	J10-132
138	1.1500	1.167	—	G35-138	J9-138	—	G36-138	J10-138
144	1.2000	1.217	—	G35-144	J9-144	—	G36-144	J10-144
150	1.2500	1.267	—	G35-150	J9-150	—	G36-150	J10-150
156	1.3000	1.317	—	G35-156	J9-156	—	G36-156	J10-156
162	1.3500	1.367	—	G35-162	J9-162	—	G36-162	J10-162
168	1.4000	1.417	—	—	J9-168	—	—	J10-168
174	1.4500	1.467	—	—	J9-174	—	—	J10-174
180	1.5000	1.517	—	—	J9-180	—	—	J10-180

Other Size Bores Available. Consult Factory.

For Gear Hubs See Pages 12-65 & 12-66