

14-1/2° PRESSURE ANGLE – CATALOG NUMBER / DIMENSIONS

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20° PRESSURE ANGLE – CATALOG NUMBER / DIMENSIONS

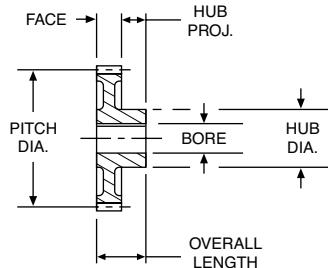
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Spur Gears

48 and 32 Diametral Pitch (Brass)

14-1/2° Pressure Angle (will not operate with 20° spurs)



STANDARD TOLERANCES

DIMENSION	TOLERANCE
BORE	All $\pm .0005$



48 D.P.



32 D.P.

REFERENCE PAGES

Alterations — 322

Lubrication — 322

Materials — 323

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew				
			Dia.	Proj.		Catalog Number	Item Code			
48 DIAMETRAL PITCH										
Face = .125" Outside Dia. = Pitch Dia. + .042" Overall Length = .125" + Hub Proj.										
BRASS										
10	.208	.0935	—	—		G127	09322			
12	.250				A	G129	09324			
14	.292					G130	09326			
15	.312	.125	—	—		G131	09328			
16	.333					G132	09330			
18	.375					G133	09332			
20	.417					G134	09334			
22	.458					G135	09336			
24	.500					G136	09338			
26	.542					G137	09340			
32	.667		.1875	—		G138	09342			
36	.750			—		G139	09344			
40	.833				D	G140	09346			
44	.917					G141	09348			
48	1.000					G142	09350			
54	1.125					G143	09352			
60	1.250					G144	09354			
66	1.375		.250	.50		G145	09356			
72	1.500					G146	09358			
84	1.750					G147	09360			
96	2.000					G148	09362			
100	2.083					G154	09364			
120	2.500		.3125	.62		G149	09366			
144	3.000			.31		G150	09368			
192	4.000					G151	09370			
32 DIAMETRAL PITCH										
Face = .062" Outside Dia. = Pitch Dia. + .062"										
BRASS										
10	.312	.125	—	—		G96	09234			
14	.438					G98	09238			
16	.500				A	G99	09240			
20	.625					G101	09244			
24	.750		.1875	—		G102	09246			
28	.875			—		G103	09248			
32	1.000					G104	09250			
40	1.250					G105	09252			
48	1.500		.250	—		G106	09254			
64	2.000					G110	09256			
80	2.500		.3125	—		G111	09258			
96	3.000					G112	09260			
112	3.500					G113	09262			
128	4.000		.375	—		G114	09264			
Face = .188"										
8	.250					G159	09266			
10	.312		.125	—		G161	09268			
12	.375			—		G163	09270			
14	.438					G165	09272			
15	.469					G166	09274			
16	.500				A	G167	09276			
18	.562					G168	09278			
20	.625					G169	09280			
22	.688		.1875	—		G170	09282			
24	.750			—		G171	09284			
26	.812					G172	09286			
28	.875					G173	09288			
30	.938					G174	09290			
32	1.000					G175	09292			
36	1.125					G176	09294			
40	1.250		.250	—		G177	09296			
44	1.375			—		G178	09298			
48	1.500					G179	09300			
52	1.625					G180	09302			
56	1.750		.3125	—		G181	09304			

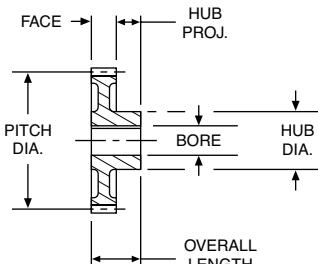
32 and 24 Diametral Pitch (Brass & Steel)

14-1/2° Pressure Angle (will not operate with 20° spurs)

ALL DIMENSIONS IN INCHES

ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew		With Setscrew				
			Dia.	Proj.		Catalog Number	Item Code	Catalog Number	Item Code			
32 DIAMETRAL PITCH												
BRASS												
64	2.000	.3125	.62	.25	B	G182	09306	-	-			
72	2.250			.31	C	G183	09308	-	-			
80	2.500				G184	09310	-	-				
96	3.000				G185	09312	-	-				
112	3.500				G186	09314	-	-				
128	4.000			.75	G187	09316	-	-				
STEEL												
16	.500	.375	.375	.1875	-	S3216	09572	-	-			
20	.625			.250	-	S3220	09574	-	-			
22	.688			.3125	-	S3222	09576	-	-			
24	.750			.375	-	S3224	09578	-	-			
28	.875			.375	-	S3228	09580	-	-			
32	1.000			.375	-	S3232	09582	-	-			
40	1.250			-	-	S3240	09584	-	-			
48	1.500			-	-	S3248	09586	-	-			
56	1.750			-	-	S3256	09588	-	-			
64	2.000			-	-	S3264	09590	-	-			
80	2.500			-	-	S3280	09592	-	-			
96	3.000			-	-	S3296	09594	-	-			
16	.500			.1875	.39	H3216	09536	-	-			
18	.562			.45	.31	H3218	09538	-	-			
20	.625			.250	.52	H3220	09540	-	-			
22	.688			.3125	.58	H3222	09542	-	-			
24	.750			.375	.64	H3224	09544	-	-			
26	.812			.375	.70	H3226	09546	-	-			
28	.875			.375	.75	H3228	09548	-	-			
30	.938			.375	.75	H3230	09550	-	-			
32	1.000			.375	.38	H3232	09552	-	-			
40	1.250	1.00	.375	.88	.38	H3240	09554	-	-			
48	1.500			.88	.38	H3248	09556	-	-			
56	1.750			.88	.38	H3256	09558	-	-			
64	2.000			.88	.38	H3264	09560	-	-			
80	2.500			.88	.38	H3280	09562	-	-			
96	3.000			.88	.38	H3296	09564	-	-			
128	4.000	2.12	.375	.88	.50	H32128	09566	-	-			
160	5.000			2.12	.50	H32160	09568	-	-			
192	6.000			2.12	.50	H32192	09570	-	-			
24 DIAMETRAL PITCH												
BRASS												
12	.500	.3125	.3125	.1875	.38	A	G254	09202	-			
16	.667			.250	.50	G256	09204	-	-			
18	.750			.250	.50	G257	09206	-	-			
24	1.000			.250	.62	B	G258	09208	-			
30	1.250			.250	.62	G259	09210	-	-			
36	1.500			.250	.62	G261	09212	-	-			
42	1.750	2.12	.375	.62	.25	C	G263	09214	-			
48	2.000			.62	.25	G264	09216	-	-			
54	2.250			.62	.25	G265	09218	-	-			
60	2.500			.62	.25	G266	09220	-	-			
66	2.750			.62	.25	G267	09222	-	-			
72	3.000			.62	.25	D	G268	09224	-			
84	3.500	2.12	.375	.75	.31	G269	09226	-	-			
96	4.000			.75	.31	G270	09228	-	-			
120	5.000			.88	.38	G272	09230	-	-			
144	6.000			.88	.38	G274	09232	-	-			



STANDARD TOLERANCES

DIMENSION	TOLERANCE	
	BORE	All
		±.0005



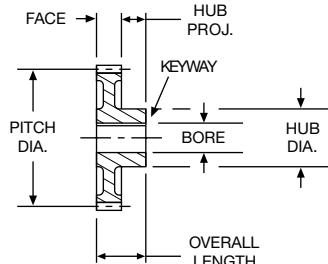
REFERENCE PAGES

- Alterations — 322
- Horsepower Ratings — 50
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49

Spur Gears

24 and 20 Diametral Pitch (Steel)

14-1/2° Pressure Angle (will not operate with 20° spurs)



STANDARD TOLERANCES

DIMENSION	TOLERANCE
BORE	All
	±.0005



REFERENCE PAGES

- Alterations — 322
- Horsepower Ratings — 50, 51
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49

*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.

†H2412 & H2414 have #35 (.110) drilled hole through one wall, no keyway.

‡H2415-H24144 has one setscrew, no keyway.

**NA11B-5/16"-NA14B-5/16" bore has #35 (.110) drilled hole through one wall, no keyway.

††3/8" & 1/2" bores have one setscrew, no keyway.

NA40-5/8" & NA40-3/4" bores have standard keyway at 90° to setscrew. See Page 323.

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew		With Keyway & Setscrew†				
			Dia.	Proj.		Catalog Number	Item Code	Catalog Number	Item Code			
24 DIAMETRAL PITCH												
STEEL												
12	.500	.250	—	—		S2412	09630	—	—			
15	.625	—	—	—		S2415	09632	—	—			
16	.667	.3125	—	—		S2416	09634	—	—			
18	.750	—	—	—		S2418	09636	—	—			
21	.875	.375	—	—		S2421	09638	—	—			
24	1.000	—	—	—		S2424	09640	—	—			
30	1.250	—	—	—		S2430	09642	—	—			
36	1.500	—	—	—		S2436	09644	—	—			
42	1.750	.500	—	—		S2442	09646	—	—			
48	2.000	—	—	—		S2448	09648	—	—			
60	2.500	—	—	—		S2460	09650	—	—			
72	3.000	—	—	—		S2472	09652	—	—			
12	.500	.250	.36	.31	A	—	—	H2412†	09596			
14	.583	—	.46	.31		—	—	H2414†	09598			
15	.625	—	.50	—		—	—	H2415†	09600			
16	.667	.3125	.54	.31		—	—	H2416†	09602			
18	.750	—	.62	.31		—	—	H2418†	09604			
20	.833	—	.70	—		—	—	H2420†	09606			
21	.875	—	.74	.31		—	—	H2421†	09608			
24	1.000	—	.87	—		—	—	H2424†	09610			
30	1.250	—	1.00	—		—	—	H2430†	09612			
36	1.500	—	1.12	—		—	—	H2436†	09614			
42	1.750	—	1.12	—		—	—	H2442†	09616			
48	2.000	—	1.25	—		—	—	H2448†	09618			
60	2.500	—	1.25	—		—	—	H2460†	09620			
72	3.000	—	1.38	—		—	—	H2472†	09622			
96	4.000	—	2.00	—		—	—	H2496†	09624			
120	5.000	.500	2.25	.50		—	—	H24120†	09626			
144	6.000	—	2.25	—		—	—	H24144†	09628			
20 DIAMETRAL PITCH												
STEEL												
11	.600*	—	.46	.38	A	NA11B	09662	NA11B-5/16"	46000			
12	.600	.3125	.46	.38		NA12B	09664	NA12B-5/16"	46001			
13	.650	—	.50	—		NA13B	09666	NA13B-5/16"	46002			
14	.700	—	.56	—		NA14B	09668	NA14B-5/16"	46003			
15	.750	—	.60	—		NA15B	09670	NA15B-3/8††	46004			
16	.800	.375	.66	.38		NA16B	09672	NA16B-3/8††	46005			
18	.900	—	.74	—		NA18B	09674	NA18B-3/8††	46006			
20	1.000	.375	.84	.38		NA20B	09676	NA20B-3/8††	46007			
22	1.100	.375	.82	.38		NA22B	09678	NA22B-3/8††	46009			
24	1.200	.375	.92	.38		NA24	09680	NA24-3/8††	46011			
25	1.250	.375	.97	.38		NA25B	09682	NA25B-3/8††	46013			
28	1.400	.375	1.12	.38		NA28B	09684	NA28B-3/8††	46015			
30	1.500	.375	1.22	.38		NA30B	09686	NA30B-3/8††	46017			
32	1.600	.375	1.32	.50		NA32	09688	NA32-3/8††	46019			
35	1.750	.375	1.47	.50		NA35	09690	NA35-3/8††	46021			
36	1.800	.375	1.52	.50		NA36	09692	NA36-3/8††	46023			
40	2.000	.375	1.72	.50		NA40	09694	NA40-3/8††	46025			
48	2.400	—	1.33	—		NA48A	10208	—	—			
50	2.500	—	1.42	—		NA50A	10210	—	—			
60	3.000	—	1.92	—		NA60A	10212	—	—			
64	3.200	—	2.12	—		NA64A	10214	—	—			

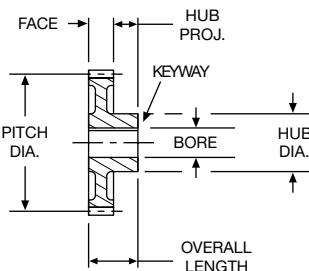
Spur Gears

20 and 16 Diametral Pitch (Cast Iron, Brass & Steel)

14-1/2° Pressure Angle (will not operate with 20° spurs)

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew		With Keyway and Setscrew†				
			Dia.	Proj.		Catalog Number	Item Code	Catalog Number	Item Code			
20 DIAMETRAL PITCH												
CAST IRON												
70	3.500	.375	1.25	.50	B	NA70	10216	-	-			
72	3.600					NA72	10218	-	-			
80	4.000					NA80	10220	-	-			
84	4.200					NA84	10222	-	-			
90	4.500				C	NA90	10224	-	-			
96	4.800					NA96	10226	-	-			
100	5.000					NA100	10228	-	-			
112	5.600				D	NA112	10230	-	-			
120	6.000					NA120	10232	-	-			
140	7.000					NA140	10234	-	-			
144	7.200					NA144	10236	-	-			
160	8.000					NA160	10238	-	-			
180	9.000					NA180	10240	-	-			
200	10.000					NA200B	10242	-	-			
Face = .375" Outside Dia. = Pitch Dia. + .100" Overall Length = .375" + Hub Proj.												
16 DIAMETRAL PITCH												
BRASS												
8	.500	.1875	-	-	A	G226	09168	-	-			
9	.563					G227	09170	-	-			
10	.625					G228	09172	-	-			
12	.750					G229	09174	-	-			
14	.875					G230	09176	-	-			
16	1.000					G231	09178	-	-			
18	1.125					G232	09180	-	-			
20	1.250					G233	09182	-	-			
24	1.500	.3125	-	-	B	G235	09184	-	-			
28	1.750					G236	09186	-	-			
32	2.000					G237	09188	-	-			
40	2.500					G238	09190	-	-			
48	3.000					G239	09192	-	-			
56	3.500					G240	09194	-	-			
64	4.000					G241	09196	-	-			
80	5.000					G242	09198	-	-			
STEEL Face = .500"												
11	.750*	.375	.56	.44	A	NB11B	09704	NB11B-3/8†	46029			
12	.750		.56			NB12B	09706	NB12B-3/8†	46030			
13	.813		.63			NB13B	09708	NB13B-3/8†	46031			
14	.875		.69			NB14B	09710	NB14B-3/8†	46032			
15	.938		.75			NB15B	09712	NB15B-1/2†	46033			
16	1.000	.500	.81	.44		NB16B	09714	NB16B-1/2†	46034			
18	1.125		.94			NB18B	09716	NB18B-1/2†	46035			
20	1.250	.500	.96	.44		NB20B	09718	NB20B-1/2†	46036			
		.625				-	-	NB20B-5/8	46037			
22	1.375	.500	1.08	.44		NB22B	09720	NB22B-1/2†	46038			
		.625				-	-	NB22B-5/8	46039			
24	1.500	.500	1.20	.44		NB24B	09722	NB24B-1/2†	46040			
		.625				-	-	NB24B-5/8	46041			
		.750				-	-	NB24B-3/4	46042			
26	1.625	.500	1.33	.44		NB26B	09724	NB26B-1/2†	46043			
		.625				-	-	NB26B-5/8	46044			
		.750				-	-	NB26B-3/4	46045			
28	1.750	.500	1.45	.50		NB28B	09726	NB28B-1/2†	46046			
		.625				-	-	NB28B-5/8	46047			
		.750				-	-	NB28B-3/4	46048			
		.875				-	-	NB28B-7/8	46049			
30	1.875	.500	1.58	.50		NB30B	09728	NB30B-1/2†	46050			
		.625				-	-	NB30B-5/8	46051			
		.750				-	-	NB30B-3/4	46052			
		.875				-	-	NB30B-7/8	46053			
		1.000				-	-	NB30B-1	46054			



STANDARD TOLERANCES

DIMENSION	TOLERANCE	
	BORE	All
		±.0005



REFERENCE PAGES

Alterations — 322

Horsepower Ratings — 51, 52

Lubrication — 322

Materials — 323

Selection Procedure — 49

*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.

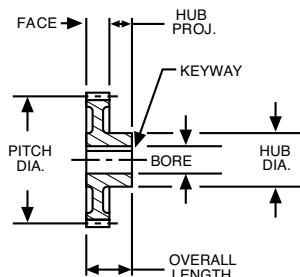
†3/8" and 1/2" bores have one setscrew, no keyway.

5/8" bore and larger have standard keyway at 90° to setscrew. See Page 323.

Spur Gears

16 and 12 Diametral Pitch (Steel, Non-Metallic & Cast Iron)

14-1/2° Pressure Angle (will not operate with 20° spurs)



STANDARD TOLERANCES

DIMENSION	TOLERANCE
BORE	All $\pm .0005$



REFERENCE PAGES

- Alterations — 322
- Horsepower Ratings — 52, 53
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49

*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.

†1/2" bore has one setscrew, no keyway.

5/8" bore and larger have standard keyway at 90° to setscrew. See Page 323.

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew		With Keyway and Setscrew				
			Dia.	Proj.		Catalog Number	Item Code	Catalog Number	Item Code			
16 DIAMETRAL PITCH												
Face = .500" Outside Dia. = Pitch Dia. + .125" Overall Length = .500" + Hub Proj.												
STEEL												
32	2.000	.500 .625 .750 .875 1.000	1.70	.50	A	NB32 — — — — —	09730 — — — — —	NB32-1/2† NB32-5/8 NB32-3/4 NB32-7/8 NB32-1	46055 46056 46057 46058 46059			
36	2.250	.500	1.95	.50		NB36	09732	—	—			
40	2.500	.500	1.69	.50		NB40A	10244	—	—			
48	3.000	.500	2.19	.50		NB48A	10246	—	—			
NON-METALLIC												
16	1.000	.375	.81	.50		QBH16	09014	—	—			
20	1.250		1.06			QBH20	09018	—	—			
24	1.500		1.31	.50		QBH24	09022	—	—			
32	2.000		1.81	.50		QBH32	09024	—	—			
40	2.500		—	—		QB40	09000	—	—			
48	3.000		—	—		QB48	09002	—	—			
64	4.000		—	—		QB64	09006	—	—			
CAST IRON												
54	3.375	.500	1.25	.50		B	NB54	10248	—			
56	3.500	.500	1.25	.50		NB56	10250	—	—			
60	3.750	.500	1.38	.62		NB60	10252	—	—			
64	4.000		1.38			C	NB64	10254	—			
72	4.500		1.38			NB72	10256	—	—			
80	5.000		1.50			NB80	10258	—	—			
84	5.250		1.50			NB84	10260	—	—			
96	6.000		1.50			NB96	10262	—	—			
112	7.000		1.50			NB112	10264	—	—			
120	7.500		1.50			NB120	10266	—	—			
128	8.000		1.50			NB128	10268	—	—			
144	9.000		1.75			D	NB144	10270	—			
160	10.000	.625	1.75	.75		NB160B	10272	—	—			
192	12.000		2.00			NB192B	10274	—	—			
12 DIAMETRAL PITCH												
Face = .750" Outside Dia. = Pitch Dia. + .167" Overall Length = .750" + Hub Proj.												
STEEL												
11	1.000*	.500	.75	.50		A	ND11B	09744	ND11B-1/2†	46060		
12	1.000	.500	.75	.50		ND12B	09746	ND12B-1/2†	46061			
13	1.083	.500	.83	.50		ND13B	09748	ND13B-1/2†	46062			
14	1.167	.500	.92			ND14B	09750	ND14B-1/2†	46063			
15	1.250		1.00			ND15B	09752	ND15B-5/8	46064			
16	1.333	.625	.99	.50		ND16B	09754	ND16B-5/8	46065			
18	1.500		1.15			ND18B	09756	ND18B-5/8	46066			
20	1.667	.625 .750	1.32	.50		ND20B	09758	ND20B-5/8	46067			
						—	—	ND20B-3/4	46068			
21	1.750	.625 .750 .875	1.40	.50		ND21B	09760	ND21B-5/8	46069			
						—	—	ND21B-3/4	46070			
						—	—	ND21B-7/8	46071			
22	1.833	.625 .750 .875 1.000	1.49	.50		ND22B	09762	ND22B-5/8	46072			
						—	—	ND22B-3/4	46073			
						—	—	ND22B-7/8	46074			
						—	—	ND22B-1	46075			
24	2.000	.625 .750 .875 1.000	1.65	.50		ND24B	09764	ND24B-5/8	46076			
						—	—	ND24B-3/4	46077			
						—	—	ND24B-7/8	46078			
						—	—	ND24B-1	46079			
30	2.500		2.15			ND30	09766	—	—			
32	2.667		1.92			ND32A	10276	—	—			
36	3.000		2.25			ND36A	10278	—	—			
40	3.333		2.34			ND40A	10280	—	—			
42	3.500		2.50			ND42A	10282	—	—			

Spur Gears

12 and 10 Diametral Pitch (Steel, Non-Metallic & Cast Iron)

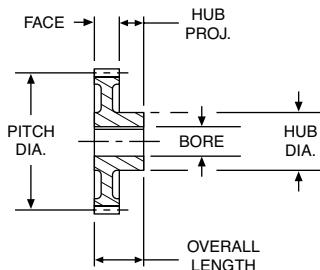
14-1/2° Pressure Angle (will not operate with 20° spurs)

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew		With Keyway and Setscrew†				
			Dia.	Proj.		Catalog Number	Item Code	Catalog Number	Item Code			
Face = .750" 12 DIAMETRAL PITCH												
Outside Dia. = Pitch Dia. + .167" Overall Length = .750" + Hub Proj.												
NON-METALLIC												
15	1.250	.500	1.00	.50	A	QDH15	09038	-	-			
18	1.500		1.25			QDH18	09042	-	-			
21	1.750		1.50			QDH21	09046	-	-			
24	2.000					QDH24	09050	-	-			
30	2.500					QDH30	09052	-	-			
36	3.000					QD36	09026	-	-			
48	4.000					QD48	09030	-	-			
60	5.000	.750	-	-		QD60	09034	-	-			
CAST-IRON												
48	4.000				C	ND48	10284	-	-			
54	4.500					ND54	10286	-	-			
60	5.000					ND60	10288	-	-			
64	5.333					ND64	10290	-	-			
72	6.000					ND72	10292	-	-			
84	7.000					ND84	10294	-	-			
96	8.000				D	ND96	10296	-	-			
108	9.000					ND108	10298	-	-			
112	9.333					ND112	10300	-	-			
120	10.000					ND120	10302	-	-			
144	12.000					ND144	10304	-	-			
168	14.000					ND168	10306	-	-			
Face = 1.000" 10 DIAMETRAL PITCH												
Outside Dia. = Pitch Dia. + .200" Overall Length = 1.000" + Hub Proj.												
STEEL												
11	1.200*	.625	.92	.62	A	NF11B	09778	NF11B-5/8	46080			
12	1.200		.92			NF12B	09780	NF12B-5/8	46081			
14	1.400		1.02			NF14B	09782	NF14B-5/8	46082			
15	1.500					NF15B	09784	NF15B-3/4	46083			
16	1.600					NF16B	09786	NF16B-3/4	46084			
18	1.800					NF18B	09788	NF18B-3/4	46085			
						-	-	NF18B-7/8	46086			
20	2.000					NF20B	09790	NF20B-3/4	46087			
						-	-	NF20B-7/8	46088			
						-	-	NF20B-1	46089			
24	2.400					NF24B	09792	NF24B-3/4	46090			
						-	-	NF24B-7/8	46091			
						-	-	NF24B-1	46092			
25	2.500					NF25	09794	-	-			
28	2.800					NF28A	10310	-	-			
30	3.000					NF30A	10312	-	-			
32	3.200					NF32A	10314	-	-			
35	3.500					NF35A	10316	-	-			
36	3.600					NF36A	10318	-	-			
NON-METALLIC												
15	1.500	.625	1.20	.62	A	QFH15	09062	-	-			
18	1.800		1.50			QFH18	09066	-	-			
20	2.000					QFH20	09068	-	-			
25	2.500					QFH25	09070	-	-			
30	3.000					QFH30	09072	-	-			



A



STANDARD TOLERANCES

DIMENSION	TOLERANCE
BORE	All ±.0005



REFERENCE PAGES

Alterations — 322

Horsepower Ratings — 53, 54

Lubrication — 322

Materials — 323

Selection Procedure — 49

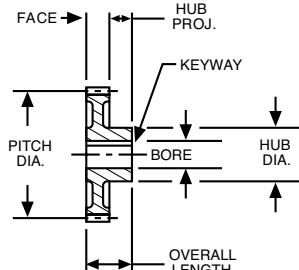
*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.

†All gears have standard keyway at 90° to setscrew. See Page 323.

Spur Gears

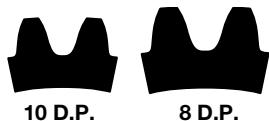
10 and 8 Diametral Pitch (Cast Iron, Steel & Non-Metallic)

14-1/2° Pressure Angle (will not operate with 20° spurs)



STANDARD TOLERANCES

DIMENSION	TOLERANCE
BORE	All $\pm .0005$



REFERENCE PAGES

- Alterations — 322
- Horsepower Ratings — 54, 55
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49

*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.

†All gears have standard keyway, at 90° to setscrew.
See Page 323.

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

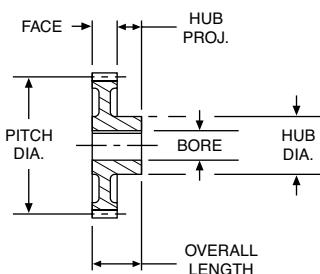
No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew		With Keyway and Setscrew†						
			Dia.	Proj.		Catalog Number	Item Code	Catalog Number	Item Code					
10 DIAMETRAL PITCH														
CAST IRON														
Face = 1.000" Outside Dia. = Pitch Dia. + .200" Overall Length = 1.000" + Hub Proj.														
40 42 45 48 50 54 55 60 64 70	4.000 4.200 4.500 4.800 5.000 5.400 5.500 6.000 6.400 7.000	.875	2.12	.88	B	NF40	10320	-	-					
						NF42	10322	-	-					
						NF45	10324	-	-					
						NF48	10326	-	-					
						NF50	10328	-	-					
					C	NF54	10330	-	-					
						NF55	10332	-	-					
						NF60	10334	-	-					
						NF64	10336	-	-					
						NF70	10338	-	-					
72 80 84 90 96	7.200 8.000 8.400 9.000 9.600	2.25	.88	D	NF72	10340	-	-	-					
						NF80	10342	-	-					
						NF84	10344	-	-					
						NF90	10346	-	-					
						NF96	10348	-	-					
					NF100	10350	-	-	-					
						NF110	10352	-	-					
						NF120	10356	-	-					
						NF140	10358	-	-					
						NF144	10360	-	-					
100 110 120 140 144 160 180	10.000 11.000 12.000 14.000 14.400 16.000 18.000	1.00	2.50	1.00	NF160	10362	-	-	-					
						NF180	10364	-	-					
Face = 1.250" Outside Dia. = Pitch Dia. + .250" Overall Length = 1.250" + Hub Proj.														
8 DIAMETRAL PITCH														
STEEL														
11 12 14 15 16 18 20 22 24 28	1.500* 1.500 1.750 1.875 2.000 .875 2.250 2.750 3.000 3.500	.750 1.000 1.000 1.000 1.000 .875 1.000 1.000 1.000 .875	1.12 1.12 1.31 1.43 1.56 1.81 2.06 2.31 2.06 2.56	.75 .75 .75 .75 .75 .75 .75 .75 .88 .88	A	NH11B	09806	NH11B-3/4	46093					
						NH12B	09808	NH12B-3/4	46094					
						NH14B	09810	NH14B-3/4	46095					
						NH15B	09812	NH15B-7/8	46096					
						NH16B	09814	NH16B-7/8	46097					
						-	-	NH16B-1	46098					
						NH18B	09816	NH18B-7/8	46099					
						-	-	NH18B-1	46100					
						-	-	NH18B-1-1/8	46101					
						NH20B	09818	NH20B-7/8	46102					
30 32	3.750 4.000	1.125 1.000	.75 1.000 1.000 3.00	.75 .75 .88	A	-	-	NH20B-1	46103					
						-	-	NH20B-1-1/8	46104					
						NH22B	09820	NH22B-7/8	46105					
						-	-	NH22B-1	46106					
NON-METALLIC														
16 18 20 24	2.000 2.250 2.500 3.000	.750 1.000 1.000 1.000	1.62 1.88 2.12 2.62	.75 .75 .75 .75	A	QHH16	09082	-	-					
						QHH18	09084	-	-					
						QHH20	09086	-	-					
						QHH24	09088	-	-					
NON-METALLIC														
28	3.500	.875 1.000	2.75 3.00	.75 .88	A	QHH28	09090	-	-					
						-	-	-	-					
						-	-	-	-					
						-	-	-	-					

Spur Gears

8 and 6 Diametral Pitch (Cast Iron & Steel) 14-1/2° Pressure Angle (will not operate with 20° spurs)

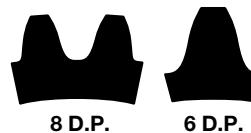
ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew		With Keyway and Setscrew†				
			Dia.	Proj.		Catalog Number	Item Code	Catalog Number	Item Code			
Face = 1.250" 8 DIAMETRAL PITCH												
Outside Dia. = Pitch Dia. + .250" Overall Length = 1.250" + Hub Proj.												
CAST IRON												
36	4.500	1.000	2.50	1.00	B	NH36	10376	-	-			
40	5.000					NH40	10378	-	-			
42	5.250					NH42	10380	-	-			
44	5.500					NH44	10382	-	-			
48	6.000					NH48	10384	-	-			
54	6.750				C	NH54	10386	-	-			
56	7.000					NH56	10388	-	-			
60	7.500					NH60	10390	-	-			
64	8.000					NH64	10392	-	-			
72	9.000					NH72	10394	-	-			
80	10.000	1.125	3.00	1.12	D	NH80	10396	-	-			
84	10.500					NH84	10398	-	-			
88	11.000					NH88	10400	-	-			
96	12.000					NH96	10402	-	-			
112	14.000					NH112	10404	-	-			
120	15.000					NH120	10406	-	-			
128	16.000					NH128	10408	-	-			
144	18.000					NH144	10410	-	-			
160	20.000	1.125	3.25	1.25		NH160B	10412	-	-			
Face = 1.500" 6 DIAMETRAL PITCH												
Outside Dia. = Pitch Dia. + .333" Overall Length = 1.500" + Hub Proj.												
STEEL												
11	2.000*	1.000	1.46	.88	A	NJ11B	09830	NJ11B-1	46108			
12	2.000	1.000	1.79	.88		NJ12B	09832	NJ12B-1	46109			
14	2.333					NJ14B	09834	NJ14B-1	46110			
		1.125	1.96	.88		-	-	NJ14B-1-1/8	46111			
15	2.500					NJ15B	09836	NJ15B-1	46112			
						-	-	NJ15B-1-1/8	46113			
						-	-	NJ15B-1-3/16	46114			
						-	-	NJ15B-1-1/4	46115			
16	2.667	1.000	2.13	.88		NJ16B	09838	NJ16B-1	46116			
						-	-	NJ16B-1-1/8	46117			
						-	-	NJ16B-1-3/16	46118			
						-	-	NJ16B-1-1/4	46119			
18	3.000					NJ18B	09840	NJ18B-1	46120			
		1.125	2.46	.88		-	-	NJ18B-1-1/8	46121			
						-	-	NJ18B-1-3/16	46122			
						-	-	NJ18B-1-1/4	46123			
20	3.333					NJ20	09842	NJ20-1	46124			
		1.125	2.79	.88		-	-	NJ20-1-1/8	46125			
						-	-	NJ20-1-3/16	46126			
						-	-	NJ20-1-1/4	46127			
21	3.500	1.000	2.96	.88		NJ21B	09844	-	-			
24	4.000	1.125	3.00	.88		NJ24A	10414	-	-			
27	4.500					NJ27A	10416	-	-			
30	5.000					NJ30A	10418	-	-			



STANDARD TOLERANCES

DIMENSION	TOLERANCE
BORE	All ±.0005



REFERENCE PAGES

- Alterations — 322
- Horsepower Ratings — 55, 56
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49

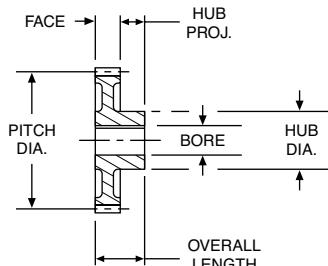
*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.

†All gears have standard keyway, at 90° to setscrew. See Page 323.

Spur Gears

6 and 5 Diametral Pitch (Steel & Cast Iron)

14-1/2° Pressure Angle (will not operate with 20° spurs)



STANDARD TOLERANCES

DIMENSION	TOLERANCE
BORE	All $\pm .0005$



REFERENCE PAGES

- Alterations — 322
- Horsepower Ratings — 56
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew				
			Dia.	Proj.		Catalog Number	Item Code			
6 DIAMETRAL PITCH										
Face = 1.500" Outside Dia. = Pitch Dia. + .333" Overall Length = 1.500" + Hub Proj.										
CAST IRON										
32	5.333				B	NJ32	10420			
33	5.500					NJ33	10422			
36	6.000					NJ36	10424			
40	6.667	1.125	2.50	1.00		NJ40	10426			
42	7.000				C	NJ42	10428			
48	8.000					NJ48	10430			
54	9.000					NJ54	10432			
60	10.000					NJ60	10434			
64	10.667					NJ64	10436			
66	11.000					NJ66	10438			
72	12.000					NJ72	10440			
84	14.000					NJ84	10442			
96	16.000					NJ96	10444			
108	18.000					NJ108	10446			
120	20.000					NJ120B	10448			
144	24.000					NJ144B	10452			
Face = 1.750" Outside Dia. = Pitch Dia. + .400" Overall Length = 1.750" + Hub Proj.										
5 DIAMETRAL PITCH										
STEEL										
11	2.400*		1.78			NK11B	09846			
12	2.400		1.78			NK12B	09848			
14	2.800		2.18			NK14B	09850			
15	3.000	1.0625	2.38			NK15B	09852			
16	3.200		2.58			NK16B	09854			
18	3.600		2.98			NK18B	09856			
20	4.000		3.38			NK20B	09858			
CAST IRON										
24	4.800				A	NK24B	10454			
25	5.000	1.0625	3.00	1.25		NK25B	10456			
30	6.000					NK30B	10458			
35	7.000					NK35B	10460			
40	8.000	1.1875	3.00	1.25		NK40B	10462			
45	9.000					NK45B	10464			
50	10.000					NK50B	10466			
55	11.000					NK55B	10468			
60	12.000	1.1875	3.50	1.25		NK60B	10470			
70	14.000					NK70B	10472			
80	16.000					NK80B	10474			
100	20.000	1.3125	3.75	1.50		NK100B	10478			

*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.

Spur Gears

4 and 3 Diametral Pitch (Steel & Cast Iron)

14-1/2° Pressure Angle (will not operate with 20° spurs)

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

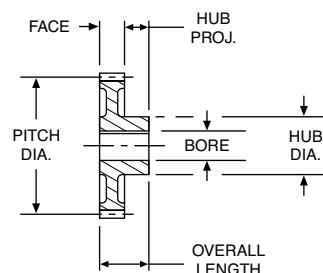
No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew				
			Dia.	Proj.		Catalog Number	Item Code			
4 DIAMETRAL PITCH										
STEEL										
11	3.000*		2.27			NL11B	09860			
12	3.000		2.27			NL12B	09862			
14	3.500		2.77			NL14B	09864			
15	3.750		3.02			NL15B	09866			
16	4.000		3.27			NL16B	09868			
18	4.500		3.77			NL18B	09870			
20	5.000		4.27			NL20B	09872			
22	5.500		4.77			NL22B	09874			
CAST IRON										
24	6.000	1.125			A	NL24B	10484			
28	7.000					NL28B	10486			
30	7.500		3.50		B	NL30	10488			
32	8.000					NL32B	10490			
36	9.000					NL36B	10492			
40	10.000					NL40B	10494			
42	10.500					NL42	10496			
44	11.000	1.250				NL44B	10498			
48	12.000					NL48B	10500			
54	13.500					NL54	10502			
56	14.000					NL56B	10504			
60	15.000					NL60	10506			
64	16.000					NL64B	10508			
72	18.000					NL72B	10510			
80	20.000					NL80B	10512			
84	21.000					NL84	10514			
88	22.000	1.375	4.50	1.50		NL88B	10516			
96	24.000					NL96B	10518			
3 DIAMETRAL PITCH										
STEEL										
11	4.000*					NO11B†	09876			
12	4.000					NO12B†	09878			
14	4.667					NO14B	09880			
15	5.000					NO15B	09882			
16	5.333					NO16B	09884			
18	6.000					NO18B	09886			
20	6.667					NO20	09888			
21	7.000					NO21B	09890			
CAST IRON										
24	8.000		4.50	1.25		NO24B	10524			
30	10.000	1.4375				NO30B	10526			
36	12.000		5.25			NO36B	10528			
42	14.000					NO42	10530			
48	16.000					NO48B	10532			
54	18.000	1.5625	5.25	1.75		NO54	10534			
60	20.000					NO60B	10536			
72	24.000	1.6875	5.50			NO72B	10538			
84	28.000		5.75			NO84B	10540			
96	32.000	1.9375	5.75	1.75		NO96B	10542			
108	36.000					NO108B	10544			

*Special Pitch Diameter, used for calculating Center Distance only, not Ratio.

†NO11B and NO12B have 4" Face.

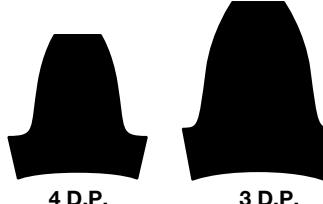


A



STANDARD TOLERANCES

DIMENSION		TOLERANCE
BORE	All	±.0005



REFERENCE PAGES

Alterations — 322

Horsepower Ratings — 56, 57

Lubrication — 322

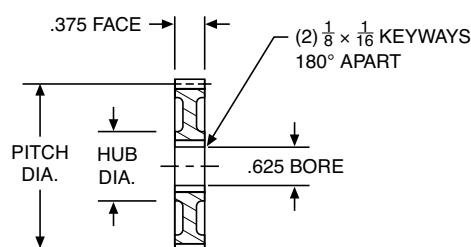
Materials — 323

Selection Procedure — 49

Change Gears

20 Diametral Pitch (Steel & Cast Iron)

14-1/2° Pressure Angle (will not operate with 20° spurs)

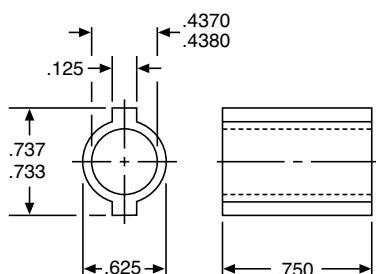


REFERENCE PAGES

- Alterations — 322
- Horsepower Ratings — 51
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49

COMPOUND STEEL BUSHINGS

These steel bushings have 2 keys, 180° apart and fit bores of GA series change gears with a slip fit. They are used to mount two gears on one shaft (or stud) and drive one from the other.



ORDER BY CATALOG NUMBER OR ITEM CODE

CATALOG NO.	ITEM CODE
GAB20A	18500

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Hub Dia.	Catalog Number	Item Code	No. of Teeth	Pitch Dia.	Hub Dia.	Catalog Number	Item Code
20 DIAMETRAL PITCH									
Outside Dia. = Pitch Dia. +.100"									
STEEL									CAST IRON
20	1.000		GA20	10038	71	3.550		GA71B	10842
21	1.050		GA21	10040	72	3.600		GA72B	10844
22	1.100		GA22	10042	73	3.650		GA73B	10846
23	1.150		GA23	10044	74	3.700		GA74B	10848
24	1.200		GA24	10046	75	3.750		GA75B	10850
25	1.250		GA25	10048	76	3.800		GA76B	10852
26	1.300		GA26	10050	77	3.850		GA77B	10854
27	1.350		GA27	10052	78	3.900		GA78B	10856
28	1.400		GA28	10054	79	3.950		GA79B	10858
29	1.450		GA29	10056	80	4.000		GA80B	10860
30	1.500		GA30	10058	81	4.050		GA81B	10862
31	1.550		GA31	10060	82	4.100		GA82B	10864
32	1.600		GA32	10062	83	4.150		GA83B	10866
33	1.650		GA33	10064	84	4.200		GA84B	10868
34	1.700		GA34	10066	85	4.250		GA85B	10870
35	1.750		GA35	10068	86	4.300		GA86B	10872
36	1.800		GA36	10070	87	4.350		GA87B	10874
37	1.850		GA37	10072	88	4.400		GA88B	10876
38	1.900		GA38	10074	89	4.450		GA89B	10878
39	1.950		GA39	10076	90	4.500		GA90B	10880
40	2.000		GA40	10078	91	4.550		GA91B	10882
41	2.050		GA41	10080	92	4.600		GA92B	10884
42	2.100		GA42	10082	93	4.650		GA93B	10886
43	2.150		GA43	10084	94	4.700		GA94B	10888
44	2.200		GA44	10086	95	4.750		GA95B	10890
45	2.250		GA45	10088	96	4.800		GA96B	10892
46	2.300		GA46	10090	97	4.850		GA97B	10894
47	2.350		GA47	10092	98	4.900		GA98B	10896
48	2.400		GA48	10094	99	4.950		GA99B	10898
49	2.450		GA49	10096	100	5.000		GA100B	10900
50	2.500		GA50	10098	101	5.050		GA101B	10902
CAST IRON									
51	2.550		GA51B	10802	102	5.100		GA102B	10904
52	2.600		GA52B	10804	103	5.150		GA103B	10906
53	2.650		GA53B	10806	104	5.200		GA104B	10908
54	2.700		GA54B	10808	105	5.250		GA105B	10910
55	2.750		GA55B	10810	106	5.300		GA106B	10912
56	2.800		GA56B	10812	107	5.350		GA107B	10914
57	2.850		GA57B	10814	108	5.400		GA108B	10916
58	2.900		GA58B	10816	109	5.450		GA109B	10918
59	2.950		GA59B	10818	110	5.500		GA110B	10920
60	3.000		GA60B	10820	111	5.550		GA111B	10922
61	3.050		GA61B	10822	112	5.600		GA112B	10924
62	3.100		GA62B	10824	113	5.650		GA113B	10926
63	3.150		GA63B	10826	114	5.700		GA114B	10928
64	3.200		GA64B	10828	115	5.750		GA115B	10930
65	3.250		GA65B	10830	116	5.800		GA116B	10932
66	3.300		GA66B	10832	117	5.850		GA117B	10934
67	3.350		GA67B	10834	118	5.900		GA118B	10936
68	3.400		GA68B	10836	119	5.950		GA119A	10938
69	3.450		GA69B	10838	120	6.000		GA120B	10940
70	3.500		GA70B	10840					

Style See Page 323	20 – 78 Teeth – A
	79 – 120 Teeth – C

Change Gears

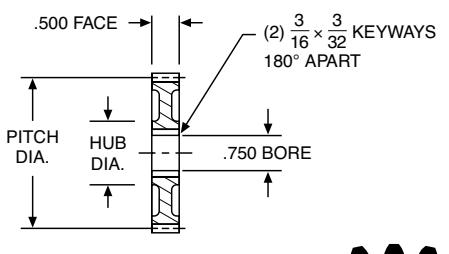
16 Diametral Pitch (Steel & Cast Iron)

14-1/2° Pressure Angle (will not operate with 20° spurs)

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Hub Dia.	Catalog Number	Item Code	No. of Teeth	Pitch Dia.	Hub Dia.	Catalog Number	Item Code
16 DIAMETRAL PITCH									
Outside Dia. = Pitch Dia. + .125"									
STEEL					CAST IRON				
20	1.250		GB20	10100	76	4.750		GB76B	11012
21	1.313		GB21	10102	77	4.813		GB77B	11014
22	1.375		GB22	10104	78	4.875		GB78B	11016
23	1.438		GB23	10106	79	4.938		GB79B	11018
24	1.500		GB24	10108	80	5.000		GB80B	11020
25	1.563		GB25	10110	81	5.063		GB81B	11022
26	1.625		GB26	10112	82	5.125		GB82A	11024
27	1.688		GB27	10114	83	5.188		GB83A	11026
28	1.750		GB28	10116	84	5.250		GB84A	11028
29	1.813		GB29	10118	85	5.313		GB85A	11030
30	1.875		GB30	10120	86	5.375		GB86A	11032
31	1.938		GB31	10122	87	5.438		GB87A	11034
32	2.000		GB32	10124	88	5.500		GB88A	11036
33	2.063		GB33	10126	89	5.563		GB89A	11038
34	2.125		GB34	10128	90	5.625		GB90A	11040
35	2.188		GB35	10130	91	5.688		GB91A	11042
36	2.250		GB36	10132	92	5.750		GB92A	11044
37	2.313		GB37	10134	93	5.813		GB93A	11046
38	2.375		GB38	10136	94	5.875		GB94A	11048
39	2.438		GB39	10138	95	5.938		GB95A	11050
40	2.500		GB40	10140	96	6.000		GB96A	11052
CAST IRON									
41	2.563		GB41B	10942	97	6.063		GB97A	11054
42	2.625		GB42B	10944	98	6.125		GB98A	11056
43	2.688		GB43B	10946	99	6.188		GB99A	11058
44	2.750		GB44B	10948	100	6.250		GB100A	11060
45	2.913		GB45B	10950	101	6.313		GB101A	11062
46	2.875		GB46B	10952	102	6.375		GB102A	11064
47	2.938		GB47B	10954	103	6.438		GB103A	11066
48	3.000		GB48B	10956	104	6.500		GB104A	11068
49	3.063		GB49B	10958	105	6.563		GB105A	11070
50	3.125		GB50B	10960	106	6.625		GB106A	11072
51	3.188		GB51B	10962	107	6.688		GB107A	11074
52	3.250		GB52B	10964	108	6.750		GB108A	11076
53	3.313		GB53B	10966	109	6.913		GB109A	11078
54	3.375		GB54B	10968	110	6.975		GB110A	11080
55	3.438		GB55B	10970	111	6.938		GB111A	11082
56	3.500		GB56B	10972	112	7.000		GB112A	11084
57	3.563		GB57B	10974	113	7.063		GB113A	11086
58	3.625		GB58B	10976	114	7.125		GB114A	11088
59	3.688		GB59B	10978	115	7.188		GB115A	11090
60	3.750		GB60B	10980	116	7.250		GB116A	11092
61	3.813		GB61B	10982	117	7.313		GB117A	11094
62	3.875		GB62B	10984	118	7.375		GB118A	11096
63	3.938		GB63B	10986	119	7.438		GB119A	11098
64	4.000		GB64B	10988	120	7.500		GB120A	11100
65	4.063		GB65B	10990	121	7.563		GB121A	11102
66	4.125		GB66B	10992	122	7.625		GB122A	11104
67	4.188		GB67B	10994	123	7.688		GB123A	11106
68	4.250		GB68B	10996	124	7.750		GB124A	11108
69	4.313		GB69B	10998	125	7.813		GB125A	11110
70	4.375		GB70B	11000	126	7.875		GB126A	11112
71	4.438		GB71B	11002	127	7.938		GB127A	11114
72	4.500		GB72B	11004	128	8.000		GB128A	11116
73	4.563		GB73B	11006					
74	4.625		GB74B	11008					
75	4.688		GB75B	11010					

Style See Page 323	20 - 79 Teeth - A
	80 - 128 Teeth - C



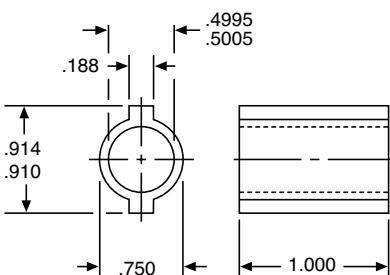
16 D.P.

REFERENCE PAGES

- Alterations — 322
- Horsepower Ratings — 52
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49

COMPOUND STEEL BUSHINGS

These steel bushings have 2 keys, 180° apart and fit bores of GB series change gears with a slip fit. They are used to mount two gears on one shaft (or stud) and drive one from the other.



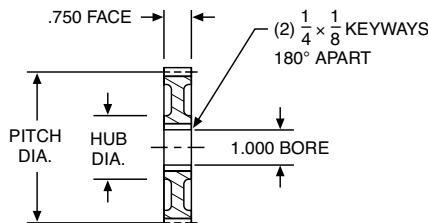
ORDER BY CATALOG NUMBER OR ITEM CODE

CATALOG NO.	ITEM CODE
GBB16A	18502

Change Gears

12 Diametral Pitch (Steel & Cast Iron)

14-1/2° Pressure Angle (will not operate with 20° spurs)



REFERENCE PAGES

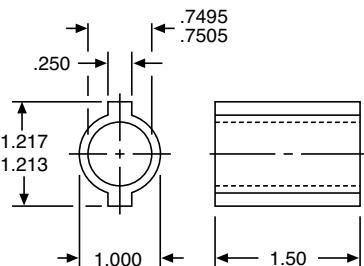
- Alterations — 322
- Horsepower Ratings — 53
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49



12 D.P.

Compound Steel Bushings

These steel bushings have 2 keys, 180° apart and fit bores of GD series change gears with a slip fit. They are used to mount two gears on one shaft (or stud) and drive one from the other.



**ORDER BY CATALOG NUMBER
OR ITEM CODE**

CATALOG NO.	ITEM CODE
GDB12A	18504

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Hub Dia.	Catalog Number	Item Code	No. of Teeth	Pitch Dia.	Hub Dia.	Catalog Number	Item Code
12 DIAMETRAL PITCH									
Outside Dia. = Pitch Dia. +.167"									
STEEL									CAST IRON
20	1.667		GD20	10142	75	6.250		GD75A	11194
21	1.750		GD21	10144	76	6.333		GD76A	11196
22	1.833		GD22	10146	77	6.417		GD77A	11198
23	1.917		GD23	10148	78	6.500		GD78A	11200
24	2.000		GD24	10150	79	6.583		GD79A	11202
25	2.083		GD25	10152	80	6.667		GD80A	11204
26	2.167		GD26	10154	81	6.750		GD81A	11206
27	2.250		GD27	10156	82	6.833		GD82A	11208
28	2.333		GD28	10158	83	6.917		GD83A	11210
29	2.417		GD29	10160	84	7.000		GD84A	11212
30	2.500		GD30	10162	85	7.083		GD85A	11214
31	2.583		GD31	10164	86	7.167		GD86A	11216
32	2.667		GD32	10166	87	7.250		GD87A	11218
33	2.750		GD33	10168	88	7.333		GD88A	11220
34	2.833		GD34	10170	89	7.417		GD89A	11222
35	2.917		GD35	10172	90	7.500		GD90A	11224
36	3.000		GD36	10174	91	7.583		GD91A	11226
CAST IRON									
37	3.083		GD37B	11118	92	7.667		GD92A	11228
38	3.167		GD38B	11120	93	7.750		GD93A	11230
39	3.250		GD39B	11122	94	7.833		GD94A	11232
40	3.333		GD40B	11124	95	7.917		GD95A	11234
41	3.417		GD41B	11126	96	8.000		GD96A	11236
42	3.500		GD42B	11128	97	8.083		GD97A	11238
43	3.583		GD43B	11130	98	8.167		GD98A	11240
44	3.667		GD44B	11132	99	8.250		GD99A	11242
45	3.750		GD45B	11134	100	8.333		GD100A	11244
46	3.833		GD46B	11136	101	8.417		GD101A	11246
47	3.917		GD47B	11138	102	8.500		GD102A	11248
48	4.000		GD48B	11140	103	8.583		GD103A	11250
49	4.083		GD49B	11142	104	8.667		GD104A	11252
50	4.167		GD50B	11144	105	8.750		GD105A	11254
51	4.250		GD51B	11146	106	8.833		GD106A	11256
52	4.333		GD52B	11148	107	8.917		GD107A	11258
53	4.417		GD53B	11150	108	9.000		GD108A	11260
54	4.500		GD54B	11152	109	9.083		GD109A	11262
55	4.583		GD55B	11154	110	9.167		GD110A	11264
56	4.667		GD56B	11156	111	9.250		GD111A	11266
57	4.750		GD57B	11158	112	9.333		GD112A	11268
58	4.833		GD58B	11160	113	9.417		GD113A	11270
59	4.917		GD59B	11162	114	9.500		GD114A	11272
60	5.000		GD60B	11164	115	9.583		GD115A	11274
61	5.083		GD61B	11166	116	9.667		GD116A	11276
62	5.167		GD62B	11168	117	9.750		GD117A	11278
63	5.250		GD63A	11170	118	9.833		GD118A	11280
64	5.333		GD64A	11172	119	9.917		GD119A	11282
65	5.417		GD65A	11174	120	10.000		GD120A	11284
66	5.500		GD66A	11176					
67	5.583		GD67A	11178					
68	5.667		GD68A	11180					
69	5.750		GD69A	11182					
70	5.833		GD70A	11184					
71	5.917		GD71A	11186					
72	6.000		GD72A	11188					
73	6.083		GD73A	11190					
74	6.167		GD74A	11192					

Style See Page 323	20 – 60 Teeth – A 61 – 120 Teeth – C
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Change Gears

10 Diametral Pitch (Steel & Cast Iron)

14-1/2° Pressure Angle (will not operate with 20° spurs)

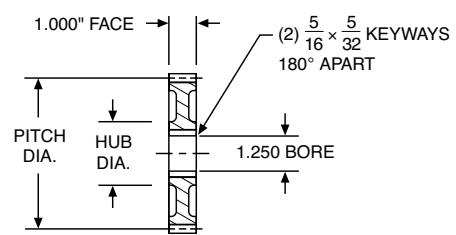
ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Hub Dia.	Catalog Number	Item Code	No. of Teeth	Pitch Dia.	Hub Dia.	Catalog Number	Item Code
10 DIAMETRAL PITCH									
Outside Dia. = Pitch Dia. + .200"									
STEEL					CAST IRON				
20	2.000		GF20	10176	61	6.100		GF61A	11346
21	2.100		GF21	10178	62	6.200		GF62A	11348
22	2.200		GF22	10180	63	6.300		GF63A	11350
23	2.300		GF23	10182	64	6.400		GF64A	11352
24	2.400		GF24	10184	65	6.500		GF65A	11354
25	2.500		GF25	10186	66	6.600		GF66A	11356
26	2.600		GF26	10188	67	6.700		GF67A	11358
27	2.700		GF27	10190	68	6.800		GF68A	11360
28	2.800		GF28	10192	69	6.900		GF69A	11362
29	2.900		GF29	10194	70	7.000		GF70A	11364
30	3.000		GF30	10196	71	7.100		GF71A	11366
CAST IRON									
31	3.100		GF31B	11286	72	7.200		GF72A	11368
32	3.200		GF32B	11288	73	7.300		GF73A	11370
33	3.300		GF33B	11290	74	7.400		GF74A	11372
34	3.400		GF34B	11292	75	7.500		GF75A	11374
35	3.500		GF35B	11294	76	7.600		GF76A	11376
36	3.600		GF36B	11296	77	7.700		GF77A	11378
37	3.700		GF37B	11298	78	7.800		GF78A	11380
38	3.800		GF38B	11300	79	7.900		GF79A	11382
39	3.900		GF39B	11302	80	8.000		GF80A	11384
40	4.000		GF40B	11304	81	8.100		GF81A	11386
41	4.100		GF41B	11306	82	8.200		GF82A	11388
42	4.200		GF42B	11308	83	8.300		GF83A	11390
43	4.300		GF43B	11310	84	8.400		GF84A	11392
44	4.400		GF44B	11312	85	8.500		GF85A	11394
45	4.500		GF45B	11314	86	8.600		GF86A	11396
46	4.600		GF46B	11316	87	8.700		GF87A	11398
47	4.700		GF47B	11318	88	8.800		GF88A	11400
48	4.800		GF48B	11320	89	8.900		GF89A	11402
49	4.900		GF49B	11322	90	9.000		GF90A	11404
50	5.000		GF50B	11324	91	9.100		GF91A	11406
51	5.100		GF51B	11326	92	9.200		GF92A	11408
52	5.200		GF52A	11328	93	9.300		GF93A	11410
53	5.300		GF53A	11330	94	9.400		GF94A	11412
54	5.400		GF54A	11332	95	9.500		GF95A	11414
55	5.500		GF55A	11334	96	9.600		GF96A	11416
56	5.600		GF56A	11336	97	9.700		GF97A	11418
57	5.700		GF57A	11338	98	9.800		GF98A	11420
58	5.800		GF58A	11340	99	9.900		GF99A	11422
59	5.900		GF59A	11342	100	10.000		GF100A	11424

Style See Page 323	20 - 60 Teeth - A 61 - 66 Teeth - B 67 - 100 Teeth - C
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A



REFERENCE PAGES

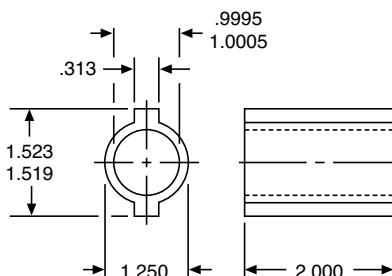
- Alterations — 322
- Horsepower Ratings — 54
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49



10 D.P.

Compound Steel Bushings

These steel bushings have 2 keys, 180° apart and fit bores of GF series change gears with a slip fit. They are used to mount two gears on one shaft (or stud) and drive one from the other.



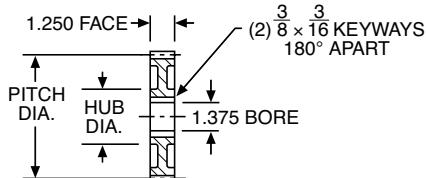
ORDER BY CATALOG NUMBER
OR ITEM CODE

CATALOG NO.	ITEM CODE
GFB10A	18506

Change Gears

8 Diametral Pitch (Steel & Cast Iron)

14-1/2° Pressure Angle (will not operate with 20° spurs)

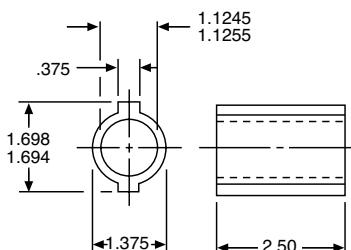


REFERENCE PAGES

- Alterations — 322
- Horsepower Ratings — 55
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49

Compound Steel Bushings

These steel bushings have 2 keys, 180° apart and fit bores of GH series change gears with a slip fit. They are used to mount two gears on one shaft (or stud) and drive one from the other.



**ORDER BY CATALOG NUMBER
OR ITEM CODE**

CATALOG NO.	ITEM CODE
GHB8A	18508

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Hub Dia.	Catalog Number	Item Code	No. of Teeth	Pitch Dia.	Hub Dia.	Catalog Number	Item Code
8 DIAMETRAL PITCH									
<i>Outside Dia. = Pitch Dia. + .250"</i>									
STEEL									CAST IRON
20	2.500	—	GH20	10198	61	7.625		GH61A	11498
21	2.625	—	GH21	10200	62	7.750		GH62A	11500
22	2.750	—	GH22	10202	63	7.875		GH63A	11502
23	2.875	—	GH23	10204	64	8.000		GH64A	11504
24	3.000	—	GH24	10206	65	8.125		GH65A	11506
CAST IRON									
25	3.125		GH25B	11426	66	8.250		GH66A	11508
26	3.250		GH26B	11428	67	8.375		GH67A	11510
27	3.375		GH27B	11430	68	8.500		GH68A	11512
28	3.500		GH28B	11432	69	8.625		GH69A	11514
29	3.625	2.06	GH29B	11434	70	8.750		GH70A	11516
30	3.750		GH30B	11436	71	8.875		GH71A	11518
31	3.875		GH31B	11438	72	9.000		GH72A	11520
32	4.000		GH32B	11440	73	9.125		GH73A	11522
33	4.125		GH33B	11442	74	9.250		GH74A	11524
34	4.250		GH34B	11444	75	9.375		GH75A	11526
35	4.375		GH35B	11446	76	9.500		GH76A	11528
36	4.500		GH36B	11448	77	9.625		GH77A	11530
37	4.625		GH37B	11450	78	9.750		GH78A	11532
38	4.750		GH38B	11452	79	9.875		GH79A	11534
39	4.875		GH39B	11454	80	10.000		GH80A	11536
40	5.000		GH40B	11456	81	10.125		GH81A	11538
41	5.125		GH41A	11458	82	10.250		GH82A	11540
42	5.250		GH42A	11460	83	10.375		GH83A	11542
43	5.375		GH43A	11462	84	10.500		GH84A	11544
44	5.500		GH44A	11464	85	10.625		GH85A	11546
45	5.625		GH45A	11466	86	10.750		GH86A	11548
46	5.750		GH46A	11468	87	10.875		GH87A	11550
47	5.875		GH47A	11470	88	11.000		GH88A	11552
48	6.000		GH48A	11472	89	11.125		GH89A	11554
49	6.125		GH49A	11474	90	11.250		GH90A	11556
50	6.250		GH50A	11476	91	11.375		GH91A	11558
51	6.375		GH51A	11478	92	11.500		GH92A	11560
52	6.500		GH52A	11480	93	11.625		GH93A	11562
53	6.625		GH53A	11482	94	11.750		GH94A	11564
54	6.750		GH54A	11484	95	11.875		GH95A	11566
55	6.875		GH55A	11486	96	12.000		GH96A	11568
56	7.000		GH56A	11488	97	12.125		GH97A	11570
57	7.125		GH57A	11490	98	12.250		GH98A	11572
58	7.250		GH58A	11492	99	12.375		GH99A	11574
59	7.375		GH59A	11494	100	12.500		GH100A	11576
60	7.500		GH60A	11496					

Style	20 – 49 Teeth – A
See	50 – 57 Teeth – B
Page	58 – 68 Teeth – C
323	69 – 100 Teeth – D

Stem Pinions

20 through 6 Diametral Pitch (Steel)

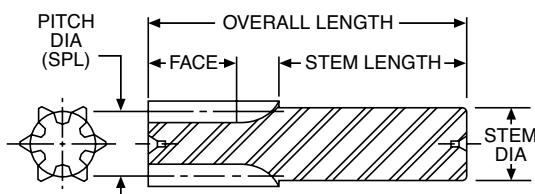
14-1/2° Pressure Angle (will not operate with 20° spurs)

Boston Gear Stem Pinions feature small numbers of teeth cut integral on a steel shaft. Undercutting of the teeth is minimized by the use of special enlarged Pitch Diameters. When run with standard stock spur gears, they provide high ratios not normally found in spur gear drives. They are not intended to be operated with each other, with internal gears or with 11 tooth pinions, but will run satisfactorily with all other standard 14½° Pressure Angle spur gears.

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.*	Stem Dia.	Stem Length	Overall Length	Catalog Number	Item Code
20 DIAMETRAL PITCH						
FACE = 1.125"						
5	.287	.375	2.875	4.500	NAR5	09654
6	.335	.375	2.875	4.500	NAR6	09656
8	.430	.500	3.375	5.000	NAR8	09658
10	.525	.625	3.375	5.000	NAR10	09660
16 DIAMETRAL PITCH						
FACE = 1.375"						
5	.359	.4375	3.125	5.000	NBR5	09696
6	.419	.500	3.125	5.000	NBR6	09698
8	.537	.625	3.375	5.250	NBR8	09700
10	.656	.750	3.375	5.250	NBR10	09702
12 DIAMETRAL PITCH						
FACE = 2.000"						
5	.479	.625	4.375	7.250	NDR5	09734
6	.558	.625	4.375	7.250	NDR6	09736
7	.637	.750	4.375	7.250	NDR7	09738
8	.716	.875	4.375	7.250	NDR8	09740
10	.875	1.000	4.375	7.250	NDR10	09742
10 DIAMETRAL PITCH						
FACE = 2.250"						
5	.575	.750	4.375	7.500	NFR5	09768
6	.670	.750	4.375	7.500	NFR6	09770
7	.765	.875	4.375	7.500	NFR7	09772
8	.860	1.000	4.375	7.500	NFR8	09774
10	1.050	1.125	4.375	7.500	NFR10	09776
8 DIAMETRAL PITCH						
FACE = 2.500"						
5	.718	.875	4.375	7.750	NHR5	09796
6	.837	1.000	4.375	7.750	NHR6	09798
7	.956	1.125	4.375	7.750	NHR7	09800
8	1.075	1.125	4.375	7.750	NHR8	09802
10	1.312	1.500	4.375	7.750	NHR10	09804
6 DIAMETRAL PITCH						
FACE = 3.000"						
5	.958	1.250	4.375	8.500	NJR5	09822
6	1.116	1.375	4.375	8.500	NJR6	09824
8	1.433	1.625	5.000	9.000	NJR8	09826
10	1.750	2.000	5.375	9.500	NJR10	09828

*Used for calculating Center Distance, not ratio.



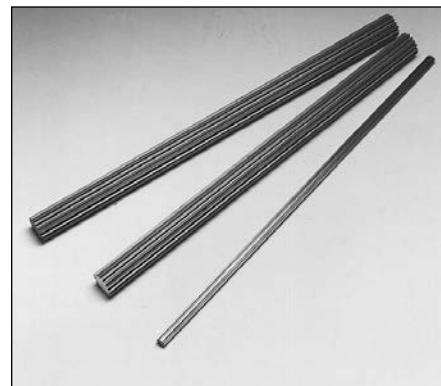
STANDARD TOLERANCES

DIMENSION		TOLERANCE
STEM DIA.	All	+ .0000 - .0015
STEM DIA.	All	+ .0000 - .0015

Drawn Pinion Wire

48, 32 and 24 Diametral Pitch (Brass & Steel)

14-1/2° Pressure Angle (will not operate with 20° spurs)



Drawn Pinion Wire, teeth not generated.
All Pinion Wire is stocked in 4 foot pieces.
Other lengths can be furnished on
special order. Price on application.

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Catalog Number	Item Code
48 DIAMETRAL PITCH			
BRASS			
6	.125	G24	36900
8	.167	G25	36902
9	.188	G26	36904
10	.208	G27	36906
12	.250	G29	36908
14	.292	G30	36910
15	.312	G31	36912
16	.333	G32	36914
18	.375	G33	36916
STEEL			
6	.125	GS24	36954
8	.167	GS25	36956
9	.188	GS26	36958
10	.208	GS27	36960
12	.250	GS29	36962
14	.292	GS30	36964
15	.312	GS31	36966
16	.333	GS32	36968
18	.375	GS33	36970
32 DIAMETRAL PITCH			
BRASS			
6	.188	G39	36918
8	.250	G40	36920
9	.281	G41	36922
10	.312	G42	36924
11	.344	G43	36926
12	.375	G44	36928
14	.438	G45	36930
15	.469	G46	36932
16	.500	G47	36934
STEEL			
6	.188	GS39	36972
8	.250	GS40	36974
9	.281	GS41	36976
10	.312	GS42	36978
11	.344	GS43	36980
12	.375	GS44	36982
14	.438	GS45	36984
15	.469	GS46	36986
16	.500	GS47	36988
24 DIAMETRAL PITCH			
BRASS			
6	.250	G54	36936
9	.375	G56	36940
10	.417	G57	36942
12	.500	G59	36946
14	.583	G60	36948
15	.625	G61	36950
16	.667	G62	36952
STEEL			
6	.250	GS54	36990
8	.333	GS55	36992
9	.375	GS56	36994
10	.417	GS57	36996
11	.458	GS58	36998
12	.500	GS59	37000
14	.583	GS60	37002
15	.625	GS61	37004
16	.667	GS62	37006

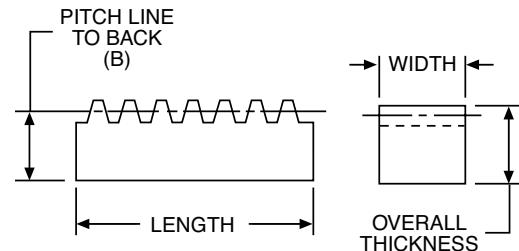
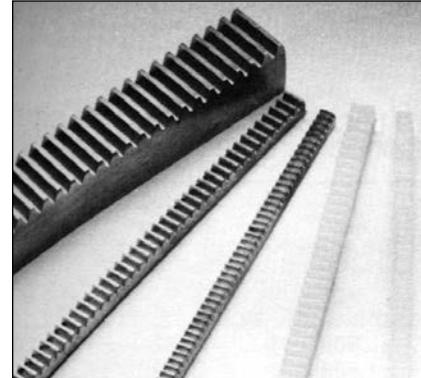
48 through 3 Diametral Pitch (Nylon & Steel)

14-1/2° Pressure Angle (will not operate with 20° spurs)

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

Overall Thickness	Pitch Line to Back (B)	Nominal Length (Feet)	Mating Spur Gear Page #	Nylon		Steel	
				Catalog Number	Item Code	Catalog Number	Item Code
48 DIAMETRAL PITCH FACE WIDTH = .125"							
.125	.104	1 2	18	GP586-1 —	53899 —	— L501-2	— 12726
32 DIAMETRAL PITCH FACE WIDTH = .188"							
.188	.156	1 2 4	18, 19	GP583-1 — —	53900 — —	L503-2 L503-4	12728 12730
24 DIAMETRAL PITCH FACE WIDTH = .250"							
.250	.208	1 2 4	19, 20	GP579-1 — —	53901 — —	L505-2 L505-4	12732 12734
20 DIAMETRAL PITCH FACE WIDTH = .375"							
.375	.325	2 4 6	20, 21	— — —	— — —	L509-2 L509-4 L509-6	12736 12738 12740
16 DIAMETRAL PITCH FACE WIDTH = .313"							
.312	.250	2 4	21, 22	— —	— —	L510-2 L510-4	12742 12744
.500	.438	4 6		— —	— —	L512-4 L512-6	12746 12748
12 DIAMETRAL PITCH FACE WIDTH = .750"							
.500	.417	4 6	22, 23	— —	— —	L514-4 L514-6	12750 12752
.750	.667	4 6		— —	— —	L515-4 L515-6	12754 12756
10 DIAMETRAL PITCH FACE WIDTH = 1.000"							
.625	.525	4 6	23, 24	— —	— —	L516-4 L516-6	37324 37326
1.000	.900	4 6		— —	— —	L517-4 L517-6	37328 37330
8 DIAMETRAL PITCH FACE WIDTH = 1.250"							
.750	.625	4 6	24, 25	— —	— —	L518-4 L518-6	37332 37334
1.250	1.125	4 6		— —	— —	L519-4 L519-6	37336 37338
6 DIAMETRAL PITCH FACE WIDTH = 1.500"							
1.000	.833	4 6	25, 26	— —	— —	L520-4 L520-6	37340 37342
1.500	1.333	4 6		— —	— —	L521-4 L521-6	37344 37346
5 DIAMETRAL PITCH FACE WIDTH = 1.750"							
1.250	1.050	4 6	26	— —	— —	L522-4 L522-6	37348 37350
4 DIAMETRAL PITCH FACE WIDTH = 2.000"							
1.500	1.250	4 6	27	— —	— —	L523-4 L523-6	37352 37354
3 DIAMETRAL PITCH FACE WIDTH = 3.000"							
1.500	1.167	4 6	27	— —	— —	L524-4 L524-6	37356 37358

*Face Width of L512-4 and L512-6 = 1/2".

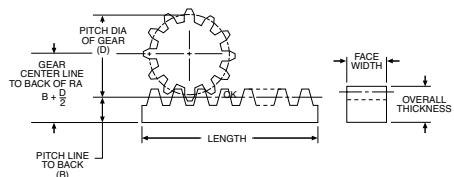


STANDARD TOLERANCES‡

DIMENSION		TOLERANCE
LENGTH†	ALL	+ 1.00 - .000
FACE WIDTH	1/8 - 3/4	+ .000 - .002
	1 - 1-1/2	+ .000 - .003
	1-3/4 - 2	+ .000 - .004
	3	+ .000 - .006

†Ends not machined. Tolerance allows for cutting and matching. Nylon Rack is molded in proper lengths to permit end to end butting without interruption of tooth spacing.

‡Steel only.



REFERENCE PAGES

Alterations — 322

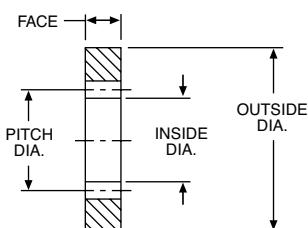
Lubrication — 322

Materials — 323

Internal Gears

48 through 16 Diametral Pitch (Brass)

14-1/2° Pressure Angle (will not operate with 20° spurs)

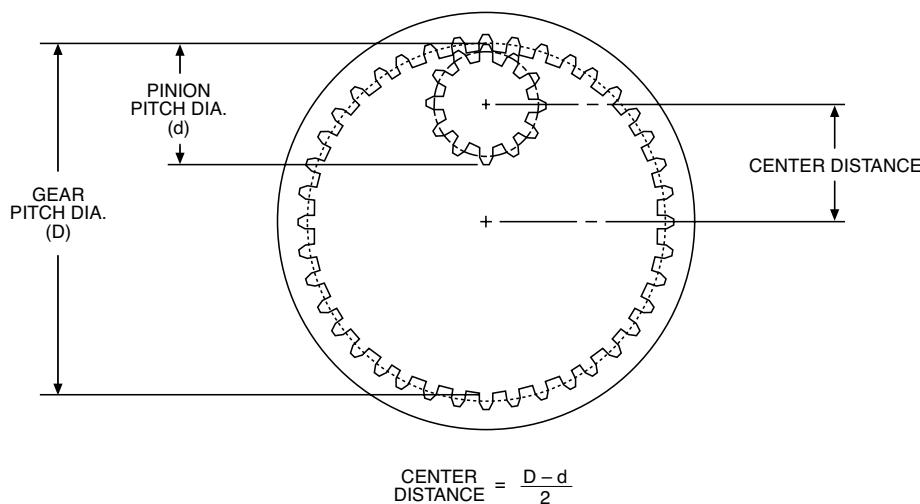


STANDARD TOLERANCES

DIMENSION		TOLERANCE
I.D.	48 Pitch 32 Pitch 24 Pitch 16 Pitch	All All All All
		+.004 -.000 +.005 -.000 +.006 -.000 +.008 -.000
O.D.	All	+.001 + .003

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	O.D.	I.D.	Catalog Number	Item Code
48 DIAMETRAL PITCH					
FACE = .125"					
48	1.000	1.500	.986	G632	12066
72	1.500	2.000	1.486	G633	12068
96	2.000	2.750	1.986	G635	12070
144	3.000	3.750	2.986	G637	12072
32 DIAMETRAL PITCH					
FACE = .188"					
48	1.500	2.000	1.480	G664	12056
64	2.000	2.750	1.980	G666	12058
96	3.000	3.750	2.980	G668	12060
128	4.000	4.750	3.980	G669	12062
192	6.000	6.750	5.980	G670	12064
24 DIAMETRAL PITCH					
FACE = .250"					
36	1.500	2.250	1.474	G675	12046
48	2.000	2.750	1.974	G677	12048
72	3.000	3.750	2.974	G679	12050
96	4.000	4.750	3.974	G680	12052
144	6.000	6.750	5.974	G681	12054
16 DIAMETRAL PITCH					
FACE = .313"					
32	2.000	2.750	1.962	G689	12038
48	3.000	3.750	2.962	G691	12040
64	4.000	4.750	3.962	G692	12042
96	6.000	6.750	5.962	G693	12044



NOTE: The difference in tooth numbers between Gear and Pinion should not be less than 15.

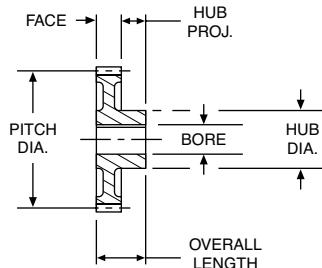
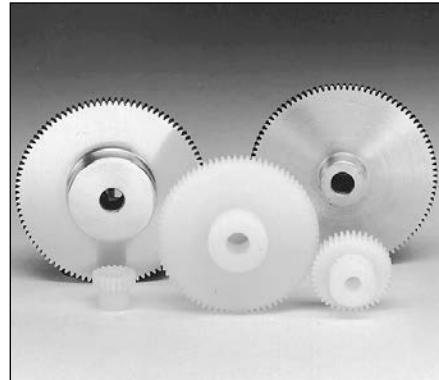
Spur Gears

64 and 48 Diametral Pitch (Delrin & Brass)

20° Pressure Angle (will not operate with 14-1/2° spurs)

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew				
			Dia.	Proj.		Catalog Number	Item Code			
64 DIAMETRAL PITCH										
BRASS										
16	.250		.19			Y6416	09482			
18	.281		.22			Y6418	09484			
20	.312	.125	.25	.19		Y6420	09486			
24	.375		.28			Y6424	09488			
28	.438		.34			Y6428	09490			
32	.500		.38			Y6432	09492			
36	.562		.44			Y6436	09494			
40	.625		.44			Y6440	09496			
44	.688	.1875	.50	.25	A	Y6444	09498			
48	.750		.50			Y6448	09500			
52	.812		.56			Y6452	09502			
56	.875		.56			Y6456	09504			
60	.938		.62			Y6460	09506			
64	1.000		.62			Y6464	09508			
72	1.125		.69			Y6472	09510			
80	1.250		.69			Y6480	09512			
88	1.375	.250	.75	.25		Y6488	09514			
96	1.500		.75			Y6496	09516			
112	1.750		.81			Y64112	09518			
128	2.000		.88			Y64128	09520			
144	2.250	.3125	.75	.31	C	Y64144	09522			
160	2.500		.75			Y64160	09524			
192	3.000		.88			Y64192	09526			
48 DIAMETRAL PITCH										
MOLDED DELRIN										
18	.375		.31			YP4818	53902			
19	.396		.34			YP4819	53903			
20	.417		.38			YP4820	53904			
21	.438		.41			YP4821	53905			
22	.458	.1562	.45			YP4822	53906			
23	.479		.48			YP4823	53907			
24	.500		.50			YP4824	53908			
25	.521					YP4825	53909			
26	.542					YP4826	53910			
27	.562					YP4827	53911			
28	.583					YP4828	53912			
29	.604					YP4829	53913			
30	.625					YP4830	53914			
31	.646					YP4831	53915			
32	.667					YP4832	53916			
33	.688					YP4833	53917			
34	.708					YP4834	53918			
35	.729					YP4835	53919			
36	.750	.1875	.55	.25		YP4836	53920			
37	.771					YP4837	53921			
38	.792					YP4838	53922			
39	.813					YP4839	53923			
40	.833					YP4840	53924			
42	.875					YP4842	53925			



STANDARD TOLERANCES

DIMENSION		TOLERANCE
BORE	All	±.0005



48 D.P.

64 D.P.

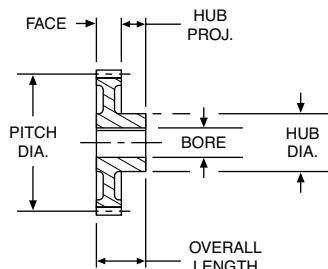
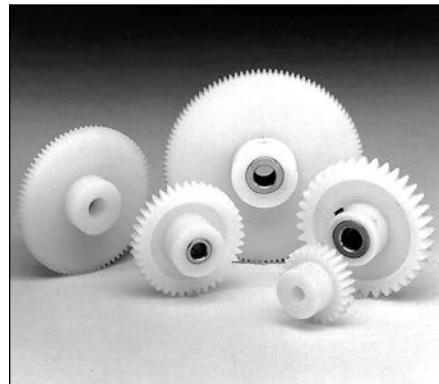
REFERENCE PAGES

Alterations — 322
Lubrication — 322
Materials — 323

Spur Gears

48 Diametral Pitch (Delrin)

20° Pressure Angle (will not operate with 14-1/2° spurs)



STANDARD TOLERANCES*

DIMENSION	TOLERANCE
BORE	All
	+.001 - .000

*Gears with Brass Inserts only.



48 D.P.

REFERENCE PAGES

Alterations — 322
Materials — 323

†All YPB gears have setscrews.

BORE	SETSCREW
1/8	#2-56
3/16	#4-40
1/4	#6-32

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew†				
			Dia.	Proj.		Catalog Number	Item Code			
48 DIAMETRAL PITCH										
Face = .125" Outside Dia. = Pitch Dia. + .042" Overall Length = .125" + Hub Proj.										
MOLDED DELRIN										
44	.917	.188	.55			YP4844	53926			
45	.938					YP4845	53927			
48	1.000					YP4848	53928			
52	1.083					YP4852	53929			
54	1.125					YP4854	53930			
56	1.168					YP4856	53931			
60	1.250					YP4860	53932			
64	1.333					YP4864	53933			
66	1.375					YP4866	53934			
72	1.500					YP4872	53935			
80	1.667					YP4880	53936			
84	1.750					YP4884	53937			
96	2.000					YP4896	53938			
100	2.083					YP48100	53939			
108	2.250					YP48108	53940			
120	2.500					YP48120	53941			
MOLDED DELRIN WITH BRASS INSERTS										
18	.375		.31			YPB4818	53942			
19	.396		.34			YPB4819	53943			
20	.417		.38			YPB4820	53944			
21	.438		.40			YPB4821	53945			
22	.458					YPB4822	53946			
23	.479					YPB4823	53947			
24	.500					YPB4824	53948			
25	.521					YPB4825	53949			
26	.542		.45			YPB4826	53950			
27	.562		.48			YPB4827	53951			
28	.583		.50			YPB4828	53952			
29	.604					YPB4829	53953			
30	.625					YPB4830	53954			
31	.646					YPB4831	53955			
32	.667					YPB4832	53956			
33	.688					YPB4833	53957			
34	.708					YPB4834	53958			
35	.729					YPB4835	53959			
36	.750					YPB4836	53960			
37	.771					YPB4837	53961			
38	.792					YPB4838	53962			
39	.813					YPB4839	53963			
40	.833					YPB4840	53964			
42	.875					YPB4842	53965			
44	.917					YPB4844	53966			
45	.938					YPB4845	53967			
48	1.000					YPB4848	53968			
52	1.083					YPB4852	53969			
54	1.125					YPB4854	53970			
56	1.168					YPB4856	53971			
60	1.250					YPB4860	53972			
64	1.333					YPB4864	53973			
66	1.375		.61			YPB4866	53974			
72	1.500					YPB4872	53975			
80	1.667					YPB4880	53976			
84	1.750					YPB4884	53977			
96	2.000					YPB4896	53978			
100	2.083					YPB48100	53979			
108	2.250					YPB48108	53980			
120	2.500					YPB48120	53981			

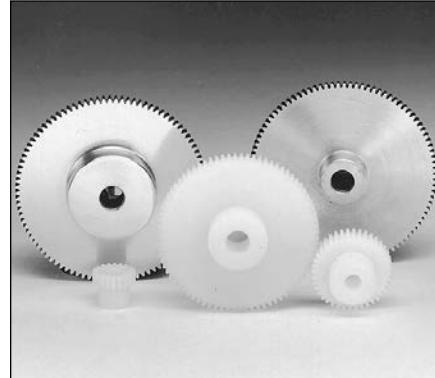
Spur Gears

48 and 32 Diametral Pitch (Delrin & Brass)

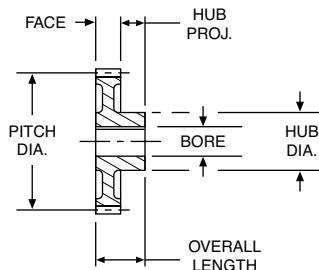
20° Pressure Angle (will not operate with 14-1/2° spurs)

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew				
			Dia.	Proj.		Catalog Number	Item Code			
48 DIAMETRAL PITCH										
BRASS										
12	.250		.18		A	Y4812	09444			
15	.312		.22			Y4815	09446			
18	.375		.28			Y4818	09448			
21	.438		.35			Y4821	09450			
24	.500		.38			Y4824	09452			
27	.562		.44			Y4827	09454			
30	.625		.44			Y4830	09456			
36	.750		.50			Y4836	09458			
42	.875		.57			Y4842	09460			
48	1.000		.63			Y4848	09462			
54	1.125		.69			Y4854	09464			
60	1.250		.69			Y4860	09466			
66	1.375		.75			Y4866	09468			
72	1.500		.75			Y4872	09470			
84	1.750		.82			Y4884	09472			
96	2.000		.88			Y4896	09474			
120	2.500		.75			Y48120	09476			
144	3.000		.88			Y48144	09478			
192	4.000		1.00			Y48192	09480			
32 DIAMETRAL PITCH										
MOLDED DELRIN										
12	.375		.28		A	YP3212	53982			
14	.438		.31			YP3214	53983			
15	.469		.31			YP3215	53984			
16	.500		.34			YP3216	53985			
18	.562					YP3218	53986			
20	.625		.47		A	YP3220	53987			
22	.688		.50			YP3222	53988			
24	.750		.56			YP3224	53989			
26	.812		.50			YP3226	53990			
28	.875		.56			YP3228	53991			
30	.938					YP3230	53992			
32	1.000		.63		B	YP3232	53993			
34	1.062					YP3234	53994			
36	1.125					YP3236	53995			
38	1.187					YP3238	53996			
40	1.250					YP3240	53997			
42	1.312					YP3242	53998			
44	1.375					YP3244	53999			
48	1.500		.63			YP3248	54000			
52	1.625					YP3252	54001			
56	1.750		.67			YP3256	54002			
64	2.000					YP3264	54003			
72	2.250					YP3272	54004			
80	2.500		.81			YP3280	54005			
96	3.000					YP3296	54006			



A



STANDARD TOLERANCES*

DIMENSION		TOLERANCE
BORE	All	±.0005"

*Brass only.



48 D.P.

32 D.P.

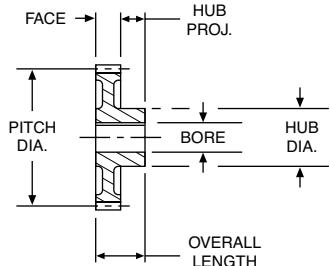
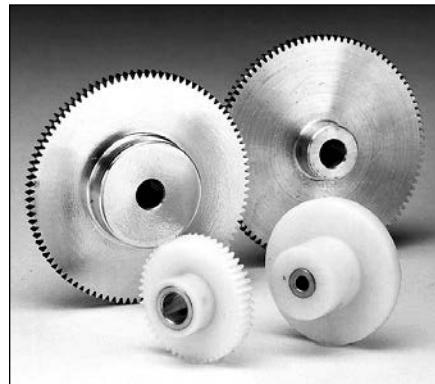
REFERENCE PAGES

Alterations — 322
Lubrication — 322
Materials — 323

Spur Gears

32 Diametral Pitch (Delrin & Brass)

20° Pressure Angle (will not operate with 14-1/2° spurs)



STANDARD TOLERANCES

DIMENSION	TOLERANCE
Brass	
BORE	All $\pm .0005$
Delrin with Brass Inserts	
BORE	All $+.001 - .000$



32 D.P.

REFERENCE PAGES

Alterations — 322
Lubrication — 322
Materials — 323

†All YPB gears have setscrew and spot drill.

BORE	SETScrew
1/8	#2-56
3/16	#4-40
1/4	#6-32
5/16	#8-32

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew†				
			Dia.	Proj.		Catalog Number	Item Code			
32 DIAMETRAL PITCH										
MOLDED DELRIN with BRASS INSERTS										
12	.375		.28			YPB3212	54007			
14	.438		.31			YPB3214	54008			
15	.469		.31			YPB3215	54009			
16	.500		.34			YPB3216	54010			
18	.562		.34			YPB3218	54011			
20	.625		.47			A YPB3220	54012			
22	.688		.50			YPB3222	54013			
24	.750		.50			YPB3224	54014			
26	.812		.56			YPB3226	54015			
28	.875		.50			YPB3228	54016			
30	.938		.56			YPB3230	54017			
32	1.000		.63			B YPB3232	54018			
34	1.062		.61			YPB3234	54019			
36	1.125		.61			YPB3236	54020			
38	1.187		.61			YPB3238	54021			
40	1.250		.61			YPB3240	54022			
42	1.312		.61			YPB3242	54023			
44	1.375		.61			YPB3244	54024			
48	1.500		.63			YPB3248	54025			
52	1.625		.67			YPB3252	54026			
56	1.750		.67			YPB3256	54027			
64	2.000		.67			YPB3264	54028			
72	2.250		.81			YPB3272	54029			
80	2.500		.81			YPB3280	54030			
96	3.000		.81			YPB3296	54031			
BRASS										
12	.375		.28			A Y3212	09406			
14	.438		.34			Y3214	09408			
16	.500		.40			Y3216	09410			
18	.562		.43			Y3218	09412			
20	.625		.47			Y3220	09414			
24	.750		.53			Y3224	09416			
28	.875		.59			Y3228	09418			
32	1.000		.66			B Y3232	09420			
36	1.125		.72			Y3236	09422			
40	1.250		.72			Y3240	09424			
48	1.500		.78			Y3248	09426			
56	1.750		.84			C Y3256	09428			
64	2.000		.90			Y3264	09430			
72	2.250		.88			Y3272	09432			
80	2.500		.88			Y3280	09434			
96	3.000		1.00			Y3296	09436			
112	3.500		1.00			Y32112	09438			
128	4.000		1.00			Y32128	09440			
160	5.000		1.00			Y32160	09442			

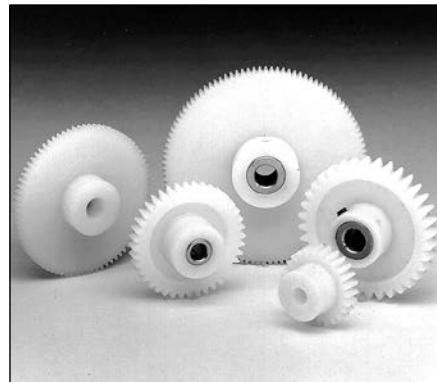
Spur Gears

24 Diametral Pitch (Delrin)

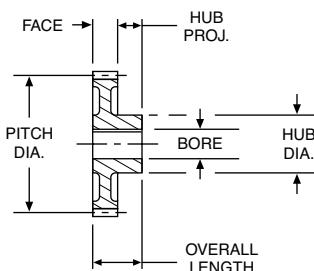
20° Pressure Angle (will not operate with 14-1/2° spurs)

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew†				
			Dia.	Proj.		Catalog Number	Item Code			
24 DIAMETRAL PITCH										
MOLDED DELRIN										
12	.500		.38			YP2412	54032			
14	.583		.44			YP2414	54033			
15	.625		.48			YP2415	54034			
16	.667					YP2416	54035			
17	.709					YP2417	54036			
18	.750					YP2418	54037			
19	.791					YP2419	54038			
20	.833					YP2420	54039			
21	.875					YP2421	54040			
22	.917					YP2422	54041			
23	.959					YP2423	54042			
24	1.000		.63			YP2424	54043			
25	1.041		.61			YP2425	54044			
26	1.083					YP2426	54045			
27	1.125					YP2427	54046			
28	1.167		.63			YP2428	54047			
30	1.250					YP2430	54048			
32	1.333					YP2432	54049			
33	1.375					YP2433	54050			
34	1.416					YP2434	54051			
36	1.500		.63			YP2436	54052			
39	1.625					YP2439	54053			
40	1.666					YP2440	54054			
42	1.750					YP2442	54055			
44	1.833					YP2444	54056			
45	1.875					YP2445	54057			
48	2.000					YP2448	54058			
50	2.083					YP2450	54059			
52	2.166					YP2452	54060			
54	2.250					YP2454	54061			
56	2.333					YP2456	54062			
60	2.500					YP2460	54063			
MOLDED DELRIN WITH BRASS INSERTS										
12	.500		.38			YPB2412	54064			
14	.583		.44			YPB2414	54065			
15	.625		.48			YPB2415	54066			
16	.667					YPB2416	54067			
17	.709					YPB2417	54068			
18	.750					YPB2418	54069			
19	.791					YPB2419	54070			
20	.833					YPB2420	54071			
21	.875					YPB2421	54072			
22	.917					YPB2422	54073			
23	.959					YPB2423	54074			
24	1.000		.63			YPB2424	54075			
25	1.041		.61			YPB2425	54076			
26	1.083					YPB2426	54077			
27	1.125					YPB2427	54078			
28	1.167		.63			YPB2428	54079			
30	1.250					YPB2430	54080			
32	1.333					YPB2432	54081			
33	1.375					YPB2433	54082			
34	1.416					YPB2434	54083			
36	1.500		.63			YPB2436	54084			
39	1.625					YPB2439	54085			
40	1.666					YPB2440	54086			
42	1.750		.67			YPB2442	54087			



A



STANDARD TOLERANCES*

DIMENSION	TOLERANCE
BORE	All
	+.001 - .000

*Gears with Brass Inserts only.



24 D.P.

REFERENCE PAGES

Alterations — 322
Materials — 323

†All YPB gears have setscrew and spot drill.

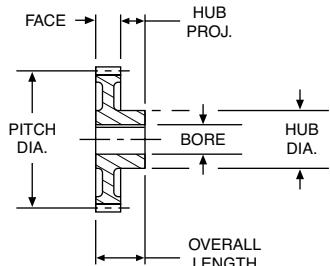
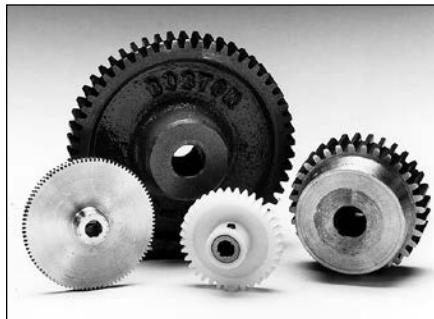
BORE	SETSCREW
3/16	#4-40
1/4	#6-32
5/16	#8-32

Spur Gears

24 and 20 Diametral Pitch (Delrin, Brass, Steel & Cast Iron)

20° Pressure Angle (will not operate with 14-1/2° spurs)

A



STANDARD TOLERANCES

DIMENSION	TOLERANCE	
Brass, Steel and Cast Iron		
BORE	All	± .0005
Delrin with Brass Inserts		
BORE	All	+ .001 – .000



24 D.P.



20 D.P.

REFERENCE PAGES

- Alterations — 322
- Horsepower Ratings — 58
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49

†YPB gears have one setscrew (#8-32), no keyway.

*5/16" bore have #35 (.110) drilled hole through one wall, no keyway.

‡3/8" bore have one setscrew. No keyway.

1/2" bore and larger have standard keyway at 90° to setscrew.
See Page 323.

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

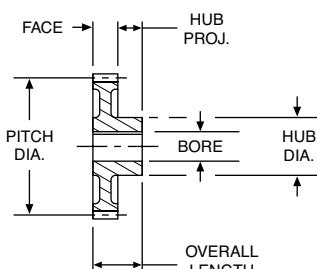
No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew		With Keyway and Setscrew†				
			Dia.	Proj.		Catalog Number	Item Code	Catalog Number	Item Code			
24 DIAMETRAL PITCH												
MOLDED DELRIN WITH BRASS INSERTS												
44	1.833				B	YPB2444	54088	—	—			
45	1.875					YPB2445	54089	—	—			
48	2.000					YPB2448	54090	—	—			
50	2.083					YPB2450	54091	—	—			
52	2.166					YPB2452	54092	—	—			
54	2.250					YPB2454	54093	—	—			
56	2.333					YPB2456	54094	—	—			
60	2.500					YPB2460	54095	—	—			
BRASS												
12	.500				A	Y2412	09372	—	—			
15	.625					Y2415	09374	—	—			
18	.750					Y2418	09376	—	—			
21	.875					Y2421	09378	—	—			
24	1.000				A	Y2424	09380	—	—			
27	1.125					Y2427	09382	—	—			
30	1.250					Y2430	09384	—	—			
36	1.500					Y2436	09386	—	—			
42	1.750				A	Y2442	09388	—	—			
48	2.000					Y2448	09390	—	—			
54	2.250					Y2454	09392	—	—			
60	2.500					Y2460	09394	—	—			
72	3.000				C	Y2472	09396	—	—			
84	3.500					Y2484	09398	—	—			
96	4.000					Y2496	09400	—	—			
120	5.000					Y24120	09402	—	—			
144	6.000					Y24144	09404	—	—			
20 DIAMETRAL PITCH												
STEEL												
12	.600				A	YA12	09892	YA12-5/16*	46128			
14	.700					YA14	09894	YA14-5/16*	46129			
15	.750					YA15	09896	YA15-3/8‡	46130			
16	.800					YA16	09898	YA16-3/8‡	46131			
18	.900					YA18	09900	YA18-3/8‡	46132			
20	1.000				A	YA20	09902	YA20-1/2	46133			
24	1.200					YA24	09914	YA24-1/2	46134			
25	1.250					YA25	09904	YA25-1/2	46135			
30	1.500					YA30	09906	YA30-1/2	46136			
35	1.750					YA35	09908	YA35-1/2	46137			
40	2.000				A	YA40	09910	YA40-1/2	46138			
	.625					—	—	YA40-5/8	46139			
	.750					—	—	YA40-3/4	46140			
45	2.250					YA45	09912	—	—			
50	2.500					YA50A	10548	—	—			
60	3.000					YA60A	10550	—	—			
70	3.500					YA70A	10552	—	—			
CAST IRON												
80	4.000				C	YA80	10554	—	—			
84	4.200					YA84	10556	—	—			
90	4.500					YA90	10558	—	—			
100	5.000				D	YA100	10560	—	—			
120	6.000					YA120	10562	—	—			
140	7.000					YA140	10564	—	—			
160	8.000					YA160	10566	—	—			
180	9.000					YA180	10568	—	—			
200	10.000					YA200	10570	—	—			

Spur Gears

16 and 12 Diametral Pitch (Steel & Cast Iron) 20° Pressure Angle (will not operate with 14-1/2° spurs)

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew		With Keyway and Setscrew†				
			Dia.	Proj.		Catalog Number	Item Code	Catalog Number	Item Code			
16 DIAMETRAL PITCH												
STEEL												
12	.750	.375	.56	.50	A	YB12	09916	YB12-3/8†	46141			
14	.875	.375	.69	.50		YB14	09918	YB14-3/8†	46142			
15	.938	.375	.75	.50		YB15	09920	YB15-3/8†	45991			
16	1.000	.500	.81	.50		YB16	09922	YB16-1/2	46144			
18	1.125	.500	.94	.50		YB18	09924	YB18-1/2	46145			
20	1.250	.625	1.05	.50		YB20	09926	YB20-5/8	46146			
24	1.500	.625	1.20	.50		YB24	09928	YB24-5/8	46147			
	.750					—	—	YB24-3/4	46148			
28	1.750	.625	1.45	.50		YB28	09930	YB28-5/8	46149			
	.750					—	—	YB28-3/4	46150			
30	1.875	.625	1.58	.50		YB30	09932	YB30-5/8	46151			
	.750					—	—	YB30-3/4	46152			
	.875					—	—	YB30-7/8	46153			
32	2.000	.625	1.70	.50		YB32	09934	YB32-5/8	46154			
	.750					—	—	YB32-3/4	46155			
	.875					—	—	YB32-7/8	46156			
	1.000					—	—	YB32-1	46157			
36	2.250				D	YB36	09936	—	—			
40	2.500					YB40	09938	—	—			
48	3.000	.625	2.00	.62		YB48A	10572	—	—			
56	3.500					YB56A	10574	—	—			
60	3.750					YB60A	10576	—	—			
64	4.000					YB64A	10578	—	—			
72	4.500	.750	3.38	.75		YB72A	10580	—	—			
80	5.000					YB80A	10582	—	—			
CAST IRON												
96	6.000	.750	1.75	.75	D	YB96	10584	—	—			
128	8.000					YB128	10588	—	—			
144	9.000					YB144	10590	—	—			
160	10.000	.875	2.00	.75		YB160	10592	—	—			
192	12.000					YB192	10594	—	—			
12 DIAMETRAL PITCH												
STEEL												
12	1.000	.500	.75	.62	A	YD12	09940	YD12-1/2*	46158			
13	1.083		.83			YD13	09942	YD13-5/8‡	46159			
14	1.167		.92			YD14	09944	YD14-5/8	46160			
15	1.250	.625	.99			YD15	09946	YD15-5/8	46161			
16	1.333		1.07			YD16	09948	YD16-5/8	46162			
18	1.500	.750	1.24			YD18	09950	YD18-3/4	46163			
20	1.667		1.32			YD20	09952	YD20-3/4	46164			
21	1.750	.750	1.40	.62		YD21	09954	YD21-3/4	46165			
	.875					—	—	YD21-7/8	46166			
24	2.000	.750				YD24	09956	YD24-3/4	46167			
	.875					—	—	YD24-7/8	46168			
	1.000					—	—	YD24-1	46169			
28	2.333	.750	1.99	.62		YD28	09958	YD28-3/4	46170			
	.875					—	—	YD28-7/8	46171			
	1.000					—	—	YD28-1	46172			
30	2.500				D	YD30	09960	—	—			
36	3.000	.750	2.15	.62		YD36A	10596	—	—			
42	3.500		1.94			YD42A	10598	—	—			
48	4.000	.875	2.88			YD48A	10600	—	—			
54	4.500		3.38	.88		YD54A	10602	—	—			



STANDARD TOLERANCES

DIMENSION	TOLERANCE	
	BORE	All
		±.0005



16 D.P.

12 D.P.

REFERENCE PAGES

- Alterations — 322
- Horsepower Ratings — 58, 59
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49

†3/8" bore have one setscrew.
No keyway.

YB15-1/2 and larger have standard keyway at 90° to setscrew.
See page 323.

*YD12-1/2 has one setscrew.
No keyway.

‡YD13-5/8 has one setscrew.
No keyway.

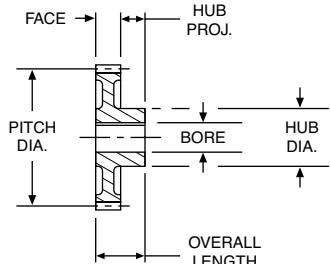
YD14-5/8 bore and larger have standard keyway at 90° to setscrew.

Spur Gears

12 and 10 Diametral Pitch (Cast Iron & Steel)

20° Pressure Angle (will not operate with 14-1/2° spurs)

A



STANDARD TOLERANCES

DIMENSION	TOLERANCE
BORE	All $\pm .0005$



12 D.P.



10 D.P.

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew		With Keyway and Setscrew†					
			Dia.	Proj.		Catalog Number	Item Code	Catalog Number	Item Code				
12 DIAMETRAL PITCH													
Face = 1.000" Outside Dia. = Pitch Dia. + .166" Overall Length = 1.000" + Hub Proj.													
CAST IRON													
60	5.000	.875	2.12	.88	B	YD60	10604	-	-				
66	5.500					YD66	10606	-	-				
72	6.000	1.000	2.50	1.00	D	YD72	10608	-	-				
84	7.000					YD84	10610	-	-				
96	8.000	1.000	2.50	1.00	D	YD96	10612	-	-				
108	9.000					YD108	10614	-	-				
120	10.000	1.000	2.50	1.00	D	YD120	10616	-	-				
132	11.000					YD132	10618	-	-				
144	12.000	1.000	2.50	1.00	D	YD144	10620	-	-				
168	14.000					YD168	10622	-	-				
192	16.000	1.000	2.50	1.00	D	YD192	10624	-	-				
216	18.000					YD216	10626	-	-				
10 DIAMETRAL PITCH													
Face = 1.250" Outside Dia. = Pitch Dia. + .200" Overall Length = 1.250" + Hub Proj.													
STEEL													
12	1.200	.625	.92	.62	A	YF12	09962	YF12-5/8	46173				
14	1.400	.750	1.12	.62		YF14	09964	YF14-5/8	46174				
15	1.500		1.22	.62		YF15	09966	YF15-3/4	46175				
16	1.600		1.32	.62		YF16	09968	YF16-3/4	46176				
18	1.800	.750	1.42	.62		YF18	09970	YF18-3/4	46177				
						-	-	YF18-7/8	46178				
20	2.000	1.000	1.62	.62		YF20	09972	YF20-7/8	46179				
						-	-	YF20-1	46180				
24	2.400	1.000	2.02	.62		YF24	09974	YF24-7/8	46181				
						-	-	YF24-1	46182				
25	2.500	1.000	2.12	.62		YF25	09976	YF25-7/8	46183				
						-	-	YF25-1	46184				
28	2.800	1.000	2.42	.62		YF28	09978	YF28-7/8	46185				
						-	-	YF28-1	46186				
30	3.000	.875	2.00	.88	B	YF30A	10630	-	-				
35	3.500		2.50	.88		YF35A	10632	-	-				
40	4.000	1.000	2.95	.88		YF40A	10634	-	-				
45	4.500		3.45			YF45A	10636	-	-				
48	4.800		3.75			YF48A	10638	-	-				
50	5.000		3.95			YF50A	10640	-	-				
CAST IRON													
55	5.500	1.000	2.50	1.00	B	YF55	10642	-	-				
60	6.000					YF60	10644	-	-				
70	7.000					YF70	10646	-	-				
80	8.000					YF80	10648	-	-				
90	9.000					YF90	10650	-	-				
100	10.000	1.125	3.00	1.12	D	YF100	10652	-	-				
120	12.000					YF120	10656	-	-				
140	14.000					YF140	10658	-	-				
160	16.000					YF160	10660	-	-				
200	20.000					YF200B	10664	-	-				

†All gears have standard keyway at 90° to setscrew. See Page 323.

REFERENCE PAGES

- Alterations — 322
- Horsepower Ratings — 59, 60
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49

Spur Gears

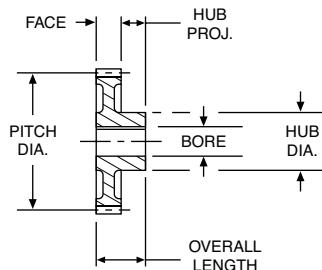
8 and 6 Diametral Pitch (Steel & Cast Iron)

20° Pressure Angle (will not operate with 14-1/2° spurs)

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

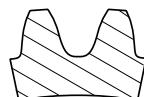
No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew		With Keyway and Setscrew†				
			Dia.	Proj.		Catalog Number	Item Code	Catalog Number	Item Code			
8 DIAMETRAL PITCH												
STEEL												
12	1.500	.750	1.12	.75	A	YH12	09980	YH12-3/4	46187			
14	1.750		1.31			YH14	09982	YH14-3/4	46188			
15	1.875	.750	1.43	.75		YH15	09984	YH15-3/4	46189			
		.875				-	-	YH15-7/8	46190			
16	2.000	.875	1.56	.88		YH16	09986	YH16-7/8	46191			
		1.000				-	-	YH16-1	46192			
18	2.250	.875	1.81	.88		YH18	09988	YH18-7/8	46193			
		1.000				-	-	YH18-1	46194			
		1.125				-	-	YH18-1-1/8	46195			
20	2.500	.875	2.06	.88		YH20	09990	YH20-7/8	46196			
		1.000				-	-	YH20-1	46197			
		1.125				-	-	YH20-1-1/8	46198			
22	2.750	.875	2.31	.88		YH22	09992	YH22-7/8	46199			
		1.000				-	-	YH22-1	46200			
		1.125				-	-	YH22-1-1/8	46201			
24	3.000	.875	2.56	.88		YH24	09994	YH24-7/8	46202			
		1.000				-	-	YH24-1	46203			
		1.125				-	-	YH24-1-1/8	46204			
28	3.500	.875	3.06	.88		YH28	09996	-	-			
32	4.000	1.000	3.00	.88		YH32C	10666	-	-			
36	4.500	1.000	3.50	.88		YH36C	10668	-	-			
CAST IRON												
40	5.000	1.000	2.50	1.00	B	YH40B	10670	-	-			
44	5.500					YH44B	10672	-	-			
48	6.000					YH48B	10674	-	-			
56	7.000				C	YH56B	10676	-	-			
60	7.500					YH60	10678	-	-			
64	8.000					YH64B	10680	-	-			
72	9.000					YH72B	10682	-	-			
80	10.000	1.125	3.00	1.25	D	YH80B	10684	-	-			
88	11.000					YH88B	10686	-	-			
96	12.000					YH96B	10688	-	-			
112	14.000					YH112B	10690	-	-			
120	15.000					YH120	10692	-	-			
128	16.000					YH128B	10694	-	-			
6 DIAMETRAL PITCH												
STEEL												
12	2.000	1.000	1.46	.88	A	YJ12	09998	YJ12-1	46205			
14	2.333	1.000	1.79	.88		YJ14	10000	YJ14-1	46206			
		1.125				-	-	YJ14-1-1/8	46207			
15	2.500	1.000	1.96	.88		YJ15	10002	YJ15-1	46208			
		1.125				-	-	YJ15-1-1/8	46209			
		1.1875				-	-	YJ15-1-3/16	46210			
		1.250				-	-	YJ15-1-1/4	46211			

†All gears have standard keyway at 90° to setscrew. See Page 323.



STANDARD TOLERANCES

DIMENSION	TOLERANCE	
	BORE	All
BORE	All	±.0005



8 D.P.

6 D.P.

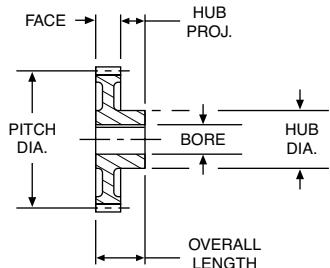
REFERENCE PAGES

- Alterations — 322
- Horsepower Ratings — 60, 61
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49

Spur Gears

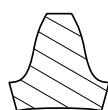
6 and 5 Diametral Pitch (Steel & Cast Iron)

20° Pressure Angle (will not operate with 14-1/2° spurs)

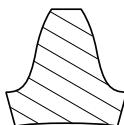


STANDARD TOLERANCES

DIMENSION	TOLERANCE
BORE	All $\pm .0005$



6 D.P.



5 D.P.

REFERENCE PAGES

- Alterations — 322
- Horsepower Ratings — 61, 62
- Lubrication — 322
- Materials — 323
- Selection Procedure — 49

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	Bore	Hub		Style See Page 323	Without Keyway or Setscrew		With Keyway and Setscrew†				
			Dia.	Proj.		Catalog Number	Item Code	Catalog Number	Item Code			
6 DIAMETRAL PITCH												
Face = 2.000" Outside Dia. = Pitch Dia. + .333" Overall Length = 2.000" + Hub Proj.												
STEEL												
16	2.667	1.000 1.125 1.1875 1.250	2.13	.88	A	YJ16 — — — —	10004 — — — —	YJ16-1 YJ16-1-1/8 YJ16-1-3/16 YJ16-1-1/4	46212 46213 46214 46215			
18	3.000	1.000 1.125 1.1875 1.250	2.46	.88		YJ18 — — — —	10006 — — — —	YJ18-1 YJ18-1-1/8 YJ18-1-3/16 YJ18-1-1/4	46216 46217 46218 46219			
21	3.500	1.000 1.125 1.1875 1.250	2.96	.88		YJ21 — — — —	10008 — — — —	YJ21-1 YJ21-1-1/8 YJ21-1-3/16 YJ21-1-1/4	46220 46221 46222 46223			
24	4.000	3.00	3.50 4.00	.88		YJ24A	10704	—	—			
27	4.500	1.125				YJ27A	10706	—	—			
30	5.000	4.00				YJ30C	10708	—	—			
CAST IRON												
33	5.500	1.125	3.00	1.50	B	YJ33B	10710	—	—			
36	6.000		3.50		A	YJ36B	10712	—	—			
42	7.000				B	YJ42B	10714	—	—			
48	8.000	1.250	3.50	1.50		YJ48B	10716	—	—			
54	9.000					YJ54B	10718	—	—			
60	10.000				C	YJ60B	10720	—	—			
66	11.000					YJ66B	10722	—	—			
72	12.000	1.250	4.00	1.50		YJ72B	10724	—	—			
84	14.000				D	YJ84B	10726	—	—			
96	16.000					YJ96B	10728	—	—			
108	18.000					YJ108B	10730	—	—			
120	20.000	1.375	4.50	1.50		YJ120B	10732	—	—			
5 DIAMETRAL PITCH												
Face = 2.500" Outside Dia. = Pitch Dia. + .400" Overall Length = 2.500" + Hub Proj.												
STEEL												
12	2.400					YK12	10010	—	—			
14	2.800					YK14	10012	—	—			
15	3.000				A	YK15	10014	—	—			
16	3.200	1.125	2.18			YK16	10016	—	—			
18	3.600		2.38			YK18	10018	—	—			
20	4.000		2.58			YK20	10020	—	—			
CAST IRON												
24	4.800					YK24	10738	—	—			
25	5.000	1.125	3.75	1.25	A	YK25B	10740	—	—			
28	5.600					YK28	10742	—	—			
30	6.000					YK30B	10744	—	—			
35	7.000				B	YK35B	10746	—	—			
40	8.000	1.250	3.75	1.25		YK40B	10748	—	—			
45	9.000				C	YK45B	10750	—	—			
50	10.000		4.00			YK50	10752	—	—			
60	12.000					YK60	10754	—	—			
70	14.000	1.375	4.38	1.50		YK70B	10756	—	—			
80	16.000					YK80B	10758	—	—			
100	20.000				D	YK100	10762	—	—			
110	22.000	1.500	4.75	1.75		YK110	10764	—	—			
120	24.000		5.00			YK120	10766	—	—			
140	28.000		5.00			YK140B	10768	—	—			
160	32.000	1.625	5.00	2.00		YK160B	10770	—	—			
180	36.000		5.50			YK180B	10772	—	—			

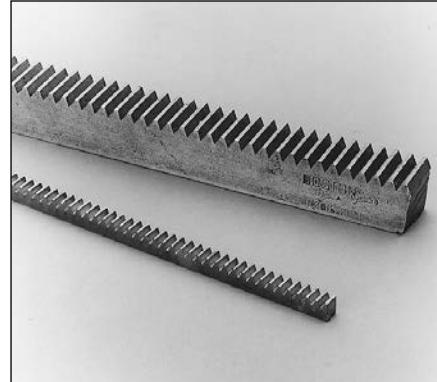
†All gears have standard keyway at 90° to setscrew. See Page 323.

20 through 4 Diametral Pitch (Steel)

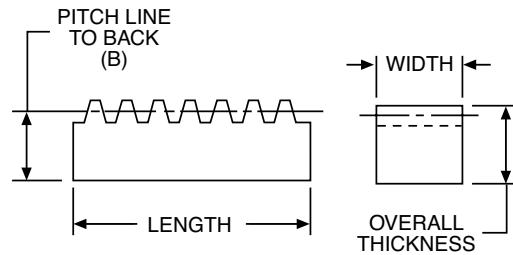
20° Pressure Angle (will not operate with 14-1/2° spurs)

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

Overall Thickness	Pitch Line to Back (B)	Nominal Length (Feet)	Mating Spur Gear Page No.	Steel				
				Catalog Number	Item Code			
20 DIAMETRAL PITCH								
FACE WIDTH - .500"								
.500	.450	4 6	42	L2020-4 L2020-6	12758 12760			
16 DIAMETRAL PITCH								
FACE WIDTH - .750"								
.750	.688	4 6	43	L2016-4 L2016-6	12762 12764			
12 DIAMETRAL PITCH								
FACE WIDTH - 1.000"								
1.000	.917	4 6	43 - 44	L2012-4 L2012-6	37320 37322			
10 DIAMETRAL PITCH								
FACE WIDTH - 1.250"								
1.250	1.150	4 6	44	L2010-4 L2010-6	37316 37318			
8 DIAMETRAL PITCH								
FACE WIDTH - 1.500"								
1.500	1.375	4 6	45	L208-4 L208-6	37312 37314			
6 DIAMETRAL PITCH								
FACE WIDTH - 2.000"								
1.500	1.333	4 6	45 - 46	L206-4 L206-6	37308 37310			
5 DIAMETRAL PITCH								
FACE WIDTH - 2.500"								
1.500	1.300	4 6	46	L205-4 L205-6	37304 37306			
4 DIAMETRAL PITCH								
FACE WIDTH - 3.500"								
2.000	1.750	4 6	-	L204-4 L204-6	37300 37302			



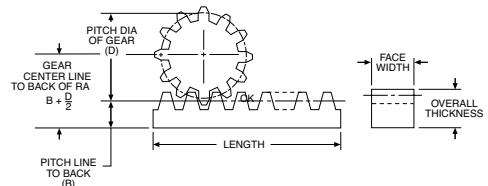
A



STANDARD TOLERANCES

DIMENSION	TOLERANCE
LENGTH†	All +1.000 - .000
FACE WIDTH	1/2 - 3/4 +.000 -.002 1 - 1-1/2 +.000 -.003 2 - 2-1/2 +.000 -.004 3-1/2 +.000 -.006

†Ends not machined. Tolerance allows for cutting and matching.



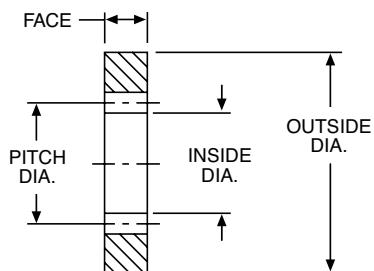
REFERENCE PAGES

Alterations — 322
Lubrication — 322
Materials — 323

Internal Gears

64 through 24 Diametral Pitch (Brass)

20° Pressure Angle (will not operate with 14-1/2° spurs)



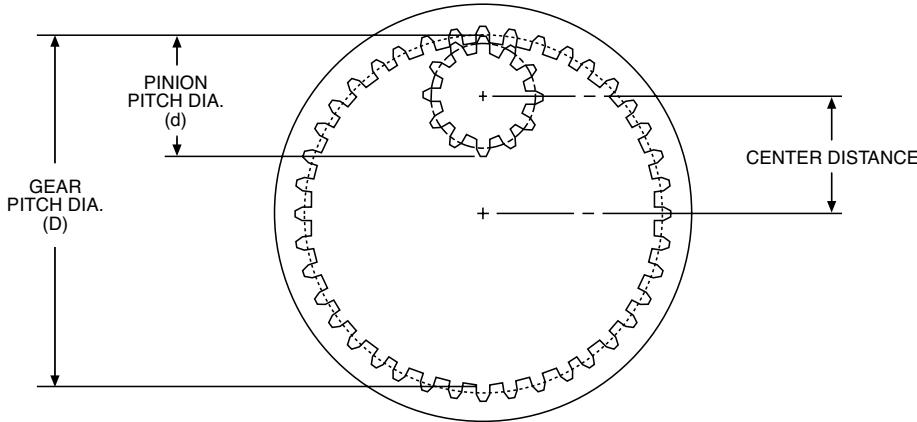
ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

No. of Teeth	Pitch Dia.	O.D.	I.D.	Catalog Number	Item Code
64 DIAMETRAL PITCH					
64	1.000	1.500	.980	YI6464	12030
96	1.500	2.000	1.480	YI6496	12032
128	2.000	2.750	1.980	YI64128	12034
192	3.000	3.750	2.980	YI64192	12036
48 DIAMETRAL PITCH					
48	1.000	1.500	.974	YI4848	12020
72	1.500	2.000	1.474	YI4872	12022
96	2.000	2.750	1.974	YI4896	12024
144	3.000	3.750	2.974	YI48144	12026
192	4.000	4.750	3.974	YI48192	12028
32 DIAMETRAL PITCH					
48	1.500	2.000	1.461	YI3248	12010
64	2.000	2.750	1.961	YI3264	12012
96	3.000	3.750	2.961	YI3296	12014
128	4.000	4.750	3.961	YI32128	12016
192	6.000	6.750	5.961	YI32192	12018
24 DIAMETRAL PITCH					
36	1.500	2.250	1.450	YI2436	12000
48	2.000	2.750	1.950	YI2448	12002
72	3.000	3.750	2.950	YI2472	12004
96	4.000	4.750	3.950	YI2496	12006
144	6.000	6.750	5.950	YI24144	12008

NOTE: The difference in tooth numbers between Gear and Pinion should not be less than 12.

STANDARD TOLERANCES

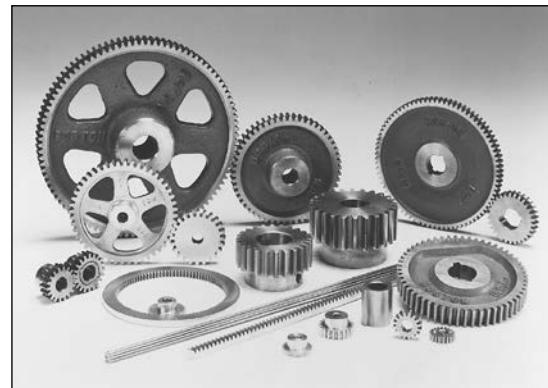
DIMENSION		TOLERANCE
I.D.	64 Pitch 48 Pitch 32 Pitch 24 Pitch	All All All All
		+.004 - .000 +.005 - .000 +.006 - .000 +.008 - .000
O.D.	All	+.001 + .003



$$\text{CENTER DISTANCE} = \frac{D - d}{2}$$

Boston spur gears are designed to transmit motion or power between parallel shafts. Configurations include spur, rack, pinion wire, stem pinions and internal gears; most with a selection of bores, keyways and setscrews. Styles include plain, web, web with lightening holes or spoked. Change gears have consecutive numbers of teeth for reduction uses.

Boston fine-pitch spur gears are available in Delrin and Brass. Configurations include spur, rack, pinion wire and internal gears; most with a selection of bores, keyways, and setscrews. Styles include plain, web with lightening holes or spoked.



Selection Procedure

1. Determine service factor.
 - a. Using application Classification Chart, pages 331-332, determine service factor or
 - b. With knowledge of operating conditions and load classification, select service factor from Table 1 below.

Design HP = Application Load X Service Factor (Table 1)

3. Select spur gear pinion with horsepower capacity equal to (or greater than) design horsepower determined in Step 2. 14½° Pressure Angle Spur Gears—Page 50 to Page 57. 20° Pressure Angle Spur Gears—Page 58 to Page 62.
4. Select a driven spur gear with a catalog rating equal to or greater than the horsepower determined in Step 2. All ratings are predicated on gears properly lubricated and maintained.

Selection Hints

- A. Select pinion having pitch diameter at least twice the shaft diameter.
- B. Pinion number of teeth should be greater than 16 for 14½°PA and 13 for 20°PA to avoid excessive undercutting.
- C. For tooth numbers or RPMs not on Chart, interpolation of horsepower is adequate.
- D. Pitchline velocities above 1000 FPM are not recommended for metallic spur gears. The Selection Chart reflects this in the lack of ratings for larger numbers of teeth at higher RPM's. Ratings to the right of heavy line are not recommended, as suggested maximum velocity is exceeded, and should be used for interpolation purposes only.

TABLE 1

Service Factor	Operating Conditions
.8	Uniform — not more than 15 minutes in 2 hours.
1.0	Moderate Shock — not more than 15 minutes in 2 hours. Uniform — not more than 10 hours per day.
1.25	Moderate Shock — not more than 10 hours per day. Uniform — more than 10 hours per day.
1.50	Heavy Shock — not more than 15 minutes in 2 hours. Moderate Shock — more than 10 hours per day.
1.75	Heavy Shock — not more than 10 hours per day.
2.0	Heavy Shock — more than 10 hours per day.

Heavy shock loads and/or severe wear conditions may require the use of higher service factors. Consultation with factory is recommended in these applications.

Spur Gears

Approximate Horsepower and Torque* Ratings

For Class I Service (Service Factor = 1.0)

32 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

3/16" FACE

REFERENCE PAGE 19.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
16	.003	7.4	.01	7.3	.01	7.3	.02	7.1	.03	7.0	.06	6.6	.09	6.3	.11	5.9	.15	5.4	.24	4.2
18	.003	8.9	.01	8.8	.01	8.7	.03	8.5	.04	8.3	.07	7.8	.10	7.3	.13	6.9	.18	6.1	.27	4.7
20	.004	10.2	.01	10.2	.02	10.1	.03	9.8	.05	9.6	.08	8.9	.12	8.3	.15	7.8	.20	6.9	.30	5.2
22	.005	11.7	.01	11.6	.02	11.4	.04	11.1	.05	10.8	.09	9.9	.13	9.3	.16	8.7	.22	7.6	.32	5.7
24	.01	13.0	.01	12.9	.02	12.7	.04	12.3	.06	11.9	.10	10.9	.14	10.1	.18	9.4	.24	8.3	.34	6.0
26	.01	14.5	.01	14.4	.02	14.1	.04	13.7	.06	13.3	.12	12.0	.16	11.1	.20	10.2	.26	8.9	.37	6.4
28	.01	15.9	.01	15.1	.02	15.5	.05	14.9	.07	14.5	.12	13.1	.17	12.0	.21	11.0	.27	9.5	.39	6.8
30	.01	17.3	.01	17.0	.03	16.7	.05	16.1	.07	15.5	.13	13.9	.18	12.7	.22	11.7	.29	10.0	.40	7.0
32	.01	18.9	.01	18.7	.03	18.3	.06	17.6	.08	16.9	.14	15.2	.20	13.7	.24	12.6	.31	10.7	.43	7.4
40	.01	24.5	.02	24.2	.04	23.6	.07	22.4	.10	21.3	.18	18.7	.24	16.7	.29	15	.36	12.5	.48	8.4
48	.01	29.9	.02	29.4	.05	28.5	.09	26.8	.12	25.4	.21	21.8	.27	19.1	.32	17	.40	13.9	.52	9.0
56	.01	35.7	.03	35	.05	33.8	.10	31.5	.14	29.6	.24	24.9	.31	21.6	.36	18.9	.44	15.3	.55	9.7
64	.02	41.4	.03	40.6	.06	38.9	.11	36	.16	33.5	.26	27.8	.34	23.7	.39	20.7	.47	16.5	.58	10.2
80	.02	52.4	.04	51	.08	48.5	.14	44.2	.19	40.6	.31	32.5	.39	27.2	.44	23.3	.52	18.2		
96	.02	62.6	.05	60.6	.09	57.1	.16	51.2	.22	46.4	.34	36.2	.42	29.6	.48	25.1	.55	19.2		
128	.03	83.9	.06	80.6	.12	74.6	.21	64.9	.27	57.5	.41	42.7	.49	34	.54	28.3				
160	.04	106	.08	101	.15	92.1	.25	78.2	.32	67.8	.46	48.6	.54	37.9						
192	.05	126	.09	119	.17	107	.28	88.4	.36	75.4	.50	52.4	.57	40.1						

24 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

1/4" FACE

REFERENCE PAGE 20.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
12	.004	10.9	.01	10.8	.02	10.7	.03	10.5	.05	10.3	.09	9.7	.13	9.2	.17	8.7	.22	7.9	.35	6.1
14	.01	14.2	.01	14.1	.02	13.9	.04	13.6	.06	13.3	.12	12.4	.17	11.6	.21	10.9	.28	9.8	.43	7.5
15	.01	15.8	.01	15.7	.02	15.5	.05	15.1	.07	14.7	.13	13.7	.18	12.8	.23	12	.31	10.7	.46	8.0
16	.01	17.5	.01	17.4	.03	17.2	.05	16.7	.08	16.2	.14	15	.20	14	.25	13.1	.33	11.6	.49	8.6
18	.01	20.9	.02	20.7	.03	20.4	.06	19.8	.09	19.2	.17	17.6	.23	16.3	.29	15.1	.38	13.3	.55	9.7
20	.01	24.3	.02	24.1	.04	23.7	.07	22.9	.11	22.1	.19	20.1	.26	18.5	.33	17.1	.42	14.8	.61	10.6
21	.01	26.1	.02	25.8	.04	25.4	.08	24.5	.11	23.6	.20	21.4	.28	19.6	.34	18.1	.45	15.6	.63	11.0
24	.01	30.7	.02	30.4	.05	29.7	.09	28.5	.13	27.5	.23	24.6	.32	22.3	.39	20.4	.50	17.4	.69	12.0
30	.02	40.7	.03	40.2	.06	39.2	.12	37.2	.17	35.5	.30	31.1	.40	27.7	.48	24.9	.60	20.8	.80	13.9
36	.02	51.2	.04	50.4	.08	48.8	.15	46	.21	43.5	.36	37.3	.47	32.7	.55	29.1	.68	23.9	.89	15.5
42	.02	60.7	.05	59.6	.09	59.5	.17	53.6	.24	50.3	.40	42.4	.52	36.6	.61	32.3	.74	26	.94	16.5
48	.03	70.4	.05	68.9	.11	66.2	.19	61.3	.27	57	.45	47.2	.58	40.3	.67	35.1	.80	28		
60	.04	90	.07	87.7	.13	83.3	.24	75.9	.33	69.6	.53	55.9	.67	46.6	.76	40	.89	31.2		
72	.04	109	.08	106	.16	99.8	.28	89.5	.39	81	.60	63.2	.74	51.8	.84	43.9	.96	33.6		
96	.06	147	.11	141	.21	130	.36	113	.48	100	.71	74.7	.85	59.5	.94	49.5				
120	.07	185	.14	175	.25	159	.43	135	.56	118	.80	84.3	.94	65.7	1.07	56.4				
144	.09	219	.16	207	.29	185	.49	153	.62	131	.86	90.8	.99	69.6						

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

* Torque Ratings (Lb. Ins.).

Ratings for brass gears are approximately 50% of steel ratings with same face width.

Spur Gears

Approximate Horsepower and Torque* Ratings For Class I Service (Service Factor = 1.0)

20 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

3/8" FACE

REFERENCE PAGE 20.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
11	.01	21.6	.02	21.4	.03	21.2	.07	20.7	.10	20.2	.18	18.9	.25	17.8	.32	16.8	.43	15.1	.66	11.6
12	.01	23.5	.02	23.4	.04	23	.07	22.5	.10	21.9	.19	20.5	.27	19.2	.34	18	.46	16.1	.70	12.2
13	.01	26.9	.02	26.8	.04	26.4	.08	25.7	.12	25	.22	23.2	.31	21.6	.39	20.3	.51	17.9	.77	13.4
14	.01	30.7	.02	30.5	.05	30	.09	29.1	.13	28.3	.25	26.1	.35	24.2	.43	22.6	.57	20	.84	14.7
15	.01	34.2	.03	33.9	.05	33.4	.10	32.3	.15	31.4	.27	28.8	.38	26.6	.47	24.7	.62	21.7	.90	15.8
16	.02	37.8	.03	37.5	.06	36.8	.11	35.7	.16	34.5	.30	31.6	.41	29	.51	26.9	.67	23.4	.97	16.9
18	.02	45.1	.04	44.7	.07	43.8	.13	42.3	.19	40.8	.35	36.9	.48	33.7	.59	31	.76	26.7	1.08	18.9
20	.02	52.4	.04	51.9	.08	50.8	.15	48.7	.22	46.9	.40	42	.54	38	.66	34.8	.85	29.7	1.18	20.6
22	.02	59.5	.05	58.8	.09	57.5	.17	54.9	.25	52.7	.45	46.8	.60	42	.73	38.2	.92	32.3	1.26	22.1
24	.03	66.3	.05	65.4	.10	63.8	.19	60.8	.28	58	.49	51.1	.65	45.6	.78	41.2	.99	34.6	1.33	23.3
25	.03	70.5	.06	69.5	.11	67.7	.20	64.4	.29	61.4	.51	53.8	.68	47.9	.82	43.1	1.03	36	1.38	24.0
28	.03	81.2	.06	80	.12	77.7	.23	73.4	.33	69.7	.57	60.3	.76	53.2	.91	47.5	1.12	39.2	1.47	25.7
30	.03	87.8	.07	86.4	.13	83.7	.25	78.9	.36	74.6	.61	64	.80	56.1	.95	50	1.17	40.9	1.52	26.6
32	.04	96.3	.08	94.7	.15	91.6	.27	86	.39	81	.66	69.1	.86	60.2	1.02	53.3	1.24	43.4	1.59	27.8
35	.04	107	.08	105	.16	101	.30	94.7	.42	88.9	.71	74.9	.92	64.7	1.09	57	1.31	46	1.66	29.1
36	.04	110	.09	108	.17	104	.31	97.1	.43	91	.73	76.4	.94	65.8	1.10	57.8	1.33	46.5	1.68	29.3
40	.05	124	.10	122	.19	117	.34	108	.48	101	.79	83.5	1.02	71.2	1.18	62.1	1.41	49.4	1.75	30.7
48	.06	151	.12	148	.22	141	.41	128	.56	118	.91	95.4	1.14	80	1.31	69.8	1.54	53.8		
50	.06	158	.12	154	.23	146	.42	133	.58	122	.93	98	1.17	81.7	1.34	70.1	1.56	54.6		
60	.08	193	.15	187	.28	176	.50	158	.68	143	1.06	112	1.31	91.6	1.48	77.6	1.70	59.5		
64	.08	209	.16	203	.30	190	.54	169	.73	153	1.12	118	1.37	96	1.54	80.9				

20 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

3/8" FACE

REFERENCE PAGE 21.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
70	.05	137	.10	132	.20	123	.35	109	.46	97.5	.71	74.2	.86	60	.96	50.2				
72	.06	140	.11	136	.20	126	.35	111	.47	99.4	.72	75.3	.87	60.6	.97	50.7				
80	.06	158	.12	152	.22	141	.39	123	.52	108	.77	80.7	.92	64.3	1.02	53.4				
84	.07	166	.13	159	.23	147	.40	127	.53	112	.79	82.7	.94	65.5	1.03	54.3				
90	.07	177	.13	169	.25	155	.42	133	.56	117	.81	85.4	.96	67.2						
96	.07	189	.14	180	.26	164	.44	140	.58	122	.84	87.9	.98	68.8						
100	.08	196	.15	186	.27	170	.46	144	.59	125	.85	89.5	1.00	69.7						
112	.09	222	.17	210	.30	189	.50	158	.65	136	.91	95.5	1.05	73.6						
120	.09	237	.18	223	.32	200	.53	166	.67	141	.93	98.1	1.07	75.1						
140	.11	273	.20	255	.36	225	.58	183	.73	153	.99	104								
144	.11	281	.21	262	.37	230	.59	186	.74	156	1.00	105								
160	.13	317	.23	294	.41	256	.64	203	.80	168	1.06	111								
180	.14	353	.26	324	.44	278	.69	217	.85	178	1.10	115								
200	.15	388	.28	354	.48	300	.73	230	.89	187	1.13	119								

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute.
They should be used for interpolation purposes only.

*Torque Ratings (Lb. Ins.).

A

Spur Gears

Approximate Horsepower and Torque* Ratings

For Class I Service (Service Factor = 1.0)

16 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

1/2" FACE

REFERENCE PAGE 21 & 22.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
11	.02	44.9	.04	44.5	.07	43.9	.14	42.7	.20	41.5	.36	38.3	.51	35.6	.63	33.2	.84	29.4	1.24	21.7
12	.02	48.9	.04	48.5	.08	47.8	.15	46.3	.21	44.9	.39	41.2	.54	38.1	.67	35.4	.89	31	1.29	22.6
13	.02	56.1	.04	55.6	.09	54.7	.17	52.9	.24	51.2	.44	46.7	.61	42.9	.76	39.7	.99	34.6	1.42	24.9
14	.03	63.8	.05	63.2	.10	62	.19	59.8	.28	57.8	.50	52.4	.68	47.9	.84	44.2	1.09	38.2	1.55	27.1
15	.03	71.1	.06	70.3	.11	68.9	.21	66.4	.30	63.9	.55	57.6	.75	52.5	.92	48.1	1.18	41.3	1.66	29.0
16	.03	78.7	.06	77.8	.12	76.2	.23	73.1	.33	70.3	.60	63	.82	57.1	.99	52.2	1.27	44.5	1.77	30.9
18	.04	93.8	.07	99.6	.14	90.5	.27	86.5	.39	82.8	.70	73.4	.94	65.9	1.14	59.8	1.44	50.4	1.96	34.3
20	.04	109	.09	107	.17	105	.32	99	.45	94.9	.79	83.2	1.06	74.1	1.27	66.7	1.59	55.7	2.13	37.2
22	.05	124	.10	122	.19	118	.36	112	.51	106	.88	92.3	1.16	81.5	1.39	72.9	1.72	60.3	2.27	39.7
24	.05	138	.11	135	.21	131	.39	124	.56	117	.96	100	1.26	88	1.49	78.3	1.83	64.2	2.38	41.7
26	.06	154	.12	151	.23	146	.43	137	.61	129	1.04	110	1.36	95.4	1.61	84.4	1.96	68.6	2.51	43.9
28	.07	168	.13	165	.25	160	.47	149	.66	140	1.12	118	1.45	102	1.71	89.6	2.06	72.3	2.62	45.8
30	.07	182	.14	179	.27	172	.51	160	.71	149	1.19	125	1.53	107	1.79	93.8	2.15	75.1	2.69	47.1
32	.08	200	.16	196	.30	188	.55	174	.77	162	1.28	134	1.63	114	1.90	99.7	2.27	79.4	2.81	49.3
36	.09	228	.18	223	.34	213	.62	196	.86	181	1.40	147	1.77	124	2.05	107	2.42	84.6		
40	.10	258	.20	251	.38	239	.69	217	.95	200	1.52	160	1.91	134	2.18	115	2.55	89.4		
48	.12	314	.24	304	.45	286	.81	257	1.11	232	1.73	181	2.12	149	2.40	126	2.76	96.5		

16 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

1/2" FACE

REFERENCE PAGE 22.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
54	.09	217	.17	209	.31	196	.55	173	.74	156	1.13	119	1.38	96.6	1.54	81.1				
56	.09	224	.17	216	.32	202	.57	178	.76	160	1.16	121	1.40	98.1	1.57	82.2				
60	.10	239	.18	231	.34	214	.60	188	.80	167	1.20	126	1.44	100	1.60	84.2				
64	.10	260	.20	249	.37	231	.64	201	.85	178	1.26	132	1.50	105	1.67	87.5				
72	.12	290	.22	277	.40	255	.69	219	.91	192	1.33	140	1.57	110						
80	.13	327	.25	311	.45	283	.76	240	.99	208	1.42	149	1.66	116						
84	.14	342	.26	325	.47	294	.79	248	1.02	214	1.45	152	1.69	118						
96	.15	388	.29	365	.52	327	.86	271	1.10	231	1.53	161	1.76	123						
112	.18	455	.34	425	.60	376	.97	304	1.22	256	1.65	173								
120	.19	486	.36	452	.63	396	1.01	318	1.26	265	1.69	177								
128	.20	516	.38	477	.66	415	1.05	330	1.30	274	1.72	181								
144	.23	574	.42	527	.72	453	1.12	353	1.38	289	1.79	188								
160	.26	648	.47	590	.79	500	1.22	384	1.48	311	1.89	198								
192	.307	762	.54	683	.90	566	1.34	421	1.60	335										

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: 1. Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute.
 They should be used for interpolation purposes only.
 2. Non-metallic gears are most commonly used for the driving pinion of a pair of gears, with mating gear made of Cast Iron or Steel, where pitch line velocities exceed 1000 FPM and are not subjected to shock loads.

*Torque Ratings (Lb. In.).

Approximate Horsepower and Torque* Ratings For Class I Service (Service Factor = 1.0)

12 DIAMETRAL PITCH STEEL
14½° PRESSURE ANGLE
3/4" FACE
REFERENCE PAGE 22.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
11	.05	119	.09	118	.18	116	.35	112	.51	108	.93	97	1.27	88.6	1.55	81.5	2.00	70	2.82	49.4
12	.05	130	.10	129	.20	126	.38	120	.55	116	.99	104	1.35	94.4	1.64	86.3	2.10	73.6	2.92	51.1
13	.06	149	.12	147	.23	144	.44	138	.63	132	1.12	118	1.51	106	1.83	96.3	2.33	81.6	3.19	55.9
14	.07	169	.13	167	.26	163	.49	156	.71	149	1.25	131	1.68	118	2.03	107	2.56	89.6	3.46	60.6
15	.07	189	.15	186	.29	181	.55	172	.78	164	1.37	144	1.83	128	2.20	116	2.76	96.6	3.69	64.6
16	.08	209	.16	206	.32	200	.60	190	.86	180	1.50	157	1.99	139	2.38	125	2.96	103	3.91	68.5
18	.10	249	.19	245	.38	237	.71	224	1.01	242	1.73	182	2.28	159	2.70	142	3.32	116	4.31	75.4
20	.11	289	.23	284	.44	274	.82	257	1.15	215	1.95	205	2.54	178	2.99	157	3.64	127	4.65	81.4
21	.12	310	.24	304	.47	293	.87	274	1.22	257	2.06	216	2.67	187	3.14	164	3.80	133	4.81	84.3
22	.13	328	.26	322	.49	310	.92	288	1.28	270	2.15	226	2.78	195	3.25	171	3.92	137	4.93	86.2
24	.14	365	.28	357	.54	343	1.01	317	1.41	296	2.33	245	2.98	209	3.47	182	4.14	145	5.14	90.0
30	.19	483	.37	470	.71	447	1.29	407	1.78	373	2.85	299	3.57	250	4.09	215	4.78	167		
32	.21	529	.41	514	.77	488	1.40	442	1.92	403	3.05	320	3.80	266	4.32	227	5.02	176		
36	.24	605	.46	586	.88	552	1.57	495	2.13	448	3.33	349	4.09	286	4.62	243	5.31	186		
40	.27	682	.52	659	.98	617	1.74	547	2.34	492	3.59	377	4.37	306	4.90	257				
42	.28	715	.55	689	1.02	644	1.80	568	2.42	509	3.69	387	4.46	312	4.99	262				

12 DIAMETRAL PITCH CAST IRON
14½° PRESSURE ANGLE
3/4" FACE
REFERENCE PAGE 23.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
48	.20	497	.38	477	.70	441	1.22	384	1.62	340	2.41	253	2.88	201	3.19	167				
54	.23	571	.43	545	.79	500	1.36	430	1.79	377	2.62	275	3.09	216	3.40	178				
60	.25	631	.48	600	.87	546	1.47	463	1.91	402	2.74	288	3.21	224						
64	.27	683	.51	647	.93	586	1.56	493	2.02	425	2.87	301	3.33	233						
72	.30	762	.57	718	1.02	644	1.69	533	2.17	455	3.01	316	3.46	242						
84	.36	896	.66	837	1.17	739	1.90	598	2.40	503	3.24	340								
96	.40	1014	.74	938	1.30	817	2.06	649	2.56	538	3.39	356								
108	.46	1148	.84	1054	1.44	906	2.24	706	2.76	579	3.58	376								
112	.47	1187	.86	1087	1.47	929	2.29	720	2.80	588	3.62	379								
120	.50	1264	.91	1150	1.55	975	2.37	748	2.89	607	3.69	387								
144	.59	1487	1.06	1333	1.75	1103	2.61	821	3.11	654	3.86	406								
168	.69	1745	1.22	1541	1.98	1248	2.87	905	3.38	710										

12 DIAMETRAL PITCH NON-METALLIC
14½° PRESSURE ANGLE
3/4" FACE
REFERENCE PAGE 23.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
15																				
18																				
21																				
24																				
30																				
36																				
48																				
60																				

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: 1. Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute.
They should be used for interpolation purposes only.

2. Non-metallic gears are most commonly used for the driving pinion of a pair of gears, with mating gear made of Cast Iron or Steel, where pitch line velocities exceed 1000 FPM and are not subjected to shock loads.

*Torque Ratings (Lb. In.).

A

Spur Gears

Approximate Horsepower and Torque* Ratings

For Class I Service (Service Factor = 1.0)

10 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

1" FACE

REFERENCE PAGE 23.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
11	.09	229	.18	226	.35	221	.67	211	.96	202	1.71	179	2.31	162	2.80	147	3.55	124	4.85	85
12	.10	249	.20	246	.38	240	.73	229	1.04	218	1.83	192	2.45	172	2.95	155	3.71	130	5.00	88
14	.13	325	.25	320	.49	311	.93	294	1.33	279	2.30	241	3.04	213	3.62	190	4.49	157	5.89	103
15	.14	362	.28	356	.55	345	1.03	325	1.46	307	2.51	264	3.30	231	3.92	206	4.82	169	6.25	109
16	.16	400	.31	393	.60	381	1.13	357	1.60	337	2.73	287	3.57	250	4.22	221	5.15	180	6.62	116
18	.19	447	.37	468	.72	451	1.33	420	1.87	394	3.15	330	4.07	285	4.76	250	5.75	201	7.25	127
20	.22	553	.43	542	.83	520	1.53	481	2.13	448	3.53	371	4.52	317	5.26	276	6.28	220	7.79	136
24	.28	698	.54	681	1.03	648	1.88	592	2.59	545	4.19	440	5.26	369	6.04	317	7.09	248		
25	.29	742	.57	722	1.09	687	1.98	625	2.73	574	4.38	460	5.49	384	6.28	330	7.34	257		
28	.34	854	.66	829	1.24	784	2.24	707	3.06	644	4.83	507	5.98	419	6.79	357	7.85	275		
30	.37	922	.71	893	1.34	842	2.39	754	3.25	683	5.07	533	6.24	437	7.05	370	8.10	283		
32	.40	1010	.78	977	1.46	917	2.59	817	3.51	737	5.41	569	6.61	463	7.44	391				
35	.45	1123	.86	1083	1.60	1011	2.83	893	3.80	799	5.79	608	7.01	491	7.83	411				
36	.46	1153	.88	1111	1.64	1036	2.89	912	3.88	815	5.87	617	7.09	496	7.91	415				

10 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

1" FACE

REFERENCE PAGE 24.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
40	.31	780	.59	749	1.10	693	1.92	603	2.54	534	3.79	398	4.52	317	5.01	263				
42	.32	818	.62	783	1.15	722	1.99	626	2.63	552	3.88	407	4.61	323	5.09	267				
45	.35	889	.67	850	1.24	780	2.13	670	2.79	587	4.08	428	4.81	337						
48	.38	946	.71	901	1.31	823	2.23	701	2.91	611	4.20	441	4.92	345						
50	.39	983	.74	935	1.35	851	2.29	722	2.98	626	4.27	449	4.99	350						
54	.43	1083	.82	1029	1.48	931	2.48	782	3.21	674	4.53	476	5.26	368						
55	.44	1105	.83	1046	1.50	945	2.51	791	3.24	681	4.57	480	5.29	371						
60	.48	1199	.90	1130	1.61	1013	2.66	839	3.41	716	4.73	497	5.43	381						
64	.51	1297	.97	1217	1.72	1084	2.82	890	3.59	755	4.93	518								
70	.56	1410	1.04	1316	1.84	1162	2.99	942	3.77	792	5.10	535								
72	.57	1447	1.07	1349	1.88	1187	3.04	958	3.82	803	5.15	541								
80	.64	1623	1.19	1502	2.07	1308	3.30	1039	4.10	861	5.43	570								
84	.67	1697	1.24	1565	2.15	1355	3.39	1069	4.10	882	5.51	579								
90	.72	1807	1.32	1659	2.26	1425	3.53	1111	4.34	911	5.63	591								
96	.76	1916	1.39	1750	2.37	1492	3.65	1152	4.46	938	5.73	602								
100	.79	1988	1.44	1810	2.44	1535	3.74	1177	4.54	955	5.80	609								
110	.87	2203	1.58	1990	2.64	1667	3.99	1258	4.81	1011	6.05	636								
120	.94	2380	1.69	2133	2.80	1766	4.17	1314	4.98	1047	6.18	650								
140	1.08	2724	1.91	2405	3.09	1949	4.48	1413	5.27	1108										
144	1.11	2791	1.95	2457	3.15	1983	4.54	1430	5.33	1119										
160	1.24	3132	2.16	2727	3.44	2166	4.87	1535	5.66	1188										
180	1.37	3459	2.36	2971	3.68	2318	5.11	1609	5.87	1233										

10 DIAMETRAL PITCH NON-METALLIC

14½° PRESSURE ANGLE

1" FACE

REFERENCE PAGE 23.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
15																				
18																				
20																				
25																				
30																				

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: 1. Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute.

They should be used for interpolation purposes only.

2. Non-metallic gears are most commonly used for the driving pinion of a pair of gears, with mating gear made of Cast Iron or Steel, where pitch line velocities exceed 1000 FPM and are not subjected to shock loads.

*Torque Ratings (Lb. In.).

Spur Gears

Approximate Horsepower and Torque* Ratings For Class I Service (Service Factor = 1.0)

8 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

1-1/4" FACE

REFERENCE PAGE 24.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
11	.18	446	.35	439	.68	427	1.28	404	1.82	383	3.16	332	4.19	294	5.00	263	6.21	217	8.17	143
12	.19	485	.38	478	.73	463	1.38	436	1.96	412	3.37	354	4.43	310	5.26	276	6.47	226	8.39	147
14	.25	632	.49	620	.95	599	1.77	559	2.49	524	4.21	442	5.45	382	6.40	336	7.75	271	9.81	172
15	.28	703	.55	690	1.05	664	1.96	617	2.74	576	4.58	481	5.90	413	6.89	362	8.29	290	10.39	182
16	.31	778	.60	762	1.16	731	2.15	677	3.00	630	4.97	522	6.36	445	7.39	388	8.83	309	10.96	192
18	.37	927	.72	905	1.37	865	2.52	794	3.49	734	5.69	598	7.20	504	8.30	436	9.80	343		
20	.43	1075	.83	1047	1.58	996	2.88	907	3.96	832	6.35	667	7.96	557	9.10	478	10.64	372		
22	.48	1219	.94	1184	1.78	1121	3.21	1012	4.39	923	6.95	730	8.62	603	9.79	514	11.34	397		
24	.54	1355	1.04	1313	1.96	1237	3.52	1109	4.78	1004	7.46	783	9.17	642	10.36	544	11.90	417		
28	.66	1655	1.27	1596	2.37	1490	4.18	1316	5.61	1178	8.53	896	10.33	723	11.54	606				
30	.71	1786	1.36	1718	2.53	1598	4.44	1400	5.93	1247	8.93	938	10.73	752	11.94	627				
32	.78	1957	1.49	1878	2.76	1738	4.80	1513	6.38	1340	9.49	997	11.34	794	12.56	660				

8 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

1-1/4" FACE

REFERENCE PAGE 25.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
36	.53	1339	1.01	1279	1.86	1174	3.20	1009	4.21	884	6.14	645	7.25	507						
40	.60	1508	1.14	1434	2.07	1305	3.51	1107	4.57	961	6.55	688	7.66	536						
42	.63	1579	1.19	1498	2.16	1358	3.63	1145	4.71	989	6.69	703	7.78	545						
44	.67	1681	1.26	1591	2.28	1437	3.82	1204	4.93	1036	6.95	730	8.05	564						
48	.72	1824	1.36	1719	2.44	1540	4.05	1275	5.18	1088	7.19	756	8.27	579						
54	.83	2092	1.55	1958	2.75	1735	4.48	1413	5.67	1192	7.72	811								
56	.86	2164	1.60	2021	2.83	1784	4.59	1446	5.78	1215	7.83	822								
60	.92	2307	1.70	2145	2.98	1880	4.79	1508	5.99	1259	8.01	842								
64	.99	2492	1.83	2307	3.19	2008	5.06	1595	6.30	1323	8.33	875								
72	1.10	2775	2.02	2548	3.47	2188	5.42	1707	6.66	1399	8.64	908								
80	1.23	3107	2.24	2828	3.81	2398	5.84	1839	7.10	1492	9.06	952								
84	1.29	3246	2.34	2943	3.94	2481	5.99	1887	7.25	1523	9.18	965								
88	1.34	3384	2.42	3056	4.06	2561	6.13	1933	7.39	1553	9.30	976								
96	1.45	3656	2.60	3277	4.31	2713	6.41	2019	7.65	1608	9.50	998								
112	1.69	4256	2.98	3757	4.83	3045	7.01	2207		8.24	1731									
120	1.79	4517	3.14	3960	5.04	3176	7.22	2275		8.44	1773									
128	1.89	4773	3.30	4155	5.24	3300	7.42	2339		8.62	1811									
144	2.09	5272	3.59	4528	5.60	3532	7.78	2452												
160	2.33	5868	3.95	4980	6.07	3828	8.28	2610												

8 DIAMETRAL PITCH NON-METALLIC

14½° PRESSURE ANGLE

1-1/4" FACE

REFERENCE PAGE 24.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
16																				
18																				
20																				
22																				
24																				
28																				

6 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

1-1/2" FACE

REFERENCE PAGE 25.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
11	.38	946	.74	928	1.42	893	2.64	832	3.70	778	6.20	652	8.01	561	9.37	492	11.29	395	14.19	249
12	.41	1030	.80	1008	1.54	968	2.84	896	3.97	834	6.57	691	8.41	589	9.78	514	11.69	409	14.51	254
14	.53	1340	1.04	1308	1.98	1247	3.62	1142	5.01	1053	8.12	853	10.24	717	11.77	618	13.85	485		
15	.59	1491	1.15	1452	2.19	1381	3.99	1257	5.49	1154	8.81	925	11.03	773	12.62	663	14.75	517		
16	.65	1648	1.27	1603	2.41	1519	4.37	1376	5.98	1257	9.51	999	11.83	828	13.47	708	15.65	548		
18	.78	1962	1.51	1902	2.84	1792	5.10	1606	6.92	1455	10.80	1135	13.28	930	15.00	788	17.23	603		
20	.90	2273	1.74	2196	3.26	2057	5.79	1825	7.81	1640	11.97	1258	14.57	1020	16.33	858				
21	.97	2436	1.86	2349	3.48	2194	6.15	1937	8.25	1734	12.56	1319	15.20	1065	1					

Spur Gears

Approximate Horsepower and Torque* Ratings

For Class I Service (Service Factor = 1.0)

6 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

1-1/2" FACE

REFERENCE PAGE 26.

5 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

1-3/4" FACE

REFERENCE PAGE 26.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
11	.63	1583	1.23	1546	2.35	1479	4.31	1360	5.99	1258	9.79	1028	12.41	869	14.33	753	16.96	594		
12	.68	1723	1.33	1680	2.54	1600	4.64	1462	6.40	1345	10.33	1085	12.99	910	14.91	783	17.49	613		
14	.89	2241	1.73	2176	3.26	2057	5.89	1855	8.04	1689	12.68	1332	15.70	1099	17.82	936	20.60	721		
15	.99	2491	1.92	2415	3.61	2275	6.47	2039	8.79	1847	13.71	1441	16.86	1181	19.05	1000	21.88	766		
16	1.09	2754	2.11	2664	3.97	2501	7.07	2227	9.56	2008	14.76	1550	18.03	1262	20.27	1065				
18	1.30	3275	2.50	3156	4.67	2942	8.22	2590	11.01	2313	16.68	1752	20.13	1410	22.46	1179				
20	1.50	3793	2.89	3640	5.35	3370	9.31	2934	12.36	2597	18.40	1933	21.98	1539	24.34	1279				

5 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

1-3/4" FACE

REFERENCE PAGE 26.

4 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

2" FACE

REFERENCE PAGE 27.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
11	1.11	2810	2.17	2730	4.10	2584	7.41	2334	10.13	2128	16.01	1682	19.86	1391	22.57	1185	26.14	915		
12	1.21	3057	2.35	2963	4.43	2792	7.94	2502	10.79	2266	16.83	1768	20.69	1449	23.37	1228	26.85	940		
14	1.58	3971	3.04	3831	5.67	3577	10.02	3158	13.46	2827	20.48	2151	24.79	1736	27.70	1455				
15	1.75	4414	3.37	4247	6.26	3948	10.98	3461	14.67	3081	22.06	2318	26.52	1857	29.50	1550				
16	1.93	4876	3.71	4680	6.87	4332	11.97	3772	15.90	3339	23.66	2485	28.26	1979	31.30	1644				
18	2.30	5794	4.39	5535	8.06	5080	13.85	4364	18.20	3824	26.56	2790	31.35	2196						
20	2.66	6703	5.06	6373	9.21	5802	15.61	4920	20.33	4271	29.13	3060	34.04	2384						
22	3.01	7579	5.69	7173	10.28	6478	17.22	5427	22.23	4670	31.33	3291	36.29	2541						

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute.

NOTE: Ratings to right of heavy line are not recommended.
They should be used for interpolation purposes only.

*Torque Ratings (Lb. Ins.).

Approximate Horsepower and Torque* Ratings
For Class I Service (Service Factor = 1.0)

4 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

2" FACE

REFERENCE PAGE 27.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
24	2.00	5042	3.77	4750	6.75	4257	11.19	3525	14.32	3008	19.88	2089	22.84	1600						
28	2.43	6129	4.54	5723	8.02	5053	12.99	4094	16.38	3441	22.16	2328								
30	2.62	6599	4.87	6135	8.53	5378	13.69	4314	17.14	3601	22.92	2408								
32	2.86	7211	5.30	6675	9.22	5811	14.65	4616	18.22	3829	24.11	2534								
36	3.25	8187	5.96	7514	10.24	6454	15.98	5034	19.64	4126	25.49	2677								
40	3.64	9177	6.63	8354	11.24	7085	17.24	5433	20.97	4406	26.77	2812								
42	3.80	9588	6.90	8694	11.63	7328	17.69	5575	21.42	4499	27.12	2849								
44	4.04	10181	7.29	9195	12.22	7703	18.46	5816	22.24	4672	27.97	2938								
48	4.36	10999	7.82	9858	12.95	8163	19.28	6074	23.02	4837	28.58	3002								
54	4.97	12530	8.81	11104	14.35	9045	20.94	6598	24.72	5193										
56	5.13	12933	9.06	11419	14.68	9253	21.29	6708	25.04	5261										
60	5.44	13727	9.55	12034	15.32	9652	21.94	6915	25.65	5388										
64	5.86	14763	10.20	12852	16.20	10209	22.95	7233	26.66	5601										
72	6.47	16305	11.11	14005	17.33	10923	24.07	7585	27.65	5810										
80	7.18	18101	12.18	15350	18.68	11772	25.48	8029												
84	7.47	18838	12.60	15877	19.17	12079	25.93	8170												
88	7.76	19561	13.00	16387	19.63	12372	26.35	8304												
96	8.32	20970	13.78	17365	20.50	12922	27.13	8548												

3 DIAMETRAL PITCH STEEL

14½° PRESSURE ANGLE

3" FACE

REFERENCE PAGE 27.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
11	2.94	7421	5.67	7146	10.56	6652	18.55	5846	24.82	5213	37.47	3936	45.15	3162	50.30	2642				
12	3.20	8067	6.14	7743	11.37	7167	19.80	6239	26.30	5524	39.14	4111	46.74	3273	51.78	2719				
14	4.15	10462	7.92	9979	14.49	9134	24.79	7812	32.48	6824	47.09	4947	55.40	3880						
15	4.61	11618	8.76	11046	15.96	10056	27.06	8528	35.24	7403	50.49	5304	59.01	4132						
16	5.09	12825	9.64	12156	17.47	11008	29.38	9259	38.03	7989	53.89	5661	62.60	4383						
18	6.03	15214	11.37	14333	20.38	12845	33.75	10637	43.20	9076	60.00	6303	68.93	4827						
20	6.97	17570	13.05	16454	23.16	14599	37.80	11913	47.89	10062	65.33	6863								
21	7.46	18795	13.92	17549	24.59	15495	39.84	12556	50.24	10554	67.96	7139								

3 DIAMETRAL PITCH CAST IRON

14½° PRESSURE ANGLE

3" FACE

REFERENCE PAGE 27.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
24	5.23	13175	9.67	12195	16.84	10617	26.76	8433	33.30	6995	44.05	4627	22.84	1600						
30	6.81	17164	12.40	15626	21.03	13251	32.25	10162	39.23	8241	50.07	5259								
36	8.41	21199	15.07	18998	24.96	15732	37.15	11707	44.37	9322	55.08	5786								
42	9.81	24721	17.32	21828	28.06	17687	40.69	12822	47.87	10056										
48	11.20	28241	19.50	24586	30.99	19530	43.91	13838	51.00	10715										
54	12.71	32043	21.83	27523	34.06	21466	47.30	14906	54.35	11417										
60	13.87	34965	23.52	29651	36.08	22740	49.22	15509												
72	16.35	41223	27.08	34136	40.30	25402	53.32	16803												
84	18.76	47293	30.40	38322	44.08	27782	56.87	17923												
96	20.75	52300	32.96	41545	46.71	29437	59.02	18597												
108	22.99	57968	35.87	45212	49.81	31395	61.84	19486												

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute.
They should be used for interpolation purposes only.

*Torque Ratings (Lb. Ins.).

A

Spur Gears

Approximate Horsepower and Torque* Ratings

For Class I Service (Service Factor = 1.0)

20 DIAMETRAL PITCH STEEL

20° PRESSURE ANGLE

1/2" FACE

REFERENCE PAGE 42.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
12	.01	36.5	.03	36.3	.06	35.8	.11	34.9	.16	34.1	.30	31.8	.42	29.7	.53	28.0	.71	25.0	1.08	18.9
14	.02	48.0	.04	47.7	.07	46.9	.14	45.6	.21	44.3	.39	40.9	.54	37.9	.67	35.4	.89	31.2	1.32	23.0
15	.02	53.8	.04	53.3	.08	52.5	.16	50.9	.23	49.3	.43	45.3	.60	41.9	.74	38.9	.97	34.1	1.42	24.9
16	.02	58.6	.05	58.1	.09	57.1	.18	55.2	.25	53.5	.46	48.8	.64	44.9	.79	41.6	1.04	36.3	1.49	26.2
18	.03	68.6	.05	67.9	.11	66.7	.20	64.2	.29	62.0	.53	56.1	.73	51.2	.90	47.1	1.16	40.6	1.64	28.7
20	.03	79.2	.06	78.4	.12	76.8	.23	73.7	.34	70.8	.60	63.5	.82	57.5	1.00	52.6	1.28	44.9	1.78	31.2
24	.04	99.5	.08	98.3	.15	95.8	.29	91.3	.41	87.1	.73	76.7	.98	68.5	1.18	61.9	1.48	51.9	2.00	34.9
25	.04	105	.08	103	.16	101	.30	95.6	.43	91.1	.76	79.9	1.02	71.1	1.22	64.1	1.53	53.5	2.04	35.8
30	.05	132	.10	130	.20	126	.38	119	.53	112	.92	96.4	1.21	84.5	1.43	75.2	1.76	61.6	2.28	40.0
35	.07	165	.13	162	.25	156	.46	145	.65	136	1.09	115	1.42	99.4	1.67	87.5	2.02	70.6	2.55	44.7
40	.08	194	.15	190	.29	182	.53	168	.75	157	1.24	130	1.58	111	1.84	96.6	2.20	77.0	2.73	47.8
45	.09	224	.17	219	.33	209	.61	192	.84	177	1.38	145	1.74	122	2.01	105	2.37	83.0		
50	.10	248	.19	242	.37	230	.66	210	.92	192	1.47	154	1.84	129	2.10	111	2.46	86.1		
60	.12	306	.24	296	.44	279	.79	250	1.08	227	1.68	177	2.07	145	2.34	123	2.69	94.0		
70	.14	365	.28	352	.52	329	.92	291	1.24	260	1.88	198	2.28	160	2.55	134				

20 DIAMETRAL PITCH CAST IRON

20° PRESSURE ANGLE

1/2" FACE

REFERENCE PAGE 42.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
80	.10	256	.20	246	.36	228	.63	198	.84	176	1.24	131	1.49	104	1.65	86.5				
84	.11	269	.20	257	.38	237	.65	206	.86	181	1.27	134	1.51	106	1.67	87.8				
90	.11	287	.22	274	.40	252	.69	216	.90	189	1.32	138	1.55	109	1.71	89.7				
100	.13	317	.24	302	.44	275	.74	233	.96	202	1.38	145	1.61	113	1.76	92.4				
120	.15	387	.29	365	.52	327	.86	271	1.10	231	1.53	161	1.76	123						
140	.18	447	.33	418	.59	369	.95	299	1.20	251	1.62	170	1.83	128						
160	.21	520	.38	481	.66	419	1.06	333	1.31	276	1.74	183								
180	.23	579	.42	532	.72	457	1.13	356	1.39	292	1.80	189								
200	.25	637	.46	580	.78	492	1.20	377	1.46	306	1.86	195								

16 DIAMETRAL PITCH STEEL

20° PRESSURE ANGLE

3/4" FACE

REFERENCE PAGE 43.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
12	.03	85.5	.07	84.7	.13	83.4	.26	80.9	.37	78.4	.69	72.0	.95	66.5	1.18	61.8	1.55	54.2	2.26	39.5
14	.04	112	.09	111	.17	109	.33	105	.48	102	.88	92.2	1.20	84.4	1.48	77.7	1.92	67.2	2.73	47.7
15	.05	126	.10	124	.19	122	.37	117	.54	113	.97	102	1.33	92.8	1.62	85.2	2.09	73.1	2.93	51.3
16	.05	136	.11	135	.21	133	.40	127	.58	122	1.04	110	1.42	99.4	1.73	90.8	2.21	77.5	3.07	53.8
18	.06	160	.13	158	.25	155	.47	148	.67	142	1.19	125	1.61	113	1.94	102	2.46	86.2	3.35	58.6
20	.07	185	.14	183	.28	178	.54	169	.77	161	1.35	141	1.80	126	2.16	113	2.70	94.7	3.62	63.3
24	.09	233	.18	229	.35	222	.66	209	.94	198	1.62	170	2.12	149	2.52	132	3.10	108	4.02	70.4
28	.11	283	.22	278	.43	268	.79	250	1.12	235	1.88	198	2.44	171	2.87	151	3.47	122	4.40	77.0
30	.12	308	.24	302	.46	291	.86	270	1.20	253	2.01	211	2.59	181	3.02	159	3.63	127	4.55	79.7
32	.13	340	.26	333	.51	320	.94	296	1.31	275	2.17	228	2.78	195	3.23	170	3.86	135	4.79	83.9
36	.16	395	.31	385	.58	368	1.07	338	1.49	312	2.42	254	3.06	215	3.53	186	4.17	146	5.09	89.1
40	.18	452	.35	440	.66	418	1.21	381	1.66	349	2.67	280	3.34	234	3.82	201	4.47	156	5.37	94.1
48	.22	556	.43	539	.81	508	1.44	455	1.96	412	3.06	322	3.76	264	4.25	223	4.88	171		
56	.26	665	.51	642	.95	599	1.68	529	2.25	474	3.43	360	4.15	291	4.64	244				
60	.28	711	.54	684	1.01	636	1.77	557	2.36	496	3.55	373	4.27	299	4.75	250				
64	.31	779	.59	748	1.10	692	1.91	602	2.54	533	3.78	397	4.51	316	5.00	263				
72	.35	872	.66	833	1.21	764	2.08	656	2.74	575	4.00	420	4.72	330						
80	.39	991	.75	943	1.36	858	2.31	728	3.01	632	4.31	653	5.04	353						

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute.

They should be used for interpolation purposes only.

*Torque Ratings (Lb. Ins.).

Spur Gears

Approximate Horsepower and Torque* Ratings For Class I Service (Service Factor = 1.0)

16 DIAMETRAL PITCH CAST IRON

20° PRESSURE ANGLE

3/4" FACE

REFERENCE PAGE 43.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
96	.28	707	.53	666	.95	597	1.57	494	2.01	421	2.79	293	3.20	224						
128	.38	949	.70	879	1.21	765	1.93	608	2.40	504	3.17	333	3.56	249						
144	.42	1057	.77	970	1.32	833	2.06	650	2.54	533	3.29	346								
160	.47	1195	.86	1088	1.46	923	2.25	707	2.73	574	3.49	366								
192	.56	1406	1.00	1260	1.66	1044	2.46	777	2.94	618	3.65	384								

12 DIAMETRAL PITCH STEEL

20° PRESSURE ANGLE

1" FACE

REFERENCE PAGE 43.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
12	.08	202	.16	200	.31	196	.60	188	.86	181	1.54	162	2.09	147	2.55	134	3.27	114	4.53	79.4
13	.09	233	.18	230	.36	225	.68	215	.98	206	1.75	183	2.36	165	2.86	150	3.63	127	4.97	87.1
14	.11	265	.21	262	.41	256	.77	244	1.11	233	1.96	206	2.63	184	3.18	167	4.00	140	5.42	94.8
15	.12	297	.23	293	.45	285	.86	271	1.23	259	2.16	227	2.88	202	3.46	182	4.34	152	5.80	102
16	.13	323	.25	319	.49	310	.93	294	1.33	279	2.31	243	3.07	215	3.68	193	4.58	160	6.05	106
18	.15	379	.30	373	.57	361	1.08	340	1.53	322	2.63	276	3.46	242	4.10	215	5.04	177	6.55	115
20	.17	437	.34	429	.66	415	1.23	389	1.74	365	2.95	310	3.84	269	4.52	238	5.50	193	7.02	123
21	.19	468	.36	459	.70	443	1.31	413	1.84	388	3.11	327	4.03	282	4.73	249	5.73	201	7.26	127
24	.22	548	.43	537	.82	515	1.51	477	2.11	444	3.50	368	4.48	314	5.21	274	6.22	218	7.72	135
28	.26	667	.52	651	.99	621	1.80	568	2.49	524	4.04	425	5.10	357	5.86	308	6.89	241		
30	.29	720	.56	707	1.07	673	1.94	612	2.68	562	4.29	451	5.37	376	6.15	323	7.19	252		
36	.37	928	.71	899	1.34	847	2.41	759	3.27	688	5.11	537	6.28	440	7.09	373	8.15	285		
42	.44	1112	.85	1073	1.59	1001	2.81	884	3.77	792	5.73	602	6.94	486	7.76	407				
48	.52	1304	.99	1252	1.84	1159	3.20	1009	4.25	893	6.33	665	7.56	529	8.37	440				
54	.60	1505	1.14	1437	2.09	1319	3.60	1133	4.73	993	6.90	724	8.14	570						

12 DIAMETRAL PITCH CAST IRON

20° PRESSURE ANGLE

1" FACE

REFERENCE PAGE 44.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
60	.40	998	.75	949	1.37	864	2.32	733	3.03	636	4.34	456	5.07	355						
66	.45	1125	.84	1064	1.53	961	2.56	805	3.30	693	4.65	488	5.38	377						
72	.48	1221	.91	1150	1.64	1031	2.71	853	3.47	728	4.81	506	5.53	387						
84	.58	1450	1.07	1354	1.90	1196	3.07	969	3.88	814	5.24	551								
96	.65	1641	1.21	1519	2.10	1322	3.33	1050	4.15	871	5.49	576								
108	.75	1879	1.37	1725	2.35	1482	3.67	1156	4.51	947	5.85	615								
120	.82	2068	1.49	1882	2.53	1596	3.88	1224	4.73	993	6.03	634								
132	.89	2252	1.61	2034	2.70	1704	4.08	1287	4.92	1033	6.19	650								
144	.97	2433	1.73	2181	2.87	1806	4.26	1344	5.09	1070	6.32	664								
168	1.13	2861	2.00	2526	3.25	2047	4.71	1484	5.54	1164										
192	1.27	3209	2.22	2794	3.52	2219	4.99	1573	5.80	1218										
216	1.41	3545	2.42	3045	3.77	2375	5.23	1649	6.01	1263										

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute.
They should be used for interpolation purposes only.

*Torque Ratings (Lb. In.).

A

Spur Gears

Approximate Horsepower and Torque* Ratings

For Class I Service (Service Factor = 1.0)

10 DIAMETRAL PITCH STEEL

20° PRESSURE ANGLE

1-1/4" FACE

REFERENCE PAGE 44.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
12	.14	363	.28	358	.55	349	1.06	333	1.51	318	2.66	280	3.57	250	4.30	226	5.40	189	7.27	127
14	.19	477	.37	469	.72	456	1.37	431	1.95	409	3.37	354	4.46	312	5.31	279	6.58	230	8.63	151
15	.21	533	.42	525	.81	509	1.52	479	2.16	453	3.70	389	4.87	341	5.78	303	7.10	249	9.22	161
16	.23	580	.45	571	.88	552	1.64	518	2.32	488	3.96	416	5.18	363	6.12	321	7.47	262	9.60	168
18	.27	679	.53	667	1.02	642	1.90	599	2.67	561	4.48	471	5.79	406	6.79	356	8.19	287	10.33	181
20	.31	784	.61	768	1.17	737	2.16	682	3.02	635	5.00	526	6.41	449	7.45	391	8.90	311	11.04	193
24	.39	983	.76	958	1.45	913	2.65	834	3.65	767	5.89	619	7.41	519	8.50	447	9.98	349		
25	.41	1032	.80	1005	1.52	956	2.76	870	3.80	799	6.10	641	7.64	535	8.74	459	10.21	358		
28	.47	1195	.92	1161	1.74	1097	3.14	990	4.29	901	6.76	710	8.37	586	9.50	499	10.99	385		
30	.52	1300	1.00	1260	1.88	1187	3.38	1064	4.59	964	7.16	752	8.80	616	9.94	522	11.42	400		
35	.64	1615	1.24	1558	2.31	1454	4.08	1284	5.47	1150	8.33	875	10.08	706	11.27	592				
40	.75	1896	1.44	1820	2.67	1685	4.65	1467	6.18	1299	9.20	966	10.99	770	12.17	639				
45	.87	2190	1.66	2092	3.05	1920	5.23	1649	6.88	1445	10.04	1054	11.85	830						
48	.92	2328	1.76	2218	3.21	2026	5.48	1727	7.16	1504	10.33	1085	12.12	849						
50	.96	2420	1.83	2301	3.32	2095	5.64	1777	7.34	1542	10.52	1105	12.29	861						

10 DIAMETRAL PITCH CAST IRON

20° PRESSURE ANGLE

1-1/4" FACE

REFERENCE PAGE 44.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
55	.65	1638	1.23	1550	2.22	1400	3.72	1173	4.80	1009	6.77	711	7.84	549						
60	.71	1778	1.33	1675	2.38	1501	3.94	1243	5.05	1061	7.01	737	8.06	564						
70	.84	2114	1.57	1974	2.77	1743	4.48	1413	5.65	1187	7.65	803								
80	.98	2462	1.81	2279	3.15	1984	5.00	1576	6.22	1307	8.23	865								
90	1.09	2742	2.00	2517	3.43	2162	5.35	1686	6.58	1382	8.54	897								
100	1.20	3016	2.18	2746	3.70	2329	5.67	1786	6.89	1448	8.80	924								
120	1.45	3650	2.59	3271	4.30	2709	6.40	2016	7.64	1605	9.48	996								
140	1.66	4177	2.93	3688	4.74	2989	6.88	2167	8.09	1699										
160	1.91	4814	3.32	4191	5.28	3329	7.49	2359	8.69	1826										
200	2.30	5802	3.90	4920	5.99	3773	8.17	2573												

8 DIAMETRAL PITCH STEEL

20° PRESSURE ANGLE

1-1/2" FACE

REFERENCE PAGE 45.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
12	.27	678	.53	667	1.03	647	1.93	609	2.74	576	4.71	495	6.19	434	7.35	386	9.03	316	11.72	205
14	.35	890	.69	874	1.34	843	2.50	787	3.51	738	5.92	622	7.68	537	9.01	473	10.91	382	13.81	242
15	.39	996	.77	976	1.49	939	2.77	873	3.88	816	6.49	681	8.35	585	9.76	513	11.73	411	14.70	257
16	.43	1084	.84	1061	1.62	1018	2.99	943	4.18	877	6.92	727	8.85	620	10.30	541	12.30	431		
18	.50	1268	.98	1238	1.88	1183	3.44	1086	4.77	1003	7.78	817	9.84	689	11.35	596	13.40	469		
20	.58	1462	1.13	1424	2.15	1354	3.91	1233	5.39	1131	8.64	908	10.82	758	12.38	650	14.47	507		
22	.66	1651	1.27	1604	2.41	1518	4.35	1371	5.95	1250	9.41	989	11.67	817	13.27	698	15.36	538		
24	.73	1831	1.41	1775	2.65	1672	4.75	1498	6.46	1357	10.08	1059	12.39	868	14.00	735	16.08	563		
28	.88	2224	1.70	2145	3.18	2003	5.61	1768	7.54	1583	11.47	1204	13.88	972	15.51	815	17.10	898		
32	1.06	2664	2.03	2557	3.76	2367	6.54	2060	8.68	1824	12.92	1358	15.44	1081						
36	1.22	3082	2.34	2944	4.29	2703	7.37	2321	9.68	2034	14.13	1484	16.68	1168						

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute.
They should be used for interpolation purposes only.

*Torque Ratings (Lb. Ins.).

Approximate Horsepower and Torque* Ratings
For Class I Service (Service Factor = 1.0)

8 DIAMETRAL PITCH CAST IRON

20° PRESSURE ANGLE

1-1/2" FACE

REFERENCE PAGE 45.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
40	.84	2111	1.59	2007	2.90	1928	4.92	1550	6.40	1345	9.18	964	10.72	751						
44	.95	2384	1.79	2256	3.23	2038	5.42	1707	6.99	1469	9.86	1035	11.41	799						
48	1.03	2587	1.93	2437	3.47	2184	5.74	1809	7.35	1543	10.20	1072	11.72	821						
56	1.22	3080	2.28	2876	4.03	2539	6.53	2057	8.23	1729	11.14	1170								
60	1.30	3283	2.42	3052	4.25	2676	6.81	2146	8.53	1792	11.40	1198								
64	1.42	3588	2.64	3322	4.59	2892	7.29	2297	9.07	1905	12.00	1260								
72	1.59	3997	2.91	3669	5.00	3151	7.80	2458	9.59	2014	12.44	1307								
80	1.79	4525	3.27	4119	5.54	3493	8.50	2679	10.34	2173	13.20	1386								
88	1.96	4929	3.53	4451	5.92	3729	8.93	2816	10.76	2262	13.54	1422								
96	2.11	5325	3.79	4772	6.27	3952	9.33	2941	11.15	2341	13.83	1453								
112	2.49	6266	4.39	5533	7.11	4483	10.31	3250	12.13	2549										
120	2.64	6651	4.63	5830	7.42	4677	10.63	3351	12.43	2610										
128	2.79	7028	4.85	6118	7.71	4860	10.93	3444	12.69	2667										

6 DIAMETRAL PITCH STEEL

20° PRESSURE ANGLE

2" FACE

REFERENCE PAGE 45 & 46.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
12	.63	1559	1.24	1565	2.38	1502	4.41	1391	6.16	1294	10.20	1072	13.06	915	15.19	798	18.14	635		
14	.83	2097	1.62	2046	3.10	1951	5.67	1786	7.84	1647	12.70	1334	16.02	1122	18.42	967	21.67	759		
15	.93	2345	1.81	2284	3.45	2171	6.27	1977	8.64	1814	13.85	1455	17.35	1215	19.85	1043	23.20	812		
16	1.01	2551	1.97	2480	3.73	2351	6.76	2129	9.26	1945	14.71	1545	18.30	1282	20.85	1095	24.21	848		
18	1.18	2981	2.29	2889	4.32	2722	7.74	2440	10.52	2210	16.41	1724	20.18	1413	22.79	1197	26.18	917		
21	1.46	3671	2.81	3541	5.25	3306	9.26	2919	12.44	2613	18.93	1988	22.91	1605	25.61	1345				
24	1.70	4294	3.27	4122	6.05	3815	10.54	3322	14.00	2941	20.83	2188	24.88	1743	27.56	1448				
27	1.98	4986	3.78	4763	6.94	4372	11.92	3755	15.66	3241	22.85	2400	26.98	1889						
30	2.25	5660	4.27	5381	7.77	4899	13.18	4155	17.17	3607	24.60	2584	28.75	2013						

6 DIAMETRAL PITCH CAST IRON

20° PRESSURE ANGLE

2" FACE

REFERENCE PAGE 46.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
33	1.53	3847	2.89	3641	5.22	3288	8.74	2755	11.28	2370	15.90	1670	18.42	1290						
36	1.71	4316	3.23	4066	5.78	3644	9.58	3018	12.26	2575	17.02	1788	19.56	1370						
42	2.04	5148	3.81	4807	6.73	4244	10.91	3439	13.76	2891	18.62	1955								
48	2.38	6009	4.41	5563	7.68	4843	12.21	3847	15.19	3191	20.09	2111								
54	2.74	6899	5.02	6333	8.63	5440	13.46	4243	16.55	3477	21.48	2256								
60	3.01	7591	5.48	6910	9.30	5860	14.26	4494	17.35	3645	22.14	2326								
66	3.38	8515	6.10	7691	10.22	6443	15.44	4864	18.60	3907	23.39	2457								
72	3.65	9200	6.54	8245	10.83	6827	16.12	5080	19.26	4045	23.90	2511								
84	4.30	10835	7.59	9566	12.30	7752	17.83	5620	20.98	4407										
96	4.82	12152	8.39	10579	13.33	8404	18.90	5955	21.95	4611										
108	5.47	13800	9.40	11583	14.67	9245	20.37	6420	23.41	4917										
120	5.97	15059	10.13	12770	15.54	9793	21.20	6680												

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute.
They should be used for interpolation purposes only.

*Torque Ratings (Lb. Ins.).

A

Spur Gears

Approximate Horsepower and Torque* Ratings

For Class I Service (Service Factor = 1.0)

5 DIAMETRAL PITCH STEEL 20° PRESSURE ANGLE 2-1/2" FACE REFERENCE PAGE 46.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
12	1.14	2865	2.22	2794	4.22	2662	7.71	2431	10.65	2237	17.19	1805	21.61	1513	24.80	1302	29.09	1019		
14	1.49	3756	2.89	3647	5.47	3449	9.87	3110	13.48	2832	21.25	2233	26.31	1843	29.87	1569	34.53	1209		
15	1.67	4198	3.23	4069	6.08	3833	10.90	3435	14.81	3112	23.11	2427	28.41	1990	32.09	1686	36.87	1291		
16	1.81	4565	3.50	4416	6.58	4146	11.72	3693	15.85	3329	24.47	2570	29.89	2093	33.61	1765				
18	2.12	5332	4.08	5138	7.60	4789	13.38	4216	17.92	3766	27.15	2852	32.77	2295	36.56	1920				
20	2.44	6141	4.68	5894	8.66	5456	15.07	4750	20.02	4205	29.79	3129	35.58	2492	39.41	2070				

5 DIAMETRAL PITCH CAST IRON 20° PRESSURE ANGLE 2-1/2" FACE REFERENCE PAGE 46.

No. Teeth	25 RPM		50 RPM		100 RPM		200 RPM		300 RPM		600 RPM		900 RPM		1200 RPM		1800 RPM		3600 RPM	
	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque	H.P.	Torque
24	1.82	4599	3.48	4381	6.35	4002	10.82	3411	14.15	2972	20.41	2144	23.95	1677						
25	1.91	4826	3.64	4588	6.63	4177	11.24	3542	14.64	3075	20.97	2203	24.51	1716						
28	2.21	5571	4.18	5267	7.54	4750	12.60	3970	16.23	3410	22.81	2396	26.37	1847						
30	2.40	6050	4.52	5700	8.10	5108	13.42	4230	17.18	3609	23.86	2506	27.41	1920						
35	2.97	7477	5.54	6982	9.78	6164	15.85	4995	19.98	4199	27.04	2840								
40	3.47	8737	6.42	8087	11.17	7040	17.75	5593	22.08	4639	29.21	3068								
45	3.98	10040	7.31	9216	12.56	7916	19.59	6174	24.09	5060	31.26	3284								
50	4.38	11046	7.98	10056	13.53	8528	20.75	6540	25.25	5304	32.22	3384								
60	5.32	13399	9.53	12008	15.78	9944	23.48	7400	28.05	5892	34.81	3657								
70	6.27	15794	11.06	13945	17.93	11300	26.00	8192	30.58	6425										
80	7.23	18229	12.59	15869	20.00	12605	28.34	8932	32.92	6916										
100	8.71	21969	14.78	18630	22.67	14288	30.92	9745												
110	9.68	24409	16.22	20449	24.50	15439	32.88	10362												
120	10.38	26168	17.19	21669	25.58	16125	33.85	10666												
140	11.70	29508	18.97	23910	27.50	17334	35.49	11182												
160	13.30	33526	21.13	26631	29.94	18870	37.83	11921												
180	14.49	36534	22.61	28495	31.40	19787	38.97	12281												

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute.
They should be used for interpolation purposes only.

*Torque Ratings (Lb. Ins.).

Gear Gauge Set



14-1/2° and 20° Pressure Angles

This handy, steel gear gauge set consists of 16 leaves — 24 gauges — to measure both 14-1/2° and 20° Pressure Angle tooth form, in diametral pitch sizes 64, 48, 32, 24, 20, 16, 12, 10, 8, 6, 5 and 4. Pitch sizes 8, 6, 5 and 4 both 14-1/2° and 20° are cut on individual leaves. Pitch sizes 64 through 10 inclusive, have both 14-1/2° and 20° Pressure Angles on a single leaf.

SOLD ONLY AS A COMPLETE SET

ORDER BY CATALOG NUMBER OR ITEM CODE

Catalog Number	Item Code
Gear Gauge	06000