

STOCK GEARS

OVER 9500 ITEMS HELP YOU GEAR UP FOR HIGHER PRODUCTIVITY

BROWNING is one of the most comprehensive lines of off-the-shelf gears in the industry, including spur, miter and bevel, and change gears. These are available in 20° pressure angle from 20 to 4 dp, and 14 1/2° pressure angle from 48 to 3 dp ... all designed to increase output, reduce costs and avoid specials.

- Thousands of shaft-ready finished bore and bushing types (a BROWNING exclusive) eliminate rework costs, assure true-running precision at all times.
- More stock sizes made of steel ... you get weldability plus greater strength, at cast iron prices.
- Extra tooth depth and larger radii provide stronger teeth, a deeper lubrication reservoir and more clearance.
- Many bevel gears are available hardened for longer life.
- Many odd-tooth sizes.
- Custom gear capabilities - up to 60" dia. and 17" face.

All BROWNING® gears meet AGMA quality standards and our own close manufacturing tolerances. Gear up with BROWNING to increase your productivity!

**SPUR GEAR AND
PINION,
BUSHING TYPE**



BEVEL GEARS



**BUSHING TYPE
SPUR GEAR AND RACK**

STOCK GEARS

SPUR GEARS

TYPE	MATERIAL	PRESSURE ANGLE	PITCH RANGE	TOOTH RANGE	BORE RANGE
Spur, Min. Bore (Fine Pitch)	Steel	14 1/2°	32, 24, 20	11-200	3/32-1
Spur, Min. Bore	Steel & Cast Iron	14 1/2	16,12,10,8,6,5,4,3	11-200	3/8 - 3 5/8
Spur, Fin. Bore			20,16,12,10,8,6	11-35	1/4 - 1 1/4
Spur, Bushing Type			16,12,10,8,6,5,4,3	15-200	3/8 - 4 1/4
Spur, Min. Bore	Steel & Cast Iron	20	20,16,12,10,8,6,5,4	12-240	5/16 - 3 5/8
Spur, Fin. Bore			20,16,12,10,8,6	12-40	1/4 - 1 1/4
Spur, Bushing Type			16,12,10,8,6,5,4	18-240	3/8 - 4 1/4
Spur, Change Gear	Steel	14 1/2	20,16,12,10,8	20-129	5/8 - 1 3/8**
Rack	Steel	14 1/2	32,24,20,16,12,10,8,6,5,4,3	-	-
	Steel	20	20,16,12,10,8,6,5,4	-	-

BEVEL AND MITER GEARS

TYPE	MATERIAL	PRESSURE ANGLE	PITCH RANGE	TOOTH RANGE	BORE RANGE
Bevel	Unhardened Steel	20	20,16,12,10,8,6,5,4,3	10-96	3/16 - 3
Miter	Hardened & Unhardened Steel	20	32,24,20,16,12,10,8,6,5,4	12-32	3/16 - 3
Spiral Bevel	Hardened Steel	20	14,10,8	16-34	1/2 - 1 1/2
Spiral Miter			12,10,8,7,6,5	15-28	1/2 - 1 3/8

** Bushing bore range is 7/16 - 1 1/16.

NEW! Expanded MTO Gear Rack Capability

- From 1 DP to 64 DP
- Metric Module Pitch
- Face Widths to 18" (450 mm)
- Thickness to 18" (450 mm)
- Maximum width 23" (554 mm)
- 14 1/2, 20 25° P.A.
- Additional Steels
- Up to AGMA Call 11 Spacing Accuracy
- Up to any practical length
- Round and helical gear rack



32 Pitch

3/16" Face

14 1/2° Pressure Angle

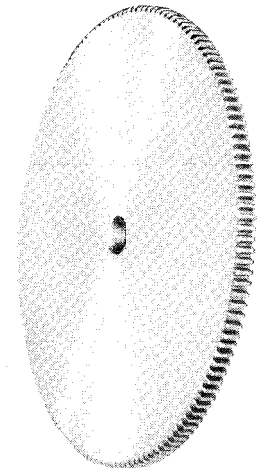
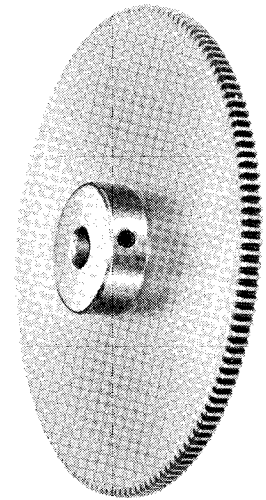


TABLE No. 2

STOCK STEEL MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
NSS3215	.469"	.53"	15	2	3/16"	3/16"	3/16"	1/2"	5/16"	3/8"	.03
NSS3216A	.500	.56	16	A2	3/16	-	3/16	-	-	-	.03
NSS3216	.500	.56	16	2	3/16	3/16	3/16	1/2	5/16	13/32	.03
NSS3218	.562	.62	18	2	3/16	3/16	3/16	1/2	5/16	15/32	.03
NSS3220A	.625	.68	20	A2	1/4	-	3/16	-	-	-	.03
NSS3220	.625	.68	20	2	1/4	1/4	3/16	1/2	5/16	17/32	.03
NSS3222A	.688	.75	22	A2	1/4	-	3/16	-	-	-	.03
NSS3222	.688	.75	22	2	1/4	1/4	3/16	1/2	5/16	19/32	.03
NSS3224A	.750	.81	24	A2	5/16	-	3/16	-	-	-	.03
NSS3224	.750	.81	24	2	5/16	5/16	3/16	1/2	5/16	21/32	.06
NSS3226	.812	.87	26	2	5/16	3/8	3/16	1/2	5/16	23/32	.06
NSS3228A	.875	.93	28	A2	3/8	-	3/16	-	-	-	.06
NSS3228	.875	.93	28	2	5/16	3/8	3/16	1/2	5/16	3/4	.09
NSS3230	.938	1.00	30	2	5/16	3/8	3/16	1/2	5/16	3/4	.09
NSS3232A	1.000	1.06	32	A2	3/8	-	3/16	-	-	-	.06
NSS3232	1.000	1.06	32	2	5/16	3/8	3/16	9/16	3/8	3/4	.13
NSS3240A	1.250	1.31	40	A2	3/8	-	3/16	-	-	-	.13
NSS3240	1.250	1.31	40	2	3/8	7/16	3/16	9/16	3/8	7/8	.19
NSS3248A	1.500	1.56	48	A2	3/8	-	3/16	-	-	-	.13
NSS3248	1.500	1.56	48	2	3/8	7/16	3/16	9/16	3/8	7/8	.19
NSS3256A	1.750	1.81	56	A2	3/8	-	3/16	-	-	-	.13
NSS3256	1.750	1.81	56	2	3/8	1/2	3/16	9/16	3/8	1	.25
NSS3264A	2.000	2.06	64	A2	3/8	-	3/16	-	-	-	.19
NSS3264	2.000	2.06	64	2	3/8	1/2	3/16	9/16	3/8	1	.31
NSS3280A	2.500	2.56	80	A2	3/8	-	3/16	-	-	-	.25
NSS3280	2.500	2.56	80	2	3/8	9/16	3/16	9/16	3/8	1 1/8	.38
NSS3296A	3.000	3.06	96	A2	3/8	-	3/16	-	-	-	.38
NSS3296	3.000	3.06	96	2	3/8	9/16	3/16	11/16	1/2	1 1/4	.56
NSS32128	4.000	4.06	128	2	3/8	11/16	3/16	11/16	1/2	1 3/8	.88
NSS32160	5.000	5.06	160	2	3/8	11/16	3/16	11/16	1/2	1 3/8	1.3
NSS32192	6.000	6.06	192	2	3/8	13/16	3/16	13/16	5/8	1 1/2	1.8
NSS32200	6.250	6.31	200	2	3/8	13/16	3/16	13/16	5/8	1 1/2	1.9

Note: All of above Gears have one Hollow Head Setscrew in Hub, except Type A2 which have no Setscrew.



24 Pitch

1/4" Face

14 1/2° Pressure Angle

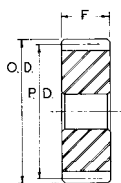


TABLE No. 1

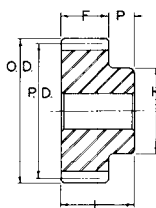
STOCK STEEL MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
NSS2412A	.500"	.58"	12	A2	1/4	-	1/4"	-	-	-	.03
NSS2412	.500	.58	12	2	1/4	1/4"	1/4	9/16	5/16	3/8"	.06
NSS2414	.583	.66	14	2	1/4	1/4	1/4	9/16	5/16	15/32	.06
NSS2415A	.625	.70	15	A2	1/4	-	1/4	-	-	-	.03
NSS2415	.625	.70	15	2	1/4	1/4	1/4	9/16	5/16	1/2	.06
NSS2416A	.667	.75	16	A2	5/16	-	1/4	-	-	-	.03
NSS2416	.667	.75	16	2	5/16	5/16	1/4	9/16	5/16	35/64	.06
NSS2418A	.750	.83	18	A2	5/16	-	1/4	-	-	-	.03
NSS2418	.750	.83	18	2	5/16	3/8	1/4	9/16	5/16	5/8	.06
NSS2419	.792	.87	19	2	5/16	3/8	1/4	9/16	5/16	21/32	.06
NSS2420	.833	.91	20	2	5/16	3/8	1/4	9/16	5/16	23/32	.06
NSS2421A	.875	.95	21	A2	3/8	-	1/4	-	-	-	.03
NSS2421	.875	.95	21	2	3/8	1/2	1/4	9/16	5/16	3/4	.06
NSS2422	.917	1.00	22	2	3/8	1/2	1/4	9/16	5/16	25/32	.09
NSS2423	.958	1.04	23	2	3/8	1/2	1/4	5/8	3/8	13/16	.09
NSS2424A	1.000	1.08	24	A2	1/2	-	1/4	-	-	-	.06
NSS2424	1.000	1.08	24	2	3/8	1/2	1/4	5/8	3/8	7/8	.13
NSS2425	1.042	1.12	25	2	3/8	9/16	1/4	5/8	3/8	7/8	.13
NSS2426	1.083	1.16	26	2	3/8	9/16	1/4	5/8	3/8	7/8	.13
NSS2427	1.125	1.20	27	2	3/8	9/16	1/4	5/8	3/8	7/8	.13
NSS2428	1.167	1.25	28	2	3/8	5/8	1/4	5/8	3/8	1	.13
NSS2430A	1.250	1.33	30	A2	1/2	-	1/4	-	-	-	.06
NSS2430	1.250	1.33	30	2	3/8	5/8	1/4	5/8	3/8	1	.13
NSS2432	1.333	1.41	32	2	3/8	5/8	1/4	5/8	3/8	1 1/8	.13
NSS2433	1.375	1.45	33	2	3/8	5/8	1/4	5/8	3/8	1 1/8	.13
NSS2436A	1.500	1.58	36	A2	1/2	-	1/4	-	-	-	.06
NSS2436	1.500	1.58	36	2	3/8	5/8	1/4	5/8	3/8	1 1/8	.19
NSS2439	1.625	1.70	39	2	3/8	5/8	1/4	5/8	3/8	1 1/8	.19
NSS2440	1.667	1.75	40	2	3/8	5/8	1/4	5/8	3/8	1 1/8	.19
NSS2442A	1.750	1.83	42	A2	1/2	-	1/4	-	-	-	.13
NSS2442	1.750	1.83	42	2	3/8	5/8	1/4	5/8	3/8	1 1/8	.19
NSS2444	1.833	1.91	44	2	3/8	5/8	1/4	5/8	3/8	1 1/4	.25
NSS2445	1.875	1.95	45	2	3/8	5/8	1/4	5/8	3/8	1 1/4	.25
NSS2448A	2.000	2.08	48	A2	1/2	-	1/4	-	-	-	.19
NSS2448	2.000	2.08	48	2	3/8	5/8	1/4	5/8	3/8	1 1/4	.25
NSS2454	2.250	2.33	54	2	3/8	5/8	1/4	5/8	3/8	1 1/4	.31
NSS2456	2.333	2.41	56	2	3/8	5/8	1/4	5/8	3/8	1 1/4	.38
NSS2460A	2.500	2.58	60	A2	1/2	-	1/4	-	-	-	.31
NSS2460	2.500	2.58	60	2	3/8	5/8	1/4	5/8	3/8	1 1/4	.38
NSS2464	2.667	2.75	64	2	1/2	3/4	1/4	5/8	3/8	1 3/8	.44
NSS2466	2.750	2.83	66	2	1/2	3/4	1/4	5/8	3/8	1 3/8	.5
NSS2470	2.917	3.00	70	2	1/2	3/4	1/4	5/8	3/8	1 3/8	.56
NSS2472A	3.000	3.08	72	A2	1/2	-	1/4	-	-	-	.5
NSS2472	3.000	3.08	72	2	1/2	3/4	1/4	3/4	1/2	1 3/8	.63
NSS2484	3.500	3.58	84	2	1/2	3/4	1/4	3/4	1/2	1 1/2	.81
NSS2496	4.000	4.08	96	2	1/2	3/4	1/4	3/4	13/32	1 1/2	1.0
NSS24120	5.000	5.08	120	2	1/2	3/4	1/4	3/4	13/32	1 1/2	1.5
NSS24144	6.000	6.08	144	2	1/2	7/8	1/4	7/8	17/32	1 5/8	2.3

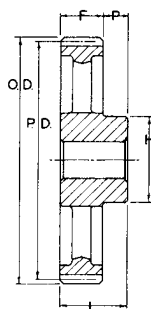
Note: All of above Gears have One Hollow Head Setscrew in Hub, except type A2 gears which have no hubs and NSS2412 and NSS2414 which have One #35 (.110") Drilled Hole thru one wall of Hub.



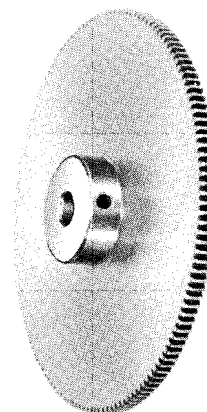
TYPE A2



TYPE 2



TYPE 4



20 Pitch

3/8" Face

14 1/2° Pressure Angle

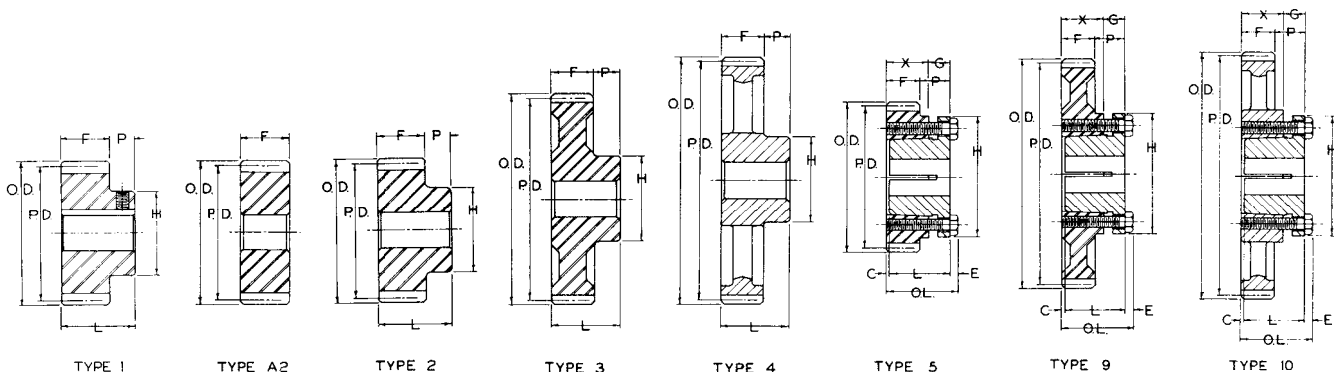


TABLE No. 1

STOCK STEEL MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
NSS2011*	.600"	.70"	11	2	5/16"	5/16"	3/8"	3/4"	3/8"	29/64"	.06
NSS2012	.600	.70	12	2	5/16	5/16	3/8	3/4	3/8	29/64	.06
NSS2013	.650	.75	13	2	5/16	3/8	3/8	3/4	3/8	1/2	.06
NSS2014	.700	.80	14	2	5/16	3/8	3/8	3/4	3/8	35/64	.06
NSS2015	.750	.85	15	2	3/8	3/8	3/8	3/4	3/8	19/32	.06
NSS2016	.800	.90	16	2	3/8	7/16	3/8	3/4	3/8	21/32	.12
NSS2017	.850	.95	17	2	3/8	7/16	3/8	3/4	3/8	45/64	.12
NSS2018	.900	1.00	18	2	3/8	1/2	3/8	3/4	3/8	3/4	.12
NSS2019	.950	1.05	19	2	3/8	1/2	3/8	3/4	3/8	51/64	.12
NSS2020	1.000	1.10	20	2	3/8	1/2	3/8	3/4	3/8	27/32	.12
NSS2021	1.050	1.15	21	2	3/8	1/2	3/8	3/4	3/8	7/8	.16
NSS2022	1.100	1.20	22	2	3/8	9/16	3/8	3/4	3/8	61/64	.19
NSS2023	1.150	1.25	23	2	3/8	9/16	3/8	3/4	3/8	61/64	.13
NSS2024	1.200	1.30	24	2	3/8	9/16	3/8	3/4	3/8	1 3/64	.13
NSS2025	1.250	1.35	25	2	3/8	5/8	3/8	3/4	3/8	1 3/32	.19
NSS2028	1.400	1.50	28	2	3/8	5/8	3/8	3/4	3/8	1 1/4	.25
NSS2030	1.500	1.60	30	2	3/8	3/4	3/8	3/4	3/8	1 11/32	.31
NSS2032	1.600	1.70	32	2	3/8	3/4	3/8	7/8	1/2	1 7/16	.38
NSS2035	1.750	1.85	35	2	3/8	7/8	3/8	7/8	1/2	1 9/16	.44
NSS2036	1.800	1.90	36	2	3/8	7/8	3/8	7/8	1/2	1 5/8	.5
NSS2040	2.000	2.10	40	2	3/8	1	3/8	7/8	1/2	1 13/16	.56
NSS2045	2.250	2.35	45	2	3/8	1	3/8	7/8	1/2	1 13/16	.63
NSS2048	2.400	2.50	48	2	3/8	1	3/8	7/8	1/2	1 13/16	.81
NSS2050	2.500	2.60	50	2	3/8	1	3/8	7/8	1/2	1 13/16	.88
NSS2055	2.750	2.85	55	2	3/8	1	3/8	7/8	1/2	1 13/16	.94
NSS2060	3.000	3.10	60	2	3/8	1	3/8	7/8	1/2	1 13/16	.94
NSS2064	3.200	3.30	64	2	3/8	1	3/8	7/8	1/2	1 13/16	1.0
NSS2070	3.500	3.60	70	2	3/8	1	3/8	7/8	1/2	1 13/16	1.2
NSS2072	3.600	3.70	72	2	3/8	1	3/8	7/8	1/2	1 13/16	1.3
NSS2075	3.750	3.85	75	2	3/8	1	3/8	7/8	1/2	1 13/16	1.4
NSS2080	4.000	4.10	80	2	1/2	1	3/8	7/8	1/2	1 13/16	1.5
NSS2084	4.200	4.30	84	2	1/2	1	3/8	7/8	1/2	1 13/16	1.8
NSS2090	4.500	4.60	90	2	1/2	1	3/8	7/8	1/2	1 13/16	2.0
NSS2096	4.800	4.90	96	2	1/2	1	3/8	7/8	1/2	1 13/16	2.1
NSS20100	5.000	5.10	100	2	1/2	1	3/8	7/8	1/2	1 13/16	2.3
NSS20110	5.500	5.60	110	2	1/2	1	3/8	7/8	1/2	1 13/16	2.8
NSS20112	5.600	5.70	112	2	1/2	1	3/8	7/8	1/2	1 13/16	2.9
NSS20120	6.000	6.10	120	2	1/2	1	3/8	7/8	1/2	1 13/16	3.4
NSS20132	6.600	6.70	132	2	1/2	1	3/8	7/8	1/2	1 13/16	4.0
NSS20140	7.000	7.10	140	2	1/2	1	3/8	7/8	1/2	1 13/16	4.5
NSS20144	7.200	7.30	144	2	1/2	1	3/8	7/8	1/2	1 13/16	4.6
NSS20150	7.500	7.60	150	2	1/2	1	3/8	1	5/8	1 13/16	5.1
NSS20156	7.800	7.90	156	2	1/2	1	3/8	1	5/8	1 13/16	5.5
NSS20160	8.000	8.10	160	2	1/2	1	3/8	1	5/8	1 13/16	5.8
NSS20168	8.400	8.50	168	2	1/2	1	3/8	1	5/8	1 13/16	6.5
NSS20180	9.000	9.10	180	2	1/2	1	3/8	1	5/8	1 13/16	7.3
NSS20200	10.000	10.10	200	2	1/2	1	3/8	1	5/8	1 13/16	8.6

*Enlarged Pinion Tooth Form - Pitch Diameter is Special. Use For Calculating Center Distance but not for Ratio.



16 Pitch

1/2" Face

14 1/2°

Pressure
Angle



TABLE No. 1

STOCK STEEL FINISHED BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	STOCK BORES MARKED "X"						DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			5/16"	3/8"	1/2"	5/8"	3/4"	1"	F	L	P	H	
NSS16F12	.750"	.87"	12	1	X	-	-	-	-	-	1/2"	15/16"	7/16"	9/16"	.09
NSS16F13	.813	.93	13	1	-	X	-	-	-	-	1/2	15/16	7/16	5/8	.09
NSS16F14	.875	1.00	14	1	-	X	-	-	-	-	1/2	15/16	7/16	11/16	.13
NSS16F15	.938	1.06	15	1	-	X	X	-	-	-	1/2	15/16	7/16	3/4	.13
NSS16F16	1.000	1.12	16	1	-	X	X	-	-	-	1/2	15/16	7/16	13/16	.19
NSS16F18	1.125	1.25	18	1	-	-	X	-	-	-	1/2	15/16	7/16	15/16	.19
NSS16F20	1.250	1.37	20	1	-	-	X	X	-	-	1/2	15/16	7/16	1 1/16	.19
NSS16F22	1.375	1.50	22	1	-	-	X	X	-	-	1/2	15/16	7/16	1 3/16	.25
NSS16F24	1.500	1.62	24	1	-	-	X	X	X	-	1/2	15/16	7/16	1 5/16	.31
NSS16F26	1.625	1.75	26	1	-	-	X	X	X	-	1/2	15/16	7/16	1 7/16	.44
NSS16F28	1.750	1.87	28	1	-	-	X	X	X	-	1/2	1	1/2	1 1/2	.50
NSS16F30	1.875	2.00	30	1	-	-	X	X	X	X	1/2	1	1/2	1 5/8	.50
NSS16F32	2.000	2.12	32	1	-	-	X	X	X	X	1/2	1	1/2	1 3/4	.69

All of above Gears are Steel. Furnished with one Hollow Head Setscrew and Standard Keyseat, except 1/2" bore and smaller which have Setscrew only. For standard Keyseats see Page F-8.

TABLE No. 2

STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
NSS1611*	.750"	.87"	11	2	3/8"	3/8"	1/2"	15/16"	7/16"	9/16"	.06
NSS1612	.750	.87	12	2	3/8	3/8	1/2	15/16	7/16	9/16	.06
NSS1613	.813	.93	13	2	3/8	3/8	1/2	15/16	7/16	5/8	.06
NSS1614	.875	1.00	14	2	3/8	7/16	1/2	15/16	7/16	11/16	.06
NSS1615	.938	1.06	15	2	1/2	1/2	1/2	15/16	7/16	3/4	.09
NSS1616	1.000	1.12	16	2	1/2	1/2	1/2	15/16	7/16	13/16	.09
NSS1617	1.063	1.18	17	2	1/2	1/2	1/2	15/16	7/16	7/8	.09
NSS1618	1.125	1.25	18	2	1/2	9/16	1/2	15/16	7/16	15/16	.13
NSS1619	1.188	1.31	19	2	1/2	9/16	1/2	15/16	7/16	1	.13
NSS1620	1.250	1.37	20	2	1/2	5/8	1/2	15/16	7/16	1 1/16	.13
NSS1621	1.313	1.43	21	2	1/2	5/8	1/2	15/16	7/16	1 1/8	.19
NSS1622	1.375	1.50	22	2	1/2	5/8	1/2	15/16	7/16	1 3/16	.19
NSS1623	1.438	1.56	23	2	1/2	11/16	1/2	15/16	7/16	1 1/4	.25
NSS1624	1.500	1.62	24	2	1/2	3/4	1/2	15/16	7/16	1 5/16	.31
NSS1626	1.625	1.75	26	2	1/2	3/4	1/2	15/16	7/16	1 7/16	.31
NSS1628	1.750	1.87	28	2	1/2	7/8	1/2	1	1/2	1 1/2	.50
NSS1630	1.875	2.00	30	2	1/2	1	1/2	1	1/2	1 5/8	.56
NSS1632	2.000	2.12	32	2	1/2	1	1/2	1	1/2	1 3/4	.63
NSS1634	2.125	2.25	34	2	1/2	1 1/8	1/2	1	1/2	1 7/8	.75
NSS1636	2.250	2.37	36	2	1/2	1 1/4	1/2	1	1/2	2	.81
NSS1638	2.375	2.50	38	2	1/2	1 1/4	1/2	1	1/2	2	.94
NSS1640	2.500	2.62	40	2	1/2	1 1/4	1/2	1	1/2	2	1.0
NSS1644	2.750	2.87	44	2	1/2	1 1/4	1/2	1	1/2	2	1.1
NSS1648	3.000	3.12	48	2	1/2	1 1/4	1/2	1	1/2	2	1.3
NSS1652	3.250	3.37	52	2	1/2	1 1/4	1/2	1	1/2	2	1.5
NSS1654	3.375	3.50	54	2	1/2	1 1/4	1/2	1	1/2	2	1.6
NSS1656	3.500	3.62	56	2	1/2	1 1/4	1/2	1	1/2	2	1.7
NSS1660	3.750	3.87	60	2	1/2	1 1/4	1/2	1 1/8	5/8	2	1.8
NSS1664	4.000	4.12	64	2	5/8	1 1/4	1/2	1 1/8	5/8	2	1.8
NSS1668	4.250	4.37	68	2	5/8	1 1/4	1/2	1 1/8	5/8	2	2.2
NSS1672	4.500	4.62	72	2	5/8	1 1/4	1/2	1 1/8	5/8	2	2.3
NSS1680	5.000	5.12	80	2	5/8	1 1/4	1/2	1 1/8	5/8	2	2.6
NSS1684	5.250	5.37	84	2	5/8	1 1/4	1/2	1 1/8	5/8	2	3.1
NSS1688	5.500	5.62	88	2	5/8	1 1/4	1/2	1 1/8	5/8	2	2.3
NCS1696	6.000	6.12	96	4	5/8	1 1/4	1/2	1 1/8	5/8	2	2.3
NCS16104	6.500	6.62	104	4	5/8	1 1/4	1/2	1 1/8	5/8	2	2.9
NCS16112	7.000	7.12	112	4	5/8	1 1/4	1/2	1 1/8	5/8	2	2.8
NCS16120	7.500	7.62	120	4	5/8	1 1/4	1/2	1 1/8	5/8	2	3.0
NCS16128	8.000	8.12	128	4	5/8	1 1/4	1/2	1 1/8	5/8	2	3.4
NCS16136	8.500	8.62	136	4	5/8	1 1/4	1/2	1 1/8	5/8	2	4.1
NCS16144	9.000	9.12	144	2	5/8	1 1/4	1/2	1 1/4	3/4	2	8.5
NCS16160	10.000	10.12	160	4	5/8	1 1/4	1/2	1 1/4	3/4	2	4.5
NCS16192	12.000	12.12	192	4	5/8	1 1/4	1/2	1 1/4	3/4	2	5.4

*Enlarged Pinion Tooth Form - Pitch Diameter is Special. Use For Calculating Center Distance but not for Ratio.
All 88 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

12 Pitch

3/4" Face

14 1/2° Pressure Angle



TABLE No. 1

STOCK STEEL FINISHED BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	STOCK BORES MARKED "X"					DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			1/2"	5/8"	3/4"	7/8"	1"	F	L	P	H	
NSS12F11*	1.000"	1.16"	11	1	X	-	-	-	-	3/4"	1 1/4"	1/2"	3/4"	.1
NSS12F12	1.000	1.16	12	1	X	-	-	-	-	3/4	1 1/4	1/2	3/4	.1
NSS12F13	1.083	1.25	13	1	X	-	-	-	-	3/4	1 1/4	1/2	13/16	.2
NSS12F14	1.167	1.33	14	1	X	-	-	-	-	3/4	1 1/4	1/2	29/32	.2
NSS12F15	1.250	1.41	15	1	X	-	-	-	-	3/4	1 1/4	1/2	1	.3
NSS12F16	1.333	1.50	16	1	X	-	-	-	-	3/4	1 1/4	1/2	1 1/16	.3
NSS12F18	1.500	1.66	18	1	-	X	-	-	-	3/4	1 1/4	1/2	1 1/4	.4
NSS12F20	1.667	1.83	20	1	-	X	X	-	-	3/4	1 1/4	1/2	1 13/32	.5
NSS12F21	1.750	1.91	21	1	-	X	X	X	-	3/4	1 1/4	1/2	1 1/2	.6
NSS12F22	1.833	2.00	22	1	-	X	X	X	X	3/4	1 1/4	1/2	1 9/16	.6
NSS12F24	2.000	2.16	24	1	-	X	X	X	X	3/4	1 1/4	1/2	1 3/4	.8

*Enlarged Pinion Tooth Form - Pitch Diameter is Special. Use For Calculating Center Distance but not for Ratio.

All of above Gears are Steel. Furnished with one Hollow Head Setscrew and Standard Keyseat, except 1/2" bore and smaller which have Setscrew only. For standard Keyseats see Page F-8.

TABLE No. 2

STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
NSS1211*	1.000"	1.16"	11	2	1/2"	1/2"	3/4"	1 1/4"	1/2"	3/4"	.1
NSS1212	1.000	1.16	12	2	1/2	1/2	3/4	1 1/4	1/2	3/4	.1
NSS1213	1.083	1.25	13	2	1/2	1/2	3/4	1 1/4	1/2	13/16	.1
NSS1214	1.167	1.33	14	2	1/2	1/2	3/4	1 1/4	1/2	29/32	.1
NSS1215	1.250	1.41	15	2	5/8	5/8	3/4	1 1/4	1/2	1	.2
NSS1216	1.333	1.50	16	2	5/8	5/8	3/4	1 1/4	1/2	1 1/16	.3
NSS1217	1.417	1.58	17	2	5/8	5/8	3/4	1 1/4	1/2	1 1/8	.3
NSS1218	1.500	1.66	18	2	5/8	5/8	3/4	1 1/4	1/2	1 1/4	.4
NSS1219	1.583	1.75	19	2	5/8	11/16	3/4	1 1/4	1/2	1 5/16	.4
NSS1220	1.667	1.83	20	2	5/8	3/4	3/4	1 1/4	1/2	1 13/32	.5
NSS1221	1.750	1.91	21	2	5/8	7/8	3/4	1 1/4	1/2	1 1/2	.5
NSS1222	1.833	2.00	22	2	5/8	1	3/4	1 1/4	1/2	1 9/16	.6
NSS1223	1.917	2.08	23	2	5/8	1	3/4	1 1/4	1/2	1 5/8	.8
NSS1224	2.000	2.16	24	2	5/8	1	3/4	1 1/4	1/2	1 3/4	.8
NSS1225	2.083	2.25	25	2	5/8	1 1/16	3/4	1 1/4	1/2	1 27/32	.9
NSS1226	2.167	2.33	26	2	5/8	1 1/8	3/4	1 3/8	5/8	1 15/16	1.0
NSS1228	2.333	2.50	28	2	5/8	1 3/16	3/4	1 3/8	5/8	2 1/16	1.4
NSS1230	2.500	2.66	30	2	5/8	1 3/8	3/4	1 3/8	5/8	2 1/4	1.5
NSS1232	2.667	2.83	32	2	5/8	1 3/8	3/4	1 3/8	5/8	2 1/4	1.9
NSS1234	2.833	3.00	34	2	5/8	1 1/2	3/4	1 3/8	5/8	2 3/8	2.1
NSS1236	3.000	3.16	36	2	5/8	1 5/8	3/4	1 3/8	5/8	2 1/2	2.4
NSS1238	3.167	3.33	38	2	5/8	1 5/8	3/4	1 3/8	5/8	2 1/2	2.4
NSS1240	3.333	3.50	40	2	5/8	1 5/8	3/4	1 3/8	5/8	2 1/2	2.6
NSS1242	3.500	3.66	42	2	5/8	1 5/8	3/4	1 3/8	5/8	2 1/2	2.6
NSS1244	3.667	3.83	44	2	5/8	1 5/8	3/4	1 3/8	5/8	2 1/2	2.8
NSS1248	4.000	4.16	48	2	3/4	1 5/8	3/4	1 1/2	3/4	2 1/2	3.4
NSS1254	4.500	4.66	54	2	3/4	1 5/8	3/4	1 1/2	3/4	2 1/2	4.1
NSS1256	4.667	4.83	56	2	3/4	1 5/8	3/4	1 1/2	3/4	2 1/2	4.4
NSS1260	5.000	5.16	60	2	3/4	1 5/8	3/4	1 1/2	3/4	2 1/2	5.1
NCS1264	5.333	5.50	64	4	3/4	1 1/2	3/4	1 1/2	3/4	2 1/2	3.8
NCS1266	5.500	5.66	66	4	3/4	1 1/2	3/4	1 1/2	3/4	2 1/2	3.8
NCS1272	6.000	6.16	72	4	3/4	1 1/2	3/4	1 1/2	3/4	2 1/2	3.8
NCS1278	6.500	6.66	78	4	3/4	1 1/2	3/4	1 1/2	3/4	2 1/2	4.6
NCS1284	7.000	7.16	84	4	3/4	1 1/2	3/4	1 1/2	3/4	2 1/2	4.2
NCS1290	7.500	7.66	90	4	3/4	1 1/2	3/4	1 1/2	3/4	2 1/2	5.1
NCS1296	8.000	8.16	96	4	3/4	1 1/2	3/4	1 1/2	3/4	2 1/2	4.8
NCS12102	8.500	8.66	102	4	3/4	1 1/2	3/4	1 1/2	3/4	2 1/2	5.9
NCS12108	9.000	9.16	108	4	3/4	1 1/2	3/4	1 1/2	3/4	2 1/2	5.4
NCS12112	9.333	9.50	112	4	3/4	1 1/2	3/4	1 1/2	3/4	2 1/2	5.8
NCS12120	10.000	10.16	120	4	7/8	1 1/2	3/4	1 1/2	3/4	2 1/2	5.8
NCS12132	11.000	11.16	132	4	7/8	1 1/2	3/4	1 1/2	3/4	2 1/2	8.9
NCS12144	12.000	12.16	144	4	7/8	1 1/2	3/4	1 3/4	1	2 1/2	8.4
NCS12156	13.000	13.16	156	4	7/8	1 1/2	3/4	1 3/4	1	2 1/2	10.5
NCS12168	14.000	14.16	168	4	7/8	1 1/2	3/4	1 3/4	1	2 1/2	10.3
NCS12180	15.000	15.16	180	4	7/8	1 1/2	3/4	1 3/4	1	2 1/2	13.8

*Enlarged Pinion Tooth Form - Pitch Diameter is Special. Use For Calculating Center Distance but not for Ratio.

All 60 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

12 Pitch

$\frac{3}{4}$ " Face

14 $\frac{1}{2}$ ° Pressure Angle

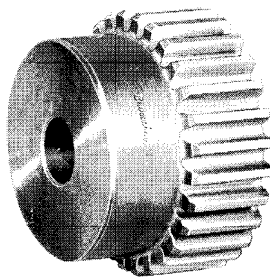


TABLE No. 1

STOCK STEEL AND CAST IRON SPUR GEARS WITH BROWNING SPLIT TAPER® BUSHINGS

PART No.		DIAMETER		No. TEETH	TYPE	DIMENSIONS										WT. Lbs. LESS BUSH.
GEAR	BUSH.	PITCH	NOMINAL O.D.			F	O.L.	L	P	C	H	G	X	E		
NSS12G30	G	2.500"	2.66"	30	6	3/4"	1 3/8"	1"	7/16"	3/16"	2"	-	-	3/16"	.8	
NSS12H36	H	3.000	3.16	36	5	3/4	1 1/2	1 1/4	9/16	1/16	2 1/2	7/16"	7/8"	3/16	1.1	
NSS12H42	H	3.500	3.66	42	5	3/4	1 1/2	1 1/4	9/16	1/16	2 1/2	7/16	7/8	3/16	1.5	
NSS12H48	H	4.000	4.16	48	5	3/4	1 1/2	1 1/4	9/16	1/16	2 1/2	7/16	7/8	3/16	2.3	
NSS12H54	H	4.500	4.66	54	5	3/4	1 1/2	1 1/4	9/16	1/16	2 1/2	7/16	7/8	3/16	3.0	
NSS12H60	H	5.000	5.16	60	9	3/4	1 1/2	1 1/4	9/16	1/16	2 1/2	7/16	7/8	3/16	2.9	
NCS12H72	H	6.000	6.16	72	10	3/4	1 1/2	1 1/4	9/16	1/16	2 1/2	7/16	7/8	3/16	2.9	
NCS12H84	H	7.000	7.16	84	10	3/4	1 1/2	1 1/4	9/16	1/16	2 1/2	7/16	7/8	3/16	3.5	
NCS12H120	H	10.000	10.16	120	10	3/4	1 1/2	1 1/4	9/16	1/16	2 1/2	7/16	7/8	3/16	5.2	
NCS12P144	P1	12.000	12.16	144	16	3/4	2 3/16	1 15/16	1 3/16	-	3	5/8	1 5/16	1/4	8.3	

All 60 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.



BORE RANGE

TABLE No. 2

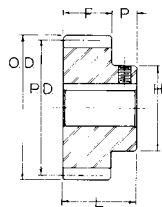
BUSHING	BORE RANGE
G	$\frac{3}{8}$ " - 1"
H	$\frac{3}{8}$ " - 1 $\frac{1}{2}$ "
P1	$\frac{1}{2}$ " - 1 $\frac{3}{4}$ "

STANDARD KEYSEATS

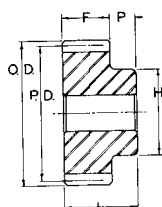
TABLE No. 3

BORE RANGE	KEYSEAT
$\frac{3}{8}$ " - $\frac{7}{16}$ "	None
$\frac{1}{2}$ - $\frac{9}{16}$ "	$\frac{1}{8}$ " x $\frac{1}{16}$ "
$\frac{5}{8}$ - $\frac{7}{8}$ "	$\frac{3}{16}$ x $\frac{3}{32}$ "
$\frac{15}{16}$ - 1 $\frac{1}{4}$ "	$\frac{1}{4}$ x $\frac{1}{8}$ "
1 $\frac{15}{16}$ - 1 $\frac{3}{8}$ "	$\frac{5}{16}$ x $\frac{5}{32}$ "
1 $\frac{7}{16}$ - 1 $\frac{3}{4}$ "	$\frac{3}{8}$ x $\frac{3}{16}$ "
1 $\frac{13}{16}$ - 2 $\frac{1}{4}$ "	$\frac{1}{2}$ x $\frac{1}{4}$ "
2 $\frac{5}{16}$ - 2 $\frac{11}{16}$ "	$\frac{5}{8}$ x $\frac{5}{16}$ "

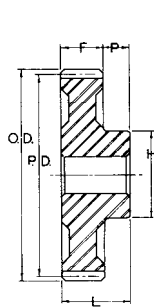
1 $\frac{3}{8}$ Bore Bushings also available with $\frac{3}{8}$ " x $\frac{3}{16}$ " Keyseat.



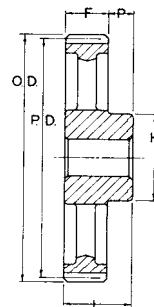
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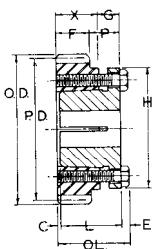
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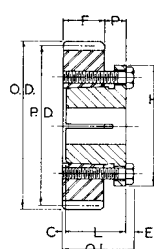
TYPE 3



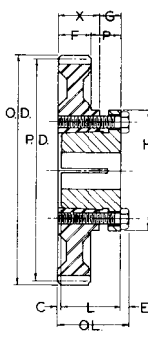
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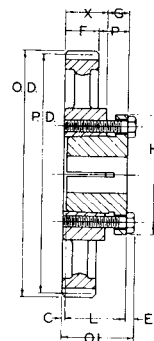
TYPE 5



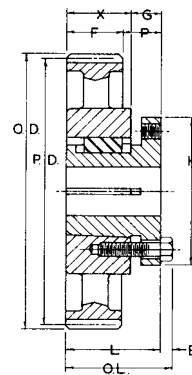
TYPE 6



TYPE 9



TYPE 10



TYPE 16

10 Pitch

1" Face

14 1/2° Pressure Angle



TABLE No. 1

STOCK STEEL FINISHED BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	STOCK BORES MARKED "X"					DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			1/2"	5/8"	3/4"	7/8"	1"	F	L	P	H	
NSS10F12	1.200"	1.40"	12	1	X	-	-	-	-	1"	1 5/8"	5/8"	29/32"	.3
NSS10F14	1.400	1.60	14	1	-	X	-	-	-	1	1 5/8	5/8	1 7/64	.4
NSS10F15	1.500	1.70	15	1	-	X	-	-	-	1	1 5/8	5/8	1 7/32	.4
NSS10F16	1.600	1.80	16	1	-	X	X	-	-	1	1 5/8	5/8	1 5/16	.6
NSS10F18	1.800	2.00	18	1	-	-	X	X	-	1	1 5/8	5/8	1 33/64	.7
NSS10F20	2.000	2.20	20	1	-	-	X	X	X	1	1 5/8	5/8	1 29/32	.9
NSS10F24	2.400	2.60	24	1	-	-	X	X	X	1	1 5/8	5/8	2 7/64	1.6

All of above Gears are Steel. Furnished with one Hollow Head Setscrew and Standard Keyseat, except 1/2" bore which has Setscrew only.

TABLE No. 2

STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
NSS1011*	1.200"	1.40"	11	2	5/8"	5/8"	1"	1 5/8"	5/8"	29/32"	.3
NSS1012	1.200	1.40	12	2	5/8	5/8	1	1 5/8	5/8	29/32	.3
NSS1013	1.300	1.50	13	2	5/8	5/8	1	1 5/8	5/8	1	.3
NSS1014	1.400	1.60	14	2	5/8	5/8	1	1 5/8	5/8	1 7/64	.4
NSS1015	1.500	1.70	15	2	3/4	3/4	1	1 5/8	5/8	1 13/64	.4
NSS1016	1.600	1.80	16	2	3/4	3/4	1	1 5/8	5/8	1 5/16	.4
NSS1017	1.700	1.90	17	2	3/4	3/4	1	1 5/8	5/8	1 1/8	.6
NSS1018	1.800	2.00	18	2	3/4	7/8	1	1 5/8	5/8	1 33/64	.7
NSS1019	1.900	2.10	19	2	3/4	7/8	1	1 5/8	5/8	1 5/16	.9
NSS1020	2.000	2.20	20	2	3/4	1	1	1 5/8	5/8	1 45/64	1.0
NSS1021	2.100	2.30	21	2	3/4	1	1	1 5/8	5/8	1 3/4	1.1
NSS1022	2.200	2.40	22	2	3/4	1 1/8	1	1 5/8	5/8	1 7/8	1.3
NSS1024	2.400	2.60	24	2	3/4	1 1/4	1	1 5/8	5/8	2 7/64	1.5
NSS1025	2.500	2.70	25	2	3/4	1 3/8	1	1 5/8	5/8	2 13/64	1.8
NSS1026	2.600	2.80	26	2	3/4	1 7/16	1	1 5/8	5/8	2 5/16	1.9
NSS1028	2.800	3.00	28	2	3/4	1 5/8	1	1 7/8	7/8	2 1/2	2.6
NSS1030	3.000	3.20	30	2	3/4	1 3/4	1	1 7/8	7/8	2 5/8	3.0
NSS1032	3.200	3.40	32	2	3/4	1 3/4	1	1 7/8	7/8	2 5/8	3.3
NSS1035	3.500	3.70	35	2	3/4	1 3/4	1	1 7/8	7/8	2 5/8	3.8
NSS1036	3.600	3.80	36	2	3/4	1 3/4	1	1 7/8	7/8	2 5/8	3.8
NSS1038	3.800	4.00	38	2	3/4	1 3/4	1	1 7/8	7/8	2 5/8	4.3
NSS1040	4.000	4.20	40	2	7/8	1 3/4	1	1 7/8	7/8	2 5/8	4.5
NSS1042	4.200	4.40	42	2	7/8	1 3/4	1	1 7/8	7/8	2 5/8	4.9
NSS1045	4.500	4.70	45	2	7/8	1 3/4	1	1 7/8	7/8	2 5/8	5.6
NSS1048	4.800	5.00	48	2	7/8	1 3/4	1	1 7/8	7/8	2 5/8	6.7
NSS1050	5.000	5.20	50	2	7/8	1 3/4	1	1 7/8	7/8	2 5/8	6.3
NSS1054	5.400	5.60	54	2	7/8	1 3/4	1	1 7/8	7/8	2 5/8	8.0
NCS1055	5.500	5.70	55	4	7/8	1 9/16	1	1 7/8	7/8	2 5/8	4.7
NCS1060	6.000	6.20	60	4	7/8	1 9/16	1	1 7/8	7/8	2 5/8	5.0
NCS1064	6.400	6.60	64	4	7/8	1 9/16	1	1 7/8	7/8	2 5/8	5.4
NCS1065	6.500	6.70	65	4	7/8	1 9/16	1	1 7/8	7/8	2 5/8	5.5
NCS1070	7.000	7.20	70	4	7/8	1 9/16	1	1 7/8	7/8	2 5/8	5.9
NCS1072	7.200	7.40	72	4	7/8	1 9/16	1	1 7/8	7/8	2 5/8	6.5
NCS1075	7.500	7.70	75	4	7/8	1 9/16	1	1 7/8	7/8	2 5/8	6.3
NCS1080	8.000	8.20	80	4	7/8	1 9/16	1	1 7/8	7/8	2 5/8	6.6
NCS1084	8.400	8.60	84	4	7/8	1 9/16	1	1 7/8	7/8	2 5/8	6.8
NCS1090	9.000	9.20	90	4	7/8	1 9/16	1	1 7/8	7/8	2 5/8	7.3
NCS1096	9.600	9.80	96	4	7/8	1 9/16	1	1 7/8	7/8	2 5/8	8.4
NCS10100	10.000	10.20	100	4	1	1 9/16	1	1 7/8	7/8	2 5/8	8.0
NCS10110	11.000	11.20	110	4	1	1 9/16	1	2	1	2 5/8	10.8
NCS10112	11.200	11.40	112	4	1	1 9/16	1	2	1	2 5/8	10.8
NCS10120	12.000	12.20	120	4	1	1 9/16	1	2	1	2 5/8	11.8
NCS10140	14.000	14.20	140	4	1	1 9/16	1	2	1	2 5/8	15.4
NCS10144	14.400	14.60	144	4	1	1 9/16	1	2	1	2 5/8	15.1
NCS10160	16.000	16.20	160	4	1	1 9/16	1	2	1	2 5/8	17.7
NCS10180	18.000	18.20	180	4	1	1 5/8	1	2	1	2 7/8	19.6

* Enlarged Pinion Tooth Form - Pitch Diameter is Special. Use for calculating Center Distance but not for Ratio.

All 54 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

10 Pitch

1" Face

14 1/2° Pressure Angle

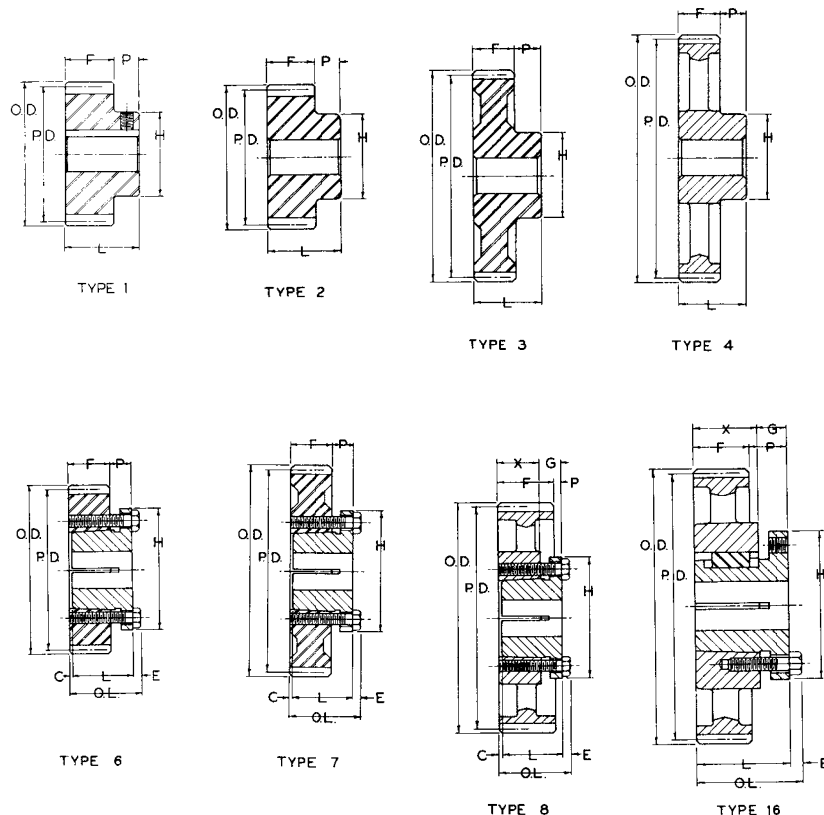


TABLE No. 1

STOCK STEEL AND CAST IRON SPUR GEARS WITH BROWNING SPLIT TAPER® BUSHINGS

PART No.		DIAMETER		No. TEETH	TYPE	DIMENSIONS									WT. Lbs. LESS BUSH.
GEAR	BUSH.	PITCH	NOMINAL O.D.			F	O.L.	L	P	C	H	G	X	E	
NSS10G25	G	2.500"	2.70"	25	6	1"	1 5⁄8"	1"	7⁄16"	7⁄16"	2"	-	-	3⁄16"	.9
NSS10H30	H	3.000	3.20	30	6	1	1 5⁄8	1 1⁄4	7⁄16	3⁄16	2 1⁄2	-	-	3⁄16	1.3
NSS10H32	H	3.200	3.40	32	6	1	1 5⁄8	1 1⁄4	7⁄16	3⁄16	2 1⁄2	-	-	3⁄16	1.6
NSS10H35	H	3.500	3.70	35	6	1	1 5⁄8	1 1⁄4	7⁄16	3⁄16	2 1⁄2	-	-	3⁄16	2.0
NSS10H36	H	3.600	3.80	36	6	1	1 5⁄8	1 1⁄4	7⁄16	3⁄16	2 1⁄2	-	-	3⁄16	2.3
NSS10H40	H	4.000	4.20	40	6	1	1 5⁄8	1 1⁄4	7⁄16	3⁄16	2 1⁄2	-	-	3⁄16	2.9
NSS10H45	H	4.500	4.70	45	6	1	1 5⁄8	1 1⁄4	7⁄16	3⁄16	2 1⁄2	-	-	3⁄16	3.8
NSS10H48	H	4.800	5.00	48	6	1	1 5⁄8	1 1⁄4	7⁄16	3⁄16	2 1⁄2	7⁄16"	1"	3⁄16	4.8
NSS10H50	H	5.000	5.20	50	7	1	1 5⁄8	1 1⁄4	7⁄16	3⁄16	2 1⁄2	7⁄16	1	3⁄16	3.4
NSS10H54	H	5.400	5.60	54	6	1	1 5⁄8	1 1⁄4	7⁄16	3⁄16	2 1⁄2	7⁄16	1	3⁄16	6.3
NCS10H55	H	5.500	5.70	55	8	1	1 1⁄2	1 1⁄4	5⁄16	1⁄16	2 1⁄2	7⁄16	7⁄8	3⁄16	3.0
NCS10H60	H	6.000	6.20	60	8	1	1 1⁄2	1 1⁄4	5⁄16	1⁄16	2 1⁄2	7⁄16	7⁄8	3⁄16	3.8
NCS10H64	H	6.400	6.60	64	8	1	1 1⁄2	1 1⁄4	5⁄16	1⁄16	2 1⁄2	7⁄16	7⁄8	3⁄16	3.4
NCS10H70	H	7.000	7.20	70	8	1	1 1⁄2	1 1⁄4	5⁄16	1⁄16	2 1⁄2	7⁄16	7⁄8	3⁄16	4.3
NCS10H72	H	7.200	7.40	72	8	1	1 1⁄2	1 1⁄4	5⁄16	1⁄16	2 1⁄2	7⁄16	7⁄8	3⁄16	4.8
NCS10H80	H	8.000	8.20	80	8	1	1 1⁄2	1 1⁄4	5⁄16	1⁄16	2 1⁄2	7⁄16	7⁄8	3⁄16	5.0
NCS10H90	H	9.000	9.20	90	8	1	1 1⁄2	1 1⁄4	5⁄16	1⁄16	2 1⁄2	7⁄16	7⁄8	3⁄16	5.8
NCS10H96	H	9.600	9.80	96	8	1	1 1⁄2	1 1⁄4	5⁄16	1⁄16	2 1⁄2	7⁄16	7⁄8	3⁄16	6.4
NCS10H100	H	10.000	10.20	100	8	1	1 1⁄2	1 1⁄4	5⁄16	1⁄16	2 1⁄2	7⁄16	7⁄8	3⁄16	6.4
NCS10P120	P1	12.000	12.20	120	16	1	2 3⁄16	1 15⁄16	15⁄16	-	3	5⁄8	1 5⁄16	1⁄4	10.2
NCS10P140	P1	14.000	14.20	140	16	1	2 3⁄16	1 15⁄16	15⁄16	-	3	5⁄8	1 5⁄16	1⁄4	13.0
NCS10P180	P1	18.000	18.20	180	16	1	2 3⁄16	1 15⁄16	15⁄16	-	3	5⁄8	1 5⁄16	1⁄4	19.9
NCS10P200	P1	20.000	20.20	200	16	1	2 3⁄16	1 15⁄16	15⁄16	-	3	5⁄8	1 5⁄16	1⁄4	22.3

All 54 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.



Browning® Gears with a greater depth of cut and larger radius at bottom of tooth have stronger teeth - a deeper lubrication reservoir and more clearance for dirt removal

BORE RANGE

TABLE No. 2

BUSHING	BORE RANGE
G	3/8" - 1"
H	3/8 - 1 1/2
P1	1/2 - 1 3/4

STANDARD KEYSEATS

TABLE No. 3

BORE RANGE	KEYSEAT
3/8" - 7/16"	None
1/2 - 9/16	1/8" X 1/16"
5/8 - 7/8	3/16 X 3/32
15/16 - 1 1/4	1/4 X 1/8
1 5/16 - 1 3/8	5/16 X 5/32
1 7/16 - 1 3/4	3/8 X 3/16

1 3/8" Bore Bushings also available with 3/8" X 3/16" Keyseat.

8 Pitch

1 1/4" Face

14 1/2° Pressure Angle



TABLE No. 1

STOCK STEEL FINISHED BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	STOCK BORES MARKED "X"					DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			5/8"	3/4"	7/8"	1"	1 1/8"	F	L	P	H	
NSS8F12	1.500"	1.75"	12	1	X	-	-	-	-	1 1/4"	2"	3/4"	1 1/8"	.5
NSS8F14	1.750	2.00	14	1	-	X	-	-	-	1 1/4	2	3/4	1 3/8	.8
NSS8F15	1.875	2.12	15	1	-	X	-	-	-	1 1/4	2	3/4	1 1/2	1.0
NSS8F16	2.000	2.25	16	1	-	X	X	X	-	1 1/4	2	3/4	1 5/8	1.2
NSS8F18	2.250	2.50	18	1	-	X	X	X	X	1 1/4	2	3/4	1 7/8	1.6
NSS8F20	2.500	2.75	20	1	-	X	X	X	X	1 1/4	2	3/4	2 1/8	2.2
NSS8F22	2.750	3.00	22	1	-	X	X	X	X	1 1/4	2	3/4	2 3/8	2.6

All Above Gears are Steel. Furnished with one Hollow Head Setscrew and Standard Keyseat.

TABLE No. 2

STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. OF TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
NSS811*	1.500"	1.75"	11	2	3/4"	3/4"	1 1/4 "	2"	3/4"	1 1/8"	.5
NSS812	1.500	1.75	12	2	3/4	3/4	1 1/4	2	3/4	1 1/8	.5
NSS813	1.625	1.87	13	2	3/4	3/4	1 1/4	2	3/4	1 1/4	.8
NSS814	1.750	2.00	14	2	3/4	3/4	1 1/4	2	3/4	1 3/8	1.0
NSS815	1.875	2.12	15	2	7/8	1	1 1/4	2	3/4	1 1/2	.8
NSS816	2.000	2.25	16	2	7/8	1	1 1/4	2	3/4	1 5/8	1.0
NSS817	2.125	2.37	17	2	7/8	1	1 1/4	2	3/4	1 3/4	1.2
NSS818	2.250	2.50	18	2	7/8	1 1/8	1 1/4	2	3/4	1 7/8	1.4
NSS819	2.375	2.62	19	2	7/8	1 1/4	1 1/4	2	3/4	2	1.8
NSS820	2.500	2.75	20	2	7/8	1 1/4	1 1/4	2	3/4	2 1/8	1.9
NSS821	2.625	2.87	21	2	7/8	1 3/8	1 1/4	2	3/4	2 1/4	2.4
NSS822	2.750	3.00	22	2	7/8	1 1/2	1 1/4	2	3/4	2 3/8	2.6
NSS824	3.000	3.25	24	2	7/8	1 3/4	1 1/4	2 1/4	1	2 5/8	3.5
NSS826	3.250	3.50	26	2	7/8	1 3/4	1 1/4	2 1/4	1	2 5/8	4.0
NSS828	3.500	3.75	28	2	7/8	1 3/4	1 1/4	2 1/4	1	2 5/8	4.4
NSS830	3.750	4.00	30	2	7/8	1 3/4	1 1/4	2 1/4	1	2 3/4	5.1
NSS832	4.000	4.25	32	2	1	1 1/8	1 1/4	2 1/4	1	2 7/8	5.7
NSS836	4.500	4.75	36	2	1	2	1 1/4	2 1/4	1	3	7.0
NSS840	5.000	5.25	40	2	1	2	1 1/4	2 1/4	1	3	8.7
NSS842	5.250	5.50	42	2	1	2	1 1/4	2 1/4	1	3	9.8
NSS844	5.500	5.75	44	2	1	2	1 1/4	2 1/4	1	3	10.3
NSS848	6.000	6.25	48	2	1	2	1 1/4	2 1/4	1	3	11.9
NSS852	6.500	6.75	52	2	1	2	1 1/4	2 1/4	1	3	13.9
NSS854	6.750	7.00	54	2	1	2	1 1/4	2 1/4	1	3	15.1
NCS856	7.000	7.25	56	4	1	1 13/16	1 1/4	2 1/4	1	3	8.5
NCS860	7.500	7.75	60	4	1	1 13/16	1 1/4	2 1/4	1	3	9.3
NCS864	8.000	8.25	64	4	1	1 13/16	1 1/4	2 1/4	1	3	9.7
NCS872	9.000	9.25	72	4	1	1 13/16	1 1/4	2 1/4	1	3	11.1
NCS876	9.500	9.75	76	4	1	1 13/16	1 1/4	2 1/4	1	3	11.5
NCS880	10.000	10.25	80	4	1 1/8	1 13/16	1 1/4	2 3/8	1 1/8	3	12.6
NCS884	10.500	10.75	84	4	1 1/8	1 13/16	1 1/4	2 3/8	1 1/8	3	13.3
NCS888	11.000	11.25	88	4	1 1/8	1 13/16	1 1/4	2 3/8	1 1/8	3	14.2
NCS896	12.000	12.25	96	4	1 1/8	2	1 1/4	2 3/8	1 1/8	3 1/4	16.1
NCS8100	12.500	12.75	100	4	1 1/8	2	1 1/4	2 3/8	1 1/8	3 1/4	16.9
NCS8112	14.000	14.25	112	4	1 1/8	2	1 1/4	2 3/8	1 1/8	3 1/4	19.4
NCS8120	15.000	15.25	120	4	1 1/8	2	1 1/4	2 3/8	1 1/8	3 1/4	21.5
NCS8128	16.000	16.25	128	4	1 1/8	2 3/16	1 1/4	2 3/8	1 1/8	3 1/2	26.6
NCS8144	18.000	18.25	144	4	1 1/8	2 3/16	1 1/4	2 3/8	1 1/8	3 1/2	28.6
NCS8160	20.000	20.25	160	4	1 1/8	2 1/4	1 1/4	2 1/2	1 1/4	3 3/4	36.6

*Enlarged Pinion Tooth Form - Pitch Diameter is Special. Use for calculating Center Distance but not for Ratio.

All 54 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

BROWNING®
STOCK
GEARS



BROWNING SPLIT
TAPER®
BUSHINGS

8 Pitch

1 1/4" Face

14 1/2° Pressure Angle

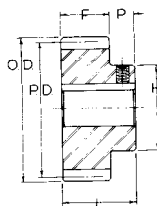
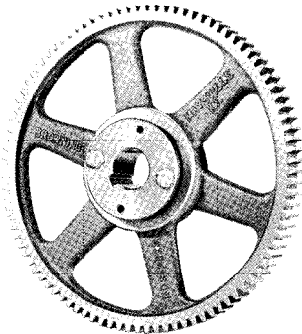


TABLE No. 1

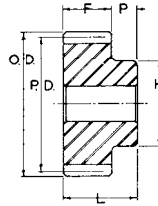
STOCK STEEL AND CAST IRON SPUR GEARS WITH BROWNING SPLIT TAPER® BUSHINGS

PART No.		DIAMETER		No. TEETH	TYPE	DIMENSIONS									WT. Lbs. LESS BUSH.
GEAR	BUSH.	PITCH	NOMINAL O.D.			F	O.L.	L	P	C	H	G	X	E	
NSS8H24	H	3.000"	3.25"	24	6	1 1/4"	1 7/8"	1 1/4"	7/16"	7/16"	2 1/2"	-	-	3/16"	1.1
NSS8H28	H	3.500	3.75	28	6	1 1/4	1 7/8	1 1/4	7/16	7/16	2 1/2	-	-	3/16	2.6
NSS8H30	H	3.750	4.00	30	6	1 1/4	1 7/8	1 1/4	7/16	7/16	2 1/2	-	-	3/16	3.0
NSS8H32	H	4.000	4.25	32	6	1 1/4	1 7/8	1 1/4	7/16	7/16	2 1/2	-	-	3/16	3.6
NSS8P36	P1	4.500	4.75	36	14	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8"	1 5/16"	1/4	4.5
NSS8P40	P1	5.000	5.25	40	14	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	5.8
NSS8P42	P1	5.250	5.50	42	14	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	6.9
NSS8P44	P1	5.500	5.75	44	14	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	7.7
NSS8P48	P1	6.000	6.25	48	14	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	9.2
NSS8P54	P1	6.750	7.00	54	14	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	12.1
NSS8P56	P1	7.000	7.25	56	15	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	6.6
NSS8P60	P1	7.500	7.75	60	15	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	7.4
NCS8P64	P1	8.000	8.25	64	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	7.7
NCS8P72	P1	9.000	9.25	72	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	9.1
NCS8P80	P1	10.000	10.25	80	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	10.6
NCS8P84	P1	10.500	10.75	84	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	10.9
NCS8P88	P1	11.000	11.25	88	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	11.9
NCS8P96	P1	12.000	12.25	96	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	13.4
NCS8P112	P1	14.000	14.25	112	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	16.9
NCS8P120	P1	15.000	15.25	120	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	18.5
NCS8P128	P1	16.000	16.25	128	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	21.8
NCS8P144	P1	18.000	18.25	144	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	26.3
NCS8Q160	Q1	20.000	20.25	160	16	1 1/4	2 25/32	2 1/2	1 1/4	-	4 1/8	3/4	1 3/4	9/32	32.2

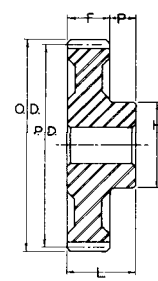
All 60 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.



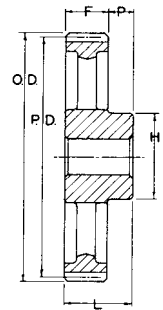
TYPE 1



TYPE 2

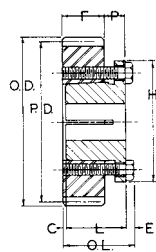


TYPE 3

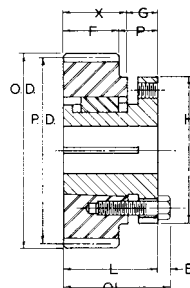


TYPE 4

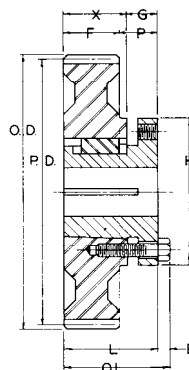
Browning has All Three
Minimum Bore Gears - Large Hubs for Reboring
Finished Bore Gears - All Steel
Bushing type - Split Taper Bushings } Off the Shelf Ready to use



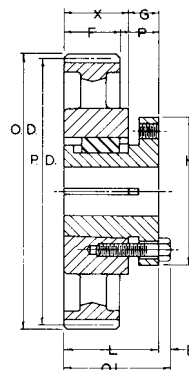
TYPE 6



TYPE 14



TYPE 15



TYPE 16

BORE RANGE

TABLE No. 2

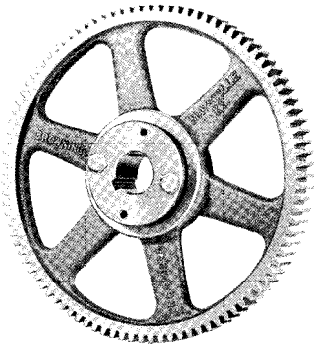
BUSHING	BORE RANGE
H	3/8" to 1 1/2"
P1	1/2 to 1 3/4
Q1	3/4 to 2 11/16

STANDARD KEYSEATS

TABLE No. 3

BORE RANGE	KEYSEAT
3/8" - 7/16"	None
1/2 - 9/16	1/8" x 1/16"
5/8 - 7/8	3/16 x 3/32
15/16 - 1 1/4	1/4 x 1/8
1 5/16 - 1 3/8	5/16 x 5/32
1 7/16 - 1 3/4	3/8 x 3/16
1 13/16 - 2 1/4	1/2 x 1/4
2 5/16 - 2 11/16	5/8 x 5/16

1 3/8" Bore Bushings also available with 3/16" x 3/16" Keyseat.



**BROWNING®
STOCK
GEARS**



**BROWNING
SPLIT TAPER®
BUSHINGS**



BORE RANGE

TABLE No. 1

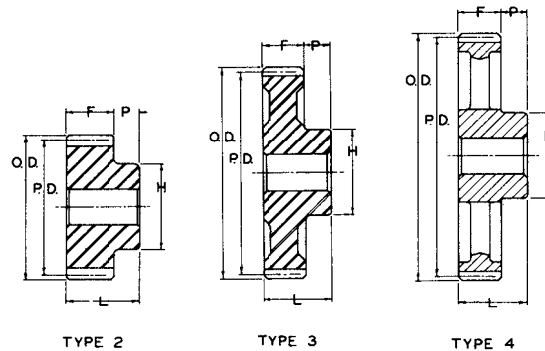
BUSHING	BORE RANGE
P1	1/2" - 1 3/4"
Q1	3/4 - 2 11/16

STANDARD KEYSEATS

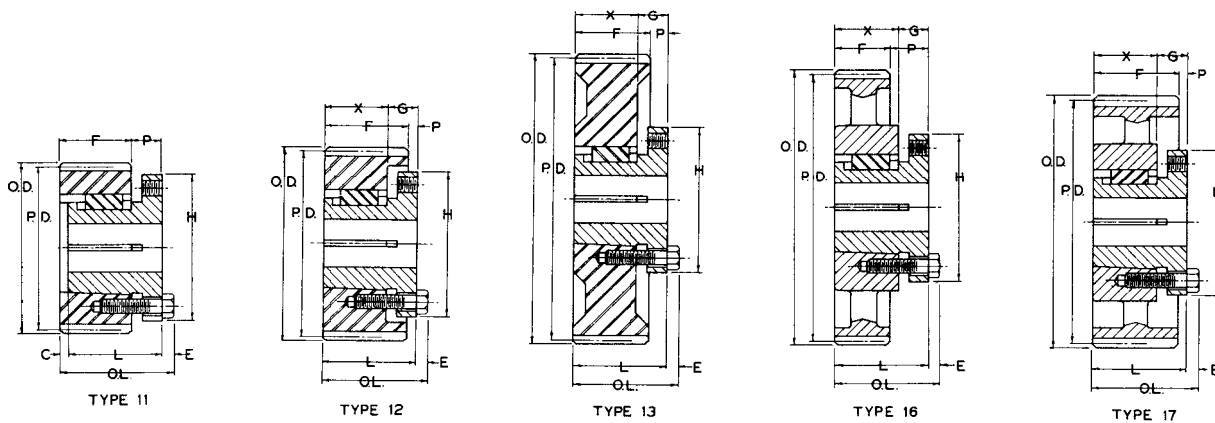
TABLE No. 2

BORE RANGE	KEYSEAT
3/8" - 7/16"	None
1/2 - 9/16	1/8" x 1/16"
5/8 - 7/8	3/16 x 3/32
15/16 - 1 1/4	1/4 x 1/8
1 5/16 - 1 3/8	5/16 x 5/32
1 7/16 - 1 3/4	3/8 x 3/16
1 13/16 - 2 1/4	1/2 x 1/4
2 5/16 - 2 3/4	5/8 x 5/16

1 3/8" Bore Bushings also available
with 3/8" x 3/16" Keyseat.



**Browning Gears are all
Individually Packaged
Easy to Stock
Easy to Identify**



6 Pitch

1 1/2" Face

14 1/2° Pressure Angle

TABLE No. 1

STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. OF TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
NSS611*	2.000"	2.33"	11	2	1"	1"	1 1/2"	2 3/4"	7/8"	1 1/2"	.9
NSS612	2.000	2.33	12	2	1	1	1 1/2	2 3/8	7/8	1 1/2	1.0
NSS614	2.333	2.66	14	2	1	1 1/8	1 1/2	2 3/8	7/8	1 13/16	1.5
NSS615	2.500	2.83	15	2	1	1 1/4	1 1/2	2 3/8	7/8	2	2.2
NSS616	2.667	3.00	16	2	1	1 3/8	1 1/2	2 3/8	7/8	2 5/32	2.6
NSS618	3.000	3.33	18	2	1	1 5/8	1 1/2	2 3/8	7/8	2 1/2	3.7
NSS620	3.333	3.66	20	2	1	1 3/4	1 1/2	2 3/8	7/8	2 27/32	4.7
NSS621	3.500	3.83	21	2	1	1 3/4	1 1/2	2 3/8	7/8	3	5.2
NSS624	4.000	4.33	24	2	1 1/8	2	1 1/2	2 1/2	1	3	6.6
NSS627	4.500	4.83	27	2	1 1/8	2	1 1/2	2 1/2	1	3	8.0
NSS630	5.000	5.33	30	2	1 1/8	2 1/8	1 1/2	2 1/2	1	3 1/8	9.8
NSS632	5.333	5.66	32	2	1 1/8	2 1/8	1 1/2	2 1/2	1	3 1/8	11.0
NSS633	5.500	5.83	33	2	1 1/8	2 1/4	1 1/2	2 1/2	1	3 1/4	11.6
NSS636	6.000	6.33	36	2	1 1/8	2 1/4	1 1/2	2 1/2	1	3 1/4	14.2
NSS640	6.667	7.00	40	2	1 1/8	2 1/4	1 1/2	2 1/2	1	3 1/4	17.0
NSS642	7.000	7.33	42	2	1 1/8	2 1/4	1 1/2	2 1/2	1	3 1/4	17.8
NCS648	8.000	8.33	48	4	1 1/8	2	1 1/2	2 1/2	1	3 1/4	12.6
NCS654	9.000	9.33	54	4	1 1/8	2	1 1/2	2 1/2	1	3 1/4	13.9
NCS660	10.000	10.33	60	4	1 1/4	2	1 1/2	2 3/4	1 1/4	3 1/4	16.0
NCS664	10.667	11.00	64	4	1 1/4	2	1 1/2	2 3/4	1 1/4	3 1/4	17.4
NCS666	11.000	11.33	66	4	1 1/4	2	1 1/2	2 3/4	1 1/4	3 1/4	17.9
NCS672	12.000	12.33	72	4	1 1/4	2	1 1/2	2 3/4	1 1/4	3 1/4	20.3
NCS684	14.000	14.33	84	4	1 1/4	2	1 1/2	2 3/4	1 1/4	3 1/4	22.0
NCS696	16.000	16.33	96	4	1 1/4	2	1 1/2	2 3/4	1 1/4	3 1/4	27.9
NCS6108	18.000	18.33	108	4	1 1/4	2	1 1/2	2 3/4	1 1/4	3 1/4	34.3
NCS6120	20.000	20.33	120	4	1 1/4	2 1/4	1 1/2	3	1 1/2	3 1/2	42.5
NCS6144	24.000	24.33	144	4	1 1/4	2 1/4	1 1/2	3	1 1/2	3 1/4	50.0

*Enlarged Pinion Tooth Form - Pitch Diameter is Special. Use For Calculating Center Distance but not for Ratio.

All 42 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

TABLE NO. 2

STOCK STEEL AND CAST IRON SPUR GEARS WITH BROWNING SPLIT TAPER® BUSHINGS

PART No.		DIAMETER		No. TEETH	TYPE	DIMENSIONS									WT Lbs. LESS BUSH
GEAR	BUSH.	PITCH	NOMINAL O.D.			F	O.L.	L	P	C	H	G	X	E	
NSS6P21	P1	3.500"	3.83"	21	11	1 1/2"	2 3/8"	1 15/16"	5/8"	3/16"	3"	-	-	1/4"	2.7
NSS6P24	P1	4.000	4.33	24	11	1 1/2	2 3/8	1 15/16	5/8	3/16	3	-	-	1/4	3.9
NSS6P30	P1	5.000	5.33	30	12	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	6.5
NSS6P32	P1	5.333	5.66	32	12	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	7.7
NSS6P33	P1	5.500	5.83	33	12	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	8.1
NSS6P36	P1	6.000	6.33	36	12	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	10.1
NSS6P40	P1	6.667	7.00	40	12	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	12.6
NSS6P42	P1	7.000	7.33	42	12	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	14.2
NCS6P48	P1	8.000	8.33	48	17	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	9.2
NCS6P60	P1	10.000	10.33	60	17	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	12.1
NCS6P64	P1	10.667	11.00	64	17	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	14.5
NCS6P72	P1	12.000	12.33	72	17	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	16.6
NCS6Q84	Q1	14.000	14.33	84	16	1 1/2	2 25/32	2 1/2	1	-	4 1/8	3/4	1 3/4	9/32	22.8
NCS6Q96	Q1	16.000	16.33	96	16	1 1/2	2 25/32	2 1/2	1	-	4 1/8	3/4	1 3/4	9/32	26.8
NCS6Q108	Q1	18.000	18.33	108	16	1 1/2	2 25/32	2 1/2	1	-	4 1/8	3/4	1 3/4	9/32	31.4
NCS6Q120	Q1	20.000	20.33	120	16	1 1/2	2 25/32	2 1/2	1	-	4 1/8	3/4	1 3/4	9/32	44.2
NCS6Q132	Q1	22.000	22.33	132	16	1 1/2	2 25/32	2 1/2	1	-	4 1/8	3/4	1 3/4	9/32	39.1
NCS6Q144	Q1	24.000	24.33	144	16	1 1/2	2 25/32	2 1/2	1	-	4 1/8	3/4	1 3/4	9/32	44.8

All 42 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

All Browning® Gears are made to AGMA Standards
Each gear is individually marked and packaged
Gear charting equipment is used to check and help provide high quality stock gears at low cost

5 Pitch

1 3/4" Face

14 1/2° Pressure Angle



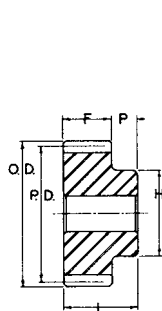
TABLE No. 1

STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

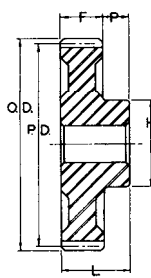
PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
NSS511*	2.400"	2.80"	11	2	1 1/16"	1 1/16"	1 3/4"	2 5/8"	7/8"	1 13/16"	2.0
NSS512	2.400	2.80	12	2	1 1/16	1 1/16	1 3/4	2 5/8	7/8	1 13/16	2.9
NSS514	2.800	3.20	14	2	1 1/16	1 3/8	1 3/4	2 5/8	7/8	2 3/16	3.1
NSS515	3.000	3.40	15	2	1 1/16	1 1/2	1 3/4	2 5/8	7/8	2 3/8	3.6
NSS516	3.200	3.60	16	2	1 1/16	1 3/4	1 3/4	2 5/8	7/8	2 3/8	4.4
NSS518	3.600	4.00	18	2	1 1/16	2	1 3/4	2 5/8	7/8	3	5.9
NSS520	4.000	4.40	20	2	1 1/16	2 3/8	1 3/4	2 5/8	7/8	3 3/8	7.6
NSS524	4.800	5.20	24	2	1 1/16	2 3/8	1 3/4	3	1 1/4	3 3/8	11.1
NSS525	5.000	5.40	25	2	1 1/16	2 3/8	1 3/4	3	1 1/4	3 3/8	12.1
NSS530	6.000	6.40	30	2	1 1/16	2 3/8	1 3/4	3	1 1/4	3 3/8	16.3
NSS535	7.000	7.40	35	2	1 3/16	2 3/8	1 3/4	3	1 1/4	3 3/8	22.0
NCS540	8.000	8.40	40	4	1 3/16	2 1/8	1 3/4	3	1 1/4	3 3/8	15.6
NCS545	9.000	9.40	45	4	1 3/16	2 1/8	1 3/4	3	1 1/4	3 3/8	17.9
NCS550	10.000	10.40	50	4	1 3/16	2 1/4	1 3/4	3	1 1/4	3 3/4	21.3
NCS555	11.000	11.40	55	4	1 3/16	2 1/4	1 3/4	3	1 1/4	3 3/4	24.5
NCS560	12.000	12.40	60	4	1 3/16	2 1/4	1 3/4	3	1 1/4	3 3/4	26.8
NCS570	14.000	14.40	70	4	1 3/16	2 1/4	1 3/4	3	1 1/4	3 3/4	31.5
NCS580	16.000	16.40	80	4	1 3/16	2 1/4	1 3/4	3	1 1/4	3 3/4	36.1
NCS5100	20.000	20.40	100	4	1 5/16	2 3/4	1 3/4	3 1/4	1 1/2	4 1/2	52.0
NCS5120	24.000	24.40	120	4	1 5/16	2 3/4	1 3/4	3 1/4	1 1/2	4 1/2	59.5

*Enlarged Pinion Tooth Form - Pitch Diameter is Special. Use for calculating Center Distance but not for Ratio.

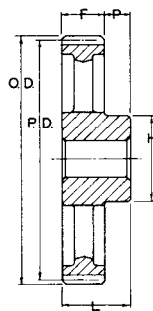
All 35 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.



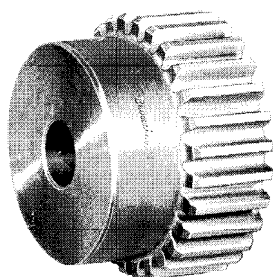
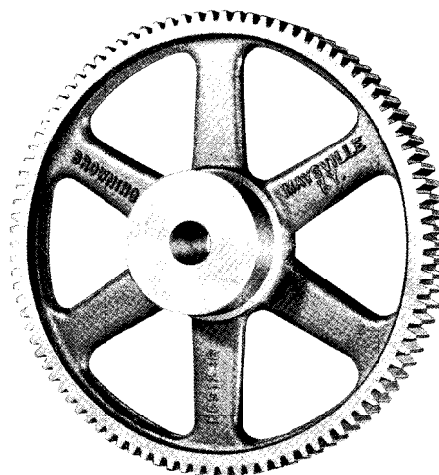
TYPE 2



TYPE 3



TYPE 4



**STEEL
AND
CAST IRON
GEARS**



5 Pitch

1 3/4" Face

14 1/2° Pressure Angle

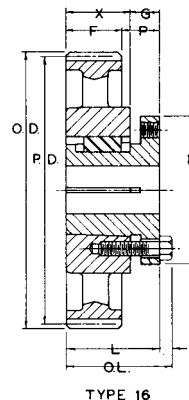
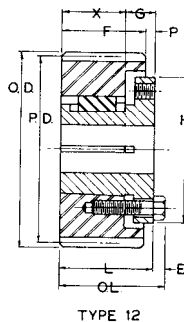
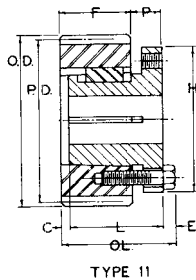


TABLE No. 1

STOCK STEEL AND CAST IRON SPUR GEARS WITH BROWNING SPLIT TAPER® BUSHINGS

PART No.		DIAMETER		No. TEETH.	TYPE	DIMENSIONS									WT. Lbs. LESS BUSH.
GEAR	BUSH.	PITCH	NOMINAL O.D.			F	O.L.	L	P	C	H	G	X	E	
NSS5P18	P1	3.600"	4.00"	18	11	1 3/4"	2 5/8"	1 15/16"	5/8"	7/16"	3"	-	-	1/4"	3.4
NSS5P20	P1	4.000	4.40	20	11	1 3/4	2 5/8	1 15/16	5/8	7/16	3	-	-	1/4	4.5
NSS5P24	P1	4.800	5.20	24	12	1 3/4	2 3/16	1 15/16	3/16	-	3	5/8"	1 5/16"	1/4	6.4
NSS5P30	P1	6.000	6.40	30	12	1 3/4	2 3/16	1 15/16	3/16	-	3	5/8	1 5/16	1/4	10.6
NSS5P35	P1	7.000	7.40	35	12	1 3/4	2 3/16	1 15/16	3/16	-	3	5/8	1 5/16	1/4	14.9
NCS5Q40	Q1	8.000	8.40	40	16	1 3/4	2 25/32	2 1/2	3/4	-	4 1/8	3/4	1 3/4	9/32	14.7
NCS5Q45	Q1	9.000	9.40	45	16	1 3/4	2 25/32	2 1/2	3/4	-	4 1/8	3/4	1 3/4	9/32	17.4
NCS5Q50	Q1	10.000	10.40	50	16	1 3/4	2 25/32	2 1/2	3/4	-	4 1/8	3/4	1 3/4	9/32	17.4
NCS5Q60	Q1	12.000	12.40	60	16	1 3/4	2 25/32	2 1/2	3/4	-	4 1/8	3/4	1 3/4	9/32	21.6
NCS5Q70	Q1	14.000	14.40	70	16	1 3/4	2 25/32	2 1/2	3/4	-	4 1/8	3/4	1 3/4	9/32	28.0
NCS5Q80	Q1	16.000	16.40	80	16	1 3/4	2 25/32	2 1/2	3/4	-	4 1/8	3/4	1 3/4	9/32	33.5
NCS5Q90	Q1	18.000	18.40	90	16	1 3/4	2 25/32	2 1/2	3/4	-	4 1/8	3/4	1 3/4	9/32	36.5
NCS5Q120	Q1	24.000	24.40	120	16	1 3/4	2 25/32	2 1/2	3/4	-	4 1/8	3/4	1 3/4	9/32	52.0

All 35 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron



BORE RANGE

TABLE No. 2

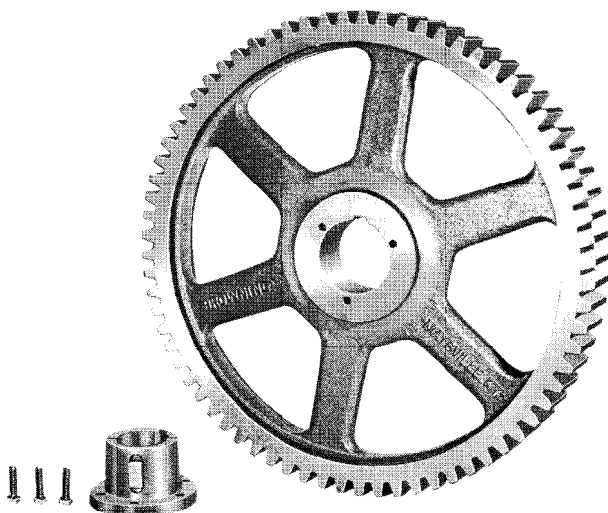
BUSHING	BORE RANGE
P1	1/2" - 1 3/4"
Q1	3/4" - 2 11/16"

STANDARD KEYSEATS

TABLE No. 3

BORE RANGE	KEYSEAT
1/2" - 9/16"	1/8" x 1/16"
5/8 - 7/8	3/16 x 3/32
15/16 - 1 1/4	1/4 x 1/8
1 15/16 - 1 3/8	5/16 x 5/32
1 7/16 - 1 3/4	3/8 x 3/16
1 13/16 - 2 1/4	1/2 x 1/4
2 5/16 - 2 11/16	5/8 x 5/16
2 13/16 - 3 1/4	3/4 x 3/8

1 3/8" Bore Bushing also available with 3/8" x 3/16" Keyseat.



**BROWNING® BUSHED GEARS
HOLD THE SHAFT WITH
CLAMP FIT AND ELIMINATE
COSTLY REWORKING ON
REPLACEMENT GEARS.**

4 Pitch

2" Face

14 1/2° Pressure Angle

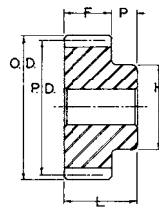
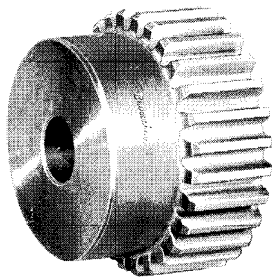


TABLE No. 1

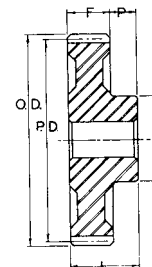
STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
NSS411*	3.000"	3.50"	11	2	1 1/8"	1 3/8"	2"	2 7/8"	7/8"	2 1/4"	3.8
NSS412	3.000	3.50	12	2	1 1/8	1 3/8	2	2 7/8	7/8	2 1/4	4.1
NSS414	3.500	4.00	14	2	1 1/8	1 7/8	2	2 7/8	7/8	2 3/4	5.8
NSS415	3.750	4.25	15	2	1 1/8	2	2	2 7/8	7/8	3	6.8
NSS416	4.000	4.50	16	2	1 1/8	2 1/4	2	2 7/8	7/8	3 1/4	8.3
NSS418	4.500	5.00	18	2	1 1/8	2 5/8	2	2 7/8	7/8	3 3/4	10.7
NSS420	5.000	5.50	20	2	1 1/8	3	2	2 7/8	7/8	4 1/4	13.6
NSS422	5.500	6.00	22	2	1 1/8	3 3/8	2	2 7/8	7/8	4 3/4	16.8
NSS424	6.000	6.50	24	2	1 1/8	3 3/8	2	3 1/2	1 1/2	4 3/4	22.4
NSS428	7.000	7.50	28	2	1 1/4	3 3/8	2	3 1/2	1 1/2	4 3/4	28.1
NCS430	7.500	8.00	30	3	1 1/4	2 5/8	2	3 1/2	1 1/2	4 1/4	24.6
NCS432	8.000	8.50	32	3	1 1/4	2 5/8	2	3 1/2	1 1/2	4 1/4	25.6
NCS436	9.000	9.50	36	3	1 1/4	2 5/8	2	3 1/2	1 1/2	4 1/4	30.9
NCS440	10.000	10.50	40	4	1 1/4	2 5/8	2	3 1/2	1 1/2	4 1/4	29.0
NCS442	10.500	11.00	42	4	1 1/4	2 5/8	2	3 1/2	1 1/2	4 1/4	30.2
NCS444	11.000	11.50	44	4	1 1/4	2 5/8	2	3 1/2	1 1/2	4 1/4	32.5
NCS448	12.000	12.50	48	4	1 1/4	2 3/4	2	3 1/2	1 1/2	4 1/2	37.5
NCS454	13.500	14.00	54	4	1 1/4	2 3/4	2	3 1/2	1 1/2	4 1/2	41.8
NCS456	14.000	14.50	56	4	1 1/4	2 3/4	2	3 1/2	1 1/2	4 1/2	40.6
NCS460	15.000	15.50	60	4	1 1/4	2 3/4	2	3 1/2	1 1/2	4 1/2	45.9
NCS464	16.000	16.50	64	4	1 1/4	2 3/4	2	3 1/2	1 1/2	4 1/2	48.3
NCS472	18.000	18.50	72	4	1 1/4	2 3/4	2	3 1/2	1 1/2	4 3/4	59.5
NCS480	20.000	20.50	80	4	1 3/8	2 3/4	2	3 1/2	1 1/2	4 3/4	63.0
NCS488	22.000	22.50	88	4	1 3/8	2 3/4	2	3 3/4	1 3/4	4 3/4	70.5
NCS496	24.000	24.50	96	4	1 3/8	3	2	3 3/4	1 3/4	5	78.0
NCS4120	30.000	30.50	120	4	1 3/8	3	2	3 3/4	1 3/4	5	112.0
NCS4144	36.000	36.50	144	4	1 3/8	3	2	3 3/4	1 3/4	5	161.0

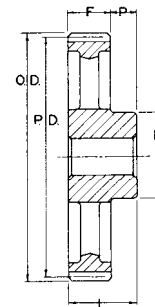
*Enlarged Pinion Tooth Form - Pitch Diameter is Special. Use for calculating Center Distance but not for Ratio.
All 28 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.



TYPE 2



TYPE 3



TYPE 4

**FOR HIGH TORQUE, SHOCK
APPLICATIONS USE BROWNING®
BUSHED GEARS**

**IN STOCK
READY TO
SHIP**

4 Pitch

2" Face

14 1/2° Pressure Angle

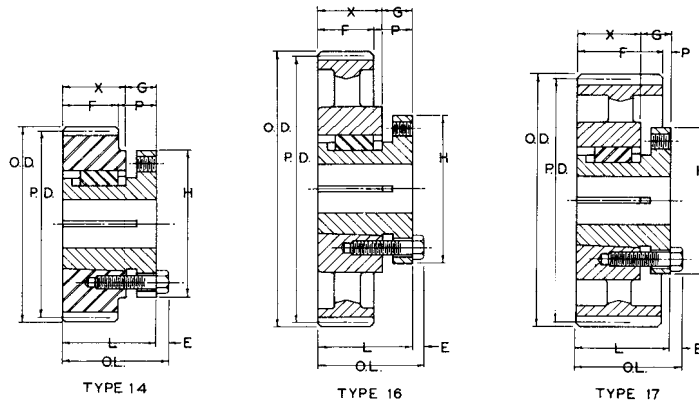


TABLE No. 1

STOCK STEEL AND CAST IRON SPUR GEARS WITH BROWNING SPLIT TAPER® BUSHINGS

PART No.	BUSH.	DIAMETER		No. TEETH	TYPE	DIMENSIONS								WT. Lbs. Less BUSH.
		PITCH	NOMINAL O.D.			F	O.L	L	P	H	G	X	E	
NSS4P15	P2	3.750"	4.25"	15	14	2"	3 3/16"	2 15/16"	15/16"	3"	5/8"	2 5/16"	1/4"	4.7
NSS4P16	P2	4.000	4.50	16	14	2	3 3/16	2 15/16	15/16	3	5/8	2 5/16	1/4	5.6
NSS4P20	P2	5.000	5.50	20	14	2	3 3/16	2 15/16	15/16	3	5/8	2 5/16	1/4	9.6
NSS4P24	P2	6.000	6.50	24	14	2	3 3/16	2 15/16	15/16	3	5/8	2 5/16	1/4	14.4
NSS4P28	P2	7.000	7.50	28	14	2	3 3/16	2 15/16	15/16	3	5/8	2 5/16	1/4	20.4
NCS4Q30	Q1	7.500	8.00	30	17	2	2 25/32	2 1/2	1/2	4 1/8	3/4	1 3/4	9/32	18.1
NCS4Q32	Q1	8.000	8.50	32	17	2	2 25/32	2 1/2	1/2	4 1/8	3/4	1 3/4	9/32	16.2
NCS4Q36	Q1	9.000	9.50	36	17	2	2 25/32	2 1/2	1/2	4 1/8	3/4	1 3/4	9/32	19.5
NCS4Q40	Q1	10.000	10.50	40	17	2	2 25/32	2 1/2	1/2	4 1/8	3/4	1 3/4	9/32	25.6
NCS4Q44	Q1	11.000	11.50	44	17	2	2 25/32	2 1/2	1/2	4 1/8	3/4	1 3/4	9/32	24.9
NCS4Q48	Q1	12.000	12.50	48	17	2	2 25/32	2 1/2	1/2	4 1/8	3/4	1 3/4	9/32	27.8
NCS4Q54	Q1	13.500	14.00	54	17	2	2 25/32	2 1/2	1/2	4 1/8	3/4	1 3/4	9/32	31.1
NCS4Q56	Q1	14.000	14.50	56	17	2	2 25/32	2 1/2	1/2	4 1/8	3/4	1 3/4	9/32	32.3
NCS4Q60	Q1	15.000	15.50	60	17	2	2 25/32	2 1/2	1/2	4 1/8	3/4	1 3/4	9/32	35.9
NCS4Q64	Q1	16.000	16.50	64	17	2	2 25/32	2 1/2	1/2	4 1/8	3/4	1 3/4	9/32	39.9
NCS4Q72	Q1	18.000	18.50	72	17	2	2 25/32	2 1/2	1/2	4 1/8	3/4	1 3/4	9/32	43.3
NCS4R80	R1	20.000	20.50	80	16	2	3 5/16	2 7/8	7/8	5 3/8	7/8	2	9/32	52.5
NCS4R88	R1	22.000	22.50	88	16	2	3 5/16	2 7/8	7/8	5 3/8	7/8	2	9/32	60.3
NCS4R96	R1	24.000	24.50	96	16	2	3 5/16	2 7/8	7/8	5 3/8	7/8	2	9/32	65.5
NCS4R120	R1	30.000	30.50	120	16	2	3 5/16	2 7/8	7/8	5 3/8	7/8	2	9/32	96.5
NCS4R144	R1	36.000	36.50	144	16	2	3 5/16	2 7/8	7/8	5 3/8	7/8	2	9/32	127

All 28 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.



BORE RANGE

TABLE No. 2

BUSHING	BORE RANGE
P2	3/4" to 1 3/4"
Q1	3/4 to 2 11/16
R1	1 1/8 to 3 3/4

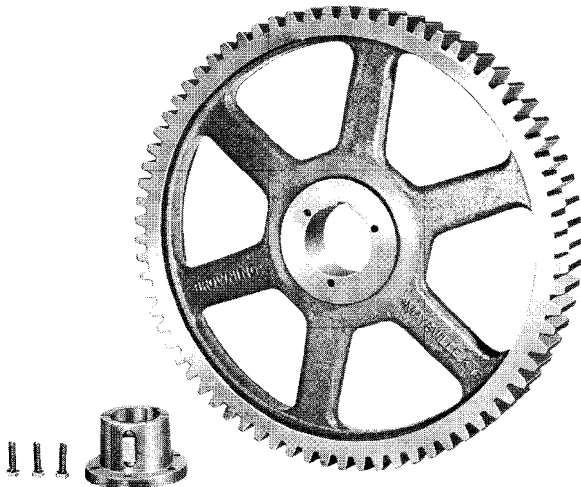
STANDARD KEYSEATS

TABLE No. 3

BORE RANGE	KEYSEAT
3/4" to 7/8"	3/16" x 3/32"
15/16 to 1 1/4	1/4 x 1/8
1 5/16 & 1 3/8	5/16 x 5/32
1 7/16 to 1 3/4	3/8 x 3/16
1 13/16 to 2 1/4	1/2 x 1/4
2 5/16 to 2 3/4	5/8 x 5/16
2 13/16 to 3 1/4	3/4 x 3/8
3 3/8 to 3 3/4	7/8 x 7/16

1 3/8" Bore Bushings also available with 3/8" x 3/16" Ks.

**PRECISION
INSPECTED**



3 Pitch

3" Face

14 1/2° Pressure Angle



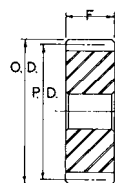
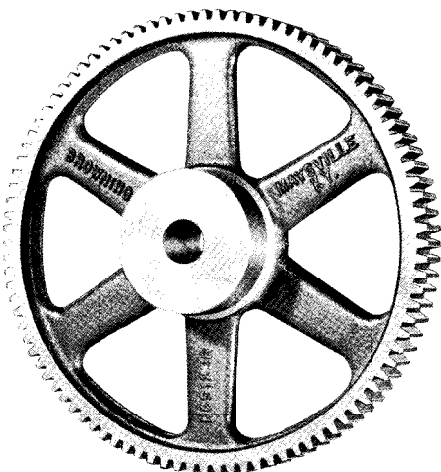
TABLE No. 1

STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

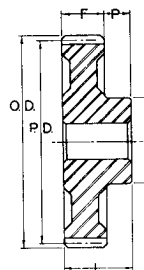
PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
NSS311A*	4.000"	4.66"	11	A2	1 5/16"	1 7/16"	4"	4"	-	-	11.7
NSS312A	4.000	4.66	12	A2	1 5/16	1 7/16	4	4	-	-	11.8
NSS314A	4.667	5.33	14	A2	1 5/16	2	3	3	-	-	12.6
NSS315A	5.000	5.66	15	A2	1 5/16	2 1/4	3	3	-	-	14.8
NSS316A	5.333	6.00	16	A2	1 5/16	2 3/8	3	3	-	-	17.0
NSS318A	6.000	6.66	18	A2	1 5/16	3	3	3	-	-	22.0
NSS320A	6.667	7.33	20	A2	1 5/16	3 5/8	3	3	-	-	27.8
NSS321A	7.000	7.66	21	A2	1 5/16	3 15/16	3	3	-	-	30.6
NSS324	8.000	8.66	24	3	1 7/16	3 1/4	3	4 1/4	1 1/4"	4 1/2"	41.0
NCS330	10.000	10.66	30	3	1 7/16	3 1/4	3	4 1/4	1 1/4"	5 1/4	53.5
NCS336	12.000	12.66	36	3	1 7/16	3 1/4	3	4 3/4	1 3/4	5 1/4	69.0
NCS342	14.000	14.66	42	4	1 7/16	3 1/4	3	4 3/4	1 3/4	5 1/4	73.5
NCS348	16.000	16.66	48	4	1 9/16	3 1/4	3	4 3/4	1 3/4	5 1/4	84.0
NCS354	18.000	18.66	54	4	1 9/16	3 1/4	3	4 3/4	1 3/4	5 1/4	95.0
NCS360	20.000	20.66	60	4	1 9/16	3 1/4	3	4 3/4	1 3/4	5 1/4	104
NCS372	24.000	24.66	72	4	1 11/16	3 3/8	3	4 3/4	1 3/4	5 3/4	142
NCS384	28.000	28.66	84	4	1 11/16	3 3/8	3	4 3/4	1 3/4	5 3/4	169
NCS396	32.000	32.66	96	4	1 15/16	3 3/8	3	4 3/4	1 3/4	5 3/4	183
NCS3108	36.000	36.66	108	4	1 15/16	3 3/8	3	4 3/4	1 3/4	5 3/4	219
NCS3120	40.000	40.66	120	4	1 15/16	3 3/8	3	4 3/4	1 3/4	6	240

*Enlarged Pinion Tooth Form - Pitch Diameter is Special. Use for calculating Center Distance but not for Ratio.

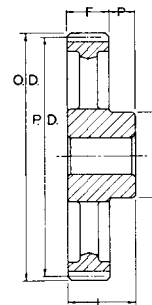
All 24 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.



TYPE A2



TYPE 3



TYPE 4

**DISTRIBUTION
NATION - WIDE
AND IN CANADA**

All Browning® Gears are made to AGMA Standards
Each gear is individually marked and packaged
Gear charting equipment is used to check and help provide high quality stock gears at low cost

3 Pitch

3" Face

14 1/2° Pressure Angle

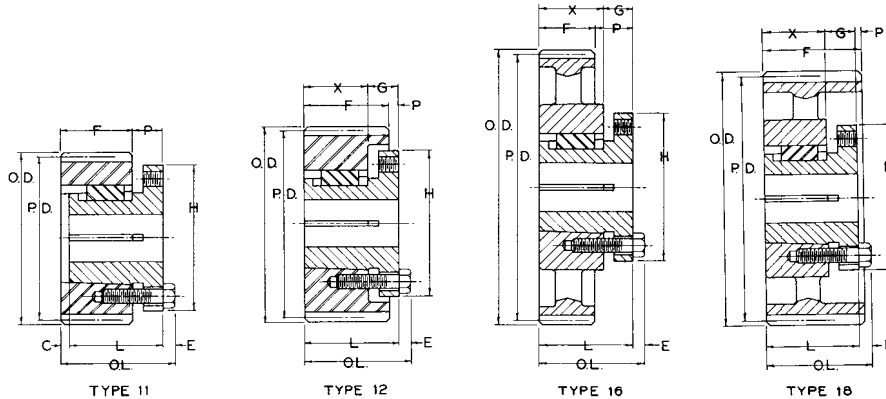


TABLE No. 1

STOCK STEEL AND CAST IRON SPUR GEARS WITH BROWNING SPLIT TAPER® BUSHINGS

PART No.		DIAMETER		No. TEETH	TYPE	DIMENSIONS									WT. Lbs. LESS BUSH.
GEAR	BUSH.	PITCH	NOMINAL O.D.			F	O.L.	L	P	C	H	G	X	E	
NSS3Q15	Q2	5.000"	5.66"	15	11	3"	4 1/32"	3 1/2"	3/4"	1/4"	4 1/8"	-	-	9/32"	10.5
NSS3Q18	Q2	6.000	6.66	18	11	3	4 1/32"	3 1/2	3/4	1/4	4 1/8	-	-	9/32	17.8
NSS3Q20	Q2	6.667	7.33	20	12	3	3 25/32	3 1/2	1/2	-	4 1/8	3/4"	2 3/4"	9/32	22.6
NSS3Q21	Q2	7.000	7.66	21	12	3	3 25/32	3 1/2	1/2	-	4 1/8	3/4	2 3/4	9/32	25.9
NSS3R24	R1	8.000	8.66	24	12	3	3 5/32	2 7/8	1/8*	-	5 3/8	7/8	2	9/32	25.4
NCS3R30	R1	10.000	10.66	30	18	3	3 5/32	2 7/8	1/8	-	5 3/8	7/8	2	9/32	40.0
NCS3R36	R1	12.000	12.66	36	18	3	3 5/32	2 7/8	1/8	-	5 3/8	7/8	2	9/32	50.5
NCS3R42	R1	14.000	14.66	42	18	3	3 5/32	2 7/8	1/8	-	5 3/8	7/8	2	9/32	56.0
NCS3R48	R1	16.000	16.66	48	18	3	3 5/32	2 7/8	1/8	-	5 3/8	7/8	2	9/32	65.5
NCS3R54	R1	18.000	18.66	54	18	3	3 5/32	2 7/8	1/8	-	5 3/8	7/8	2	9/32	77.0
NCS3R60	R1	20.000	20.66	60	18	3	3 5/32	2 7/8	1/8	-	5 3/8	7/8	2	9/32	87.0
NCS3R72	R1	24.000	24.66	72	18	3	3 5/32	2 7/8	1/8	-	5 3/8	7/8	2	9/32	114
NCS3S84	S1	28.000	28.66	84	16	3	4 3/4	4 3/8	1 3/8	-	6 3/8	1 1/16	3 5/16	3/8	151
NCS3S96	S1	32.000	32.66	96	16	3	4 3/4	4 3/8	1 3/8	-	6 3/8	1 1/16	3 5/16	3/8	180
NCS3S108	S1	36.000	36.66	108	16	3	4 3/4	4 3/8	1 3/8	-	6 3/8	1 1/16	3 5/16	3/8	198
NCS3S120	S1	40.000	40.66	120	16	3	4 3/4	4 3/8	1 3/8	-	6 3/8	1 1/16	3 5/16	3/8	244

All 24 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron. *Face of bushing flange is under rim by amount shown.



BORE RANGE

TABLE No. 2

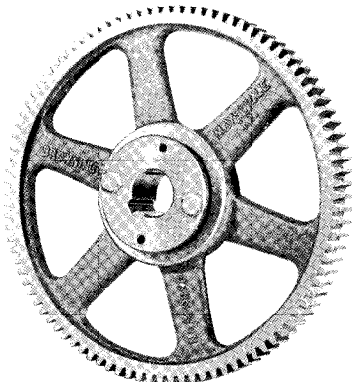
BUSHING	BORE RANGE
Q2	1" - 2 5/8"
R1	1 1/8 - 3 3/4
S1	1 11/16 - 4 1/4

STANDARD KEYSEATS

TABLE No. 3

BORE RANGE	KEYSEAT
1" - 1 1/4"	1/4" X 1/8"
1 5/16 - 1 3/8	5/16 X 5/32
1 7/16 - 1 3/4	3/8 X 3/16
1 13/16 - 2 1/4	1/2 X 1/4
2 5/16 - 2 3/4	5/8 X 5/16
2 13/16 - 3 1/4	3/4 X 3/8
3 5/16 - 3 3/4	7/8 X 7/16
3 13/16 - 4 3/8	1 X 1/2

1 3/8" Bore Bushings also available with 3/8" x 3/16" Ks.



Browning® Bushed Gears hold the shaft with Clamp Fit and eliminate costly reworking on replacement gears.

20 Pitch

1/2" Face

20° Pressure Angle



TABLE No. 1

STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
YSS2012	.600"	.70"	12	2	5/16"	5/16"	1/2"	15/16"	7/16"	29/64"	.1
YSS2014	.700	.80	14	2	5/16	3/8	1/2	15/16	7/16	9/16	.1
YSS2015	.750	.85	15	2	3/8	3/8	1/2	15/16	7/16	29/64	.1
YSS2016	.800	.90	16	2	3/8	7/16	1/2	15/16	7/16	21/32	.1
YSS2018	.900	1.00	18	2	3/8	1/2	1/2	15/16	7/16	3/4	.1
YSS2020	1.000	1.10	20	2	1/2	1/2	1/2	15/16	7/16	55/64	.1
YSS2024	1.200	1.30	24	2	1/2	9/16	1/2	15/16	7/16	1 1/16	.2
YSS2025	1.250	1.35	25	2	1/2	5/8	1/2	15/16	7/16	1 7/64	.3
YSS2030	1.500	1.60	30	2	1/2	3/4	1/2	15/16	7/16	1 23/64	.4
YSS2035	1.750	1.85	35	2	1/2	7/8	1/2	1	1/2	1 9/16	.6
YSS2040	2.000	2.10	40	2	1/2	1	1/2	1	1/2	1 13/16	.8
YSS2045	2.250	2.35	45	2	1/2	1 1/4	1/2	1	1/2	2 1/16	1.0
YSS2050	2.500	2.60	50	2	1/2	1 1/4	1/2	1	1/2	2 1/16	1.1
YSS2060	3.000	3.10	60	2	1/2	1 1/4	1/2	1	1/2	2 1/16	1.4
YSS2070	3.500	3.60	70	2	1/2	1 1/4	1/2	1	1/2	2 1/16	1.8
YSS2080	4.000	4.10	80	2	5/8	1 1/4	1/2	1 1/8	5/8	2 1/16	1.9
YSS2084	4.200	4.30	84	2	5/8	1 1/4	1/2	1 1/8	5/8	2 1/16	2.6
YSS2090	4.500	4.60	90	2	5/8	1 1/4	1/2	1 1/8	5/8	2 1/16	2.1
YSS20100	5.000	5.10	100	2	5/8	1 1/4	1/2	1 1/8	5/8	2 1/16	2.5
YCS20120	6.000	6.10	120	4	5/8	1 1/4	1/2	1 1/8	5/8	2	2.5
YCS20140	7.000	7.10	140	4	5/8	1 1/4	1/2	1 1/8	5/8	2	2.9
YCS20160	8.000	8.10	160	4	5/8	1 1/4	1/2	1 1/8	5/8	2	3.3
YCS20180	9.000	9.10	180	4	5/8	1 1/4	1/2	1 1/8	3/4	2	3.9
YCS20200	10.000	10.10	200	4	5/8	1 1/4	1/2	1 1/8	3/4	2	4.3

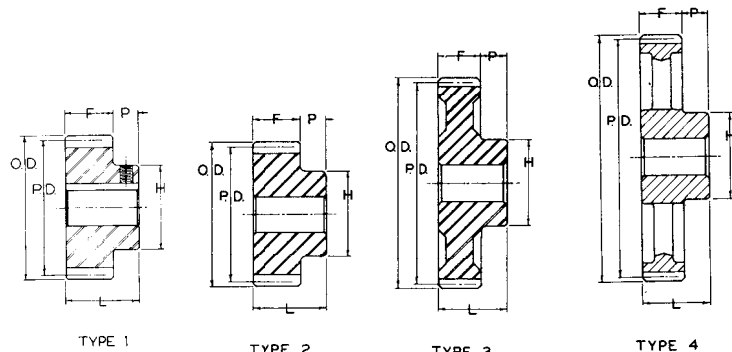
All 100 Tooth Gears and smaller are Steel. All larger gears are Cast Iron.

20o P.A. Gears will not Mesh with 14 1/2° P.A. Gears

BORE RANGE

TABLE No. 2

BUSHING	BORE RANGE
G	3/8" to 1"
H	3/8 to 1 1/2
P1	1/2 to 1 3/4

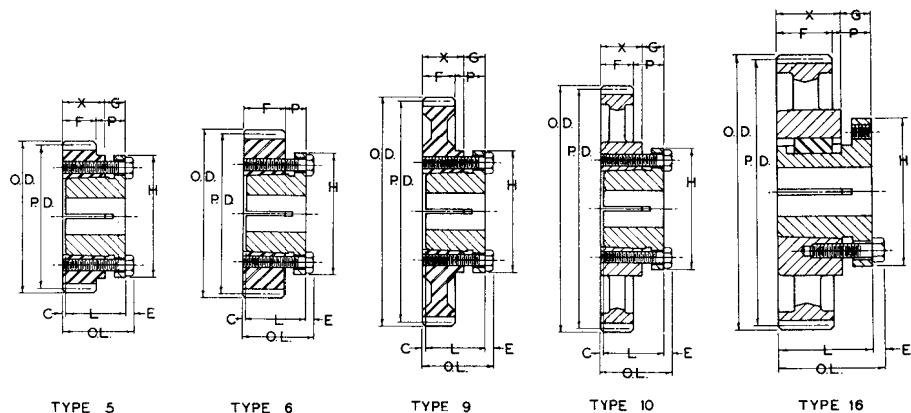


STANDARD KEYSEATS

TABLE No. 3

BORE RANGE	KEYSEAT
3/8" & 7/16"	None
1/2 & 9/16	1/8" x 1/16"
5/8 to 7/8	3/16 x 3/32
15/16 to 1 1/4	1/4 x 1/8
1 5/16 & 1 3/8	5/16 x 5/32
1 7/16 to 1 3/4	3/8 x 3/16

1 3/8" Bore Bushings also available with 3/8" x 3/16" Ks.



16 Pitch

3/4" Face

20° Pressure Angle



TABLE No. 1

STOCK STEEL FINISHED BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	STOCK BORES MARKED "X"							DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			5/16"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	F	L	P	H	
YSS16F12	.750"	.87"	12	1	X	-	-	-	-	-	-	3/4"	1 1/4"	1/2"	9/16"	.1
YSS16F14	.875	1.00	14	1	-	X	-	-	-	-	-	3/4"	1 1/4"	1/2"	11/16	.1
YSS16F15	.938	1.06	15	1	-	X	X	-	-	-	-	3/4"	1 1/4"	1/2"	3/4"	.2
YSS16F16	1.000	1.12	16	1	-	X	X	-	-	-	-	3/4"	1 1/4"	1/2"	13/16	.2
YSS16F18	1.125	1.25	18	1	-	-	X	-	-	-	-	3/4"	1 1/4"	1/2"	15/16	.2
YSS16F20	1.250	1.37	20	1	-	-	X	X	-	-	-	3/4"	1 1/4"	1/2"	1 1/16	.3
YSS16F24	1.500	1.62	24	1	-	-	X	X	X	-	-	3/4"	1 1/4"	1/2"	1 5/16	.4
YSS16F28	1.750	1.87	28	1	-	-	-	X	X	-	-	3/4"	1 1/4"	1/2"	1 1/2	.6
YSS16F30	1.875	2.00	30	1	-	-	-	X	X	X	-	3/4"	1 1/4"	1/2"	1 5/8	.8
YSS16F32	2.000	2.12	32	1	-	-	-	X	X	X	X	3/4"	1 1/4"	1/2"	1 3/4	.8

All of above Gears are Steel. Furnished with one Hollow Head Setscrew and Standard Keyseat except 1/2" bore and smaller which have Setscrew only.

TABLE No. 2

STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
YSS1612	.750"	.87"	12	2	3/8"	3/8"	3/4"	1 1/4"	1/2"	9/16"	.1
YSS1614	.875	1.00	14	2	3/8	7/16	3/4	1 1/4	1/2	11/16	.1
YSS1615	.938	1.06	15	2	3/8	1/2	3/4	1 1/4	1/2	3/4	.1
YSS1616	1.000	1.12	16	2	1/2	1/2	3/4	1 1/4	1/2	13/16	.1
YSS1618	1.125	1.25	18	2	1/2	9/16	3/4	1 1/4	1/2	15/16	.2
YSS1620	1.250	1.37	20	2	5/8	5/8	3/4	1 1/4	1/2	1 1/16	.3
YSS1624	1.500	1.62	24	2	5/8	3/4	3/4	1 1/4	1/2	1 5/16	.4
YSS1628	1.750	1.87	28	2	5/8	7/8	3/4	1 1/4	1/2	1 1/2	.6
YSS1630	1.875	2.00	30	2	5/8	1	3/4	1 1/4	1/2	1 5/8	.7
YSS1632	2.000	2.12	32	2	5/8	1	3/4	1 1/4	1/2	1 3/4	.8
YSS1636	2.250	2.37	36	2	5/8	1 1/4	3/4	1 1/4	1/2	2	1.1
YSS1640	2.500	2.62	40	2	5/8	1 3/8	3/4	1 3/8	5/8	2 1/4	1.5
YSS1648	3.000	3.12	48	2	5/8	1 3/8	3/4	1 3/8	5/8	2 1/4	2.2
YSS1656	3.500	3.62	56	2	5/8	1 3/8	3/4	1 3/8	5/8	2 1/4	2.6
YSS1660	3.750	3.87	60	2	5/8	1 3/8	3/4	1 3/8	5/8	2 1/4	2.9
YSS1664	4.000	4.12	64	2	3/4	1 3/8	3/4	1 1/2	3/4	2 1/2	3.3
YSS1672	4.500	4.62	72	2	3/4	1 5/8	3/4	1 1/2	3/4	2 1/2	3.7
YSS1680	5.000	5.12	80	2	3/4	1 5/8	3/4	1 1/2	3/4	2 1/2	4.2
YCS1696	6.000	6.12	96	4	3/4	1 1/2	3/4	1 1/2	3/4	2 1/2	3.7
YCS16112	7.000	7.12	112	4	3/4	1 1/2	3/4	1 1/2	3/4	2 1/2	4.3
YCS16128	8.000	8.12	128	4	3/4	1 1/2	3/4	1 1/2	3/4	2 1/2	5.0
YCS16144	9.000	9.12	144	4	3/4	1 1/2	3/4	1 1/2	3/4	2 1/2	5.4
YCS16160	10.000	10.12	160	4	7/8	1 1/2	3/4	1 1/2	3/4	2 1/2	6.0
YCS16192	12.000	12.12	192	4	7/8	1 1/2	3/4	1 3/4	1	2 1/2	7.9

All 80 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

TABLE No. 3

STOCK STEEL AND CAST IRON SPUR GEARS WITH BROWNING SPLIT TAPER® BUSHINGS

PART No.		DIAMETER		No. TEETH	TYPE	DIMENSIONS									WT. Lbs. LESS BUSH.
GEAR	BUSH.	PITCH	NOMINAL O.D.			F	O.L.	L	P	C	H	G	X	E	
YSS16G36	G	2.250"	2.37"	36	6	3/4"	1 3/8"	1"	7/16"	3/16"	2"	-	-	3/16"	.6
YSS16G40	G	2.500	2.62	40	6	3/4	1 3/8	1	7/16	3/16	2	-	-	3/16	.8
YSS16H48	H	3.000	3.12	48	5	3/4	1 1/2	1 1/4	9/16	1/16	2 1/2	7/16"	7/8"	3/16	1.0
YSS16H56	H	3.500	3.62	56	5	3/4	1 1/2	1 1/4	9/16	1/16	2 1/2	7/16	7/8	3/16	1.7
YSS16H64	H	4.000	4.12	64	5	3/4	1 1/2	1 1/4	9/16	1/16	2 1/2	7/16	7/8	3/16	2.3
YSS16H80	H	5.000	5.12	80	9	3/4	1 1/2	1 1/4	9/16	1/16	2 1/2	7/16	7/8	3/16	3.0
YCS16H96	H	6.000	6.12	96	10	3/4	1 1/2	1 1/4	9/16	1/16	2 1/2	7/16	7/8	3/16	3.0

All 80 Tooth Gears and smaller are Steel. All larger, Cast Iron.

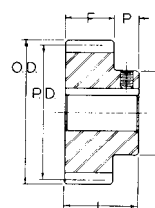
12 Pitch

1" Face

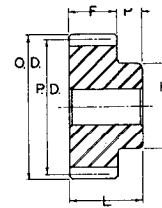
20° Pressure Angle



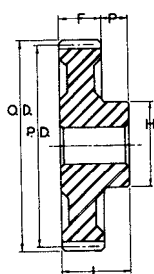
**NOTE: 20° PRESSURE ANGLE GEARS
WILL NOT MESH WITH
14½° PRESSURE ANGLE GEARS**



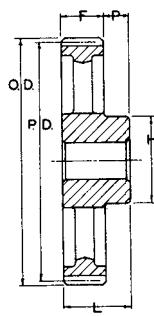
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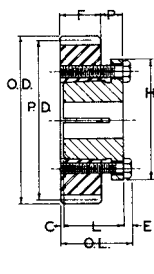
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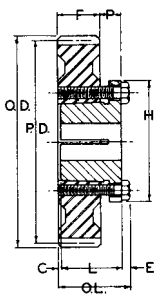
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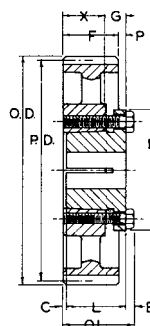
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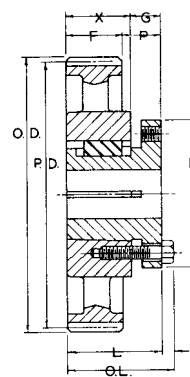
TYPE 6



TYPE 7



TYPE 8



TYPE 16



BORE RANGE

TABLE No. 1

BUSHING	BORE RANGE
G	3/8" to 1"
H	3/8 to 1 1/2
P1	1/2 to 1 3/4

STANDARD KEYSEATS

TABLE No. 2

BORE RANGE	KEYSEAT
3/8" & 7/16"	None
1/2 & 9/16	1/8" x 1/16"
5/8 to 7/8	3/16 x 3/32
15/16 to 1 1/4	1/4 x 1/8
1 5/8 & 1 3/8	5/16 x 5/32
1 7/16 to 1 3/4	3/8 x 3/16

**1 3/8" Bore Bushings also available with
3/8" x 3/16" Ks.**

**FOR ENGINEERING SEE
PAGES E-48 TO E-70**

12 Pitch

1" Face

20° Pressure Angle



TABLE No. 1

STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
YSS1212	1.000"	1.16"	12	2	1/2"	1/2"	1"	1 5/8"	5/8"	3/4"	.2
YSS1213	1.083	1.25	13	2	5/8	5/8	1	1 5/8	5/8	13/16	.2
YSS1214	1.167	1.33	14	2	5/8	5/8	1	1 5/8	5/8	29/32	.2
YSS1215	1.250	1.41	15	2	5/8	5/8	1	1 5/8	5/8	1	.3
YSS1216	1.333	1.50	16	2	5/8	5/8	1	1 5/8	5/8	1 1/16	.4
YSS1218	1.500	1.66	18	2	3/4	3/4	1	1 5/8	5/8	1 1/4	.4
YSS1220	1.667	1.83	20	2	3/4	3/4	1	1 5/8	5/8	1 13/32	.6
YSS1221	1.750	1.91	21	2	3/4	7/8	1	1 5/8	5/8	1 1/2	.7
YSS1224	2.000	2.16	24	2	3/4	1	1	1 5/8	5/8	1 3/4	1.0
YSS1228	2.333	2.50	28	2	3/4	1 1/4	1	1 5/8	5/8	2 1/16	1.3
YSS1230	2.500	2.66	30	2	3/4	1 3/8	1	1 5/8	5/8	2 1/4	1.8
YSS1236	3.000	3.16	36	2	3/4	1 5/8	1	1 5/8	7/8	2 1/2	3.0
YSS1242	3.500	3.66	42	2	3/4	1 5/8	1	1 5/8	7/8	2 1/2	3.6
YSS1248	4.000	4.16	48	2	7/8	1 5/8	1	1 5/8	7/8	2 1/2	4.5
YSS1254	4.500	4.66	54	2	7/8	1 5/8	1	1 5/8	7/8	2 1/2	5.4
YSS1260	5.000	5.16	60	2	7/8	1 5/8	1	1 5/8	7/8	2 1/2	5.2
YCS1266	5.500	5.66	66	4	7/8	1 9/16	1	1 5/8	7/8	2 5/8	4.6
YCS1272	6.000	6.16	72	4	7/8	1 9/16	1	1 5/8	7/8	2 5/8	5.0
YCS1284	7.000	7.16	84	4	7/8	1 9/16	1	1 5/8	7/8	2 5/8	5.8
YCS1296	8.000	8.16	96	4	7/8	1 9/16	1	1 5/8	7/8	2 5/8	6.6
YCS12108	9.000	9.16	108	4	7/8	1 9/16	1	1 5/8	7/8	2 5/8	7.1
YCS12120	10.000	10.16	120	4	1	1 9/16	1	1 5/8	7/8	2 5/8	7.8
YCS12132	11.000	11.16	132	4	1	1 9/16	1	2	1	2 5/8	10.9
YCS12144	12.000	12.16	144	4	1	1 9/16	1	2	1	2 5/8	11.8
YCS12168	14.000	14.16	168	4	1	1 9/16	1	2	1	2 5/8	13.7
YCS12192	16.000	16.16	192	4	1	1 9/16	1	2	1	2 5/8	17.3
YCS12216	18.000	18.16	216	4	1	1 5/8	1	2	1	2 3/4	21.0

All 60 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

TABLE No. 2

STOCK STEEL AND CAST IRON SPUR GEARS WITH BROWNING SPLIT TAPER® BUSHINGS

PART No.		DIAMETER		No. TEETH	TYPE	DIMENSIONS									WT. LBS. Less BUSH.
GEAR	BUSH.	PITCH	NOMINAL O.D.			F	O.L.	L	P	C	H	G	X	E	
YSS12H36	H	3.000"	3.16"	36	6	1"	1 5/8"	1 1/4"	7/16"	3/16"	2 1/2"	-	-	3/16"	1.4
YSS12H42	H	3.500	3.66	42	6	1	1 5/8	1 1/4	7/16	3/16	2 1/2	-	-	3/16	2.0
YSS12H48	H	4.000	4.16	48	6	1	1 5/8	1 1/4	7/16	3/16	2 1/2	-	-	3/16	3.0
YSS12H60	H	5.000	5.16	60	7	1	1 5/8	1 1/4	7/16	3/16	2 1/2	-	-	3/16	3.5
YCS12H72	H	6.000	6.16	72	8	1	1 1/2	1 1/4	5/16	1/16	2 1/2	7/16"	7/8"	3/16	3.4
YCS12H84	H	7.000	7.16	84	8	1	1 1/2	1 1/4	5/16	1/16	2 1/2	7/16	7/8	3/16	4.5
YCS12H96	H	8.000	8.16	96	8	1	1 1/2	1 1/4	5/16	1/16	2 1/2	7/16	7/8	3/16	5.2
YCS12H108	H	9.000	9.16	108	8	1	1 1/2	1 1/4	5/16	1/16	2 1/2	7/16	7/8	3/16	5.8
YCS12P144	P1	12.000	12.16	144	16	1	2 3/16	1 15/16	15/16	-	3	5/8	1 5/16	1/4	10.5

All 60 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

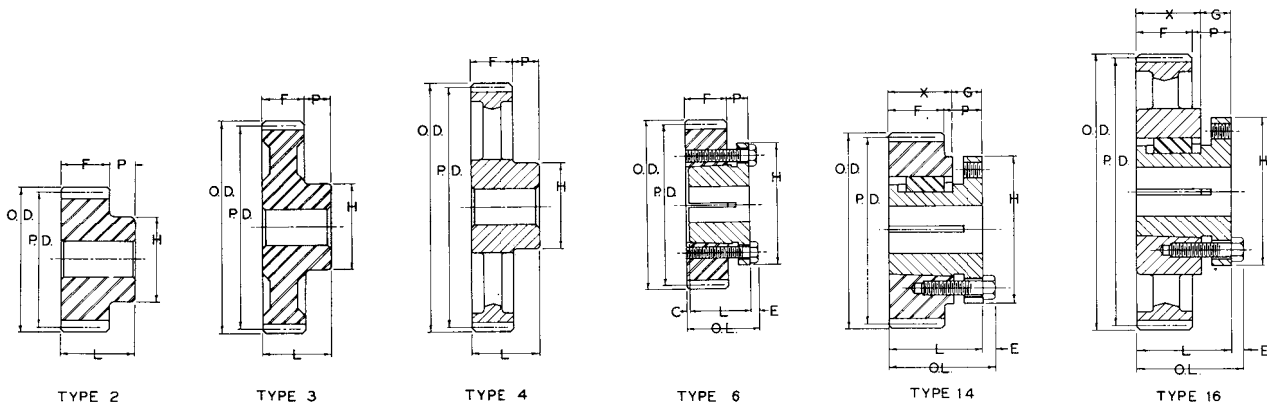
10 Pitch

1 1/4" Face

20° Pressure Angle



**BROWNING® GEARS - THE MOST COMPLETE LINE
OF STOCK GEARS IN FINISHED BORE,
MINIMUM BORE AND BUSHING TYPES.**



**STEEL AND
CAST IRON
GEARS OF
BEST QUALITY
ACCURATELY
MACHINED
AND INSPECTED.**

BORE RANGE

TABLE No. 1

BUSHING	BORE RANGE
H	3/8" to 1 1/2"
P1	1/2 to 1 3/4
Q1	3/4 to 2 11/16

STANDARD KEYSEATS

TABLE No. 2

BORE RANGE	KEYSEAT
3/8" & 7/16"	None
1/2 & 9/16	1/8" x 1/16"
5/8 to 7/8	3/16 x 3/32
15/16 to 1 1/4	1/4 x 1/8
1 5/16 & 1 3/8	5/16 x 5/32
1 7/16 to 1 3/4	3/8 x 3/16
1 13/16 to 2 1/4	1/2 x 1/4
2 5/16 to 2 11/16	5/8 x 5/16

1 3/8" Bore Bushings also available with 3/8" x 3/16" Ks.

10 Pitch

1 1/4" Face

20° Pressure Angle



TABLE No. 1

STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
YSS1012	1.200"	1.40"	12	2	5/8"	5/8"	1 1/4"	1 1/4"	5/8"	23/32"	.4
YSS1014	1.400	1.60	14	2	5/8	5/8	1 1/4	1 1/4	5/8	1 1/64	.6
YSS1015	1.500	1.70	15	2	3/4	3/4	1 1/4	1 1/4	5/8	1 1/32	.6
YSS1016	1.600	1.80	16	2	3/4	3/4	1 1/4	1 1/4	5/8	1 5/16	.7
YSS1018	1.800	2.00	18	2	3/4	7/8	1 1/4	1 1/4	5/8	1 33/64	.9
YSS1020	2.000	2.20	20	2	7/8	1	1 1/4	1 1/4	5/8	1 23/32	1.0
YSS1024	2.400	2.60	24	2	7/8	1 1/4	1 1/4	1 1/4	5/8	2 1/64	1.8
YSS1025	2.500	2.70	25	2	7/8	1 3/8	1 1/4	1 1/4	5/8	2 1/32	2.0
YSS1028	2.800	3.00	28	2	7/8	1 5/8	1 1/4	1 1/4	5/8	2 1/2	2.8
YSS1030	3.000	3.20	30	2	7/8	1 3/4	1 1/4	2 1/4	1	2 5/8	3.7
YSS1035	3.500	3.70	35	2	7/8	1 3/4	1 1/4	2 1/4	1	2 5/8	4.5
YSS1040	4.000	4.20	40	2	1	1 3/4	1 1/4	2 1/4	1	2 5/8	5.4
YSS1045	4.500	4.70	45	2	1	1 3/4	1 1/4	2 1/4	1	2 5/8	6.7
YSS1048	4.800	5.00	48	2	1	1 3/4	1 1/4	2 1/4	1	2 5/8	7.4
YSS1050	5.000	5.20	50	2	1	2	1 1/4	2 1/4	1	3	8.5
YSS1055	5.500	5.70	55	2	1	2	1 1/4	2 1/4	1	3	10.4
YSS1060	6.000	6.20	60	2	1	2	1 1/4	2 1/4	1	3	12.0
YCS1070	7.000	7.20	70	4	1	1 13/16	1 1/4	2 1/4	1	3	8.7
YCS1080	8.000	8.20	80	4	1	1 13/16	1 1/4	2 1/4	1	3	9.8
YCS1090	9.000	9.20	90	4	1	1 13/16	1 1/4	2 1/4	1	3	10.9
YCS10100	10.000	10.20	100	4	1 1/8	1 13/16	1 1/4	2 3/8	1 1/8	3	13.1
YCS10120	12.000	12.20	120	4	1 1/8	2	1 1/4	2 3/8	1 1/8	3 1/4	15.7
YCS10140	14.000	14.20	140	4	1 1/8	2	1 1/4	2 3/8	1 1/8	3 1/4	19.5
YCS10160	16.000	16.20	160	4	1 1/8	2 1/4	1 1/4	2 3/8	1 1/8	3 1/2	25.1
YCS10180	18.000	18.20	180	4	1 1/8	2 1/4	1 1/4	2 3/8	1 1/8	3 1/2	29.6
YCS10200	20.000	20.20	200	4	1 1/8	2 1/4	1 1/4	2 1/2	1 1/4	3 3/4	34.8

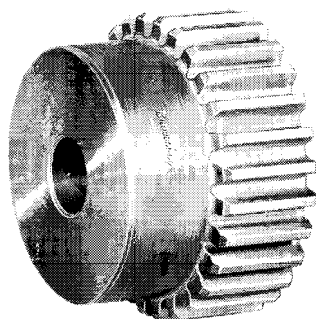
All 60 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

TABLE No. 2

STOCK STEEL AND CAST IRON SPUR GEARS WITH BROWNING SPLIT TAPER® BUSHINGS

PART No.		DIAMETER		No. TEETH	TYPE	DIMENSIONS									WT. Lbs. LESS BUSH.
GEAR	BUSH.	PITCH	NOMINAL O.D.			F	O.L.	L	P	C	H	G	X	E	
YSS10H30	H	3.000"	3.20"	30	6	1 1/4"	1 7/8"	1 1/4"	7/16"	7/16"	2 1/2"	-	-	3/16"	2.8
YSS10H35	H	3.500	3.70	35	6	1 1/4	1 7/8	1 1/4	7/16	7/16	2 1/2	-	-	3/16	2.6
YSS10H40	H	4.000	4.20	40	6	1 1/4	1 7/8	1 1/4	7/16	7/16	2 1/2	-	-	3/16	3.6
YSS10P45	P1	4.500	4.70	45	14	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16"	1/4	4.5
YSS10P55	P1	5.500	5.70	55	14	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	6.8
YSS10P60	P1	6.000	6.20	60	14	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	9.5
YCS10P70	P1	7.000	7.20	70	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	6.8
YCS10P80	P1	8.000	8.20	80	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	7.9
YCS10P100	P1	10.000	10.20	100	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	10.6
YCS10P110	P1	11.000	11.20	110	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	12.4
YCS10P140	P1	14.000	14.20	140	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	15.6
YCS10P180	P1	18.000	18.20	180	16	1 1/4	2 3/16	1 15/16	11/16	-	3	5/8	1 5/16	1/4	25.6

All 60 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.



FOR BUSHING
DETAILS SEE
PAGE A-1.



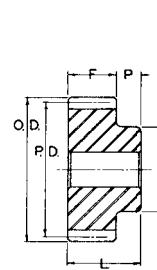
8 Pitch

1 1/2" Face

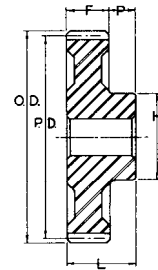
20° Pressure Angle



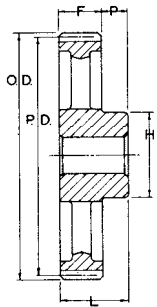
Browning has All Three
 Finished Bore Gears - All Steel
 Bushing Type - Browning Split Taper® Bushings } Off the Shelf
 Minimum Bore Gears - Large Hubs for Reboring } Ready to Use



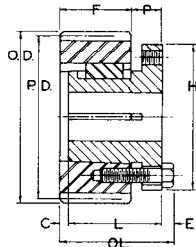
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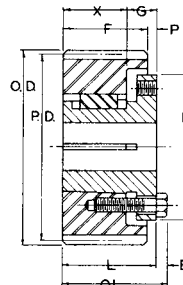
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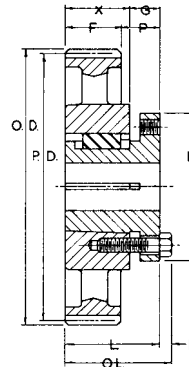
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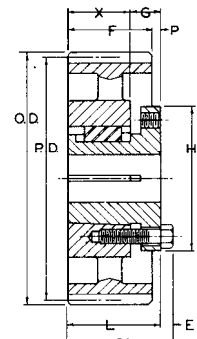
TYPE 11



TYPE 12



TYPE 16



TYPE 17

**ALL GEARS
 INDIVIDUALLY
 PACKAGED
 AND CLEARLY
 LABELED
 FOR EASY
 IDENTIFICATION**

BORE RANGE

TABLE No. 1

BUSHING	BORE RANGE
P1	1/2" to 1 3/4"
Q1	3/4 to 2 11/16

STANDARD KEYSEATS

TABLE No. 2

BORE RANGE	KEYSEAT
1/2" & 9/16"	1/8" x 1/16"
5/8 to 7/8	3/16 x 3/32
15/16 to 1 1/4	1/4 x 1/8
1 5/16 & 1 3/8	5/16 x 5/32
1 7/16 to 1 3/4	3/8 x 3/16
1 13/16 to 2 1/4	1/2 x 1/4
2 5/16 to 2 11/16	5/8 x 5/16

1 3/8" Bore Bushings also available with 3/8" x 3/16" Ks.

8 Pitch

1 1/2" Face

20° Pressure Angle



TABLE No. 1

STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
YSS812	1.500"	1.75"	12	2	3/4"	3/4"	1 1/2"	2 1/4"	3/4"	1 1/8"	.6
YSS814	1.750	2.00	14	2	3/4	3/4	1 1/2	2 1/4	3/4	1 3/8	1.0
YSS815	1.875	2.12	15	2	3/4	7/8	1 1/2	2 1/4	3/4	1 1/2	1.2
YSS816	2.000	2.25	16	2	7/8	1	1 1/2	2 3/8	7/8	1 5/8	1.4
YSS818	2.250	2.50	18	2	7/8	1 1/8	1 1/2	2 3/8	7/8	1 7/8	1.9
YSS820	2.500	2.75	20	2	7/8	1 1/4	1 1/2	2 3/8	7/8	2 1/8	2.5
YSS822	2.750	3.00	22	2	7/8	1 1/2	1 1/2	2 3/8	7/8	2 3/8	3.0
YSS824	3.000	3.25	24	2	7/8	1 3/4	1 1/2	2 3/8	7/8	2 5/8	3.9
YSS828	3.500	3.75	28	2	7/8	2 1/8	1 1/2	2 3/8	7/8	3 1/8	5.4
YSS832	4.000	4.25	32	2	1	2 1/8	1 1/2	2 1/2	1	3 1/8	6.9
YSS836	4.500	4.75	36	2	1	2 1/8	1 1/2	2 1/2	1	3 1/8	8.3
YSS840	5.000	5.25	40	2	1	2 1/8	1 1/2	2 1/2	1	3 1/8	9.9
YSS844	5.500	5.75	44	2	1	2 1/4	1 1/2	2 1/2	1	3 1/4	12.5
YSS848	6.000	6.25	48	2	1	2 1/4	1 1/2	2 1/2	1	3 1/4	14.5
YSS856	7.000	7.25	56	2	1	2 1/4	1 1/2	2 1/2	1	3 1/4	19.0
YSS860	7.500	7.75	60	2	1	2 1/4	1 1/2	2 1/2	1	3 1/4	21.1
YCS864	8.000	8.25	64	4	1	2	1 1/2	2 1/2	1	3 1/4	12.9
YCS872	9.000	9.25	72	4	1	2	1 1/2	2 1/2	1	3 1/4	14.3
YCS880	10.000	10.25	80	4	1 1/8	2	1 1/2	2 3/4	1 1/4	3 1/4	16.6
YCS888	11.000	11.25	88	4	1 1/8	2	1 1/2	2 3/4	1 1/4	3 1/4	17.8
YCS896	12.000	12.25	96	4	1 1/8	2	1 1/2	2 3/4	1 1/4	3 1/4	20.1
YCS8112	14.000	14.25	112	4	1 1/8	2	1 1/2	2 3/4	1 1/4	3 1/4	25.1
YCS8120	15.000	15.25	120	4	1 1/8	2	1 1/2	2 3/4	1 1/4	3 1/4	26.7
YCS8128	16.000	16.25	128	4	1 1/8	2	1 1/2	2 3/4	1 1/4	3 1/4	28.6
YCS8144	18.000	18.25	144	4	1 1/8	2	1 1/2	2 3/4	1 1/4	3 1/4	34.9
YCS8160	20.000	20.25	160	4	1 1/4	2 1/4	1 1/2	3	1 1/2	3 1/2	42.1

All 60 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

TABLE No. 2

STOCK STEEL AND CAST IRON SPUR GEARS WITH BROWNING SPLIT TAPER® BUSHINGS

PART No.		DIAMETER		No. TEETH	TYPE	DIMENSIONS									WT. LBS. Less BUSH.
GEAR	BUSH.	PITCH	NOMINAL O.D.			F	O.L.	L	P	C	H	G	X	E	
YSS8P28	P1	3.500"	3.75"	28	11	1 1/2"	2 3/4"	1 15/16"	5/8"	3/16"	3"	-	-	1/4"	2.8
YSS8P32	P1	4.000	4.25	32	11	1 1/2	2 3/8	1 15/16	5/8	3/16	3	-	-	1/4	3.9
YSS8P36	P1	4.500	4.75	36	12	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8"	1 5/16"	1/4	5.1
YSS8P40	P1	5.000	5.25	40	12	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	6.4
YSS8P44	P1	5.500	5.75	44	12	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	8.0
YSS8P48	P1	6.000	6.25	48	12	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	10.1
YSS8P56	P1	7.000	7.25	56	12	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	14.0
YSS8P60	P1	7.500	7.75	60	12	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	15.8
YCS8P64	P1	8.000	8.25	64	17	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	9.8
YCS8P72	P1	9.000	9.25	72	17	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	10.9
YCS8P80	P1	10.000	10.25	80	17	1 1/2	2 3/16	1 15/16	7/16	-	3	5/8	1 5/16	1/4	12.3
YCS8Q112	Q1	14.000	14.25	112	16	1 1/2	2 25/32	2 1/2	1	-	4 1/8	3/4	1 3/4	9/32	21.9
YCS8Q120	Q1	15.000	15.25	120	16	1 1/2	2 25/32	2 1/2	1	-	4 1/8	3/4	1 3/4	9/32	24.8

All 60 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

**NOTE: 20° PRESSURE ANGLE GEARS
WILL NOT MESH WITH
14 1/2° PRESSURE ANGLE GEARS**

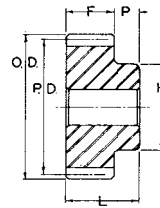
6 Pitch

2" Face

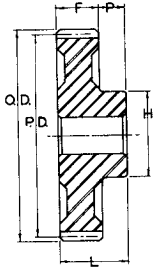
20° Pressure Angle



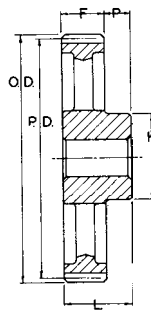
**FOR ENGINEERING
DATA SEE
PAGES E-48 TO E-70**



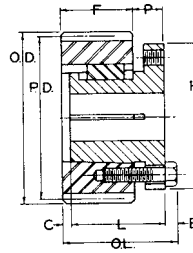
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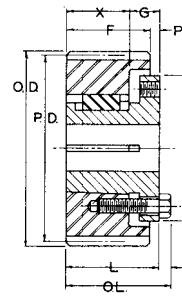
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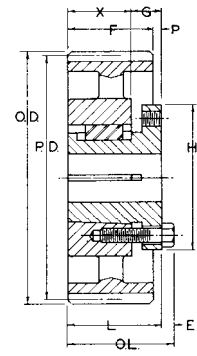
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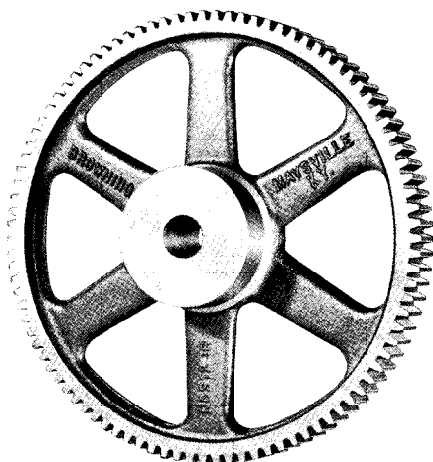
TYPE 11



TYPE 12



TYPE 17



BORE RANGE

TABLE No. 1

BUSHING	BORE RANGE
P1	1/2" to 1 3/4"
Q1	3/4 to 2 11/16

**FOR BUSHING
DETAILS SEE
PAGE A-1.**

STANDARD KEYSEATS

TABLE No. 2

BORE RANGE	KEYSEAT
1/2" & 9/16"	1/8" x 1/16"
5/8 to 7/8	3/16 x 3/32
15/16 to 1 1/4	1/4 x 1/8
1 5/16 & 1 3/8	5/16 x 5/32
1 7/16 to 1 3/4	3/8 x 3/16
1 13/16 to 2 1/4	1/2 x 1/4
2 5/16 to 2 3/4	5/8 x 5/16
2 13/16 to 3 3/16	3/4 x 3/8

1 3/8" Bore Bushings also available with 3/8" x 3/16" Ks.

6 Pitch

2" Face

20° Pressure Angle



TABLE No. 1

STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
YSS612	2.000"	2.33"	12	2	1"	1"	2"	2 7/8"	7/8"	1 1/2"	1.5
YSS614	2.333	2.66	14	2	1	1 1/8	2	2 7/8	7/8	1 13/16	2.4
YSS615	2.500	2.83	15	2	1	1 1/4	2	2 7/8	7/8	2	2.8
YSS616	2.667	3.00	16	2	1	1 3/8	2	2 7/8	7/8	2 5/32	3.2
YSS618	3.000	3.33	18	2	1	1 5/8	2	2 7/8	7/8	2 1/2	4.4
YSS621	3.500	3.83	21	2	1	2	2	2 7/8	7/8	3	6.5
YSS624	4.000	4.33	24	2	1 1/8	2	2	3 1/2	1 1/2	3	9.1
YSS627	4.500	4.83	27	2	1 1/8	2	2	3 1/2	1 1/2	3	10.8
YSS630	5.000	5.33	30	2	1 1/8	2 1/8	2	3 1/2	1 1/2	3 1/8	13.3
YSS633	5.500	5.83	33	2	1 1/8	2 1/4	2	3 1/2	1 1/2	3 1/4	15.8
YSS636	6.000	6.33	36	2	1 1/8	2 5/16	2	3 1/2	1 1/2	3 3/8	19.4
YSS642	7.000	7.33	42	2	1 1/4	2 5/16	2	3 1/2	1 1/2	3 3/8	25.2
YCS648	8.000	8.33	48	4	1 1/4	2 1/8	2	3 1/2	1 1/2	3 3/8	18.1
YCS654	9.000	9.33	54	4	1 1/4	2 1/8	2	3 1/2	1 1/2	3 3/8	19.8
YCS660	10.000	10.33	60	4	1 1/4	2 1/4	2	3 1/2	1 1/2	3 3/4	24.0
YCS666	11.000	11.33	66	4	1 1/4	2 1/4	2	3 1/2	1 1/2	3 3/4	26.1
YCS672	12.000	12.33	72	4	1 1/4	2 1/4	2	3 1/2	1 1/2	3 3/4	29.3
YCS684	14.000	14.33	84	4	1 1/4	2 1/4	2	3 1/2	1 1/2	3 3/4	35.9
YCS696	16.000	16.33	96	4	1 1/4	2 1/4	2	3 1/2	1 1/2	3 3/4	40.0
YCS6108	18.000	18.33	108	4	1 1/4	2 1/4	2	3 1/2	1 1/2	3 3/4	45.9
YCS6120	20.000	20.33	120	4	1 3/8	2 3/4	2	3 1/2	1 1/2	4 1/2	56.0

All 42 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

TABLE No. 2

STOCK STEEL AND CAST IRON SPUR GEARS WITH BROWNING SPLIT TAPER® BUSHINGS

PART No.		DIAMETER		No. TEETH	TYPE	DIMENSIONS									WT. Lbs. LESS BUSH.
GEAR	BUSH.	PITCH	NOMINAL O.D.			F	O.L.	L	P	C	H	G	X	E	
YSS6P24	P1	4.000"	4.33"	24	11	2"	2 7/8"	1 15/16"	5/8"	1 11/16"	3"	-	-	1/4"	5.2
YSS6P30	P1	5.000	5.33	30	12	2	2 3/16	1 15/16	1/16U	-	3	5/8"	1 5/16"	1/4	7.7
YSS6P33	P1	5.500	5.83	33	12	2	2 3/16	1 15/16	1/16U	-	3	5/8	1 5/16	1/4	9.3
YSS6P36	P1	6.000	6.33	36	12	2	2 3/16	1 15/16	1/16U	-	3	5/8	1 5/16	1/4	11.2
YSS6P42	P1	7.000	7.33	42	12	2	2 3/16	1 15/16	1/16U	-	3	5/8	1 5/16	1/4	15.5
YCS6Q48	Q1	8.000	8.33	48	17	2	2 25/32	2 1/2	1/2	-	4 1/8	3/4	1 3/4	9/32	15.9
YCS6Q54	Q1	9.000	9.33	54	17	2	2 25/32	2 1/2	1/2	-	4 1/8	3/4	1 3/4	9/32	18.7
YCS6Q60	Q1	10.000	10.33	60	17	2	2 25/32	2 1/2	1/2	-	4 1/8	3/4	1 3/4	9/32	18.8
YCS6Q66	Q1	11.000	11.33	66	17	2	2 25/32	2 1/2	1/2	-	4 1/8	3/4	1 3/4	9/32	22.9
YCS6Q72	Q1	12.000	12.33	72	17	2	2 25/32	2 1/2	1/2	-	4 1/8	3/4	1 3/4	9/32	23.8
YCS6Q96	Q1	16.000	16.33	96	17	2	2 25/32	2 1/2	1/2	-	4 1/8	3/4	1 3/4	9/32	35.0
YCS6Q108	Q1	18.000	18.33	108	17	2	2 25/32	2 1/2	1/2	-	4 1/8	3/4	1 3/4	9/32	40.0
YCS6Q120	Q1	20.000	20.33	120	17	2	2 25/32	2 1/2	1/2	-	4 1/8	3/4	1 3/4	9/32	52.5

All 42 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

NOTE - "U" after "P" dimension indicates bushing flange under rim by amount shown.

**BROWNING® GEARS- THE MOST COMPLETE LINE
OF STOCK GEARS IN FINISHED BORE,
MINIMUM BORE AND BUSHING TYPES.**

5 Pitch

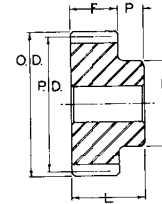
2 1/2" Face

20° Pressure Angle

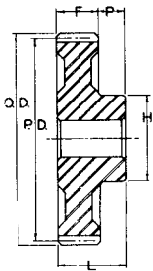


PRECISION
INSPECTED

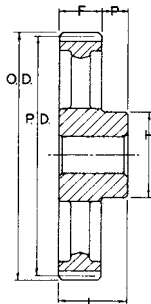
DISTRIBUTION
NATION - WIDE
AND IN CANADA



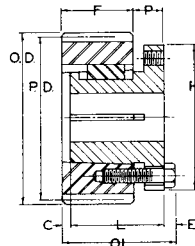
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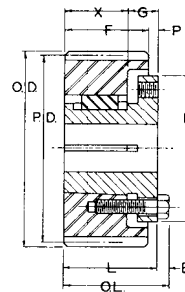
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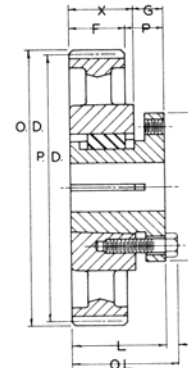
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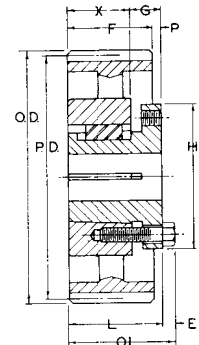
TYPE 11



TYPE 12



TYPE 16



TYPE 17

BORE RANGE

TABLE No. 1

BUSHING	BORE RANGE
P2	3/4" to 1 3/4"
Q1	3/4 to 2 11/16
R1	1 1/8 to 3 3/4
S1	1 11/16 to 4 1/4

STANDARD KEYSEATS

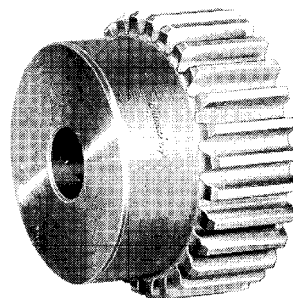
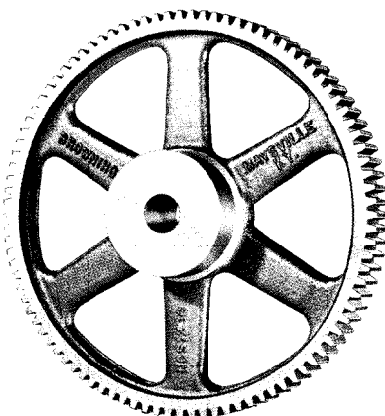
TABLE No. 2

BORE RANGE	KEYSEAT
3/4" to 7/8"	3/16" x 3/32"
15/16 to 1 1/4	1/4 x 1/8
1 5/16 to 1 3/8	5/16 x 5/32
1 7/16 to 1 3/4	3/8 x 3/16
1 13/16 to 2 1/4	1/2 x 1/4
2 5/16 to 2 3/4	5/8 x 5/16
2 13/16 to 3 1/4	3/4 x 3/8
3 5/16 to 3 3/4	7/8 x 7/16
3 3/16 to 4 1/4	1 x 1/2

1 3/8" Bore Bushings also available with 3/8" x 3/16" Ks.

ALL ITEMS
INDIVIDUALLY
PACKAGED

FOR BUSHING
DETAILS SEE
PAGE A-1



5 Pitch

2 1/2" Face

20° Pressure Angle



TABLE No. 1

STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX.	F	L	P	H	
YSS512	2.400"	2.80"	12	2	1 1/8"	1 1/8"	2 1/2"	3 3/8"	7/8"	1 13/16"	2.8
YSS514	2.800	3.20	14	2	1 1/8	1 3/8	2 1/2	3 3/8	7/8	2 3/16	4.2
YSS515	3.000	3.40	15	2	1 1/8	1 1/2	2 1/2	3 3/8	7/8	2 3/8	5.0
YSS516	3.200	3.60	16	2	1 1/8	1 3/4	2 1/2	3 3/8	7/8	2 5/8	5.9
YSS518	3.600	4.00	18	2	1 1/8	2	2 1/2	3 3/8	7/8	3	7.8
YSS520	4.000	4.40	20	2	1 1/8	2 3/8	2 1/2	3 3/8	7/8	3 3/8	10.0
YSS524	4.800	5.20	24	2	1 1/8	2 3/8	2 1/2	3 3/4	1 1/4	3 3/4	15.5
YSS525	5.000	5.40	25	2	1 1/8	3	2 1/2	3 3/4	1 1/4	4 1/4	17.8
YSS528	5.600	6.00	28	2	1 1/8	3	2 1/2	3 3/4	1 1/4	4 1/4	21.4
YSS530	6.000	6.40	30	2	1 1/8	3	2 1/2	3 3/4	1 1/4	4 1/4	24.0
YSS535	7.000	7.40	35	2	1 1/4	3	2 1/2	3 3/4	1 1/4	4 1/4	31.9
YCS540	8.000	8.40	40	3	1 1/4	2 5/8	2 1/2	3 3/4	1 1/4	4 1/4	30.0
YCS545	9.000	9.40	45	3	1 1/4	2 5/8	2 1/2	3 3/4	1 1/4	4 1/4	30.3
YCS550	10.000	10.40	50	4	1 1/4	2 5/8	2 1/2	3 3/4	1 1/4	4 1/4	33.3
YCS560	12.000	12.40	60	4	1 3/8	2 3/4	2 1/2	4	1 1/2	4 1/2	45.7
YCS570	14.000	14.40	70	4	1 3/8	2 3/4	2 1/2	4	1 1/2	4 1/2	49.0
YCS580	16.000	16.40	80	4	1 3/8	2 3/4	2 1/2	4	1 1/2	4 1/2	56.5
YCS590	18.000	18.40	90	4	1 3/8	2 3/4	2 1/2	4	1 1/2	4 3/4	65.5

All 35 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

TABLE No. 2

STOCK STEEL AND CAST IRON SPUR GEARS WITH BROWNING SPLIT TAPER® BUSHINGS

PART No.		DIAMETER		No. TEETH	TYPE	DIMENSIONS									WT. Lbs. LESS BUSH.
GEAR	BUSH.	PITCH	NOMINAL O.D.			F	O.L.	L	P	C	H	G	X	E	
YSS5P18	P2	3.600"	4.00"	18	11	2 1/2"	3 3/8"	2 15/16"	5/8"	3/16"	3"	-	-	1/4"	4.9
YSS5P20	P2	4.000	4.40	20	11	2 1/2	3 3/8	2 15/16	5/8	3/16	3	-	-	1/4	6.7
YSS5P35	P2	7.000	7.40	35	12	2 1/2	3 3/16	2 15/16	7/16	-	3	5/8"	2 5/16"	1/4	24.0
YCS5Q40	Q1	8.000	8.40	40	17	2 1/2	2 25/32	2 1/2	0	-	4 1/8	3/4	1 3/4	9/32	18.6
YCS5Q45	Q1	9.000	9.40	45	17	2 1/2	2 25/32	2 1/2	0	-	4 1/8	3/4	1 3/4	9/32	22.2
YCS5Q60	Q1	12.000	12.40	60	17	2 1/2	2 25/32	2 1/2	0	-	4 1/8	3/4	1 3/4	9/32	32.9
YCS5Q70	Q1	14.000	14.40	70	17	2 1/2	2 25/32	2 1/2	0	-	4 1/8	3/4	1 3/4	9/32	35.9
YCS5Q80	Q1	16.000	16.40	80	17	2 1/2	2 25/32	2 1/2	0	-	4 1/8	3/4	1 3/4	9/32	47.1
YCS5Q90	Q1	18.000	18.40	90	17	2 1/2	2 25/32	2 1/2	0	-	4 1/8	3/4	1 3/4	9/32	52.0
YCS5R100	R1	20.000	20.40	100	17	2 1/2	3 5/32	2 7/8	3/8	-	5 3/8	7/8	2	9/32	60.0
YCS5R120	R1	24.000	24.40	120	17	2 1/2	3 5/32	2 7/8	3/8	-	5 3/8	7/8	2	9/32	77.0
YCS5S140	S1	28.000	28.40	140	16	2 1/2	4 3/4	4 3/8	1 7/8	-	6 3/8	1 1/16	3 5/16	3/8	141

All 35 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

**STEEL AND CAST IRON HIGH
QUALITY GEARS, WITH SPLIT
TAPER BUSHINGS - FOR COMBINED
STRENGTH AND ECONOMY.**

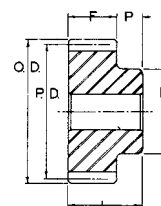
4 Pitch

3 1/2" Face

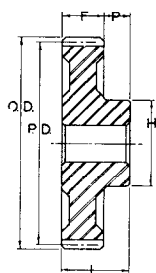
20° Pressure Angle



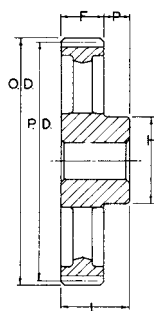
**BROWNING® GEARS - THE MOST COMPLETE LINE
OF STOCK GEARS IN FINISHED BORE,
MINIMUM BORE AND BUSHING TYPES.**



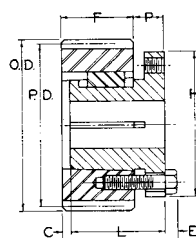
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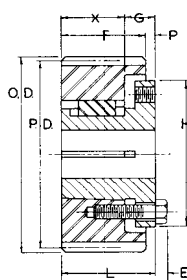
TYPE 3



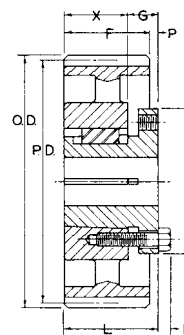
TYPE 4



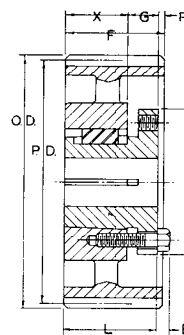
TYPE 11



TYPE 12



TYPE 17



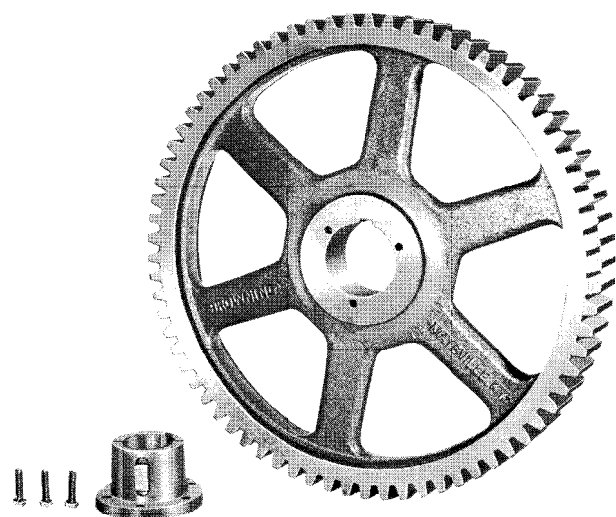
TYPE 18

**FOR ENGINEERING
DATA SEE
PAGES E-48 TO E-70**

BORE RANGE	
TABLE NO. 1	
BUSHING	BORE RANGE
Q2	1" to 2 5/8"
R1	1 1/8 to 3 3/4
S1	1 11/16 to 4 1/4

STANDARD KEYSEATS	
TABLE NO. 2	
BORE RANGE	KEYSEAT
1" to 1 1/4"	1/4" x 1/8"
1 5/16 to 1 3/8	5/16 x 5/32
1 7/16 to 1 3/4	3/8 x 3/16
1 13/16 to 2 1/4	1/2 x 1/4
2 5/16 to 2 3/4	5/8 x 5/16
2 13/16 to 3 1/4	3/4 x 3/8
3 5/16 to 3 3/4	7/8 x 7/16
3 13/16 to 4 1/4	1 x 1/2

**1 3/8" Bore Bushings also available
with 3/4" x 3/16" Ks.**



**FOR BUSHING DETAILS
SEE PAGE A-1.**

4

3 1/2"

20° Pressure Angle



TABLE No. 1

STOCK STEEL AND CAST IRON MINIMUM BORE SPUR GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		DIMENSIONS				WT. Lbs.
	PITCH	NOMINAL O.D.			STOCK	MAX	F	L	P	H	
YSS412	3.000"	3.50"	12	2	1 1/16"	1 3/8"	3 1/2"	4 1/2"	1"	2 1/4"	6.6
YSS414	3.500	4.00	14	2	1 1/16	1 7/8	3 1/2	4 1/2	1	2 3/4	9.8
YSS415	3.750	4.25	15	2	1 1/16	2	3 1/2	4 1/2	1	3	11.5
YSS416	4.000	4.50	16	2	1 5/16	2 1/4	3 1/2	4 1/2	1	3 1/4	12.7
YSS418	4.500	5.00	18	2	1 5/16	2 3/4	3 1/2	4 1/2	1	3 3/4	16.8
YSS420	5.000	5.50	20	2	1 5/16	3	3 1/2	4 1/2	1	4 1/4	21.4
YSS424	6.000	6.50	24	2	1 5/16	3 1/2	3 1/2	4 1/2	1	5 1/4	32.2
YSS428	7.000	7.50	28	2	1 5/16	4 1/2	3 1/2	4 1/2	1	6 1/4	45.3
YSS432	8.000	8.50	32	2	1 7/16	2 3/4	3 1/2	4 3/4	1 1/4	4 1/2	47.3
YCS436	9.000	9.50	36	3	1 7/16	2 3/4	3 1/2	4 3/4	1 1/4	4 1/2	52.5
YCS440	10.000	10.50	40	3	1 7/16	3 1/4	3 1/2	4 3/4	1 1/4	5 1/4	59.9
YCS444	11.000	11.50	44	3	1 7/16	3 1/4	3 1/2	4 3/4	1 1/4	5 1/4	69.8
YCS448	12.000	12.50	48	3	1 7/16	3 1/4	3 1/2	5 1/4	1 1/4	5 1/4	78.5
YCS456	14.000	14.50	56	4	1 7/16	3 1/4	3 1/2	5 1/4	1 1/4	5 1/4	84.8
YCS460	15.000	15.50	60	4	1 9/16	3 1/4	3 1/2	5 1/4	1 3/4	5 1/4	91.0
YCS464	16.000	16.50	64	4	1 9/16	3 1/4	3 1/2	5 1/4	1 3/4	5 1/4	93.8
YCS472	18.000	18.50	72	4	1 9/16	3 1/4	3 1/2	5 1/4	1 3/4	5 1/4	107.0
YCS480	20.000	20.50	80	4	1 9/16	3 1/4	3 1/2	5 1/4	1 3/4	5 1/4	114.0

All 32 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron.

TABLE No. 2

STOCK STEEL AND CAST IRON SPUR GEARS WITH BROWNING SPLIT TAPER® BUSHINGS

PART No.		DIAMETER		No. TEETH	TYPE	DIMENSIONS									WT. Lbs. LESS BUSH.
GEAR	BUSH.	PITCH	NOMINAL O.D.			F	O.L.	L	P	C	H	G	X	E	
YSS4020	Q2	5.000"	5.50"	20	11	3 1/2"	4 17/32"	3 1/2"	3/4"	3/4"	4 1/8"	-	-	9/32"	12.9
YSS4024	Q2	6.000	6.50	24	11	3 1/2	4 17/32	3 1/2	3/4	3/4	4 1/8	-	-	9/32	21.5
YSS4028	Q2	7.000	7.50	28	12	3 1/2	3 25/32	3 1/2	0	-	4 1/8	3/4"	2 3/4"	9/32	29.4
YSS4R32	R1	8.000	8.50	32	12	3 1/2	3 1/2	2 7/8	5/8*	-	5 3/8	7/8	2	9/32	28.5
YCS4R40	R1	10.000	10.50	40	18	3 1/2	3 1/2	2 7/8	5/8	-	5 3/8	7/8	2	9/32	42.7
YCS4R44	R1	11.000	11.50	44	18	3 1/2	3 1/2	2 7/8	5/8	-	5 3/8	7/8	2	9/32	47.8
YCS4R60	R1	15.000	15.50	60	18	3 1/2	3 1/2	2 7/8	5/8	-	5 3/8	7/8	2	9/32	67.5
YCS4R64	R1	16.000	16.50	64	18	3 1/2	3 1/2	2 7/8	5/8	-	5 3/8	7/8	2	9/32	73.8
YCS4R72	R1	18.000	18.50	72	18	3 1/2	3 1/2	2 7/8	5/8	-	5 3/8	7/8	2	9/32	84.0
YCS4R80	R1	20.000	20.50	80	18	3 1/2	3 1/2	2 7/8	5/8	-	5 3/8	7/8	2	9/32	96.5
YCS4R96	R1	24.000	24.50	96	18	3 1/2	3 1/2	2 7/8	5/8	-	5 3/8	7/8	2	9/32	124
YCS4S112	S1	28.000	28.50	112	17	3 1/2	4 3/4	4 3/8	7/8	-	6 3/8	1 1/16	3 5/16	3/8	166
YCS4S128	S1	32.000	32.50	128	17	3 1/2	4 3/4	4 3/8	7/8	-	6 3/8	1 1/16	3 5/16	3/8	199
YCS4S160	S1	40.000	40.50	160	17	3 1/2	4 3/4	4 3/8	7/8	-	6 3/8	1 1/16	3 5/16	3/8	250

All 32 Tooth Gears and smaller are Steel. All larger sizes, Cast Iron. *Face of bushing flange is under rim by amount shown.

**MINIMUM BORE GEARS ARE FURNISHED WITHOUT
KEYSEATS OR SETSCREWS. THEY CAN BE
RE-BORED TO SUIT, KEYSEATED AND
SETSCREWED. THEY HAVE LARGE MACHINED
HUBS FOR EASY REBORING AND WIDE BORE RANGE.
FOR SHAFT READY GEARS AT LOWER COST
USE BROWNING® BUSHED GEARS.**

20 Pitch

3/8" Face

14 1/2° Pressure Angle

TABLE No. 1

SPECIFICATIONS - STOCK STEEL CHANGE GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		F	WT. Lbs.	PART No.	DIAMETER		No. TEETH	TYPE	BORE		F	WT. Lbs.
	PITCH	NOMINAL O.D.			GEAR	BUSH				PITCH	NOMINAL O.D.			GEAR	BUSH		
NCG2020	1.000"	1.10"	20	C1	5/8"	7/16"	3/8"	.06	NCG2070	3.500"	3.60"	70	C1	5/8"	7/16"	3/8"	1.0
NCG2021	1.050	1.15	21	C1	5/8	7/16	3/8	.06	NCG2071	3.550	3.65	71	C1	5/8	7/16	3/8	1.0
NCG2022	1.100	1.20	22	C1	5/8	7/16	3/8	.06	NCG2072	3.600	3.70	72	C1	5/8	7/16	3/8	1.0
NCG2023	1.150	1.25	23	C1	5/8	7/16	3/8	.06	NCG2073	3.650	3.75	73	C1	5/8	7/16	3/8	1.1
NCG2024	1.200	1.30	24	C1	5/8	7/16	3/8	.09	NCG2074	3.700	3.80	74	C1	5/8	7/16	3/8	1.1
NCG2025	1.250	1.35	25	C1	5/8	7/16	3/8	.09	NCG2075	3.750	3.85	75	C1	5/8	7/16	3/8	1.1
NCG2026	1.300	1.40	26	C1	5/8	7/16	3/8	.09	NCG2076	3.800	3.90	76	C1	5/8	7/16	3/8	1.2
NCG2027	1.350	1.45	27	C1	5/8	7/16	3/8	.09	NCG2077	3.850	3.95	77	C1	5/8	7/16	3/8	1.2
NCG2028	1.400	1.50	28	C1	5/8	7/16	3/8	.13	NCG2078	3.900	4.00	78	C1	5/8	7/16	3/8	1.3
NCG2029	1.450	1.55	29	C1	5/8	7/16	3/8	.13	NCG2079	3.950	4.05	79	C1	5/8	7/16	3/8	1.3
NCG2030	1.500	1.60	30	C1	5/8	7/16	3/8	.13	NCG2080	4.000	4.10	80	C1	5/8	7/16	3/8	1.3
NCG2031	1.550	1.65	31	C1	5/8	7/16	3/8	.13	NCG2081	4.050	4.15	81	C1	5/8	7/16	3/8	1.3
NCG2032	1.600	1.70	32	C1	5/8	7/16	3/8	.13	NCG2082	4.100	4.20	82	C1	5/8	7/16	3/8	1.4
NCG2033	1.650	1.75	33	C1	5/8	7/16	3/8	.19	NCG2083	4.150	4.25	83	C1	5/8	7/16	3/8	1.4
NCG2034	1.700	1.80	34	C1	5/8	7/16	3/8	.19	NCG2084	4.200	4.30	84	C1	5/8	7/16	3/8	1.4
NCG2035	1.750	1.85	35	C1	5/8	7/16	3/8	.19	NCG2085	4.250	4.35	85	C1	5/8	7/16	3/8	1.4
NCG2036	1.800	1.90	36	C1	5/8	7/16	3/8	.19	NCG2086	4.300	4.40	86	C1	5/8	7/16	3/8	1.5
NCG2037	1.850	1.95	37	C1	5/8	7/16	3/8	.19	NCG2087	4.350	4.45	87	C1	5/8	7/16	3/8	1.5
NCG2038	1.900	2.00	38	C1	5/8	7/16	3/8	.25	NCG2088	4.400	4.50	88	C1	5/8	7/16	3/8	1.6
NCG2039	1.950	2.05	39	C1	5/8	7/16	3/8	.25	NCG2089	4.450	4.55	89	C1	5/8	7/16	3/8	1.6
NCG2040	2.000	2.10	40	C1	5/8	7/16	3/8	.25	NCG2090	4.500	4.60	90	C1	5/8	7/16	3/8	1.6
NCG2041	2.050	2.15	41	C1	5/8	7/16	3/8	.25	NCG2091	4.550	4.65	91	C1	5/8	7/16	3/8	1.7
NCG2042	2.100	2.20	42	C1	5/8	7/16	3/8	.31	NCG2092	4.600	4.70	92	C1	5/8	7/16	3/8	1.8
NCG2043	2.150	2.25	43	C1	5/8	7/16	3/8	.31	NCG2093	4.650	4.75	93	C1	5/8	7/16	3/8	1.8
NCG2044	2.200	2.30	44	C1	5/8	7/16	3/8	.31	NCG2094	4.700	4.80	94	C1	5/8	7/16	3/8	1.8
NCG2045	2.250	2.35	45	C1	5/8	7/16	3/8	.31	NCG2095	4.750	4.85	95	C1	5/8	7/16	3/8	1.8
NCG2046	2.300	2.40	46	C1	5/8	7/16	3/8	.31	NCG2096	4.800	4.90	96	C1	5/8	7/16	3/8	1.9
NCG2047	2.350	2.45	47	C1	5/8	7/16	3/8	.38	NCG2097	4.850	4.95	97	C1	5/8	7/16	3/8	2.0
NCG2048	2.400	2.50	48	C1	5/8	7/16	3/8	.38	NCG2098	4.900	5.00	98	C1	5/8	7/16	3/8	2.0
NCG2049	2.450	2.55	49	C1	5/8	7/16	3/8	.38	NCG2099	4.950	5.05	99	C1	5/8	7/16	3/8	2.0
NCG2050	2.500	2.60	50	C1	5/8	7/16	3/8	.44	NCG2100	5.000	5.10	100	C1	5/8	7/16	3/8	2.0
NCG2051	2.550	2.65	51	C1	5/8	7/16	3/8	.44	NCG2101	5.050	5.15	101	C1	5/8	7/16	3/8	2.0
NCG2052	2.600	2.70	52	C1	5/8	7/16	3/8	.50	NCG2102	5.100	5.20	102	C1	5/8	7/16	3/8	2.1
NCG2053	2.650	2.75	53	C1	5/8	7/16	3/8	.50	NCG2103	5.150	5.25	103	C1	5/8	7/16	3/8	2.2
NCG2054	2.700	2.80	54	C1	5/8	7/16	3/8	.50	NCG2104	5.200	5.30	104	C1	5/8	7/16	3/8	2.2
NCG2055	2.750	2.85	55	C1	5/8	7/16	3/8	.56	NCG2105	5.250	5.35	105	C1	5/8	7/16	3/8	2.3
NCG2056	2.800	2.90	56	C1	5/8	7/16	3/8	.56	NCG2106	5.300	5.40	106	C1	5/8	7/16	3/8	2.3
NCG2057	2.850	2.95	57	C1	5/8	7/16	3/8	.56	NCG2107	5.350	5.45	107	C1	5/8	7/16	3/8	2.3
NCG2058	2.900	3.00	58	C1	5/8	7/16	3/8	.63	NCG2108	5.400	5.50	108	C1	5/8	7/16	3/8	2.4
NCG2059	2.950	3.05	59	C1	5/8	7/16	3/8	.63	NCG2109	5.450	5.55	109	C1	5/8	7/16	3/8	2.5
NCG2060	3.000	3.10	60	C1	5/8	7/16	3/8	.69	NCG2110	5.500	5.60	110	C1	5/8	7/16	3/8	2.5
NCG2061	3.050	3.15	61	C1	5/8	7/16	3/8	.69	NCG2111	5.550	5.65	111	C1	5/8	7/16	3/8	2.5
NCG2062	3.100	3.20	62	C1	5/8	7/16	3/8	.69	NCG2112	5.600	5.70	112	C1	5/8	7/16	3/8	2.5
NCG2063	3.150	3.25	63	C1	5/8	7/16	3/8	.69	NCG2113	5.650	5.75	113	C1	5/8	7/16	3/8	2.6
NCG2064	3.200	3.30	64	C1	5/8	7/16	3/8	.75	NCG2114	5.700	5.80	114	C1	5/8	7/16	3/8	2.8
NCG2065	3.250	3.35	65	C1	5/8	7/16	3/8	.75	NCG2115	5.750	5.85	115	C1	5/8	7/16	3/8	2.8
NCG2066	3.300	3.40	66	C1	5/8	7/16	3/8	.81	NCG2116	5.800	5.90	116	C1	5/8	7/16	3/8	2.8
NCG2067	3.350	3.45	67	C1	5/8	7/16	3/8	.81	NCG2117	5.850	5.95	117	C1	5/8	7/16	3/8	2.8
NCG2068	3.400	3.50	68	C1	5/8	7/16	3/8	.88	NCG2118	5.900	6.00	118	C1	5/8	7/16	3/8	2.9
NCG2069	3.450	3.55	69	C1	5/8	7/16	3/8	.94	NCG2119	5.950	6.05	119	C1	5/8	7/16	3/8	2.9
									NCG2120	6.000	6.10	120	C1	5/8	7/8	3/8	3.0



These Change Gears can be used interchangeably with Spur Gears shown on Page E-5 for intermediate ratios.

See page A-7 for Steel Hubs for reworking these gears.

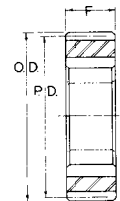
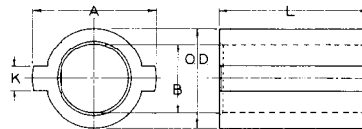


TABLE No. 2

CHANGE GEAR BUSHING

PART No.	DIMENSIONS					WT. Lbs.
	O.D.	A	B	L	K	
CGB20	5/8"	47/64"	7/16"	3/4"	1/8"	.1



ALL BROWNING® CHANGE GEARS ARE STEEL

16 Pitch

1/2" Face

14 1/2° Pressure Angle

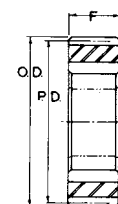
TABLE No. 1

SPECIFICATIONS - STOCK STEEL CHANGE GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		F	WT. LBS.	PART No.	DIAMETER		No. TEETH	TYPE	BORE		F	WT. Lbs.
	PITCH	NOMINAL O.D.			GEAR	BUSH.				PITCH	NOMINAL O.D.			GEAR	BUSH.		
NCG1620	1.250"	1.37"	20	C1	3/4"	1/2"	1/2"	.09	NCG1675	4.688"	4.81"	75	C1	3/4"	1/2"	1/2"	2.5
NCG1621	1.313	1.43	21	C1	3/4"	1/2"	1/2"	.09	NCG1676	4.750	4.87	76	C1	3/4"	1/2"	1/2"	2.7
NCG1622	1.375	1.50	22	C1	3/4"	1/2"	1/2"	.09	NCG1677	4.813	4.93	77	C1	3/4"	1/2"	1/2"	2.8
NCG1623	1.438	1.56	23	C1	3/4"	1/2"	1/2"	.13	NCG1678	4.875	5.00	78	C1	3/4"	1/2"	1/2"	2.8
NCG1624	1.500	1.62	24	C1	3/4"	1/2"	1/2"	.13	NCG1679	4.938	5.06	79	C1	3/4"	1/2"	1/2"	2.8
NCG1625	1.563	1.68	25	C1	3/4"	1/2"	1/2"	.19	NCG1680	5.000	5.12	80	C1	3/4"	1/2"	1/2"	3.0
NCG1626	1.625	1.75	26	C1	3/4"	1/2"	1/2"	.19	NCG1681	5.063	5.18	81	C1	3/4"	1/2"	1/2"	3.0
NCG1627	1.688	1.81	27	C1	3/4"	1/2"	1/2"	.25	NCG1682	5.125	5.25	82	C1	3/4"	1/2"	1/2"	3.0
NCG1628	1.750	1.87	28	C1	3/4"	1/2"	1/2"	.25	NCG1683	5.188	5.31	83	C1	3/4"	1/2"	1/2"	3.2
NCG1629	1.813	1.93	29	C1	3/4"	1/2"	1/2"	.25	NCG1684	5.250	5.37	84	C1	3/4"	1/2"	1/2"	3.3
NCG1630	1.875	2.00	30	C1	3/4"	1/2"	1/2"	.31	NCG1685	5.313	5.43	85	C1	3/4"	1/2"	1/2"	3.3
NCG1631	1.938	2.06	31	C1	3/4"	1/2"	1/2"	.31	NCG1686	5.375	5.50	86	C1	3/4"	1/2"	1/2"	3.3
NCG1632	2.000	2.12	32	C1	3/4"	1/2"	1/2"	.38	NCG1687	5.438	5.56	87	C1	3/4"	1/2"	1/2"	3.5
NCG1633	2.063	2.18	33	C1	3/4"	1/2"	1/2"	.38	NCG1688	5.500	5.62	88	C1	3/4"	1/2"	1/2"	3.5
NCG1634	2.125	2.25	34	C1	3/4"	1/2"	1/2"	.38	NCG1689	5.563	5.68	89	C1	3/4"	1/2"	1/2"	3.6
NCG1635	2.188	2.31	35	C1	3/4"	1/2"	1/2"	.44	NCG1690	5.625	5.75	90	C1	3/4"	1/2"	1/2"	3.8
NCG1636	2.250	2.37	36	C1	3/4"	1/2"	1/2"	.44	NCG1691	5.688	5.81	91	C1	3/4"	1/2"	1/2"	3.8
NCG1637	2.313	2.43	37	C1	3/4"	1/2"	1/2"	.50	NCG1692	5.750	5.87	92	C1	3/4"	1/2"	1/2"	3.8
NCG1638	2.375	2.50	38	C1	3/4"	1/2"	1/2"	.50	NCG1693	5.813	5.93	93	C1	3/4"	1/2"	1/2"	3.9
NCG1639	2.438	2.56	39	C1	3/4"	1/2"	1/2"	.56	NCG1694	5.875	6.00	94	C1	3/4"	1/2"	1/2"	4.1
NCG1640	2.500	2.62	40	C1	3/4"	1/2"	1/2"	.56	NCG1695	5.938	6.06	95	C1	3/4"	1/2"	1/2"	4.1
NCG1641	2.563	2.68	41	C1	3/4"	1/2"	1/2"	.63	NCG1696	6.000	6.12	96	C1	3/4"	1/2"	1/2"	4.3
NCG1642	2.625	2.75	42	C1	3/4"	1/2"	1/2"	.68	NCG1697	6.063	6.18	97	C1	3/4"	1/2"	1/2"	4.3
NCG1643	2.688	2.81	43	C1	3/4"	1/2"	1/2"	.75	NCG1698	6.125	6.25	98	C1	3/4"	1/2"	1/2"	4.3
NCG1644	2.750	2.87	44	C1	3/4"	1/2"	1/2"	.75	NCG1699	6.188	6.31	99	C1	3/4"	1/2"	1/2"	4.4
NCG1645	2.813	2.93	45	C1	3/4"	1/2"	1/2"	.75	NCG16100	6.250	6.37	100	C1	3/4"	1/2"	1/2"	4.6
NCG1646	2.875	3.00	46	C1	3/4"	1/2"	1/2"	.81	NCG16101	6.313	6.43	101	C1	3/4"	1/2"	1/2"	4.8
NCG1647	2.938	3.06	47	C1	3/4"	1/2"	1/2"	.81	NCG16102	6.375	6.50	102	C1	3/4"	1/2"	1/2"	4.8
NCG1648	3.000	3.12	48	C1	3/4"	1/2"	1/2"	.94	NCG16103	6.438	6.56	103	C1	3/4"	1/2"	1/2"	4.9
NCG1649	3.063	3.18	49	C1	3/4"	1/2"	1/2"	.94	NCG16104	6.500	6.62	104	C1	3/4"	1/2"	1/2"	5.1
NCG1650	3.125	3.25	50	C1	3/4"	1/2"	1/2"	1.00	NCG16105	6.563	6.68	105	C1	3/4"	1/2"	1/2"	5.1
NCG1651	3.188	3.31	51	C1	3/4"	1/2"	1/2"	1.00	NCG16106	6.625	6.75	106	C1	3/4"	1/2"	1/2"	5.2
NCG1652	3.250	3.37	52	C1	3/4"	1/2"	1/2"	1.00	NCG16107	6.688	6.81	107	C1	3/4"	1/2"	1/2"	5.2
NCG1653	3.313	3.43	53	C1	3/4"	1/2"	1/2"	1.10	NCG16108	6.750	6.87	108	C1	3/4"	1/2"	1/2"	5.3
NCG1654	3.375	3.50	54	C1	3/4"	1/2"	1/2"	1.10	NCG16109	6.813	6.93	109	C1	3/4"	1/2"	1/2"	5.4
NCG1655	3.438	3.56	55	C1	3/4"	1/2"	1/2"	1.30	NCG16110	6.875	7.00	110	C1	3/4"	1/2"	1/2"	5.5
NCG1656	3.500	3.62	56	C1	3/4"	1/2"	1/2"	1.30	NCG16111	6.938	7.06	111	C1	3/4"	1/2"	1/2"	5.5
NCG1657	3.563	3.68	57	C1	3/4"	1/2"	1/2"	1.40	NCG16112	7.000	7.12	112	C1	3/4"	1/2"	1/2"	5.8
NCG1658	3.625	3.75	58	C1	3/4"	1/2"	1/2"	1.50	NCG16113	7.063	7.18	113	C1	3/4"	1/2"	1/2"	5.8
NCG1659	3.688	3.81	59	C1	3/4"	1/2"	1/2"	1.50	NCG16114	7.125	7.25	114	C1	3/4"	1/2"	1/2"	6.0
NCG1660	3.750	3.87	60	C1	3/4"	1/2"	1/2"	1.60	NCG16115	7.188	7.31	115	C1	3/4"	1/2"	1/2"	6.3
NCG1661	3.813	3.93	61	C1	3/4"	1/2"	1/2"	1.60	NCG16116	7.250	7.37	116	C1	3/4"	1/2"	1/2"	6.3
NCG1662	3.875	4.00	62	C1	3/4"	1/2"	1/2"	1.80	NCG16117	7.313	7.43	117	C1	3/4"	1/2"	1/2"	6.3
NCG1663	3.938	4.06	63	C1	3/4"	1/2"	1/2"	1.80	NCG16118	7.375	7.50	118	C1	3/4"	1/2"	1/2"	6.4
NCG1664	4.000	4.12	64	C1	3/4"	1/2"	1/2"	1.80	NCG16119	7.438	7.56	119	C1	3/4"	1/2"	1/2"	6.4
NCG1665	4.063	4.18	65	C1	3/4"	1/2"	1/2"	2.00	NCG16120	7.500	7.62	120	C1	3/4"	1/2"	1/2"	6.5
NCG1666	4.125	4.25	66	C1	3/4"	1/2"	1/2"	2.00	NCG16121	7.563	7.68	121	C1	3/4"	1/2"	1/2"	6.8
NCG1667	4.188	4.31	67	C1	3/4"	1/2"	1/2"	2.00	NCG16122	7.625	7.75	122	C1	3/4"	1/2"	1/2"	6.8
NCG1668	4.250	4.37	68	C1	3/4"	1/2"	1/2"	2.10	NCG16123	7.688	7.81	123	C1	3/4"	1/2"	1/2"	7.0
NCG1669	4.313	4.43	69	C1	3/4"	1/2"	1/2"	2.10	NCG16124	7.750	7.87	124	C1	3/4"	1/2"	1/2"	7.0
NCG1670	4.375	4.50	70	C1	3/4"	1/2"	1/2"	2.30	NCG16125	7.813	7.93	125	C1	3/4"	1/2"	1/2"	7.2
NCG1671	4.438	4.56	71	C1	3/4"	1/2"	1/2"	2.30	NCG16126	7.875	8.00	126	C1	3/4"	1/2"	1/2"	7.2
NCG1672	4.500	4.62	72	C1	3/4"	1/2"	1/2"	2.50	NCG16127	7.938	8.06	127	C1	3/4"	1/2"	1/2"	7.4
NCG1673	4.563	4.68	73	C1	3/4"	1/2"	1/2"	2.50	NCG16128	8.000	8.12	128	C1	3/4"	1/2"	1/2"	7.4
NCG1674	4.625	4.75	74	C1	3/4"	1/2"	1/2"	2.50	NCG16129	8.063	8.18	129	C1	3/4"	1/2"	1/2"	7.5

These Change Gears can be used interchangeably with Spur Gears shown on Page F-6 for intermediate ratios.

See page A-7 for Steel Hubs for reworking these gears.

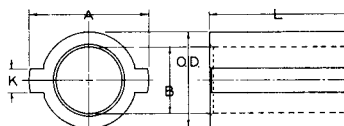


TYPE C1

TABLE No. 2

CHANGE GEAR BUSHING

PART No.	DIMENSIONS					WT. Lbs.
	O.D.	A	B	L	K	
CGB16	3/4"	29/32"	1/2"	1"	3/16"	.1



12 Pitch

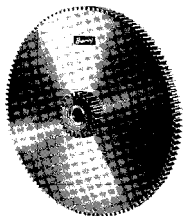
3/4" Face

14 1/2° Pressure Angle

TABLE No. 1

SPECIFICATIONS - STOCK STEEL CHANGE GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		F	WT. LBS.	PART No.	DIAMETER		No. TEETH	TYPE	BORE		F	WT. Lbs.
	PITCH	NOMINAL O.D.			GEAR	BUSH.				PITCH	NOMINAL O.D.			GEAR	BUSH.		
NCG1220	1.667"	1.83"	20	C1	1"	3/4"	3/4"	.2	NCG1270	5.833"	6.00"	70	C1	1"	3/4"	3/4"	6.8
NCG1221	1.750	1.91	21	C1	1	3/4	3/4	.2	NCG1271	5.917	6.08	71	C1	1	3/4	3/4	7.0
NCG1222	1.833	2.00	22	C1	1	3/4	3/4	.3	NCG1272	6.000	6.16	72	C1	1	3/4	3/4	7.3
NCG1223	1.917	2.08	23	C1	1	3/4	3/4	.3	NCG1273	6.083	6.25	73	C1	1	3/4	3/4	7.4
NCG1224	2.000	2.16	24	C1	1	3/4	3/4	.4	NCG1274	6.167	6.33	74	C1	1	3/4	3/4	7.6
NCG1225	2.083	2.25	25	C1	1	3/4	3/4	.4	NCG1275	6.250	6.41	75	C1	1	3/4	3/4	7.6
NCG1226	2.167	2.33	26	C1	1	3/4	3/4	.5	NCG1276	6.333	6.50	76	C1	1	3/4	3/4	8.0
NCG1227	2.250	2.41	27	C1	1	3/4	3/4	.5	NCG1277	6.417	6.58	77	C1	1	3/4	3/4	8.1
NCG1228	2.333	2.50	28	C1	1	3/4	3/4	.6	NCG1278	6.500	6.66	78	C1	1	3/4	3/4	8.4
NCG1229	2.417	2.58	29	C1	1	3/4	3/4	.8	NCG1279	6.583	6.75	79	C1	1	3/4	3/4	8.7
NCG1230	2.500	2.66	30	C1	1	3/4	3/4	.8	NCG1280	6.667	6.83	80	C1	1	3/4	3/4	8.7
NCG1231	2.583	2.75	31	C1	1	3/4	3/4	.8	NCG1281	6.750	6.91	81	C1	1	3/4	3/4	8.8
NCG1232	2.667	2.83	32	C1	1	3/4	3/4	1.0	NCG1282	6.833	7.00	82	C1	1	3/4	3/4	8.9
NCG1233	2.750	2.91	33	C1	1	3/4	3/4	1.1	NCG1283	6.917	7.08	83	C1	1	3/4	3/4	9.2
NCG1234	2.833	3.00	34	C1	1	3/4	3/4	1.1	NCG1284	7.000	7.16	84	C1	1	3/4	3/4	9.4
NCG1235	2.917	3.08	35	C1	1	3/4	3/4	1.3	NCG1285	7.083	7.25	85	C1	1	3/4	3/4	9.5
NCG1236	3.000	3.16	36	C1	1	3/4	3/4	1.3	NCG1286	7.167	7.33	86	C1	1	3/4	3/4	9.8
NCG1237	3.083	3.25	37	C1	1	3/4	3/4	1.4	NCG1287	7.250	7.41	87	C1	1	3/4	3/4	10.0
NCG1238	3.167	3.33	38	C1	1	3/4	3/4	1.5	NCG1288	7.333	7.50	88	C1	1	3/4	3/4	10.2
NCG1239	3.250	3.41	39	C1	1	3/4	3/4	1.6	NCG1289	7.417	7.58	89	C1	1	3/4	3/4	10.5
NCG1240	3.333	3.50	40	C1	1	3/4	3/4	1.6	NCG1290	7.500	7.66	90	C1	1	3/4	3/4	10.5
NCG1241	3.417	3.58	41	C1	1	3/4	3/4	1.8	NCG1291	7.583	7.75	91	C1	1	3/4	3/4	11.2
NCG1242	3.500	3.66	42	C1	1	3/4	3/4	1.8	NCG1292	7.667	7.83	92	C1	1	3/4	3/4	11.2
NCG1243	3.583	3.75	43	C1	1	3/4	3/4	2.0	NCG1293	7.750	7.91	93	C1	1	3/4	3/4	11.6
NCG1244	3.667	3.83	44	C1	1	3/4	3/4	2.1	NCG1294	7.833	8.00	94	C1	1	3/4	3/4	11.8
NCG1245	3.750	3.91	45	C1	1	3/4	3/4	2.1	NCG1295	7.917	8.08	95	C1	1	3/4	3/4	12.0
NCG1246	3.833	4.00	46	C1	1	3/4	3/4	2.3	NCG1296	8.000	8.16	96	C1	1	3/4	3/4	12.1
NCG1247	3.917	4.08	47	C1	1	3/4	3/4	2.4	NCG1297	8.083	8.25	97	C1	1	3/4	3/4	12.5
NCG1248	4.000	4.16	48	C1	1	3/4	3/4	2.6	NCG1298	8.167	8.33	98	C1	1	3/4	3/4	12.6
NCG1249	4.083	4.25	49	C1	1	3/4	3/4	2.8	NCG1299	8.250	8.41	99	C1	1	3/4	3/4	12.9
NCG1250	4.167	4.33	50	C1	1	3/4	3/4	2.8	NCG12100	8.333	8.50	100	C1	1	3/4	3/4	13.1
NCG1251	4.250	4.41	51	C1	1	3/4	3/4	2.8	NCG12101	8.417	8.58	101	C1	1	3/4	3/4	13.1
NCG1252	4.333	4.50	52	C1	1	3/4	3/4	3.0	NCG12102	8.500	8.66	102	C1	1	3/4	3/4	13.4
NCG1253	4.417	4.58	53	C1	1	3/4	3/4	3.2	NCG12103	8.583	8.75	103	C1	1	3/4	3/4	13.7
NCG1254	4.500	4.66	54	C1	1	3/4	3/4	3.3	NCG12104	8.667	8.83	104	C1	1	3/4	3/4	13.9
NCG1255	4.583	4.75	55	C1	1	3/4	3/4	3.4	NCG12105	8.750	8.91	105	C1	1	3/4	3/4	14.3
NCG1256	4.667	4.83	56	C1	1	3/4	3/4	3.5	NCG12106	8.833	9.00	106	C1	1	3/4	3/4	14.5
NCG1257	4.750	4.91	57	C1	1	3/4	3/4	3.7	NCG12107	8.917	9.08	107	C1	1	3/4	3/4	14.7
NCG1258	4.833	5.00	58	C1	1	3/4	3/4	3.8	NCG12108	9.000	9.16	108	C1	1	3/4	3/4	14.7
NCG1259	4.917	5.08	59	C1	1	3/4	3/4	3.8	NCG12109	9.083	9.25	109	C1	1	3/4	3/4	15.2
NCG1260	5.000	5.16	60	C1	1	3/4	3/4	4.0	NCG12110	9.167	9.33	110	C1	1	3/4	3/4	15.5
NCG1261	5.083	5.25	61	C1	1	3/4	3/4	4.2	NCG12111	9.250	9.41	111	C1	1	3/4	3/4	15.6
NCG1262	5.167	5.33	62	C1	1	3/4	3/4	4.3	NCG12112	9.333	9.50	112	C1	1	3/4	3/4	16.1
NCG1263	5.250	5.41	63	C1	1	3/4	3/4	4.5	NCG12113	9.417	9.58	113	C1	1	3/4	3/4	16.2
NCG1264	5.333	5.50	64	C1	1	3/4	3/4	4.5	NCG12114	9.500	9.66	114	C1	1	3/4	3/4	16.5
NCG1265	5.417	5.58	65	C1	1	3/4	3/4	4.9	NCG12115	9.583	9.75	115	C1	1	3/4	3/4	17.2
NCG1266	5.500	5.66	66	C1	1	3/4	3/4	5.0	NCG12116	9.667	9.83	116	C1	1	3/4	3/4	17.6
NCG1267	5.583	5.75	67	C1	1	3/4	3/4	5.3	NCG12117	9.750	9.91	117	C1	1	3/4	3/4	17.7
NCG1268	5.667	5.83	68	C1	1	3/4	3/4	5.3	NCG12118	9.833	10.00	118	C1	1	3/4	3/4	18.0
NCG1269	5.750	5.91	69	C1	1	3/4	3/4	5.5	NCG12119	9.917	10.08	119	C1	1	3/4	3/4	18.2
									NCG12120	10.000	10.16	120	C1	1	3/4	3/4	18.3



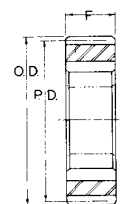
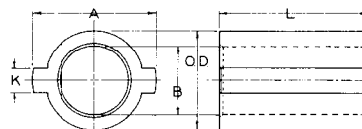
These Change Gears can be used interchangeably with Spur Gears shown on Page E-7 and E-8 for intermediate ratios.

See page A-7 for Steel Hubs for reworking these gears.

TABLE No. 2

CHANGE GEAR BUSHING

PART No.	DIMENSIONS					WT. Lbs.
	O.D.	A	B	L	K	
CGB12	1"	1 7/32"	3/4"	1 1/2"	1/4"	.2



TYPE C1

ALL BROWNING® CHANGE GEARS ARE STEEL

10 Pitch

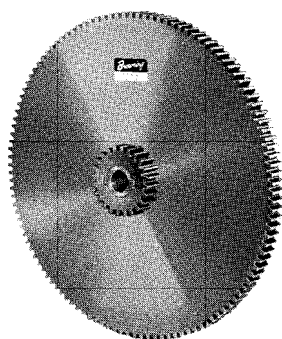
1" Face

14 1/2° Pressure Angle

TABLE No. 1

SPECIFICATIONS - STOCK STEEL CHANGE GEARS

PART No.	DIAMETER		No. TEETH	TYPE	BORE		F	WT. Lbs.	PART No.	DIAMETER		No. TEETH	TYPE	BORE		F	WT. Lbs.
	PITCH	NOMINAL O.D.			GEAR	BUSH.				PITCH	NOMINAL O.D.			GEAR	BUSH.		
NCG1020	2.000"	2.20"	20	C1	1 1/4"	1"	1"	.4	NCG1060	6.000"	6.20"	60	C1	1 1/4"	1"	1"	8.0
NCG1021	2.100	2.30	21	C1	1 1/4	1	1	.5	NCG1061	6.100	6.30	61	C1	1 1/4	1	1	8.3
NCG1022	2.200	2.40	22	C1	1 1/4	1	1	.7	NCG1062	6.200	6.40	62	C1	1 1/4	1	1	8.6
NCG1023	2.300	2.50	23	C1	1 1/4	1	1	.8	NCG1063	6.300	6.50	63	C1	1 1/4	1	1	8.8
NCG1024	2.400	2.60	24	C1	1 1/4	1	1	.9	NCG1064	6.400	6.60	64	C1	1 1/4	1	1	9.0
NCG1025	2.500	2.70	25	C1	1 1/4	1	1	.9	NCG1065	6.500	6.70	65	C1	1 1/4	1	1	9.4
NCG1026	2.600	2.80	26	C1	1 1/4	1	1	1.0	NCG1066	6.600	6.80	66	C1	1 1/4	1	1	9.7
NCG1027	2.700	2.90	27	C1	1 1/4	1	1	1.2	NCG1067	6.700	6.90	67	C1	1 1/4	1	1	10.2
NCG1028	2.800	3.00	28	C1	1 1/4	1	1	1.4	NCG1068	6.800	7.00	68	C1	1 1/4	1	1	10.3
NCG1029	2.900	3.10	29	C1	1 1/4	1	1	1.5	NCG1069	6.900	7.10	69	C1	1 1/4	1	1	10.6
NCG1030	3.000	3.20	30	C1	1 1/4	1	1	1.6	NCG1070	7.000	7.20	70	C1	1 1/4	1	1	11.0
NCG1031	3.100	3.30	31	C1	1 1/4	1	1	1.8	NCG1071	7.100	7.30	71	C1	1 1/4	1	1	11.2
NCG1032	3.200	3.40	32	C1	1 1/4	1	1	1.8	NCG1072	7.200	7.40	72	C1	1 1/4	1	1	11.9
NCG1033	3.300	3.50	33	C1	1 1/4	1	1	1.9	NCG1073	7.300	7.50	73	C1	1 1/4	1	1	12.1
NCG1034	3.400	3.60	34	C1	1 1/4	1	1	2.1	NCG1074	7.400	7.60	74	C1	1 1/4	1	1	12.4
NCG1035	3.500	3.70	35	C1	1 1/4	1	1	2.3	NCG1075	7.500	7.70	75	C1	1 1/4	1	1	12.5
NCG1036	3.600	3.80	36	C1	1 1/4	1	1	2.4	NCG1076	7.600	7.80	76	C1	1 1/4	1	1	12.9
NCG1037	3.700	3.90	37	C1	1 1/4	1	1	2.6	NCG1077	7.700	7.90	77	C1	1 1/4	1	1	13.7
NCG1038	3.800	4.00	38	C1	1 1/4	1	1	2.7	NCG1078	7.800	8.00	78	C1	1 1/4	1	1	13.9
NCG1039	3.900	4.10	39	C1	1 1/4	1	1	2.9	NCG1079	7.900	8.10	79	C1	1 1/4	1	1	14.2
NCG1040	4.000	4.20	40	C1	1 1/4	1	1	3.0	NCG1080	8.000	8.20	80	C1	1 1/4	1	1	14.5
NCG1041	4.100	4.30	41	C1	1 1/4	1	1	3.4	NCG1081	8.100	8.30	81	C1	1 1/4	1	1	14.7
NCG1042	4.200	4.40	42	C1	1 1/4	1	1	3.5	NCG1082	8.200	8.40	82	C1	1 1/4	1	1	15.1
NCG1043	4.300	4.50	43	C1	1 1/4	1	1	3.6	NCG1083	8.300	8.50	83	C1	1 1/4	1	1	15.7
NCG1044	4.400	4.60	44	C1	1 1/4	1	1	3.8	NCG1084	8.400	8.60	84	C1	1 1/4	1	1	16.1
NCG1045	4.500	4.70	45	C1	1 1/4	1	1	4.1	NCG1085	8.500	8.70	85	C1	1 1/4	1	1	16.4
NCG1046	4.600	4.80	46	C1	1 1/4	1	1	4.1	NCG1086	8.600	8.80	86	C1	1 1/4	1	1	16.7
NCG1047	4.700	4.90	47	C1	1 1/4	1	1	4.5	NCG1087	8.700	8.90	87	C1	1 1/4	1	1	17.1
NCG1048	4.800	5.00	48	C1	1 1/4	1	1	4.7	NCG1088	8.800	9.00	88	C1	1 1/4	1	1	17.3
NCG1049	4.900	5.10	49	C1	1 1/4	1	1	4.9	NCG1089	8.900	9.10	89	C1	1 1/4	1	1	18.2
NCG1050	5.000	5.20	50	C1	1 1/4	1	1	5.6	NCG1090	9.000	9.20	90	C1	1 1/4	1	1	18.3
NCG1051	5.100	5.30	51	C1	1 1/4	1	1	5.7	NCG1091	9.100	9.30	91	C1	1 1/4	1	1	19.1
NCG1052	5.200	5.40	52	C1	1 1/4	1	1	6.0	NCG1092	9.200	9.40	92	C1	1 1/4	1	1	19.6
NCG1053	5.300	5.50	53	C1	1 1/4	1	1	6.1	NCG1093	9.300	9.50	93	C1	1 1/4	1	1	20.1
NCG1054	5.400	5.60	54	C1	1 1/4	1	1	6.6	NCG1094	9.400	9.60	94	C1	1 1/4	1	1	20.6
NCG1055	5.500	5.70	55	C1	1 1/4	1	1	6.6	NCG1095	9.500	9.70	95	C1	1 1/4	1	1	20.9
NCG1056	5.600	5.80	56	C1	1 1/4	1	1	7.1	NCG1096	9.600	9.80	96	C1	1 1/4	1	1	21.6
NCG1057	5.700	5.90	57	C1	1 1/4	1	1	7.2	NCG1097	9.700	9.90	97	C1	1 1/4	1	1	22.0
NCG1058	5.800	6.00	58	C1	1 1/4	1	1	7.5	NCG1098	9.800	10.00	98	C1	1 1/4	1	1	22.2
NCG1059	5.900	6.10	59	C1	1 1/4	1	1	7.7	NCG1099	9.900	10.10	99	C1	1 1/4	1	1	22.4
									NCG10100	10.000	10.20	100	C1	1 1/4	1	1	22.5



These Change Gears can be used interchangeably with Spur Gears shown on Page E-9 and E-10 for intermediate ratios.

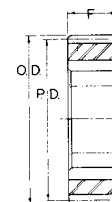
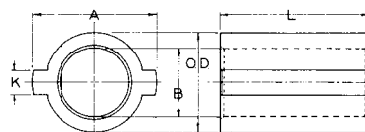
See page A-7 for Steel Hubs for reworking these gears.

**ALL BROWNING®
CHANGE GEARS
ARE STEEL.**

TABLE No. 2

CHANGE GEAR BUSHING

PART No.	DIMENSIONS					WT. Lbs.
	O.D.	A	B	L	K	
CGB10	1 1/4"	1 33/64"	1"	2"	5/16"	.3



TYPE C1

8 Pitch

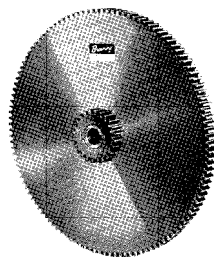
1 1/4" Face

14 1/2° Pressure Angle

TABLE No. 1

SPECIFICATIONS - STOCK STEEL CHANGE GEARS

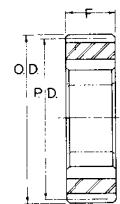
PART No.	DIAMETER		No. TEETH	TYPE	BORE		F	WT. Lbs.	PART No.	DIAMETER		No. TEETH	TYPE	BORE		F	WT. Lbs.
	PITCH	NOMINAL O.D.			GEAR	BUSH.				PITCH	NOMINAL O.D.			GEAR	BUSH.		
NCG820	2.500"	2.75"	20	C1	1 3/8"	1 1/8"	1 1/4"	1.1	NCG860	7.500"	7.75"	60	C1	1 3/8"	1 1/8"	1 1/4"	15.4
NCG821	2.625	2.87	21	C1	1 3/8"	1 1/8"	1 1/4"	1.3	NCG861	7.625	7.87	61	C1	1 3/8"	1 1/8"	1 1/4"	15.8
NCG822	2.750	3.00	22	C1	1 3/8"	1 1/8"	1 1/4"	1.4	NCG862	7.750	8.00	62	C1	1 3/8"	1 1/8"	1 1/4"	16.5
NCG823	2.875	3.12	23	C1	1 3/8"	1 1/8"	1 1/4"	1.6	NCG863	7.875	8.12	63	C1	1 3/8"	1 1/8"	1 1/4"	16.9
NCG824	3.000	3.25	24	C1	1 3/8"	1 1/8"	1 1/4"	1.8	NCG864	8.000	8.25	64	C1	1 3/8"	1 1/8"	1 1/4"	17.7
NCG825	3.125	3.37	25	C1	1 3/8"	1 1/8"	1 1/4"	2.0	NCG865	8.125	8.37	65	C1	1 3/8"	1 1/8"	1 1/4"	18.1
NCG826	3.250	3.50	26	C1	1 3/8"	1 1/8"	1 1/4"	2.3	NCG866	8.250	8.50	66	C1	1 3/8"	1 1/8"	1 1/4"	18.6
NCG827	3.375	3.62	27	C1	1 3/8"	1 1/8"	1 1/4"	2.5	NCG867	8.375	8.62	67	C1	1 3/8"	1 1/8"	1 1/4"	19.3
NCG828	3.500	3.75	28	C1	1 3/8"	1 1/8"	1 1/4"	2.7	NCG868	8.500	8.75	68	C1	1 3/8"	1 1/8"	1 1/4"	19.7
NCG829	3.625	3.87	29	C1	1 3/8"	1 1/8"	1 1/4"	2.8	NCG869	8.625	8.87	69	C1	1 3/8"	1 1/8"	1 1/4"	20.8
NCG830	3.750	4.00	30	C1	1 3/8"	1 1/8"	1 1/4"	3.3	NCG870	8.750	9.00	70	C1	1 3/8"	1 1/8"	1 1/4"	21.5
NCG831	3.875	4.12	31	C1	1 3/8"	1 1/8"	1 1/4"	3.6	NCG871	8.875	9.12	71	C1	1 3/8"	1 1/8"	1 1/4"	22.2
NCG832	4.000	4.25	32	C1	1 3/8"	1 1/8"	1 1/4"	3.8	NCG872	9.000	9.25	72	C1	1 3/8"	1 1/8"	1 1/4"	22.6
NCG833	4.125	4.37	33	C1	1 3/8"	1 1/8"	1 1/4"	4.0	NCG873	9.125	9.37	73	C1	1 3/8"	1 1/8"	1 1/4"	23.3
NCG834	4.250	4.50	34	C1	1 3/8"	1 1/8"	1 1/4"	4.3	NCG874	9.250	9.50	74	C1	1 3/8"	1 1/8"	1 1/4"	24.0
NCG835	4.375	4.62	35	C1	1 3/8"	1 1/8"	1 1/4"	4.6	NCG875	9.375	9.62	75	C1	1 3/8"	1 1/8"	1 1/4"	25.4
NCG836	4.500	4.75	36	C1	1 3/8"	1 1/8"	1 1/4"	4.9	NCG876	9.500	9.75	76	C1	1 3/8"	1 1/8"	1 1/4"	25.6
NCG837	4.625	4.87	37	C1	1 3/8"	1 1/8"	1 1/4"	5.3	NCG877	9.625	9.87	77	C1	1 3/8"	1 1/8"	1 1/4"	26.5
NCG838	4.750	5.00	38	C1	1 3/8"	1 1/8"	1 1/4"	5.6	NCG878	9.750	10.00	78	C1	1 3/8"	1 1/8"	1 1/4"	26.8
NCG839	4.875	5.12	39	C1	1 3/8"	1 1/8"	1 1/4"	5.9	NCG879	9.875	10.12	79	C1	1 3/8"	1 1/8"	1 1/4"	27.5
NCG840	5.000	5.25	40	C1	1 3/8"	1 1/8"	1 1/4"	6.3	NCG880	10.000	10.25	80	C1	1 3/8"	1 1/8"	1 1/4"	28.1
NCG841	5.125	5.37	41	C1	1 3/8"	1 1/8"	1 1/4"	7.3	NCG881	10.125	10.37	81	C1	1 3/8"	1 1/8"	1 1/4"	29.3
NCG842	5.250	5.50	42	C1	1 3/8"	1 1/8"	1 1/4"	7.3	NCG882	10.250	10.50	82	C1	1 3/8"	1 1/8"	1 1/4"	30.1
NCG843	5.375	5.62	43	C1	1 3/8"	1 1/8"	1 1/4"	7.8	NCG883	10.375	10.62	83	C1	1 3/8"	1 1/8"	1 1/4"	30.9
NCG844	5.500	5.75	44	C1	1 3/8"	1 1/8"	1 1/4"	8.1	NCG884	10.500	10.75	84	C1	1 3/8"	1 1/8"	1 1/4"	31.2
NCG845	5.625	5.87	45	C1	1 3/8"	1 1/8"	1 1/4"	8.6	NCG885	10.625	10.87	85	C1	1 3/8"	1 1/8"	1 1/4"	32.5
NCG846	5.750	6.00	46	C1	1 3/8"	1 1/8"	1 1/4"	9.0	NCG886	10.750	11.00	86	C1	1 3/8"	1 1/8"	1 1/4"	32.9
NCG847	5.875	6.12	47	C1	1 3/8"	1 1/8"	1 1/4"	9.4	NCG887	10.875	11.12	87	C1	1 3/8"	1 1/8"	1 1/4"	33.5
NCG848	6.000	6.25	48	C1	1 3/8"	1 1/8"	1 1/4"	9.7	NCG888	11.000	11.25	88	C1	1 3/8"	1 1/8"	1 1/4"	33.8
NCG849	6.125	6.37	49	C1	1 3/8"	1 1/8"	1 1/4"	10.0	NCG889	11.125	11.37	89	C1	1 3/8"	1 1/8"	1 1/4"	34.8
NCG850	6.250	6.50	50	C1	1 3/8"	1 1/8"	1 1/4"	10.7	NCG890	11.250	11.50	90	C1	1 3/8"	1 1/8"	1 1/4"	36.6
NCG851	6.375	6.62	51	C1	1 3/8"	1 1/8"	1 1/4"	11.0	NCG891	11.375	11.62	91	C1	1 3/8"	1 1/8"	1 1/4"	36.9
NCG852	6.500	6.75	52	C1	1 3/8"	1 1/8"	1 1/4"	11.7	NCG892	11.500	11.75	92	C1	1 3/8"	1 1/8"	1 1/4"	37.8
NCG853	6.625	6.87	53	C1	1 3/8"	1 1/8"	1 1/4"	11.9	NCG893	11.625	11.87	93	C1	1 3/8"	1 1/8"	1 1/4"	38.6
NCG854	6.750	7.00	54	C1	1 3/8"	1 1/8"	1 1/4"	12.3	NCG894	11.750	12.00	94	C1	1 3/8"	1 1/8"	1 1/4"	40.2
NCG855	6.875	7.12	55	C1	1 3/8"	1 1/8"	1 1/4"	13.1	NCG895	11.875	12.12	95	C1	1 3/8"	1 1/8"	1 1/4"	40.5
NCG856	7.000	7.25	56	C1	1 3/8"	1 1/8"	1 1/4"	13.3	NCG896	12.000	12.25	96	C1	1 3/8"	1 1/8"	1 1/4"	41.0
NCG857	7.125	7.37	57	C1	1 3/8"	1 1/8"	1 1/4"	13.9	NCG897	12.125	12.37	97	C1	1 3/8"	1 1/8"	1 1/4"	41.6
NCG858	7.250	7.50	58	C1	1 3/8"	1 1/8"	1 1/4"	14.6	NCG898	12.250	12.50	98	C1	1 3/8"	1 1/8"	1 1/4"	43.9
NCG859	7.375	7.62	59	C1	1 3/8"	1 1/8"	1 1/4"	15.2	NCG899	12.375	12.62	99	C1	1 3/8"	1 1/8"	1 1/4"	44.2
									NCG8100	12.500	12.75	100	C1	1 3/8"	1 1/8"	1 1/4"	45.5



These Change Gears can be used interchangeably with Spur Gears shown on Page E-11 and E-12 for intermediate ratios.

See page A-7 for Steel Hubs for reworking these gears.

**ALL BROWNING®
CHANGE GEARS
ARE STEEL.**

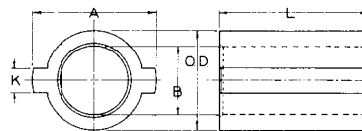


TYPE C1

TABLE No. 2

CHANGE GEAR BUSHING

PART No.	DIMENSIONS					WT. Lbs.
	O.D.	A	B	L	K	
CGB8	1 3/8"	1 45/64"	1 1/8"	2 1/2"	3/8"	.4



14 1/2° Pressure Angle

Will not operate with 20° Gears

20° Pressure Angle

Will not operate with 14 1/2° Gears

TABLE No. 1 STOCK STEEL RACK

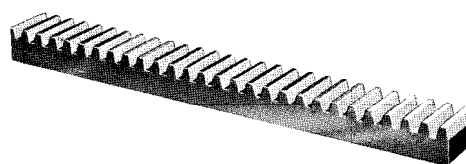
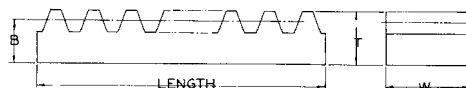
PART No.	STOCK LENGTHS	PITCH	DIMENSIONS			WT. Lbs.
			W	T	B	
4NSR32x3/16	4 Ft.	32	3/16"	3/16"	.156"	.5
6NSR32x3/16	6 Ft.	32	3/16	3/16	.156	1.2
2NSR24x1/4	2 Ft.	24	1/4	1/4	.208	.5
4NSR24x1/4	4 Ft.	24	1/4	1/4	.208	1.1
6NSR24x1/4	6 Ft.	24	1/4	1/4	.208	1.5
2NSR20x3/8	2 Ft.	20	3/8	3/8	.325	.9
4NSR20x3/8	4 Ft.	20	3/8	3/8	.325	1.8
6NSR20x3/8	6 Ft.	20	3/8	3/8	.325	3.0
4NSR16x5/16	4 Ft.	16	5/16	5/16	.250	1.4
6NSR16x5/16	6 Ft.	16	5/16	5/16	.250	2.0
4NSR16x1/2	4 Ft.	16	1/2	1/2	.438	3.3
6NSR16x1/2	6 Ft.	16	1/2	1/2	.438	4.8
12NSR16x1/2	12 Ft.	16	1/2	1/2	.438	10.0
4NSR12x1/2	4 Ft.	12	3/4	1/2	.417	4.5
6NSR12x1/2	6 Ft.	12	3/4	1/2	.417	6.8
4NSR12x3/4	4 Ft.	12	3/4	3/4	.667	7.1
6NSR12x3/4	6 Ft.	12	3/4	3/4	.667	10.6
12NSR12x3/4	12 Ft.	12	3/4	3/4	.667	22.0
4NSR10x5/8	4 Ft.	10	1	5/8	.525	7.6
6NSR10x5/8	6 Ft.	10	1	5/8	.525	11.4
12NSR10x5/8	12 Ft.	10	1	5/8	.525	22.0
4NSR10x1	4 Ft.	10	1	1	.900	12.8
6NSR10x1	6 Ft.	10	1	1	.900	19.1
12NSR10x1	12 Ft.	10	1	1	.900	40.0
4NSR8x3/4	4 Ft.	8	1 1/4	3/4	.625	11.0
6NSR8x3/4	6 Ft.	8	1 1/4	3/4	.625	16.5
12NSR8x3/4	12 Ft.	8	1 1/4	3/4	.625	33.0
4NSR8x1 1/4	4 Ft.	8	1 1/4	1 1/4	1.125	19.3
6NSR8x1 1/4	6 Ft.	8	1 1/4	1 1/4	1.125	29.3
12NSR8x1 1/4	12 Ft.	8	1 1/4	1 1/4	1.125	60.0
4NSR6x1	4 Ft.	6	1 1/2	1	.833	16.9
6NSR6x1	6 Ft.	6	1 1/2	1	.833	25.7
4NSR6x1 1/2	4 Ft.	6	1 1/2	1 1/2	1.333	27.5
6NSR6x1 1/2	6 Ft.	6	1 1/2	1 1/2	1.333	41.3
4NSR5x1 1/4	4 Ft.	5	1 3/4	1 1/4	1.050	31.3
6NSR5x1 1/4	6 Ft.	5	1 3/4	1 1/4	1.050	47.8
4NSR5x1 1/2	4 Ft.	5	1 3/4	1 1/2	1.300	25.0
6NSR5x1 1/2	6 Ft.	5	1 3/4	1 1/2	1.300	37.9
4NSR4x1 1/2	4 Ft.	4	2	1 1/2	1.250	34.1
6NSR4x1 1/2	6 Ft.	4	2	1 1/2	1.250	50.8
4NSR4x2	4 Ft.	4	2	2	1.750	48.0
6NSR4x2	6 Ft.	4	2	2	1.750	71.5
4NSR3x1 1/2	4 Ft.	3	3	1 1/2	1.167	47.3
6NSR3x1 1/2	6 Ft.	3	3	1 1/2	1.167	70.5

Furnished only in stock lengths shown. Other lengths available on special order. Price on application.

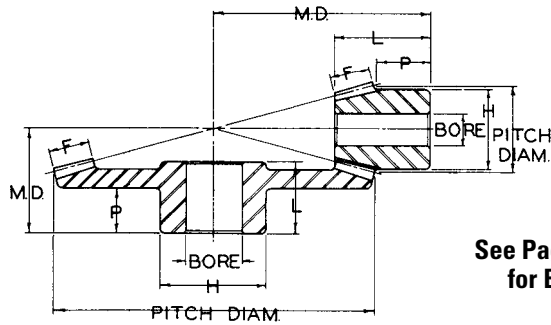
TABLE No. 2 STOCK STEEL RACK

PART No.	STOCK LENGTHS	PITCH	DIMENSIONS			WT. Lbs.
			W	T	B	
4YSR20x1/2	4 Ft.	20	1/2"	1/2"	.450"	3.4
6YSR20x1/2	6 Ft.	20	1/2	1/2	.450	5.0
4YSR16x3/4	4 Ft.	16	3/4	3/4	.688	7.3
6YSR16x3/4	6 Ft.	16	3/4	3/4	.688	11.1
4YSR12x1	4 Ft.	12	1	1	.917	13.0
6YSR12x1	6 Ft.	12	1	1	.917	19.6
4YSR10x1 1/4	4 Ft.	10	1 1/4	1 1/4	1.150	20.0
6YSR10x1 1/4	6 Ft.	10	1 1/4	1 1/4	1.150	30.0
4YSR8x1 1/2	4 Ft.	8	1 1/2	1 1/2	1.375	28.0
6YSR8x1 1/2	6 Ft.	8	1 1/2	1 1/2	1.375	42.0
4YSR6x1 1/2	4 Ft.	6	2	1 1/2	1.333	36.9
6YSR6x1 1/2	6 Ft.	6	2	1 1/2	1.333	55.0
4YSR5x1 1/2	4 Ft.	5	2 1/2	1 1/2	1.300	44.9
6YSR5x1 1/2	6 Ft.	5	2 1/2	1 1/2	1.300	66.8
4YSR4x2	4 Ft.	4	3 1/2	2	1.750	83.0
6YSR4x2	6 Ft.	4	3 1/2	2	1.750	125

Furnished only in stock lengths shown. Other lengths available on special order. Price on application.



STOCK LENGTHS ARE EXTRA LONG TO ALLOW FOR CUTTING AND MATCHING.



See Page E-71 to E-73
for Engineering

STEEL BEVEL GEARS

20° Pressure Angle

TABLE No. 1

SPECIFICATIONS - UNHARDENED STEEL BEVEL GEARS

PART No.	PITCH	PITCH DIAM.	No. TEETH	BORE		MD DIM.	MAT'L	DIMENSIONS				WT. Lbs.
				STOCK	MAX.			F	L	P	H	
YSB20B20-20	20	1.000"	20	3/8"	3/8"	.688"	Stl.	.170"	29/64"	5/16"	3/4"	.1
YSB20B10-20	20	.500	10	3/16	3/16	.750	Stl.	.170	27/64	1/4	13/32	.1
YSB16B24-15	16	1.500	24	1/2	9/16	1.188	Stl.	.250	3/4	9/16	1 1/8	.2
YSB16B16-15	16	1.000	16	3/8	7/16†	1.250	Stl.	.250	47/64	7/16	13/16	.1
YSB16B24-20	16	1.500	24	1/2	1/2	1.000	Stl.	.190	5/8	7/16	1	.2
YSB16B12-20	16	.750	12	3/8	3/8	1.125	Stl.	.190	37/64	11/32	21/32	.1
YSB16B32-20	16	2.000	32	1/2	9/16	1.188	Stl.	.350	49/64	1/2	1 1/8	.2
YSB16B16-20	16	1.000	16	3/8	7/16†	1.500	Stl.	.350	27/32	7/16	13/16	.1
YSB16B48-30	16	3.000	48	5/8	13/16	1.313	Stl.	.420	7/8	9/16	1 1/2	.8
YSB16B16-30	16	1.000	16	7/16†	7/16†	2.000	Stl.	.420	59/64	15/32	7/8	.1
YSB16B64-40	16	4.000	64	5/8	1 3/8	1.375	Stl.	.480	57/64	9/16	2 1/4	1.6
YSB16B16-40	16	1.000	16	1/2	1/2	2.500	Stl.	.480	63/64	15/32	13/16	.1
YSB16B96-60	16	6.000	96	5/8	1	1.688	Stl.	.610	1 1/4	7/8	1 3/4	3.0
YSB16B16-60	16	1.000	16	1/2	1/2	3.750	Stl.	.610	1 1/8	23/32	15/16	.1
YSB14B28-20	14	2.000	28	1/2	7/8	1.375	Stl.	.350	15/16	21/32	1 5/8	.5
YSB14B14-20	14	1.000	14	1/2	1/2	1.625	Stl.	.350	31/32	9/16	13/16	.1
YSB12B27-15	12	2.250	27	1/2	13/16	1.750	Stl.	.410	1 1/8	25/32	1 1/2	.6
YSB12B18-15	12	1.500	18	1/2	9/16	1.875	Stl.	.410	1 1/8	21/32	1 1/4	.2
YSB12B36-20	12	3.000	36	5/8	1 5/16	1.875	Stl.	.530	1 17/64	7/8	2 1/8	1.4
YSB12B18-20	12	1.500	18	1/2	5/8	2.375	Stl.	.530	1 3/8	13/16	1 5/16	.4
YSB12F36-20x1	12	3.000	36	1*	-	1.875	Stl.	.530	1 17/64	7/8	2 1/8	1.2
YSB12F18-20x3/4	12	1.500	18	3/4 ●	-	2.375	Stl.	.530	1 3/8	13/16	1 5/16	.3
YSBF12B36-20	12	3.000	36	5/8	3/4	1.500	Stl.	.460	7/8	1/2	1 7/16	.7
YSBF12B18-20	12	1.500	18	1/2	9/16	2.250	Stl.	.460	1 13/64	11/16	1 1/4	.3
YSB12B48-20	12	4.000	48	5/8	7/8	2.000	Stl.	.590	1 11/64	3/4	1 5/8	1.5
YSB12B24-20	12	2.000	24	1/2	13/16	2.875	Stl.	.590	1 7/16	3/4	1 1/2	.8
YSB12B54-30	12	4.500	54	5/8	1	1.750	Stl.	.600	1 1/16	3/4	1 3/4	1.7
YSB12B18-30	12	1.500	18	1/2	9/16	3.000	Stl.	.600	1 11/32	11/16	1 1/4	.4
YSB12B72-40	12	6.000	72	3/4	1 1/4	2.000	Stl.	.600	1 5/16	81/64	2	3.1
YSB12B18-40	12	1.500	18	1/2	9/16	3.750	Stl.	.600	1 23/64	23/32	1 1/4	.4
YSB12B72-60	12	6.000	72	3/4	1 1/4	1.750	Stl.	.740	1 5/16	81/64	2	3.1
YSB12B12-60	12	1.000	12	1/2	1/2	3.750	Stl.	.740	1 31/64	23/32	15/16	.2
YSB10B30-15	10	3.000	30	3/4	1 1/2	2.250	Stl.	.570	1 7/16	1	2 1/2	1.7
YSB10B20-15	10	2.000	20	3/4	15/16	2.500	Stl.	.570	1 33/64	23/32	1 3/4	.8
YSB10B40-20	10	4.000	40	7/8	2	2.500	Stl.	.710	1 11/16	1 3/16	3	3.7
YSB10B20-20	10	2.000	20	3/4	15/16	3.125	Stl.	.710	1 51/64	1 1/16	1 3/4	.9
YSB10B50-20	10	5.000	50	3/4	1 1/4	2.625	Stl.	.700	1 19/32	1	2	3.6
YSB10B25-20	10	2.500	25	3/4	1 1/4	3.375	Stl.	.700	1 35/64	3/4	2	1.2
YSB10B60-30	10	6.000	60	7/8	2	2.750	Stl.	.780	1 55/64	1 3/8	3	6.3
YSB10B20-30	10	2.000	20	3/4	1	4.375	Stl.	.780	2 5/32	1 5/16	1 3/4	1.2
YSB10F60-30x1	10	6.000	60	1*	-	2.750	Stl.	.780	1 55/64	1 3/8	3	5.9
YSB10F20-30x7/8	10	2.000	20	7/8*	-	4.375	Stl.	.780	2 3/32	1 5/16	1 3/4	1.2

* With Standard Keyway and Setscrew. ● With Setscrew only.

▲ Bracketed groups-Any pinion may be used with any gear.

† No Keyway or Setscrew.

INSTALLATION DATA

Browning® Bevel and Miter Gears will give smooth quiet operation if properly mounted and lubricated. The following requirements must be considered:

1. All Stock Bevel and Miter Gears must be accurately mounted at 90° angle for proper tooth bearing.
2. Mounting Distance (MD) is the distance from the end of the hub of one gear to the center line of the mating gear. It is very important that this dimension be correct to provide proper backlash and tooth contact.
3. Since all Bevel and Miter Gears develop axial as well as radial thrust, adequate bearing support must be provided.
4. Lubrication with mineral oil is generally recommended for straight Bevel and Miter Gears. Heavily loaded gears and those subjected to shock will require Extreme Pressure lubricants. Oil temperature should not exceed 150° F. for continuous normal duty, although temperature up to 200° F. may be satisfactory for short periods of operation.

STEEL BEVEL GEARS

20° Pressure Angle

TABLE No. 1

SPECIFICATIONS - UNHARDENED STEEL BEVEL GEARS

PART No.	PITCH	PITCH DIAM.	No. TEETH	BORE		MD DIM.	MAT'L.	DIMENSIONS				WT. Lbs.
				STOCK	MAX.			F	L	P	H	
YSB10B60-40	10	6.000"	60	$\frac{7}{8}$ "	$1\frac{5}{8}$ "	2.250"	Stl.	.720"	$1\frac{5}{8}$ "	$1\frac{1}{8}$ "	$2\frac{1}{2}$ "	4.6
YSB10B15-40	10	1.500	15	$\frac{5}{8}$ "	$\frac{3}{4}$ "	3.875	Stl.	.720	$1\frac{39}{64}$ "	$\frac{27}{32}$ "	$1\frac{7}{16}$ "	.6
YSB10B90-60	10	9.000	90	1	$1\frac{13}{16}$ "	2.500	Stl.	.860	$1\frac{13}{16}$ "	$1\frac{5}{16}$ "	$2\frac{3}{4}$ "	9.8
YSB10B15-60	10	1.500	15	$\frac{5}{8}$ "	$\frac{3}{4}$ "	5.500	Stl.	.860	$1\frac{55}{64}$ "	$\frac{31}{32}$ "	$1\frac{7}{16}$ "	.6
YSB8B40-20	8	5.000	40	1	2	2.875	Stl.	.820	$1\frac{27}{32}$ "	$1\frac{1}{4}$ "	3	5.0
YSB8B20-20	8	2.500	20	$\frac{7}{8}$ "	$1\frac{1}{4}$ "	4.000	Stl.	.820	$2\frac{9}{32}$ "	$1\frac{13}{32}$ "	$2\frac{1}{8}$ "	2.0
YSB8F40-20x1	8	5.000	40	1*	-	2.875	Stl.	.820	$1\frac{27}{32}$ "	$1\frac{1}{4}$ "	3	5.0
YSB8F20-20x1	8	2.500	20	1*	-	4.000	Stl.	.820	$2\frac{9}{32}$ "	$1\frac{13}{32}$ "	$2\frac{1}{8}$ "	1.8
YSB8B48-30	8	6.000	48	$\frac{7}{8}$ "	$1\frac{13}{16}$ "	2.375	Stl.	.840	$1\frac{5}{8}$ "	1	$2\frac{3}{4}$ "	5.3
YSB8B16-30	8	2.000	16	$\frac{3}{4}$ "	1	4.250	Stl.	.840	$2\frac{5}{64}$ "	$1\frac{3}{16}$ "	$1\frac{3}{4}$ "	1.2
YSB8B64-40	8	8.000	64	1	$1\frac{13}{16}$ "	2.750	Stl.	.840	$1\frac{7}{8}$ "	$1\frac{1}{4}$ "	$2\frac{3}{4}$ "	9.7
YSB8B16-40	8	2.000	16	$\frac{7}{8}$ "	$1\frac{1}{8}$ "	5.250	Stl.	.840	$2\frac{3}{32}$ "	$1\frac{1}{32}$ "	$1\frac{1}{8}$ "	1.3
YSB8B72-40	8	9.000	72	$1\frac{1}{8}$ "	2	3.250	Stl.	1.220	$2\frac{5}{16}$ "	$1\frac{11}{16}$ "	3	12.3
YSB8B18-40	8	2.250	18	$\frac{7}{8}$ "	$1\frac{1}{4}$ "	5.750	Stl.	1.220	$2\frac{15}{32}$ "	$1\frac{1}{32}$ "	$2\frac{1}{8}$ "	1.9
YSB6B36-20	6	6.000	36	$1\frac{1}{8}$ "	$2\frac{1}{4}$ "	3.500	Stl.	1.060	$2\frac{1}{4}$ "	$1\frac{1}{2}$ "	$3\frac{1}{4}$ "	8.4
YSB6B18-20	6	3.000	18	1	$1\frac{7}{16}$ "	4.750	Stl.	1.060	$2\frac{49}{64}$ "	$1\frac{19}{32}$ "	$2\frac{1}{2}$ "	3.4
YSB6F36-20x1 1/8	6	6.000	36	$1\frac{1}{8}$ "*	-	3.500	Stl.	1.060	$2\frac{1}{4}$ "	$1\frac{1}{2}$ "	$3\frac{1}{4}$ "	8.6
YSB6F18-20x1 1/8	6	3.000	18	$1\frac{1}{8}$ "*	-	4.750	Stl.	1.060	$2\frac{49}{64}$ "	$1\frac{19}{32}$ "	$2\frac{1}{2}$ "	3.1
YSB6B42-20	6	7.000	42	$1\frac{1}{8}$ "	$2\frac{1}{4}$ "	3.750	Stl.	1.050	$2\frac{19}{64}$ "	$1\frac{1}{2}$ "	$3\frac{1}{2}$ "	11.4
YSB6B21-20	6	3.500	21	1	$1\frac{5}{8}$ "	5.000	Stl.	1.050	$2\frac{33}{64}$ "	$1\frac{1}{4}$ "	$2\frac{1}{2}$ "	3.8
YSB6B48-20	6	8.000	48	$1\frac{1}{8}$ "	$2\frac{1}{4}$ "	3.438	Stl.	1.170	$1\frac{57}{64}$ "	1	$3\frac{1}{8}$ "	11.8
YSB6B24-20	6	4.000	24	1	$1\frac{3}{4}$ "	5.438	Stl.	1.170	$2\frac{35}{64}$ "	$1\frac{1}{4}$ "	$2\frac{5}{8}$ "	4.9
YSB6B45-30	6	7.500	45	$1\frac{1}{8}$ "	$2\frac{1}{4}$ "	3.000	Stl.	1.070	$2\frac{1}{8}$ "	$1\frac{1}{4}$ "	$3\frac{1}{4}$ "	10.6
YSB6B15-30	6	2.500	15	$\frac{7}{8}$ "	$1\frac{1}{4}$ "	5.250	Stl.	1.070	$2\frac{9}{16}$ "	$1\frac{7}{16}$ "	$2\frac{1}{8}$ "	2.3
YSB6B60-40	6	10.000	60	$1\frac{1}{8}$ "	$2\frac{1}{4}$ "	3.250	Stl.	1.210	$2\frac{1}{4}$ "	$1\frac{3}{8}$ "	$3\frac{1}{4}$ "	17.6
YSB6B15-40	6	2.500	15	1	$1\frac{3}{8}$ "	6.750	Stl.	1.210	$2\frac{31}{32}$ "	$1\frac{3}{4}$ "	$2\frac{1}{2}$ "	3.3
YSB5B30-20	5	6.000	30	$1\frac{1}{4}$ "	$2\frac{1}{4}$ "	3.500	Stl.	1.040	$2\frac{1}{4}$ "	$1\frac{3}{8}$ "	$3\frac{1}{4}$ "	8.9
YSB5B15-20	5	3.000	15	1	$1\frac{3}{8}$ "	4.375	Stl.	1.040	$2\frac{25}{64}$ "	$1\frac{9}{32}$ "	$2\frac{5}{8}$ "	3.1
YSB5B45-30	5	9.000	45	$1\frac{1}{4}$ "	$2\frac{1}{4}$ "	3.750	Stl.	1.310	$2\frac{1}{2}$ "	$1\frac{11}{16}$ "	$3\frac{3}{4}$ "	17.1
YSB5B15-30	5	3.000	15	1	$1\frac{1}{2}$ "	5.875	Stl.	1.310	$2\frac{11}{16}$ "	$1\frac{5}{16}$ "	$2\frac{5}{8}$ "	3.6
YSB5B60-40	5	12.000	60	$1\frac{1}{4}$ "	$2\frac{3}{8}$ "	3.750	Stl.	1.700	$2\frac{5}{8}$ "	$1\frac{9}{16}$ "	4	31.2
YSB5B15-40	5	3.000	15	1	$1\frac{9}{16}$ "	7.500	Stl.	1.700	$3\frac{13}{64}$ "	$1\frac{7}{16}$ "	3	5.0
YSB4B32-20	4	8.000	32	$1\frac{1}{8}$ "	$2\frac{1}{4}$ "	4.250	Stl.	1.400	$2\frac{11}{16}$ "	$1\frac{9}{16}$ "	$3\frac{3}{4}$ "	17.6
YSB4B16-20	4	4.000	16	$1\frac{1}{8}$ "	$1\frac{7}{8}$ "	6.000	Stl.	1.400	$3\frac{11}{32}$ "	$1\frac{13}{16}$ "	$3\frac{1}{4}$ "	7.5
YSB4B42-30	4	10.500	42	$1\frac{1}{8}$ "	$2\frac{1}{4}$ "	4.000	Stl.	1.420	$2\frac{11}{16}$ "	$1\frac{1}{2}$ "	$3\frac{3}{4}$ "	26.4
YSB4B14-30	4	3.500	14	$1\frac{1}{8}$ "	$1\frac{13}{16}$ "	7.250	Stl.	1.420	$3\frac{27}{64}$ "	$1\frac{15}{16}$ "	$3\frac{1}{4}$ "	7.0
YSB4B56-40	4	14.000	56	$1\frac{1}{4}$ "	$2\frac{5}{8}$ "	4.250	Stl.	1.690	$2\frac{7}{8}$ "	$1\frac{5}{8}$ "	$4\frac{1}{4}$ "	48.7
YSB4B14-40	4	3.500	14	$1\frac{1}{8}$ "	$1\frac{7}{8}$ "	9.000	Stl.	1.690	$3\frac{45}{64}$ "	$1\frac{15}{16}$ "	$3\frac{1}{4}$ "	7.6
YSB3B30-20	3	10.000	30	$1\frac{1}{4}$ "	3	5.500	Stl.	1.870	$3\frac{19}{32}$ "	2	5	39.9
YSB3B15-20	3	5.000	15	$1\frac{1}{8}$ "	2	7.250	Stl.	1.870	$4\frac{1}{32}$ "	$1\frac{15}{16}$ "	$3\frac{3}{4}$ "	13.7

▲ Bracketed groups-Any pinion may be used with any gear

Straight
Tooth

20° Pressure
Angle

TABLE No. 1

SPECIFICATIONS - UNHARDENED STEEL MITER GEARS

PART No.	PITCH	PITCH DIAM.	No. TEETH	BORE		MD DIM.	DIMENSIONS				WT. Lbs.
				STOCK	MAX.		F	L	P	H	
YSM32B16	32	.500"	16	3/16"	3/16"	.500"	.120"	11/32"	13/64"	13/32"	.1
YSM32B24	32	.750	24	3/16	3/16	.688	.140	27/64	1/4	1/2	.1
YSM24B18	24	.750	18	1/4	1/4	.813	.156	9/16	3/8	5/8	.1
YSM24B24	24	1.000	24	1/4	1/4	.906	.200	9/16	9/32	5/8	.1
YSM20B12	20	.600	12	1/4	1/4	.671	.120	31/64	5/16	1/2	.1
YSM20B18	20	.900	18	5/16	5/16	.953	.140	5/8	13/32	5/8	.1
YSM20B20	20	1.000	20	3/8	3/8	1.125	.234	13/16	1/2	3/4	.1
YSM20B25	20	1.250	25	3/8	1/2	1.188	.250	3/4	7/16	1	.1
YSM16B12	16	.750	12	5/16	5/16	.813	.160	37/64	3/8	5/8	.1
YSM16B16	16	1.000	16	3/8	3/8	1.063	.220	3/4	7/16	3/4	.1
YSM16B20	16	1.250	20	7/16	1/2	1.250	.270	27/32	1/2	1	.2
YSM16B24	16	1.500	24	1/2	1/2	1.375	.310	7/8	1/2	1	.2
YSM14B14	14	1.000	14	3/8	7/16	1.063	.190	47/64	1/2	7/8	.1
x YSM14F14x7/16	14	1.000	14	7/16	7/16	1.063	.190	47/64	1/2	7/8	.1
YSM12B15	12	1.250	15	3/8	1/2	1.250	.270	55/64	1/2	1	.1
YSM12B15x7/16	12	1.250	15	7/16	1/2	1.250	.270	55/64	1/2	1	.1
YSM12B15x1/2	12	1.250	15	1/2	1/2	1.250	.270	55/64	1/2	1	.1
x YSM12F15x1/2	12	1.250	15	1/2	1/2	1.250	.270	55/64	1/2	1	.1
YSM12B18	12	1.500	18	1/2	5/8	1.500	.320	1 1/64	5/8	1 1/4	.3
YSM12B18x3/8	12	1.500	18	5/8	5/8	1.500	.320	1 1/64	5/8	1 1/4	.2
o YSM12F18x3/8	12	1.500	18	5/8	5/8	1.500	.320	1 1/64	5/8	1 1/4	.2
YSM12B21	12	1.750	21	1/2	3/4	1.750	.390	1 3/16	11/16	1 3/8	.4
YSM12B21x3/8	12	1.750	21	5/8	3/4	1.750	.390	1 3/16	11/16	1 3/8	.4
o YSM12F21x3/8	12	1.750	21	5/8	3/4	1.750	.390	1 3/16	11/16	1 3/8	.4
YSM12B21x3/4	12	1.750	21	3/4	3/4	1.750	.390	1 3/16	11/16	1 3/8	.4
o YSM12F21x3/4	12	1.750	21	3/4	3/4	1.750	.390	1 3/16	11/16	1 3/8	.4
YSM12B24	12	2.000	24	1/2	5/8	1.875	.430	1 7/32	11/16	1 5/8	.5
YSM12B30	12	2.500	30	5/8	7/8	2.313	.540	1 31/64	27/32	1 5/8	.9
YSM10B20	10	2.000	20	1/2	7/8	2.000	.440	1 23/64	13/16	1 5/8	.7
YSM10B20x3/8	10	2.000	20	5/8	7/8	2.000	.440	1 23/64	13/16	1 5/8	.7
o YSM10F20x3/8	10	2.000	20	5/8	7/8	2.000	.440	1 23/64	13/16	1 5/8	.7
YSM10B20x1/4	10	2.000	20	3/4	7/8	2.000	.440	1 23/64	13/16	1 5/8	.6
o YSM10F20x1/4	10	2.000	20	3/4	7/8	2.000	.440	1 23/64	13/16	1 5/8	.6
YSM10B25	10	2.500	25	3/4	1 1/4	2.438	.550	1 5/8	15/16	2	1.3
YSM10B25x7/8	10	2.500	25	7/8	1 1/4	2.438	.550	1 5/8	15/16	2	1.2
o YSM10F25x7/8	10	2.500	25	7/8	1 1/4	2.438	.550	1 5/8	15/16	2	1.2
YSM10B25x1	10	2.500	25	1	1 1/4	2.438	.550	1 5/8	15/16	2	1.1
o YSM10F25x1	10	2.500	25	1	1 1/4	2.438	.550	1 5/8	15/16	2	1.1
YSM8B24	8	3.000	24	3/4	1	2.563	.640	1 37/64	13/16	1 3/4	1.4
YSM8B24x1	8	3.000	24	1	1 3/8	2.750	.640	1 49/64	1 1/16	2 1/4	1.8
o YSM8F24x1	8	3.000	24	1	1 3/8	2.750	.640	1 49/64	1 1/16	2 1/4	1.8
YSM8B24x1 1/4	8	3.000	24	1 1/4	1 5/8	2.750	.640	1 49/64	1	2 1/2	1.8
o YSM8F24x1 1/4	8	3.000	24	1 1/4	1 5/8	2.750	.640	1 49/64	1	2 1/2	1.8
o YSM8F28x1 3/16	8	3.500	28	1 1/16	1 5/8	3.250	.750	2 3/32	1 1/4	2 1/2	2.7
o YSM8F28x1 1/4	8	3.500	28	1 1/4	1 5/8	3.250	.750	2 3/32	1 1/4	2 1/2	2.7
YSM8B32x7/8	8	4.000	32	7/8	1 1/2	3.438	.840	2 3/32	15/16	2 3/8	3.8
YSM8B32	8	4.000	32	1	2	3.625	.840	2 3/32	1 1/8	3	4.7
YSM6B24x1	6	4.000	24	1	2	3.625	.860	2 5/16	1 5/16	3	4.6
YSM6B24	6	4.000	24	1 1/4	2	3.625	.860	2 5/16	1 5/16	3	4.4
YSM6B24x1 1/2	6	4.000	24	1 1/2	2	3.625	.860	2 5/16	1 5/16	3	4.1
o YSM6F24x1 1/2	6	4.000	24	1 1/2	2	3.625	.860	2 5/16	1 5/16	3	4.1
YSM6B27	6	4.500	27	1 1/4	2 3/16	4.125	.960	2 5/8	1 1/2	3 1/4	6.3
YSM5B25	5	5.000	25	1 3/8	2 1/4	4.625	1.100	3	1 3/4	3 1/2	8.8
o YSM5F25x1 1/2	5	5.000	25	1 1/2	2 1/4	4.625	1.100	3	1 3/4	3 1/2	8.4
o YSM5F25x1 3/4	5	5.000	25	1 3/4	2 1/4	4.625	1.100	3	1 3/4	3 1/2	7.8
YSM4B24	4	6.000	24	1 1/2	2 3/8	5.500	1.330	3 9/16	1 15/16	4	14.5
o YSM4F24x1 3/4	4	6.000	24	1 3/4	2 3/8	5.500	1.330	3 9/16	1 15/16	4	14.0
YSM4B28	4	7.000	28	2	3	6.000	1.430	3 5/8	1 15/16	5	21.5

x - With Setscrews only.

o - With Standard Keyway and Setscrew

Browning® Miter Gears are available in both Hardened and Unhardened types. For Engineering see Pages E-69 to E-72.

Straight
Tooth

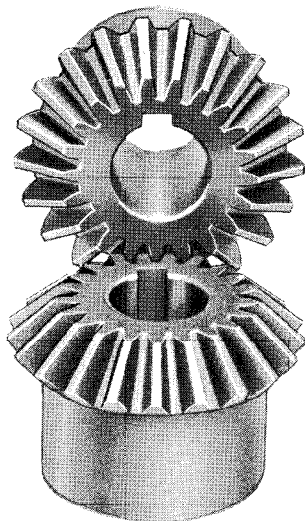
20° Pressure
Angle

TABLE No. 1

SPECIFICATIONS - HARDENED STEEL MITER GEARS

PART No.	PITCH	PITCH DIAM.	No. TEETH	BORE	MD DIM.	DIMENSIONS				WT. Lbs.
						F	L	P	H	
YSM16F16Hx3/8	16	1.000"	16	3/8"	1 1/16"	.22"	3/4"	7/16"	3/4"	.1
YSM12F15Hx1/2	12	1.250	15	1/2	1 1/4	.27	55/64	1/2	1	.1
YSM12F18Hx5/8	12	1.500	18	5/8	1 1/2	.32	1 1/64	5/8	1 1/4	.2
YSM12F21Hx5/8	12	1.750	21	5/8	1 3/4	.39	1 3/16	11/16	1 3/8	.4
YSM12F30Hx5/8	12	2.500	30	5/8	2 5/16	.54	1 31/64	21/32	1 5/8	.8
YSM10F20Hx5/8	10	2.000	20	5/8	2	.44	1 23/64	13/16	1 5/8	.6
YSM10F20Hx3/4	10	2.000	20	3/4	2	.44	1 23/64	13/16	1 5/8	.6
YSM10F25Hx3/4	10	2.500	25	3/4	2 7/16	.55	1 5/8	15/16	2	1.3
YSM10F25Hx7/8	10	2.500	25	7/8	2 7/16	.55	1 5/8	15/16	2	1.2
YSM10F25Hx1	10	2.500	25	1	2 7/16	.55	1 5/8	15/16	2	1.2
YSM8F24Hx3/4	8	3.000	24	3/4	2 9/16	.64	1 37/64	13/16	1 3/4	1.4
YSM8F24Hx1	8	3.000	24	1	2 3/4	.64	1 49/64	1 1/16	2 1/4	1.8
YSM8F24Hx1 1/4	8	3.000	24	1 1/4	2 3/4	.64	1 49/64	1	2 1/2	1.8
YSM8F28Hx1	8	3.500	28	1	3 1/4	.75	2 3/32	1 1/4	2 1/2	2.9
YSM8F28Hx1 3/16	8	3.500	28	1 3/16	3 1/4	.75	2 3/32	1 1/4	2 1/2	2.8
YSM8F28Hx1 1/4	8	3.500	28	1 1/4	3 1/4	.75	2 3/32	1 1/4	2 1/2	2.7
YSM8F32Hx1	8	4.000	32	1	3 5/8	.84	2 9/32	1 1/8	3	4.8
YSM6F24Hx1 1/4	6	4.000	24	1 1/4	3 5/8	.86	2 5/16	1 5/16	3	4.5
YSM6F24Hx1 1/2	6	4.000	24	1 1/2	3 5/8	.86	2 5/16	1 5/16	3	4.0
YSM5F25Hx1 3/8	5	5.000	25	1 3/8	4 5/8	1.10	3	1 3/4	3 1/2	8.6
YSM5F25Hx1 3/4	5	5.000	25	1 3/4	4 5/8	1.10	3	1 3/4	3 1/2	7.9
YSM4F24Hx1 3/4	4	6.000	24	1 3/4	5 1/2	1.33	3 9/16	1 15/16	4	13.8

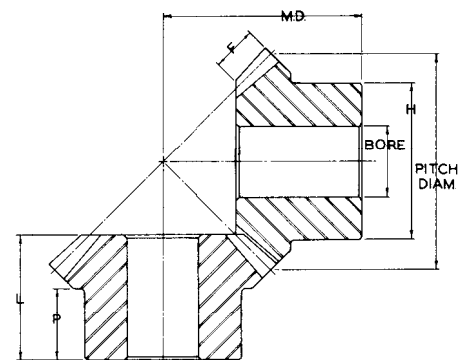
All of above have Standard Keyway and Setscrew.



STANDARD KEYSEATS

TABLE No. 2

BORE RANGE	KEYSEAT
3/8"	3/32" x 3/64"
1/2	1/8 x 1/16
5/8 to 7/8	3/16 x 3/32
15/16 to 1 1/4	1/4 x 1/8
1 3/8 to 1 3/4	3/8 x 3/16



**Miter Gears must be run in sets of two or more Gears with
the same Pitch, Pressure Angle and number of Teeth.**

Spiral Bevel and Miter Gears have continuous pitch line contact and therefore run more smoothly and quietly than straight tooth gears. They must be run in sets of mating gears with opposite hand spiral. In Browning® stock spiral bevel gear sets the pinion has left hand spiral and the gear has right hand spiral.

TABLE No. 1

SPECIFICATIONS - HARDENED STEEL SPIRAL BEVEL GEARS

PART No.	PITCH	PITCH DIA.	No. TEETH	BORE	KEYSEAT	MD DIM.	DIMENSIONS				WT. Lbs.
							F	L	P	H	
YSBS14F16LH-20x1/2	14	1.143	16	1/2	1/8 x 1/16	1.625	.380	27/32	28/64	1	.2
YSBS14F32RH-20x7/8	14	2.285	32	7/8	3/16 x 3/32	1.375	.380	27/32	9/16	1 5/8	.6
YSBS10F17LH-20x5/8	10	1.700	17	5/8	3/16 x 3/32	2.375	.570	1 7/32	5/8	1 1/2	.6
YSBS10F34RH-20x1 3/16	10	3.400	34	1 3/16	1/4 x 1/8	1.875	.570	1 1/8	3/4	2	1.5
YSBS8F17LH-20x3/4	8	2.125	17	3/4	3/16 x 3/32	3.125	.710	1 11/16	15/16	1 7/8	1.5
YSBS8F34RH-20x1 1/2	8	4.250	34	1 1/2	3/8 x 3/16	2.500	.710	1 9/16	1 1/16	2 7/8	3.2

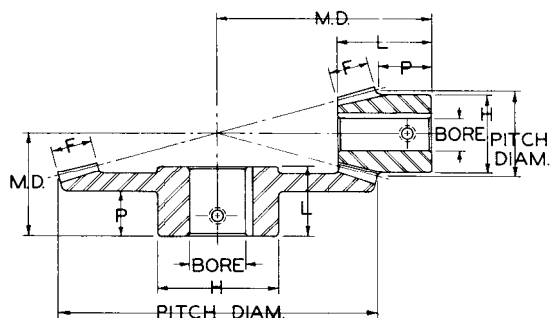
All sizes are furnished with Keyseat and Setscrew.

TABLE No. 2

SPECIFICATIONS - HARDENED STEEL SPIRAL MITER GEARS

PART No.	PITCH	PITCH DIA.	No. TEETH	BORE	KEYSEAT	MD DIM.	DIMENSIONS				WT. Lbs.
							F	L	P	H	
YSMS12F15RHx1/2	12	1.250	15	1/2	1/8 x 1/16	1.250	.270	27/32	1/2	1	.2
YSMS12F15LHx1/2	12	1.250	15	1/2	1/8 x 1/16	1.250	.270	27/32	1/2	1	.2
YSMS12F18RHx5/8	12	1.500	18	5/8	3/16 x 3/32	1.500	.320	1	5/8	1 1/4	.3
YSMS12F18LHx5/8	12	1.500	18	5/8	3/16 x 3/32	1.500	.320	1	5/8	1 1/4	.3
YSMS10F20RHx3/4	10	2.000	20	3/4	3/16 x 3/32	2.000	.440	1 11/32	13/16	1 5/8	.7
YSMS10F20LHx3/4	10	2.000	20	3/4	3/16 x 3/32	2.000	.440	1 11/32	13/16	1 5/8	.7
YSMS10F25RHx7/8	10	2.500	25	7/8	3/16 x 3/32	2.437	.570	1 5/8	15/16	2	1.4
YSMS10F25LHx7/8	10	2.500	25	7/8	3/16 x 3/32	2.437	.570	1 5/8	15/16	2	1.4
YSMS8F28RHx1 3/16	8	3.500	28	1 3/16	1/4 x 1/8	3.250	.780	2 3/32	1 1/4	2 1/2	2.8
YSMS8F28LHx1 3/16	8	3.500	28	1 3/16	1/4 x 1/8	3.250	.780	2 3/32	1 1/4	2 1/2	2.8
YSMS7F21RHx1	7	3.000	21	1	1/4 x 1/8	2.750	.680	1 25/32	7/8	2 1/4	2.1
YSMS7F21LHx1	7	3.000	21	1	1/4 x 1/8	2.750	.680	1 25/32	7/8	2 1/4	2.1
YSMS6F24RHx1 1/4	6	4.000	24	1 1/4	1/4 x 1/8	3.625	.890	2 5/16	1 5/16	3	4.3
YSMS6F24LHx1 1/4	6	4.000	24	1 1/4	1/4 x 1/8	3.625	.890	2 5/16	1 5/16	3	4.3
YSMS6F24RHx1 1/2	6	4.000	24	1 1/2	3/8 x 3/16	3.625	.890	2 5/16	1 3/16	3	4.0
YSMS6F24LHx1 1/2	6	4.000	24	1 1/2	3/8 x 3/16	3.625	.890	2 5/16	1 3/16	3	4.0
YSMS5F25RHx1 3/8	5	5.000	25	1 3/8	5/16 x 5/32	4.625	1.140	3	1 3/4	3 1/2	8.7
YSMS5F25LHx1 3/8	5	5.000	25	1 3/8	5/16 x 5/32	4.625	1.140	3	1 3/4	3 1/2	8.7

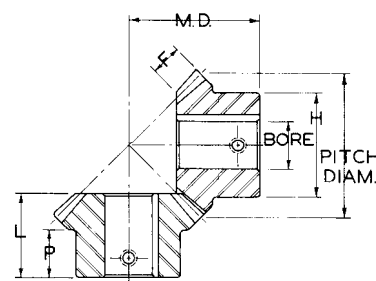
▲ These gears will run together to give selection of bore combinations.
All sizes are furnished with Keyseat and Setscrew.



Spiral Bevel Gears



For Engineering Data, See Page E-72



Spiral Miter Gears

GENERAL

Spur gearing is the most widely used type for power transmission, offering uniform ratio and positive shaft locations. Two or more spur gears may be used in a gear train for positively connecting shafts rotating at a constant speed ratio. The relative speed of rotation is governed by the gear ratio, or number of teeth in the driven gear divided by the number of teeth in the driver. Additional gears in a train may offer other shaft speeds as well as opposite shaft rotation.

Spur gears are strong and efficient, and when properly used, will give long and satisfactory service. For higher speed applications, where noise is a factor, a non-metallic gear of laminated phenolic may be used in the gear train. While 14 1/2° Pressure Angle involute tooth form is most widely used, 20° Pressure Angle is also a standard type. Gears using 14 1/2° and 20° pressure angles will not operate together. The 20° type is desired for heavy shock loads.

For many high speed applications, Helical Gears have superseded spur gears due to quieter operation. Helical Gears give maximum smoothness and quietness when used on parallel shafts. Since these gears develop end thrust, it is necessary to provide suitable counteracting thrust washers or bearings.

Helical Gears are also known as Spiral Gears when used on right

angle shaft applications. They are used for low ratios and where little horsepower is required, but smoothness of operation is desired.

Bevel and Miter Gears are used for right angle drives where shafts intersect. Miter Gear sets give 1:1 ratio. Bevel Gear set stock ratios range from 1 1/2:1 to 6:1. Bevel and Miter Gears are subject to the same limitations of speed and operating conditions as are Spur Gears. They develop end thrust which must be counteracted by suitable washers or bearings.

Bushed Miter Gears using stock Browning Split Taper® Bushings are also available. Use of the Tapered Bushing eliminates the requirement for thrust washers or bearings.

Worm Gearing is used for higher speed ratios and is the smoothest and quietest form of gearing when correctly designed and properly lubricated. They develop end thrust which must be counteracted by suitable washers or bearings.

Horsepower ratings govern gear selection for safe operation based on beam strength alone. This does not take wear into account. Hardened teeth will improve life as will the correct type of lubrication.

LUBRICATION

Since all types of gears operate more smoothly, quietly and with longer life expectancy if properly lubricated, it is an important consideration in the design of gear drives. Lubrication may be by drip, splash, immersion or pressure, depending on the type of gear, speed in terms of pitch-line velocity, hardness of material and combination of materials.

The most common types of gear lubricants used to hold gear tooth wear to a minimum and to minimize rubbing and sliding friction between metallic teeth are generally of mineral origin. Vegetable and animal as well as some synthetic lubricants are also occasionally used. Mineral oils, paraffin or asphaltic base are recommended for most gear applications. These oils are suitable for gears of all materials, including

non-metallic materials.

Worm gearing is subjected entirely to sliding friction rather than combined sliding and rolling friction encountered with involute spur gears. The best result in worm gear lubrication is obtained with a steam cylinder oil or an oil containing a small percentage of acid-free tallow.

The pour point of any lubricant should be below the lowest expected operating temperature. Where heavy loads are expected, mild extreme-pressure lubricant should be used, with viscosity the same as for mineral oil. The extreme-pressure lubricants should not be used for bronze gears

RATINGS

BROWNING® Gears are rated in accordance with AGMA and Industrial Standards, and are based on 8-10 hours operation per day, no shock load and oil bath lubrication. The ratings, except worms and worm gears, are based primarily on the Lewis Formula, Barth Revision, which takes into consideration beam strength, but not wear. Worm and worm gear ratings are according to

AGMA Standards including strength and wear considerations. Material stress values are shown in Table No. 1. Gear life is largely dependent on the type of service, care in installation and method of lubrication. BROWNING suggests using Service Factors shown in Tables No. 2 and 3 for better design of all gear drives.

MATERIAL STRESS VALUES

TABLE No. 1

TYPE GEAR	MATERIAL	STRESS PSI
Spur	Hardened Steel	30000
Spur	Unhardened Steel	20000
Spur	Cast Iron	12000
Bevel	Unhardened Steel	16000
Miter	Hardened Steel	25000
Miter	Unhardened Steel	16000

SERVICE FACTORS

TYPE LOAD

TABLE No. 2

HOURS OPERATION PER DAY	SERVICE FACTORS		
	NO SHOCK	LIGHT SHOCK	HEAVY SHOCK
8-10	1.0	1.2	1.4
11-16	1.1	1.3	1.5
17-24	1.2	1.4	1.6

TYPE LUBRICATION

TABLE No. 3

TYPE LUBRICATION	SERVICE FACTOR
Intermittent	.7
Grease	.4
Oil, Drip	.2
Oil, Bath	.0

SPUR GEARS

BROWNING® Spur Gears are made to Standard Diametral Pitch and are available in 14 1/2° and 20° pressure angles. The Diametral Pitch of a gear refers to the number of teeth per inch of Pitch Diameter.

The Center Distance between two spur gears is one-half the sum of their Pitch Diameters. BROWNING Spur Gears are cut to run at standard center distance with proper backlash to provide for lubrication and misalignment.

Tables of gear specifications and of Horsepower Ratings at a variety of speeds are given for currently

available sizes. Fine pitch gears, primarily used to transmit motion rather than power, are not shown in Horsepower Tables. Horsepower Ratings are based on tooth strength, for normal 8 hour operation, with proper lubrication, and at a pitch line velocity not over 1000 feet per minute for 14 1/2° P.A. gears and 1200 feet per minute for 20° P.A. gears. For more severe service additional horsepower capacity must be provided.

The following Diametral Pitch Formulae are used in the design of BROWNING Spur Gears:

DIAMETRAL PITCH IS THE NUMBER OF TEETH PER EACH INCH OF PITCH DIAMETER

TABLE No. 1

TO OBTAIN	HAVING	FORMULAE
Diametral Pitch	Circular Pitch	Divide 3.1416 by the Circular Pitch.
	Number of Teeth and Pitch Dia.	Divide the Number of Teeth by the Pitch Diameter.
	Number of Teeth and Outside Dia.	Divide No. of Teeth plus 2 by the Outside Diameter.
Pitch Diameter	Number of Teeth and Diametral Pitch	Divide the Number of Teeth by the Diametral Pitch.
	Number of Teeth and Outside Dia.	Divide the product of the number of Teeth and the Outside Diameter by the Number of Teeth plus 2.
	Outside Diameter and Diametral Pitch	From the Outside Diameter subtract the quotient of 2 divided by the Diametral Pitch.
Number of Teeth	Pitch Diameter and Diametral Pitch	Multiply the Pitch Diameter by the Diametral Pitch.
Tooth Thickness on the Pitch Line	Diametral Pitch	Divide 1.5708 by the Diametral Pitch.
Addendum Outside Diameter	Diametral Pitch	Divide 1 by the Diametral Pitch.
	Pitch Diameter and Addendum	Add 2 Addendums to the Pitch Diameter.
Minimum Whole Depth (Hobbed)	Diametral Pitch	Coarser than 24 D.P. = $\frac{2.35}{D.P.}$
Clearance	Whole Depth and Addendum	From the Whole Depth subtract 2 Addendums
Center Distance	Driver P.D.	$\frac{\text{Driver P.D.} + \text{Driven P.D.}}{2}$
	Driven P.D.	

BROWNING Spur Gear of 14 1/2° and 20° Pressure Angle are available in several types as indicated on pages F-3 to F-34. The 14 1/2° Change Gear offer many additional ratios since they can be modified with Stock Steel Hubs for use as Spur Gears, and are available with any number of teeth between the smallest and largest stock sizes.

Spur Gear Drives, for acceptable operation, should have a basic minimum number of teeth as shown in Table No. 2 below. For smooth operation and an economical drive select the

finest pitch gears of suitable capacity. Because 20° P.A. Spur Gears have a greater horsepower capacity than comparable 14 1/2° P.A. gears, using 20° P.A. gears will normally give a finer pitch, smoother running, and less expensive gear drive.

The rating of both the driving pinion and the driven gear must be equal to or greater than the required design horsepower of the drive, including all Service Factors.

TABLE No. 2

PRESSURE ANGLE	MIN. NO. OF TEETH IN PINION	PREFERRED MIN. NO. OF TEETH IN PINION	MIN. TOTAL NO. OF TEETH IN MATING PAIR
14 1/2°	16	20	40
20°	14	18	28

WARNING - Less than optimum performance, i.e., high noise, less life, etc. may be expected if gears below minimums indicated are used.



See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes

14 1/2° SPUR GEAR PITCH SELECTION CHARTS

TABLE No. 1

DESIGN H.P.	16 TEETH							18 TEETH							20 TEETH						
	R.P.M. SMALL GEAR							R.P.M. SMALL GEAR							R.P.M. SMALL GEAR						
	50	100	300	600	900	1200	1800	50	100	300	600	900	1200	1800	50	100	300	600	900	1200	1800
.05	16	20	24	32	32	32	32	16	20	24	32	32	32	32	16	20	24	32	32	32	32
.10	12	16	20	24	24	32	32	12	16	20	24	32	32	32	12	16	24	24	32	32	32
1/4	10	12	16	20	20	24	24	10	12	16	20	20	24	24	10	12	16	20	24	24	24
1/3	8	10	16	16	20	20	24	10	12	16	20	20	24	24	10	12	16	20	20	24	24
1/2	8	10	12	16	16	20	20	8	10	12	16	16	20	20	8	10	12	16	20	20	20
3/4	6	8	12	12	16	16	16	6	10	12	12	16	16	20	8	10	12	16	16	16	20
1	6	8	10	12	12	16	16	6	8	12	12	12	16	16	6	8	12	12	16	16	16
1 1/2	5	6	10	12	12	12	12	5	6	10	12	12	12	12	6	8	10	12	12	12	16
2	4	6	8	10	12	12	12	5	6	8	10	12	12	12	5	6	10	10	12	12	12
3	4	5	8	8	10	10	10	4	5	8	10	10	10	12	4	6	8	10	10	10	12
5	3	4	6	8	8	8	10	3	4	6	8	8	8	10	4	5	6	8	8	10	10
7 1/2	3	3	5	6	6	6	8	3	4	5	6	6	6	8	3	4	6	6	8	8	-
10	3	3	4	5	6	6	-	3	3	5	6	6	6	6	3	3	5	6	6	-	-
15	-	3	4	4	5	-	-	-	-	4	5	5	5	6	-	3	4	5	5	-	-
20	-	-	3	4	4	-	-	-	-	3	4	5	-	-	-	3	4	4	5	-	-
25	-	-	3	3	4	-	-	-	-	3	4	-	-	-	-	-	3	4	-	-	-
30	-	-	3	3	-	-	-	-	-	3	3	-	-	-	-	-	3	-	-	-	-
40	-	-	-	3	-	-	-	-	-	3	3	-	-	-	-	-	3	-	-	-	-
50	-	-	-	3	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-

TABLE No. 2

DESIGN H.P.	22 TEETH							24 TEETH							26 TEETH						
	R.P.M. SMALL GEAR							R.P.M. SMALL GEAR							R.P.M. SMALL GEAR						
	50	100	300	600	900	1200	1800	50	100	300	600	900	1200	1800	50	100	300	600	900	1200	1800
.05	20	20	32	32	32	32	32	20	24	32	32	32	32	32	20	24	32	32	32	32	32
.10	12	16	24	24	32	32	32	16	20	24	32	32	32	32	16	20	24	32	32	32	32
1/4	10	12	20	20	24	24	24	12	12	20	20	24	24	24	12	12	20	24	24	24	32
1/3	10	12	16	20	20	24	24	10	12	16	20	20	24	24	10	12	16	20	24	24	24
1/2	10	10	16	16	20	20	20	10	12	16	16	20	20	24	10	12	16	20	20	20	24
3/4	8	10	12	16	16	16	20	8	10	12	16	16	20	20	8	10	12	16	16	20	20
1	6	8	12	12	16	16	16	8	10	12	12	16	16	16	8	10	12	16	16	16	20
1 1/2	6	8	10	12	12	12	16	6	8	10	12	12	12	16	6	8	12	12	12	16	16
2	5	6	10	12	12	12	12	6	6	10	12	12	12	12	6	8	10	12	12	12	-
3	4	6	8	10	10	12	12	5	6	8	10	10	12	12	5	6	8	10	12	12	-
5	4	5	6	8	8	10	-	4	5	6	8	10	10	-	4	5	8	8	10	10	-
7 1/2	3	4	6	6	8	8	-	3	4	6	6	8	8	-	4	5	6	8	8	-	-
10	3	4	5	6	6	6	-	4	5	6	6	6	8	-	3	4	6	6	6	-	-
15	-	3	4	5	6	-	-	3	4	5	6	-	-	-	-	3	5	6	-	-	-
20	-	3	4	4	-	-	-	-	4	5	-	-	-	-	-	-	4	5	-	-	-
25	-	-	3	4	-	-	-	-	-	3	4	-	-	-	-	-	4	-	-	-	-
30	-	-	3	4	-	-	-	-	-	3	4	-	-	-	-	-	3	-	-	-	-

TABLE No. 3

DESIGN H.P.	28 TEETH							30 TEETH							32 TEETH						
	R.P.M. SMALL GEAR							R.P.M. SMALL GEAR							R.P.M. SMALL GEAR						
	50	100	300	600	900	1200	1800	50	100	300	600	900	1200	1800	50	100	300	600	900	1200	1800
.05	20	24	32	32	32	32	32	20	24	32	32	32	32	32	20	24	32	32	32	32	32
.10	16	20	24	32	32	32	32	16	20	24	32	32	32	32	16	20	24	32	32	32	32
1/4	12	16	20	24	24	24	32	12	16	20	24	24	24	32	12	16	20	24	24	24	32
1/3	12	12	20	20	24	24	24	12	12	20	20	24	24	24	12	12	20	20	24	24	24
1/2	10	12	16	20	20	20	24	10	12	16	20	20	20	24	10	12	16	20	20	24	24
3/4	8	10	12	16	20	20	20	8	10	12	16	20	20	20	8	12	16	16	20	20	20
1	8	10	12	16	16	16	20	8	10	12	16	16	16	20	8	10	12	16	16	20	20
1 1/2	6	8	12	12	12	16	16	6	8	12	12	16	16	16	6	8	12	12	16	16	16
2	6	8	10	12	12	12	16	6	8	10	12	12	12	16	6	8	10	12	12	12	16
3	5	6	10	10	12	12	-	5	6	10	10	12	12	-	5	6	10	12	12	12	-
5	4	5	8	8	10	-	-	3	6	8	10	10	-	-	4	6	8	10	-	-	-
7 1/2	4	5	6	8	8	-	-	3	5	6	8	8	-	-	3	5	6	8	8	-	-
10	3	4	6	6	8	-	-	3	3	6	6	8	-	-	3	3	6	6	8	-	-
15	-	3	5	6	-	-	-	-	3	5	6	-	-	-	-	3	5	6	-	-	-
20	-	-	4	5	-	-	-	-	3	3	5	-	-	-	-	3	3	-	-	-	-
25	-	-	4	-	-	-	-	-	-	3	-	-	-	-	-	-	3	-	-	-	-
30	-	-	3	-	-	-	-	-	-	3	-	-	-	-	-	-	3	-	-	-	-

SPUR GEARS

BROWNING® Spur Gear Horsepower Tables when used in conjunction with "Pitch Selection Charts," Pages E-48 and E-52 and "Ratio and Center Distance Charts," Pages E-56 to E-68, greatly simplify the selection of a Spur Gear Drive, including those using change gears and non-metallic spur gears.

All BROWNING spur Gears, steel, cast iron and non-metallic

have the proper amount of backlash incorporated in them so that mounting on centers of one-half the sum of the pitch diameters is the correct setting. Closer mounting removes the backlash, causing crowding and rapid destruction of the involute profiles generated in the gear teeth. Bearings of ample size should be mounted adjacent to each gear to prevent shaft deflection.

TABLE No. 1

RATINGS FOR 14 1/2° STEEL SPUR AND CHANGE GEARS

NUMBER OF TEETH	HORSEPOWER AT VARIOUS R.P.M.																				
	32 D.P.							24 D.P.							20 D.P.						
	100	200	300	600	900	1200	1800	100	200	300	600	900	1200	1800	100	200	300	600	900	1200	1800
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.04	.07	.10	.19	.27	.34	.46
12	-	-	-	-	-	-	-	.02	.03	.05	.09	.13	.17	.22	.04	.07	.10	.19	.27	.34	.46
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.04	.08	.12	.22	.30	.38	.50
14	-	-	-	-	-	-	-	.02	.04	.06	.12	.17	.21	.28	.05	.09	.13	.24	.33	.41	.55
15	.011	.021	.030	.057	.081	.103	.141	.03	.05	.07	.13	.18	.23	.31	.06	.10	.15	.27	.38	.47	.61
16	.012	.023	.033	.063	.089	.112	.153	.03	.05	.08	.14	.20	.25	.33	.06	.11	.16	.30	.41	.51	.66
17	-	-	-	-	-	-	-	.03	.06	.09	.16	.22	.27	.36	.07	.12	.18	.32	.45	.55	.71
18	.014	.027	.040	.074	.104	.131	.176	.03	.06	.09	.17	.23	.29	.38	.07	.14	.19	.35	.47	.59	.75
19	-	-	-	-	-	-	-	.04	.07	.10	.18	.25	.31	.40	.07	.14	.21	.37	.50	.62	.79
20	.016	.031	.046	.084	.119	.148	.198	.04	.07	.11	.19	.26	.33	.42	.08	.16	.22	.40	.55	.67	.85
21	-	-	-	-	-	-	-	.04	.08	.11	.20	.28	.34	.45	.09	.16	.24	.42	.57	.70	.89
22	.018	.034	.051	.094	.132	.164	.218	.04	.08	.12	.21	.29	.36	.46	.09	.18	.25	.45	.60	.73	.93
23	-	-	-	-	-	-	-	.05	.09	.13	.22	.30	.37	.48	.10	.19	.27	.47	.63	.77	.97
24	.019	.039	.056	.104	.144	.178	.235	.05	.09	.13	.23	.32	.39	.50	.10	.19	.28	.49	.65	.78	.94
25	-	-	-	-	-	-	-	.05	.10	.14	.25	.33	.40	.52	.11	.20	.29	.51	.68	.82	1.02
26	.022	.043	.063	.114	.158	.195	.254	.05	.10	.14	.26	.35	.42	.53	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	.06	.11	.15	.27	.36	.44	.55	-	-	-	-	-	-	-
28	.024	.047	.068	.124	.171	.210	.272	.06	.11	.16	.28	.37	.45	.57	.12	.23	.33	.58	.76	.90	1.13
30	.027	.051	.074	.134	.184	.224	.289	.06	.12	.17	.30	.40	.48	.60	.13	.25	.36	.62	.81	.96	1.18
32	.029	.055	.079	.142	.194	.236	.303	.07	.13	.18	.32	.42	.50	.63	.14	.27	.38	.65	.85	1.00	1.23
33	-	-	-	-	-	-	-	.07	.13	.19	.33	.43	.52	.64	-	-	-	-	-	-	-
35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.16	.30	.42	.70	.91	1.07	1.30
36	-	-	-	-	-	-	-	.08	.15	.21	.36	.47	.55	.68	.16	.31	.43	.73	.94	1.10	1.33
39	-	-	-	-	-	-	-	.09	.16	.22	.38	.50	.59	.72	-	-	-	-	-	-	-
40	.037	.071	.101	.178	.238	.286	.358	.09	.16	.23	.39	.51	.60	.73	.19	.35	.48	.80	1.03	1.19	1.43
42	-	-	-	-	-	-	-	.09	.17	.24	.41	.53	.62	.75	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-	.10	.18	.25	.43	.55	.64	.77	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	.10	.19	.26	.43	.56	.65	.78	.21	.39	.54	.88	1.11	1.28	1.51
48	.045	.086	.122	.210	.276	.328	.403	.11	.20	.28	.46	.59	.68	.81	.23	.41	.57	.92	1.16	1.33	1.56
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.24	.43	.59	.95	1.19	1.36	1.59
54	-	-	-	-	-	-	-	.12	.22	.30	.50	.63	.72	.85	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.26	.47	.64	1.01	1.26	1.43	1.65
56	.054	.100	.141	.238	.308	.362	.438	.13	.23	.32	.52	.65	.75	.87	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	.13	.24	.33	.54	.67	.77	.90	.28	.50	.68	1.07	1.31	1.48	1.70
64	.062	.113	.159	.263	.337	.392	.469	.14	.26	.36	.56	.70	.80	.93	.30	.53	.72	1.11	1.35	1.52	-
66	-	-	-	-	-	-	-	.15	.26	.36	.57	.71	.80	.93	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	.16	.28	.38	.60	.73	.83	.96	.33	.58	.78	1.19	1.44	1.61	-
72	-	-	-	-	-	-	-	.16	.29	.39	.61	.74	.84	-	.34	.59	.80	1.21	1.46	1.62	-
75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.35	.61	.82	1.23	1.48	1.65	-
80	.076	.139	.205	.307	.385	.441	.515	-	-	-	-	-	-	-	.37	.64	.85	1.27	1.52	1.68	-
84	-	-	-	-	-	-	-	.18	.32	.43	.66	.80	.89	-	.39	.67	.88	1.30	1.55	-	-
90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.41	.71	.93	1.36	1.61	-	-
96	.091	.163	.222	.346	.425	.481	.552	.21	.36	.48	.72	.86	.95	-	.44	.74	.97	1.40	1.64	-	-
100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.46	.77	1.01	1.44	1.69	-	-
110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.49	.83	1.07	1.50	1.74	-	-
112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.50	.84	1.08	1.51	1.75	-	-
120	-	-	-	-	-	-	-	.25	.43	.56	.80	.94	-	-	.53	.88	1.12	1.56	1.79	-	-
128	.118	.206	.274	.408	.487	.539	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
132	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.57	.93	1.18	1.61	-	-	-
140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.60	.97	1.22	1.65	-	-	-
144	-	-	-	-	-	-	-	.30	.49	.63	.87	1.00	-	-	.61	.98	1.24	1.66	-	-	-
150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.64	1.02	1.28	1.71	-	-	-
156	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.66	1.05	1.30	1.73	-	-	-
160	.143	.244	.318	.456	.532	-	-	-	-	-	-	-	-	-	.67	1.06	1.32	1.74	-	-	-
168	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.69	1.09	1.35	1.78	-	-	-
180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.73	1.13	1.39	1.81	-	-	-
192	.167	.277	.354	.492	.566	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200	.173	.285	.364	.501	-	-	-	-	-	-	-	-	-	-	.78	1.20	1.46	1.88	-	-	-

Ratings below Heavy Line are not recommended as Pitch Line Velocity exceeds 1000 feet per minute; they are published for interpolation purposes only. Interpolate for intermediate sizes and speeds.



See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes

TABLE No. 1

RATINGS FOR 14 1/2° STEEL AND CAST IRON SPUR GEARS AND STEEL CHANGE GEARS

NUMBER OF TEETH	HORSEPOWER AT VARIOUS R.P.M.																	
	16 D.P.						12 D.P.						10 D.P.					
	100	200	300	600	900	1200	1800	100	200	300	600	900	1200	1800	100	200	300	600
11	.08	.15	.21	.39	.55	.68	.89	.20	.38	.55	.99	1.34	1.64	2.09	.38	.72	1.04	1.83
12	.08	.15	.21	.39	.55	.68	.89	.20	.38	.55	.99	1.34	1.64	2.09	.38	.72	1.04	1.83
13	.09	.17	.24	.44	.61	.75	.98	.21	.43	.62	1.11	1.49	1.81	2.30	.43	.81	1.16	2.03
14	.10	.18	.26	.48	.66	.81	1.05	.25	.47	.68	1.20	1.61	1.94	2.45	.48	.90	1.28	2.21
15	.11	.22	.31	.55	.75	.94	1.18	.28	.55	.80	1.38	1.84	2.21	2.76	.54	1.03	1.47	2.50
16	.13	.24	.33	.60	.81	1.00	1.27	.32	.60	.86	1.50	2.01	2.39	2.96	.61	1.12	1.63	2.69
17	.13	.25	.36	.64	.87	1.06	1.35	.34	.66	.93	1.61	2.13	2.54	3.14	.65	1.23	1.73	2.93
18	.15	.29	.39	.69	.93	1.13	1.43	.37	.71	1.02	1.73	2.27	2.71	3.31	.76	1.40	1.94	3.24
19	.15	.29	.42	.73	.98	1.19	1.49	.40	.75	1.07	1.82	2.38	2.82	3.45	.76	1.41	1.97	3.29
20	.17	.32	.45	.79	1.06	1.27	1.59	.44	.82	1.15	1.95	2.54	2.99	3.64	.83	1.53	2.13	3.53
21	.18	.34	.48	.85	1.13	1.35	1.68	.47	.87	1.23	2.07	2.68	3.14	3.81	.88	1.62	2.26	3.72
22	.19	.36	.51	.88	1.17	1.40	1.73	.49	.92	1.28	2.15	2.78	3.25	3.92	.93	1.71	2.38	3.88
23	.20	.37	.53	.92	1.21	1.45	1.78	.52	.96	1.34	2.23	2.87	3.35	4.02	-	-	-	-
24	.21	.39	.56	.96	1.26	1.49	1.84	.55	1.01	1.41	2.33	2.99	3.47	4.15	1.03	1.87	2.59	4.17
25	-	-	-	-	-	-	-	.57	1.05	1.47	2.42	3.08	3.58	4.25	1.08	1.97	2.71	4.35
26	.23	.43	.61	1.04	1.36	1.60	1.95	.60	1.11	1.54	2.52	3.20	3.70	4.38	1.13	2.06	2.83	4.51
28	.25	.47	.66	1.11	1.44	1.70	2.05	.66	1.20	1.66	2.69	3.39	3.90	4.59	1.24	2.24	3.06	4.82
30	.28	.51	.72	1.20	1.54	1.80	2.17	.72	1.30	1.79	2.88	3.60	4.12	4.82	1.35	2.42	3.28	5.12
32	.30	.55	.77	1.27	1.63	1.89	2.26	.77	1.39	1.91	3.03	3.77	4.29	4.98	1.44	2.57	3.47	5.36
34	.32	.58	.81	1.33	1.70	1.96	2.33	.82	1.47	2.01	3.16	3.90	4.43	5.12	-	-	-	-
35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.59	2.81	3.77	5.74
36	.34	.62	.86	1.40	1.78	2.05	2.42	.87	1.57	2.13	3.32	4.08	4.61	5.27	1.64	2.89	3.87	5.87
38	.36	.66	.91	1.46	1.84	2.12	2.48	.92	1.65	2.23	3.44	4.20	4.74	-	1.74	3.05	4.06	6.10
40	.38	.69	.96	1.53	1.92	2.20	2.57	.98	1.74	2.35	3.60	4.38	4.91	-	1.84	3.20	4.25	6.32
42	-	-	-	-	-	-	-	1.04	1.83	2.46	3.74	4.52	5.06	-	1.93	3.35	4.43	6.54
44	.42	.76	1.04	1.65	2.05	2.33	2.70	1.09	1.91	2.56	3.86	4.65	5.17	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.08	3.57	4.70	6.85
48	.46	.82	1.12	1.75	2.15	2.43	2.79	1.18	2.06	2.73	4.06	4.85	5.37	-	2.24	3.76	4.91	7.09
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.30	3.89	5.07	7.27
52	.50	.88	1.19	1.84	2.24	2.52	-	-	-	-	-	-	-	-	-	-	-	-
54	.52	.92	1.24	1.89	2.30	2.57	-	1.32	2.27	2.99	4.36	5.15	-	-	2.46	4.13	5.33	7.54
55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.50	2.51	3.24	4.57
56	.53	.94	1.27	1.93	2.33	2.61	-	1.37	2.34	3.07	4.45	5.23	-	-	-	-	-	-
60	.57	1.00	1.34	2.01	2.42	2.69	-	1.46	2.47	3.21	4.60	5.38	-	-	1.62	2.68	3.43	4.77
64	.61	1.06	1.41	2.09	2.50	2.77	-	.93	1.56	2.02	2.86	3.32	-	-	1.71	2.81	3.57	4.90
65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	.96	1.60	2.07	2.92	3.38	-	-	-	-	-	-
68	.64	1.12	1.48	2.17	2.58	-	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.85	3.00	3.78	5.12
72	.68	1.16	1.53	2.23	2.63	-	-	1.03	1.71	2.18	3.03	3.48	-	-	1.90	3.06	3.85	5.19
75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.96	3.14	3.94	5.26
78	-	-	-	-	-	-	-	1.10	1.81	2.30	3.15	-	-	-	-	-	-	-
80	.74	1.26	1.64	2.35	2.75	-	-	-	-	-	-	-	-	-	2.06	3.27	4.07	5.39
84	.77	1.30	1.69	2.40	2.80	-	-	1.17	1.89	2.39	3.23	-	-	-	2.14	3.38	4.19	5.49
85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.17	3.41	4.21	5.52
88	.48	.81	1.05	1.48	1.72	-	-	-	-	-	-	-	-	-	-	-	-	-
90	-	-	-	-	-	-	-	1.24	1.98	2.49	3.32	-	-	-	2.27	3.54	4.35	5.65
95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.37	3.66	4.48	5.76
96	.53	.87	1.12	1.55	1.78	-	-	1.31	2.08	2.58	3.41	-	-	-	2.38	3.68	4.50	5.77
100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.46	3.78	4.59	5.85
102	-	-	-	-	-	-	-	1.37	2.16	2.67	3.50	-	-	-	-	-	-	-
104	.56	.92	1.17	1.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-
105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.55	3.88	4.69	5.93
108	-	-	-	-	-	-	-	1.43	2.23	2.75	3.56	-	-	-	-	-	-	-
110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.64	3.98	4.80	6.02
112	.59	.96	1.21	1.64	-	-	-	1.47	2.28	2.79	3.60	-	-	-	2.67	4.02	4.83	-
114	-	-	-	-	-	-	-	1.49	2.30	2.81	3.62	-	-	-	-	-	-	-
120	.63	1.00	1.26	1.68	-	-	-	1.54	2.37	2.88	3.67	-	-	-	2.80	4.17	4.98	-
126	-	-	-	-	-	-	-	1.61	2.44	2.96	3.74	-	-	-	-	-	-	-
128	.66	1.05	1.31	1.74	-	-	-	-	-	-	-	-	-	-	-	-	-	-
130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.96	4.35	5.15	-
132	-	-	-	-	-	-	-	1.66	2.50	3.02	3.79	-	-	-	-	-	-	-
136	.69	1.09	1.35	1.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.11	4.52	5.31	-
144	.72	1.13	1.39	1.80	-	-	-	1.76	2.62	3.13	3.89	-	-	-	3.17	4.57	5.36	-
150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.26	4.67	5.45	-
152	.75	1.16	1.42	1.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-
156	-	-	-	-	-	-	-	1.87	2.74	3.25	-	-	-	-	-	-	-	-
160	.78	1.20	1.45	1.86	-	-	-	-	-	-	-	-	-	-	3.41	4.80	-	-
168	.81	1.23	1.48	1.88	-	-	-	1.96	2.84	3.33	-	-	-	-	-	-	-	-
170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
176	.84	1.27	1.53	1.93	-	-	-	-	-	-	-	-	-	-	3.51	4.92	-	-
180	-	-	-	-	-	-	-	2.04	2.93	3.42	-	-	-	-	3.64	5.05	-	-
192	.89	1.35	1.60	1.97	-	-	-	2.12	3.00	3.48	-	-	-	-	-	-	-	-
198	-	-	-	-	-	-	-	2.17	3.06	3.54	-	-	-	-	-	-	-	-
200	.92	1.36	1.61	-	-	-	-	-	-	-	-	-	-	-	3.87	5.27	-	-

Ratings above Heavy Dash Line are for Steel Spur Gears and Change Gears. Ratings below this line are for Cast Iron Spur Gears. For Change Gears multiply ratings below this line by 1.66. Interpolate sizes and speeds.
Ratings below Heavy Solid Line are not recommended as Pitch Line Velocity exceeds 1000 feet per minute. they are published for interpolation purposes only.



See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes

TABLE No. 1

RATINGS FOR 14 1/2° STEEL AND CAST IRON SPUR GEARS AND STEEL CHANGE GEARS

NUM- BER OF TEETH	HORSEPOWER AT VARIOUS R.P.M.																				
	8 D.P.							6 D.P.							5 D.P.						
	100	200	300	600	900	1200	1800	100	200	300	600	900	1200	1800	100	200	300	600	900	1200	1800
11	.73	1.38	1.95	3.35	4.40	5.23	6.43	1.53	2.83	3.96	6.55	8.39	9.75	11.65	2.53	4.63	6.39	10.31	12.97	14.88	17.46
12	.73	1.38	1.95	3.35	4.40	5.23	6.43	1.53	2.83	3.96	6.55	8.39	9.75	11.65	2.53	4.63	6.39	10.31	12.97	14.88	17.46
13	.82	1.54	2.19	3.71	4.85	5.73	6.98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	.88	1.84	2.32	3.91	5.08	5.95	7.21	1.97	3.47	4.80	7.77	9.80	11.27	13.27	3.13	5.65	7.71	12.16	15.06	17.09	19.76
15	1.07	1.91	2.75	4.67	5.89	6.88	8.34	2.20	4.04	5.35	8.82	11.02	12.74	14.69	3.60	6.51	8.74	13.72	16.80	19.03	21.94
16	1.19	2.14	3.00	5.00	6.06	7.38	8.80	2.41	4.44	5.97	9.52	11.81	13.58	15.62	3.91	7.10	9.41	14.74	17.94	20.25	-
17	1.26	2.32	3.23	5.32	6.77	7.83	9.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	1.43	2.53	3.54	5.73	7.17	8.35	9.78	2.83	5.13	6.88	10.80	13.39	14.98	17.27	4.54	8.31	11.31	16.82	20.22	22.48	-
19	1.45	2.66	3.67	5.93	7.46	8.58	10.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	1.58	2.88	3.96	6.35	7.96	9.11	10.64	3.27	5.79	7.81	11.98	14.58	16.35	-	5.36	9.33	12.38	18.43	22.01	24.38	-
21	1.68	3.05	4.19	6.67	8.32	9.48	11.03	3.48	6.14	8.25	12.55	15.19	16.97	-	-	-	-	-	-	-	-
22	1.77	3.20	4.38	6.93	8.59	9.76	11.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	1.96	3.52	4.79	7.47	9.18	10.37	-	4.03	7.02	9.32	13.88	16.54	18.35	-	6.55	11.18	14.62	21.09	24.74	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.89	11.69	15.22	21.82	25.50	-	-
26	2.16	3.85	5.19	8.01	9.76	10.97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	4.65	7.98	10.49	15.31	18.07	-	-	-	-	-	-	-	-	-
28	2.37	4.18	5.62	8.55	10.35	11.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	2.56	4.48	5.99	9.01	10.83	12.05	-	5.14	8.84	11.51	16.49	19.27	-	-	8.45	14.00	17.92	24.88	28.58	-	-
32	2.73	4.76	6.32	9.41	11.24	12.45	-	5.57	9.37	12.13	17.19	19.97	-	-	-	-	-	-	-	-	-
33	-	-	-	-	-	-	-	5.70	9.60	12.37	17.42	20.18	-	-	-	-	-	-	-	-	-
35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.82	15.92	20.07	27.14	-	-	-
36	3.09	5.32	6.99	10.19	12.03	-	-	6.26	10.37	13.28	18.44	21.18	-	-	-	-	-	-	-	-	-
40	3.46	5.86	7.64	10.94	12.79	-	-	6.97	11.37	14.41	19.66	-	-	-	6.72	10.68	13.29	17.58	-	-	-
42	3.64	6.14	7.96	11.31	13.16	-	-	7.32	11.86	14.95	29.23	-	-	-	-	-	-	-	-	-	-
44	3.81	6.39	8.24	11.62	13.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.49	11.69	14.37	18.65	-	-	-
48	4.13	6.84	8.76	12.16	13.97	-	-	4.94	7.85	9.77	12.92	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.17	12.54	15.25	19.44	-	-	-
52	4.42	7.23	9.19	12.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	4.58	7.46	9.44	12.85	-	-	-	5.45	8.50	10.45	13.56	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.80	13.28	16.00	20.11	-	-	-
56	2.84	4.61	5.81	7.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	3.01	4.84	6.06	8.10	-	-	-	5.93	9.10	11.08	14.12	-	-	-	9.40	13.99	16.70	20.72	-	-	-
64	3.17	5.04	6.27	8.29	-	-	-	6.22	9.44	11.29	14.44	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	6.39	9.65	11.62	14.57	-	-	-	-	-	-	-	-	-	-
68	3.35	5.26	6.51	8.53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.51	15.24	17.89	-	-	-	-
72	3.49	5.45	6.70	8.69	-	-	-	6.82	10.15	12.12	15.03	-	-	-	-	-	-	-	-	-	-
76	3.64	5.63	6.89	8.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80	3.79	5.81	7.07	9.00	-	-	-	-	-	-	-	-	-	-	11.47	16.26	18.88	-	-	-	-
84	3.93	5.98	7.23	9.16	-	-	-	7.58	11.00	12.93	-	-	-	-	-	-	-	-	-	-	-
88	4.06	6.13	7.39	9.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.36	17.17	19.72	-	-	-	-
92	4.19	6.30	7.55	9.44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
96	4.33	6.45	7.70	-	-	-	-	8.30	11.76	13.66	-	-	-	-	-	-	-	-	-	-	-
100	4.45	6.59	7.84	-	-	-	-	-	-	-	-	-	-	-	13.21	18.01	-	-	-	-	-
108	-	-	-	-	-	-	-	8.93	12.40	14.24	-	-	-	-	-	-	-	-	-	-	-
110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13.92	18.69	-	-	-	-	-
112	4.82	6.99	8.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
120	5.04	7.22	8.44	-	-	-	-	9.50	12.96	-	-	-	-	-	14.60	19.31	-	-	-	-	-
128	5.25	7.44	8.64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
132	-	-	-	-	-	-	-	10.02	13.51	-	-	-	-	-	-	-	-	-	-	-	-
144	5.64	7.84	9.00	-	-	-	-	10.51	13.90	-	-	-	-	-	-	-	-	-	-	-	-
160	6.00	8.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
168	6.15	8.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Ratings above Heavy Dash Line are for Steel Spur Gears and Change Gears (8 pitch). Ratings below this line are for Cast Iron Spur Gears. For 8 Pitch Change Gears multiply ratings below this line by 1.66. Interpolate for intermediate sizes and speeds. Ratings below Heavy Solid Line are not recommended as Pitch Line Velocity exceeds 1000 feet per minute.



WARNING See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes

TABLE No.1

RATINGS FOR 14 1/2° STEEL AND CAST IRON SPUR GEARS

NUM- BER OF TEETH	HORSEPOWER AT VARIOUS R.P.M.													
	4 D.P.							3 D.P.						
	50	100	200	300	600	900	1200	25	50	100	200	300	600	900
11	2.35	4.42	7.92	10.77	16.80	20.65	23.33	3.19	6.13	11.35	19.75	26.25	39.04	46.52
12	2.35	4.42	7.92	10.77	16.80	20.65	23.33	3.19	6.13	11.35	19.75	26.25	39.04	46.52
14	2.91	5.44	9.48	12.89	19.62	23.75	26.54	3.97	7.60	13.92	23.81	31.21	45.26	50.25
15	3.60	6.37	11.27	14.69	22.04	26.45	29.63	4.90	8.82	16.16	26.94	34.10	51.11	58.78
16	3.81	6.86	11.93	15.83	23.61	28.18	31.23	5.08	10.31	17.33	28.95	39.24	53.83	62.46
18	4.32	8.10	13.76	18.08	26.45	31.31	-	5.94	11.34	20.51	34.01	43.18	59.92	69.09
20	5.07	9.23	15.65	20.38	29.20	34.12	-	6.96	13.03	23.13	37.75	47.83	65.22	-
21	-	-	-	-	-	-	-	7.46	13.93	24.61	39.86	50.27	67.99	-
22	5.68	10.26	17.20	22.20	31.28	36.24	-	-	-	-	-	-	-	-
24	6.28	11.25	18.64	23.86	33.14	38.17	-	5.22	9.71	16.86	28.02	33.48	44.38	-
28	7.57	13.37	21.66	27.31	36.94	-	-	-	-	-	-	-	-	-
30	4.91	8.61	13.81	17.30	23.13	-	-	6.87	12.51	21.22	32.53	39.58	50.50	-
32	5.26	9.15	14.53	18.08	23.92	-	-	-	-	-	-	-	-	-
36	5.95	10.22	15.94	19.59	25.42	-	-	8.39	15.04	24.90	37.06	44.27	-	-
40	6.65	11.27	17.29	21.03	-	-	-	-	-	-	-	-	-	-
42	7.00	11.80	17.95	21.73	-	-	-	9.95	17.57	28.48	41.28	48.56	-	-
44	7.33	12.28	18.55	22.34	-	-	-	-	-	-	-	-	-	-
48	7.87	12.81	19.29	23.38	-	-	-	11.32	19.77	31.59	44.65	51.81	-	-
54	8.79	14.32	20.89	24.67	-	-	-	12.68	21.79	33.97	47.20	-	-	-
56	9.09	14.73	21.36	25.13	-	-	-	-	-	-	-	-	-	-
60	9.63	15.46	22.15	25.88	-	-	-	14.00	23.73	36.41	49.68	-	-	-
64	10.14	16.10	22.82	26.50	-	-	-	-	-	-	-	-	-	-
72	11.19	17.45	24.23	27.83	-	-	-	16.46	27.26	40.58	53.62	-	-	-
80	12.12	18.59	25.35	-	-	-	-	-	-	-	-	-	-	-
84	12.57	19.13	25.87	-	-	-	-	18.72	32.47	43.98	56.70	-	-	-
88	13.01	19.64	26.36	-	-	-	-	-	-	-	-	-	-	-
96	13.87	20.64	27.30	-	-	-	-	20.88	33.17	47.02	59.36	-	-	-
108	-	-	-	-	-	-	-	22.89	35.70	49.59	-	-	-	-
120	16.12	23.11	29.43	-	-	-	-	24.74	37.96	51.78	-	-	-	-
144	18.06	25.09	-	-	-	-	-	-	-	-	-	-	-	-

Ratings above Heavy Dash Line are for Steel Spur Gears; those below are for Cast Iron Spur Gears. Interpolate for intermediate sizes and speeds.

Ratings below Heavy Solid Line are not recommended as Pitch Line Velocity exceeds 1000 feet per minute; they are published for interpolation purposes only.

EXAMPLES

A drive is desired for 2 H.P., 300 R.P.M. drive shaft to 100 R.P.M. driven shaft to operate on approximately 4 inch centers, 11-16 hours per day, with light shock load and with drip lubrication. Driving shaft is 7/8" diameter with 3/16" x 3/32" keyseat. Driven shaft is 1 7/16" diameter with 3/8" x 3/16" keyseat.

EXAMPLE 1, using 14 1/2° P.A. Gears

- Overload Service Factor, Tables 2 and 3 Page E-46.
11-16 hours operation-light shock = 1.3
Drip lubrication = .2
Service Factor = 1.5
- Required horsepower: 1.5 x 2 = 3.0
- Ratio is 300 = 3.00
100
- Refer to Table No. 1, Page E-66 under 3.000 ratio and gear combination having suitable minimum number of teeth in pinion and giving 4.000" centers. This table indicates 8 pitch, 16 teeth or 10 pitch, 20 teeth to be within required limits.
- Refer to Pitch Selection Chart, Table No. 1, Page E-50 for 3 H.P. at 300 R.P.M. This shows the 8 pitch, 16 tooth gear to be suitable.
- Check H.P. capacity in Rating Table No. 1, Page E-49 which shows 3.00 H.P. for driver at 300 R.P.M., and 4.13 H.P. for driven at 100 R.P.M.
- Select gears from Table No. 1 and Table No. 2 Page E-9 and Table No. 1, Page E-10.

EXAMPLE 2, using 20° P.A. Gears

- Overload Service Factor, Tables 2 and 3 Page E-46.
11-16 hours operation-light shock = 1.3
Drip lubrication = .2
Service Factor = 1.5
- Required horsepower: 1.5 x 2 = 3.0
- Ratio is 300 = 3.00
100
- Refer to Table No. 1, Page E-66 under 3.000 ratio and gear combination having suitable minimum number of teeth in pinion and giving 4.000" centers. This table indicates 8 pitch, 16 teeth or 10 pitch, 20 teeth to be within required limits.
- Refer to Pitch Selection Chart, Tables No. 1 and 2, Page E-55 for 3 H.P. at 300 R.P.M. These show the 10 pitch, 20 tooth gear to be desirable as the finer pitch.
- Check H.P. capacity in Rating Table No. 2, Page E-55 which shows 3.02 H.P. for driver at 300 R.P.M., and 3.97 H.P. for driven at 100 R.P.M.
- Select gears from Table No. 1, and Table No. 2, Page E-24.

20° SPUR GEAR PITCH SELECTION CHARTS

TABLE No. 1

DESIGN H.P.	14 TEETH								16 TEETH								18 TEETH							
	R.P.M. SMALL GEAR								R.P.M. SMALL GEAR								R.P.M. SMALL GEAR							
	50	100	300	600	900	1200	1800	50	100	300	600	900	1200	1800	50	100	300	600	900	1200	1800			
.05	16	20	20	20	20	20	20	16	20	20	20	20	20	20	20	20	20	20	20	20	20			
.10	12	16	20	20	20	20	20	12	16	20	20	20	20	20	16	20	20	20	20	20	20			
1/4	10	12	16	20	20	20	20	10	12	20	20	20	20	20	12	16	20	20	20	20	20			
1/3	10	12	16	20	20	20	20	10	12	16	20	20	20	20	10	12	16	20	20	20	20			
1/2	8	10	12	16	20	20	20	8	10	16	16	20	20	20	10	12	16	20	20	20	20			
3/4	6	8	12	16	16	16	20	8	10	12	16	16	20	20	8	10	12	16	16	20	20			
1	6	8	12	12	16	16	16	6	8	12	16	16	16	20	6	10	12	16	16	16	20			
1 1/2	6	6	10	12	12	12	16	6	8	10	12	12	16	16	6	8	12	12	16	16	16			
2	5	6	8	10	12	12	12	5	6	10	12	12	12	16	6	6	10	12	12	12	16			
3	4	6	8	10	10	12	12	5	6	8	10	12	12	12	5	6	8	10	12	12	12			
5	4	5	6	8	8	10	10	4	5	6	8	10	10	10	4	5	6	8	10	10	12			
7 1/2	-	4	6	6	8	8	8	4	4	6	6	8	8	10	4	5	6	8	8	8	10			
10	-	4	5	6	6	6	8	-	4	5	6	6	8	8	-	4	6	6	6	8	8			
15	-	-	4	5	6	6	6	-	-	5	5	6	6	6	-	4	5	6	6	6	-			
20	-	-	4	5	5	5	6	-	-	4	5	5	6	-	-	-	4	5	6	6	-			
25	-	-	4	4	5	5	-	-	-	4	4	5	5	-	-	-	4	5	5	5	-			
30	-	-	-	4	4	4	-	-	-	4	4	4	5	-	-	-	4	4	5	5	-			
40	-	-	-	4	4	4	-	-	-	-	4	4	-	-	-	-	-	4	4	-	-			
50	-	-	-	-	4	4	-	-	-	-	-	4	-	-	-	-	-	4	4	-	-			

TABLE No. 2

DESIGN H.P.	20 TEETH								22 TEETH								24 TEETH							
	R.P.M. SMALL GEAR								R.P.M. SMALL GEAR								R.P.M. SMALL GEAR							
	50	100	300	600	900	1200	1800	50	100	300	600	900	1200	1800	50	100	300	600	900	1200	1800			
.05	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20			
.10	16	20	20	20	20	20	20	16	20	20	20	20	20	20	16	20	20	20	20	20	20			
1/4	12	16	20	20	20	20	20	12	16	20	20	20	20	20	12	16	20	20	20	20	20			
1/3	12	12	20	20	20	20	20	12	12	20	20	20	20	20	12	16	20	20	20	20	20			
1/2	10	12	16	20	20	20	20	10	12	16	20	20	20	20	10	12	16	20	20	20	20			
3/4	8	10	16	16	20	20	20	8	10	16	16	20	20	20	8	12	16	16	20	20	20			
1	8	10	12	16	16	20	20	8	10	12	16	16	20	20	8	10	12	16	16	20	20			
1 1/2	6	8	12	12	16	16	16	6	8	12	16	16	16	16	6	8	12	16	16	16	16			
2	6	8	10	12	12	16	16	6	8	10	12	16	16	16	6	8	12	12	16	16	16			
3	5	6	10	10	12	12	12	5	6	10	12	12	12	16	6	6	10	12	12	12	16			
5	4	5	8	10	10	10	12	4	6	8	10	10	10	12	5	6	8	10	10	12	12			
7 1/2	4	5	6	8	8	8	10	4	5	6	8	8	10	10	4	5	6	8	8	8	10			
10	4	4	6	6	8	8	8	4	4	6	6	8	8	-	4	5	6	8	8	8	-			
15	-	4	5	6	6	6	-	-	4	5	6	6	6	-	-	4	5	6	6	6	-			
20	-	-	5	5	6	6	-	-	4	5	5	6	6	-	-	4	5	6	6	-	-			
25	-	-	4	5	5	6	-	-	-	4	5	5	6	-	-	-	4	5	6	-	-			
30	-	-	4	4	5	-	-	-	-	4	5	5	-	-	-	-	4	5	5	-	-			
40	-	-	4	4	4	-	-	-	-	4	4	-	-	-	-	-	4	5	-	-	-			
50	-	-	-	4	-	-	-	-	-	-	4	-	-	-	-	-	-	4	-	-	-			

TABLE No. 3

DESIGN H.P.	26 TEETH								28 TEETH								30 TEETH							
	R.P.M. SMALL GEAR								R.P.M. SMALL GEAR								R.P.M. SMALL GEAR							
	50	100	300	600	900	1200	1800	50	100	300	600	900	1200	1800	50	100	300	600	900	1200	1800			
.05	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20			
.10	16	20	20	20	20	20	20	16	20	20	20	20	20	20	16	20	20	20	20	20	20			
1/4	12	16	20	20	20	20	20	12	16	20	20	20	20	20	12	16	20	20	20	20	20			
1/3	12	16	20	20	20	20	20	12	16	20	20	20	20	20	12	16	20	20	20	20	20			
1/2	10	12	20	20	20	20	20	12	12	16	20	20	20	20	12	12	20	20	20	20	20			
3/4	10	12	16	20	20	20	20	10	12	16	20	20	20	20	10	12	16	20	20	20	20			
1	8	10	16	16	20	20	20	8	12	16	16	20	20	20	8	12	16	16	20	20	20			
1 1/2	6	10	12	16	16	16	20	8	10	12	16	16	16	20	8	10	12	16	16	16	20			
2	6	8	12	12	16	16	16	6	8	12	12	16	16	16	6	8	12	16	16	16	16			
3	6	6	10	12	12	12	16	6	8	10	12	12	12	16	6	8	10	12	12	16	16			
5	5	6	8	10	10	12	12	5	6	8	10	12	12	12	5	6	8	10	12	12	12			
7 1/2	4	5	6	8	10	10	10	4	5	8	8	10	10	-	4	6	8	8	10	10	-			
10	4	5	6	8	8	8	10	4	5	6	8	8	8	-	4	5	6	8	8	10	-			
15	-	4	5	6	6	6	-	-	4	6	6	6	8	-	-	4	6	6	6	8	-			
20	-	4	5	6	6	6	-	-	4	5	6	6	-	-	-	4	5	6	6	-	-			
25	-	-	5	5	6	-	-	-	4	5	5	6	-	-	-	4	5	5	6	-	-			
30	-	-	4	5	5	-	-	-	-	4	5	-	-	-	-	-	4	5	-	-	-			
40	-	-	4	4	5	-	-	-	-	4	4	-	-	-	-	-	4	4	-	-	-			
50	-	-	-	4	-	-	-	-	-	4	4	-	-	-	-	-	4	4	-	-	-			

TABLE No. 1

RATINGS FOR 20° STEEL AND CAST IRON SPUR GEARS

NUMBER OF TEETH	HORSEPOWER AT VARIOUS R.P.M																				
	20 D.P.							16 D.P.							12 D.P.						
	100	200	300	600	900	1200	1800	100	200	300	600	900	1200	1800	100	200	300	600	900	1200	1800
12	.06	.11	.16	.30	.43	.53	.71	.13	.26	.37	.69	.96	1.18	1.55	.31	.60	.86	1.54	2.09	2.55	3.27
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.36	.68	.98	1.75	2.36	2.86	3.64
14	.07	.14	.21	.39	.54	.67	.89	.17	.32	.48	.87	1.19	1.46	1.83	.41	.77	1.11	1.96	2.63	3.17	4.00
15	.09	.15	.23	.44	.60	.74	.97	.20	.37	.53	.98	1.33	1.61	2.08	.45	.86	1.23	2.16	2.88	3.46	4.34
16	.09	.18	.25	.46	.64	.79	1.04	.21	.40	.58	1.04	1.42	1.73	2.21	.49	.93	1.33	2.31	3.07	3.68	4.57
18	.11	.20	.30	.53	.73	.90	1.16	.25	.47	.67	1.19	1.61	1.95	2.46	.57	1.08	1.53	2.63	3.46	4.11	5.05
20	.12	.23	.34	.60	.82	1.00	1.28	.28	.54	.77	1.34	1.80	2.16	2.70	.66	1.23	1.74	2.95	3.84	4.52	5.50
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	.70	1.31	1.85	3.11	4.04	4.74	5.73
24	.15	.29	.41	.73	.98	1.18	1.48	.35	.66	.94	1.61	2.12	2.52	3.10	.82	1.51	2.11	3.50	4.48	5.21	6.22
25	.16	.31	.44	.77	1.02	1.23	1.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	.43	.80	1.12	1.89	2.44	2.87	3.47	.99	1.80	2.50	4.05	5.10	5.86	6.90
30	.20	.38	.53	.92	1.21	1.43	1.76	.46	.86	1.20	2.01	2.59	3.02	3.63	1.07	1.94	2.67	4.29	5.37	6.15	7.18
32	-	-	-	-	-	-	-	.50	.93	1.29	2.14	2.74	3.19	3.81	-	-	-	-	-	-	-
35	.24	.45	.63	1.07	1.38	1.63	1.97	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	-	-	-	-	-	-	-	.58	1.06	1.46	2.38	3.01	3.47	4.10	1.32	2.37	3.22	5.03	6.18	6.98	8.02
40	.28	.52	.73	1.21	1.55	1.80	2.16	.65	1.18	1.63	2.62	3.28	3.75	4.38	-	-	-	-	-	-	-
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.58	2.79	3.74	5.69	6.89	7.70	8.73
45	.33	.60	.83	1.35	1.71	1.97	2.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	.80	1.43	1.95	3.04	3.73	4.22	4.84	1.82	3.18	4.22	6.28	7.50	8.30	-
50	.36	.66	.91	1.46	1.83	2.10	2.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.05	3.53	4.64	6.77	7.99	8.78	-
56	-	-	-	-	-	-	-	.94	1.66	2.23	3.39	4.10	4.59	5.21	-	-	-	-	-	-	-
60	.44	.79	1.08	1.68	2.07	2.34	2.69	1.01	1.77	2.36	3.55	4.27	4.75	-	2.28	3.88	5.05	7.23	8.45	-	-
64	-	-	-	-	-	-	-	1.08	1.88	2.50	3.72	4.45	4.92	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.51	2.53	3.27	4.60	5.33	-	-
70	.52	.92	1.23	1.87	2.27	2.53	2.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	1.21	2.08	2.73	3.98	4.70	5.17	-	1.63	2.70	3.46	4.8	5.51	-	-
80	.59	1.03	1.37	2.03	2.43	2.69	-	1.34	2.27	2.95	4.23	4.95	-	-	-	-	-	-	-	-	-
84	.62	1.07	1.41	2.08	2.47	2.73	-	-	-	-	-	-	-	-	1.87	3.02	3.81	5.15	5.81	-	-
90	.66	1.13	1.48	2.16	2.55	2.81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
96	-	-	-	-	-	-	-	.94	1.56	1.99	2.77	3.18	-	-	2.08	3.31	4.12	5.45	-	-	-
100	.73	1.23	1.60	2.30	2.68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.30	3.59	4.41	5.72	-	-	-
112	-	-	-	-	-	-	-	1.07	1.74	2.19	2.96	3.37	-	-	-	-	-	-	-	-	-
120	.51	.85	1.09	1.50	1.73	-	-	-	-	-	-	-	-	-	2.50	3.83	4.66	5.97	-	-	-
128	-	-	-	-	-	-	-	1.20	1.91	2.37	3.14	-	-	-	-	-	-	-	-	-	-
132	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.68	4.05	4.88	6.12	-	-	-
140	.58	.94	1.19	1.61	1.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
144	-	-	-	-	-	-	-	1.32	2.06	2.54	3.29	-	-	-	2.86	4.26	5.09	6.33	-	-	-
160	.65	1.03	1.28	1.70	-	-	-	1.43	2.19	2.67	3.40	-	-	-	-	-	-	-	-	-	-
168	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.18	4.61	5.42	6.57	-	-	-
180	.71	1.11	1.37	1.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
192	-	-	-	-	-	-	-	1.64	2.44	2.92	3.58	-	-	-	3.49	4.95	5.75	-	-	-	-
200	.78	1.19	1.45	1.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
216	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.76	5.22	5.99	-	-	-	-
240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.97	5.42	6.13	-	-	-	-

Ratings above Heavy Dash Line are for Steel Spur Gears; those below are for Cast Iron Spur Gears.

Ratings below Heavy Solid Line are not recommended as Pitch Line Velocity exceeds 1200 feet per minute.



See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes.

TABLE No. 2

RATINGS FOR 20° STEEL SPUR GEARS

NUMBER OF TEETH	HORSEPOWER AT VARIOUS R.P.M																				
	10 D.P.							8 D.P.							6 D.P.						
	100	200	300	600	900	1200	1800	100	200	300	600	900	1200	1800	100	200	300	600	900	1200	1800
12	.56	1.06	1.51	2.66	3.57	4.30	5.40	1.03	1.93	2.74	4.71	6.19	7.35	9.04	2.38	4.41	6.16	10.20	13.06	15.19	18.14
14	.72	1.37	1.94	3.37	4.45	5.31	6.57	1.34	2.49	3.51	5.91	7.66	9.00	10.89	3.09	5.65	7.82	12.68	15.98	18.38	21.63
15	.81	1.52	2.16	3.70	4.87	5.78	7.10	1.49	2.77	3.88	6.49	8.36	9.76	11.73	3.45	6.29	8.64	13.86	17.35	19.86	23.20
16	.88	1.64	2.32	3.96	5.17	6.11	7.47	1.61	2.99	4.17	6.91	8.85	10.29	12.29	3.73	6.77	9.26	14.71	18.30	20.84	24.20
18	1.02	1.90	2.67	4.49	5.80	6.79	8.20	1.88	3.45	4.78	7.78	9.85	11.36	13.41	4.32	7.75	10.53	16.42	20.19	22.81	26.20
20	1.17	2.16	3.02	5.00	6.40	7.44	8.89	2.15	3.91	5.38	8.63	10.81	12.37	14.45	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.25	9.27	12.45	18.95	22.94	25.63	29.06
22	-	-	-	-	-	-	-	2.41	4.36	5.96	9.42	11.68	13.27	15.38	-	-	-	-	-	-	-
24	1.45	2.65	3.65	5.89	7.41	8.50	9.97	2.65	4.75	6.46	10.08	12.39	13.99	16.07	6.05	10.54	13.99	20.83	24.88	27.55	-
25	1.53	2.78	3.83	6.15	7.70	8.81	10.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.94	11.93	15.68	22.88	27.01	29.69	-
28	1.74	3.14	4.29	6.77	8.38	9.51	11.00	3.18	5.61	7.54	11.47	13.89	15.52	17.60	-	-	-	-	-	-	-
30	1.88	3.38	4.59	7.16	8.80	9.94	11.42	-	-	-	-	-	-	-	7.77	13.18	17.17	24.60	28.74	-	-
32	-	-	-	-	-	-	-	3.71	6.46	8.58	12.76	15.24	16.88	-	-	-	-	-	-	-	-
33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.62	14.45	18.64	26.28	30.44	-	-

Ratings below Heavy Solid Line are not recommended as Pitch Line Velocity exceeds 1200 feet per minute.



See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes.

TABLE No. 1

RATINGS FOR 20° STEEL AND CAST IRON SPUR GEARS

NUMBER OF TEETH	HORSE POWER AT VARIOUS R.P.M																				
	10 D.P.							8 D.P.							6 D.P.						
	100	200	300	600	900	1200	1800	100	200	300	600	900	1200	1800	100	200	300	600	900	1200	1800
35	2.25	3.98	5.34	8.13	9.84	10.99	12.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	-	-	-	-	-	-	-	4.22	7.25	9.53	13.89	15.41	18.03	-	9.48	15.70	20.10	27.92	32.06	-	-
40	2.62	4.56	6.06	9.02	10.77	11.93	-	4.74	8.04	10.46	15.00	17.52	-	-	-	-	-	-	-	-	-
42	-	-	-	-	-	-	-	5.25	8.80	11.35	16.00	18.53	-	-	11.15	18.06	22.77	30.81	34.40	-	-
44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	2.98	5.12	6.73	9.82	11.59	12.74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	3.19	5.43	7.10	10.25	12.02	-	-	5.73	9.49	12.15	16.87	19.33	-	-	7.63	12.11	15.07	19.93	-	-	-
50	3.32	5.63	7.34	10.51	12.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.48	13.23	16.26	21.10	-	-	-
55	3.65	6.11	7.89	11.12	12.88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	6.64	10.76	13.56	18.34	20.74	-	-	-	-	-	-	-	-	-
60	3.97	6.58	8.42	11.69	13.43	-	-	7.08	11.36	14.22	19.01	-	-	-	9.31	14.27	17.36	22.14	-	-	-
64	-	-	-	-	-	-	-	4.48	7.16	8.87	11.74	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.12	15.28	18.41	23.09	-	-	-
70	2.75	4.46	5.62	7.61	8.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	4.95	7.76	9.50	12.41	-	-	-	10.78	16.05	19.17	23.77	-	-	-
80	3.09	4.91	6.11	8.08	-	-	-	5.45	8.35	10.16	12.90	-	-	-	-	-	-	-	-	-	-
84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.10	17.53	20.78	24.96	-	-	-
88	-	-	-	-	-	-	-	5.84	8.82	10.62	13.36	-	-	-	-	-	-	-	-	-	-
90	3.39	5.29	6.51	8.44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
96	-	-	-	-	-	-	-	6.23	9.27	11.08	13.77	-	-	-	13.24	18.77	21.80	-	-	-	-
100	3.70	5.67	6.90	8.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.33	19.90	22.86	-	-	-	-
110	3.97	6.00	7.23	9.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
112	-	-	-	-	-	-	-	6.97	10.11	11.89	-	-	-	-	-	-	-	-	-	-	-
120	4.24	6.31	7.53	9.37	-	-	-	7.32	10.49	12.25	-	-	-	-	15.32	20.89	23.72	-	-	-	-
128	-	-	-	-	-	-	-	7.63	10.81	12.55	-	-	-	-	-	-	-	-	-	-	-
132	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16.19	21.74	-	-	-	-	-
140	4.72	6.84	8.05	9.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
144	-	-	-	-	-	-	-	8.24	11.45	13.15	-	-	-	-	17.04	22.54	-	-	-	-	-
160	5.16	7.31	8.49	-	-	-	-	8.77	11.96	13.61	-	-	-	-	-	-	-	-	-	-	-
176	-	-	-	-	-	-	-	9.29	12.47	-	-	-	-	-	-	-	-	-	-	-	-
180	5.57	7.73	8.88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
192	-	-	-	-	-	-	-	9.77	12.93	-	-	-	-	-	-	-	-	-	-	-	-
200	5.95	8.11	9.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE No. 2

RATINGS FOR 20° STEEL AND CAST IRON SPUR GEARS

NUMBER OF TEETH	HORSE POWER AT VARIOUS R.P.M													
	5 D.P.							4 D.P.						
	100	200	300	600	900	1200	1800	50	100	200	300	600	900	1200
12	4.22	7.72	10.65	17.19	21.61	24.80	29.09	4.79	9.03	16.17	21.98	34.29	42.16	47.62
14	5.46	9.85	13.46	21.22	26.27	29.83	34.49	6.23	11.64	20.55	27.59	41.98	50.82	56.79
15	6.08	10.90	14.82	23.11	28.42	32.10	36.87	6.96	12.93	22.67	30.27	45.55	54.75	60.90
16	6.57	11.71	15.84	24.45	29.86	33.37	38.35	7.54	13.95	24.29	32.25	48.00	57.34	63.50
18	7.60	13.39	17.94	27.17	32.79	36.58	-	8.76	16.09	27.63	36.33	53.00	62.57	68.76
20	8.65	15.06	19.99	29.75	35.54	39.36	-	10.02	18.24	30.93	40.27	57.71	67.43	-
24	10.58	18.04	23.57	34.01	39.90	43.68	-	12.38	22.18	36.74	47.03	65.31	75.01	-
25	11.14	18.89	24.60	35.25	41.18	-	-	-	-	-	-	-	-	-
28	12.57	21.01	27.07	38.04	43.98	-	-	14.84	26.21	42.47	53.54	72.43	82.11	-
30	13.51	22.37	28.63	39.76	45.67	-	-	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-	17.23	30.01	47.68	59.32	78.50	-	-
35	15.91	25.79	32.51	43.98	49.98	-	-	-	-	-	-	-	-	-
36	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	10.96	17.41	21.65	28.64	-	-	-	11.82	20.30	31.67	38.94	50.52	-	-
44	-	-	-	-	-	-	-	13.27	22.51	34.53	42.00	53.57	-	-
45	-	-	-	-	-	-	-	14.70	24.63	37.20	44.81	56.37	-	-
48	12.29	19.18	23.58	30.59	-	-	-	-	-	-	-	-	-	-
50	13.53	20.75	25.24	32.19	-	-	-	16.05	26.58	39.55	47.25	58.50	-	-
56	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	15.79	23.50	28.07	34.83	-	-	-	18.51	30.12	43.67	51.36	62.24	-	-
64	-	-	-	-	-	-	-	19.46	31.81	45.57	53.25	-	-	-
70	17.84	25.86	30.42	36.76	-	-	-	21.10	33.52	47.51	55.10	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80	19.65	27.85	32.34	-	-	-	-	23.23	36.23	50.32	57.79	-	-	-
90	21.18	29.42	33.79	-	-	-	-	25.41	38.98	53.16	60.20	-	-	-
96	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100	22.68	30.93	35.19	-	-	-	-	29.07	43.27	57.23	-	-	-	-
110	23.97	32.17	-	-	-	-	-	-	-	-	-	-	-	-
112	-	-	-	-	-	-	-	-	-	-	-	-	-	-
120	25.23	33.37	-	-	-	-	-	32.53	47.16	60.84	-	-	-	-
128	-	-	-	-	-	-	-	-	-	-	-	-	-	-
140	27.39	35.34	-	-	-	-	-	35.58	50.43	63.68	-	-	-	-
160	29.24	36.96	-	-	-	-	-	40.93	55.83	68.25	-	-	-	-
180	30.94	38.14	-	-	-	-	-	-	-	-	-	-	-	-

Ratings above Heavy Dash Line are for Steel Spur Gears; those below are for Cast Iron Spur Gears.
Ratings below Heavy Solid Line are not recommended as Pitch Line Velocity exceeds 1200 feet per minute.



See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes.

TABLE No. 1

RATIO AND CENTER DISTANCE - SPUR GEARS

1.000-
1.063
RATIO

GEAR COMBINATIONS		RATIO	CENTER DISTANCE											
NO. TEETH			DIAMETRAL PITCH											
DRIVER	DRIVEN		48	32	24	20	16	12	10	8	6	5	4	3
11	11	1.000	.229†	.344†	.458†	.600†	.750†	1.000†	1.200†	1.500†	2.000†	2.400†	3.000†	4.000†
12	12	1.000	.250†	.375†	.500†	.600	.750	1.000	1.200	1.500	2.000	2.400	3.000	4.000†
13	13	1.000	-	.406†	.542†	.650†	.813†	1.083	1.300†	1.625†	-	-	-	-
14	14	1.000	.292†	.438†	.583†	.700	.875	1.167	1.400	1.750	2.333	2.800	3.500	4.667†
15	15	1.000	.313†	.469†	.625†	.750	.938	1.250	1.500	1.875	2.500	3.000	3.750	5.000†
16	16	1.000	.333†	.500†	.667†	.800	1.000	1.333	1.600	2.000	2.667	3.200	4.000	5.333†
17	17	1.000	-	-	.708†	.850†	1.063†	1.417†	1.700†	2.125†	-	-	-	-
18	18	1.000	.375†	.563†	.750†	.900	1.125	1.500	1.800	2.250	3.000	3.600	4.500	6.000†
19	19	1.000	-	-	.792†	.950†	1.188†	1.583†	1.900†	2.375†	-	-	-	-
20	20	1.000	.417†	.625†	.833†	1.000	1.250	1.667	2.000	2.500	3.333†	4.000	5.000	6.667†
21	21	1.000	-	-	.875†	1.050†	1.313†	1.750	2.100†	2.625†	3.500	-	-	7.000†
22	22	1.000	.458†	.688†	.917†	1.100†	1.375†	1.833†	2.200†	2.750	-	-	5.500†	-
23	23	1.000	-	-	.958†	1.150†	1.438†	1.917†	-	-	-	-	-	-
24	24	1.000	.500†	.750†	1.000†	1.200	1.500	2.000	2.400	3.000	4.000	4.800	6.000	8.000†
25	25	1.000	-	.781†	1.042†	1.250	-	2.083†	2.500	-	-	5.000	-	-
26	26	1.000	.542†	.813†	1.083†	-	1.625†	2.167†	2.600†	3.250†	-	-	-	-
27	27	1.000	-	-	1.125†	-	-	-	-	-	4.500	-	-	-
28	28	1.000	.583†	.875†	1.167†	1.400†	1.750	2.333	2.800	3.500	-	5.600*	7.000	-
30	30	1.000	-	.938†	1.250†	1.500	1.875	2.500	3.000	3.750†	5.000	6.000	7.500†	10.000†
32	32	1.000	.667†	1.000†	1.333†	1.600†	2.000	2.667†	3.200†	4.000	5.333†	-	8.000	-
33	33	1.000	-	-	1.375†	-	-	-	-	-	5.500	-	-	-
34	34	1.000	-	-	-	-	2.125†	2.833†	-	-	-	-	-	-
35	35	1.000	-	-	-	1.750	-	-	3.500	-	-	7.000	-	-
36	36	1.000	.750†	1.125†	1.500†	1.800†	2.250	3.000	3.600†	4.500	6.000	-	9.000	12.000†
38	38	1.000	-	-	-	-	2.375†	3.167†	3.800†	-	-	-	-	-
39	39	1.000	-	-	1.625†	-	-	-	-	-	-	-	-	-
40	40	1.000	.833†	1.250†	1.667†	2.000	2.500	3.333†	4.000	5.000	6.667†	8.000	10.000	-
42	42	1.000	-	-	1.750†	-	-	3.500	4.200†	5.250†	7.000	-	10.500†	14.000†
44	44	1.000	.917†	1.375†	1.833†	-	2.750†	3.667†	-	5.500	-	-	11.000	-
45	45	1.000	-	-	1.875†	2.250	-	-	4.500	-	-	9.000	-	-
48	48	1.000	1.000†	1.500†	2.000†	2.400†	3.000	4.000	4.800	6.000	8.000	-	12.000	16.000†
50	50	1.000	-	1.563†	-	2.500	-	-	5.000	-	-	10.000	-	-
52	52	1.000	1.083†	1.625†	-	-	3.250†	-	-	6.500†	-	-	-	-
54	54	1.000	1.125†	-	2.250†	-	3.375†	4.500	5.400†	6.750†	9.000	-	13.500†	18.000†
55	55	1.000	-	-	-	2.750†	-	-	5.500	-	-	11.000†	-	-
56	56	1.000	1.167†	1.750†	2.333†	-	3.500	4.667†	-	7.000	-	-	14.000	-
60	60	1.000	1.250†	1.875†	2.500†	3.000	3.750	5.000	6.000	7.500	10.000	12.000	15.000	20.000†
64	64	1.000	-	2.000†	2.667†	3.200†	4.000	5.333†	6.400†	8.000	10.667†	-	16.000	-
65	65	1.000	-	-	-	-	-	-	6.500†	-	-	-	-	-
66	66	1.000	1.375†	-	2.750†	-	-	5.500	-	-	11.000	-	-	-
68	68	1.000	-	-	-	-	4.250†	-	-	8.500†	-	-	-	-
70	70	1.000	-	2.188†	2.917†	3.500	-	-	7.000	-	-	14.000	-	-
72	72	1.000	1.500†	2.250†	3.000†	3.600†	4.500	6.000	7.200†	9.000	12.000	-	18.000	24.000†
75	75	1.000	-	2.344†	-	3.750†	-	-	7.500†	-	-	-	-	-
76	76	1.000	-	-	-	-	-	-	-	9.500†	-	-	-	-
78	78	1.000	-	-	-	-	-	6.500†	-	-	-	-	-	-
80	80	1.000	1.667†	2.500†	-	4.000	5.000	6.500†	8.000	10.000	-	16.000	20.000	28.000†
84	84	1.000	1.750†	-	3.500†	4.200	5.250†	7.000	8.400†	10.500†	14.000	-	21.000†	-
64	65	1.016	-	-	-	-	-	-	6.450†	-	-	-	-	-
54	55	1.019	-	-	-	-	-	-	5.450†	-	-	-	-	-
44	45	1.023	-	-	1.854†	-	-	-	-	-	-	-	-	-
39	40	1.026	-	-	1.646†	-	-	-	-	-	-	-	-	-
35	36	1.029	-	-	-	1.775†	-	-	3.550†	-	-	-	-	-
70	72	1.029	-	2.219†	2.958†	3.550†	-	-	7.100†	-	-	-	-	-
32	33	1.031	-	-	1.354†	-	-	-	-	-	5.417†	-	-	-
64	66	1.031	-	-	2.708†	-	-	5.417†	-	-	10.833†	-	-	-
27	28	1.037	-	-	1.146†	-	-	-	-	-	-	-	-	-
54	56	1.037	1.146†	-	2.292†	-	3.438†	4.583†	-	6.875†	-	-	13.750†	-
26	27	1.038	-	-	1.104†	-	-	-	-	-	-	-	-	-
52	54	1.038	1.104†	-	-	-	3.313†	-	-	6.625†	-	-	-	-
25	26	1.040	-	.797†	1.063†	-	-	2.125†	2.550†	-	-	-	-	-
50	52	1.040	-	1.594†	-	-	-	-	-	-	-	-	-	-
24	25	1.042	-	.766†	1.021†	1.225	-	2.042†	2.450	-	-	4.900	-	-
48	50	1.042	-	1.531†	-	2.450†	-	-	4.900	-	-	-	-	-
72	75	1.042	-	2.297†	-	3.675†	-	-	7.350†	-	-	-	-	-
23	24	1.043	-	-	.979†	1.175†	1.469†	1.958†	-	-	-	-	-	-
22	23	1.045	-	-	.938†	1.125†	1.406†	1.875†	-	-	-	-	-	-
21	22	1.048	-	-	.896†	1.075†	1.344†	1.792†	2.150†	2.688†	-	-	-	-
42	44	1.048	-	-	1.792†	-	3.583†	-	-	5.375†	-	-	10.750†	-
20	21	1.050	-	-	.854†	1.025†	1.281†	1.708	2.050†	2.563†	3.417†	-	-	6.833†
40	42	1.050	-	-	1.708†	-	-	3.417†	4.100†	5.125†	6.833†	-	10.250†	-
80	84	1.050	1.708†	-	-	4.100	5.125†	-	8.200†	10.250†	-	-	20.500†	-
19	20	1.053	-	-	.813†	.975†	1.219†	1.625†	1.950†	2.438†	-	-	-	-
38	40	1.053	-	-	-	-	2.438†	3.250†	3.900†	-	-	-	-	-
76	80	1.053	-	-	-	-	-	-	9.750†	-	-	-	-	-
18	19	1.056	-	-	.771†	.925†	1.156†	1.542†	1.850†	2.313†	-	-	-	-
36	38	1.056	-	-	-	-	2.313†	3.083†	3.700†	-	-	-	-	-
72	76	1.056	-	-	-	-	-	-	-	9.250†	-	-	-	-
17	18	1.059	-	-	.729†	.875†	1.094†	1.458†	1.750†	2.188†	-	-	-	-
34	36	1.059	-	-	-	-	2.188†	2.917†	-	-	-	-	-	-
68	72	1.059	-	-	-	-	4.375†	-	-	8.750†	-	-	-	-
66	70	1.061	-	-	2.833†	-	-	-	-	-	-	-	-	-
16	17	1.063	-	-	.688†	.825†	1.031†	1.375†	1.650†	2.063†	-	-	-	-
32	34	1.063	-	-	-	-	2.063†	2.750†	-	-	-	-	-	-
64	68	1.063	-	-	-	-	4.125†	-	-	8.250†	-	-	-	-

† = 14 1/2° * = 20° only.



See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes.

1.067-
1.158
RATIO

TABLE No. 1

RATIO AND CENTER DISTANCE - SPUR GEARS

GEAR COMBINATIONS NO. TEETH		RATIO	CENTER DISTANCE											
DRIVER	DRIVEN		DIAMETRAL PITCH											
			48	32	24	20	16	12	10	8	6	5	4	3
15	16	1.067	.323†	.484†	.646†	.775	.969	1.292	1.550	1.938	2.583	3.100	3.875	5.167†
30	32	1.067	-	.969†	1.292†	1.550†	1.938	2.583†	3.100†	3.875†	5.167†	-	7.750†	-
45	48	1.067	-	-	1.938†	2.325†	-	-	4.650	-	-	-	-	-
60	64	1.067	-	1.938†	2.583†	3.100†	3.875	5.167†	6.200†	7.750	10.333†	-	15.500	-
75	80	1.067	-	2.422†	-	3.875†	-	-	7.750†	-	-	-	-	-
14	15	1.071	.302†	.453†	.604†	.725	.906	1.208	1.450	1.813	2.417	2.900	3.625	4.833†
28	30	1.071	-	.906†	1.208†	1.450†	1.813	2.417	2.900	3.625†	-	5.800*	7.250†	-
42	45	1.071	-	-	1.813†	-	-	-	4.350†	-	-	-	-	-
56	60	1.071	1.208†	1.813†	2.417†	-	3.625	4.833†	-	7.250	-	-	14.500	-
70	75	1.071	-	2.266†	-	3.625†	-	-	7.250†	-	-	-	-	-
13	14	1.077	-	.422†	.563†	.675†	.844†	1.125	1.350†	1.688†	-	-	-	-
26	28	1.077	.563†	.844†	1.125†	-	1.688†	2.250†	2.700†	3.375†	-	-	-	-
39	42	1.077	-	-	1.688†	-	-	-	-	-	-	-	-	-
52	56	1.077	1.125†	1.688†	-	-	3.375†	-	-	6.750†	-	-	-	-
65	70	1.077	-	-	-	-	-	-	6.750†	-	-	-	-	-
78	84	1.077	-	-	-	-	-	6.750†	-	-	-	-	-	-
25	27	1.080	-	-	1.083†	-	-	-	-	-	-	-	-	-
50	54	1.080	-	-	-	-	-	-	5.200†	-	-	-	-	-
12	13	1.083	-	.391†	.521†	.625†	.781†	1.042	1.250†	1.563†	-	-	-	-
24	26	1.083	.521†	.781†	1.042†	-	1.563†	2.083†	2.500†	3.125†	-	-	-	-
36	39	1.083	-	-	1.563†	-	-	-	-	-	-	-	-	-
48	52	1.083	1.042†	1.563†	-	-	3.125†	-	-	6.250†	-	-	-	-
60	65	1.083	-	-	-	-	-	-	6.250†	-	-	-	-	-
72	78	1.083	-	-	-	-	-	6.250†	-	-	-	-	-	-
35	38	1.086	-	-	-	-	-	-	3.650†	-	-	-	-	-
23	25	1.087	-	-	1.000†	1.200†	-	2.000†	-	-	-	-	-	-
11	12	1.091	.204†	.359†	.479†	.600†	.750†	1.000†	1.200†	1.500†	2.000†	2.400†	3.000†	4.000†
22	24	1.091	.479†	.719†	.958†	1.150†	1.438†	1.917†	2.300†	2.875	-	-	5.750†	-
33	36	1.091	-	-	1.438†	-	-	-	-	-	5.750	-	-	-
44	48	1.091	.958†	1.438†	1.917†	-	2.875†	3.833†	-	5.750	-	-	11.500	-
55	60	1.091	-	-	-	2.875†	-	-	5.750	-	-	11.500†	-	-
66	72	1.091	1.438†	-	2.875†	-	-	5.750	-	-	11.500	-	-	-
32	35	1.094	-	-	-	1.675†	-	-	3.350†	-	-	-	-	-
64	70	1.094	-	2.094†	2.792†	3.350†	-	-	6.700†	-	-	-	-	-
21	23	1.095	-	-	.917†	1.100†	1.375†	1.833†	-	-	-	-	-	-
20	22	1.100	.438†	.656†	.875†	1.050†	1.313†	1.750†	2.100†	2.625	-	-	5.250†	-
30	33	1.100	-	-	1.313†	-	-	-	-	5.250	-	-	-	-
40	44	1.100	.875†	1.313†	1.750†	-	2.625†	3.500†	-	5.250	-	-	10.500	-
50	55	1.100	-	-	-	2.625†	-	-	5.250	-	-	10.500†	-	-
60	66	1.100	1.313†	-	2.625†	-	-	5.250	-	-	10.500	-	-	-
19	21	1.105	-	-	.833†	1.000†	1.250†	1.667†	2.000†	2.500†	-	-	-	-
38	42	1.105	-	-	-	-	-	3.333†	4.000†	-	-	-	-	-
76	84	1.105	-	-	-	-	-	-	-	10.000†	-	-	-	-
65	72	1.108	-	-	-	-	-	-	6.850†	-	-	-	-	-
18	20	1.111	.396†	.594†	.792†	.950	1.188	1.583	1.900	2.375	3.167†	3.800	4.750	6.333†
27	30	1.111	-	-	1.188†	-	-	-	-	4.750	-	-	-	-
36	40	1.111	.792†	1.188†	1.583†	1.900†	2.375	3.167†	3.800†	4.750	6.333†	-	9.500	-
45	50	1.111	-	-	-	2.375	-	-	4.750	-	-	9.500	-	-
54	60	1.111	1.188†	-	2.375†	-	3.563†	4.750	5.700†	7.125†	9.500	-	14.250†	19.000†
72	80	1.111	1.583†	2.375†	-	3.800†	4.750	-	7.600†	9.500	-	-	19.000	-
17	19	1.118	-	-	.750†	.900†	1.125†	1.500†	1.800†	2.250†	-	-	-	-
34	38	1.118	-	-	-	-	2.250†	3.000†	-	-	-	-	-	-
68	76	1.118	-	-	-	-	-	-	-	9.000†	-	-	-	-
25	28	1.120	-	.828†	1.104†	1.325†	-	2.208†	2.650	-	-	5.300*	-	-
50	56	1.120	-	1.656†	-	-	-	-	-	-	-	-	-	-
75	84	1.120	-	-	-	3.975†	-	-	7.950†	-	-	-	-	-
16	18	1.125	.354†	.531†	.708†	.850	1.063	1.417	1.700	2.125	2.833	3.400	4.250	5.667†
24	27	1.125	-	-	1.063†	-	-	-	-	4.250	-	-	-	-
32	36	1.125	.708†	1.063†	1.417†	1.700†	2.125	2.833†	3.400†	4.250	5.667†	-	8.500	-
40	45	1.125	-	-	1.771†	2.125	-	-	4.250	-	-	8.500	-	-
48	54	1.125	1.063†	-	2.125†	-	3.188†	4.250	5.100†	6.375†	8.500	-	12.750†	17.000†
64	72	1.125	-	2.125†	-	3.400†	4.250	5.667†	6.800†	8.500	11.333†	-	17.000	-
39	44	1.128	-	-	1.729†	-	-	-	-	-	-	-	-	-
23	26	1.130	-	-	1.021†	-	1.531†	2.042†	-	-	-	-	-	-
15	17	1.133	-	-	.667†	.800†	1.000†	1.333†	1.600†	2.000†	-	-	-	-
30	34	1.133	-	-	-	-	2.000†	2.667†	-	-	-	-	-	-
60	68	1.133	-	-	-	-	4.000†	-	-	8.000†	-	-	-	-
22	25	1.136	-	.734†	.979†	1.175†	-	1.958†	2.350†	-	-	-	-	-
44	50	1.136	-	1.469†	-	-	-	-	-	-	-	-	-	-
14	16	1.143	.313†	.469†	.625†	.750	.938	1.250	1.500	1.875	2.500	3.000	3.750	5.000†
21	24	1.143	-	-	.938†	1.125†	1.406†	1.875	2.250†	2.813†	3.750	-	7.500†	-
28	32	1.143	.625†	.938†	1.250†	1.500†	1.875	2.500†	3.000†	3.750	-	7.500	-	-
35	40	1.143	-	-	-	1.875	-	-	3.750	-	-	-	-	-
42	48	1.143	-	-	1.875†	-	-	3.750	4.500†	5.625†	7.500	-	11.250†	15.000†
56	64	1.143	-	-	2.500†	-	3.750	5.000†	-	7.500	-	-	15.000	-
70	80	1.143	-	2.344†	-	3.750	-	-	7.500	-	-	15.000	-	-
48	55	1.146	-	-	-	2.575†	-	-	5.150	-	-	-	-	-
20	23	1.150	-	-	.896†	1.075†	1.344†	1.792†	-	-	-	-	-	-
13	15	1.154	-	.438†	.583†	.700†	.875†	1.167	1.400†	1.750†	-	-	-	-
26	30	1.154	-	.875†	1.167†	-	1.750†	2.333†	2.800†	3.500†	-	-	-	-
39	45	1.154	-	-	1.750†	-	-	-	-	-	-	-	-	-
52	60	1.154	1.167†	1.750†	-	-	3.500*	-	-	7.000†	-	-	-	-
65	75	1.154	-	-	-	-	-	-	-	-	-	-	-	-
19	22	1.158	-	-	.854†	1.025†	1.281†	1.708†	2.050†	2.563†	-	-	-	-
38	44	1.158	-	-	-	-	2.563†	3.417†	-	-	-	-	-	-

† = 14 1/2° only * = 20° only.



See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes.

TABLE No. 1

RATIO AND CENTER DISTANCE - SPUR GEARS

1.164-
1.267
RATIO

GEAR COMBINATIONS		RATIO	CENTER DISTANCE											
No. TEETH			DIAMETRAL PITCH											
DRIVER	DRIVEN		48	32	24	20	16	12	10	8	6	5	4	3
55	64	1.164	-	-	-	2.975†	-	-	5.950†	-	-	-	-	-
12	14	1.167	.271†	.406†	.542†	.650	.813	1.083	1.300	1.625	2.167	2.600	3.250	4.333†
18	21	1.167	-	-	.813†	.975†	1.219†	1.625	1.950†	2.438†	3.250	-	-	6.500†
24	28	1.167	.542†	.813†	1.083†	1.300†	1.625	2.167	2.600	3.250	-	5.200*	6.500	-
30	35	1.167	-	-	-	1.625	-	-	3.250	-	-	6.500	-	-
36	42	1.167	-	-	1.625†	-	-	3.250	3.900†	4.875†	6.500	-	9.750†	13.000†
48	56	1.167	1.083†	1.625†	2.166†	-	3.250	4.333†	-	6.500	-	-	13.000	-
60	70	1.167	-	2.031†	2.708†	3.250	-	-	6.500	-	-	13.000	-	-
72	84	1.167	1.625†	-	3.250†	3.900†	4.875†	6.500	7.800†	9.750†	13.000	-	19.500†	26.000†
64	75	1.172	-	2.172†	-	3.475†	-	-	6.950†	-	-	-	-	-
23	27	1.174	-	-	1.042†	-	-	-	-	-	-	-	-	-
17	20	1.176	-	-	.771†	.925†	1.156†	1.542†	1.850†	2.313†	-	-	-	-
34	40	1.176	-	-	-	-	2.313†	3.083†	-	-	-	-	-	-
68	80	1.176	-	-	-	-	4.625†	-	-	9.250†	-	-	-	-
28	33	1.179	-	-	1.271†	-	-	-	-	-	-	-	-	-
56	66	1.179	1.271†	-	2.542†	-	-	5.083†	-	-	-	-	-	-
11	13	1.182	-	.375†	.500†	.625†	.781†	1.042†	1.250†	1.563†	-	-	-	-
22	26	1.182	.500†	.750†	1.000†	-	1.500†	2.000†	2.400†	3.00†	-	-	-	-
33	39	1.182	-	-	1.500†	-	-	-	-	-	-	-	-	-
44	52	1.182	1.000†	1.500†	-	-	3.000†	-	-	6.000†	-	-	-	-
55	65	1.182	-	-	-	-	-	-	6.000†	-	-	-	-	-
66	78	1.182	-	-	-	-	-	6.000†	-	-	-	-	-	-
38	45	1.184	-	-	-	-	-	-	4.150†	-	-	-	-	-
27	32	1.185	-	-	1.229†	-	-	-	-	-	4.917†	-	-	-
54	64	1.185	-	-	2.458†	-	3.688†	4.917†	5.900†	7.375†	9.833†	-	14.750†	-
16	19	1.188	-	-	.729†	.875†	1.094†	1.458†	1.750†	2.188†	-	-	-	-
32	38	1.188	-	-	-	-	2.188†	2.917†	3.500†	-	-	-	-	-
64	76	1.188	-	-	-	-	-	-	-	8.750†	-	-	-	-
21	25	1.190	-	-	.958†	1.150†	-	1.917†	2.300†	-	-	-	-	-
42	50	1.190	-	-	-	-	-	-	4.600†	-	-	-	-	-
15	18	1.200	.344†	.516†	.688†	.825	1.031	1.375	1.650	2.063	2.750	3.300	4.125	5.500†
20	24	1.200	.458†	.688†	.917†	1.100	1.375	1.833	2.200	2.750	3.667†	4.400	5.500	7.333†
25	30	1.200	-	.859†	1.146†	1.375	-	2.292†	2.750	-	-	5.500	-	-
30	36	1.200	-	1.031†	1.375†	1.650†	2.063	2.750	3.300†	4.125†	5.500	-	8.250†	11.000†
35	42	1.200	-	-	-	-	-	-	3.850†	-	-	-	-	-
40	48	1.200	.917†	1.375†	1.833†	2.200†	2.750	3.667†	4.400	5.500	7.333†	-	11.000	-
45	54	1.200	-	-	2.063†	-	-	-	4.950†	-	-	-	-	-
50	60	1.200	-	1.719†	-	2.750	-	-	5.500	-	-	11.000	-	-
60	72	1.200	1.375†	2.063†	2.750†	3.300†	4.125	5.500	6.600†	8.250	11.000	-	16.500	22.000†
70	84	1.200	-	-	3.208†	3.850	-	-	7.700†	-	-	-	-	-
54	65	1.204	-	-	-	-	-	-	5.950†	-	-	-	-	-
19	23	1.211	-	-	.875†	1.050†	1.313†	1.750†	-	-	-	-	-	-
33	40	1.212	-	-	1.521†	-	-	-	-	-	6.083†	-	-	-
66	80	1.212	1.521†	-	-	-	-	-	-	-	-	-	-	-
14	17	1.214	-	-	.646†	.775†	.969†	1.292†	1.550†	1.938†	-	-	-	-
28	34	1.214	-	-	-	-	1.938†	2.583†	-	-	-	-	-	-
56	68	1.214	-	-	-	-	3.875†	-	-	7.750†	-	-	-	-
23	28	1.217	-	-	1.063†	1.275†	-	-	-	-	-	-	-	-
32	39	1.219	-	-	1.479†	-	1.594†	2.125†	-	-	-	-	-	-
64	78	1.219	-	-	-	-	-	5.917†	-	-	-	-	-	-
18	22	1.222	.417†	.625†	.833†	1.000†	1.250†	1.667†	2.000†	2.500	-	-	5.000†	-
27	33	1.222	-	-	1.250†	-	-	-	-	5.000	-	-	-	-
36	44	1.222	.833†	1.250†	1.667†	-	2.500†	3.333†	-	5.000	-	-	10.000	-
45	55	1.222	-	-	-	2.500†	-	-	5.000	-	-	10.000†	-	-
54	66	1.222	1.250†	-	2.500†	-	-	5.000	-	-	10.000	-	-	-
22	27	1.227	-	-	1.021†	-	-	-	-	-	-	-	-	-
44	54	1.227	1.021†	-	2.042†	-	3.063†	4.083†	-	6.125†	-	-	12.250†	-
13	16	1.231	-	.453†	.604†	.725†	.906†	1.208	1.450†	1.813†	-	-	-	-
26	32	1.231	.604†	.906†	1.208†	-	1.813†	2.417†	2.900†	3.625†	-	-	-	-
39	48	1.231	-	-	1.813†	-	-	-	-	-	-	-	-	-
52	64	1.231	-	1.813†	-	-	3.625†	-	-	7.250†	-	-	-	-
65	80	1.231	-	-	-	-	-	-	7.250†	-	-	-	-	-
17	21	1.235	-	-	.792†	.950†	1.188†	1.583†	1.900†	2.375†	-	-	-	-
34	42	1.235	-	-	-	-	-	3.167†	-	-	-	-	-	-
68	84	1.235	-	-	-	-	4.750†	-	-	9.500†	-	-	-	-
21	26	1.238	-	-	.979†	-	1.469†	1.958†	2.350†	2.938†	-	-	-	-
42	52	1.238	-	-	-	-	-	-	-	5.875†	-	-	-	-
45	56	1.244	-	-	2.104†	-	-	-	-	-	-	-	-	-
12	15	1.250	.281†	.422†	.563†	.675	.844	1.125	1.350	1.688	2.2500	2.700	3.376	4.500†
16	20	1.250	.375†	.563†	.750†	.900	1.125	1.500	1.800	2.250	3.000†	3.600	4.500	6.000†
20	25	1.250	-	.703†	.938†	1.125	-	1.875†	2.250	-	-	4.500	-	-
24	30	1.250	-	.844†	1.125†	1.350	1.688	2.250	2.700	3.375†	4.500	-	6.750†	9.000†
28	35	1.250	-	-	1.575†	-	-	3.150	-	-	-	6.300*	-	-
32	40	1.250	.750†	1.125†	1.500†	1.800†	2.250	3.000†	3.600†	4.500	6.000†	-	9.000	-
36	45	1.250	-	-	1.688†	2.025†	-	-	4.050†	-	-	-	-	-
40	50	1.250	-	1.406†	-	2.250	-	-	4.500	-	-	9.000	-	-
48	60	1.250	1.125	1.688†	2.250†	2.700†	3.375	4.500	5.400	6.750	9.000	-	13.500	18.000†
56	70	1.250	-	1.969†	2.625†	-	-	-	-	-	-	-	-	-
60	75	1.250	-	2.109†	-	3.375†	-	-	6.750†	-	-	-	-	-
64	80	1.250	-	2.250†	-	3.600†	4.500	-	7.200†	9.000	-	-	18.000	-
54	68	1.259	-	-	-	-	3.813†	-	-	7.625†	-	-	-	-
19	24	1.263	-	-	.896†	1.075†	1.344†	1.792†	2.150†	2.688†	-	-	-	-
38	48	1.263	-	-	-	-	2.688†	3.583†	4.300†	-	-	-	-	-
15	19	1.267	-	-	.708†	.850†	1.063†	1.417†	1.700†	2.125†	-	-	-	-
30	38	1.267	-	-	-	-	2.125†	2.833†	3.400†	-	-	-	-	-

† = 14 1/2° only * = 20° only.



See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes.

1.267-
1.391
RATIO

TABLE No. 1

RATIO AND CENTER DISTANCE - SPUR GEARS

GEAR COMBINATIONS No. TEETH		RATIO	CENTER DISTANCE											
DRIVER	DRIVEN		DIAMETRAL PITCH											
			48	32	24	20	16	12	10	8	6	5	4	3
60	76	1.267	-	-	-	-	-	-	-	8.500†	-	-	-	-
26	33	1.269	-	-	-	-	-	-	-	-	-	-	-	-
52	66	1.269	1.229†	-	-	-	-	-	-	-	-	-	-	-
11	14	1.273	.260†	.391†	.521†	.650†	.813†	1.083†	1.300†	1.625†	2.167†	2.600†	3.250†	4.333†
22	28	1.273	.521†	.781†	1.042†	1.250†	1.563†	2.083†	2.500†	3.125	-	-	6.250†	-
33	42	1.273	-	-	1.563†	-	-	-	-	-	6.250	-	-	-
44	56	1.273	1.042†	1.563†	2.083†	-	3.125†	4.167†	-	6.250	-	-	12.500†	-
55	70	1.273	-	-	-	3.125†	-	-	6.250	-	-	12.500†	-	-
66	84	1.273	1.563†	-	3.125†	-	-	6.250	-	-	12.500	-	-	-
18	23	1.278	-	-	.854†	1.025†	1.281†	1.708†	-	-	-	-	-	-
25	32	1.280	-	.891†	1.188†	1.425†	-	2.375†	2.850†	-	-	-	-	-
50	64	1.280	-	1.781†	-	2.850†	-	-	5.700†	-	-	-	-	-
14	18	1.286	.333†	.500†	.667†	.800	1.000	1.333	1.600	2.000	2.667	3.200	4.000	5.333†
21	27	1.286	-	-	1.000†	-	-	-	-	4.000	-	-	-	-
28	36	1.286	.667†	1.000†	1.333†	1.600†	2.000	2.667	3.200†	4.000	-	-	8.000	-
35	45	1.286	-	-	-	2.000	-	-	4.000	-	-	8.000	-	-
42	54	1.286	-	-	2.000†	-	-	4.000	4.800†	6.000†	8.000	-	12.000†	16.000†
56	72	1.286	1.333†	2.000†	2.667†	-	4.000	5.333†	-	8.000	-	-	16.000	-
65	84	1.292	-	-	-	-	-	-	7.450†	-	-	-	-	-
17	22	1.294	-	-	.813†	.975†	1.219†	1.625†	1.950†	2.438†	-	-	-	-
34	44	1.294	-	-	-	-	2.438†	3.250†	-	-	-	-	-	-
54	70	1.296	-	-	2.583†	-	-	-	6.200†	-	-	-	-	-
20	26	1.300	.479†	.719†	.958†	-	1.438†	1.917†	2.300†	2.875†	-	-	-	-
30	39	1.300	-	-	1.438†	-	-	-	-	-	-	-	-	-
40	52	1.300	.958†	1.438†	-	-	2.875†	-	-	5.750†	-	-	-	-
50	65	1.300	-	-	-	-	-	-	5.750†	-	-	-	-	-
60	78	1.300	-	-	-	-	-	5.750†	-	-	-	-	-	-
23	30	1.304	-	-	1.104†	1.325†	1.656†	2.208†	-	-	-	-	-	-
13	17	1.308	-	-	.625†	.750†	.938†	1.250†	1.500†	1.875†	-	-	-	-
26	34	1.308	-	-	-	-	1.875†	2.500†	-	-	-	-	-	-
52	68	1.308	-	-	-	-	3.750†	-	-	7.500†	-	-	-	-
55	72	1.309	-	-	-	3.175†	-	-	6.350†	-	-	-	-	-
42	55	1.310	-	-	-	-	-	-	4.850†	-	-	-	-	-
16	21	1.313	-	-	.771†	.925†	1.156†	1.542	1.850†	2.313†	3.083	-	-	6.167†
32	42	1.313	-	-	1.542†	-	-	3.083†	3.700†	4.625†	6.167†	-	9.250†	-
64	84	1.313	-	-	3.083†	3.700†	4.625†	6.167†	7.400†	9.250†	12.333†	-	18.500†	-
19	25	1.316	-	-	.917†	1.100†	-	1.833†	2.200†	-	-	-	-	-
38	50	1.316	-	-	-	-	-	-	4.400†	-	-	-	-	-
25	33	1.320	-	-	1.208†	-	-	-	-	-	-	-	-	-
12	16	1.333	.292†	.438†	.583†	.700	.875	1.167	1.400	1.750	2.333	2.800	3.500	4.667†
15	20	1.333	.365†	.547†	.729†	.875	1.094	1.458	1.750	2.188	2.917†	3.500	4.375	5.833†
18	24	1.333	.438†	.656†	.875†	1.050	1.313	1.750	2.100	2.625	3.500	4.200	5.250	7.000†
21	28	1.333	-	-	1.021†	1.225†	1.531†	2.042	2.450†	3.063†	-	-	-	-
24	32	1.333	.583†	.875†	1.167†	1.400†	1.750	2.333†	2.800†	3.500	4.667†	-	7.000	-
27	36	1.333	-	-	1.313†	-	-	-	-	5.250	5.250	-	-	-
30	40	1.333	-	1.094†	1.458†	1.750	2.188	2.197†	3.500	4.375†	5.833†	7.000	8.750†	-
33	44	1.333	-	-	1.604†	-	-	-	-	-	-	-	-	-
36	48	1.333	.875†	1.313†	1.750†	2.100†	2.625	3.500	4.200†	5.250	7.000	-	10.500	14.000†
42	56	1.333	-	-	2.042†	-	-	4.083†	-	6.125†	-	-	12.250†	-
45	60	1.333	-	-	2.188†	2.625	-	-	5.250	-	-	10.500	-	-
48	64	1.333	-	1.750†	2.333†	2.800†	3.500	4.667†	5.600†	7.000	9.333†	-	14.000	-
54	72	1.333	1.313†	-	2.625†	-	3.938†	5.250	6.300†	7.875†	10.500	-	15.750†	21.000†
60	80	1.333	1.458†	2.188†	-	3.500	4.375	-	7.000	8.750	-	14.000	17.500	-
56	75	1.339	-	2.047†	-	-	-	-	-	-	-	-	-	-
26	35	1.346	-	-	-	-	-	-	3.050†	-	-	-	-	-
52	70	1.346	-	1.906†	-	-	-	-	-	-	-	-	-	-
20	27	1.350	-	-	.979†	-	-	-	-	-	3.917†	-	-	-
40	54	1.350	.979†	-	1.958†	-	2.938†	3.917†	4.700†	5.875†	7.833†	-	11.750†	-
17	23	1.353	-	-	.833†	1.000†	1.250†	1.667†	-	-	-	-	-	-
48	65	1.354	-	-	-	-	-	-	5.650†	-	-	-	-	-
14	19	1.357	-	-	.688†	.825†	1.031†	1.375†	1.650†	2.063†	-	-	-	-
28	38	1.357	-	-	-	-	2.063†	2.750†	3.300†	-	-	-	-	-
56	76	1.357	-	-	-	-	-	-	-	8.250†	-	-	-	-
25	34	1.360	-	-	-	-	-	2.458†	-	-	-	-	-	-
11	15	1.364	.271†	.406†	.542†	.675†	.844†	1.125†	1.350†	1.688†	2.250†	2.700†	3.375†	4.500†
22	30	1.364	-	.813†	1.083†	1.300†	1.625†	2.167†	2.600†	3.250†	-	-	6.500†	-
33	45	1.364	-	-	1.625†	-	-	-	-	-	-	-	-	-
44	60	1.364	1.083†	1.625†	2.167†	-	3.250†	4.333†	-	6.500	-	-	13.000	-
55	75	1.364	-	-	-	3.250†	-	-	6.500†	-	-	-	-	-
19	26	1.368	-	-	.938†	-	1.406†	1.875†	2.250†	2.813†	-	-	-	-
38	52	1.368	-	-	-	-	2.813†	-	-	-	-	-	-	-
35	48	1.371	-	-	-	2.075†	-	-	4.150	-	-	-	-	-
16	22	1.375	.396†	.594†	.792†	.950†	1.188†	1.583†	1.900†	2.375	-	-	4.750†	-
24	33	1.375	-	-	1.188†	-	-	-	-	-	4.750	-	-	-
32	44	1.375	.792†	1.188†	1.583†	-	2.375†	3.167†	-	4.750	-	-	9.500	-
40	55	1.375	-	-	-	2.375†	-	-	4.750	-	-	9.500†	-	-
48	66	1.375	1.188†	-	2.375†	-	-	4.750	-	9.500	-	-	-	-
13	18	1.385	-	.484†	.646†	.775†	.969†	1.292	1.550†	1.938†	-	-	-	-
26	36	1.385	.646†	.969†	1.292†	-	1.938†	2.583†	3.100†	3.875†	-	-	-	-
39	54	1.385	-	-	1.938†	-	-	-	-	-	-	-	-	-
52	72	1.385	1.292†	1.938†	-	-	3.875†	-	7.750†	-	-	-	-	-
18	25	1.389	-	.672†	.896†	1.075	-	1.792†	2.150	-	-	4.300	-	-
36	50	1.389	-	1.344†	-	2.150†	-	-	4.300†	-	-	-	-	-
54	75	1.389	-	-	-	-	-	-	6.450†	-	-	-	-	-
23	32	1.391	-	-	1.146†	1.375†	1.719†	2.292†	-	-	-	-	-	-

† = 14 1/2° only * = 20° only.



See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes.

TABLE No. 1

RATIO AND CENTER DISTANCE - SPUR GEARS

GEAR COMBINATIONS		RATIO	CENTER DISTANCE											
No. TEETH			DIAMETRAL PITCH											
DRIVER	DRIVEN		48	32	24	20	16	12	10	8	6	5	4	3
28	39	1.393	-	-	1.396†	-	-	5.583†	-	-	-	-	-	-
56	78	1.393	-	-	-	-	-	-	-	-	-	-	-	-
15	21	1.400	-	-	.750†	.900†	1.125†	1.500	1.800†	2.250†	3.000	-	-	6.000†
20	28	1.400	.500†	.750†	1.000†	1.200†	1.500	2.000	2.400	3.000	-	4.800*	6.000	-
25	35	1.400	-	-	-	-	-	-	3.000	-	-	-	-	-
30	42	1.400	-	-	1.500†	-	-	3.000	3.600†	4.500†	6.000	-	9.000†	12.000†
40	56	1.400	1.000†	1.500†	2.000†	-	3.000	4.000†	-	6.000	-	-	12.000	-
50	70	1.400	-	1.875†	-	3.000	-	-	6.000	-	-	12.000	-	-
60	84	1.400	1.500†	-	3.000†	3.600	4.500†	6.000	7.200†	9.000†	12.000	-	18.000†	24.000†
32	45	1.406	-	-	1.604†	1.925†	-	-	3.850†	-	-	-	-	-
54	76	1.407	-	-	-	-	-	-	-	8.125†	-	-	-	-
17	24	1.412	-	-	.854†	1.025†	1.281†	1.708†	2.050†	2.563†	-	-	-	-
34	48	1.412	-	-	-	-	2.563†	3.417†	-	-	-	-	-	-
12	17	1.417	-	-	.604†	.725†	.906†	1.208†	1.450†	1.813†	-	-	-	-
24	34	1.417	-	-	-	-	1.813†	2.417†	-	-	-	-	-	-
48	68	1.417	-	-	-	-	3.625†	-	-	7.250†	-	-	-	-
19	27	1.421	-	-	.958†	-	-	-	-	-	-	-	-	-
38	54	1.421	-	-	-	-	2.875†	3.833†	4.600†	-	-	-	-	-
45	64	1.422	-	-	2.271†	2.725†	-	-	5.450†	-	-	-	-	-
14	20	1.429	.354†	.531†	.708†	.850	1.063	1.417	1.700	2.125	2.833†	3.400	4.250	5.667†
21	30	1.429	-	-	1.063†	1.275†	1.594†	2.125	2.550†	3.188†	4.250	-	-	8.500†
28	40	1.429	.708†	1.063†	1.417†	1.700†	2.125	2.833†	3.400	4.250	-	6.800*	8.500	-
35	50	1.429	-	-	-	2.125	-	-	4.250	-	-	8.500	-	-
42	60	1.429	-	-	2.125†	-	-	4.250	5.100†	6.375†	8.500	-	12.750†	17.000†
56	80	1.429	1.417†	2.125†	-	-	4.250	-	-	-	-	-	17.000	-
23	33	1.435	-	-	1.167†	-	-	-	-	-	-	-	-	-
39	56	1.436	-	-	1.979†	-	-	-	-	-	-	-	-	-
16	23	1.438	-	-	.813†	.975†	1.219†	1.625†	-	-	-	-	-	-
25	36	1.440	-	.953†	1.271†	1.525†	-	2.542†	3.050†	-	-	-	-	-
50	72	1.440	-	1.906†	3.050†	-	-	-	6.100†	-	-	-	-	-
52	75	1.442	-	1.984†	-	-	-	-	-	-	-	-	-	-
18	26	1.444	.458†	.688†	.917†	-	1.375†	1.833†	2.200†	2.750†	-	-	-	-
27	39	1.444	-	-	1.375†	-	-	-	-	-	-	-	-	-
36	52	1.444	.917†	1.375†	-	-	2.750†	-	-	5.500†	-	-	-	-
45	65	1.444	-	-	-	-	-	-	5.500†	-	-	-	-	-
54	78	1.444	-	-	-	-	-	5.500†	-	-	-	-	-	-
38	55	1.447	-	-	-	-	-	-	4.650†	-	-	-	-	-
11	16	1.455	.281†	.422†	.563†	.700†	.875†	1.167†	1.400†	1.750†	2.333†	2.800†	3.500†	4.667†
22	32	1.455	.563†	.844†	1.125†	1.350†	1.688†	2.250†	2.700†	3.375	-	-	6.750†	-
33	48	1.455	-	-	1.688†	-	-	-	-	-	6.750	-	-	-
44	64	1.455	-	1.688†	2.250†	-	3.375†	4.500†	-	6.750	-	-	13.500	-
55	80	1.455	-	-	-	3.375†	-	-	6.750	-	-	13.500†	-	-
24	35	1.458	-	-	-	1.475	-	-	2.950	-	-	5.900	-	-
48	70	1.458	-	1.844†	2.458†	2.950†	-	-	5.900	-	-	-	-	-
13	19	1.462	-	-	.667†	.800†	1.000†	1.333†	1.600†	2.000†	-	-	-	-
26	38	1.462	-	-	-	-	2.000†	2.667†	3.200†	-	-	-	-	-
52	76	1.462	-	-	-	-	-	-	-	8.000†	-	-	-	-
15	22	1.467	.385†	.578†	.771†	.925†	1.156†	1.542†	1.850†	2.313	-	-	4.625†	-
30	44	1.467	-	1.156†	1.542†	-	2.313†	3.083†	-	4.625†	-	-	9.250†	-
45	66	1.467	-	-	2.313†	-	-	-	-	-	-	-	-	-
17	25	1.471	-	-	.875†	1.050†	-	1.750†	2.100†	-	-	-	-	-
19	28	1.474	-	-	.979†	1.175†	-	1.958†	2.350†	2.938†	-	-	-	-
38	56	1.474	-	-	-	-	2.938†	3.917†	-	-	-	-	-	-
23	34	1.478	-	-	-	-	1.781†	2.375†	-	-	-	-	-	-
27	40	1.481	-	-	1.396†	-	-	-	-	-	5.583†	-	-	-
54	80	1.481	1.396†	-	-	-	4.188†	-	6.700†	8.375†	-	-	16.750†	-
12	18	1.500	.313†	.469†	.625†	.750	.938	1.250	1.500	1.875	2.500	3.000	3.750	5.000†
14	21	1.500	-	-	.729†	.875†	1.094†	1.458	1.750†	2.188†	-	-	-	5.833†
16	24	1.500	.417†	.625†	.833†	1.000	1.250	1.667	2.000	2.500	3.333	4.000	5.000	6.667†
18	27	1.500	-	-	.938†	-	-	-	-	-	3.750	-	-	-
20	30	1.500	-	.781†	1.042†	1.250	1.563	2.083	2.500	3.125†	4.167†	5.000	6.250†	8.333†
22	33	1.500	-	-	1.146†	-	-	-	-	-	-	-	-	-
24	36	1.500	.625†	.938†	1.250†	1.500†	1.875	2.500	3.000†	3.750	5.000	-	7.500	10.000†
26	39	1.500	-	-	1.354†	-	-	-	-	-	-	-	-	-
28	42	1.500	-	-	1.458†	-	-	2.917	3.500†	4.375†	-	-	8.750†	-
30	45	1.500	-	-	1.563†	1.875	-	-	3.750	-	-	7.500	-	-
32	48	1.500	.833†	1.250†	1.667†	2.000†	2.500	3.333†	4.000†	5.000	6.667†	-	10.000	-
36	54	1.500	.938†	-	1.875†	-	2.813†	3.750	4.500†	5.625†	7.500	-	11.250†	15.000†
40	60	1.500	1.042†	1.563†	2.083†	2.500	3.125	4.167†	5.000	6.250	8.333†	10.000	12.500	-
44	66	1.500	1.146†	-	2.292†	-	-	4.583†	-	-	-	-	-	-
48	72	1.500	1.250†	1.875†	2.500†	3.000†	3.750	5.000	6.000†	7.500	10.000	-	15.000	20.000†
50	75	1.500	-	1.953†	-	3.125†	-	-	6.250†	-	-	-	-	-
56	84	1.500	1.458†	-	2.917†	-	4.375†	5.833†	-	8.750†	-	-	17.500†	-
25	38	1.520	-	-	-	-	-	2.625†	3.150†	-	-	-	-	-
23	35	1.522	-	-	-	1.450†	-	-	-	-	-	-	-	-
21	32	1.524	-	-	1.104†	1.325†	1.656†	2.208†	2.650†	3.313†	4.417†	-	-	-
42	64	1.524	-	-	2.208†	-	-	4.417†	5.300†	6.625†	8.833†	-	13.250†	-
55	84	1.527	-	-	-	3.475†	-	-	6.950†	-	-	-	-	-
36	55	1.528	-	-	-	2.275†	-	-	4.550†	-	-	-	-	-
17	26	1.529	-	-	.896†	-	1.344†	1.792†	2.150†	2.688†	-	-	-	-
34	52	1.529	-	-	-	-	2.688†	-	-	-	-	-	-	-
15	23	1.533	-	-	.792†	.950†	1.188†	1.583†	-	-	-	-	-	-
13	20	1.538	-	.516†	.688†	.825†	1.031†	1.375	1.650†	2.063†	-	-	-	-
26	40	1.538	.688†	1.031†	1.375†	-	2.063†	2.750†	3.300†	4.125†	-	-	-	-
39	60	1.538	-	-	2.063†	-	-	-	-	-	-	-	-	-

† = 14 1/2° only * = 20° only.

⚠ WARNING

See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes.

1.538-
1.704
RATIO

TABLE No. 1

RATIO AND CENTER DISTANCE - SPUR GEARS

GEAR COMBINATIONS		RATIO	CENTER DISTANCE											
No. TEETH			DIAMETRAL PITCH											
DRIVER	DRIVEN		48	32	24	20	16	12	10	8	6	5	4	3
52	80	1.538	1.375†	2.063†	-	-	4.125†	-	-	8.250†	-	-	-	-
35	54	1.543	-	-	-	-	-	-	4.450†	-	-	-	-	-
11	17	1.545	-	-	.583†	.725†	.906†	1.208†	1.450†	1.813†	-	-	-	-
22	34	1.545	-	-	-	-	-	1.750†	2.333†	-	-	-	-	-
44	68	1.545	-	-	-	-	-	3.500†	-	7.000†	-	-	-	-
42	65	1.548	-	-	-	-	-	-	5.350†	-	-	-	-	-
18	28	1.556	.479†	.719†	.958†	1.150†	1.438	1.917	2.300	2.875	-	4.600*	5.750	-
27	42	1.556	-	-	1.438†	-	-	-	-	-	5.750	-	-	-
36	56	1.556	.958†	1.438†	1.917†	-	2.875	3.833†	-	5.750	-	-	11.500	-
45	70	1.556	-	-	2.396†	2.875	-	-	5.750	-	-	11.500	-	-
54	84	1.556	1.438†	-	2.875†	-	4.313†	5.750	6.900†	8.625†	11.500	-	17.250†	23.000†
25	39	1.560	-	-	1.333†	-	-	-	-	-	-	-	-	-
16	25	1.563	-	.641†	.854†	1.025	-	1.708†	2.050	-	-	4.100	-	-
32	50	1.563	-	1.281†	-	2.050†	-	-	4.100†	-	-	-	-	-
48	75	1.563	-	1.922†	-	3.075†	-	-	6.150†	-	-	-	-	-
23	36	1.565	-	-	1.229†	1.475†	1.844†	2.458†	-	-	-	-	-	-
14	22	1.571	.375†	.563†	.750†	.900†	1.125†	1.500†	1.800†	2.250	-	-	4.500†	-
21	33	1.571	-	-	1.125†	-	-	-	-	-	4.500	-	-	-
28	44	1.571	.750†	1.125†	1.500†	-	2.250†	3.000†	-	4.500	-	-	9.000	-
35	55	1.571	-	-	-	2.250†	-	-	4.500	-	-	9.000†	-	-
42	66	1.571	-	-	2.250†	-	-	4.500	-	-	-	-	-	-
19	30	1.579	-	-	1.021†	1.225†	1.531†	2.042†	2.450†	3.063†	-	-	-	-
38	60	1.579	-	-	-	-	3.063†	4.083†	4.900†	-	-	-	-	-
12	19	1.583	-	-	.646†	.775†	.969†	1.292†	1.550†	1.938†	-	-	-	-
24	38	1.583	-	-	-	-	1.938†	2.583†	3.100†	-	-	-	-	-
48	76	1.583	-	-	-	-	-	-	-	7.750†	-	-	-	-
17	27	1.588	-	-	.917†	-	-	-	-	-	-	-	-	-
34	54	1.588	-	-	-	-	2.750†	3.667†	-	-	-	-	-	-
22	35	1.591	-	-	-	1.425†	-	-	2.850†	-	-	-	-	-
44	70	1.591	-	1.781†	2.375†	-	-	-	-	-	-	-	-	-
15	24	1.600	.406†	.609†	.813†	.975	1.219	1.625	1.950	2.438	3.250	3.900	4.875	6.500†
20	32	1.600	.542†	.813†	1.083†	1.300†	1.625	2.167†	2.600†	3.250	4.333†	-	6.500	-
25	40	1.600	-	1.016†	1.354†	1.625	-	2.708†	3.250	-	-	6.500	-	-
30	48	1.600	-	1.219†	1.625†	1.950†	2.438	3.250	3.900	4.875†	6.500	-	9.750†	13.000†
40	64	1.600	-	1.625†	2.167†	2.600†	3.250	4.333†	5.200†	6.500	8.667†	-	13.000	-
45	72	1.600	-	-	2.438†	2.925†	-	-	5.850†	-	-	-	-	-
50	80	1.600	-	2.031†	-	3.250	-	-	6.500	-	-	13.000	-	-
28	45	1.607	-	-	1.521†	1.825†	-	-	3.650	-	-	-	-	-
13	21	1.615	-	-	.708†	.850†	1.063†	1.417	1.700†	2.125†	-	-	-	-
26	42	1.615	-	-	1.417†	-	-	2.833†	3.400†	4.250†	-	-	-	-
52	84	1.615	1.417†	-	-	-	4.250†	-	-	8.500†	-	-	-	-
21	34	1.619	-	-	-	-	1.719†	2.292†	-	-	-	-	-	-
42	68	1.619	-	-	-	-	-	-	-	6.875†	-	-	-	-
16	26	1.625	.438†	.656†	.875†	-	1.313†	1.750†	2.100†	2.625†	-	-	-	-
24	39	1.625	-	-	1.313†	-	-	-	-	-	-	-	-	-
32	52	1.625	.875†	1.313†	-	-	2.625†	-	-	5.250†	-	-	-	-
40	65	1.625	-	-	-	-	-	-	5.250†	-	-	-	-	-
48	78	1.625	-	-	-	-	-	5.250†	-	-	-	-	-	-
27	44	1.630	-	-	1.479†	-	-	-	-	-	-	-	-	-
11	18	1.636	.302†	.453†	.604†	.750†	.938†	1.250†	1.500†	1.875†	2.500†	3.000†	3.750†	5.000†
22	36	1.636	.604†	.906†	1.208†	1.450†	1.813†	2.417†	2.900†	3.625	-	-	7.250†	-
33	54	1.636	-	-	1.813†	-	-	-	-	7.250	-	-	-	-
44	72	1.636	1.208†	1.813†	2.417†	-	3.625†	4.833†	-	7.250	-	-	14.500	-
39	64	1.641	-	-	2.146†	-	-	-	-	-	-	-	-	-
14	23	1.643	-	-	.771†	.925†	1.156†	1.542†	-	-	-	-	-	-
17	28	1.647	-	-	.938†	1.125†	1.406†	1.875†	2.250†	2.813†	-	-	-	-
34	56	1.647	-	-	-	-	2.813†	3.750†	-	-	-	-	-	-
20	33	1.650	-	-	1.104†	-	-	-	-	-	4.417†	-	-	-
40	66	1.650	1.104†	-	2.208†	-	-	4.417†	-	8.833†	-	-	-	-
23	38	1.652	-	-	-	-	1.906†	2.542†	-	-	-	-	-	-
12	20	1.667	.333†	.500†	.667†	.800	1.000	1.333	1.600	2.000	2.667†	3.200	4.000	5.333†
15	25	1.667	-	.625†	.833†	1.000	-	1.667†	2.000	-	-	4.000	-	-
18	30	1.667	-	.750†	1.000†	1.200	1.500	2.000	2.400	3.000†	4.000	4.800	6.000†	8.000†
21	35	1.667	-	-	-	1.400†	-	-	2.800†	-	-	-	-	-
24	40	1.667	.667†	1.000†	1.333†	1.600	2.000	2.667†	3.200	4.000	5.333†	6.400	8.000	-
27	45	1.667	-	-	1.500†	-	-	-	-	-	-	-	-	-
30	50	1.667	-	1.250†	-	2.000	-	-	4.000	-	-	8.000	-	-
36	60	1.667	1.000†	1.500†	2.000†	2.400†	3.000	4.000	4.800†	6.000	8.000	-	12.000	16.000†
42	70	1.667	-	-	2.333†	-	-	-	5.600†	-	-	-	-	-
45	75	1.667	-	-	-	3.000†	-	-	6.000†	-	-	-	-	-
48	80	1.667	1.333†	2.000†	-	3.200†	4.000	-	6.400	8.000	-	-	16.000	-
25	42	1.680	-	-	1.396†	-	-	2.792†	3.350†	-	-	-	-	-
50	84	1.680	-	-	-	3.350	-	-	6.700†	-	-	-	-	-
19	32	1.684	-	-	1.063†	1.275†	1.594†	2.125†	2.550†	3.188†	-	-	-	-
38	64	1.684	-	-	-	-	3.188†	4.250†	5.100†	-	-	-	-	-
16	27	1.688	-	-	.896†	-	-	-	-	-	3.583	-	-	-
32	54	1.688	.896†	-	1.792†	-	2.688†	3.583†	4.300†	5.375†	7.167†	-	10.750†	-
13	22	1.692	-	.547†	.729†	.875†	1.094†	1.458†	1.750†	2.188†	-	-	-	-
26	44	1.692	.729†	1.094†	1.458†	-	2.188†	2.917†	-	4.375†	-	-	-	-
39	66	1.692	-	-	2.188†	-	-	-	-	-	-	-	-	-
23	39	1.696	-	-	1.292†	-	-	-	-	-	-	-	-	-
33	56	1.697	-	-	1.854†	-	-	-	-	-	-	-	-	-
20	34	1.700	-	-	-	-	1.688†	2.250†	-	-	-	-	-	-
40	68	1.700	-	-	-	-	3.375†	-	-	6.750†	-	-	-	-
44	75	1.704	-	1.859†	-	-	-	-	-	-	-	-	-	-

† = 14 1/2° only * = 20° only.



See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes.

TABLE No. 1

RATIO AND CENTER DISTANCE - SPUR GEARS

GEAR COMBINATIONS No. TEETH		RATIO	CENTER DISTANCE											
			DIAMETRAL PITCH											
DRIVER	DRIVEN		48	32	24	20	16	12	10	8	6	5	4	3
38	65	1.711	-	-	-	-	-	5.150†	-	-	-	-	-	
14	24	1.714	.396†	.594†	.792†	.950	1.188	1.583	1.900	2.375	3.167	3.800	4.750†	6.333†
21	36	1.714	-	-	1.188†	1.425†	1.781†	2.375	2.850†	3.563†	4.750	-	-	9.500†
28	48	1.714	.792†	1.188†	1.583†	1.900†	2.375	3.167	3.800	4.750	-	9.500	9.500	-
35	60	1.714	-	-	-	2.375	-	-	4.750	-	-	-	-	-
42	72	1.714	-	-	2.375†	-	-	4.750	5.700†	7.125†	9.500	-	14.250†	19.000†
32	55	1.719	-	-	-	2.175†	-	-	4.350†	-	-	-	-	-
11	19	1.727	-	-	.625†	.775†	.969†	1.292†	1.550†	1.938†	-	-	-	-
22	38	1.727	-	-	-	-	1.875†	2.500†	3.000†	-	-	-	-	-
44	76	1.727	-	-	-	-	-	-	-	7.500†	-	-	-	-
26	45	1.731	-	-	1.479†	-	-	-	3.550†	-	-	-	-	-
15	26	1.733	.427†	.641†	.854†	-	1.281†	1.708†	2.050†	2.563†	-	-	-	-
30	52	1.733	-	1.281†	-	-	2.563†	-	-	5.125†	-	-	-	-
19	33	1.737	-	-	1.0833†	-	-	-	-	-	-	-	-	-
38	66	1.737	-	-	-	-	-	4.333†	-	-	-	-	-	-
23	40	1.739	-	-	1.313†	1.575†	1.969†	2.625†	-	-	-	-	-	-
12	21	1.750	-	-	.688†	.825†	1.031†	1.375	1.650†	2.063†	2.750	-	-	5.500†
16	28	1.750	.458†	.688†	.917†	1.100†	1.375	1.833	2.200	2.750	-	4.400*	5.500	-
20	35	1.750	-	-	-	1.375	-	-	2.750	-	-	5.500	-	-
24	42	1.750	-	-	1.375†	-	-	2.750	3.300†	4.125†	5.500	-	8.250†	11.000†
32	56	1.750	.917†	1.375†	1.833†	-	2.750	3.667†	-	5.500	-	-	11.000	-
40	70	1.750	-	1.719†	2.292†	2.750	-	-	5.500	-	-	11.000	-	-
48	84	1.750	1.375†	-	2.750†	3.300†	4.125†	5.500	6.600†	8.250†	11.000	-	16.500†	22.000†
25	44	1.760	-	1.078†	1.438†	-	-	2.875†	-	-	-	-	-	-
17	30	1.765	-	-	.979†	1.175†	1.469†	1.958†	2.350†	2.938†	-	-	-	-
34	60	1.765	-	-	-	-	2.938†	3.917†	-	-	-	-	-	-
13	23	1.769	-	-	.750†	.900†	1.125†	1.500†	-	-	-	-	-	-
22	39	1.773	-	-	1.271†	-	-	-	-	-	-	-	-	-
44	78	1.773	-	-	-	-	-	5.083†	-	-	-	-	-	-
18	32	1.778	.521†	.781†	1.042†	1.250†	1.563	2.083†	2.500†	3.125	4.167†	-	6.250	-
27	48	1.778	-	-	1.563†	-	-	-	-	-	6.250	-	-	-
36	64	1.778	-	1.563†	2.083†	2.500†	3.125	4.167†	5.000†	6.250	8.333†	-	12.500	-
45	80	1.778	-	-	-	3.125	-	-	6.250	-	-	12.500	-	-
14	25	1.786	-	.609†	.813†	.975	-	1.625†	1.950	-	-	3.900	-	-
28	50	1.786	-	1.219†	-	1.950†	-	-	3.900	-	-	7.800†	-	-
42	75	1.786	-	-	-	-	-	-	5.850†	-	-	-	-	-
19	34	1.789	-	-	-	-	1.656†	2.208†	-	-	-	-	-	-
38	68	1.789	-	-	-	-	3.313†	-	-	-	-	-	-	-
39	70	1.795	-	-	-	-	-	-	-	-	-	-	-	-
15	27	1.800	-	-	2.271†	.875†	-	-	-	-	3.500	-	-	-
20	36	1.800	.583†	.875†	1.167†	1.400†	1.750	2.333	2.800†	3.500	4.667†	-	7.000	9.333†
25	45	1.800	-	-	1.458†	1.750	-	-	3.500	-	-	7.000	-	-
30	54	1.800	-	-	1.750†	-	2.625†	3.500	4.200†	5.250†	7.000	-	10.500†	14.000†
40	72	1.800	1.167†	1.750†	2.333†	2.800†	3.500	4.667†	5.600†	7.000	9.333†	-	14.000	-
36	65	1.806	-	-	-	-	-	-	5.050†	-	-	-	-	-
21	38	1.810	-	-	-	-	1.844†	2.458†	2.950†	-	-	-	-	-
42	76	1.810	-	-	-	-	-	-	-	7.375†	-	-	-	-
11	20	1.818	.323†	.484†	.646†	.800†	1.000†	1.333†	1.600†	2.000†	2.667†	3.200†	4.000†	5.333†
22	40	1.818	.646†	.969†	1.292†	1.550†	1.938†	2.583†	3.100†	3.875	-	-	7.750†	-
33	60	1.818	-	-	1.938†	-	-	-	-	-	7.750	-	-	-
44	80	1.818	1.292†	1.938†	-	-	3.875†	-	-	7.750	-	-	15.500	-
23	42	1.826	-	-	1.354†	-	-	2.708†	-	-	-	-	-	-
35	64	1.829	-	-	-	2.475†	-	-	4.950†	-	-	-	-	-
12	22	1.833	.354†	.531†	.708†	.850†	1.063†	1.417†	1.700†	2.125	-	-	4.250†	-
18	33	1.833	-	-	1.063†	-	-	-	-	-	4.250	-	-	-
24	44	1.833	.708†	1.063†	1.417†	-	2.125†	2.833†	-	4.250	-	-	8.500	-
30	55	1.833	-	-	-	2.125†	-	-	4.250	-	-	8.500†	-	-
36	66	1.833	1.063†	-	2.125†	-	-	4.250	-	-	8.500	-	-	-
19	35	1.842	-	-	-	1.350†	-	-	2.700†	-	-	-	-	-
38	70	1.842	-	-	-	-	-	-	5.400†	-	-	-	-	-
13	24	1.846	-	.578†	.771†	.925†	1.156†	1.542	1.850†	2.313†	-	-	-	-
26	48	1.846	.771†	1.156†	1.542†	-	2.313†	3.083†	3.700†	4.625†	-	-	-	-
39	72	1.846	-	-	2.313†	-	-	-	-	-	-	-	-	-
14	26	1.857	.417†	.625†	.833†	-	1.250†	1.667†	2.000†	2.500†	-	-	-	-
21	39	1.857	-	-	1.250†	-	-	-	-	-	-	-	-	-
28	52	1.857	.833†	1.250†	-	-	2.500†	-	-	5.000†	-	-	-	-
35	65	1.857	-	-	-	-	-	-	5.000†	-	-	-	-	-
42	78	1.857	-	-	-	-	-	5.000†	-	-	-	-	-	-
15	28	1.867	.448†	.672†	.896†	1.075†	1.344	1.792	2.150	2.688	-	4.300*	5.375	-
30	56	1.867	-	1.344†	1.792†	-	2.688	3.583†	-	5.375†	-	-	10.750†	-
45	84	1.867	-	-	2.688†	3.225	-	-	6.450†	-	-	-	-	-
16	30	1.875	-	.719†	.958†	1.150	1.438	1.917	2.300	2.875†	3.833†	4.600	5.750†	7.667†
24	45	1.875	-	-	1.438†	1.725	-	-	3.450	-	-	6.900	-	-
32	60	1.875	.958†	1.438†	1.917†	2.300†	2.875	3.833†	4.600†	5.750	7.667†	-	11.500	-
40	75	1.875	-	1.797†	-	2.875†	-	-	5.750†	-	-	-	-	-
17	32	1.882	-	-	1.021†	1.225†	1.531†	2.042†	2.450†	3.063†	-	-	-	-
34	64	1.882	-	-	-	-	3.063†	4.083†	-	-	-	-	-	-
18	34	1.889	-	-	-	-	1.625†	2.167†	-	-	-	-	-	-
36	68	1.889	-	-	-	-	3.250†	-	-	6.500†	-	-	-	-
19	36	1.895	-	-	1.146†	1.375†	1.719†	2.292†	2.750†	-	-	-	-	-
38	72	1.895	-	-	-	-	3.438†	4.583†	5.500†	-	-	-	-	-
20	38	1.900	-	-	-	-	1.813†	2.417†	2.900†	-	-	-	-	-
40	76	1.900	-	-	-	-	-	-	-	7.250†	-	-	-	-
21	40	1.905	-	-	1.271†	1.525†	1.906†	2.542†	3.050†	3.813†	5.083†	-	-	-
42	80	1.905	-	-	-	-	-	-	6.100†	7.625†	-	-	15.250†	-

† = 14 1/2° only * = 20° only.



See Table No. 2, Page F-47 for Minimum Recommended Gear Sizes.

1.909-
2.160
RATIO

TABLE No. 1

RATIO AND CENTER DISTANCE - SPUR GEARS

GEAR COMBINATIONS No. TEETH		RATIO	CENTER DISTANCE											
DRIVER	DRIVEN		DIAMETRAL PITCH											
			48	32	24	20	16	12	10	8	6	5	4	3
21	21	1.909	-	-	.667†	.825†	1.031†	1.375†	1.650†	2.063†	2.750†	-	-	5.500†
22	42	1.909	-	-	1.333†	-	-	2.667†	3.200†	4.000†	-	-	8.000†	-
44	84	1.909	1.333†	-	2.667†	-	4.000†	5.333†	-	8.000†	-	-	16.000†	-
23	44	1.913	-	-	1.396†	-	2.094†	2.792†	-	-	-	-	-	-
12	23	1.917	-	-	.729†	.875†	1.094†	1.458†	-	-	-	-	-	-
25	48	1.920	-	1.141†	1.521†	1.825†	-	3.042†	3.650	-	-	-	-	-
13	25	1.923	-	.594†	.792†	.950†	-	1.583†	1.900†	-	-	-	-	-
26	50	1.923	-	1.188†	-	-	-	-	3.800†	-	-	-	-	-
14	27	1.929	-	-	.854†	-	-	-	-	-	3.417	-	-	-
28	54	1.929	.854†	-	1.708†	-	2.563†	3.417	4.100†	5.125†	-	-	10.250†	-
33	64	1.939	-	-	2.021†	-	-	-	-	-	8.083†	-	-	-
17	33	1.941	-	-	1.042†	-	-	-	-	-	-	-	-	-
34	66	1.941	-	-	-	-	-	4.167†	-	-	-	-	-	-
18	35	1.944	-	-	-	1.325	-	-	2.650	-	-	5.300	-	-
36	70	1.944	-	1.656†	2.208†	2.650†	-	-	5.300†	-	-	-	-	-
20	39	1.950	-	-	1.229†	-	-	-	-	-	-	-	-	-
40	78	1.950	-	-	-	-	-	4.917†	-	-	-	-	-	-
23	45	1.957	-	-	1.417†	1.700†	-	-	-	-	-	-	-	-
28	55	1.964	-	-	-	2.075†	-	-	4.150	-	-	-	-	-
38	75	1.974	-	-	-	-	-	-	5.650†	-	-	-	-	-
11	22	2.000	.344†	.516†	.688†	.850†	1.063†	1.417†	1.700†	2.125†	-	-	4.250†	-
12	24	2.000	.375†	.563†	.750†	.900	1.125	1.500	1.800	2.250	3.000	3.600	4.500	6.000†
13	26	2.000	-	.609†	.813†	-	1.219†	1.625†	1.950†	2.438†	-	-	-	-
14	28	2.000	.438†	.656†	.875†	1.050†	1.313	1.750	2.100	2.625	-	4.200*	5.250	-
15	30	2.000	-	.703†	.938†	1.125	1.406	1.875	2.250	2.813†	3.750	4.500	5.625†	7.500†
16	32	2.000	.500†	.750†	1.000†	1.200†	1.500	2.000†	2.400†	3.000	4.000†	-	6.000	-
17	34	2.000	-	-	-	-	1.594†	2.125†	-	-	-	-	-	-
18	36	2.000	.563†	.844†	1.125†	1.350†	1.688	2.250	2.700†	3.375	4.500	-	6.750	9.000†
19	38	2.000	-	-	-	-	1.781†	2.375†	2.850†	-	-	-	-	-
20	40	2.000	.625†	.938†	1.250†	1.500	1.875	2.500†	3.000	3.750	5.000†	6.000	7.500	-
21	42	2.000	-	-	1.313†	-	-	2.625	3.150†	3.938†	5.250	-	-	10.500†
22	44	2.000	.688†	1.031†	1.375†	-	2.063†	2.750†	3.150†	4.125	-	-	8.250†	-
24	48	2.000	.750†	1.125†	1.500†	1.800†	2.250	3.000	3.600	4.500	6.000	-	9.000	12.000†
25	50	2.000	-	1.172†	-	1.875	-	-	3.750	-	-	7.500	-	-
26	52	2.000	.813†	1.219†	-	-	2.438†	-	-	4.875†	-	-	-	-
27	54	2.000	-	-	1.688†	-	-	-	-	-	6.750	-	-	-
28	56	2.000	.875†	1.313†	1.750†	-	2.625	3.500†	4.500	5.250	-	-	10.500	-
30	60	2.000	-	1.406†	1.875†	2.250	2.813	3.750	4.500	5.625†	7.500	9.000	11.250†	15.000†
32	64	2.000	-	1.500†	2.000†	2.400†	3.000	4.000†	4.800†	6.000	8.000†	-	12.000	-
33	66	2.000	-	-	2.063†	-	-	-	-	8.250	-	-	-	-
34	68	2.000	-	-	-	-	3.188†	-	-	-	-	-	-	-
35	70	2.000	-	-	-	2.625	-	-	5.250	-	-	10.500	-	-
36	72	2.000	1.125†	1.688†	2.250†	2.700†	3.375	4.500	5.400†	6.750	9.000	-	13.500	18.000†
40	80	2.000	1.250†	1.875†	-	3.000	3.750	-	6.000	7.500	12.000	-	15.000	-
42	84	2.000	-	-	2.625†	-	-	5.250	6.300†	7.875†	10.500	-	15.750†	21.000
32	65	2.031	-	-	-	-	-	-	4.850†	-	-	-	-	-
22	45	2.045	-	-	1.396†	1.675†	-	-	3.350†	-	-	-	-	-
19	39	2.053	-	-	1.208†	-	-	-	-	-	-	-	-	-
38	78	2.053	-	-	-	-	-	4.833†	-	-	-	-	-	-
35	72	2.057	-	-	-	2.675†	-	-	5.350†	-	-	-	-	-
17	35	2.059	-	-	-	1.300†	-	-	2.600†	-	-	-	-	-
16	33	2.063	-	-	1.021†	-	-	-	-	-	4.083	-	-	-
32	66	2.063	1.021†	-	2.042†	-	-	4.083†	-	-	8.167†	-	-	-
27	56	2.074	-	-	1.729†	-	-	-	-	-	-	-	-	-
13	27	2.077	-	-	.833†	-	-	-	-	-	-	-	-	-
26	54	2.077	.833†	-	1.667†	-	2.500†	3.333†	4.000†	5.000†	-	-	-	-
25	52	2.080	-	1.203†	-	-	-	-	-	-	-	-	-	-
12	25	2.083	-	.578†	.771†	.925	-	1.542†	1.850	-	-	3.700	-	-
24	50	2.083	-	1.156†	-	1.850	-	-	3.700	-	-	-	-	-
36	75	2.083	-	1.734†	-	2.775†	-	-	5.500†	-	-	-	-	-
23	48	2.087	-	-	1.479†	1.775†	2.219†	2.958†	-	-	-	-	-	-
11	23	2.091	-	-	.708†	.850†	-	1.063†	1.417†	-	-	-	-	-
21	44	2.095	-	-	1.354†	-	2.031†	2.708†	-	4.063†	-	-	-	-
20	42	2.100	-	-	1.292†	-	-	2.583	3.100†	3.875†	5.167†	-	7.750†	10.333†
40	84	2.100	1.292†	-	2.583†	3.100	3.875†	5.167†	6.200†	7.750†	10.333†	-	15.500†	-
19	40	2.105	-	-	1.229†	1.475†	1.844†	2.458†	2.950†	3.688†	-	-	-	-
38	80	2.105	-	-	-	-	3.688†	-	5.900†	-	-	-	-	-
18	38	2.111	-	-	-	-	1.750†	2.333†	2.800†	-	-	-	-	-
36	76	2.111	-	-	-	-	-	-	-	7.000†	-	-	-	-
26	55	2.115	-	-	-	-	-	-	4.050†	-	-	-	-	-
17	36	2.118	-	-	1.104†	1.325†	1.656†	2.208†	2.650†	3.313†	-	-	-	-
34	72	2.118	-	-	-	-	3.313†	4.417†	-	-	-	-	-	-
33	70	2.121	-	-	2.146†	-	-	-	-	-	-	-	-	-
16	34	2.125	-	-	-	-	1.563†	2.083†	-	-	-	-	-	-
32	68	2.125	-	-	-	-	3.125†	-	-	6.250†	-	-	-	-
15	32	2.133	.490†	.734†	.979†	1.175†	1.469	1.958†	2.350†	2.938	3.917†	-	5.875	-
30	64	2.133	-	1.469†	1.958†	2.350†	2.938	3.917†	4.700†	5.875†	7.833†	-	11.750†	-
14	30	2.143	-	.688†	.917†	1.100	1.375	1.833	2.200	2.750†	3.667	4.400	5.500†	7.333†
21	45	2.143	-	-	1.375†	1.650†	-	-	3.300†	-	-	-	-	-
28	60	2.143	.917†	1.375†	1.833†	2.200†	2.750	3.667	4.400	5.500	-	8.800*	11.000	-
35	75	2.143	-	-	-	2.750†	-	-	5.500†	-	-	-	-	-
13	28	2.154	-	.641†	.854†	1.025†	1.281†	1.708	2.050†	2.563†	-	-	-	-
26	56	2.154	.854†	1.281†	-	-	2.563†	3.417†	-	5.125†	-	-	-	-
39	84	2.154	-	-	2.563†	-	-	-	-	-	-	-	-	-
25	54	2.160	-	-	1.646†	-	-	3.292†	3.950†	-	-	-	-	-

† = 14 1/2° only * = 20° only.



WARNING

See Table No. 2, Page F-47 for Minimum Recommended Gear Sizes.

TABLE No. 1

RATIO AND CENTER DISTANCE - SPUR GEARS

GEAR COMBINATIONS		RATIO	CENTER DISTANCE											
No. TEETH			DIAMETRAL PITCH											
DRIVER	DRIVEN		48	32	24	20	16	12	10	8	6	5	4	3
12	26	2.167	.396†	.594†	.792†	-	1.188†	1.583†	1.900†	2.375†	-	-	-	-
18	39	2.167	-	-	1.188†	-	-	-	-	-	-	-	-	-
24	52	2.167	.792†	1.188†	-	-	2.375†	-	-	4.750†	-	-	-	-
30	65	2.167	-	-	-	-	-	-	4.750†	-	-	-	-	-
36	78	2.167	-	-	-	-	-	4.750†	-	-	-	-	-	-
23	50	2.174	-	-	-	1.825†	-	-	-	-	-	-	-	-
11	24	2.182	.365†	.547†	.729†	.900†	1.125†	1.500†	1.800†	2.250†	3.000†	3.600†	4.500†	6.000†
22	48	2.182	.729†	1.094†	1.458†	1.750†	2.188†	2.917†	3.500†	4.375	-	-	8.750†	-
33	72	2.182	-	-	2.188†	-	-	-	-	8.750	-	-	-	-
16	35	2.188	-	-	-	1.275	-	-	2.550	-	5.100	-	-	-
32	70	2.188	-	1.594†	2.125†	2.550†	-	-	5.100†	-	-	-	-	-
15	33	2.200	-	-	1.000†	-	-	-	-	4.000	-	-	-	-
20	44	2.200	.667†	1.000†	1.333†	-	2.000†	2.667†	-	4.000	-	-	8.000	-
25	55	2.200	-	-	-	2.000†	-	-	4.000	-	8.000†	-	-	-
30	66	2.200	-	-	2.000†	-	-	4.000	-	-	8.000	-	-	-
19	42	2.211	-	-	1.271†	-	-	2.542†	3.050†	3.813†	-	-	-	-
38	84	2.211	-	-	-	-	3.813†	5.083†	6.100†	-	-	-	-	-
18	40	2.222	.604†	.906†	1.208†	1.450	1.813	2.417†	2.900	3.625	4.833†	5.800	7.250	-
27	60	2.222	-	-	1.813†	-	-	-	-	7.250	-	-	-	-
36	80	2.222	1.208†	1.813†	-	2.900†	3.625	-	5.800†	7.250	-	-	14.500	-
17	38	2.235	-	-	-	-	1.719†	2.292†	2.750†	-	-	-	-	-
25	56	2.240	-	1.266†	1.688†	-	-	3.375†	-	-	-	-	-	-
12	27	2.250	-	-	.813†	-	-	-	-	-	3.250	-	-	-
16	36	2.250	.542†	.813†	1.083†	1.300†	1.625	2.167	2.600†	3.250	4.333	-	6.500	8.667†
20	45	2.250	-	-	1.354†	1.625	-	-	3.250	-	-	6.500	-	-
24	54	2.250	.813†	-	1.625†	-	2.438†	3.250	3.900†	4.875†	6.500	-	9.750†	13.000†
32	72	2.250	1.083†	1.625†	2.167†	2.600†	3.250	4.333†	5.200†	6.500	8.667†	-	13.000	-
23	52	2.261	-	-	-	-	2.344†	-	-	-	-	-	-	-
15	34	2.267	-	-	-	-	1.531†	2.042†	-	-	-	-	-	-
30	68	2.267	-	-	-	-	3.063†	-	-	6.125†	-	-	-	-
11	25	2.273	-	.563†	.750†	.925†	-	1.542†	1.850†	-	-	3.700†	-	-
22	50	2.273	-	1.125†	-	1.800†	-	-	3.600†	-	-	-	-	-
14	32	2.286	.479†	.719†	.958†	1.150†	1.438	1.917†	2.300†	2.875	3.833†	-	5.750	-
21	48	2.286	-	-	1.438†	1.725†	2.156	2.875	3.450†	4.313†	5.750	-	-	11.500†
28	64	2.286	-	1.438†	1.917†	2.300†	2.875	3.833†	4.600†	5.750	-	-	11.500	-
35	80	2.286	-	-	-	2.875	-	-	5.750	-	-	11.500	-	-
24	55	2.292	-	-	-	1.975†	-	-	3.950	-	-	7.900†	-	-
17	39	2.294	-	-	1.167†	-	-	-	-	-	-	-	-	-
34	78	2.294	-	-	-	-	-	4.667†	-	-	-	-	-	-
13	30	2.308	-	.672†	.896†	1.075†	1.344†	1.792	2.150†	2.688†	-	-	-	-
26	60	2.308	.896†	1.344†	1.792†	-	2.688†	3.583†	4.300†	5.375†	-	-	-	-
19	44	2.316	-	-	1.313†	-	1.969†	2.625†	-	3.938†	-	-	-	-
28	65	2.321	-	-	-	-	-	-	4.650†	-	-	-	-	-
12	28	2.333	.417†	.625†	.833†	1.000†	1.250	1.667	2.000	2.500	-	4.000*	5.000	-
15	35	2.333	-	-	-	1.250	-	-	2.500	-	-	5.000	-	-
18	42	2.333	-	-	1.250†	-	-	2.500	3.000†	3.750†	5.000	-	7.500†	10.000†
24	56	2.333	.833†	1.250†	1.667†	-	2.500	3.333†	-	5.000	-	-	10.000	-
30	70	2.333	-	1.563†	2.083†	2.500	-	-	5.000	-	-	10.000	-	-
36	84	2.333	1.250†	2.500†	3.000†	3.750†	5.000	6.000†	7.500†	10.000	-	-	15.000†	20.000†
32	75	2.344	-	1.672†	-	2.675†	-	-	5.350*	-	-	-	-	-
23	54	2.348	-	-	1.604†	-	2.406†	3.208†	-	-	-	-	-	-
17	40	2.353	-	-	1.888†	1.425†	1.781†	2.375†	2.850†	3.563†	-	-	-	-
34	80	2.358	-	-	-	-	3.563†	-	-	-	-	-	-	-
14	33	2.357	-	-	.979†	-	-	-	-	-	3.917	-	-	-
28	66	2.357	.979†	-	1.958†	-	-	3.917	-	-	-	-	-	-
11	26	2.364	.385†	.578†	.771†	-	1.188†	1.583†	1.900†	2.375†	-	-	-	-
22	52	2.364	.771†	1.156†	-	-	2.313†	-	-	4.625†	-	-	-	-
19	45	2.368	-	-	1.333†	1.600†	-	-	3.200†	-	-	-	-	-
27	64	2.370	-	-	1.896†	-	-	-	-	7.583†	-	-	-	-
16	38	2.375	-	-	-	-	1.688†	2.250†	2.700†	-	-	-	-	-
32	76	2.375	-	-	-	-	-	-	-	6.750†	-	-	-	-
21	50	2.381	-	-	-	1.775†	-	-	3.550†	-	-	-	-	-
23	55	2.391	-	-	-	1.950†	-	-	-	-	-	-	-	-
15	36	2.400	.531†	.797†	1.063†	1.275†	1.594	2.125	2.550†	3.188	4.250	-	6.375	8.500†
20	48	2.400	.708†	1.063†	1.417†	1.700†	2.125	2.833	3.400	4.250	5.667†	-	8.500	11.333†
25	60	2.400	-	1.328†	1.771†	2.125	-	3.542†	4.250	-	-	8.500	-	-
30	72	2.400	-	1.594†	2.125†	2.550†	3.188	4.250	5.100†	6.375†	8.500	-	12.750†	17.000†
35	84	2.400	-	-	-	2.975	-	-	5.950†	-	-	-	-	-
14	34	2.429	-	-	-	-	1.500†	2.000†	-	-	-	-	-	-
28	68	2.429	-	-	-	-	3.000†	-	-	6.000†	-	-	-	-
23	56	2.435	-	-	1.646†	-	2.469	3.292†	-	-	-	-	-	-
16	39	2.438	-	-	1.146†	-	-	-	-	-	-	-	-	-
32	78	2.438	-	-	-	-	-	4.583†	-	-	-	-	-	-
18	44	2.444	.646†	.969†	1.292†	-	1.938†	2.583†	-	3.875	-	-	7.750	-
27	66	2.444	-	-	1.938†	-	-	-	-	7.750	-	-	-	-
11	27	2.455	-	-	.792†	-	-	-	-	3.250†	-	-	-	-
22	54	2.455	.792†	-	1.583†	-	2.375†	3.167†	3.800†	4.750†	-	-	9.500†	-
13	32	2.462	-	.703†	.938†	1.125†	1.406†	1.875†	2.250†	2.813†	-	-	-	-
26	64	2.462	-	1.406†	1.875†	-	2.813†	3.750†	4.500†	5.625†	-	-	-	-
17	42	2.471	-	-	1.229†	-	-	2.458†	2.950†	3.688†	-	-	-	-
34	84	2.471	-	-	-	-	3.688†	4.917†	-	-	-	-	-	-
21	52	2.476	-	-	-	-	2.281†	-	-	4.563†	-	-	-	-
12	30	2.500	-	.656†	.875†	1.050	1.313	1.750	2.100	2.625†	3.500	4.200	5.250†	7.000†
14	35	2.500	-	-	-	1.225	-	-	2.450	-	-	4.900	-	-
16	40	2.500	.583†	.875†	1.167†	1.400	1.750	2.333†	2.800	3.500	4.667†	5.600	7.000	-

† = 14 1/2° only * = 20° only.



See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes.

2.500- 2.923 RATIO

TABLE No. 1

RATIO AND CENTER DISTANCE - SPUR GEARS

GEAR COMBINATIONS		RATIO	CENTER DISTANCE											
No. TEETH			DIAMETRAL PITCH											
DRIVER	DRIVEN		48	32	24	20	16	12	10	8	6	5	4	3
18	45	2.500	-		1.313†	1.575	-	-	3.150	-	-	6.300	-	-
20	50	2.500		1.094†		1.750	-	-	3.500	-	-	7.000	-	-
22	55	2.500				1.925†	-	-	3.850†	-	-		-	-
24	60	2.500	.875†	1.313†	1.750†	2.100	2.625	3.500	4.200	5.250	7.000	8.400	10.500	14.000†
26	65	2.500							4.550†	-	-		-	-
28	70	2.500		1.531†	2.042†	2.450†	-	-	4.900	-	-	9.800*	-	-
30	75	2.500		1.641†		2.625†	-	-	5.250†	-	-		-	-
32	80	2.500	1.167†	1.750†		2.800†	3.500		5.600†	7.000	-		14.000	
19	48	2.526			1.396†	1.675†	2.094†	2.792†	3.350†	4.188†	-			
15	38	2.533					1.636†	2.208†	2.650†		-			
30	76	2.533								6.625†	-			
13	33	2.538			.958†						-			
26	66	2.538	.958†		1.917†			3.833†			-			
11	28	2.545	.406†	.609†	.813†	1.000†	1.250†	1.667†	2.000†	2.500†	-		5.000†	
22	56	2.545	.813†	1.219†	1.625†		2.438†	3.250†		4.875	-		9.750†	
33	84	2.545			2.438†						9.750	-		
25	64	2.560		1.391†	1.854†	2.225†		3.708†	4.500†		-			
14	36	2.571	.521†	.781†	1.042†	1.250†	1.563	2.083	2.500†	3.125	4.167		6.250	8.333†
21	54	2.571			1.563†		2.344†	3.125	3.750†	4.688†	6.250	-		12.500†
28	72	2.571	1.042†	1.563†	2.083†	2.500†	3.125	4.167	5.000†	6.250		-	12.500	
17	44	2.588			1.271†		1.906†	2.542†		3.813†	-			
27	70	2.593			2.021†						-			
15	39	2.600			1.125†						-			
20	52	2.600	.750†	1.125†			2.250†			4.500†	-			
25	65	2.600							4.500†		-			
30	78	2.600						4.500†			-			
23	60	2.609			1.729†	2.075†	2.594†	3.458†			-			
13	34	2.615					1.469†	1.958†			-			
26	68	2.615					2.938†			5.875†	-			
21	55	2.619				1.900†			3.800†		-			
16	42	2.625			1.208†			2.417	2.900†	3.625†	4.833		7.250†	9.667†
32	84	2.625	1.208†		2.417†	2.900†	3.625†	4.833†	5.800†	7.250†	9.667†		14.500†	
19	50	2.632				1.725†			3.450†		-			
25	66	2.640			1.896†			3.792†			-			
17	45	2.647			1.292†	1.550†			3.100†		-			
12	32	2.667	.458†	.688†	.917†	1.100†	1.375	1.833†	2.200†	2.750	3.667†		5.500	
15	40	2.667	.573†	.859†	1.146†	1.375	1.719	2.292†	2.750	3.438	4.583†	5.500	6.875	
18	48	2.667	.688†	1.031†	1.375†	1.650†	2.063	2.750	3.300	4.125	5.500		8.250	11.000†
21	56	2.667			1.604†		2.406†	3.208†		4.813†		-		
24	64	2.667		1.375†	1.833†	2.200†	2.750	3.667†	4.400†	5.500	7.333†		11.000	
27	72	2.667			2.063†						8.250			
30	80	2.667		1.719†		2.750	3.438		5.500	6.875†		11.000	13.750†	
28	75	2.679		1.609†		2.575†			5.150†		-			
13	35	2.692				1.200†			2.400†		-			
26	70	2.692		1.500†	2.000†				4.800†		-			
20	54	2.700	.771†		1.542†		2.313†	3.083	3.700†	4.625†	6.167†		9.250†	12.333†
24	65	2.708							4.450†		-			
14	38	2.714					1.625†	2.167†	2.600†		-			
28	76	2.714							6.500†		-			
11	30	2.727		.641†	.854†	1.050†	1.313†	1.750†	2.100†	2.625†	3.500†	4.200†	5.250†	7.000†
22	60	2.727	.854†	1.281†	1.708†	2.050†	2.563†	3.417†	4.100†	5.125		-	10.250†	
19	52	2.737					2.219†			4.438†		-		
12	33	2.750			.938†						3.750			
16	44	2.750	.625†	.938†	1.250†		1.875†	2.500†		3.750		-	7.500	
20	55	2.750				1.875†			3.750		-	7.500†		
24	66	2.750	.938†		1.875†			3.750			7.500			
13	36	2.769		.766†	1.021†	1.225†	1.531†	2.042	2.450†	3.063†		-		
26	72	2.769	1.021†	1.531†	2.042†		3.063†	4.083†	4.900†	6.125†		-		
18	50	2.778		1.063†		1.700			3.400			6.800		
23	64	2.783			1.183†	2.175†	2.719†	3.625†				-		
14	39	2.786			1.104†							-		
28	78	2.786						4.417†				-		
15	42	2.800			1.188†			2.375	2.850†	3.563†	4.750		7.125†	9.500†
20	56	2.800	.792†	1.188†	1.583†		2.375	3.167†		4.75			9.500	
25	70	2.800		1.484†	1.979†	2.375			4.750			-		
30	84	2.800			2.375†	2.850	3.563†	4.750	5.700†	7.125†	9.500		14.250†	19.000†
16	45	2.813			1.271†	1.525			3.050			6.100		
17	48	2.824			1.354†	1.625†	2.031†	2.708†	3.250†	4.063†				
12	34	2.833					1.438†	1.917†				-		
24	68	2.833					2.875†			5.750†		-		
19	54	2.842			1.521†		2.281†	3.042†	3.650†	4.563†		-		
14	40	2.857	.563†	.844†	1.125†	1.350	1.688	2.250†	2.700	3.375	4.500†	5.400	6.750	
21	60	2.857			1.688†	2.025†	2.531†	3.375	4.050†	5.063†	6.750			13.500†
28	80	2.857	1.125†	1.688†	2.700†		3.375		5.400	6.750		10.800*	13.500	
23	66	2.870			1.854†			3.708†				-		
25	72	2.880		1.516†	2.021†	2.425†		4.042†	4.850†		-			
26	75	2.885		1.578†					5.050†		-			
18	52	2.889	.729†	1.094†			2.188†			4.375†		-		
19	55	2.895				1.850†			3.700†		-			
11	32	2.909	.448†	.672†	.896†	1.100†	1.375†	1.833†	2.200†	2.750†	3.667†		5.500†	
22	64	2.909		1.344†	1.792†	2.150†	2.688†	3.583†	4.300†	5.375		-	10.750†	
12	35	2.917				1.175			2.350		-	4.700		
24	70	2.917		1.469†	1.958†	2.350			4.700		-	9.400		
13	38	2.923					1.594†	2.125†	2.550†		-			
26	76	2.923								6.375†		-		

† = 14 1/2° only * = 20° only.



See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes.

TABLE No. 1 RATIO AND CENTER DISTANCE - SPUR GEARS

GEAR COMBINATIONS No. TEETH		RATIO	CENTER DISTANCE											
DRIVER	DRIVEN		DIAMETRAL PITCH											
			48	32	24	20	16	12	10	8	6	5	4	3
15	44	2.933	.615†	.922†	1.229†	-	1.844†	2.458†	-	3.688	-	-	7.375	-
17	50	2.941	-	-	-	1.675†	-	-	3.350†	-	-	-	-	-
19	56	2.947	-	-	1.563†	-	2.344†	3.125	-	4.688†	-	-	-	-
22	65	2.955	-	-	-	-	-	-	4.350†	-	-	-	-	-
23	68	2.957	-	-	-	-	2.844†	-	-	-	-	-	-	-
11	33	3.000	-	-	.917†	-	-	-	-	-	3.750†	-	-	-
12	36	3.000	.500†	.750†	1.000†	1.200†	1.500	2.000	2.400†	3.000	4.000	-	6.000	8.000†
13	39	3.000	-	-	1.083†	-	-	-	-	-	-	-	-	-
14	42	3.000	-	-	1.167†	-	-	2.333	2.800†	3.500†	4.667	-	7.000†	9.333†
15	45	3.000	-	-	1.250†	1.500	-	-	3.000	-	-	6.000	-	-
16	48	3.000	.667†	1.000†	1.333†	1.600†	2.000	2.667	3.200	4.000	5.333	-	8.000	10.667†
18	54	3.000	.750†	-	1.500†	-	2.250†	3.000	3.600†	4.500†	6.000	-	9.000†	12.000†
20	60	3.000	.833†	1.250†	1.667†	2.000	2.500	3.333	4.000	5.000	6.667†	8.000	10.000	13.333†
22	66	3.000	.917†	-	1.833†	-	-	3.667†	-	-	-	-	-	-
24	72	3.000	1.000†	1.500†	2.000†	2.400†	3.000	4.000	4.800†	6.000	8.000	-	12.000	16.000†
25	75	3.000	-	1.563†	-	2.500†	-	-	5.000†	-	-	-	-	-
26	78	3.000	-	-	-	-	-	4.333†	-	-	-	-	-	-
28	84	3.000	1.167†	-	2.333†	2.800†	3.500†	4.667	5.600†	7.000†	-	-	14.000†	-
23	70	3.043	-	-	1.938†	2.325†	-	-	-	-	-	-	-	-
21	64	3.048	-	-	1.771†	2.125†	2.656†	3.542†	4.250†	5.313†	7.083†	-	-	-
18	55	3.056	-	-	-	1.825†	-	-	3.650	-	-	7.300†	-	-
17	52	3.059	-	-	-	-	2.156†	-	-	4.313†	-	-	-	-
13	40	3.077	-	.828†	1.104†	1.325†	1.656†	2.208†	2.650†	3.313†	-	-	-	-
26	80	3.077	1.104†	1.656†	-	-	3.313†	5.300†	6.625†	-	-	-	-	-
11	34	3.091	-	-	-	-	1.406†	1.875†	-	-	-	-	-	-
22	68	3.091	-	-	-	-	2.813†	-	-	5.625†	-	-	-	-
21	65	3.095	-	-	-	-	-	-	4.300†	-	-	-	-	-
18	56	3.111	.771†	1.156†	1.542†	-	2.313	3.083†	-	4.625	-	-	9.250	-
27	84	3.111	-	-	2.313†	-	-	-	-	-	9.250	-	-	-
25	78	3.120	-	-	-	-	-	4.292†	-	-	-	-	-	-
16	50	3.125	-	1.031†	-	1.650	-	-	3.300	-	-	6.600	-	-
24	75	3.125	-	1.547†	-	2.475†	-	-	4.950†	-	-	-	-	-
23	72	3.130	-	-	1.979†	2.375†	2.969†	3.958†	-	-	-	-	-	-
14	44	3.143	.604†	.906†	1.208†	-	1.813†	2.417†	-	3.625	-	-	7.250	-
21	66	3.143	-	-	1.813†	-	-	3.625	-	-	7.250	-	-	-
19	60	3.158	-	-	1.646†	1.975†	2.469†	3.292†	3.950†	4.938†	-	-	-	-
12	38	3.167	-	-	-	-	1.563†	2.083†	2.500†	-	-	-	-	-
24	76	3.167	-	-	-	-	-	-	-	6.250†	-	-	-	-
17	54	3.176	-	-	1.479†	-	2.219†	2.958†	3.550†	4.438†	-	-	-	-
11	35	3.182	-	-	-	1.175†	-	-	2.350†	-	-	4.700†	-	-
22	70	3.182	-	1.438†	1.917†	2.300†	-	-	4.600†	-	-	-	-	-
15	48	3.200	.656†	.984†	1.313†	1.575†	1.969	2.625	3.150	3.938	5.250	-	7.875	10.500†
20	64	3.200	-	1.313†	1.750†	2.100†	2.625	3.500†	4.200†	5.250	7.000†	-	10.500	-
25	80	3.200	-	1.641†	-	2.625	-	-	5.250	-	-	10.500	-	-
14	45	3.214	-	-	1.229†	1.475	-	-	2.950	-	-	5.900	-	-
13	42	3.231	-	-	1.146†	-	-	2.292	2.750†	3.438†	-	-	-	-
26	84	3.231	1.146†	-	2.292†	-	3.438†	4.583†	5.500†	6.875†	-	-	-	-
17	55	3.235	-	-	-	1.800†	-	-	3.600†	-	-	-	-	-
21	68	3.238	-	-	-	-	2.781†	-	-	5.563†	-	-	-	-
12	39	3.250	-	-	1.063†	-	-	-	-	-	-	-	-	-
16	52	3.250	.708†	1.063†	-	-	2.125†	-	-	4.250†	-	-	-	-
20	65	3.250	-	-	-	-	-	-	4.250†	-	-	-	-	-
24	78	3.250	-	-	-	-	-	4.250†	-	-	-	-	-	-
23	75	3.261	-	-	-	2.450†	-	-	-	-	-	-	-	-
11	36	3.273	.490†	.734†	.979†	1.200†	1.500†	2.000†	2.400†	3.000†	4.000†	-	6.000†	8.000†
22	72	3.273	.979†	1.469†	1.958†	2.350†	2.938†	3.917†	4.700†	5.875	-	-	11.750†	-
17	56	3.294	-	-	1.521†	-	2.281†	3.042†	-	4.563†	-	-	-	-
20	66	3.300	.896†	-	1.792†	-	-	3.583	-	-	7.167†	-	-	-
12	40	3.333	.542†	.813†	1.083†	1.300	1.625	2.167†	2.600	3.250	4.333†	5.200	6.500	-
15	50	3.333	-	1.016†	-	1.625	-	-	3.250	-	-	6.500	-	-
18	60	3.333	.813†	1.219†	1.625†	1.950	2.438	3.250	3.900	4.875	6.500	7.800	9.750	13.000†
21	70	3.333	-	-	1.896†	2.275†	-	-	4.550†	-	-	-	-	-
24	80	3.333	1.083†	1.625†	-	2.600	3.250	-	5.200	6.500	-	10.400	13.000	-
25	84	3.360	-	-	2.271†	2.725	-	4.542†	5.450†	-	-	-	-	-
19	64	3.368	-	-	1.729†	2.075†	2.594†	3.458†	4.150†	5.188†	-	-	-	-
16	54	3.375	.729†	-	1.458†	-	2.188†	2.917	3.500†	4.375†	5.833	-	8.750†	11.667†
13	44	3.385	-	.891†	1.188†	-	1.781†	2.375†	-	3.563†	-	-	-	-
23	78	3.391	-	-	-	-	-	4.208†	-	-	-	-	-	-
20	68	3.400	-	-	-	-	2.750†	-	-	5.500†	-	-	-	-
22	75	3.409	-	1.516†	-	2.425†	-	-	4.850†	-	-	-	-	-
19	65	3.421	-	-	-	-	-	-	4.200†	-	-	-	-	-
14	48	3.429	.646†	.969†	1.292†	1.550†	1.938	2.583	3.100	3.875	5.167	-	7.750	10.333†
21	72	3.429	-	-	1.938†	2.325†	2.906†	3.875	4.650†	5.813†	7.750	-	-	15.500†
16	55	3.438	-	-	-	1.775†	-	-	3.550	-	-	7.100†	-	-
11	38	3.455	-	-	-	-	1.563†	2.083†	2.500†	-	-	-	-	-
22	76	3.455	-	-	-	-	-	-	-	6.125†	-	-	-	-
13	45	3.462	-	-	1.208†	1.450†	-	-	2.900†	-	-	-	-	-
15	52	3.467	.698†	1.047†	-	-	2.094†	-	-	4.188†	-	-	-	-
19	66	3.474	-	-	1.771†	-	-	3.542†	-	-	-	-	-	-
23	80	3.478	-	-	-	2.575†	3.219†	-	-	-	-	-	-	-
12	42	3.500	-	-	1.125†	-	-	2.250	2.700†	3.375†	4.500	-	6.750†	9.000†
16	56	3.500	.750†	1.125†	1.500†	-	2.250	3.000†	-	4.500	-	-	9.000	-
20	70	3.500	-	1.406†	1.875†	2.250	-	-	4.500	-	-	9.000	-	-
24	84	3.500	1.125†	-	2.250†	2.700	3.375†	4.500	5.400†	6.750†	9.000	-	13.500†	18.000†
17	60	3.529	-	-	1.604†	1.925†	2.406†	3.208†	3.850†	4.813†	-	-	-	-

† = 14 1/2° only * = 20° only.



See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes.

3.545-
4.615
RATIO

TABLE No. 1

RATIO AND CENTER DISTANCE - SPUR GEARS

GEAR COMBINATIONS NO. TEETH		RATIO	CENTER DISTANCE											
DRIVER	DRIVEN		DIAMETRAL PITCH											
			48	32	24	20	16	12	10	8	6	5	4	3
11	39	3.545	-	-	1.042†	-	-	-	-	-	-	-	-	-
22	78	3.545	-	-	-	-	-	4.167†	-	-	-	-	-	-
18	64	3.556	-	1.281†	1.708†	2.050†	2.563	3.417†	4.100†	5.125	6.833†	-	10.250	-
14	50	3.571	-	1.000†	-	1.600	-	-	3.200	-	-	6.400	-	-
21	75	3.571	-	-	-	2.400†	-	-	4.800†	-	-	-	-	-
19	68	3.579	-	-	-	-	2.719†	-	-	5.438†	-	-	-	-
15	54	3.600	.719†	-	1.438†	-	2.156†	2.875	3.450†	4.313†	5.750	-	8.625†	11.500†
20	72	3.600	.958†	1.438†	1.917†	2.300†	2.875	3.833	4.600†	5.750	7.667†	-	11.500	15.333†
18	65	3.611	-	-	-	-	-	-	4.150†	-	-	-	-	-
21	76	3.619	-	-	-	-	-	-	-	6.063†	-	-	-	-
11	40	3.636	.531†	.797†	1.063†	1.300†	1.625†	2.167†	2.600†	3.250†	4.333†	5.200†	6.500†	-
22	80	3.636	1.063†	1.594†	-	2.550†	3.188†	-	5.100†	6.375	-	-	12.750†	-
23	84	3.652	-	-	2.229†	2.675†	3.344†	4.458†	-	-	-	-	-	-
12	44	3.667	.583†	.875†	1.167†	-	1.750†	2.333†	-	3.500	-	-	7.000	-
15	55	3.667	-	-	-	1.750†	-	-	3.500	-	-	7.000†	-	-
18	66	3.667	.875†	-	1.750†	-	-	3.500	-	-	7.000	-	-	-
19	70	3.684	-	-	1.854†	2.225†	-	-	4.450†	-	-	-	-	-
13	48	3.692	-	.953†	1.271†	1.525†	1.906†	2.542	3.050†	3.813†	-	-	-	-
14	52	3.714	.688†	1.031†	-	-	2.063†	-	4.125†	-	-	-	-	-
21	78	3.714	-	-	-	-	-	4.125†	-	-	-	-	-	-
15	56	3.733	.740†	1.109†	1.479†	-	2.219	2.958†	-	4.438	-	-	8.875	-
12	45	3.750	-	-	1.188†	1.425	-	-	2.850	-	-	5.700	-	-
16	60	3.750	.792†	1.188†	1.583†	1.900	2.375	3.167	3.800	4.750	6.333	7.600	9.500	12.667†
20	75	3.750	-	1.484†	-	2.375†	-	-	4.750†	-	-	-	-	-
17	64	3.765	-	-	1.688†	2.025†	2.531†	3.375†	4.050†	5.063†	-	-	-	-
18	68	3.778	-	-	-	-	2.668†	-	-	5.375†	-	-	-	-
19	72	3.789	-	-	1.896†	2.275†	2.844†	3.792†	4.550†	5.688†	-	-	-	-
20	76	3.800	-	-	-	-	-	-	-	6.000†	-	-	-	-
21	80	3.810	-	-	-	2.525†	3.156†	-	5.050†	6.313†	-	-	-	-
11	42	3.818	-	-	1.104†	-	-	2.250†	2.700†	3.375†	4.500†	-	6.750†	9.000†
22	84	3.818	1.104†	-	2.208†	2.650†	3.313†	4.417†	5.300†	6.625†	-	-	13.250†	-
17	65	3.824	-	-	-	-	-	-	4.100†	-	-	-	-	-
13	50	3.846	-	.984†	-	1.575†	-	-	3.150†	-	-	-	-	-
14	54	3.857	.708†	-	1.417†	-	2.125†	2.833	3.400†	4.250†	5.667	-	8.500†	11.333†
17	66	3.882	-	-	1.729†	-	-	3.458†	-	-	-	-	-	-
18	70	3.889	-	1.375†	1.833†	2.200	-	-	4.400	-	-	8.800	-	-
20	78	3.900	-	-	-	-	-	4.083†	-	-	-	-	-	-
14	55	3.929	-	-	-	1.725†	-	-	3.450	-	-	6.900†	-	-
19	75	3.947	-	-	-	2.350†	-	-	4.700†	-	-	-	-	-
11	44	4.000	.573†	.859†	1.146†	-	1.750†	2.333†	-	3.500†	-	-	7.000†	-
12	48	4.000	.625†	.938†	1.250†	1.500†	1.875	2.500	3.000	3.750	5.000	-	7.500	10.000†
13	52	4.000	-	1.016†	-	-	2.031†	-	-	4.063†	-	-	-	-
14	56	4.000	.729†	1.094†	1.458†	-	2.188	2.917†	-	4.375	-	-	8.750	-
15	60	4.000	.781†	1.172†	1.563†	1.875	2.344	3.125	3.750	4.688	6.250	7.500	9.375	12.500†
16	64	4.000	-	1.250†	1.667†	2.000†	2.500	3.333†	4.000†	5.000	6.667†	-	10.000	-
17	68	4.000	-	-	-	-	2.656†	-	-	5.313†	-	-	-	-
18	72	4.000	.938†	1.406†	1.875†	2.250†	2.813	3.750	4.500†	5.625	7.500	-	11.250	15.000†
19	76	4.000	-	-	-	-	-	-	-	5.938†	-	-	-	-
20	80	4.000	1.042†	1.563†	-	2.500	3.125	5.000	5.000	6.250	-	10.000	12.500	-
21	84	4.000	-	-	2.188†	2.625†	3.281†	4.375	5.250†	6.563†	8.750	-	17.500†	-
16	65	4.063	-	-	-	-	-	-	4.050†	-	-	-	-	-
11	45	4.091	-	-	1.167†	1.425†	-	-	2.850†	-	-	5.700†	-	-
19	78	4.105	-	-	-	-	-	4.042†	-	-	-	-	-	-
17	70	4.118	-	-	1.813†	2.175†	-	-	4.350†	-	-	-	-	-
16	66	4.125	.854†	-	1.708†	-	-	3.417	-	-	6.833	-	-	-
13	54	4.154	-	-	1.396†	-	2.094†	2.792	3.350†	4.188†	-	-	-	-
12	50	4.167	-	.969†	-	1.550	-	-	3.100	-	-	6.200	-	-
18	75	4.167	-	1.453†	-	2.325†	-	-	4.650†	-	-	-	-	-
20	84	4.200	1.083†	-	2.167†	2.600	3.250†	4.333	5.200†	6.500†	8.667†	-	13.000†	17.333†
19	80	4.211	-	-	-	2.475†	3.094†	-	4.950†	6.188†	-	-	-	-
18	76	4.222	-	-	-	-	-	-	-	5.875†	-	-	-	-
13	55	4.231	-	-	-	1.700†	-	-	3.400†	-	-	-	-	-
17	72	4.235	-	-	1.854†	2.225†	2.781†	3.708†	4.450†	5.563†	-	-	-	-
16	68	4.250	-	-	-	2.625†	3.250†	-	5.250†	6.500†	-	-	-	-
15	64	4.267	-	1.234†	1.646†	1.975†	2.469	3.292†	3.950†	4.938	6.583†	-	9.875	-
14	60	4.286	.771†	1.156†	1.542†	1.850	2.313	3.083	3.700	4.625	6.167	7.400	9.250	12.333†
13	56	4.308	-	1.078†	1.438†	-	2.156†	2.875†	-	4.313†	-	-	-	-
12	52	4.333	.667†	1.000†	-	-	2.000†	-	-	4.000†	-	-	-	-
15	65	4.333	-	-	-	-	-	-	4.000†	-	-	-	-	-
18	78	4.333	-	-	-	-	-	4.000†	-	-	-	-	-	-
11	48	4.364	.615†	.922†	1.229†	1.500†	1.875†	2.500†	3.000†	3.750†	5.000†	-	7.500†	10.000†
16	70	4.375	-	1.344†	1.792†	2.150	-	-	4.300	-	-	8.600	-	-
15	66	4.400	.844†	-	1.688†	-	-	3.375	-	-	6.750	-	-	-
17	75	4.412	-	-	-	2.300†	-	-	4.600†	-	-	-	-	-
19	84	4.421	-	-	2.146†	2.575†	3.219†	4.292†	5.150†	6.438†	-	-	-	-
18	80	4.444	1.021†	1.531†	-	2.450	3.063	-	4.900	6.125	-	9.800	12.250	-
17	76	4.471	-	-	-	-	-	-	-	5.813†	-	-	-	-
12	54	4.500	.688†	-	1.375†	-	2.063†	2.750	3.300†	4.125†	5.500	-	8.250†	11.000†
16	72	4.500	.917†	1.375†	1.833†	2.200†	2.750	3.667	4.400†	5.500	7.333	-	11.000	14.667†
15	68	4.533	-	-	-	-	2.594†	-	-	5.188†	-	-	-	-
11	50	4.545	-	.953†	-	1.550†	-	-	3.100†	-	-	6.200†	-	-
14	64	4.571	-	1.219†	1.625†	1.950†	2.438	3.250†	3.900†	4.875	6.500†	-	9.750	-
12	55	4.583	-	-	-	1.675†	-	-	3.350	-	-	6.700†	-	-
17	78	4.588	-	-	-	-	-	3.958†	-	-	-	-	-	-
13	60	4.615	-	1.141†	1.521†	1.825†	2.281†	3.042	3.650†	4.563†	-	-	-	-

† = 14 1/2° only * = 20° only.

▲WARNING

See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes.

TABLE No. 1

RATIO AND CENTER DISTANCE - SPUR GEARS

GEAR COMBINATIONS		RATIO	CENTER DISTANCE											
No. TEETH			DIAMETRAL PITCH											
DRIVER	DRIVEN		48	32	24	20	16	12	10	8	6	5	4	3
14	65	4.643	-	-	-	-	-	3.950†	-	-	-	-	-	
12	56	4.667	.708†	1.063†	1.417†	2.125	2.833†	-	4.250	-	-	8.500	-	
15	70	4.667	-	1.328†	1.771†	2.125	-	4.250	-	-	8.500	-	-	
18	84	4.667	1.063†	-	2.125†	2.550	3.188†	4.250	5.100†	6.375†	8.500	12.750†	17.000†	
16	75	4.688	-	1.422†	-	2.275†	-	-	4.550†	-	-	-	-	
17	80	4.706	-	-	-	2.425†	3.031†	-	4.850†	6.063†	-	-	-	
14	66	4.714	.833†	-	1.667†	-	-	3.333	-	6.667	-	-	-	
11	52	4.727	.656†	.984†	-	-	2.000†	-	-	4.000†	-	-	-	
16	76	4.750	-	-	-	-	-	-	-	5.750†	-	-	-	
15	72	4.800	.906†	1.359†	1.813†	2.175†	2.719	3.625	4.350†	5.438	7.250	-	10.875	
14	68	4.857	-	-	-	-	2.563†	-	-	5.125†	-	-	-	
16	78	4.875	-	-	-	-	-	3.916†	-	-	-	-	-	
11	54	4.909	.677†	-	1.354†	-	2.063†	2.750†	3.300†	4.125†	5.500†	-	8.250†	
13	64	4.923	-	1.203†	1.604†	1.925†	2.406†	3.208†	3.850†	4.813†	-	-	-	
17	84	4.941	-	-	2.104†	2.525†	3.156†	4.208†	5.050†	6.313†	-	-	-	
11	55	5.000	-	-	-	1.675†	-	-	3.350†	-	-	6.700†	-	
12	60	5.000	.750†	1.125†	1.500†	1.800	2.250	3.000	3.600	4.500	6.000	7.200	9.000	
13	65	5.000	-	-	-	-	-	-	3.900†	-	-	-	-	
14	70	5.000	-	1.313†	1.750†	2.100	-	-	4.200	-	-	8.400	-	
15	75	5.000	-	1.406†	-	2.250†	-	-	4.500†	-	-	-	-	
16	80	5.000	1.000†	1.500†	-	2.400	3.000	-	4.800	6.000	-	9.600	12.000	
15	76	5.067	-	-	-	-	-	-	-	5.688†	-	-	-	
13	66	5.077	-	-	1.646†	-	-	3.292	-	-	-	-	-	
11	56	5.091	.698†	1.047†	1.396†	-	2.125†	2.833†	-	4.250†	-	-	8.500†	
14	72	5.143	.896†	1.344†	1.792†	2.150†	2.688	3.583	4.300†	5.375	7.167	-	10.750	
15	78	5.200	-	-	-	-	-	3.875†	-	-	-	-	-	
13	68	5.231	-	-	-	-	2.531†	-	-	5.063†	-	-	-	
16	84	5.250	1.042†	-	2.083†	2.500	3.125†	4.167	5.000†	6.250†	8.333	-	12.500†	
12	64	5.333	-	1.188†	1.583†	1.900†	2.375	3.167†	3.800†	4.750	6.333†	-	9.500	
15	80	5.333	.990†	1.484†	-	2.375	2.969	-	4.750	5.938	-	9.500	11.875	
14	75	5.357	-	1.391†	-	2.225†	-	-	4.450†	-	-	-	-	
13	70	5.385	-	1.297†	1.729†	2.075†	-	-	4.150†	-	-	-	-	
12	65	5.417	-	-	-	-	-	-	3.850†	-	-	-	-	
14	76	5.429	-	-	-	-	-	-	-	5.625†	-	-	-	
11	60	5.455	.740†	1.109†	1.479†	1.800†	2.250†	3.000†	3.600†	4.500†	6.000†	7.200†	9.000†	
12	66	5.500	.813†	-	1.625†	-	-	3.250	-	-	6.500	-	-	
13	72	5.538	-	1.328†	1.771†	2.125†	2.656†	3.542	4.250†	5.313†	-	-	-	
14	78	5.571	-	-	-	-	-	3.833†	-	-	-	-	-	
15	84	5.600	1.031†	-	2.063†	2.475†	3.094†	4.125	4.950†	6.188†	8.250	-	12.375†	
12	68	5.667	-	-	-	-	2.500†	-	-	5.000†	-	-	-	
14	80	5.714	.979†	1.469†	-	2.350	2.938	-	4.700	5.875	-	9.400	11.750	
13	75	5.769	-	1.375†	-	2.200†	-	-	4.400†	-	-	-	-	
11	64	5.818	-	1.172†	1.563†	1.900†	2.375†	3.167†	3.800†	4.750†	6.333†	-	9.500†	
12	70	5.833	-	1.281†	1.708†	2.050	-	-	4.100	-	-	8.200	-	
13	76	5.846	-	-	-	-	-	-	-	5.563†	-	-	-	
11	65	5.909	-	-	-	-	-	-	3.800†	-	-	-	-	
11	66	6.000	.802†	-	1.604†	-	-	3.250†	-	-	6.500†	-	-	
12	72	6.000	.875†	1.313†	1.750†	2.100†	2.625	3.500	4.200†	5.250	7.000	-	10.500	
13	78	6.000	-	-	-	-	-	3.792†	-	-	-	-	-	
14	84	6.000	1.021†	-	2.042†	2.450	3.063†	4.083	4.900†	6.125†	8.167	-	12.250†	
13	80	6.154	-	1.453†	-	2.325†	2.906†	-	4.650†	5.813†	-	-	-	
11	68	6.182	-	-	-	-	2.500†	-	-	5.000†	-	-	-	
12	75	6.250	-	1.359†	-	2.175†	-	-	4.350†	-	-	-	-	
12	76	6.333	-	-	-	-	-	-	-	5.500†	-	-	-	
11	70	6.364	-	1.266†	1.688†	2.050†	-	-	4.100†	-	-	8.200†	-	
13	84	6.462	-	-	2.021†	2.425†	3.031†	4.042	4.850†	6.063†	-	-	-	
12	78	6.500	-	-	-	-	-	3.750†	-	-	-	-	-	
11	72	6.545	.865†	1.297†	1.729†	2.100†	2.625†	3.500†	4.200†	5.250†	7.000†	-	10.500†	
12	80	6.667	.958†	1.438†	-	2.300	2.875	-	4.600	5.750	-	9.200	11.500	
11	75	6.818	-	1.344†	-	2.175†	-	-	4.350†	-	-	-	-	
11	76	6.909	-	-	-	-	-	-	-	5.500†	-	-	-	
12	84	7.000	1.000†	-	2.000†	2.400	3.000†	4.000	4.800†	6.000†	8.000	-	12.000†	

† = 14 1/2° only * = 20° only.



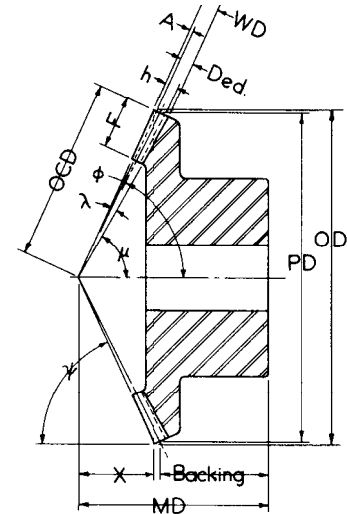
See Table No. 2, Page E-47 for Minimum Recommended Gear Sizes.

BEVEL AND MITER GEARS

BROWNING® Bevel and Miter Gears are generated with the Coniflex* straight tooth form which permits slight adjustment of Gears in assembly and deflection under load. This helps provide even distribution of tooth load, longer life and quieter operation.

Bevel and Miter Gears are used for power transmission between intersecting shafts at 90° and are recommended for low speed, high torque applications where pitch line velocity does not exceed 1000 FPM. Bevel Gears have a ratio range from 1 1/2:1 to 6:1. Miter Gears are 1:1 ratio.

Bevel Gear sets of different ratios are not interchangeable and must be used in pairs as shown in the Rating Table.



RULES AND FORMULAE FOR BEVEL AND MITER GEARS (GLEASON* SYSTEM)

TO OBTAIN	FORMULA		TO OBTAIN	FORMULA	
	PINION (p)	GEAR (G)		PINION (p)	GEAR (g)
Pitch Diameter (PD)	$PD_p = \frac{T}{P}$	$PD_G = \frac{T}{P}$	Pitch Apex to Crown (X)	$X_p = \frac{PD_G}{2} - A_p \sin \phi_p$	$X_G = \frac{PD_p}{2} - A_G \sin \phi_G$
Tangent of Pitch Angle (Ø)	$\tan \phi_p = \frac{T}{P}$ or $\phi_p = 90^\circ - \phi_G$	$\tan \phi_G = \frac{T}{P}$ or $\phi_G = 90^\circ - \phi_p$	* Whole Depth (WD)	$WD = \frac{2.188}{P}$	
Outer Cone Distance (OCD)	$OCD = \frac{PD}{2 \sin \phi}$		Dedendum (Ded)	$Ded_p = WD - A_p$	$Ded_G = WD - A_G$
Addendum (A)	$A_p = h - A_G$	$A_G = \frac{.54}{P} + \frac{.46}{(T/t)^2}$	Face Angle (ψ)	$\psi_p = \phi_p + \lambda_p$	$\psi_G = \phi_G + \lambda_p$
Working Depth (h)	$h = 2/P$		Dedendum Angle (λ)	$\lambda_p = \tan^{-1} \frac{Ded_p}{X \cdot OCD_p}$	$\lambda_G = \tan^{-1} \frac{Ded_G}{X \cdot OCD_G}$
Outside Diameter (OD)	$OD_p = PD_p + 2A_p \cos \phi_p$	$OD_G = PD_G + 2A_G \cos \phi_G$	Root Angle (μ)	$\mu_p = \phi - \lambda_p$	$\mu_G = \phi - \lambda_G$
			Mounting Distance (MD)	$MD = \frac{PD_G}{2} + \text{backing}$	$MD = \frac{PD_p}{2} + \text{backing}$
			Desired Face (F)	$F = (.3) OCD$	

Where: $\dagger$ = No. teeth of Pinion & T = No. teeth of Gear
P = Diametral Pitch & PD = Pitch Diameter
*The actual whole depth is .002 greater than calculated

EXAMPLE - BEVEL GEAR

A right angle drive is required for a 3 HP, 600 RPM pinion shaft. The desired driven speed is 300 RPM. The mounting distance of the pinion must be 4 3/4". The drive is to operate 8 hours a day, under heavy shock load and lubricated by grease. Driving shaft is 1 1/8", 1/4" x 1/8" Keyway. Driven shaft is 1 3/8", 5/16" x 5/32" Keyway.

- A. Overload Service Factor, Tables 2 & 3, Page E-46 8-10
Hours operation-Heavy Shock = 1.4
Grease = .4
Service Factor = 1.8

B. Required Horsepower: $1.8 \times 3 = 5.4$

C. Ratio = $\frac{600}{300} = 2$

- D. Look For 5.4 H.P. and 2 ratio at the 600 R.P.M. column on Page E-70. A 6 Pitch Bevel Gear Set gives 5.74 H.P.
E. Check mounting distance and bore, Page E-42.
MD = 4.750 for pinion, 1 1/8" bore with Keyway available.
F. List Drive Components
1, YSB6B36-20 (Rebore to 1 3/8", 5/16" x 5/32" Keyway)
1, YSB6F18-20 x 1 1/8", 1/4" x 1/8" Keyway.

The same basic procedure is used to select Miter Gear drives. For higher Horsepower capacities see Hardened Miter Gears.

* Coniflex and Gleason are believed to be the trademarks and/or trade names of The Gleason Works Corporation, and are not owned or controlled by Regal Beloit Corporation.

TABLE No. 1

RATINGS FOR UNHARDENED STEEL BEVEL GEARS

PART* NUMBER	PITCH	RATIO	No. TEETH	MOUNTING DISTANCE	HORSEPOWER AT PINION R.P.M.							
					50	100	200	300	600	900	1200	1800
YSB20B20-20 YSB20B10-20	20	2	20 10	.688 .750	.007	.01	.03	.04	.07	.10	.13	.18
YSB16B24-15 YSB16B16-15	16	1.5	24 16	1.188 1.250	.02	.05	.09	.12	.23	.30	.38	.49
YSB16B24-20 YSB16B12-20	16	2	24 12	1.000 1.125	.01	.02	.05	.06	.12	.16	.20	.27
YSB16B32-20 YSB16B16-20	16	2	32 16	1.188 1.500	.03	.06	.12	.17	.31	.41	.51	.67
YSB16B48-30 YSB16B16-30	16	3	48 16	1.313 2.000	.04	.08	.15	.22	.39	.53	.66	.84
YSB16B64-40 YSB16B16-40	16	4	64 16	1.375 2.500	.05	.10	.18	.25	.46	.62	.77	.99
YSB16B96-60 YSB16B16-60	16	6	96 16	1.688 3.750	.06	.13	.24	.34	.61	.83	1.02	1.31
YSB14B28-20 YSB14B14-20	14	2	28 14	1.375 1.625	.04	.07	.13	.18	.33	.43	.57	.71
YSB12B27-15 YSB12B18-15	12	1.5	27 18	1.750 1.875	.08	.15	.30	.40	.69	.91	1.10	1.36
YSB12B36-20 YSB12B18-20	12	2	36 18	1.875 2.375	.10	.19	.36	.51	.89	1.18	1.43	1.77
YSBF12B36-20 YSBF12B18-20	12	2	36 18	1.500 2.250	.09	.17	.32	.46	.80	1.06	1.28	1.58
YSB12B48-20 YSB12B24-20	12	2	48 24	2.000 2.875	.16	.32	.59	.83	1.40	1.80	2.12	2.55
YSB12B54-30 YSB12B18-30	12	3	54 18	1.750 3.000	.12	.23	.44	.62	1.07	1.42	1.71	2.11
YSB12B72-40 YSB12B18-40	12	4	72 18	2.000 3.750	.12	.24	.46	.66	1.13	1.49	1.79	2.22
YSB12B72-60 YSB12B12-60	12	6	72 12	1.750 3.750	.08	.16	.31	.43	.79	1.07	1.32	1.69
YSB10B30-15 YSB10B20-15	10	1.5	30 20	2.250 2.500	.17	.33	.61	.87	1.46	1.88	2.22	2.69
YSB10B40-20 YSB10B20-20	10	2	40 20	2.500 3.125	.21	.42	.77	1.04	1.83	2.37	2.79	3.38
YSB10B50-20 YSB10B25-20	10	2	50 25	2.625 3.375	.29	.58	1.05	1.45	2.38	3.00	3.47	-
YSB10B60-30 YSB10B20-30	10	3	60 20	2.750 4.375	.25	.50	.91	1.29	2.15	2.77	3.26	3.93
YSB10B60-40 YSB10B15-40	10	4	60 15	2.250 3.875	.16	.32	.60	.85	1.47	1.94	2.34	2.90
YSB10B90-60 YSB10B15-60	10	6	90 15	2.500 5.500	.20	.40	.76	1.08	1.86	2.45	2.95	3.36
YSB8B40-20 YSB8B20-20	8	2	40 20	2.875 4.000	.38	.76	1.38	1.92	3.15	3.97	4.61	-
YSB8B48-30 YSB8B16-30	8	3	48 16	2.375 4.250	.30	.60	1.12	1.60	2.63	3.39	3.99	4.82
YSB8B64-40 YSB8B16-40	8	4	64 16	2.750 5.250	.32	.64	1.18	1.66	2.78	3.57	4.19	5.05
YSB8B72-40 YSB8B18-40	8	4	72 18	3.250 5.750	.52	1.04	1.88	2.57	4.39	5.58	6.50	7.77
YSB6B36-20 YSB6B18-20	6	2	36 18	3.500 4.750	.72	1.44	2.65	3.60	5.74	7.15	8.24	-
YSB6B42-20 YSB6B21-20	6	2	42 21	3.750 5.000	.90	1.80	3.26	4.37	6.82	8.34	-	-
YSB6B48-20 YSB6B24-20	6	2	48 24	3.438 5.438	1.16	2.32	4.17	5.53	8.43	10.16	-	-
YSB6B45-30 YSB6B15-30	6	3	45 15	3.000 5.250	.62	1.23	2.23	3.10	4.08	6.40	7.42	-
YSB6B60-40 YSB6B15-40	6	4	60 15	3.250 6.750	.72	1.45	2.62	3.63	5.91	7.45	8.63	-

*Part Numbers shown are for Minimum Bore Gears; Ratings shown also apply for Finished Bore Gears of same pitch and number of teeth.

TABLE No. 1

RATINGS FOR UNHARDENED STEEL BEVEL GEARS

PART* NUMBER	PITCH	RATIO	No. TEETH	MOUNTING DISTANCE	HORSEPOWER AT PINION R.P.M.							
					50	100	200	300	600	900	1200	1800
YSB5B30-20	5	2	30	3.500	.81	1.61	2.94	4.00	6.37	7.94	9.13	-
YSB5B15-20			15	4.375								
YSB5B45-30	5	3	45	3.750	1.05	2.10	3.83	5.20	8.28	10.29	11.82	-
YSB5B15-30			15	5.875								
YSB5B60-40	5	4	60	3.750	1.37	2.74	5.01	6.81	10.84	13.46	15.46	-
YSB5B15-40			15	7.500								
YSB4B32-20	4	2	32	4.250	1.76	3.52	6.31	8.37	12.82	15.50	-	-
YSB4B16-20			16	6.000								
YSB4B42-30	4	3	42	4.000	1.58	3.15	5.69	7.62	11.90	14.53	-	-
YSB4B14-30			14	7.250								
YSB4B56-40	4	4	56	4.250	1.92	3.84	6.94	9.29	14.46	17.65	-	-
YSB4B14-40			14	9.000								
YSB3B30-20	3	2	30	5.500	3.81	7.61	12.64	16.76	24.62	-	-	-
YSB3B15-20			15	7.250								

*Part Numbers shown are for Minimum Bore Gears; Ratings shown also apply for Finished Bore Gears of same pitch and number of teeth.

TABLE No. 2

RATINGS FOR UNHARDENED STEEL MITER GEARS

PART* NUMBER	PITCH	No. TEETH	MOUNTING DISTANCE	HORSEPOWER AT PINION R.P.M.							
				50	100	200	300	600	900	1200	1800
YSM24B24	24	24	.906	-	-	.005	.01	.01	.02	.02	.03
YSM20B12	20	12	.671	-	.01	.02	.02	.04	.06	.08	.11
YSM16B12	16	12	.813	.01	.02	.04	.05	.09	.13	.16	.21
YSM16B16	16	16	1.063	.02	.04	.08	.11	.20	.26	.33	.42
YSM16B20	16	20	1.250	.03	.07	.13	.18	.31	.42	.51	.64
YSM16B24	16	24	1.375	.05	.09	.18	.25	.43	.57	.69	.85
YSM14B14	14	14	1.063	.02	.04	.07	.10	.19	.25	.31	.40
YSM12B15	12	15	1.250	.04	.08	.15	.21	.38	.50	.61	.77
YSM12B18	12	18	1.500	.06	.12	.22	.32	.54	.72	.86	1.07
YSM12B21	12	21	1.750	.09	.17	.32	.46	.78	1.02	1.22	1.49
YSM12B24	12	24	1.875	.11	.23	.42	.59	.98	1.26	1.49	1.79
YSM12B30	12	30	2.313	.19	.37	.68	.84	1.52	1.92	2.23	2.62
YSM10B20	10	20	2.000	.13	.26	.48	.68	1.14	1.47	1.73	2.09
YSM10B25	10	25	2.438	.22	.43	.78	1.08	1.77	2.23	2.58	3.04
YSM8B24	8	24	2.563 ▲	.36	.73	1.32	1.79	2.85	3.54	4.06	4.68
YSM8B28	8	28	3.250	.51	1.01	1.82	2.44	3.81	4.64	5.27	6.04
YSM8B32	8	32	3.625	.66	1.32	2.36	3.14	4.77	5.75	6.44	7.26
YSM6B24	6	24	3.625	.83	1.66	2.96	3.93	5.97	7.20	8.08	9.10
YSM6B27	6	27	4.125	1.07	2.13	3.72	4.99	7.36	8.77	9.72	10.88
YSM5B25	5	25	4.625	1.56	3.13	5.44	7.02	10.30	12.18	13.46	14.97
YSM4B24	4	24	5.500	2.76	5.52	9.04	11.72	15.33	16.66	19.29	23.03
YSM4B28	4	28	6.000	3.51	7.00	11.57	14.70	20.26	23.23	24.95	27.10

*Part Numbers shown are for Minimum Bore Gears; Ratings shown also apply for Finished Bore Gears of same pitch and number of teeth.

▲ YSM8F24 Finished Bore Gears have 2.750" Mounting Distance.

TABLE No. 3

RATINGS FOR HARDENED STEEL MITER GEARS

PART NUMBER	PITCH	No. TEETH	MOUNTING DISTANCE	HORSEPOWER AT PINION R.P.M.							
				50	100	200	300	600	900	1200	1800
YSM16F16H	16	16	1.063	.03	.07	.12	.17	.30	.41	.51	.66
YSM12F15H	12	15	1.250	.06	.12	.24	.33	.59	.78	.96	1.21
YSM12F18H	12	18	1.500	.09	.18	.35	.49	.85	1.23	1.35	1.67
YSM12F21H	12	21	1.750	.13	.27	.50	.72	1.22	1.60	1.90	2.32
YSM12F30H	12	30	2.313	.29	.58	1.06	1.46	2.38	3.01	3.49	4.10
YSM10F20H	10	20	2.000	.21	.41	.75	1.07	1.79	2.30	2.70	3.26
YSM10F25H	10	25	2.438	.34	.68	1.22	1.69	2.77	3.49	4.04	4.76
YSM8F24H	8	24	2.563 ▲	.57	1.13	2.06	2.80	4.45	5.52	6.34	7.32
YSM8F28H	8	28	3.250	.80	1.58	2.85	3.82	5.96	7.25	8.23	9.44
YSM8F32H	8	32	3.625	1.03	2.06	3.69	4.90	7.46	8.98	10.06	11.35
YSM6F24H	6	24	3.625	1.30	2.59	4.63	6.13	9.33	11.25	12.62	14.23
YSM5F25H	5	25	4.625	2.44	4.88	8.50	10.98	16.10	19.04	21.04	23.40
YSM4F24H	4	24	5.500	4.31	8.62	14.12	18.31	23.95	26.04	30.14	35.99

▲ Mounting Distance shown is for 3/4" Bore Only; Gears with 1" and 1 1/4" Bores have Mounting Distance of 2.750".

Ratings below Heavy Line are not recommended as Pitch Line Velocity exceeds 1000 feet per minute.

Spiral Bevel and Miter Gears have continuous pitch line contact and therefore run more smoothly and quietly than straight tooth gears. They must be run in sets of mating gears with opposite hand spiral. In Browning® stock spiral gear sets the pinion has left hand spiral and the gear has right hand spiral.

TABLE No. 1

RATINGS FOR HARDENED STEEL SPIRAL BEVEL GEARS

PART No.	PITCH	RATIO	No. TEETH	MOUNTING DIMENSION	HORSEPOWER AT PINION R.P.M.							
					50	100	200	300	600	900	1200	1800
YSBS14F32RH-20 YSBS14F16LH-20	14	2	32 16	1.375 1.625	.12	.24	.46	.70	1.33	1.99	2.65	3.76
YSBS10F34RH-20 YSBS10F17LH-20	10	2	34 17	1.875 2.375	.38	.75	1.43	2.19	4.10	6.14	8.19	12.78
YSBS8F34RH-20 YSBS8F17LH-20	8	2	34 17	2.500 3.125	.71	1.31	2.62	3.97	7.53	11.04	14.67	21.41

TABLE No. 2

RATINGS FOR HARDENED STEEL SPIRAL MITER GEARS

PART No.	PITCH	No. TEETH	MOUNTING DIMENSION	HORSEPOWER AT VARIOUS R.P.M.							
				50	100	200	300	600	900	1200	1800
YSMS12F15RH YSMS12F15LH	12	15	1.250	.06	.13	.25	.36	.68	1.02	1.35	1.98
YSMS12F18RH YSMS12F18LH	12	18	1.500	.09	.18	.35	.52	1.00	1.51	1.98	2.91
YSMS10F20RH YSMS10F20LH	10	20	2.000	.26	.50	.97	1.47	2.36	3.48	4.59	6.67
YSMS10F25RH YSMS10F25LH	10	25	2.437	.48	.87	1.67	2.51	4.83	7.06	9.29	13.75
YSMS8F28RH YSMS8F28LH	8	28	3.250	.99	2.10	4.11	6.07	11.91	13.14	17.46	25.56
YSMS7F21RH YSMS7F21LH	7	21	2.750	.70	1.36	2.60	3.84	7.40	8.22	10.96	16.44
YSMS6F24RH YSMS6F24LH	6	24	3.625	1.48	2.93	5.66	8.36	12.33	18.22	23.15	35.11
YSMS5F25RH YSMS5F25LH	5	25	4.625	2.80	5.44	10.83	15.64	22.56	33.39	42.86	63.61



BROWNING® Stock Gears are held to accurate tolerances by rigid quality control. This is made possible by the use of the most modern machinery for manufacturing and constant inspection. Each gear is easily identified by a legible part number marked on the part itself. Gears are rust-proofed and individually packaged. Each carton is clearly labelled with part number and all necessary specifications for identification of the contents, making it unnecessary to open the carton for inspection.

The Browning method of assigning clear and concise Part Numbers to all gear components provides all the essential information for identification:

SPUR GEARS:

NSS1624 (Minimum Bore Type)

- N = 14 1/2° Pressure Angle
- SS = Steel Spur
- 16 = Diametral Pitch
- 24 = No. Teeth

NSS16F24 x 3/4 (Finished Bore Type)

- N = 14 1/2° Pressure Angle
- SS = Steel Spur
- 16 = Diametral Pitch
- F = Finished Bore
- 24 = No. Teeth
- 3/4 = Bore, W/Kw. & S. S.

NCS16H96 (Bushing Type)

- N = 14 1/2° Pressure Angle
- CS = Cast Iron Spur
- 16 = Diametral Pitch
- H = H Bushing
- 96 = No. Teeth

CHANGE GEARS:

NCG1696

- N = 14 1/2° Pressure Angle
- CG = Change Gear
- 16 = Diametral Pitch
- 96 = No. Teeth

RACK:

2YSR12 x 3/4

- 2 = Two Ft. Length
- Y = 20° Pressure Angle
- S = Steel
- R = Rack
- 12 = Pitch
- 3/4 = Thickness

BEVEL GEARS:

YSB12F18-20 x 3/4

- Y = 20° Pressure Angle
- SB = Steel Bevel
- 12 = Diametral Pitch
- F = Finished Bore
- 18 = No. Teeth
- 20 = 2:1 Ratio
- 3/4 = 3/4 Bore, W/Kw. & S.S.

YSBF12B36-20

- Y = 20° Pressure Angle
- SB = Steel Bevel
- F = Short Face Length
- 12 = Diametral Pitch
- B = Min. Bore, No Kw. or S.S.
- 36 = No. Teeth
- 20 = 2:1 Ratio

Y5BS14F32RH-20 x 7/8

- Y = 20° Pressure Angle
- SB = Spiral Bevel
- S = Steel
- 14 = Diametral Pitch
- F = Finished Bore
- 32 = No. Teeth
- R = Right Hand Spiral or (L -Left Hand Spiral)
- H = Hardened Teeth
- 20 = 2:1 Ratio
- 7/8 = Bore, W/Kw. and S.S.

MITER GEARS:

YSM12F21H x 5/8

- Y = 20° Pressure Angle
- SM = Steel Miter
- 12 = Diametral Pitch
- F = Finished Bore
- 21 = No. Teeth
- H = Hardened (No "H" if unhardened)
- 5/8 = Bore, W/Kw. & S.S.

YSM12B24

- Y = 20° Pressure Angle
- SM = Steel Miter
- 12 = Diametral Pitch
- B = Min. Bore, no Kw. or S.S.
- 24 = No. Teeth

YSMS10F20RH x 3/4

- Y = 20° Pressure Angle
- SM = Spiral Miter
- S = Steel
- 10 = Diametral Pitch
- F = Finished Bore
- 20 = No. Teeth
- R = Right Hand Spiral or (L -Left Hand Spiral)
- H = Hardened Teeth
- 3/4 = Bore, W/Kw. and S.S.

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