AMERICAN NATIONAL STANDARD

Inverted Tooth (Silent) Chains and Sprockets

ANSI B29.2M - 1982

[1974)]

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FOREWORD

[This Foreword is not part of American National Standard, Inverted Tooth (Silent) Chains and Sprockets, ANSI B29.2M-1982.]

Preparatory work during the late 1930's and early 1940's by the Silent Chain Division of the Association of Roller and Silent Chain Manufacturers (ARSCM) (now the American Chain Association) resulted in agreement on standardization of silent chain primarily on the basis of standardized sprocket tooth design. Since individual chain manufacturers employed various chain joint designs, it was agreed that standards on chain detail would be limited to insure interchangeability of chains on sprockets of any number of teeth. At a meeting of representatives of all major American silent chain manufacturers in September 1944, under the auspices of the ARSCM, recommended "Engineering Standards for Industrial Silent Chain and Sprockets" were agreed upon. Formulas for sprocket design were expanded into tables which were approved and adopted by the ARSCM in April 1945. Supplementary information on sprocket tooth cutters was added and all of the data were incorporated in a comprehensive report, Industrial Standards for Industrial Silent Chains, Sprockets and Cutters. This report, with further refinements by minor revisions in 1949 and 1950, was then submitted to the Sectional Committee for review and approval as an American Standard.

The Sectional Committee accepted the recommendations with some minor revisions in 1950, and referred it to The American Society of Mechanical Engineers and the Society of Automotive Engineers for their approval as sponsors of the Committee, and subsequent transmission to the American Standards Association for final acceptance as an American Standard. After approval by ASME and SAE, it was accepted by ASA on November 9, 1950, as American Standard B29.2.

In 1956, the Sectional Committee authorized a revision to the standard to bring it up to date. The revised standard was approved by the American Standards Association on July 11, 1957. This revision has been in use for many years, and was reaffirmed by the American National Standards Institute on January 4, 1971. (ASA became ANSI in 1969.)

In 1945, the formulation of a recommended standard for "small pitch" silent chain (pitch sizes less than $^3/_8$ in.) and sprocket tooth form became a matter of consideration by ARSCM's Silent Chain Division. As in the case of the larger chain series, the objective was to provide interchangeability of chains on sprockets, and the development of recommended practices for power transmission ratings and selection procedure. After a number of years of usage as an ARSCM Industrial Standard, the recommendations became American Standard B29.9 in 1958. Although it was originally anticipated that there might be a need for two or three pitch sizes of the miniature silent chains, only one, the $^3/_{16}$ in. size, has been developed.

The information which has heretofore been published as B29.9 was incorporated in the basic Silent Chain Standard, B29.2, as part of this present revision and modernization of both documents.

This Standard was approved by the American National Standard Institute December 21, 1982.

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Chains, Attachments, and Sprockets for Power Transmission and Conveying

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NOTE: Also included in this publication on the pages following Page 24 is certain "Supplementary Information" which contains suggestions relative to the application and use of the chains covered by this Standard.

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AMERICAN NATIONAL STANDARD

INVERTED TOOTH (SILENT) CHAINS AND SPROCKETS

1 SILENT CHAINS

1.1 Nomenclature

(*a*) Silent chain is a series of toothed links alternately assembled with pins or a combination of joint components in such a way that the joint articulates between adjoining pitches. As shown in Fig. 1.1(a)-1, side guide silent chain has guide links which straddle the sprocket sides to control the chain laterally. As shown in Fig. 1.1(a)-2, center guide silent chain has guide links which run within a circumferential groove or grooves for lateral control.

(*b*) *Typical Links*. Since joint components, connectors, and offset sections vary with each manufacturer, these items are not included in this standardization. See Fig. 1.1(b) for examples of typical links.

1.2 General Configuration

Link contour may vary but must engage standard sprocket teeth so that joint centers lie on sprocket pitch circle.

(*a*) *3/8 in. Pitch Chain and Larger.* Chain widths equal to, or exceeding, 2 times the pitch have center guides. Narrower chains may be side guide or center guide. Chain widths exceeding 16 times the pitch are not recommended.

(*b*) *3/16 in. Pitch Chain.* Chain may be side guide or center guide as indicated in Tables 1.8-1 and 1.8-2.

(*c*) Maximum chain width should be limited to approximately 8 times the pitch.

1.3 Numbering System

(*a*) *3/8 in. Pitch Chain and Larger.* Two letters SC as a prefix, one or two numerals indicating pitch in eighths of an inch, and two or three numerals indicating nominal chain width in quarters of an inch. Thus SC302 designates a silent chain, 3/8 in. pitch by 1/2 in. nominal width, and SC1012 designates a silent chain, 1 1/4 in. pitch by 3 in. nominal width.

(*b*) *3/16 in. Pitch Chain.* Two letters SC as a prefix, a zero followed by a numeral indicating pitch in sixteenths of an inch, and two numerals indicating nominal width of chain in thirty-seconds of an inch. Thus SC0309 designates a silent chain, 3/16 in. pitch by 9/32 in. nominal width.

NOTE: Where links are all of equal thickness 0.030 in. (0.76 mm), it is understood that the width indication also designates the total number of links across the width of the chain.

1.4 Tolerance for Chain Length

(*a*) *3/8 in. Pitch Chain and Larger.* Chains will be designed and manufactured to fit gage sprockets. Tolerance for chain length for new chains may be over nominal length 0.030 in./ft (0.76 mm/ft), but must not be underlength.

(*b*) *3/16 in. Pitch Chain.* Chain length tolerance is 0.020 in./ft (0.51 mm/ft) over nominal length, but must not be underlength.

1.5 Measuring Loads

(*a*) *3/8 in. Pitch Chain and Larger.* Chain should be measured under load of 25 lb X pitch in inches X width in inches +20 lb (0.1724 N X pitch in mm X width in mm +89 N). Length measurements are to be taken over a length of at least 12 in. (300 mm).

(*b*) *3/16 in. Pitch Chain.* The measuring load for 3/16 in. pitch silent chain shall be approximately equal to 1 lb (4.45 N) for each link in the total chain width, i.e., the load for SC0315 would be 15 lb (67 N). Length measurements are to be taken over a length of at least 12 in. (300 mm).

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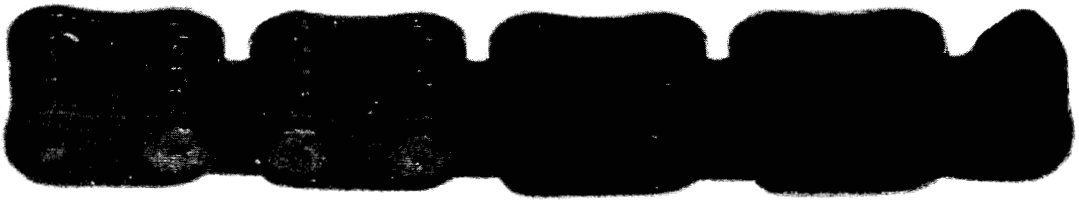


FIG. 1.1(a)-1 SIDE GUIDE SILENT CHAIN

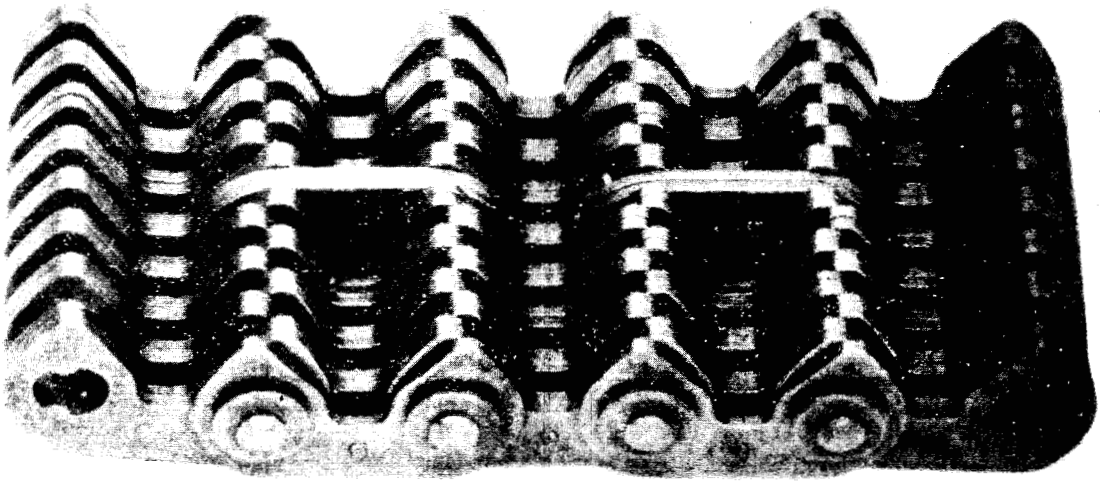


FIG. 1.1(a)-2 CENTER GUIDE SILENT CHAIN

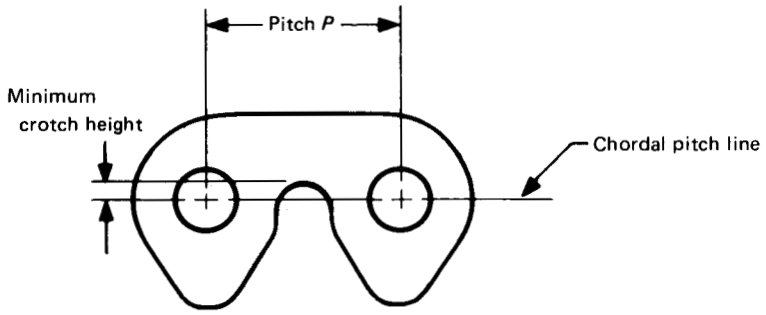


FIG. 1.1(b) TYPICAL LINKS

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1.6 General Chain Dimensions for 3/8 in. Pitch Chain and Larger



GENERAL NOTE:
Minimum crotch height = 0.062 X chain pitch

FIG. 1.6 LINK FORM

TABLE 1.6-1
CHAIN LINK DATA – INCHES

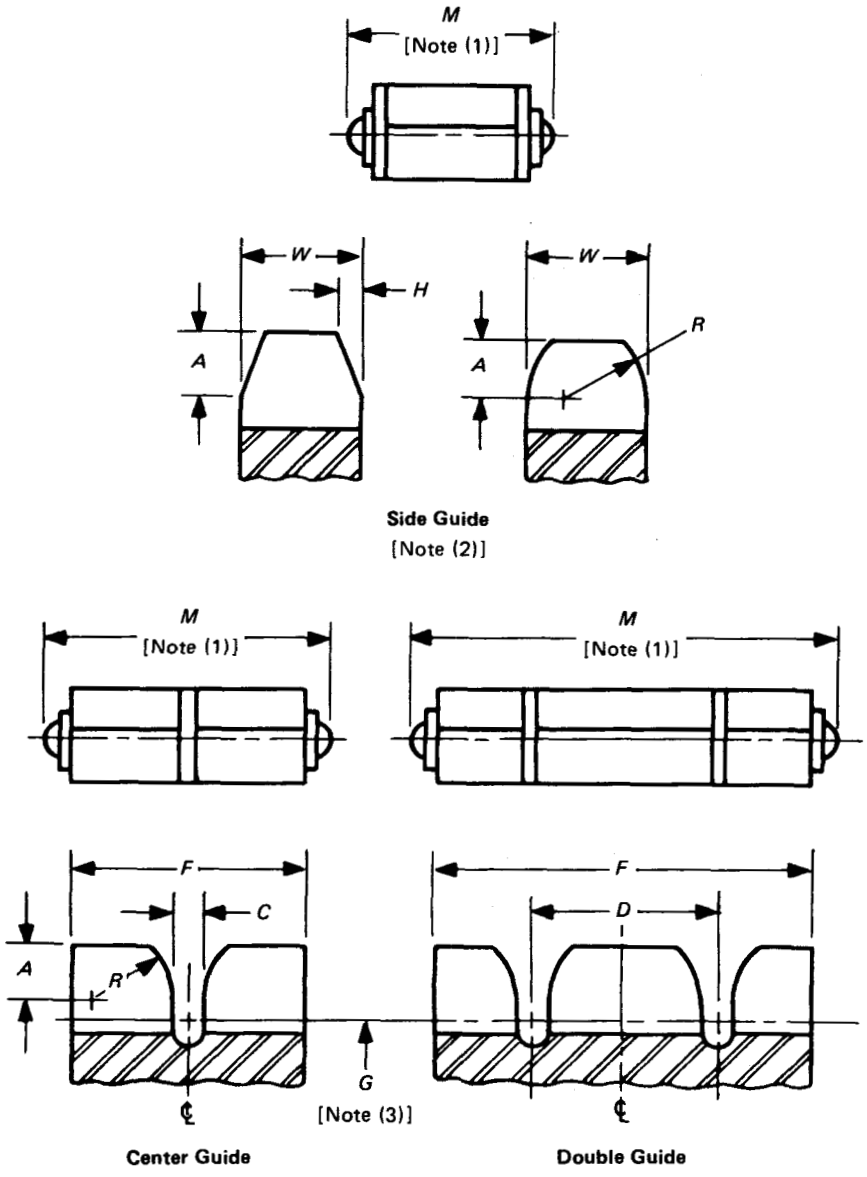
Chain Number (Width in 1/4 in.)	Chain Pitch	Stamp	Min. Crotch Height
SC3	0.375	SC3 or 3	0.0232
SC4	0.500	SC4 or 4	0.0310
SC5	0.625	SC5 or 5	0.0388
SC6	0.750	SC6 or 6	0.0465
SC8	1.000	SC8 or 8	0.0620
SC10	1.250	SC10 or 10	0.0775
SC12	1.500	SC12 or 12	0.0930
SC16	2.000	SC16 or 16	0.1240

TABLE 1.6-2
CHAIN LINK DATA – MILLIMETERS

Chain Number (Width in 1/4 in.)	Chain Pitch	Stamp	Min. Crotch Height
SC3	9.52	SC3 or 3	0.589
SC4	12.70	SC4 or 4	0.787
SC5	15.88	SC5 or 5	0.985
SC6	19.05	SC6 or 6	1.181
SC8	25.40	SC8 or 8	1.574
SC10	31.76	SC10 or 10	1.968
SC12	38.10	SC12 or 12	2.302
SC10	50.80	SC16 or 16	3.149

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1.7 Chain Widths and Sprocket Face Profiles for $^3/_8$ in. Pitch Chain and Larger



GENERAL NOTES:

(a) All sprockets should be marked with complete chain number and number of teeth. Example: SC304-25.

(b) The maximum radius over a new chain engaged on a sprocket will not exceed the sprocket pitch radius plus 75% of the chain pitch.

NOTES:

(1) *M* equals maximum overall width of chain.

(2) Side guide chains have single outside guides of same thickness as toothed links.

(3) Grooving tool may be either square or round end but groove must be full width down to diameter *G*. For values of *G* see Table 2.8.

FIG. 1.7 CHAIN WIDTHS AND SPROCKET PROFILES

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TABLE 1.7-1
CHAIN WIDTHS AND SPROCKET FACE DIMENSIONS – INCHES

Chain Number [Note (1)]	Chain Pitch	Type	*M* Max. [Note (2)]	*A*	*C* ±0.005	*D* ±0.010	*F* +0.125 −0.000	*H* ±0.003	*R* ±0.003	*W* +0.010 −0.000
SC302	0.375	Side guide[3]	0.594	0.133	...	...	...	0.051	0.200	0.410
SC303	0.375	Center guide	0.844	0.133	0.100	...	0.750	...	0.200	...
SC304	0.375	Center guide	1.094	0.133	0.100	...	1.000	...	0.200	...
SC305	0.375	Center guide	1.344	0.133	0.100	...	1.250	...	0.200	...
SC306	0.375	Center guide	1.594	0.133	0.100	...	1.500	...	0.200	...
SC307	0.375	Center guide	1.844	0.133	0.100	...	1.750	...	0.200	...
SC308	0.375	Center guide	2.094	0.133	0.100	...	2.000	...	0.200	...
SC309	0.375	Center guide	2.344	0.133	0.100	...	2.250	...	0.200	...
SC310	0.375	Center guide	2.594	0.133	0.100	...	2.500	...	0.200	...
SC312	0.375	Double guide	3.094	0.133	0.100	1.000	3.000	...	0.200	...
SC316	0.375	Double guide	4.094	0.133	0.100	1.000	4.000	...	0.200	...
SC320	0.375	Double guide	5.094	0.133	0.100	1.000	5.000	...	0.200	...
SC324	0.375	Double guide	6.094	0.133	0.100	1.000	6.000	...	0.200	...
SC402	0.500	Side guide[3]	0.750	0.133	...	...	...	0.051	0.200	0.410
SC403	0.500	Center guide	0.875	0.133	0.100	...	0.750	...	0.200	...
SC404	0.500	Center guide	1.125	0.133	0.100	...	1.000	...	0.200	...
SC405	0.500	Center guide	1.375	0.133	0.100	...	1.250	...	0.200	...
SC406	0.500	Center guide	1.625	0.133	0.100	...	1.500	...	0.200	...
SC407	0.500	Center guide	1.875	0.133	0.100	...	1.750	...	0.200	...
SC408	0.500	Center guide	2.125	0.133	0.100	...	2.000	...	0.200	...
SC409	0.500	Center guide	2.375	0.133	0.100	...	2.250	...	0.200	...
SC410	0.500	Center guide	2.625	0.133	0.100	...	2.500	...	0.200	...
SC411	0.500	Center guide	2.875	0.133	0.100	...	2.750	...	0.200	...
SC412	0.500	Center guide	3.125	0.133	0.100	...	3.000	...	0.200	...
SC414	0.500	Center guide	3.625	0.133	0.100	...	3.500	...	0.200	...
SC416	0.500	Double guide	4.125	0.133	0.100	1.000	4.000	...	0.200	...
SC420	0.500	Double guide	5.125	0.133	0.100	1.000	5.000	...	0.200	...
SC424	0.500	Double guide	6.125	0.133	0.100	1.000	6.000	...	0.200	...
SC432	0.500	Double guide	8.125	0.133	0.100	1.000	8.000	...	0.200	...
SC504	0.625	Center guide	1.156	0.177	0.125	...	1.000	...	0.250	...
SC505	0.625	Center guide	1.406	0.177	0.125	...	1.250	...	0.250	...
SC506	0.625	Center guide	1.656	0.177	0.125	...	1.500	...	0.250	...
SC507	0.625	Center guide	1.906	0.177	0.125	...	1.750	...	0.250	...
SC508	0.625	Center guide	2.156	0.177	0.125	...	2.000	...	0.250	...
SC510	0.625	Center guide	2.656	0.177	0.125	...	2.500	...	0.250	...
SC512	0.625	Center guide	3.156	0.177	0.125	...	3.000	...	0.250	...
SC516	0.625	Center guide	4.156	0.177	0.125	...	4.000	...	0.250	...
SC520	0.625	Double guide	5.156	0.177	0.125	2.000	5.000	...	0.250	...
SC524	0.625	Double guide	6.156	0.177	0.125	2.000	6.000	...	0.250	...
SC528	0.625	Double guide	7.156	0.177	0.125	2.000	7.000	...	0.250	...
SC532	0.625	Double guide	8.156	0.177	0.125	2.000	8.000	...	0.250	...
SC540	0.625	Double guide	10.156	0.177	0.125	2.000	10.000	...	0.250	...
SC604	0.750	Center guide	1.187	0.274	0.180	...	1.000	...	0.360	...
SC605	0.750	Center guide	1.437	0.274	0.180	...	1.250	...	0.360	...
SC606	0.750	Center guide	1.687	0.274	0.180	...	1.500	...	0.360	...
SC608	0.750	Center guide	2.187	0.274	0.180	...	2.000	...	0.360	...
SC610	0.750	Center guide	2.687	0.274	0.180	...	2.500	...	0.360	...
SC612	0.750	Center guide	3.187	0.274	0.180	...	3.000	...	0.360	...
SC614	0.750	Center guide	3.687	0.274	0.180	...	3.500	...	0.360	...
SC616	0.750	Center guide	4.187	0.274	0.180	...	4.000	...	0.360	...
SC620	0.750	Center guide	5.187	0.274	0.180	...	5.000	...	0.360	...
SC624	0.750	Center guide	6.187	0.274	0.180	...	6.000	...	0.360	...
SC628	0.750	Double guide	7.187	0.274	0.180	4.000	7.000	...	0.360	...
SC632	0.750	Double guide	8.187	0.274	0.180	4.000	8.000	...	0.360	...

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TABLE 1.7-1 (CONT'D)

Chain Number [Note (1)]	Chain Pitch	Type	*M* Max. [Note (2)]	*A*	*C* ±0.005	*D* ±0.010	*F* +0.125 −0.000	*H* ±0.003	*R* ±0.003	*W* +0.010 −0.000
SC636	0.750	Double guide	9.187	0.274	0.180	4.000	9.000	...	0.360	...
SC640	0.750	Double guide	10.187	0.274	0.180	4.000	10.000	...	0.360	...
SC648	0.750	Double guide	12.187	0.274	0.180	4.000	12.000	...	0.360	...
SC808	1.000	Center guide	2.250	0.274	0.180	...	2.000	...	0.360	...
SC810	1.000	Center guide	2.750	0.274	0.180	...	2.500	...	0.360	...
SC812	1.000	Center guide	3.250	0.274	0.180	...	3.000	...	0.360	...
SC816	1.000	Center guide	4.250	0.274	0.180	...	4.000	...	0.360	...
SC820	1.000	Center guide	5.250	0.274	0.180	...	5.000	...	0.360	...
SC824	1.000	Center guide	6.250	0.274	0.180	...	6.000	...	0.360	...
SC828	1.000	Double guide	7.250	0.274	0.180	4.000	7.000	...	0.360	...
SC832	1.000	Double guide	8.250	0.274	0.180	4.000	8.000	...	0.360	...
SC836	1.000	Double guide	9.250	0.274	0.180	4.000	9.000	...	0.360	...
SC840	1.000	Double guide	10.250	0.274	0.180	4.000	10.000	...	0.360	...
SC848	1.000	Double guide	12.250	0.274	0.180	4.000	12.000	...	0.360	...
SC856	1.000	Double guide	14.250	0.274	0.180	4.000	14.000	...	0.360	...
SC864	1.000	Double guide	16.250	0.274	0.180	4.000	16.000	...	0.360	...
SC1010	1.250	Center guide	2.812	0.274	0.180	...	2.500	...	0.360	...
SC1012	1.250	Center guide	3.312	0.274	0.180	...	3.000	...	0.360	...
SC1016	1.250	Center guide	4.312	0.274	0.180	...	4.000	...	0.360	...
SC1020	1.250	Center guide	5.312	0.274	0.180	...	5.000	...	0.360	...
SC1024	1.250	Center guide	6.312	0.274	0.180	...	6.000	...	0.360	...
SC1028	1.250	Center guide	7.312	0.274	0.180	...	7.000	...	0.360	...
SC1032	1.250	Double guide	8.312	0.274	0.180	4.000	8.000	...	0.360	...
SC1036	1.250	Double guide	9.312	0.274	0.180	4.000	9.000	...	0.360	...
SC1040	1.250	Double guide	10.312	0.274	0.180	4.000	10.000	...	0.360	...
SC1048	1.250	Double guide	12.312	0.274	0.180	4.000	12.000	...	0.360	...
SC1056	1.250	Double guide	14.312	0.274	0.180	4.000	14.000	...	0.360	...
SC1064	1.250	Double guide	16.312	0.274	0.180	4.000	16.000	...	0.360	...
SC1072	1.250	Double guide	18.312	0.274	0.180	4.000	18.000	...	0.360	...
SC1080	1.250	Double guide	20.312	0.274	0.180	4.000	20.000	...	0.360	...
SC1212	1.500	Center guide	3.375	0.274	0.180	...	3.000	...	0.360	...
SC1216	1.500	Center guide	4.375	0.274	0.180	...	4.000	...	0.360	...
SC1220	1.500	Center guide	5.375	0.274	0.180	...	5.000	...	0.360	...
SC1224	1.500	Center guide	6.375	0.274	0.180	...	6.000	...	0.360	...
SC1228	1.500	Center guide	7.375	0.274	0.180	...	7.000	...	0.360	...
SC1232	1.500	Double guide	8.375	0.274	0.180	4.000	8.000	...	0.360	...
SC1236	1.500	Double guide	9.375	0.274	0.180	4.000	9.000	...	0.360	...
SC1240	1.500	Double guide	10.375	0.274	0.180	4.000	10.000	...	0.360	...
SC1248	1.500	Double guide	12.375	0.274	0.180	4.000	12.000	...	0.360	...
SC1256	1.500	Double guide	14.375	0.274	0.180	4.000	14.000	...	0.360	...
SC1264	1.500	Double guide	16.375	0.274	0.180	4.000	16.000	...	0.360	...
SC1272	1.500	Double guide	18.375	0.274	0.180	4.000	18.000	...	0.360	...
SC1280	1.500	Double guide	20.375	0.274	0.180	4.000	20.000	...	0.360	...
SC1288	1.500	Double guide	22.375	0.274	0.180	4.000	22.000	...	0.360	...
SC1296	1.500	Double guide	24.375	0.274	0.180	4.000	24.000	...	0.360	...
SC1616	2.000	Center guide	4.500	0.274	0.218	...	4.000	...	0.360	...
SC1620	2.000	Center guide	5.500	0.274	0.218	...	5.000	...	0.360	...
SC1624	2.000	Center guide	6.500	0.274	0.218	...	6.000	...	0.360	...
SC1628	2.000	Center guide	7.500	0.274	0.218	...	7.000	...	0.360	...
SC1632	2.000	Double guide	8.500	0.274	0.218	4.000	8.000	...	0.360	...
SC1640	2.000	Double guide	10.500	0.274	0.218	4.000	10.000	...	0.360	...
SC1648	2.000	Double guide	12.500	0.274	0.218	4.000	12.000	...	0.360	...
SC1656	2.000	Double guide	14.500	0.274	0.218	4.000	14.000	...	0.360	...
SC1664	2.000	Double guide	16.500	0.274	0.218	4.000	16.000	...	0.360	...

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TABLE 1.7-1 (CONT'D)

Chain Number [Note (1)]	Chain Pitch	Type	*M* Max. [Note (2)]	*A*	*C* ±0.005	*D* ±0.010	*F* +0.125 −0.000	*H* ±0.003	*R* ±0.003	*W* +0.010 −0.000
SC1672	2.000	Double guide	18.500	0.274	0.218	4.000	18.000	...	0.360	...
SC1680	2.000	Double guide	20.500	0.274	0.218	4.000	20.000	...	0.360	...
SC1688	2.000	Double guide	22.500	0.274	0.218	4.000	22.000	...	0.360	...
SC1696	2.000	Double guide	24.500	0.274	0.218	4.000	24.000	...	0.360	...
SC16120	2.000	Double guide	30.500	0.274	0.218	4.000	30.000	...	0.360	...

NOTES:
(1) Consult manufacturers' catalogs for available widths.
(2) *M* equals maximum overall width of chain.
(3) Side guide chains have single outside guides of same thickness on toothed links.

TABLE 1.7-2
CHAIN WIDTHS AND SPROCKET FACE DIMENSIONS – MILLIMETERS

Chain Number [Note (1)]	Chain Pitch	Type	*M* Max. [Note (2)]	*A*	*C* ±0.13	*D* ±0.25	*F* +3.18 −0.00	*H* ±0.08	*R* ±0.08	*W* +0.25 −0.00
SC302	9.52	Side guide[3]	15.09	3.38	...	...	...	1.30	5.08	10.41
SC303	9.52	Center guide	21.44	3.38	2.54	...	19.05	...	5.08	...
SC304	9.52	Center guide	27.79	3.38	2.54	...	25.40	...	5.08	...
SC305	9.52	Center guide	34.14	3.38	2.54	...	31.75	...	5.08	...
SC306	9.52	Center guide	40.49	3.38	2.54	...	38.10	...	5.08	...
SC307	9.52	Center guide	46.84	3.38	2.54	...	44.45	...	5.08	...
SC308	9.52	Center guide	53.19	3.38	2.54	...	50.80	...	5.08	...
SC309	9.52	Center guide	59.54	3.38	2.54	...	57.15	...	5.08	...
SC310	9.52	Center guide	65.89	3.38	2.54	...	63.50	...	5.08	...
SC312	9.52	Double guide	78.59	3.38	2.54	25.40	76.20	...	5.08	...
SC316	9.52	Double guide	103.99	3.38	2.54	25.40	101.60	...	5.08	...
SC320	9.52	Double guide	129.39	3.38	2.54	25.40	127.00	...	5.08	...
SC324	9.52	Double guide	154.79	3.38	2.54	25.40	152.40	...	5.08	...
SC402	12.70	Side guide[3]	19.05	3.38	...	...	...	1.30	5.08	10.41
SC403	12.70	Center guide	22.22	3.38	2.54	...	19.05	...	5.08	...
SC404	12.70	Center guide	28.58	3.38	2.54	...	25.40	...	5.08	...
SC405	12.70	Center guide	34.92	3.38	2.54	...	31.75	...	5.08	...
SC406	12.70	Center guide	41.28	3.38	2.54	...	38.10	...	5.08	...
SC407	12.70	Center guide	47.62	3.38	2.54	...	44.45	...	5.08	...
SC408	12.70	Center guide	53.98	3.38	2.54	...	50.80	...	5.08	...
SC409	12.70	Center guide	60.32	3.38	2.54	...	57.15	...	5.08	...
SC410	12.70	Center guide	66.68	3.38	2.54	...	63.50	...	5.08	...
SC411	12.70	Center guide	73.02	3.38	2.54	...	69.85	...	5.08	...
SC412	12.70	Center guide	79.38	3.38	2.54	...	76.20	...	5.08	...
SC414	12.70	Center guide	92.08	3.38	2.54	...	88.90	...	5.08	...
SC416	12.70	Double guide	104.78	3.38	2.54	25.4	101.60	...	5.08	...
SC420	12.70	Double guide	130.18	3.38	2.54	25.4	127.00	...	5.08	...
SC424	12.70	Double guide	155.58	3.38	2.54	25.4	152.40	...	5.08	...
SC432	12.70	Double guide	206.38	3.38	2.54	25.4	203.20	...	5.08	...
SC504	15.88	Center guide	29.36	4.50	3.18	...	25.40	...	6.35	...
SC505	15.88	Center guide	35.71	4.50	3.18	...	31.75	...	6.35	...
SC506	15.88	Center guide	42.06	4.50	3.18	...	38.10	...	6.35	...
SC507	15.88	Center guide	48.41	4.50	3.18	...	44.45	...	6.35	...
SC508	15.88	Center guide	54.76	4.50	3.18	...	50.80	...	6.35	...
SC510	15.88	Center guide	67.46	4.50	3.18	...	63.50	...	6.35	...

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TABLE 1.7-2 (CONT'D)

Chain Number [Note (1)]	Chain Pitch	Type	*M* Max. [Note (2)]	*A*	*C* ±0.13	*D* ±0.25	*F* +3.18 −0.00	*H* ±0.08	*R* ±0.08	*W* +0.25 −0.00
SC512	15.88	Center guide	80.16	4.50	3.18	...	76.20	...	6.35	...
SC516	15.88	Center guide	105.56	4.50	3.18	...	101.60	...	6.35	...
SC520	15.88	Double guide	130.96	4.50	3.18	50.80	127.00	...	6.35	...
SC524	15.88	Double guide	156.36	4.50	3.18	50.80	152.40	...	6.35	...
SC528	15.88	Double guide	181.76	4.50	3.18	50.80	177.80	...	6.35	...
SC532	15.88	Double guide	207.16	4.50	3.18	50.80	203.20	...	6.35	...
SC540	15.88	Double guide	257.96	4.50	3.18	50.80	254.00	...	6.35	...
SC604	19.05	Center guide	30.15	6.96	4.57	...	25.40	...	9.14	...
SC605	19.05	Center guide	36.50	6.96	4.57	...	31.75	...	9.14	...
SC606	19.05	Center guide	42.85	6.96	4.57	...	38.10	...	9.14	...
SC608	19.05	Center guide	55.55	6.96	4.57	...	50.80	...	9.14	...
SC610	19.05	Center guide	68.25	6.96	4.57	...	63.50	...	9.14	...
SC612	19.05	Center guide	80.95	6.96	4.57	...	76.20	...	9.14	...
SC614	19.05	Center guide	93.65	6.96	4.57	...	88.90	...	9.14	...
SC616	19.05	Center guide	106.35	6.96	4.57	...	101.60	...	9.14	...
SC620	19.05	Center guide	131.75	6.96	4.57	...	127.00	...	9.14	...
SC624	19.05	Center guide	157.15	6.96	4.57	...	152.40	...	9.14	...
SC628	19.05	Double guide	182.55	6.96	4.57	101.60	177.80	...	9.14	...
SC632	19.05	Double guide	207.95	6.96	4.57	101.60	203.20	...	9.14	...
SC636	19.05	Double guide	233.35	6.96	4.57	101.60	228.60	...	9.14	...
SC640	19.05	Double guide	258.75	6.96	4.57	101.60	254.00	...	9.14	...
SC648	19.05	Double guide	309.55	6.96	4.57	101.60	304.80	...	9.14	...
SC808	25.4	Center guide	57.15	6.96	4.57	...	50.80	...	9.14	...
SC810	25.4	Center guide	69.85	6.96	4.57	...	63.50	...	9.14	...
SC812	25.4	Center guide	82.55	6.96	4.57	...	76.20	...	9.14	...
SC816	25.4	Center guide	107.95	6.96	4.57	...	101.60	...	9.14	...
SC820	25.4	Center guide	133.35	6.96	4.57	...	127.00	...	9.14	...
SC824	25.4	Center guide	158.75	6.96	4.57	...	152.40	...	9.14	...
SC828	25.4	Double guide	184.15	6.96	4.57	101.60	177.80	...	9.14	...
SC832	25.4	Double guide	209.55	6.96	4.57	101.60	203.20	...	9.14	...
SC836	25.4	Double guide	234.95	6.96	4.57	101.60	228.60	...	9.14	...
SC840	25.4	Double guide	260.35	6.96	4.57	101.60	254.00	...	9.14	...
SC848	25.4	Double guide	311.15	6.96	4.57	101.60	304.80	...	9.14	...
SC856	25.4	Double guide	361.95	6.96	4.57	101.60	355.60	...	9.14	...
SC864	25.4	Double guide	412.75	6.96	4.57	101.60	406.40	...	9.14	...
SC1010	31.75	Center guide	71.42	6.96	4.57	...	63.50	...	9.14	...
SC1012	31.75	Center guide	84.12	6.96	4.57	...	76.20	...	9.14	...
SC1016	31.75	Center guide	109.52	6.96	4.57	...	101.60	...	9.14	...
SC1020	31.75	Center guide	134.92	6.96	4.57	...	127.00	...	9.14	...
SC1024	31.75	Center guide	160.32	6.96	4.57	...	152.40	...	9.14	...
SC1028	31.75	Center guide	185.72	6.96	4.57	...	177.80	...	9.14	...
SC1032	31.75	Double guide	211.12	6.96	4.57	101.60	203.20	...	9.14	...
SC1036	31.75	Double guide	236.52	6.96	4.57	101.60	228.60	...	9.14	...
SC1040	31.75	Double guide	261.92	6.96	4.57	101.60	254.00	...	9.14	...
SC1048	31.75	Double guide	312.72	6.96	4.57	101.60	304.80	...	9.14	...
SC1056	31.75	Double guide	363.52	6.96	4.57	101.60	355.60	...	9.14	...
SC1064	31.75	Double guide	414.32	6.96	4.57	101.60	406.40	...	9.14	...
SC1072	31.75	Double guide	465.12	6.96	4.57	101.60	457.20	...	9.14	...
SC1080	31.75	Double guide	515.92	6.96	4.57	101.60	508.00	...	9.14	...
SC1212	38.10	Center guide	85.72	6.96	4.57	...	76.20	...	9.14	...
SC1216	38.10	Center guide	111.12	6.96	4.57	...	101.60	...	9.14	...
SC1220	38.10	Center guide	136.52	6.96	4.57	...	127.00	...	9.14	...
SC1224	38.10	Center guide	161.92	6.96	4.57	...	152.40	...	9.14	...
SC1228	38.10	Center guide	187.32	6.96	4.57	...	177.80	...	9.14	...

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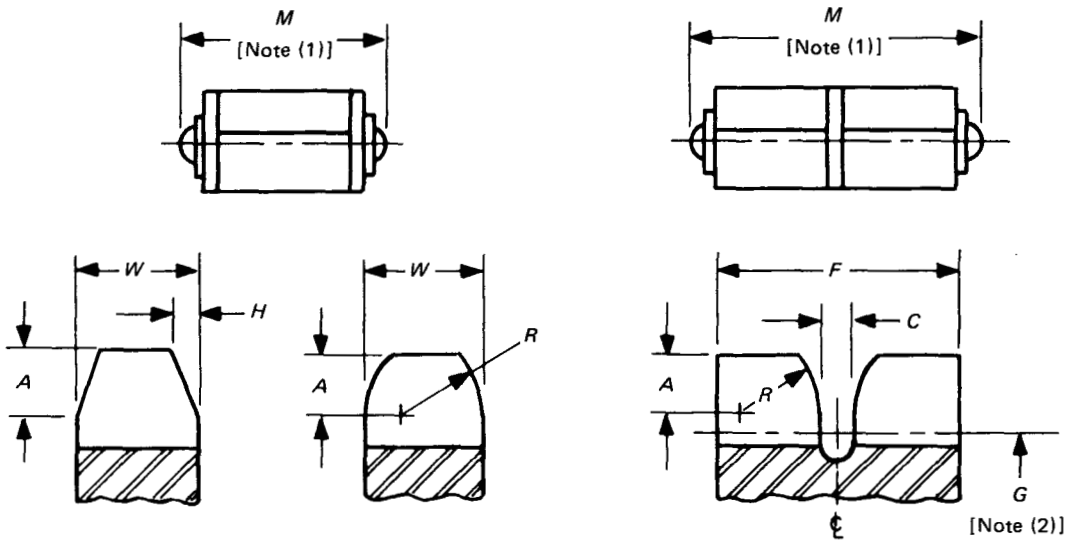
TABLE 1.7-2 (CONT'D)

Chain Number [Note (1)]	Chain Pitch	Type	*M* Max. [Note (2)]	*A*	*C* ±0.13	*D* ±0.25	*F* +3.18 −0.00	*H* ±0.08	*R* ±0.08	*W* +0.25 −0.00
SC1232	38.10	Double guide	212.72	6.96	4.57	101.60	203.20	...	9.14	...
SC1236	38.10	Double guide	238.12	6.96	4.57	101.60	228.60	...	9.14	...
SC1240	38.10	Double guide	263.52	6.96	4.57	101.60	254.00	...	9.14	...
SC1248	38.10	Double guide	314.32	6.96	4.57	101.60	304.80	...	9.14	...
SC1256	38.10	Double guide	365.12	6.96	4.57	101.60	355.60	...	9.14	...
SC1264	38.10	Double guide	415.92	6.96	4.57	101.60	406.40	...	9.14	...
SC1272	38.10	Double guide	466.72	6.96	4.57	101.60	457.20	...	9.14	...
SC1280	38.10	Double guide	517.52	6.96	4.57	101.60	508.00	...	9.14	...
SC1288	38.10	Double guide	568.32	6.96	4.57	101.60	558.80	...	9.14	...
SC1296	38.10	Double guide	619.12	6.96	4.57	101.60	609.60	...	9.14	...
SC1616	50.80	Center guide	114.30	6.96	5.54	...	101.60	...	9.14	...
SC1620	50.80	Center guide	139.70	6.96	5.54	...	127.00	...	9.14	...
SC1624	50.80	Center guide	165.10	6.96	5.54	...	152.40	...	9.14	...
SC1628	50.80	Center guide	190.50	6.96	5.54	...	177.80	...	9.14	...
SC1632	50.80	Double guide	215.90	6.96	5.54	101.60	203.20	...	9.14	...
SC1640	50.80	Double guide	266.70	6.96	5.54	101.60	254.00	...	9.14	...
SC1648	50.80	Double guide	317.50	6.96	5.54	101.60	304.80	...	9.14	...
SC1656	50.80	Double guide	368.30	6.96	5.54	101.60	355.60	...	9.14	...
SC1664	50.80	Double guide	419.10	6.96	5.54	101.60	406.40	...	9.14	...
SC1672	50.80	Double guide	469.90	6.96	5.54	101.60	457.20	...	9.14	...
SC1680	50.80	Double guide	520.70	6.96	5.54	101.60	508.00	...	9.14	...
SC1688	50.80	Double guide	571.50	6.96	5.54	101.60	558.80	...	9.14	...
SC1696	50.80	Double guide	622.30	6.96	5.54	101.60	609.60	...	9.14	...
SC16120	50.80	Double guide	774.70	6.96	5.54	101.60	762.00	...	9.14	...

NOTES:
(1) Consult manufacturers' catalogs for available widths.
(2) *M* equals maximum overall width of chain.
(3) Side guide chains have single outside guides of same thickness as toothed links.

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1.8 Chain Widths and Sprocket Face Profile for $^3/_{16}$ in. Pitch Chain



GENERAL NOTES:

(a) Sprocket face widths are established:

$W = 0.0315$ in. $(N\text{-}2) - 0.020$ in.

$W = 0.8001$ mm $(N\text{-}2) - 0.51$ mm

where

N = the total number of links wide

(b) Face width tolerance is ± 0.003 in. (± 0.08 mm)

NOTES:

(1) Grooving tool may be either square or round end but groove must be full width down to diameter G. For values of G see Tables 2.9-1 and 2.9-2.

(2) M equals maximum overall width of chain.

FIG. 1.8 CHAIN WIDTH AND SPROCKET PROFILE

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TABLE 1.8-1
CHAIN WIDTHS AND SPROCKET FACE DIMENSIONS – INCHES

Chain Number	Chain Pitch	Type	*M* Max. [Note (1)]	*A*	*C* Max.	*F* Min.	*H*	*R*	*W* ±0.003
SC0305	0.1875	Side guide	0.216	0.06	...	...	0.025	0.09	0.075
SC0307	0.1875	Side guide	0.278	0.06	...	...	0.025	0.09	0.138
SC0309	0.1875	Side guide	0.341	0.06	...	...	0.025	0.09	0.201
SC0311[2]	0.1875	Side guide/ center guide	0.403	0.06	0.050	0.334	0.025	0.09	0.264
SC0313[2]	0.1875	Side guide/ center guide	0.466	0.06	0.050	0.396	0.025	0.09	0.327
SC0315[2]	0.1875	Side guide/ center guide	0.528	0.06	0.050	0.459	0.025	0.09	0.390
SC0317	0.1875	Center guide	0.591	0.06	0.050	0.521	...	0.09	...
SC0319	0.1875	Center guide	0.653	0.06	0.050	0.584	...	0.09	...
SC0321	0.1875	Center guide	0.716	0.06	0.050	0.646	...	0.09	...
SC0323	0.1875	Center guide	0.778	0.06	0.050	0.709	...	0.09	...
SC0325	0.1875	Center guide	0.850	0.06	0.050	0.771	...	0.09	...
SC0327	0.1875	Center guide	0.903	0.06	0.050	0.834	...	0.09	...
SC0329	0.1875	Center guide	0.966	0.06	0.050	0.896	...	0.09	...
SC0331	0.1875	Center guide	1.028	0.06	0.050	0.959	...	0.09	...

NOTES:
(1) *M* equals maximum overall width of chain.
(2) Specify side guide or center guide type.

TABLE 1.8-2
CHAIN WIDTHS AND SPROCKET FACE DIMENSIONS – MILLIMETERS

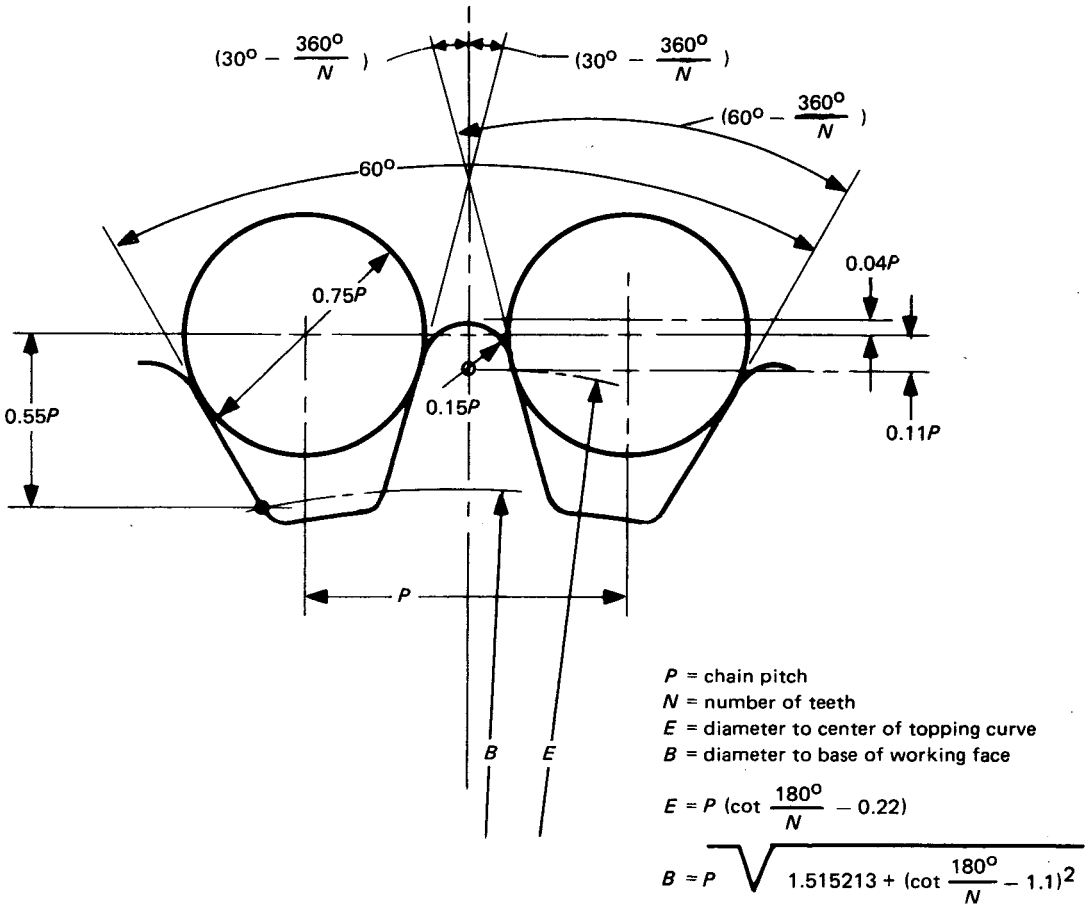
Chain Number	Chain Pitch	Type	*M* Max. [Note (1)]	*A*	*C* Max.	*F* Min.	*H*	*R*	*W* ±0.08
SC0305	4.76	Side guide	5.49	1.5	...	...	0.64	2.3	1.91
SC0307	4.76	Side guide	7.06	1.5	...	...	0.64	2.3	3.51
SC0309	4.76	Side guide	8.66	1.5	...	...	0.64	2.3	5.11
SC0311[2]	4.76	Side guide/ center guide	10.24	1.5	1.27	8.48	0.64	2.3	6.71
SC0313[2]	4.76	Side guide/ center guide	11.84	1.5	1.27	10.06	0.64	2.3	8.31
SC0315[2]	4.76	Side guide/ center guide	13.41	1.5	1.27	11.66	0.64	2.3	9.91
SC0317	4.76	Center guide	15.01	1.5	1.27	13.23	...	2.3	...
SC0319	4.76	Center guide	16.59	1.5	1.27	14.83	...	2.3	...
SC0321	4.76	Center guide	18.19	1.5	1.27	16.41	...	2.3	...
SC0323	4.76	Center guide	19.76	1.5	1.27	18.01	...	2.3	...
SC0325	4.76	Center guide	21.59	1.5	1.27	19.58	...	2.3	...
SC0327	4.76	Center guide	22.94	1.5	1.27	21.18	...	2.3	...
SC0329	4.76	Center guide	24.54	1.5	1.27	22.76	...	2.3	...
SC0331	4.76	Center guide	26.11	1.5	1.27	24.36	...	2.3	...

NOTES:
(1) *M* equals maximum overall width of chain.
(2) Specify side guide or center guide type.

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2 SPROCKETS

2.1 Tooth Form Dimensions for $^3/_8$ in. Pitch Chain and Larger



GENERAL NOTES:

(a) Teeth may be either rounded (topped) or square (turned).

(b) Shape of root line below working face may vary with type of cutter.

FIG. 2.1 SPROCKET TOOTH FORM

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2.2 Tooth Form Dimensions for $^3/_{16}$ in. Pitch Chain

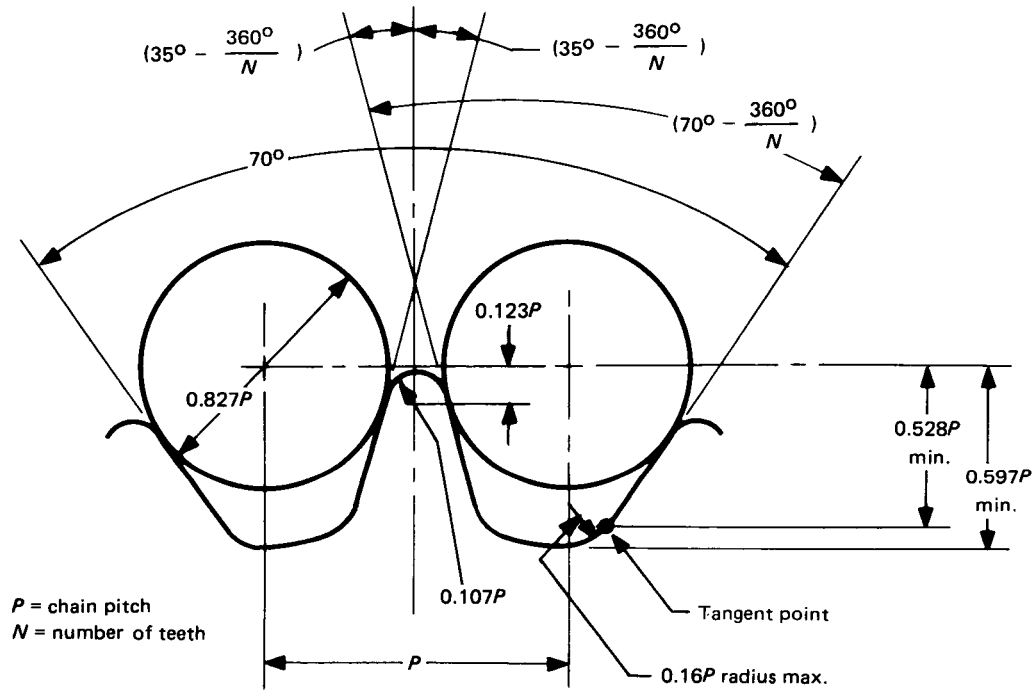
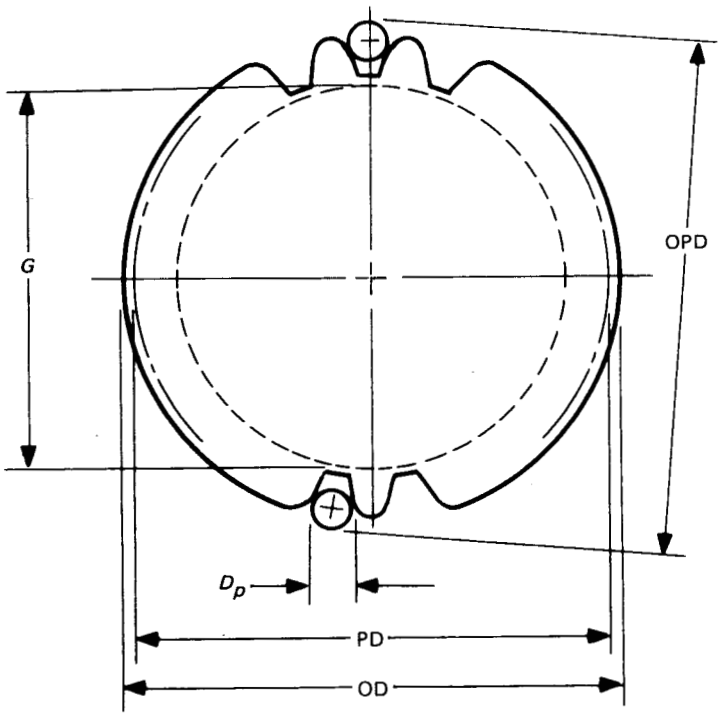


FIG. 2.2 SPROCKET TOOTH FORM

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2.3 Diameters and Measuring Dimensions for 3/8 in. Pitch Chain and Larger



P = chain pitch
PD = pitch diameter
OD = outside diameter
D_p = gage pin diameter
N = number of teeth
E = diameter to center of topping curve
OPD = over pin diameter
G = maximum guide groove diameter

FIG. 2.3 SPROCKET DIAMETERS

$$\text{PD} = \frac{P}{\sin \frac{180^\circ}{N}}$$

$$D_p = 0.625P$$

$$\text{OPD (even no. of teeth)} = \text{PD} - 0.125P \csc\left(30^\circ - \frac{180^\circ}{N}\right) + 0.625P$$

$$\text{OPD (odd no. of teeth)} = \cos\frac{90^\circ}{N}\left[\text{PD} - 0.125P \csc\left(30^\circ - \frac{180^\circ}{N}\right)\right] + 0.625P$$

$$\text{OD (rounded teeth)} = P\left(\cot\frac{180^\circ}{N} + 0.08\right)$$

$$\text{OD (square teeth)} = 2\sqrt{X^2 + L^2 - 2XL\cos\alpha}$$

where

$X = Y\cos\alpha - \sqrt{(0.15P)^2 - (Y\sin\alpha)^2}$

$Y = P(0.500 - 0.375\sec\alpha)\cot\alpha + 0.11P$

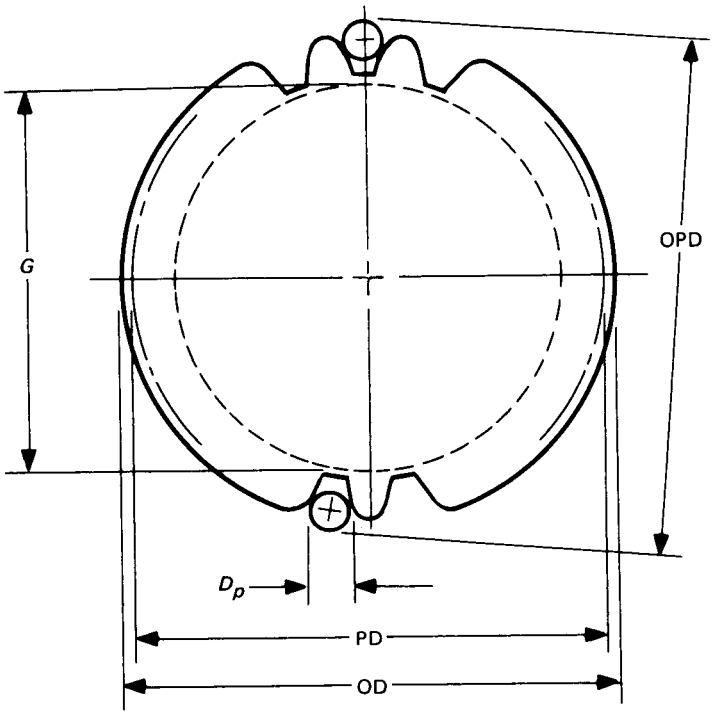
$L = Y + E/2$ (see Fig. 2.1 for E)

$\alpha = 30^\circ - 360^\circ/N$

$$G\ (\text{max.}) = P\left(\cot\frac{180^\circ}{N} - 1.16\right)$$

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2.4 Diameters and Measuring Dimensions for $^3/_{16}$ in. Pitch Chain



P = chain pitch
PD = pitch diameter
OD = outside diameter
D_p = gage pin diameter
N = number of teeth
E = diameter to center of topping curve
OPD = over pin diameter
G = maximum guide groove diameter

FIG. 2.4 SPROCKET DIAMETERS

$$D_p = 0.667P$$

$$\text{OPD (even no. of teeth)} = \text{PD} - 0.160P \csc\left(35^\circ - \frac{180^\circ}{N}\right) + 0.667P$$

$$\text{OPD (odd no. of teeth)} = \cos\frac{90^\circ}{N}\left[\text{PD} - 0.160P \csc\left(35^\circ - \frac{180^\circ}{N}\right)\right] + 0.667P$$

$$\text{OD (nominal rounded teeth)} = P\left(\cot\frac{180^\circ}{N} - 0.032\right)$$

$$G\ (\text{max.}) = P\left(\cot\frac{180^\circ}{N}\right) - 1.20$$

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2.5 Tolerances for Diameters, Over Pin Dimensions, and Eccentricity for $^3/_8$ in. Pitch Chain and Larger

TABLE 2.5-1
OVER PIN DIAMETER TOLERANCES – INCHES

	Number of Teeth									
Pitch	Up to 15	16–24	25–35	36–48	49–63	64–80	81–99	100–120	121–143	144 Up
0.375	0.005	0.005	0.005	0.006	0.006	0.007	0.007	0.007	0.008	0.008
0.500	0.005	0.006	0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.010
0.625	0.006	0.006	0.007	0.008	0.009	0.010	0.010	0.010	0.011	0.012
0.750	0.006	0.007	0.008	0.009	0.010	0.011	0.011	0.012	0.013	0.014
1.000	0.007	0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016
1.250	0.008	0.009	0.010	0.011	0.013	0.014	0.015	0.017	0.018	0.019
1.500	0.008	0.010	0.011	0.013	0.014	0.016	0.017	0.019	0.020	0.022
2.000	0.010	0.012	0.014	0.016	0.018	0.020	0.022	0.024	0.026	0.028

TABLE 2.5-2
OVER PIN DIAMETER TOLERANCES – MILLIMETERS

	Number of Teeth									
Pitch	Up to 15	16–24	25–35	36–48	49–63	64–80	81–99	100–120	121–143	144 Up
9.52	0.13	0.13	0.13	0.15	0.15	0.18	0.18	0.18	0.20	0.20
12.70	0.13	0.15	0.15	0.18	0.18	0.20	0.20	0.23	0.23	0.25
15.88	0.15	0.15	0.18	0.20	0.23	0.25	0.25	0.25	0.28	0.30
19.05	0.15	0.18	0.20	0.23	0.25	0.28	0.28	0.30	0.33	0.36
25.40	0.18	0.20	0.23	0.25	0.28	0.30	0.33	0.36	0.38	0.40
31.75	0.20	0.23	0.25	0.28	0.33	0.36	0.38	0.43	0.46	0.48
38.10	0.20	0.25	0.28	0.33	0.36	0.40	0.43	0.48	0.51	0.56
50.80	0.25	0.30	0.36	0.40	0.46	0.51	0.56	0.61	0.66	0.71

GENERAL NOTES (Tables 2.5-1 and 2.5-2):
(a) Tolerance for outside diameters of sprockets with square top teeth = plus 0.000; minus 0.050 X pitch, in.
(b) Tolerance for outside diameters of sprockets with rounded top teeth is the same as over pin diameter tolerance.
(c) Tolerance for guide groove diameter G = plus 0.000; minus 0.030 in. (0.76 mm).
(d) Tolerance for maximum eccentricity (total indicator reading) pitch diameter with respect to bore = 0.001 X PD, in., but not less than 0.006 nor more than 0.032.
(e) All tolerances are negative. Tolerance = $(0.004 + 0.001\ P\ \sqrt{N})$ in.; where P = chain pitch, N = number of teeth.

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2.6 Tolerances for Diameters, Over Pin Dimensions, and Eccentricity for $^3/_{16}$ in. Pitch Chain

TABLE 2.6-1
OVER PIN DIAMETER TOLERANCES – INCHES

	Number of Teeth									
Pitch	Up to 15	16–24	25–35	36–48	49–63	64–80	81–99	100–120	121–143	144 Up
0.1875	0.004	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.005	0.005

TABLE 2.6-2
OVER PIN DIAMETER TOLERANCES – MILLIMETERS

	Number of Teeth									
Pitch	Up to 15	16–24	25–35	36–48	49–63	64–80	81–99	100–120	121–143	144 Up
4.76	0.10	0.10	0.10	0.10	0.10	0.13	0.13	0.13	0.13	0.13

GENERAL NOTES (Tables 2.6-1 and 2.6-2):
(a) Tolerance for guide groove diameter G = plus 0.000 in.; minus 0.015 in. (0.38 mm).
(b) Tolerance for maximum eccentricity (total indicator reading) pitch diameter with respect to bore is 0.004 in. up to and including 4 in. diameter; and 0.008 in., over 4 in. diameter.
(c) All tolerances are negative.

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2.7 Hub Diameters for 3/8 in. Pitch Chain and Larger

TABLE 2.7
MAXIMUM HUB DIAMETER FOR CHAIN OF UNITY PITCH
For other pitches (3/8 in. pitch and larger), multiply these values by pitch.

Number of Teeth	Hob Cut	Straddle Cut
17	4.019	4.099
18	4.341	4.421
19	4.662	4.742
20	4.983	5.063
21	5.304	5.384
22	5.626	5.706
23	5.946	6.026
24	6.265	6.345
25	6.586	6.666
26	6.905	6.985
27	7.226	7.306
28	7.546	7.626
29	7.865	7.945
30	8.185	8.265
31	8.503	8.583

GENERAL NOTES:

(a) Formulas for calculating maximum hub diameters (MHD):

$$\text{MHD (hobbed teeth)} = P\left(\cot\frac{180^\circ}{N} - 1.33\right)$$

$$\text{MHD (straddle cut teeth)} = P\left(\cot\frac{180^\circ}{N} - 1.25\right)$$

MHD for other methods of cutting teeth may differ from the above.

(b) Good practice indicates that teeth of sprockets up to and including 31 teeth should have a Rockwell hardness of C50 min.

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2.8 Tabulation of Pitch Diameter, Outside Diameter, Over Pin Dimensions, and Guide Groove Diameter for Chain of Unity Pitch (Applicable to 3/8 in. Pitch Chain and Larger)

TABLE 2.8
TABULATION
For other pitches (3/8 in. pitch and larger), multiply these values by pitch.

Number of Teeth	Pitch Diameter	Outside Diameter		Over Pin Dia. [Note (1)]	*G* Max. Guide Groove Dia. [Note (1)]	Gage Pin Dia.
		Rounded Teeth	Square Teeth [Note (1)]			
17	5.442	5.429	5.298	5.669	4.189	0.6250
18	5.759	5.751	5.623	6.018	4.511	0.6250
19	6.076	6.072	5.947	6.324	4.832	0.6250
20	6.393	6.393	6.271	6.669	5.153	0.6250
21	6.710	6.714	6.595	6.974	5.474	0.6250
22	7.027	7.036	6.919	7.315	5.796	0.6250
23	7.344	7.356	7.243	7.621	6.116	0.6250
24	7.661	7.675	7.568	7.960	6.435	0.6250
25	7.979	7.996	7.890	8.266	6.756	0.6250
26	8.296	8.315	8.213	8.602	7.075	0.6250
27	8.614	8.636	8.536	8.909	7.396	0.6250
28	8.932	8.956	8.859	9.244	7.716	0.6250
29	9.249	9.275	9.181	9.551	8.035	0.6250
30	9.567	9.595	9.504	9.884	8.355	0.6250
31	9.885	9.913	9.828	10.192	8.673	0.6250
32	10.202	10.233	10.150	10.524	8.993	0.6250
33	10.520	10.553	10.471	10.833	9.313	0.6250
34	10.838	10.872	10.793	11.164	9.632	0.6250
35	11.156	11.191	11.115	11.472	9.951	0.6250
36	11.474	11.510	11.437	11.803	10.270	0.6250
37	11.792	11.829	11.757	12.112	10.589	0.6250
38	12.110	12.149	12.077	12.442	10.909	0.6250
39	12.428	12.468	12.397	12.751	11.228	0.6250
40	12.746	12.787	12.717	13.080	11.547	0.6250
41	13.064	13.106	13.037	13.390	11.866	0.6250
42	13.382	13.425	13.357	13.718	12.185	0.6250
43	13.700	13.743	13.677	14.028	12.503	0.6250
44	14.018	14.062	13.997	14.356	12.822	0.6250
45	14.336	14.381	14.317	14.667	13.141	0.6250
46	14.654	14.700	14.637	14.994	13.460	0.6250
47	14.972	15.018	14.957	15.305	13.778	0.6250
48	15.290	15.337	15.277	15.632	14.097	0.6250
49	15.608	15.656	15.597	15.943	14.416	0.6250
50	15.926	15.975	15.917	16.270	14.735	0.6250
51	16.244	16.293	16.236	16.581	15.053	0.6250
52	16.562	16.612	16.556	16.907	15.372	0.6250
53	16.880	16.930	16.876	17.218	15.690	0.6250
54	17.198	17.249	17.196	17.544	16.009	0.6250
55	17.517	17.568	17.515	17.857	16.328	0.6250
56	17.835	17.887	17.834	18.183	16.647	0.6250
57	18.153	18.205	18.154	18.494	16.965	0.6250
58	18.471	18.524	18.473	18.820	17.284	0.6250
59	18.789	18.842	18.793	19.131	17.602	0.6250

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TABLE 2.8 (CONT'D)

Number of Teeth	Pitch Diameter	Outside Diameter		Over Pin Dia. [Note (1)]	*G* Max. Guide Groove Dia. [Note (1)]	Gage Pin Dia.
		Rounded Teeth	Square Teeth [Note (1)]			
60	19.107	19.161	19.112	19.457	17.921	0.6250
61	19.426	19.480	19.431	19.769	18.240	0.6250
62	19.744	19.799	19.750	20.095	18.559	0.6250
63	20.062	20.117	20.070	20.407	18.877	0.6250
64	20.380	20.435	20.388	20.731	19.195	0.6250
65	20.698	20.754	20.708	21.044	19.514	0.6250
66	21.016	21.072	21.027	21.368	19.832	0.6250
67	21.335	21.391	21.346	21.682	20.151	0.6250
68	21.653	21.710	21.665	22.006	20.470	0.6250
69	21.971	22.028	21.984	22.319	20.788	0.6250
70	22.289	22.347	22.303	22.643	21.107	0.6250
71	22.607	22.665	22.622	22.955	21.425	0.6250
72	22.926	22.984	22.941	23.280	21.744	0.6250
73	23.244	23.302	23.259	23.593	22.062	0.6250
74	23.562	23.621	23.578	23.917	22.381	0.6250
75	23.880	23.939	23.897	24.230	22.699	0.6250
76	24.198	24.257	24.216	24.553	23.017	0.6250
77	24.517	24.577	24.535	24.868	23.337	0.6250
78	24.835	24.895	24.853	25.191	23.655	0.6250
79	25.153	25.213	25.172	25.504	23.973	0.6250
80	25.471	25.531	25.491	25.828	24.291	0.6250
81	25.790	25.851	25.809	26.141	24.611	0.6250
82	26.108	26.169	26.128	26.465	24.929	0.6250
83	26.426	26.487	26.447	26.778	25.247	0.6250
84	26.744	26.805	26.766	27.101	25.565	0.6250
85	27.063	27.125	27.084	27.415	25.885	0.6250
86	27.381	27.443	27.403	27.739	26.203	0.6250
87	27.699	27.761	27.722	28.052	26.521	0.6250
88	28.017	28.079	28.040	28.375	26.839	0.6250
89	28.335	28.397	28.359	28.689	27.157	0.6250
90	28.654	28.716	28.678	29.013	27.476	0.6250
91	28.972	29.035	28.997	29.327	27.795	0.6250
92	29.290	29.353	29.315	29.649	28.113	0.6250
93	29.608	29.671	29.634	29.963	28.431	0.6250
94	29.926	29.989	29.953	30.285	28.749	0.6250
95	30.245	30.308	30.271	30.601	29.068	0.6250
96	30.563	30.627	30.590	30.923	29.387	0.6250
97	30.881	30.945	30.909	31.237	29.705	0.6250
98	31.199	31.263	31.228	31.559	30.023	0.6250
99	31.518	31.582	31.546	31.874	30.342	0.6250
100	31.836	31.900	31.865	32.196	30.660	0.6250
101	32.154	32.218	32.183	32.511	30.978	0.6250
102	32.473	32.537	32.502	32.834	31.297	0.6250
103	32.791	32.856	32.820	33.148	31.616	0.6250
104	33.109	33.174	33.139	33.470	31.934	0.6250
105	33.427	33.492	33.457	33.784	32.252	0.6250
106	33.746	33.811	33.776	34.107	32.571	0.6250
107	34.064	34.129	34.094	34.422	32.889	0.6250
108	34.382	34.447	34.413	34.744	33.207	0.6250
109	34.701	34.767	34.731	35.059	33.527	0.6250

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TABLE 2.8 (CONT'D)

Number of Teeth	Pitch Diameter	Outside Diameter		Over Pin Dia. [Note (1)]	*G* Max. Guide Groove Dia. [Note (1)]	Gage Pin Dia.
		Rounded Teeth	Square Teeth [Note (1)]			
110	35.019	35.084	35.050	35.381	33.844	0.6250
111	35.337	35.403	35.368	35.695	34.163	0.6250
112	35.655	35.721	35.687	36.017	34.481	0.6250
113	35.974	36.040	36.005	36.333	34.800	0.6250
114	36.292	36.358	36.324	36.654	35.118	0.6250
115	36.610	36.676	36.642	36.969	35.436	0.6250
116	36.929	36.995	36.961	37.292	35.755	0.6250
117	37.247	37.313	37.279	37.606	36.073	0.6250
118	37.565	37.632	37.598	37.928	36.392	0.6250
119	37.883	37.950	37.916	38.243	36.710	0.6250
120	38.201	38.268	38.235	38.564	37.028	0.6250
121	38.519	38.586	38.553	38.879	37.346	0.6250
122	38.837	38.904	38.872	39.200	37.664	0.6250
123	39.156	39.223	39.190	39.516	37.983	0.6250
124	39.475	39.542	39.508	39.839	38.302	0.6250
125	39.794	39.861	39.827	40.154	38.621	0.6250
126	40.112	40.180	40.145	40.476	38.940	0.6250
127	40.430	40.497	40.464	40.790	39.257	0.6250
128	40.748	40.816	40.782	41.112	39.576	0.6250
129	41.066	41.134	41.100	41.427	39.894	0.6250
130	41.384	41.452	41.419	41.748	40.212	0.6250
131	41.702	41.770	41.738	42.063	40.530	0.6250
132	42.020	42.088	42.056	42.384	40.848	0.6250
133	42.338	42.406	42.374	42.699	41.166	0.6250
134	42.656	42.724	42.693	43.020	41.484	0.6250
135	42.975	43.043	43.011	43.336	41.803	0.6250
136	43.293	43.362	43.329	43.657	42.122	0.6250
137	43.611	43.679	43.647	43.972	42.439	0.6250
138	43.930	43.998	43.966	44.295	42.758	0.6250
139	44.249	44.317	44.284	44.611	43.077	0.6250
140	44.567	44.636	44.603	44.932	43.396	0.6250
141	44.885	44.954	44.922	45.247	43.714	0.6250
142	45.203	45.271	45.240	45.568	44.031	0.6250
143	45.521	45.590	45.558	45.883	44.350	0.6250
144	45.840	45.909	45.877	46.205	44.669	0.6250
145	46.158	46.227	46.195	46.520	44.987	0.6250
146	46.477	46.546	46.514	46.842	45.306	0.6250
147	46.796	46.865	46.832	47.159	45.625	0.6250
148	47.114	47.183	47.151	47.479	45.943	0.6250
149	47.432	47.501	47.469	47.795	46.261	0.6250
150	47.750	47.819	47.787	48.116	46.579	0.6250

GENERAL NOTE:
(a) For tolerances, see Tables 2.5-1 and 2.5-2.

NOTE:
(1) Diameters given are maximum; all tolerances must be negative.

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2.9 Tabulation of Pitch Diameter, Outside Diameter, Over Pin Dimensions, and Guide Groove Diameter for $^3/_{16}$ in. Pitch Chain

TABLE 2.9-1
TABULATION – INCHES

Number of Teeth	Pitch Dia.	Outside Dia. [Notes (1),(2)]	Over Pin Dia. [Notes (1),(3)]	Max. Groove Dia. [Note (1)]	Number of Teeth	Pitch Dia.	Outside Dia. [Notes (1),(2)]	Over Pin Dia. [Notes (1),(3)]	Max. Groove Dia. [Note (1)]
11	0.665	0.632	0.691	0.413	56	3.344	3.332	3.412	3.114
12	0.724	0.694	0.761	0.429	57	3.404	3.392	3.471	3.173
13	0.783	0.755	0.821	0.536	58	3.463	3.451	3.531	3.233
14	0.843	0.815	0.888	0.596	59	3.523	3.511	3.590	3.293
15	0.902	0.876	0.946	0.657	60	3.583	3.571	3.651	3.353
16	0.961	0.937	1.012	0.718	61	3.642	3.630	3.709	3.413
17	1.020	0.996	1.069	0.778	62	3.702	3.690	3.771	3.472
18	1.080	1.057	1.134	0.838	63	3.762	3.750	3.830	3.532
19	1.139	1.116	1.191	0.899	64	3.821	3.809	3.890	3.592
20	1.199	1.177	1.256	0.959	65	3.881	3.869	3.949	3.651
21	1.258	1.237	1.312	1.019	66	3.941	3.930	4.010	3.711
22	1.318	1.298	1.377	1.079	67	4.000	3.989	4.068	3.771
23	1.377	1.357	1.433	1.139	68	4.060	4.049	4.129	3.831
24	1.436	1.417	1.497	1.199	69	4.120	4.109	4.188	3.890
25	1.496	1.477	1.554	1.259	70	4.179	4.168	4.248	3.950
26	1.556	1.538	1.617	1.319	71	4.239	4.228	4.307	4.010
27	1.615	1.597	1.674	1.379	72	4.299	4.288	4.368	4.070
28	1.675	1.657	1.737	1.439	73	4.358	4.347	4.426	4.129
29	1.734	1.717	1.795	1.499	74	4.418	4.407	4.487	4.189
30	1.794	1.777	1.857	1.559	75	4.478	4.467	4.546	4.249
31	1.853	1.836	1.914	1.619	76	4.537	4.526	4.606	4.308
32	1.913	1.897	1.977	1.679	77	4.597	4.586	4.665	4.368
33	1.973	1.957	2.035	1.739	78	4.657	4.646	4.726	4.428
34	2.032	2.016	2.096	1.799	79	4.716	4.705	4.785	4.487
35	2.092	2.077	2.155	1.858	80	4.776	4.765	4.846	4.547
36	2.151	2.136	2.216	1.918	81	4.836	4.825	4.905	4.607
37	2.211	2.196	2.274	1.978	82	4.895	4.884	4.965	4.667
38	2.271	2.256	2.336	2.038	83	4.955	4.944	5.024	4.726
39	2.330	2.315	2.394	2.098	84	5.015	5.004	5.085	4.786
40	2.390	2.376	2.456	2.158	85	5.074	5.063	5.143	4.846
41	2.449	2.435	2.513	2.217	86	5.134	5.124	5.204	4.906
42	2.509	2.495	2.575	2.277	87	5.194	5.184	5.263	4.965
43	2.569	2.555	2.633	2.337	88	5.253	5.243	5.323	5.045
44	2.628	2.614	2.695	2.397	89	5.313	5.303	5.382	5.084
45	2.688	2.674	2.753	2.456	90	5.373	5.363	5.443	5.144
46	2.748	2.735	2.815	2.516	91	5.432	5.422	5.501	5.204
47	2.807	2.794	2.872	2.576	92	5.492	5.482	5.562	5.264
48	2.867	2.854	2.934	2.636	93	5.552	5.542	5.621	5.323
49	2.926	2.913	2.992	2.696	94	5.611	5.601	5.681	5.383
50	2.986	2.973	3.053	2.755	95	5.671	5.661	5.740	5.443
51	3.046	3.033	3.111	2.815	96	5.731	5.721	5.801	5.503
52	3.105	3.092	3.173	2.875	97	5.790	5.780	5.859	5.562
53	3.165	3.152	3.231	2.934	98	5.850	5.840	5.920	5.622
54	3.225	3.213	3.293	2.993	99	5.910	5.900	5.979	5.682
55	3.284	3.272	3.351	3.054	100	5.969	5.959	6.039	5.741

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TABLE 2.9-1 (CONT'D)

Number of Teeth	Pitch Dia.	Outside Dia. [Notes (1),(2)]	Over Pin Dia. [Notes (1),(3)]	Max. Groove Dia. [Note (1)]	Number of Teeth	Pitch Dia.	Outside Dia. [Notes (1),(2)]	Over Pin Dia. [Notes (1),(3)]	Max. Groove Dia. [Note (1)]
101	6.029	6.019	6.098	5.801	111	6.625	6.615	6.695	6.398
102	6.089	6.079	6.159	5.861	112	6.685	6.675	6.755	6.458
103	6.148	6.138	6.217	5.921	113	6.745	6.735	6.815	6.518
104	6.207	6.197	6.277	5.980	114	6.805	6.795	6.876	6.577
105	6.268	6.258	6.337	6.040	115	6.866	6.856	6.935	6.637
106	6.328	6.318	6.398	6.100	116	6.924	6.914	6.995	6.697
107	6.388	6.378	6.457	6.159	117	6.984	6.974	7.054	6.756
108	6.447	6.437	6.518	6.219	118	7.044	7.034	7.114	6.816
109	6.508	6.498	6.576	6.279	119	7.103	7.094	7.174	6.876
110	6.566	6.556	6.637	6.338	120	7.162	7.153	7.233	6.935

NOTES:
(1) Diameters given are maximum; all tolerances must be negative.
(2) For rounded teeth.
(3) Gage pin diameter = 0.1250 in.

TABLE 2.9-2
TABULATION – MILLIMETERS

Number of Teeth	Pitch Dia.	Outside Dia. [Notes (1),(2)]	Over Pin Dia. [Notes (1),(3)]	Max. Groove Dia. [Note (1)]	Number of Teeth	Pitch Dia.	Outside Dia. [Notes (1),(2)]	Over Pin Dia. [Notes (1),(3)]	Max. Groove Dia. [Note (1)]
11	16.89	16.05	17.55	10.50	36	54.64	54.25	56.29	48.72
12	18.39	17.63	19.33	10.89	37	56.16	55.78	57.76	50.24
13	19.89	19.18	20.85	13.61	38	57.68	57.30	59.33	51.77
14	21.41	20.70	22.56	15.15	39	59.18	58.80	60.81	53.29
15	22.91	22.25	24.03	16.69	40	60.71	60.35	62.38	54.81
16	24.41	23.80	25.70	18.23	41	62.20	61.85	63.83	56.31
17	25.91	25.30	27.15	19.76	42	63.73	63.37	65.40	57.84
18	27.43	26.85	28.80	21.29	43	65.25	64.90	66.88	59.36
19	28.93	28.35	30.25	22.82	44	66.75	66.40	68.45	60.88
20	30.45	29.90	31.90	24.35	45	68.28	67.92	69.93	62.38
21	31.95	31.42	33.32	25.88	46	69.80	69.47	71.50	63.91
22	33.48	32.97	34.98	27.41	47	71.30	70.97	72.95	65.43
23	34.98	34.47	36.40	28.94	48	72.82	72.49	74.52	66.95
24	36.47	35.99	38.02	30.36	49	74.32	73.99	76.00	68.48
25	38.00	37.52	39.47	31.98	50	75.84	75.51	77.55	69.98
26	39.52	39.07	41.07	33.50	51	77.37	77.04	79.02	71.50
27	41.02	40.56	42.52	35.03	52	78.87	78.54	80.59	73.03
28	42.54	42.09	44.12	36.55	53	80.39	80.06	82.07	74.52
29	44.04	43.61	45.59	38.01	54	81.92	81.61	83.64	76.02
30	45.57	45.14	47.17	39.60	55	83.41	83.11	85.12	77.57
31	47.07	46.63	48.62	41.12	56	84.94	84.63	86.66	79.10
32	48.59	48.18	50.22	42.65	57	86.46	86.16	88.16	80.59
33	50.11	49.71	51.69	44.17	58	87.96	87.66	89.69	82.12
34	51.61	51.21	53.24	45.69	59	89.48	89.18	91.19	83.64
35	53.14	52.76	54.74	47.19	60	91.01	90.70	92.74	85.17

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TABLE 2.9-2 (CONT'D)

Number of Teeth	Pitch Dia.	Outside Dia. [Notes (1),(2)]	Over Pin Dia. [Notes (1),(3)]	Max. Groove Dia. [Note (1)]	Number of Teeth	Pitch Dia.	Outside Dia. [Notes (1),(2)]	Over Pin Dia. [Notes (1),(3)]	Max. Groove Dia. [Note (1)]
61	92.51	92.20	94.21	86.69	91	137.97	137.72	139.73	132.18
62	94.03	93.73	95.78	88.19	92	139.50	139.24	141.27	133.71
63	95.55	95.25	97.28	89.71	93	141.02	140.77	142.77	135.20
64	97.05	96.75	98.81	91.24	94	142.52	142.27	144.30	136.73
65	98.58	98.27	100.30	92.74	95	144.04	143.79	145.80	138.25
66	100.10	99.82	101.85	94.26	96	145.57	145.31	147.35	139.78
67	101.60	101.32	103.33	95.78	97	147.07	146.81	148.82	141.27
68	103.12	102.84	104.88	97.31	98	148.59	148.34	150.37	142.80
69	104.65	104.37	106.38	98.81	99	150.11	149.86	151.87	144.32
70	106.15	105.87	107.90	100.33	100	151.61	151.36	153.39	145.82
71	107.67	107.39	109.40	101.85	101	153.14	152.88	154.89	147.35
72	109.19	108.92	110.95	103.38	102	154.66	154.41	156.44	148.87
73	110.69	110.41	112.42	104.88	103	156.15	155.91	157.91	150.39
74	112.22	111.94	113.97	106.40	104	157.66	157.40	159.44	151.89
75	113.74	113.46	115.47	107.92	105	159.21	158.95	160.96	153.42
76	115.24	114.96	116.99	109.42	106	160.73	160.48	162.51	154.94
77	116.76	116.48	118.49	110.95	107	162.26	162.00	164.01	156.44
78	118.29	118.01	120.04	112.47	108	163.75	163.50	165.56	157.96
79	119.79	119.51	121.54	113.97	109	165.30	165.05	167.03	159.49
80	121.31	121.03	123.09	115.49	110	166.78	166.52	168.58	160.99
81	122.83	122.56	124.59	117.02	111	168.28	168.02	170.05	162.51
82	124.33	124.05	126.11	118.54	112	169.80	169.54	171.58	164.03
83	125.86	125.58	127.61	120.04	113	171.32	171.07	173.10	165.56
84	127.38	127.10	129.16	121.56	114	172.85	172.59	174.65	167.06
85	128.88	128.60	130.63	123.09	115	174.40	174.14	176.15	168.58
86	130.40	130.15	132.18	124.61	116	175.87	175.62	177.67	170.10
87	131.93	131.67	133.68	126.11	117	177.39	177.14	179.17	171.60
88	133.43	133.17	135.20	128.14	118	178.92	178.66	180.70	173.13
89	134.95	134.70	136.70	129.13	119	180.42	180.19	182.22	174.65
90	136.47	136.22	138.25	130.66	120	181.91	181.69	183.72	176.15

NOTES:
(1) Diameters given are maximum; all tolerances must be negative.
(2) For rounded teeth.
(3) Gage pin diameter = 3.175 mm.

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SUPPLEMENTARY INFORMATION

The material that follows is for informational purposes only. It is not, and should not be considered to be, part of ANSI B29.2M-1982.

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S1.2 Lubrication S-3
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S1 CHAIN SELECTION

S1.1 Design Factors

The horsepower ratings in the following tables generally apply to lubricated silent chains, and are based on a chain width of 1 in. For ratings of chains of other widths, multiply the rated value of 1 in. by the actual width. The ratings reflect a service factor of 1, a chain length of approximately 100 pitches, use of recommended lubrication methods, and a drive arrangement where two aligned sprockets are mounted on parallel shafts in a horizontal plane. Under these conditions, approximately 15,000 hr of service life at full load operation may generally be expected.

Substantial increases in rated speed loads can be utilized, as when a full load operation is encountered only during a portion of the required service life. It is beyond the scope of this publication to present selection procedures for all conditions. Consult chain manufacturers for assistance with any special application requirements.

Drive Selection. The horsepower ratings relate to the speed of the smaller sprocket, and drive selections are made on this basis, whether the drive is speed reducing or speed increasing.

Drives with more than two sprockets, idlers, composite duty cycles, or other unusual conditions often require special consideration. It is advisable to consult chain manufacturers for selections of this nature.

Where quietness or extra-smooth operation are of special importance, a small pitch chain operating over large diameter sprockets will minimize noise and vibration.

When making drive selections, consideration is given to the loads imposed on the chain by the type of input power and the type of equipment to be driven. Service factors are used to compensate for these loads, and the required horsepower (hp) rating of the chain is determined by the following equation:

$$\text{Required hp table rating} = \frac{\text{hp to be transmitted} \times \text{service factor}}{\text{chain width, in.}}$$

S1.2 Lubrication

Lubrication. It has been shown that a separating wedge of fluid lubricant is formed in operating chain joints and between the chain links and the sprocket teeth. Therefore, fluid lubricant must be applied to assure an oil supply to minimize metal to metal contact. Lubrication, if supplied in sufficient volume, also provides effective cooling and impact damping at the higher speeds. For this reason, it is important that the lubrication recommendations be followed. The rating tables apply only to drives lubricated in the manner specified in the tables.

TABLE S1.2
LUBRICATION

Ambient Temperature, °F	Recommended Lubricant	
	3/16 and 3/8 in.	1/2 in. and Larger
20–40	SAE 10	SAE 20
40–100	SAE 20	SAE 30
100–120	SAE 30	SAE 40
120–140	SAE 40	SAE 50

Chain drives should be protected against dirt and moisture and the oil supply kept free of contamination. Periodic oil change is desirable. A good grade of nondetergent petroleum base oil is recommended. Heavy oils and greases are generally too thick to enter and fill the chain joints. Table S1.2 indicates the lubricant viscosity for various surrounding temperatures. Multi-viscosity oils are not recommended.

There are three basic types of lubrication for chain drives. The recommended type shown in the horsepower rating tables is influenced by chain speed and the amount of power transmitted. These are minimum lubrication requirements, and the use of a better type (e.g., Type III instead of Type II) is acceptable and may be beneficial. Chain life can vary appreciably depending upon the way the drive is lubricated. The better the lubrication, the longer the chain life. For this reason, it is important that the lubrication recommendations be followed when using the ratings given in these tables.

Type I – Manual or Drip Lubrication

Manual Lubrication: Oil is applied copiously with a brush or spout can at least once every eight hours of operation. Volume and frequency should be sufficient to prevent overheating of the chain or discoloration in the chain joints.

Drip Lubrication: Oil drops are directed between the link plate edges from a drip lubricator. Volume and frequency should be sufficient to prevent discoloration of lubricant in the chain joints. Precaution must be taken against misdirection of drops by windage.

Type II – Bath or Disk Lubrication

Bath Lubrication: The lower strand of chain runs through a sump of oil in the drive housing. The oil level should reach the pitch line of the chain at its lowest point while in operation.

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Disk Lubrication: The chain operates above the oil level. The disk picks up oil from the sump and deposits it onto the chain, usually by means of a trough. The diameter of the disk should be such as to produce rim speeds between 600 fpm minimum and 8,000 fpm maximum.

Type III – Oil Stream Lubrication

The lubricant is usually supplied by a circulating pump capable of supplying each chain drive with a continuous stream of oil. The oil should be applied inside the chain loop evenly across the chain width, and directed at the slack strand.

S1.3 Installation and Alignment

Sprockets. Sprockets should have the tooth form, thickness, profile, and diameters conforming to ANSI B29.2 Standard. For maximum service life, small sprockets operating at moderate to high speeds, or near the rated horsepower, should have hardened teeth. Normally, large sprockets should not exceed 120 teeth.

Center Distance. In general, a center distance of 30 to 50 chain pitches is most desirable. The distance between sprocket centers should provide at least 120 deg. chain wrap on the smaller sprocket.

Drives may be installed with either adjustable or fixed center distances. Adjustable centers simplify the control of chain slack.

For drives on fixed centers, an idler or shoe may be used to provide slack adjustment. These devices may also be used to control backlash, or to assure 120 deg. minimum chain wrap on the smaller sprocket. Sufficient housing clearance must always be provided for the chain slack to obtain full chain life.

Alignment. Accurate alignment of shafts and sprocket tooth faces provides uniform distribution of the load across the entire chain width and contributes substantially to optimum drive life. Shafting, bearings, and foundations should be suitable to maintain the initial alignment. Periodic maintenance should include an inspection of alignment to insure optimum chain life.

S1.4 Service Factors

The service factors in Table S1.4 are for normal chain loading. For unusual or extremely severe operating conditions not shown in this table, it is desirable to use larger service factors.

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TABLE S1.4
SERVICE FACTORS

Application	Engine With Fluid Coupling or Electric Motor		Engine With Straight Mechanical Drive		Torque Converter Drives	
	10 hr	24 hr	10 hr	24 hr	10 hr	24 hr
Agitators, paddle or propeller						
Liquid	1.1	1.4	1.3	1.6	1.5	1.8
Semi-liquid	1.1	1.4	1.3	1.6	1.5	1.8
Bakery machinery						
Dough mixer	1.2	1.5	...	...	...	...
Brewing and distilling equipment						
Bottling machinery	1.0	1.3	...	...	...	...
Kettles, cookers, mash tubs, scale hopper	1.0	1.3	...	...	...	...
Brick and clay machinery						
Auger machines	1.3	1.6	1.5	1.8	1.7	2.0
Brick machines	1.4	1.7	1.6	1.9	1.8	2.1
Cutting table	1.3	1.6	1.5	1.8	1.7	2.0
Dry press	1.4	1.7	1.6	1.9	1.8	2.1
De-airing machines	1.3	1.6	1.5	1.8	1.7	2.0
Granulator	1.4	1.7	1.6	1.9	1.8	2.1
Mixer	1.4	1.7	1.6	1.9	1.8	2.1
Pug mill	1.4	1.7	1.6	1.9	1.8	2.1
Rolls	1.4	1.7	1.6	1.9	1.8	2.1
Centrifuges	1.4	1.7	1.6	1.9	1.8	2.1
Compressors						
Centrifugal	1.1	1.4	1.3	1.6	1.5	1.8
Rotary	1.1	1.4	1.3	1.6	1.5	1.8
Reciprocating						
3 or more cycles	1.3	1.6	1.5	1.8	1.7	2.0
1 or 2 cycles	1.6	1.9	1.8	2.1	2.0	2.3
Conveyor						
Apron	1.4	1.7	1.6	1.9	1.8	2.1
Belt (ore, coal, sand)	1.2	1.5	1.4	1.7	1.6	1.9
Belt (light package)	1.0	1.3	1.2	1.5	1.4	1.7
Oven	1.0	1.3	1.2	1.5	1.4	1.7
Screw	1.6	1.9	1.8	2.1	2.0	2.3
Bucket	1.4	1.7	1.6	1.9	1.8	2.1
Pan	1.4	1.7	1.6	1.9	1.8	2.1
Flight	1.6	1.9	1.8	2.1	2.0	2.3
Elevator	1.4	1.7	1.6	1.9	1.8	2.1
Cotton oil plants						
Linters	1.4	1.7	1.6	1.9	1.8	2.1
Cookers	1.4	1.7	1.6	1.9	1.8	2.1
Cranes and hoists						
Main hoist						
Medium duty	1.1	1.4	1.3	1.6	1.5	1.8
Heavy duty	1.4	1.7	1.6	1.9	1.8	2.1
Skip hoist	1.4	1.7	1.6	1.9	1.8	2.1

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TABLE S1.4 (CONT'D)

Application	Engine With Fluid Coupling or Electric Motor		Engine With Straight Mechanical Drive		Torque Converter Drives	
	10 hr	24 hr	10 hr	24 hr	10 hr	24 hr
Crushing machinery						
Ball mills	1.6	1.9	1.8	2.1	2.0	2.3
Coal breakers	1.4	1.7	1.6	1.9	1.8	2.1
Coal pulverizers	1.4	1.7	1.6	1.9	1.8	2.1
Cone crushers	1.6	1.9	1.8	2.1	2.0	2.3
Crushing rolls	1.6	1.9	1.8	2.1	2.0	2.3
Gyratory crushers	1.6	1.9	1.8	2.1	2.0	2.3
Hardinge mills	1.6	1.9	1.8	2.1	2.0	2.3
Jaw crushers	1.6	1.9	1.8	2.1	2.0	2.3
Linseed crushers	1.4	1.7	1.6	1.9	1.8	2.1
Rod mills	1.6	1.9	1.8	2.1	2.0	2.3
Tube mills	1.6	1.9	1.8	2.1	2.0	2.3
Dredges						
Conveyors, pumps, stackers	1.4	1.7	1.6	1.9	1.8	2.1
Jigs, screens	1.6	1.9	1.8	2.1	2.0	2.3
Elevators						
Bucket						
Uniformly fed	1.2	1.5	1.4	1.7	1.6	1.9
Heavy duty	1.4	1.7	1.6	1.9	1.8	2.1
Fans and blowers						
Centrifugal	1.3	1.6	1.5	1.8	1.7	2.0
Exhausters	1.3	1.6	1.5	1.8	1.7	2.0
Fans (misc.)	1.2	1.5	1.4	1.7	1.6	1.9
Induced draft	1.2	1.5	1.4	1.7	1.6	1.9
Mine fans	1.4	1.7	1.6	1.9	1.8	2.1
Positive blowers	1.5	1.8	1.7	2.0	1.9	2.2
Propeller	1.3	1.6	1.5	1.8	1.7	2.0
Flour, feed, cereal mill machinery						
Bolters and sifters	1.1	1.4	1.3	1.6	1.5	1.8
Grinders and hammer mills	1.2	1.5	1.4	1.7	1.6	1.9
Lofter legs	1.0	1.3	1.2	1.5	1.4	1.7
Purifiers and reels	1.1	1.4	1.3	1.6	1.5	1.8
Roller mills	1.3	1.6	1.5	1.8	1.7	2.0
Separator	1.1	1.4	...	...	...	...
Main line shaft drives	1.4	1.7	1.6	1.9	1.8	2.1
Generators and exciters	1.2	1.5	1.4	1.7	1.6	1.9
Hoists (see cranes)						
Ice machines	1.5	1.8	1.7	2.0	1.9	2.2
Laundry machinery						
Dampeners	1.1	1.4	1.3	1.6	1.5	1.8
Extractors	1.1	1.4	1.3	1.6	1.5	1.8
Flat work ironers	1.1	1.4	1.3	1.6	1.5	1.8
Tumblers	1.2	1.5	1.4	1.7	1.6	1.9
Washers	1.1	1.4	1.3	1.6	1.5	1.8
Line shafts						
Brick plants	1.6	1.9	1.8	2.1	2.0	2.3
Coal handling plants	1.2	1.5	1.4	1.7	1.6	1.9

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TABLE S1.4 (CONT'D)

Application	Engine With Fluid Coupling or Electric Motor		Engine With Straight Mechanical Drive		Torque Converter Drives	
	10 hr	24 hr	10 hr	24 hr	10 hr	24 hr
Line shafts (*Cont'd*)						
Cotton gins	1.1	1.4	1.3	1.6	1.5	1.8
Cotton oil plants	1.1	1.4	1.3	1.6	1.5	1.8
Grain elevators	1.0	1.3	1.2	1.5	1.4	1.7
Miscellaneous	1.2	1.5	1.4	1.7	1.6	1.9
Paper mills	1.3	1.6	1.5	1.8	1.7	2.1
Rubber plants	1.4	1.7	1.6	1.9	1.8	2.1
Steel mills	1.4	1.7	1.6	1.9	1.8	2.1
Machine tools						
Boring mills	1.1	1.3	...	...	...	...
Cam cutters	1.1	1.3	...	...	...	...
Punch press and shears	1.4	1.7	...	...	...	...
Drill presses	1.0	1.3	...	...	...	...
Drop hammers	1.1	1.4	...	...	...	...
Grinders	1.0	1.3	...	...	...	...
Lathes	1.0	1.3	...	...	...	...
Milling machines	1.1	1.4	...	...	...	...
Mills						
Ball	1.5	1.8	1.7	2.0	...	...
Flaking	1.5	1.8	1.7	2.0	...	...
Hardinge	1.5	1.8	1.7	2.0	...	...
Pebble	1.5	1.8	1.7	2.0	...	...
Rod	1.5	1.8	1.7	2.0	...	...
Roller	1.5	1.8	1.7	2.0	...	...
Tube	1.5	1.8	1.7	2.0	...	...
Tumbling barrels	1.6	1.9	1.8	2.1	...	...
Mixers						
Concrete	1.6	1.9	1.8	2.1	2.0	2.3
Liquid and semi-liquid	1.1	1.4	1.3	1.6	1.5	1.8
Oil field machinery						
Slush pumps	1.3	1.6	1.5	1.8	1.7	2.0
Compounding units	1.0	1.3	1.2	1.5	1.4	1.7
Pipe line pumps	1.2	1.5	1.4	1.7	1.6	1.9
Draw works	1.6	1.9	1.8	2.1	2.0	2.3
Oil refinery equipment						
Chillers, parrifin-filter presses, rotary kilns	1.5	1.8	1.7	2.0	1.9	2.2
Paper machinery						
Agitators	1.1	1.4	1.3	1.6	1.5	1.8
Beaters	1.3	1.6	1.5	1.8	1.7	2.0
Calenders	1.2	1.5	1.4	1.7	1.6	1.9
Chippers	1.5	1.8	1.7	2.0	1.9	2.2
Dryers	1.2	1.5	1.4	1.7	1.6	1.9
Jordan engines	1.2	1.5	1.4	1.7	1.6	1.9
Nash engines	1.4	1.7	1.6	1.9	1.8	2.1
Paper machines	1.2	1.5	1.4	1.7	1.6	1.9
Washers	1.4	1.7	...	...	...	...
Winder drums	1.5	1.8	1.7	2.0	...	...
Yankee dryer	1.3	1.6	1.5	1.8	...	...

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TABLE S1.4 (CONT'D)

Application	Engine With Fluid Coupling or Electric Motor		Engine With Straight Mechanical Drive		Torque Converter Drives	
	10 hr	24 hr	10 hr	24 hr	10 hr	24 hr
Printing machinery						
Embossing press	1.2	1.5	1.4	1.7	1.6	1.9
Flat bed press	1.2	1.5	1.4	1.7	1.6	1.9
Folders	1.2	1.5	1.4	1.7	1.6	1.9
Linotype machines	1.1	1.4	1.3	1.6	1.5	1.8
Magazine presses	1.5	2.0	...	...	...	...
Newspaper presses	1.5	2.0	...	...	...	...
Paper cutters	1.1	1.4	1.3	1.6	1.5	1.8
Rotary press	1.1	1.4	1.3	1.6	1.5	1.8
Pumps						
Centrifugal	1.2	1.5	1.4	1.7	1.6	1.9
Dredge	1.6	1.9	1.8	2.1	2.0	2.3
Gear	1.2	1.5	1.4	1.7	1.6	1.9
Miscellaneous	1.5	1.8	1.7	2.0	1.9	2.2
Pipe lines	1.4	1.7	1.6	1.9	1.8	2.1
Rotary	1.1	1.4	1.3	1.6	1.5	1.8
Reciprocating						
3 or more cycles	1.3	1.6	1.5	1.8	1.7	2.0
1 or more cycles	1.6	1.9	1.8	2.1	2.0	2.3
Rubber plant machinery						
Banbury mills	1.5	1.8	1.7	2.0	1.9	2.2
Calenders	1.5	1.8	1.7	2.0	1.9	2.2
Mixers	1.5	1.8	1.7	2.0	1.9	2.2
Rolls	1.5	1.8	1.7	2.0	1.9	2.2
Rubber mill equipment						
Mixers, sheeters, mills	1.6	1.9	1.8	2.1	2.0	2.3
Calenders	1.5	1.8	1.7	2.0	1.9	2.2
Tubers, tire-building	1.5	1.8	1.7	2.0	1.9	2.2
Screens						
Air-washing, traveling	1.0	1.3	1.2	1.5	1.4	1.7
Conical	1.2	1.5	1.4	1.7	1.6	1.9
Rotary, gravel, stone	1.5	1.8	1.7	2.0	1.9	2.2
Revolving	1.2	1.5	1.4	1.7	1.6	1.9
Vibrating	1.5	1.8	1.7	2.0	1.9	2.2
Stokers	1.1	1.4	...	...	...	...
Steel plants						
Rolling mills	1.3	1.6	1.5	1.8	1.7	2.0
Wire benches	1.2	1.5	1.4	1.7	1.6	1.9
Textile machinery						
Batchers, calenders	1.1	1.4	...	...	...	...
Looms	1.1	1.4	...	...	...	...
Spinning frames	1.0	1.3	...	...	...	...
Twisters	1.0	1.3	...	...	...	...
Warpers	1.0	1.3	...	...	...	...
Reels	1.0	1.3	...	...	...	...

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S1.5 Horsepower Tables

To properly use the horsepower ratings, the following factors must be taken into consideration:

(*a*) *Service Factors*. See Table S1.4.

(*b*) *Lubrication*. The horsepower established from the sprocket and speed combination of the drive under consideration will indicate a method of lubrication. This method or a better one must be used to obtain optimum chain life. Types of lubrication as indicated on tables are:

Type I Manual, brush, or oil cup
Type II Bath or disk
Type III Circulating pump

HORSEPOWER RATING PER INCH OF CHAIN WIDTH – $^{3}/_{16}$ in. PITCH

No. of Teeth	Revolutions per Minute — Small Sprocket											
Small Sprocket	500	600	700	800	900	1200	1800	2000	3500	5000	7000	9000
15	0.28	0.33	0.38	0.43	0.47	0.60	0.80	0.90	1.33	1.66	1.94	1.96
17	0.33	0.39	0.44	0.50	0.55	0.70	0.96	1.05	1.60	2.00	2.40	2.52
19	0.37	0.43	0.50	0.55	0.61	0.80	1.10	1.20	1.80	2.30	2.76	2.92
21	0.41	0.48	0.55	0.62	0.68	0.87	1.22	1.33	2.03	2.58	3.12	3.35
23	0.45	0.53	0.60	0.68	0.75	0.96	1.35	1.47	2.25	2.88	3.50	3.78
25	0.49	0.58	0.66	0.74	0.82	1.05	1.47	1.60	2.45	3.13	3.80	4.10
27	0.53	0.62	0.71	0.80	0.88	1.15	1.58	1.72	2.63	3.35	4.06	4.37
29	0.57	0.67	0.76	0.86	0.95	1.21	1.70	1.85	2.83	3.61	4.40	4.72
31	0.60	0.72	0.81	0.91	1.01	1.30	1.81	1.97	3.02	3.84	4.66	5.00
33	0.64	0.75	0.86	0.97	1.07	1.37	1.90	2.08	3.17	4.02	4.85	...
35	0.68	0.80	0.92	1.03	1.14	1.45	2.03	2.21	3.41	4.27	5.16	...
37	0.71	0.84	0.96	1.08	1.19	1.52	2.11	2.30	3.48	4.39	5.24	...
40	0.77	0.91	1.04	1.16	1.29	1.64	2.28	2.50	3.77	4.76	...	...
45	0.86	1.02	1.15	1.30	1.43	1.83	2.53	2.75	4.15	5.21	...	...
50	0.95	1.12	1.27	1.37	1.58	2.00	2.78	3.02	4.52	5.65	...	...
	Type I						Type II			Type III		

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HORSEPOWER RATING PER INCH OF CHAIN WIDTH – 3/8 in. PITCH

No. of Teeth Small Sprocket	Revolutions per Minute – Small Sprocket												
	100	500	1000	1200	1500	1800	2000	2500	3000	3500	4000	5000	6000
17[1]	0.46	2.1	4.6	4.9	5.3	6.5	6.9	7.9	8.5	8.8	8.8	...	...
19[1]	0.53	2.5	4.8	5.4	6.5	7.4	7.9	9.1	9.9	10	11	9.8	...
21	0.58	2.8	5.1	6.0	7.3	8.3	9.0	10	11	12	12	12	10
23	0.63	3.0	5.6	6.6	8.0	9.3	10	12	13	14	14	14	12
25	0.69	3.3	6.1	7.3	8.8	10	11	13	14	15	15	15	14
27	0.74	3.5	6.8	7.9	9.5	11	12	14	15	16	18	18	16
29	0.80	3.8	7.3	8.5	10	12	13	15	16	18	19	19	18
31	0.85	4.1	7.8	9.1	11	13	14	16	18	19	20	20	19
33	0.90	4.4	8.3	9.8	12	14	15	18	19	21	21	21	20
35	0.96	4.6	8.8	10	13	15	16	19	20	23	23	23	21
37	1.0	4.9	9.1	11	14	15	16	20	21	24	24	24	...
40	1.1	5.3	10	12	15	16	18	21	24	25	26	26	...
45	1.3	6.0	11	13	16	19	20	24	26	28	29	...	...
50	1.4	6.6	13	15	18	20	23	26	29	30	...	...	...
	Type I			Type II				Type III					

NOTE:
(1) For best results, smaller sprocket should have at least 21 teeth.

HORSEPOWER RATING PER INCH OF CHAIN WIDTH – 1/2 in. PITCH

No. of Teeth Small Sprocket	Revolutions per Minute – Small Sprocket										
	100	500	700	1000	1200	1800	2000	2500	3000	3500	4000
17[1]	0.83	3.8	5.0	6.3	7.5	10	11	11	11	11	...
19[1]	0.93	3.8	5.0	7.5	8.8	11	13	14	14	14	...
21	1.0	5.0	6.3	8.8	10	14	14	15	16	16	...
23	1.1	5.0	7.5	10	11	15	16	18	19	19	18
25	1.2	5.0	7.5	10	13	16	18	20	21	21	20
27	1.3	6.3	8.8	11	13	18	19	21	24	24	23
29	1.4	6.3	8.8	13	14	19	21	24	25	25	25
31	1.5	7.5	10	13	15	21	23	25	28	28	28
33	1.6	7.5	10	14	16	23	24	28	29	30	29
35	1.8	7.5	11	15	18	24	25	29	31	31	30
37	1.9	8.8	11	16	19	25	26	30	33	33	...
40	2.0	8.8	13	18	20	28	29	33	35	35	...
45	2.5	10	14	19	23	30	30	36	39	...	...
50	2.5	11	15	21	25	34	36	40	...	...	...
	Type I			Type II			Type III				

NOTE:
(1) For best results, smaller sprocket should have at least 21 teeth.

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HORSEPOWER RATING PER INCH OF CHAIN WIDTH – 5/8 in. PITCH

No. of Teeth Small Sprocket	Revolutions per Minute – Small Sprocket									
	100	500	700	1000	1200	1800	2000	2500	3000	3500
17[1]	1.3	6.3	7.5	10	11	14	15	14	...	...
19[1]	1.4	6.3	8.8	13	14	16	18	18	...	...
21	1.6	7.5	10	13	15	19	20	20	20	...
23	1.8	7.5	11	15	16	21	23	24	23	...
25	1.9	8.8	11	16	19	24	25	26	26	24
27	2.0	10	13	18	20	26	28	29	29	26
29	2.1	10	14	19	21	28	30	31	31	29
31	2.4	11	15	20	23	30	31	34	34	31
33	2.5	11	16	21	25	33	34	36	36	34
35	2.6	13	16	23	26	34	36	39	39	35
37	2.8	13	18	24	28	36	39	43	41	...
40	3.0	14	19	26	30	39	41	44	...	...
45	3.4	16	21	29	34	44	46	...	...	...
50	3.8	18	24	33	38	48	50	...	...	...
	Type I		Type II		Type III					

NOTE:
(1) For best results, smaller sprocket should have at least 21 teeth.

HORSEPOWER RATING PER INCH OF CHAIN WIDTH – 3/4 in. PITCH

No. of Teeth Small Sprocket	Revolutions per Minute – Small Sprocket								
	100	500	700	1000	1200	1500	1800	2000	2500
17[1]	1.9	8.1	11	14	15	16	18	18	...
19[1]	2.0	9.3	13	15	18	20	21	21	...
21	2.3	10	14	18	20	23	24	25	24
23	2.5	11	15	20	23	25	28	28	28
25	2.8	13	16	21	25	29	31	31	30
27	2.9	14	18	24	28	31	34	35	35
29	3.1	15	20	26	30	34	36	38	38
31	3.4	15	21	28	31	36	40	41	41
33	3.6	16	23	30	34	39	43	44	44
35	3.8	18	24	31	36	41	45	46	46
37	4.0	19	25	34	39	44	48	49	49
40	4.4	20	28	36	41	48	51	53	53
45	4.9	23	30	40	46	53	56	58	...
50	5.4	25	34	45	51	58	61	...	...
	Type I		Type II		Type III				

NOTE:
(1) For best results, smaller sprocket should have at least 21 teeth.

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HORSEPOWER RATING PER INCH OF CHAIN WIDTH – 1 in. PITCH

No. of Teeth Small Sprocket	Revolutions per Minute – Small Sprocket										
	100	200	300	400	500	700	1000	1200	1500	1800	2000
17[1]	3.8	6.3	8.8	11	14	18	21	23	...	...	...
19[1]	3.8	7.5	10	13	15	20	25	26	28	...	...
21	3.8	7.5	11	15	18	23	29	31	33	33	...
23	3.8	8.8	13	16	19	25	31	35	38	38	...
25	5.0	8.8	14	18	21	28	35	39	41	41	41
27	5.0	10	15	19	24	30	39	43	46	46	45
29	5.0	11	16	20	25	33	41	46	50	51	50
31	6.3	11	16	23	28	35	45	50	54	55	54
33	6.3	13	18	24	29	38	49	54	59	59	58
35	6.3	13	19	25	30	40	51	56	61	63	61
37	6.8	14	20	26	33	43	54	60	65	66	...
40	7.5	15	23	29	35	45	59	65	70	...	...
45	8.8	16	25	31	39	51	65	71	76	...	...
50	10	19	28	35	43	56	71	78	...	...	...
	Type I			Type II				Type III			

NOTE:
(1) For best results, smaller sprocket should have at least 21 teeth.

HORSEPOWER RATING PER INCH OF CHAIN WIDTH – 1¼ in. PITCH

No. of Teeth Small Sprocket	Revolutions per Minute – Small Sprocket										
	100	200	300	400	500	600	700	800	1000	1200	1500
19[1]	5.6	10	15	20	24	26	29	31	34	35	...
21	6.3	11	18	23	26	30	33	36	40	41	...
23	6.9	13	19	24	29	34	36	40	45	46	46
25	7.5	14	20	26	31	36	40	44	50	53	53
27	8.0	15	23	29	35	40	44	49	54	58	58
29	8.6	16	24	31	38	43	48	53	59	63	64
31	9.3	18	26	34	40	46	51	56	64	68	69
33	9.9	19	28	35	43	49	55	60	69	73	74
35	11	20	29	38	45	53	59	64	73	78	78
37	11	21	30	40	48	55	63	68	76	81	...
40	12	24	34	44	53	60	68	74	83	88	...
45	13	26	38	49	59	68	75	81	91	...	...
50	15	29	43	54	65	74	83	90	100	...	...
	Type I			Type II			Type III				

NOTE:
(1) For best results, smaller sprocket should have at least 21 teeth.

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HORSEPOWER RATING PER INCH OF CHAIN WIDTH – $1^1/_2$ in. PITCH

No. of Teeth Small Sprocket	Revolutions per Minute – Small Sprocket										
	100	200	300	400	500	600	700	800	900	1000	1200
19[1]	8.0	15	21	28	31	35	39	40	41	43	...
21	8.8	16	24	30	36	40	44	46	49	49	...
23	10	19	26	34	40	45	49	53	55	56	55
25	10	20	29	38	44	50	55	59	61	65	64
27	11	23	31	40	48	54	60	64	68	70	70
29	13	24	34	44	51	59	65	70	74	75	76
31	14	25	36	46	55	64	70	75	79	81	83
33	14	28	39	50	59	68	75	80	85	88	89
35	15	29	41	53	63	71	79	85	90	93	94
37	16	30	44	59	66	76	84	90	96	99	...
40	18	33	48	66	73	83	90	98	105	...	...
45	19	38	54	68	81	93	101	108	113	...	...
50	21	41	59	75	89	101	111	118	...	...	...
	Type I		Type II		Type III						

NOTE:
(1) For best results, smaller sprocket should have at least 21 teeth.

HORSEPOWER RATING PER INCH OF CHAIN WIDTH – 2 in. PITCH

No. of Teeth Small Sprocket	Revolutions per Minute – Small Sprocket								
	100	200	300	400	500	600	700	800	900
19[1]	14	26	36	44	50	54	56	...	...
21	16	29	40	50	53	63	65	...	...
23	17	33	45	55	64	70	74	75	...
25	18	35	49	61	70	78	83	85	85
27	20	38	54	66	78	85	91	94	94
29	21	41	58	73	84	93	99	103	103
31	23	44	63	78	90	100	106	110	110
33	25	46	66	83	96	106	114	118	118
35	26	50	71	88	103	114	121	125	125
37	28	53	75	93	110	124	128	131	...
40	30	58	81	101	118	129	138	141	...
45	34	64	90	113	131	144	151	...	...
50	38	71	100	125	144	156	...	...	...
	Type I		Type II		Type III				

NOTE:
(1) For best results, smaller sprocket should have at least 21 teeth.

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S2 SPROCKET CUTTING TOOLS FOR 3/8 IN. PITCH CHAIN AND LARGER

S2.1 Straddle Cutters for 3/8 in. Pitch Chain and Larger

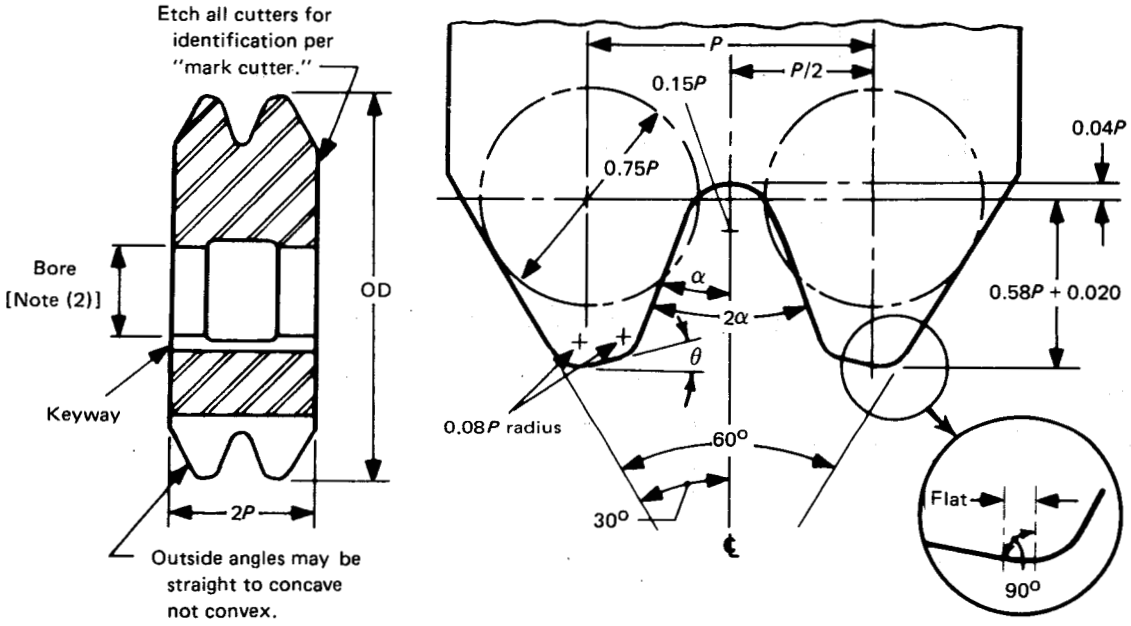


FIG. S2.1 STRADDLE CUTTER LAYOUT

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TABLE S2.1-1
STRADDLE CUTTER DATA – INCHES

Chain Pitch *P*	Mark Cutter [Note (1)]	Outside Dia.	0.75*P*	α	Θ	Bore [Note (2)]
0.375	SC3-15 thru 35 SC3-36 up	3.625	0.2813	22°-30′ 27°-30′	12° 5°	1.250
0.500	SC4-15 thru 35 SC4-36 up	3.875	0.3750	22°-30′ 27°-30′	12° 5°	1.250
0.625	SC5-15 thru 35 SC5-36 up	4.250	0.4688	22°-30′ 27°-30′	12° 5°	1.250
0.750	SC6-15 thru 35 SC6-36 up	4.625	0.5625	22°-30′ 27°-30′	12° 5°	1.250
1.000	SC8-15 thru 35 SC8-36 up	5.250	0.7500	22°-30′ 27°-30′	12° 5°	1.500
1.250	SC10-15 thru 35 SC10-36 up	5.750	0.9375	22°-30′ 27°-30′	12° 5°	1.500
1.500	SC12-15 thru 35 SC12-36 up	6.250	1.1250	22°-30′ 27°-30′	12° 5°	1.750
2.000	SC16-15 thru 35 SC16-36 up	6.500	1.5000	22°-30′ 27°-30′	12° 5°	1.750

NOTES:
(1) Range of teeth is indicated in the cutter marking.
(2) Suggested standard; bores other than standard must be specified.

TABLE S2.1-2
STRADDLE CUTTER DATA – MILLIMETERS

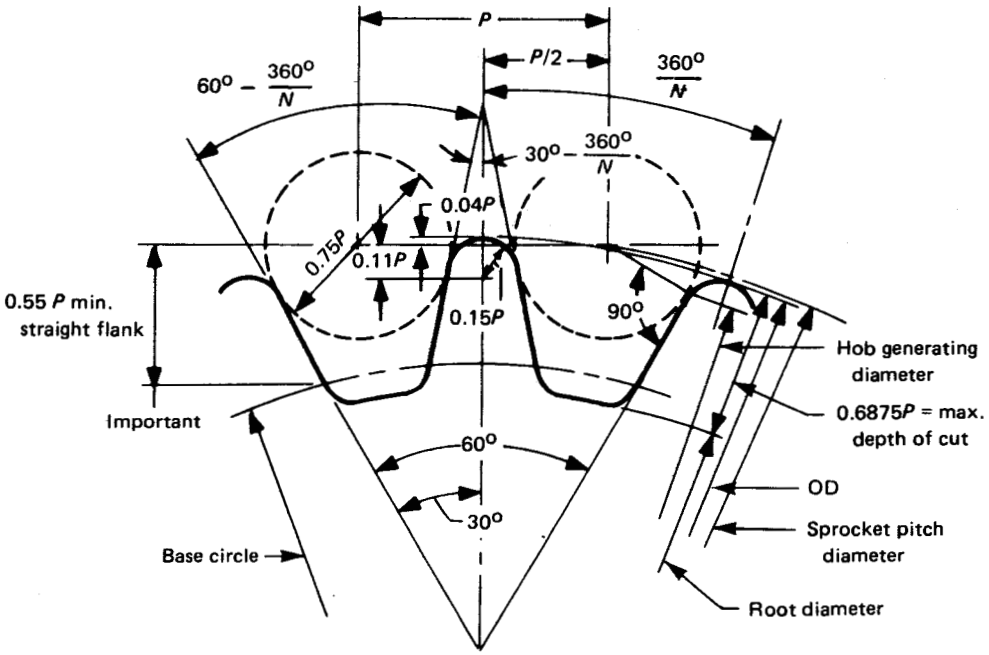
Chain Pitch *P*	Mark Cutter [Note (1)]	Outside Dia.	0.75*P*	α	Θ	Bore [Note (2)]
9.52	SC3-15 thru 35 SC3-36 up	92.08	7.14	22°-30′ 27°-30′	12° 5°	31.75
12.70	SC4-15 thru 35 SC4-36 up	98.42	9.52	22°-30′ 27°-30′	12° 5°	31.75
15.88	SC5-15 thru 35 SC5-36 up	107.95	11.91	22°-30′ 27°-30′	12° 5°	31.75
19.05	SC6-15 thru 35 SC6-36 up	117.48	14.29	22°-30′ 27°-30′	12° 5°	31.75
25.40	SC8-15 thru 35 SC8-36 up	133.35	19.05	22°-30′ 27°-30′	12° 5°	38.10
31.75	SC10-15 thru 35 SC10-36 up	146.05	23.81	22°-30′ 27°-30′	12° 5°	38.10
38.10	SC12-15 thru 35 SC12-36 up	158.75	28.58	22°-30′ 27°-30′	12° 5°	44.45
50.80	SC16-15 thru 35 SC16-36 up	165.10	38.10	22°-30′ 27°-30′	12° 5°	44.45

NOTES:
(1) Range of teeth is indicated in the cutter marking.
(2) Suggested standard; bores other than standard must be specified.

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S2.2 Hobs for 3/8 in. Pitch Chain and Larger

Basic hob generating data are shown below. This information appears in Figs. S2.2-1 and S2.2-2 and Table S2.2. When sprockets are cut, the over pin diameters in Table 2.8 must be used.



P = chain pitch
N = number teeth

$$\text{Hob generating diameter} = p \sqrt{\frac{1}{\sin^2 \frac{180^\circ}{N}} + 0.5625 - \frac{1.5 \sin\left(30 - \frac{180}{N}\right)^\circ}{\sin \frac{180^\circ}{N}}}$$

FIG. S2.2-1 HOB GENERATING CRITERIA

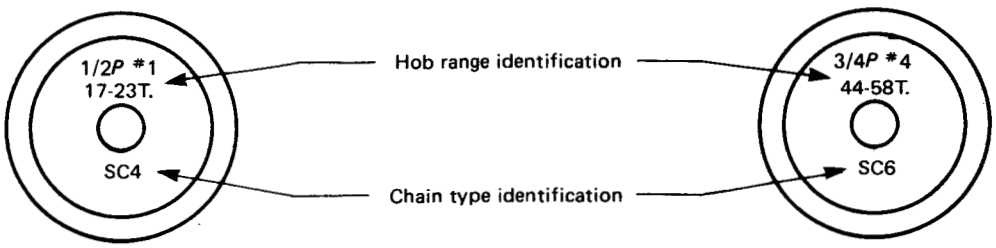


FIG. S2.2-2 HOB IDENTIFICATION

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TABLE S2.2
HOB GENERATING DATA

Chain Pitch	Hob Number	Basic Number of Teeth	Tooth Range of Hob	Generating Diameter	
				Inches	Millimeters
SC3 = 0.375 in.	1	20	17-23	2.311	58.70
9.52 mm	2	28	24-32	3.247	82.47
	3	38	33-43	4.428	112.47
	4	51	44-58	5.971	151.66
	5	69	59-79	8.114	206.10
	6	95	80-110	11.212	284.78
	7	130	111-150	15.385	390.78
SC4 = 0.500 in.	1	20	17-23	3.082	78.28
12.70 mm	2	28	24-32	4.329	109.96
	3	38	33-43	5.904	149.96
	4	51	44-58	7.962	202.23
	5	69	59-79	10.818	274.78
	6	95	80-110	14.950	379.73
	7	130	111-150	20.513	521.03
SC5 = 0.625 in.	1	20	17-23	3.852	97.84
15.88 mm	2	28	24-32	5.412	137.46
	3	38	33-43	7.381	187.48
	4	51	44-58	9.952	252.78
	5	69	59-79	13.522	343.46
	6	95	80-110	18.687	474.65
	7	130	111-150	25.641	651.28
SC6 = 0.750 in.	1	20	17-23	4.623	117.42
19.05 mm	2	28	24-32	6.494	164.95
	3	38	33-43	8.857	224.97
	4	51	44-58	11.943	303.35
	5	69	59-79	16.227	412.17
	6	95	80-110	22.424	569.57
	7	130	111-150	30.770	781.56
SC8 = 1.000 in.	1	20	17-23	6.163	156.54
25.40 mm	2	28	24-32	8.659	219.94
	3	38	33-43	11.809	299.95
	4	51	44-58	15.924	404.47
	5	69	59-79	21.636	549.55
	6	95	80-110	29.899	759.43
	7	130	111-150	41.026	1042.06
SC10 = 1.250 in.	1	20	17-23	7.704	195.68
31.75 mm	2	28	24-32	10.823	274.90
	3	38	33-43	14.761	374.93
	4	51	44-58	19.905	505.59
	5	69	59-79	27.045	686.94
	6	95	80-110	37.374	949.30
	7	130	111-150	51.283	1302.59
SC12 = 1.500 in.	1	20	17-23	9.245	234.82
38.10 mm	2	28	24-32	12.988	329.90
	3	38	33-43	17.713	449.91
	4	51	44-58	23.886	606.70
	5	69	59-79	32.454	824.33
	6	95	80-110	44.849	1139.16
	7	130	111-150	61.539	1563.09

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TABLE S2.2 (CONT'D)

Chain Pitch	Hob Number	Basic Number of Teeth	Tooth Range of Hob	Generating Diameter	
				Inches	Millimeters
SC16 = 2.000 in.	1	20	17-23	12.327	313.11
50.80 mm	2	28	24-32	17.317	439.85
	3	38	33-43	23.618	599.90
	4	51	44-58	31.848	808.94
	5	69	59-79	43.272	1099.11
	6	95	80-110	59.798	1518.87
	7	130	111-150	82.052	2084.12

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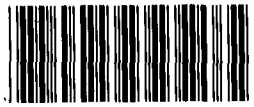
ERRATA

to

ANSI B29.2M-1982
Inverted Tooth (Silent) Chains and Sprockets

Page 15, 2.4 — *Correct formula for* G (max.) *to read:*

$$G\ (\text{max.}) = P\left(\cot\frac{180^\circ}{N} - 1.20\right)$$



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JULY 1985

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