International Standard 4156

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Straight cylindrical involute splines — Metric module, side fit — Generalities, dimensions and inspection

Cannelures cylindriques droites à flancs en développante — Module métrique, à centrage sur flancs — Généralités, dimensions et vérification

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

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It has been approved by the member bodies of the following countries :

Australia	India	Sweden
Austria	Italy	Turkey
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Chile	Korea, Rep. of	USA
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France	Spain	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Czechoslovakia
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1) In preparation : will be the subject of an addendum.

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Straight cylindrical involute splines — Metric module, side fit — Generalities, dimensions and inspection

Section one : Generalities

1 Scope and field of application

This International Standard provides data and guidance for the design, manufacture and inspection of straight (non-helical) cylindrical involute splines with side fit. It establishes a specification based on the module within the range 0,25 to 10 inclusive, relating to nominal pressure angles of 30°, 37,5° and 45°. (For electronic data processing purposes, the form of expression "37,5°" has been adopted instead of 37° 30'.)

Limiting dimensions, tolerances, manufacturing errors and their effects on the fit between connecting co-axial spline elements are defined and tabulated. Linear dimensions are expressed in millimetres and angular dimensions in degrees.

2 Terms and definitions relating to splines

2.1 spline joint : Connecting, co-axial elements that transmit torque through the simultaneous engagement of equally spaced teeth situated around the periphery of a cylindrical external member with similar spaced mating spaces situated around the inner surface of the related cylindrical internal member.

2.2 involute spline : One member of spline joint having teeth or spaces that have involute flank profiles.

2.3 internal spline : A spline formed on the inner surface of a cylinder.

2.4 external spline : A spline formed on the outer surface of a cylinder.

2.5 fillet : The concave surface of the tooth or space connecting the involute flank and the root circle. This curved surface as generated varies and cannot be properly specified by a radius of any given value.

2.6 fillet root spline : A spline having a tooth or space profile in which the opposing involute flanks are connected to the root circle (D_{ei} or D_{ie} diameter) by a single fillet.

2.7 flat root spline : A spline having a tooth or space profile in which each of the opposing involute flanks are connected to the root circle (D_{ei} or D_{ie} diameter) by a fillet.

2.8 module, m : The ratio of the circular pitch, expressed in millimetres, to the number π (or the ratio of the pitch diameter, expressed in millimetres, to the number of teeth).

2.9 pitch circle : The reference circle from which all normal spline dimensions are derived, and the circle on which the specified pressure angle has its nominal value.

2.10 pitch diameter, D : The diameter of the pitch circle, in millimetres, equal to the number of teeth multiplied by the module.

2.11 pitch point : The intersection of the spline tooth profile with the pitch circle.

2.12 circular pitch, p : A length of arc of the pitch circle between two consecutive pitch points of left- (or right-) hand flanks, which has a normal value of the number π multiplied by the module.

2.13 pressure angle, α : The acute angle between a radial line passing through any point on a tooth flank and the tangent plane to the flank at that point.

2.14 standard pressure angle, α_D : The pressure angle at the specified pitch point.

2.15 base circle : The circle from which involute spline tooth profiles are generated.

2.16 base diameter, D_b : The diameter of the base circle.

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2.17 base pitch, p_b : The arc length of the base circle between two consecutive corresponding flanks.

2.18 major circle : The circle formed by the outermost surface of the spline. It is the outside circle (tooth tip circle) of the external spline or the root circle of the internal spline.

2.19 major diameter, D_{ee}, D_{ei} : The diameter of the major circle.

2.20 minor circle : The circle formed by the innermost surface of the spline. It is the root circle of the external spline or the inside circle (tooth tip circle) of the internal spline.

2.21 minor diameter, D_{ie}, D_{ii} : The diameter of the minor circle.

2.22 form circle : The circle which establishes the deepest points of involute form control of the tooth profile. This circle along with the tooth tip circle (or start of chamfer circle) determines the limits of tooth profile requiring control. It is located near and below the major circle on the internal spline and near and above the minor circle on the external spline.

2.23 form diameter, D_{Fe}, D_{Fi} : The diameter of the form circle.

2.24 depth of engagement : The radial distance from the minor circle of the internal spline to the major circle of the external spline, minus corner clearance and/or chamfer depth.

2.25 basic (circular) space width or tooth thickness at the pitch diameter, E or S : For 30°, 37,5° and 45° pressure angle splines, half the circular pitch.

2.26 actual space width : The practically measured circular space width, on the pitch circle, of any single space width within the limit values $E_{max.}$ and $E_{min.}$.

2.27 effective space width, E_v : For an internal spline, equal to the circular tooth thickness on the pitch circle of an imaginary perfect external spline which would fit the internal spline without looseness or interference, considering engagement of the entire axial length of the splined assembly. The minimum effective space width ($E_{v\ min.}$, always equal to E) of the internal spline is always basic, as shown in table 1. Fit variations may be obtained by adjusting the tooth thickness of the external spline.

2.28 actual tooth thickness : The practically measured circular tooth thickness, on the pitch circle, of any single tooth within the limit values $S_{max.}$ and $S_{min.}$.

2.29 effective tooth thickness, S_v : For an external spline, equal to the circular space width on the pitch circle of an imaginary perfect internal spline which would fit the external spline without looseness or interference, considering engagement of the entire axial length of the splined assembly. Fit variations are obtained by adjusting this value S_v.

2.30 effective clearance, c_v (looseness or interference) : The effective space width of the internal spline minus the effective tooth thickness of the mating external spline.

2.31 theoretical clearance, c (looseness or interference) : The actual space width of an internal spline minus the actual tooth thickness of the mating external spline. It does not define the fit between mating members, because of the effect of variations.

2.32 form clearance, c_F : The radial depth of involute profile beyond the depth of engagement with the mating part. It allows eccentricity of the minor circle (internal), of the major circle (external) and of their respective pitch circles.

2.33 total index variation : Amount of absolute values of the two greatest actual (or practically measured) positive and negative variations from the theoretical spacing.

2.34 total profile variation : Amount of absolute values of the two greatest positive and negative variations, from the theoretical tooth profiles, measured normal to flanks.

2.35 total lead variation : Amount of absolute values of the two greatest opposite direction variations, from the theoretical direction (parallel to the datum axis), also including parallelism and alignment variations (see figure 1).

NOTE — Straight (non-helical) splines have an infinite lead.

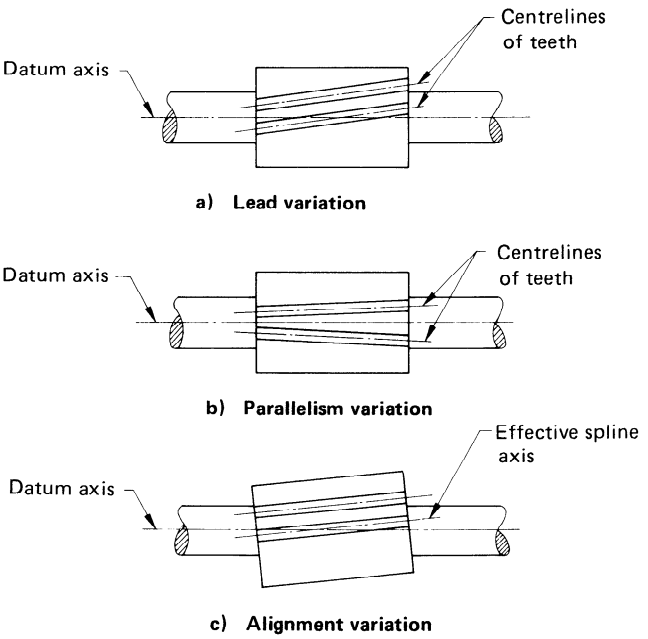


Figure 1 — Lead variations

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2.36 parallelism variation : The variation of parallelism of a single spline tooth to any other single spline tooth (see figure 1).

2.37 alignment variation : The variation of the effective spline axis with respect to the reference axis (see figure 1).

2.38 out-of-roundness : The variation of the spline from a true circular configuration.

2.39 effective variation : The accumulated effect of the spline variations on the fit with the mating part.

2.40 variation allowance, λ : The permissible effective variation.

2.41 machining tolerance, T : The permissible variation in actual space width or actual tooth thickness.

2.42 total tolerance, $(T + \lambda)$: The machining tolerance plus the variation allowance. The total tolerance on an internal spline is the difference between the minimum effective space width and the maximum actual space width; on an external spline, it is the difference between the maximum effective tooth thickness and the minimum actual tooth thickness.

2.43 length of engagement, g_γ : The axial length of contact between mating splines.

2.44 active spline length, g_w : The maximum axial spline length in contact (when working) with the mating spline. On sliding splines, the active length exceeds the length of engagement.

2.45 basic dimension : A numerical value to describe the theoretically exact size, shape or location of a feature. It is the basis from which permissible variations are established by tolerances.

2.46 auxiliary dimension : A dimension, without tolerance, given for information purposes only, for the determination of the useful production and control dimensions.

3 Symbols

3.1 General symbols

The general symbols used to designate the various spline terms and dimensions are given below (see figures 10, 11, 12, 13, 14 and 15).

NOTE — In electronic data processing (EDP), it is not always possible to present symbols in their theoretically correct form because of limitations of connected printing equipment. For this reason, some alternative symbols for EDP usage are given in brackets below (for example, the symbol D_b for base diameter may be printed as DB).

c_v = effective clearance (looseness or interference)

c_F = form clearance

D = pitch diameter

D_b [DB] = base diameter

d_{ci} = pin contact diameter, internal spline

d_{ce} = pin contact diameter, external spline

D_{Fe} [DFE] = form diameter, external spline

D_{Fi} [DFI] = form diameter, internal spline

D_{ii} [DII] = minor diameter, internal spline

D_{ee} [DEE] = major diameter, external spline

D_{ie} [DIE] = minor diameter, external spline

D_{ei} [DEI] = major diameter, internal spline

D_{Re} [DRE] = diameter of measuring pin for external spline

D_{Ri} [DRI] = diameter of measuring pin for internal spline

λ = variation allowance

inv α = involute α (= tan α − α)

K_e [KE] = approximation factor for external spline

K_i [KI] = approximation factor for internal spline

g = spline length

g_w = active spline length

g_γ = length of engagement

T = machining tolerance

M_{Re} [MRE] = measurement over two pins, external spline

M_{Ri} [MRI] = measurement between two pins, internal spline

W = measurement over k teeth, external spline

Z = number of teeth

m = module

p_b = base pitch

p = circular pitch

ϱ_{Fe} = fillet radius of the basic rack, external spline

ϱ_{Fi} = fillet radius of the basic rack, internal spline

E = basic space width, circular

E_{max} = actual maximum space width, circular

E_{min} = actual minimum space width, circular

E_v [EV] = effective space width, circular

S = basic tooth thickness, circular

S_{max} = actual maximum tooth thickness, circular

S_{min} = actual minimum tooth thickness, circular

S_v [SV] = effective tooth thickness, circular

α = pressure angle

α_D = standard pressure angle

α_{ci} = pressure angle at pin contact diameter, internal spline

α_{ce} = pressure angle at pin contact diameter, external spline

α_i = pressure angle at pin centre, internal spline

α_e = pressure angle at pin centre, external spline

α_{Fe} = pressure angle at form diameter, external spline

α_{Fi} = pressure angle at form diameter, internal spline

k — j_s — h — f — e and d = fundamental deviation on the external spline = $c_{v\,min}$

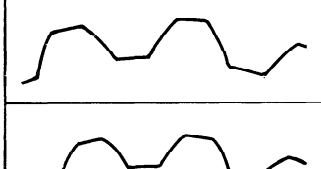
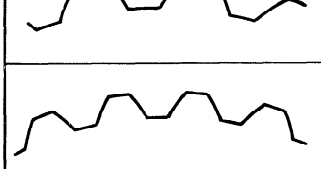
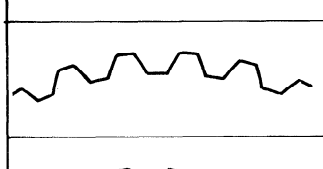
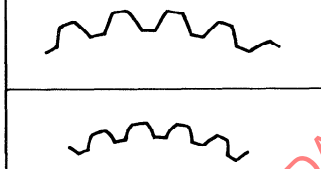
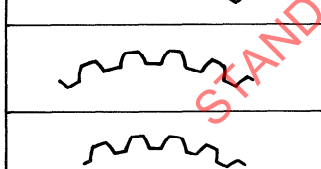
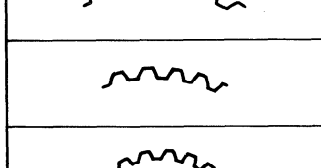
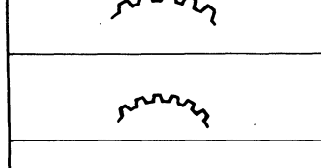
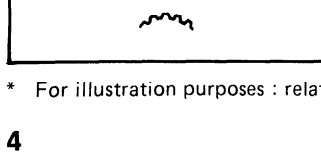
H = fundamental deviation on the internal spline

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Tables 1 and 2 give the basic dimensions and fundamental formulae, a graphical presentation of which is given by figure 2.

Table 1 — Theoretical dimensions for splines

Dimensions in millimetres

Tooth α_D 30° *	Module m	Circular pitch p	Basic space width or tooth thickness at pitch diameter E or S			Base pitch ρ_b		
			α_D 30°	α_D 37,5°	α_D 45°	α_D 30°	α_D 37,5°	α_D 45°
	10	31,416	15,708	15,708	–	27,207 0	24,923 9	–
	8	25,133	12,566	12,566	–	21,765 6	19,939 2	–
	6	18,850	9,425	9,425	–	16,324 2	14,954 4	–
	5	15,708	7,854	7,854	–	13,603 5	12,462 0	–
	4	12,566	6,283	6,283	–	10,882 8	9,969 6	–
	3	9,425	4,712	4,712	–	8,162 1	7,477 2	–
	2,5	7,854	3,927	3,927	3,927	6,801 7	6,231 0	5,553 6
	2	6,283	3,142	3,142	3,142	5,441 4	4,984 8	4,442 9
	1,75	5,498	2,749	2,749	2,749	4,761 2	4,361 7	3,887 5
	1,5	4,712	2,356	2,356	2,356	4,081 0	3,738 6	3,332 2
	1,25	3,927	1,963	1,963	1,963	3,400 9	3,115 5	2,776 8
	1	3,142	1,571	1,571	1,571	2,720 7	2,492 4	2,221 4
	0,75	2,356	1,178	1,178	1,178	2,040 5	1,869 3	1,666 1
	0,5	1,571	0,785	0,785	0,785	1,360 4	1,246 2	1,110 7
	0,25	0,785	–	–	0,393	–	–	0,555 4

* For illustration purposes : relative tooth sizes for various spline modules for pressure angle $\alpha_D = 30°$.

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Table 2 — Formulae for dimensions and tolerances for all fit classes

Term	Symbol	Formula
Pitch diameter	D	$m\,Z$
Base diameter	D_b	$m\,Z\cos\alpha_D$
Circular pitch	p	$\pi\,m$
Base pitch	p_b	$\pi\,m\cos\alpha_D$
Effective upper deviation, external	es_v	resulting from deviation allowance (fundamental) k — j_s — h — f — e and d
Minimum diameter, internal		
30°, flat root	$D_{ei\,min}$	$m(Z + 1{,}5)$
30°, fillet root	$D_{ei\,min}$	$m(Z + 1{,}8)$
37,5°, fillet root	$D_{ei\,min}$	$m(Z + 1{,}4)$
45°, fillet root	$D_{ei\,min}$	$m(Z + 1{,}2)$
Maximum major diameter, internal	$D_{ei\,max}$	$D_{ei\,min} + (T + \lambda)/\tan\alpha_D$ (see note 1)
Minimum form diameter, internal		
30°, flat root and fillet root	$D_{Fi\,min}$	$m(Z + 1) + 2\,c_F$
37,5°, fillet root	$D_{Fi\,min}$	$m(Z + 0{,}9) + 2\,c_F$
45°, fillet root	$D_{Fi\,min}$	$m(Z + 0{,}8) + 2\,c_F$
Minimum diameter, internal	$D_{ii\,min}$	$D_{Fe\,max} + 2\,c_F$ (see note 2)
Maximum minor diameter, internal		
$m \leqslant 0{,}75$	$D_{ii\,max}$	$D_{ii\,min}$ + tol. H 10
$0{,}75 < m < 2$	$D_{ii\,max}$	$D_{ii\,min}$ + tol. H 11
$m \geqslant 2$	$D_{ii\,max}$	$D_{ii\,min}$ + tol. H 12
Basic space width and Minimum effective space width	E and $E_{v\,min}$	$0{,}5\,\pi\,m$
Maximum actual space width		
class 4	E_{max}	$E_{v\,min} + (T + \lambda)$ (see note 3)
class 5	E_{max}	$E_{v\,min} + (T + \lambda)$ (see note 3)
class 6	E_{max}	$E_{v\,min} + (T + \lambda)$ (see note 3)
class 7	E_{max}	$E_{v\,min} + (T + \lambda)$ (see note 3)
Minimum actual space width	E_{min}	$E_{v\,min} + \lambda$ (see 8.2)
Maximum effective space width	$E_{v\,max}$	$E_{max} - \lambda$ (see 8.2)
Maximum major diameter, external		
30°, flat root and fillet root	$D_{ee\,max}$	$m(Z + 1) + es_v/\tan\alpha_D$ (see note 4)
37,5°, fillet root	$D_{ee\,max}$	$m(Z + 0{,}9) + es_v/\tan\alpha_D$ (see note 4)
45°, fillet root	$D_{ee\,max}$	$m(Z + 0{,}8) + es_v/\tan\alpha_D$ (see note 4)
Minimum major diameter, external		
$m \leqslant 0{,}75$	$D_{ee\,min}$	$D_{ee\,max}$ — tol. h 10
$0{,}75 < m < 2$	$D_{ee\,min}$	$D_{ee\,max}$ — tol. h 11
$m \geqslant 2$	$D_{ee\,min}$	$D_{ee\,max}$ — tol. h 12
Maximum form diameter, external	$D_{Fe\,max}$	$2\sqrt{(0{,}5\,D_b)^2 + \left(0{,}5\,D\sin\alpha_D - \frac{h_s - \frac{0{,}5\,es_v}{\tan\alpha_D}}{\sin\alpha_D}\right)^2}$ (See note 6)
Maximum minor diameter, external		
30°, flat root	$D_{ie\,max}$	$m(Z - 1{,}5) + es_v/\tan\alpha_D$
30°, fillet root	$D_{ie\,max}$	$m(Z - 1{,}8) + es_v/\tan\alpha_D$
37,5°, fillet root	$D_{ie\,max}$	$m(Z - 1{,}4) + es_v/\tan\alpha_D$
45°, fillet root	$D_{ie\,max}$	$m(Z - 1{,}2) + es_v/\tan\alpha_D$

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Table 2 — Formulae for dimensions and tolerances for all fit classes (*concluded*)

Term	Symbol	Formula
Minimum minor diameter, external	$D_{ie\ min}$	$D_{ie\ max} - (T + \lambda)/\tan \alpha_D$ (see note 1)
Basic tooth thickness	S	$0{,}5\,\pi\, m$
Maximum effective tooth thickness	$S_{v\ max}$	$S + es_v$
Minimum actual tooth thickness		
class 4	S_{min}	$S_{v\ max} - (T + \lambda)$ (see note 3)
class 5	S_{min}	$S_{v\ max} - (T + \lambda)$ (see note 3)
class 6	S_{min}	$S_{v\ max} - (T + \lambda)$ (see note 3)
class 7	S_{min}	$S_{v\ max} - (T + \lambda)$ (see note 3)
Maximum actual tooth thickness	S_{max}	$S_{v\ max} - \lambda$
Minimum effective tooth thickness	$S_{v\ min}$	$S_{min} + \lambda$
Total tolerance, space width or tooth thickness	$(T + \lambda)$	(see clause 6)
Form clearance	c_F	$0{,}1\ m$
Pin diameter, internal spline	D_{Ri}	see note 5
Pin diameter, external spline	D_{Re}	see note 5
Measurement between pins	M_{Ri}	see note 5
Measurement over pins	M_{Re}	see note 5
Change factor, internal	K_i	see section three, "Inspection"
Change factor, external	K_e	see section three, "Inspection"

NOTES

1 $(T + \lambda)$ for class 7 — see clause 6.

2 For all classes of fit, always take the $D_{Fe\ max}$ value corresponding to the H/h fit.

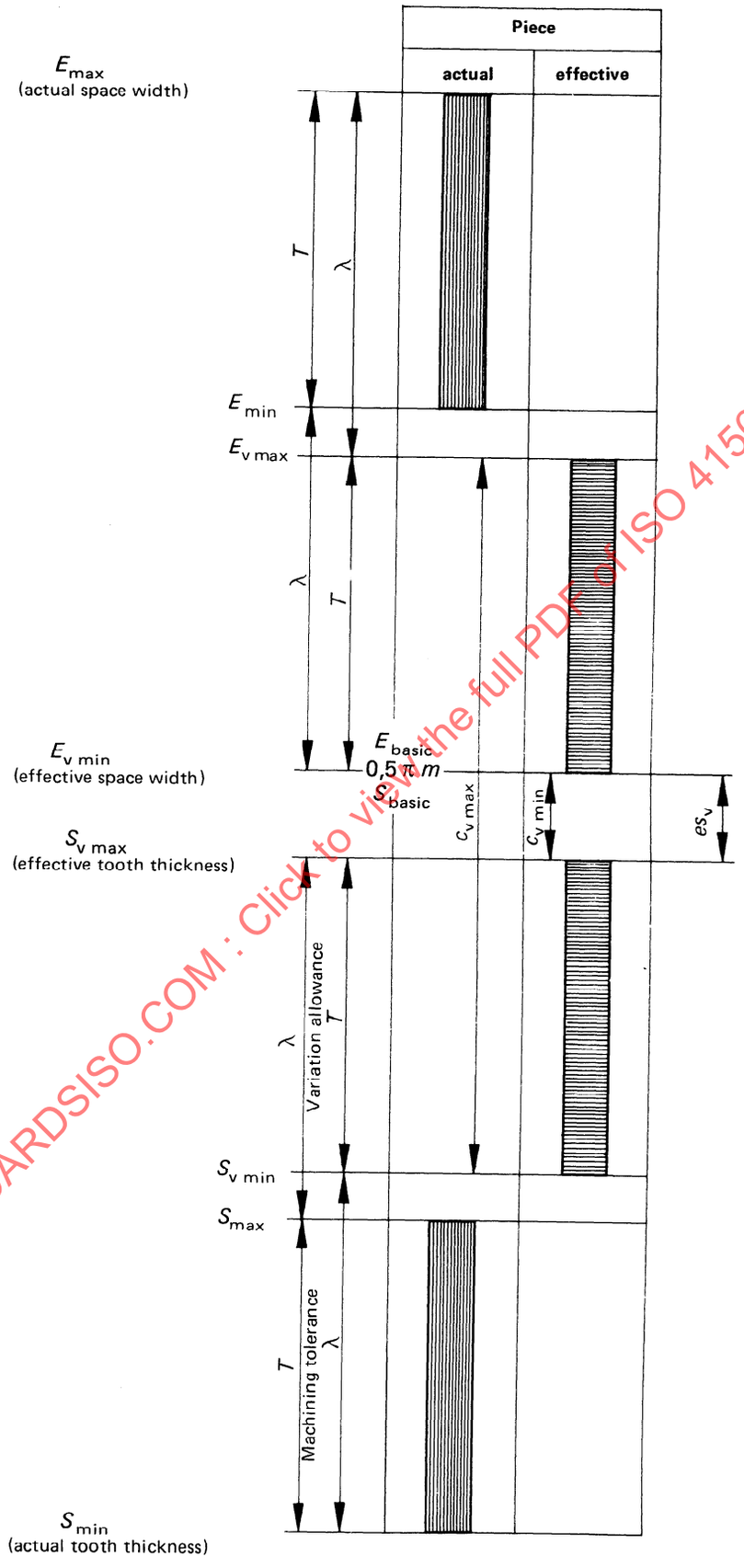
3 See clause 6 and section two — tables of dimensions.

4 Take a null upper deviation value for j_s and k fundamental deviations.

5 See section two : "Dimensions", and section three : "Inspection", concerning choice of pins.

6 For h_s see figures 3, 4, 5 and 6.

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Figure 2 — Graphical representation of tables 1 and 2

3.2 Subscripts

The following subscripts (see also the note in 3.1) are used as part of the above general symbols to designate relative conditions or locations :

$_{i}$[I] = minor or internal (in this last case, in the last position)

$_{e}$[E] = major or external (in this last case, in the last position)

$_{b}$[B] = at base

$_{c}$ = at contact point

$_{F}$[F] = pertaining to form diameter

$_{v}$[V] = effective

$_{w}$ = active

$_{R}$[R] = pertaining to gauges

$_{\gamma}$ = of engagement

$_{D}$ = standard

4 Pressure angle (standard)

Standard pressure angles included in this International Standard for involute splines are 30°, 37,5° and 45°.

5 Type of fit

This International Standard deals with only one type of fit, the side fit, for 30°, 37,5° and 45° pressure angle splines. Formulae for the dimensions and tolerances for these splines are shown in table 2.

5.1 Side fit

In this fit, the mating members contact on the sides of the teeth only. Major and minor diameters are clearance dimensions. The tooth sides act as drivers and centralize mating splines.

5.2 Spline fit classes

This International Standard provides the side fit in six spline fit classes as follows :

Spline fit class	Effective interference
H/k	$c_{v\,max} = (T + \lambda)$
H/j_s	$c_{v\,max}$ = deviation allowance $j_s = \left(\frac{T + \lambda}{2}\right)$
	Effective looseness
H/h	$c_{v\,min}$ = deviation allowance h = zero
H/f	$c_{v\,min}$ = deviation allowance f
H/e	$c_{v\,min}$ = deviation allowance e
H/d	$c_{v\,min}$ = deviation allowance d

The deviation allowances (fundamental) k — j_s — h — f — e and d are the standard deviations selected from ISO/R 286 *ISO System of limits and fits — Part 1 : General, tolerances and deviations*, which are applied to the external spline. A prescribed maximum effective interference or minimum effective looseness is obtained, allowing the fitting by adjusting from the zero line the maximum effective and minimum actual limit values of tooth thickness by the amount of the deviation allowance (see 8.7.2). The spline dimensions in the spline tables of this International Standard are given for spline fit class H/h, $c_{v\,min}$ = zero.

6 Space width and tooth thickness, total tolerance ($T + \lambda$)

Tolerance classes

This International Standard includes four classes of total tolerance ($T + \lambda$) on space width and tooth thickness selected from a combination of tolerance units (i) in ISO/R 286. The tolerance classes are indicated below, with corresponding combination of tolerance units (i). For the calculation of T and λ, see clause 8. The values of λ are given in tables 3 to 6 of clause 8.

Spline tolerance class	Tolerance unit (i)
4	= (10 i* + 40 i**)
5	= (16 i* + 64 i**)
6	= (25 i* + 100 i**)
7	= (40 i* + 160 i**)

* Tolerance based on pitch diameter

$i = 0{,}45\sqrt[3]{D} + 0{,}001\,D$ for $D \leqslant 500$ mm

$i = 0{,}004\,D + 2{,}1$ for $D > 500$ mm

** Tolerance based on space width or tooth thickness

$i = 0{,}45\sqrt[3]{E \text{ (or } S)} + 0{,}001\,E \text{ (or } S)$

where

D is the pitch diameter in millimetres;

E is the basic space width in millimetres;

S is the basic tooth thickness in millimetres.

the resultant ($T + \lambda$) in micrometres. For ($T + \lambda$) in millimetres, multiply the result by 0,001.

For the calculation of tolerance units (i), only the above indicated formulae (notes *, **) are to be taken into consideration.

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It should to be noted that total values ($T + \lambda$) may **always** be subtracted from the limit values of space width and tooth thickness given in section 2 and are usable even if the chosen fit class is other than H/h.

NOTE — Below are listed the combinations of tolerance qualities IT corresponding to the combinations of tolerance units (i) indicated above. Those combinations of tolerance qualities IT are given only to indicate the conception principle of the tolerance system regarding its eventual extension, and **only to rediscover** the corresponding combinations of tolerance units (i).

Spline tolerance class	Tolerance quality (IT)
4	= (IT 6* + IT 9**)
5	= (IT 7* + IT 10**)
6	= (IT 8* + IT 11**)
7	= (IT 9* + IT 12**)

7 Basic rack profiles for spline

7.1 The basic rack is a section of the tooth surface of an involute spline of infinitely large diameter on a plane at right angles to the tooth surfaces, the profile of which is used as the basis for defining the standard tooth dimensions of a system of involute splines.

7.2 The reference line is a straight line crossing the profile of the basic rack, with reference to which the tooth dimensions are specified.

7.3 The profile of the basic rack for the standard pressure angle splines is represented in the following figures :

figure 3 : 30° flat root spline, for modules 0,5 to 10;

figure 4 : 30° fillet root spline, for modules 0,5 to 10;

figure 5 : 37,5° fillet root spline, for modules 0,5 to 10;

figure 6 : 45° fillet root spline, for modules 0,25 to 2,5.

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* Tolerance based on pitch diameter.

** Tolerance based on space width and tooth thickness.

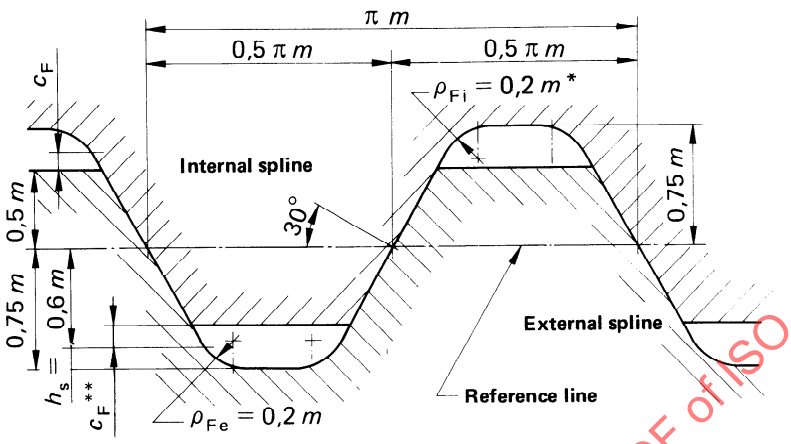


Figure 3 — Profile of the basic rack for 30° flat root spline

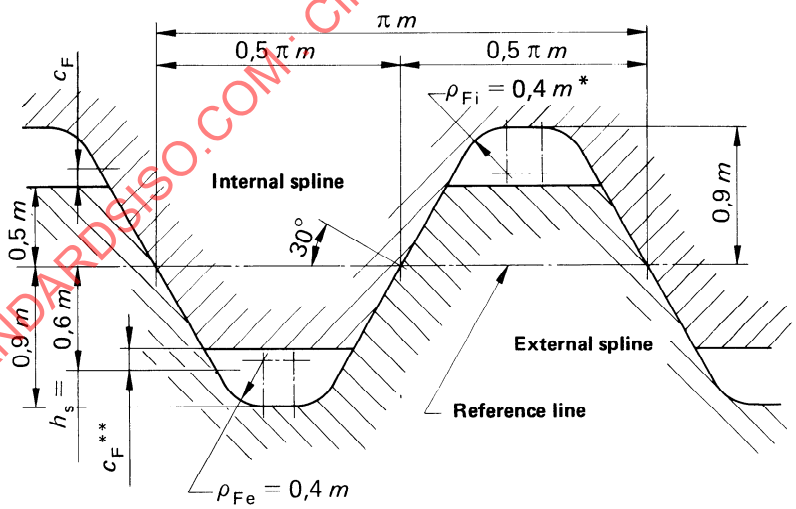


Figure 4 — Profile of the basic rack for 30° fillet root spline

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* and ** See next page.

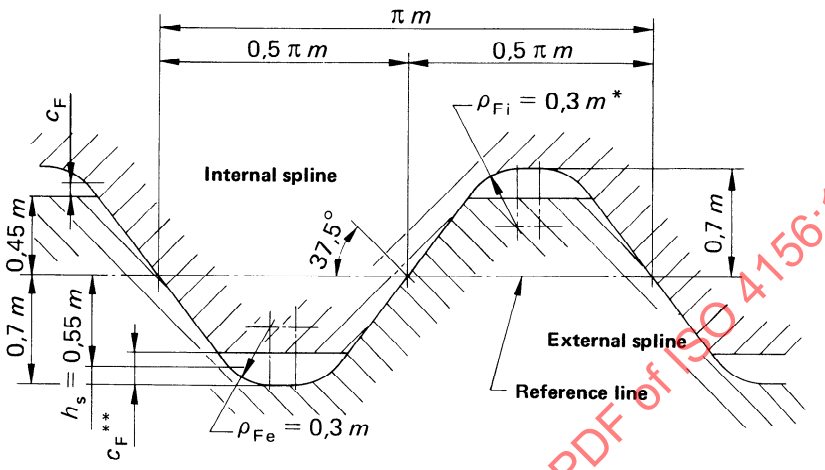


Figure 5 — Profile of the basic rack for 37,5° fillet root spline

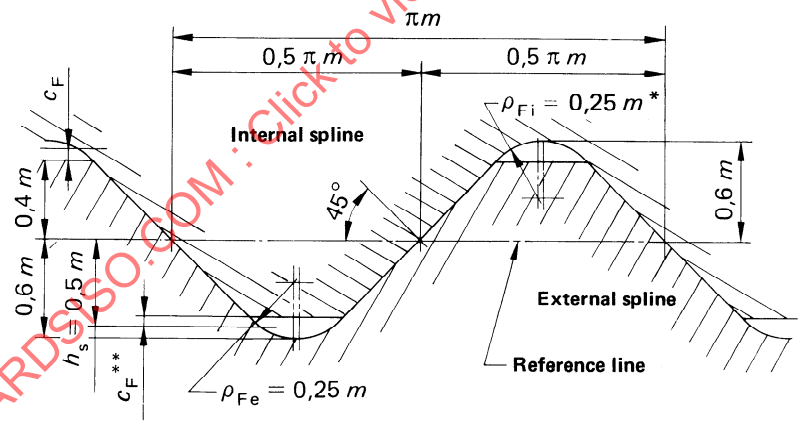


Figure 6 — Profile of the basic rack for 45° fillet root spline

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NOTE concerning figures 3 to 6 :

* For internal splines (hub), the form diameter, obtained by generating from the basic rack, is always greater than the form diameter shown in the tables of dimensions (see section two), which corresponds in all fit cases to the major maximum diameter of the shaft (with upper deviation — es_v — zero) increased to diametral form clearance (2 c_F) equal to 0,2 module.

** For external splines (shafts), c_F is obtained by generation from the basic rack ($D_{Fe\ max}$) and for H/h fit (see note 2 under table 2).

The size c_F indicated is in fact a deviation permitting the form clearance c_F given in table 2 to be obtained and is equal to 0,1 m.

7.4 The minimum radial form clearance, c_F, shown in the basic rack profiles is equal to 0,1 m for all pressure angle splines.

The form clearance is modified for fits other than H/h.

7.5 External splines may be produced by generating with a pinion-type shaper cutter or with a hob, or by cutting with no generating motion using a tool formed to the contour of a tooth space. External splines are also made by cold forming, and in these cases are usually of the fillet root design. Internal splines are usually produced by broaching, by form cutting, or by generating with a shaper cutter. Even when full tip radius tools are used, each of these cutting methods produces a fillet contour with individual characteristics. Generated spline fillets are curves related to the prolate epicycloid for external splines and the prolate hypocycloid for internal splines. These fillets have a minimum radius of curvature at the point where the fillet is tangent to the external spline minor diameter circle or the internal spline major diameter circle, and a rapidly increasing radius of curvature up to the point where the fillet becomes tangent to the involute profile.

The values in table 10 may be used as minimum radii of curvature for stress calculations and they may be specified as the minimum fillet radius. These values are based on the fillet radius shown on the basic rack profiles. For cutting of internal and external splines by generating, with the same pinion-type shaper cutter, the tool design will have to be made according to the dimensions of the internal splines to be obtained.

8 Machining tolerances and variations

8.1 Variation allowance (λ)

The variation allowance, being the addition of the total index variation, total profile variation and total lead variation, has an effect on the effective fit of an involute spline. The effect of these individual spline variations on the fit is less than their total, because areas of more than minimum clearance can have form, lead, or index errors without changing the fit. It is also unlikely that these errors would occur in their maximum amounts simultaneously on the same spline. For this reason, total index variation, profile variation and total lead variation are added together statistically and 60 % of this total is taken to determine the effect that these variations have on spline fit. On this basis, the variation allowance becomes as follows :

$$\lambda = 0{,}6\,[(\text{total index variation})^2 + (\text{total profile variation})^2 + (\text{total lead variation})^2]^{1/2}$$

The above variation allowance is based on a length of engagement equal to one-half the pitch diameter. Adjustment on the variation allowance may be required for a greater length of engagement.

8.2 Machining tolerance (T)

The machining tolerance (T) is derived from the difference between the total tolerance ($T + \lambda$) and the variation allowance (λ), i.e. $(T + \lambda) - \lambda$.

The division of total class tolerance between machining tolerance and variation allowance outlined in 8.1 and 8.2 is recommended for general guidance. Design requirements or specific processes utilized for spline manufacture may require a different division.

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Table 3 — Variation allowance, λ — Modules 0,25 to 1

Values in micrometres

z Number of teeth	$m = 0{,}25$				$m = 0{,}50$				$m = 0{,}75$				$m = 1$				z Number of teeth
	Tolerance class				Tolerance class				Tolerance class				Tolerance class				
	4	5	6	7	4	5	6	7	4	5	6	7	4	5	6	7	
6	9	14	20	31	10	15	22	34	11	16	23	36	11	17	25	38	6
7			21	32			23	35		17	24	37	12	18	26	39	7
8						16					25	38				40	8
9	10			33	11		24	36	12		26	39	13	19	27	41	9
10			22							18					28	42	10
11		15		34		17	25	37	13		27	40		20	29	43	11
12					12			38		19		41	14			44	12
13			23	35		18	26	39			28	42		21	30	45	13
14	11	16							14	20	29	43	15		31	46	14
15			24	36	13	19	27	40						22	32	47	15
16										21	30	44	16			48	16
17		17	25	37		20	29	41			31	45		23	33	49	17
18					14			42	16	22		46	17		34	50	18
19			26	38		21	30	43			32	47		24		51	19
20										23	33	48			35	52	20
21													18	25	36	53	21
22	12	18	27	39	15	22	31	44	17	24	34	49					22
23															37	54	23
24										25	35	50		26			24
25																55	25
26															38		26
27																56	27
28																	28
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36																59	36
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41																	41
42																	42
43																	43
44																	44
45																	45
46	13	19	27	41	16	23	33	49	18	26	37	55	20	28	40	60	46
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52																	52
53																	53
54																	54
55																	55

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Table 3 — Variation allowance, λ — Modules 0,25 to 1 (*concluded*)

Values in micrometres

z Number of teeth	$m = 0{,}25$				$m = 0{,}50$				$m = 0{,}75$				$m = 1$				z Number of teeth
	Tolerance class				Tolerance class				Tolerance class				Tolerance class				
	4	5	6	7	4	5	6	7	4	5	6	7	4	5	6	7	
56	13	19	27	41	16	23	33	49	18	26	37	55	20	29	41	60	56
57																61	57
58			28								38	56			42		58
59				42			34	50								62	59
60						24			19	27	39	57	21	30	43		60
61								51								63	61
62					17		35					58					62
63			29	43				52		28	40	59			44	64	63
64						25			20				22	31		65	64
65		20					36	53			41	60			45		65
66																66	66
67				44								61					67
68			30		18					29			23	32	46	67	68
69						26	37	54	21		42	62					69
70				45												68	70
71															47		71
72										30	43	63		33		69	72
73																	73
74															48	70	74
75																	75
76																71	76
77											44	64			49		77
78																	78
79																72	79
80																	80
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100																	100

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Table 4 — Variation allowance, λ — Modules 1,25 to 2

Values in micrometres

z Number of teeth	$m = 1{,}25$				$m = 1{,}5$				$m = 1{,}75$				$m = 2$				z Number of teeth
	Tolerance class				Tolerance class				Tolerance class				Tolerance class				
	4	5	6	7	4	5	6	7	4	5	6	7	4	5	6	7	
6	12	18	26	40	13	18	27	41	13	19	28	43	14	20	29	44	6
7			27			19	28	42		20	29	44			30	45	7
8	13	19		41			29	43	14		30	45		21	31	47	8
9			28	42	14	20		44		21		46	15	22	32	48	9
10				43			30	45	15		31	47				49	10
11	14	20	29			21		46		22	32	48	16	23	33		11
12				44	15		31								34	50	12
13			30	45		22		47	16	23	33	49				51	13
14		21					32	48			34	50	17	24	35	52	14
15	15		31	46								51			36	53	15
16				47	16	23	33	49		24	35	52		25		54	16
17		22	32					50	17						37	55	17
18				48			34	51			36	53	18	26			18
19			33	49		24				25		54			38	56	19
20	16	23			17		35	52	18		37	55				57	20
21				50									19	27	39	58	21
22			34			25	36	53		26	38	56					22
23		24		51				54						28	40	59	23
24	17		35		18		37		19		39	57				60	24
25				52		26		55		27		58	20		41		25
26														29		61	26
27		25	36	53			38	56		28	40	59			42	62	27
28								57				60					28
29				54	19	27	39				41		21	30	43	63	29
30	18		37					58	20	29		61				64	30
31		26		55			40	59			42	62			44		31
32						28								31		65	32
33			38	56			41	60		30	43	63	22		45	66	33
34								61				64					34
35	19	27		57	20	29	42		21		44					67	35
36			39					62		31		65		32	46		36
37				58							45	66				68	37
38						30	43	63					23		47	69	38
39								64			46	67		33			39
40		28	40	59	21		44			32					48	70	40
41								65				68					41
42	20		41	60							47	69				71	42
43						31	45	66					24	34	49		43
44		29		61					22	33		70				72	44
45								67			48						45
46			42	62			46					71		35	50	73	46
47						32		68			49					74	47
48					22					34		72	25		51		48
49	21	30	43	63			47	69	23							75	49
50						33					50	73		36			50
51								70		35					52	76	51
52			44	64	23				24			74	26				52
53							47	69						37	53	77	53
54		31		65		33											54
55	22							70	25							78	55

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Table 4 — Variation allowance, λ — Modules 1,25 to 2 (*concluded*)

Values in micrometres

Z Number of teeth	$m = 1{,}25$ Tolerance class				$m = 1{,}5$ Tolerance class				$m = 1{,}75$ Tolerance class				$m = 2$ Tolerance class				Z Number of teeth
	4	5	6	7	4	5	6	7	4	5	6	7	4	5	6	7	
56	22	31	45	65	23	33	48	70	25	35	51	74	26	37	53	78	56
57				66				71				75			54	79	57
58		32	46	67	24	34	49	72	26	36	52	76	27	38	55	80	58
59				68			50	73		37	53	77				81	59
60		33	47	69	25	35	51	74			54	78	28	39	56	82	60
61				70		36	52	75	27	38	55	79		40	57	83	61
62	23	34	48	71	26	37	53	76			56	80	29	41	58	84	62
63			49	72			54	77	28	39	57	81			59	85	63
64		35	50	73	27	38	55	78		40	58	82	30	42	60	86	64
65			51	74			56	79	29	41	59	83			61	87	65
66		36	52	75	28	39	57	80		42	60	84	31	43	62	88	66
67				76		40	58	81	30	43	61	85			63	89	67
68	24	37	53	77	29	41	59	82		44	62	86	32	44	64	90	68
69				78			60	83	31	45	63	87			65	91	69
70		38	54	79	30	42	61	84	32	46	64	88	33	45	66	92	70
71			55	80	31	43	62	85			65	89		46	67	93	71
72	25	39	56	81	32	44	63	86	33	47	66	90				94	72
73				82		45	64	87			67	91		47	68	95	73
74		40	57	83	33	46	65	88	34	48	68	92	34		69	96	74
75			58	84		47	66	89			69	93		48	70	97	75
76	26	41	59	85	34	48	67	90	35	49	70	94	35		71	98	76
77			60	86			68	91		50	71	95		49	72	99	77
78		42	61	87	35	49	69	92	36		72	96	36		73	100	78
79			62	88		50	70	93		51	73	97		50	74		79
80	27	43	63	89	36		71	94	37		74	98	37		75		80
81			64	90		51	72	95		52	75	99		51	76		81
82		44	65	91	37		73	96	38		76	100	38		77		82
83			66	92		52	74	97		53	77			52	78		83
84	28	45	67	93	38		75	98	39		78		39		79		84
85			68	94		53	76	99		54	79			53	80		85
86		46	69	95	39		77	100	40		80		40		81		86
87			70	96		54	78			55	81			54	82		87
88	29	47	71	97	40		79		41		82		41		83		88
89			72	98		55	80			56	83			55	84		89
90		48	73	99	41		81		42		84		42		85		90
91			74	100		56	82			57	85			56	86		91
92	30	49	75		42		83		43		86		43		87		92
93			76			57	84			58	87			57	88		93
94		50	77		43		85		44		88		44		89		94
95			78			58	86			59	89			58	90		95
96	31	51	79		44		87		45		90		45		91		96
97			80			59	88			60	91			59	92		97
98	32	52			45		89		46		92		46		93		98
99						60	90			61				60	94		99
100					46		91			62				61	95		100
						61	92		47	63			47	62	96		
					47	62	93			64				63	97		
						63	94		48	65			48	64	98		
					48	64	95		49	66			49	65	99		
					49	65	96		50	67			50	66	100		
					50	66	97			68				67			
						67	98		51	69			51	68			
					51	68	99		52	70			52	69			
					52	69	100			71				70			
						70			53	72			53	71			
					53	71			54	73			54	72			
					54	72			55	74			55	73			
					55	73			56	75			56	74			
					56	74			57	76			57	75			
					57	75			58	77			58	76			
					58	76			59	78			59	77			
					59	77			60	79			60	78			
					60	78			61	80			61	79			
					61	79			62	81			62	80			
					62	80			63	82			63	81			
					63	81			64	83			64	82			
					64	82			65	84			65	83			
					65	83			66	85			66	84			
					66	84			67	86			67	85			
					67	85			68	87			68	86			
					68	86			69	88			69	87			
					69	87			70	89			70	88			
					70	88			71	90			71	89			
					71	89			72	91			72	90			
					72	90			73	92			73	91			
					73	91			74	93			74	92			
					74	92			75	94			75	93			
					75	93			76	95			76	94			
					76	94			77	96			77	95			
					77	95			78	97			78	96			
					78	96			79	98			79	97			
					79	97			80	99			80	98			
					80	98			81	100			81	99			
					81	99			82				82	100			
					82	100			83				83				
					83				84				84				
					84				85				85				
					85				86				86				
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					92				93				93				
					93				94				94				
					94				95				95				
					95				96				96				
					96				97				97				
					97				98				98				
					98				99				99				
					99				100				100				
					100												

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Table 5 — Variation allowance, λ — Modules 2,5 to 5

Values in micrometres

z Number of teeth	$m = 2{,}5$ Tolerance class				$m = 3$ Tolerance class				$m = 4$ Tolerance class				$m = 5$ Tolerance class				z Number of teeth
	4	5	6	7	4	5	6	7	4	5	6	7	4	5	6	7	
6	14	21	31	47	15	22	33	50	17	25	37	56	18	27	40	61	6
7	15	22	32	49	16	23	34	52	18	26	38	57	19	28	41	62	7
8		23	33	50		24	35	53		27	39	59	20	29	43	64	8
9	16		34	51	17	25	36	54	19		40	60		30	44	66	9
10		24	35	52			37	55		28	41	62	21	31	45	67	10
11				53	18	26	38	57	20	29	42	63	22		46	69	11
12	17	25	36	54			39	58			43	64		32	47	70	12
13			37	55	19	27		59	21	30	44	66	23	33	48	72	13
14	18	26	38	56		28	40	60		31	45	67		34	49	73	14
15				57			41	61	22		46	68	24		50	75	15
16	19	27	39	58	20	29	42	62		32	47	69		35	51	76	16
17			40	59				63	23	33	48	70	25	36	52	77	17
18		28		60	21	30	43	64				72			53	79	18
19	20		41	61			44	65		34	49	73	26	37	54	80	19
20		29	42	62		31		66	24		50	74		38	55	81	20
21					22		45	67		35	51	75	27		56	82	21
22	21		43	63		32	46	68	25			76		39	57	84	22
23		30		64				69		36	52	77	28			85	23
24			44	65	23		47				53	78		40	58	86	24
25		31		66		33	48	70	26	37	54	79		41	59	87	25
26	22		45					71				80	29		60	88	26
27				67	24	34	49	72		38	55	81		42	61	89	27
28		32	46	68				73	27		56	82				90	28
29			47	69		35	50	74		39		83	30	43	62	92	29
30	23	33					51		28		57	84			63	93	30
31			48	70	25			75		40	58	85	31	44	64	94	31
32				71		36	52	76				86				95	32
33	24	34	49					77	29	41	59	87		45	65	96	33
34				72	27		53	78			60	88	32		66	97	34
35			50	73						42				46	67	98	35
36		35					54	79			61	89				99	36
37	25		51	74		38		80	30		62	90	33	47	68	100	37
38				75	27		55	81		43		91			69	101	38
39		36									63	92	34	48		102	39
40			52	76		39	56	82	31	44		93			70	103	40
41				77				83			64	94		49	71		41
42	26	37	53		28		57			45			35			104	42
43				78		40		84	32		65	95		50	72	105	43
44			54	79			58	85			66	96			73	106	44
45										46		97		51		107	45
46	27	38	55	80	29	41	59	86			67	98	36		74	108	46
47								87	33	47						109	47
48				81			60				68	99		52	75	110	48
49		39	56	82		42		88				100	37		76	111	49
50					30		61	89	34	48	69	101		53		112	50
51	28		57	83											77		51
52		40				43	62	90			70	102	38	54		113	52
53				84				91		49		103			78	114	53
54			58	85			63		35		71	104			79	115	54
55					31	44		92					39	55		116	55

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Table 5 — Variation allowance, λ — Modules 2,5 to 5 (*concluded*)

Values in micrometres

z Number of teeth	$m = 2{,}5$ Tolerance class				$m = 3$ Tolerance class				$m = 4$ Tolerance class				$m = 5$ Tolerance class				z Number of teeth
	4	5	6	7	4	5	6	7	4	5	6	7	4	5	6	7	
56							63				72	105		55			56
57												106					57
58	29	41	59	86	31	44	64	93	35	50	73		39		80	117	58
59				87								107		56			59
60		42	60		32	45	65	94	36	51	74		40		81	118	60
61				88								108		57		119	61
62	30		61				66	95			75				82	120	62
63		43		89		46		96	37	52		109	41	58			63
64			62	90	33		67	97			76	110			83	121	64
65				91		47		98		53		111		59			65
66	31						68	99			77	112	42		84	122	66
67		44	63	92				100	38	54		113		60			67
68											78	114			85	123	68
69			64	93	34	48	69	101				115					69
70									39	55	79		43	61		124	70
71		45		94			70	102			80	116			86	125	71
72	32		65			49				56		117					72
73				95			71	103			81		44	62		126	73
74					35				40			118			87	127	74
75								104		57							75
76		46	66	96		50	72				82	119		63		128	76
77	33							105							88		77
78				97								120	45			129	78
79		47	67	98	36		73	106			83	121		64	89		79
80						51			41	58						130	80
81							74	107			84	122			90		81
82			68	99									46	65		131	82
83	34				37			108		59	85	123			91	132	83
84		48	69	100		52	75	109	42			124				133	84
85															92		85
86				101						60	86	125	47	66		134	86
87			70				76	110				126			93	135	87
88		49		102		53					87					136	88
89	35						77	111	43	61		127		67	94		89
90			71	103	38						88		48			137	90
91						54	78	112				128		68	95	138	91
92		50		104						62	89						92
93			72					113				129			96	139	93
94				105					44		90	130		69			94
95							79	114					49		97	140	95
96	36		73	106	39	55				63	91	131		70			96
97		51						115							98	141	97
98				107			80	116	45			132		71			98
99			74			56				64	92	133	50		99	142	99
100															100	143	100

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Table 6 — Variation allowance, λ — Modules 6 to 10

Values in micrometres

z Number of teeth	$m = 6$ Tolerance class				$m = 8$ Tolerance class				$m = 10$ Tolerance class				z Number of teeth
	4	5	6	7	4	5	6	7	4	5	6	7	
6	20	29	43	66	23	33	50	75	25	37	55	84	6
7	21	30	45	68		34	51	77	26	38	57	87	7
8		31	46	69	24	36	53	79	27	40	59	89	8
9	22	32	47	71	25	37	54	82	28	41	61	91	9
10	23	33	49	73	26	38	56	84	29	42	62	94	10
11		34	50	75	27	39	57	86	30	43	64	96	11
12	24	35	51	76		40	58	87		44	65	98	12
13	25	36	52	78	28	41	60	89	31	45	67	100	13
14			53	80	29	42	61	91	32	46	68	102	14
15	26	37	55	81			62	93	33	47	70	104	15
16		38	56	83	30	43	64	95		48	71	106	16
17	27	39	57	84	31	44	65	96	34	49	72	108	17
18			58	85		45	66	98	35	50	74	110	18
19	28	40	59	87	32	46	67	100		51	75	112	19
20		41	60	88		47	68	101	36	52	76	113	20
21	29		61	90	33		69	103	37	53	78	115	21
22		42		91		48	70	104		54	79	117	22
23	30	43	62	92	34	49	72	106	38	55	80	119	23
24			63	93	35	50	73	107	39		81	120	24
25	31	44	64	95			74	109		56	82	122	25
26		45	65	96	36	51	75	110	40	57	84	124	26
27	32		66	97		52	76	112		58	85	125	27
28		46	67	98	37	53	77	113	41	59	86	127	28
29			68	100			78	114			87	128	29
30	33	47		101	38	54	79	116	42	60	88	130	30
31		48	69	102		55	80	117		61	89	131	31
32	34		70	103	39		81	119	43	62	90	133	32
33		49	71	104		56		120	44		91	134	33
34	35		72	105	40	57	82	121		63	92	136	34
35		50		106			83	122	45	64	93	137	35
36			73	107		58	84	124		65	94	139	36
37	36	51	74	109	41		85	125	46		95	140	37
38			75	110		59	86	126		66	96	142	38
39		52		111	42	60	87	127	47	67	97	143	39
40	37	53	76	112			88	129			98	144	40
41			77	113	43	61	89	130	48	68	99	146	41
42	38	54	78	114				131		69	100	147	42
43				115		62	90	132			101	149	43
44		55	79	116	44	63	91	133	49	70	102	150	44
45	39		80	117			92	135		71	103	151	45
46				118	45	64	93	136	50		104	153	46
47		56	81	119				137		72	105	154	47
48	40		82	120		65	94	138	51	73	106	155	48
49		57		121	46		95	139			107	156	49
50			83	122		66	96	140	52	74		158	50
51	41	58	84	123	47		97	141			108	159	51
52				124		67		143		75	109	160	52
53		59	85			68	98	144	53	76	110	161	53
54	42		86	125	48		99	145			111	163	54
55		60		126		69	100	146	54	77	112	164	55

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Table 6 — Variation allowance, λ — Modules 6 to 10 (*concluded*)

Values in micrometres

Z Number of teeth	$m = 6$ Tolerance class				$m = 8$ Tolerance class				$m = 10$ Tolerance class				Z Number of teeth
	4	5	6	7	4	5	6	7	4	5	6	7	
56	42	60	87	127	49	69	100	147	54	77	113	165	**56**
57	43	61	88	128		70	101	148	55	78		166	**57**
58				129			102	149		79	114	168	**58**
59			89	130	50	71	103	150			115	169	**59**
60	44	62	90	131				151	56	80	116	170	**60**
61				132		72	104	152			117	171	**61**
62		63	91	133	51		105	153	57	81	118	172	**62**
63						73		154				173	**63**
64	45	64	92	134			106	155		82	119	175	**64**
65			93	135	52	74	107	156	58		120	176	**65**
66				136			108	157		83	121	177	**66**
67	46	65	94	137		75		158	59	84	122	178	**67**
68				138	53		109	159				179	**68**
69		66	95	139		76	110	160		85	123	180	**69**
70			96					161	60		124	181	**70**
71	47			140	54	77	111	162		86	125	183	**71**
72		67	97	141			112	163	61			184	**72**
73				142				164		87	126	185	**73**
74	48	68	98	143	55	78	113	165			127	186	**74**
75							114	166	62	88	128	187	**75**
76			99	144		79		167			129	188	**76**
77		69	100	145	56		115	168		89		189	**77**
78	49			146		80	116	169	63		130	190	**78**
79		70	101	147				170		90	131	191	**79**
80					57	81	117	171				192	**80**
81	50		102	148			118	172	64	91	132	193	**81**
82		71		149		82		173			133	194	**82**
83			103	150	58		119	174		92	134	196	**83**
84				151			120		65			197	**84**
85	51	72	104			83		175		93	135	198	**85**
86				152	59		121	176	66		136	199	**86**
87		73	105	153		84		177		94	137	200	**87**
88				154			122	178				201	**88**
89	52		106			85	123	179	67	95	138	202	**89**
90		74		155	60			180			139	203	**90**
91			107	156			124	181		96		204	**91**
92			108	157		86		182	68		140	205	**92**
93	53	75			61		125	183		97	141	206	**93**
94			109	158		87	126					207	**94**
95				159				184	69	98	142	208	**95**
96		76	110	160	62		127	185			143	209	**96**
97	54					88		186		99		210	**97**
98			111	161			128	187	70		144	211	**98**
99		77		162		89	129	188		100	145	212	**99**
100			112		63			189				213	**100**

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8.3 Total index variation (F_p)

The total index variation is the cumulative pitch error between the two greatest opposite pitch errors over any sector of one half circumference. The total index variation (F_p) is a standard tolerance grade selection from ISO 1328, *Parallel involute gears — ISO System of accuracy*. The following formulae are used in this International Standard for the total index variation (F_p) expressed in micrometres :

Spline tolerance class	Total index variation (F_p) Formula
4	$2{,}5\sqrt{L} + 6{,}3$
5	$3{,}55\sqrt{L} + 9$
6	$5\sqrt{L} + 12{,}5$
7	$7{,}1\sqrt{L} + 18$

where length of arc $L = m\,Z\,\pi/2$.

8.4 Total profile variation (f_f)

The total profile variation is the amount of absolute values of the two greatest opposite variations of the flank surface irregularities of the actual profile that depart from the theoretical profile. A positive variation is in the direction of the space, and a negative variation is in the direction of the tooth, as shown in figure 7. The total profile variation (f_f) is a standard tolerance grade selection from ISO 1328. The following formulae are used in this International Standard for the total profile variation (f_f) expressed in micrometres :

Spline tolerance class	Total profile variation (f_f) Formula
4	$1{,}6\,\varphi_f + 10$
5	$2{,}5\,\varphi_f + 16$
6	$4\,\varphi_f + 25$
7	$6{,}3\,\varphi_f + 40$

where tolerance factor $\varphi_f = m + 0{,}012\,5\,m\,Z$.

The permissible positive variation on external splines and the negative variation on internal splines from the design profile within the central one-third of the flank depth to the form diameter shall not exceed one-third of the calculated values. See figure 7.

NOTE — The middle point is situated on the involute at an equal distance from the major diameter of the external spline (D_{ee}) and from the minor diameter of the internal spline (D_{ii}). This point is the reference for the computation of pin diameters.

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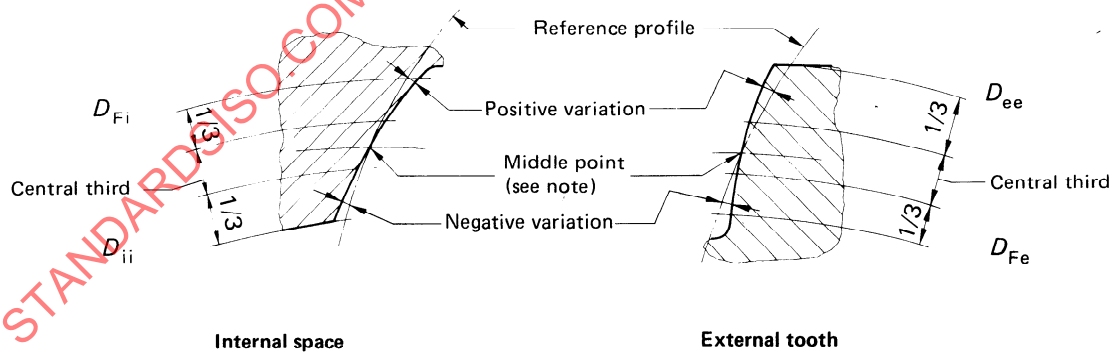


Figure 7 — Profile variations

8.5 Total lead variation (F_β)

The total lead variation is the amount of absolute values of the two greatest opposite misalignment variations from the theoretical position, measured normal to the flank for the full length of spline. The total lead variation (F_β) is a standard tolerance grade selection from ISO 1328. The following formulae are used in this International Standard for the total lead variation (F_β), expressed in micrometres :

Spline tolerance class	Total lead variation (F_β) Formula
4	$0{,}8\sqrt{g} + 4$
5	$1\sqrt{g} + 5$
6	$1{,}25\sqrt{g} + 6{,}3$
7	$2\sqrt{g} + 10$

where g is the spline length, in millimetres.

8.6 Out-of-roundness

This condition may appear merely as a result of total index and total profile variations described in 8.3 and 8.4, and requires no further allowance. However, heat treatment and deflection of thin sections may cause out-of-roundness, which increases total index and total profile variations. Tolerances for such conditions depend on many variables, and are therefore not tabulated. Additional tooth and space width tolerance must allow for such conditions.

8.7 Eccentricity

8.7.1 Eccentricity of major and minor diameters, in relation to the effective reference diameter of side fit splines, should not cause contact beyond the form diameters of the mating splines, even under conditions of maximum effective clearance. This International Standard does not establish specific tolerances.

8.7.2 Deviation allowance from an H/h fit (without looseness or interference). If working conditions require looseness or interference, and the alignment of mating splines is affected by eccentricity of locating surfaces relative to each other and/or the splines, it may be necessary to prescribe a minimum effective clearance by decreasing the effective and actual tooth thickness of the external spline by an amount sufficient to allow the misaligned splines to assemble.

8.7.2.1 This International Standard provides standard deviation allowance k — j_s — h — f — e and d for application to the circular tooth thickness at the pitch diameter (S) of the external spline in order to establish the spline fit classes without looseness or having maximum effective interferences or minimum effective clearances (see table 7) and thus standardizing on composite GO gauges. Figure 8 represents in graphical form the deviation allowances and spline class tolerance zones for the six spline fit classes as outlined in 5.2.

8.7.2.2 Application of deviation allowance

The spline tables in section two of this International Standard are based on spline fit class H/h, which has a minimum effective clearance equal to zero. Selection of a spline fit class having a different deviation allowance requires adjustment to the external spline dimensions as follows :

a) For the deviation allowance selected (k — j_s — h — f — e and d), determine the upper deviation value (es_v) from table 7.

b) Adjust the maximum effective tooth thickness, $S_{v\ max}$, and the minimum actual tooth thickness, S_{min}, specified in the spline tables, by the amount of the upper deviation value (es_v) shown in section two.

c) Adjust major diameter and minor minimum and maximum diameters (D_{ee}, $D_{ie\ min}$ and $D_{ie\ max}$) from the value given in table 8 for each deviation allowance and each pressure angle.

For fit classes H/k and H/j_s, a null value of upper deviation (es_v) for the major diameter of the external spline (D_{ee}) will have to be taken.

d) Calculate minimum and maximum dimensions over two pins, external spline ($M_{Re\ min}$ and $M_{Re\ max}$) :

$$M_{Re\ min} = M_{Re\ min}{}^{*} + (es_v)\ K_e$$

$$M_{Re\ max}{}^{**} = M_{Re\ min}{}^{*} + (es_v + T)\ K_e$$

Values of the factor K_e are given in section three. These formulae are approximate (see section three; clause . . ., approximation factor). In case of dispute, only calculated values according to the formulae stated in section three, clauses . . . to . . . (concerning dimensions between or over pins) shall be taken into consideration.

Upper deviation (es_v) values are given in table 7.

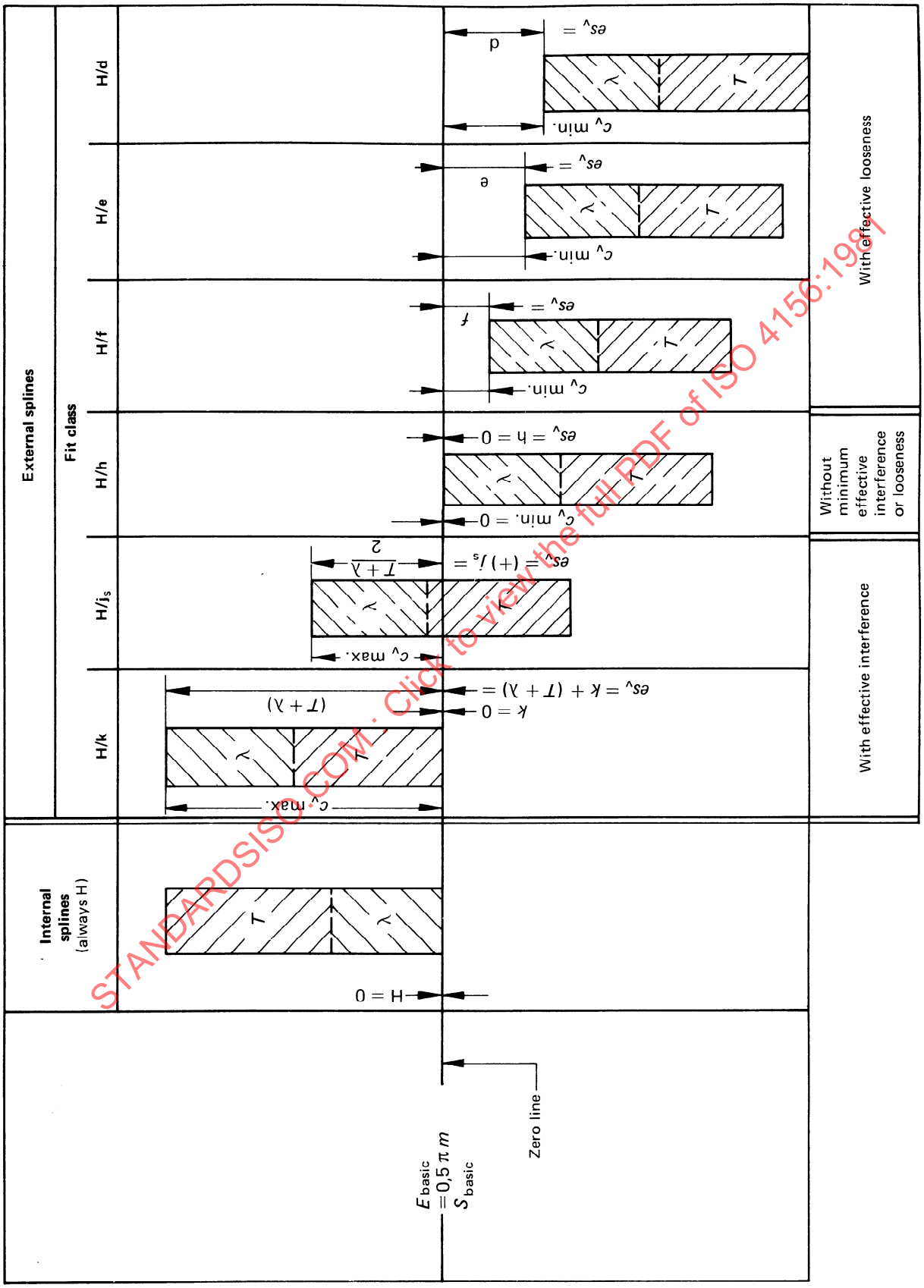
e) Calculate the minimum and maximum dimensions over k teeth, external spline (W_{min} and W_{max}).

Values of minimum and maximum dimensions over k teeth are given for the fit class H/h in section three — Inspection — clause . . . For other fit classes, apply the corresponding formulae in section three, clause . . .

* $M_{Re\ min}$ values corresponding to values of fit class H/h (see section three).

** $M_{Re\ max}$ values corresponding to the maximum actual limits (machining).

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Figure 8 — Graphical representation of deviation allowances for the spline fit classes

Table 7 — Limit deviations (es_v) resulting from fundamental deviations

1 μm = 0,001 mm

Pitch diameter D mm	External splines						Internal splines
	Upper deviation relative to basic tooth thickness, S, at pitch diameter, μm						Lower deviation relative to basic space width at pitch diameter, μm
	For fundamental deviations						
	d	e	f	h	j_s	k	H
⩽ 3	− 20	− 14	− 6	0	plus $\frac{S_{v\,max} - S_{min}}{2}$ relative to tolerance class considered [1]	plus $S_{v\,max} - S_{min}$ relative to tolerance class considered [1]	0
> 3 to 6	− 30	− 20	− 10	0			0
> 6 to 10	− 40	− 25	− 13	0			0
> 10 to 18	− 50	− 32	− 16	0			0
> 18 to 30	− 65	− 40	− 20	0			0
> 30 to 50	− 80	− 50	− 25	0			0
> 50 to 80	− 100	− 60	− 30	0			0
> 80 to 120	− 120	− 72	− 36	0			0
> 120 to 180	− 145	− 85	− 43	0			0
> 180 to 250	− 170	− 100	− 50	0			0
> 250 to 315	− 190	− 110	− 56	0			0
> 315 to 400	− 210	− 125	− 62	0			0
> 400 to 500	− 230	− 135	− 68	0			0
> 500 to 630	− 260	− 145	− 76	0			0
> 630 to 800	− 290	− 160	− 80	0			0
> 800 to 1 000	− 320	− 170	− 86	0			0

1) For $S_{v\,max}$ and S_{min}, see section two — tables of dimensions.

Basic tooth thickness, S, and basic space width e at pitch diameter, mm			
Module 0,25 = 0,393	Module 1,25 = 1,963	Module 2,5 = 3,927	Module 6 = 9,425
Module 0,5 = 0,785	Module 1,5 = 2,356	Module 3 = 4,712	Module 8 = 12,566
Module 0,75 = 1,178	Module 1,75 = 2,749	Module 4 = 6,283	Module 10 = 15,708
Module 1 = 1,571	Module 2 = 3,142	Module 5 = 7,854	

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Table 8 — Reduction for minor and major diameters (D_{ie} and D_{ee}) of external splines resulting from fundamental deviations

1 μm = 0,001 mm

Pitch diameter D mm	$es_v/\tan\alpha_D$, μm, for									h	j_s	k
	d			e			f					
	30°	37,5°	45°	30°	37,5°	45°	30°	37,5°	45°	α_D	α_D	α_D
⩽ 3	− 35	− 26	− 20	− 24	− 18	− 14	− 10	− 8	− 6	0	plus quotient of $\frac{S_{v\,max} - S_{min}}{2}$ by $\tan\alpha_D$ [1]	plus quotient of $S_{v\,max} - S_{min}$ by $\tan\alpha_D$ [1]
> 3 to 6	− 52	− 39	− 30	− 35	− 26	− 20	− 17	− 13	− 10	0		
> 6 to 10	− 69	− 52	− 40	− 43	− 33	− 25	− 23	− 17	− 13	0		
> 10 to 18	− 87	− 65	− 50	− 55	− 42	− 32	− 28	− 21	− 16	0		
> 18 to 30	− 113	− 85	− 65	− 69	− 52	− 40	− 35	− 26	− 20	0		
> 30 to 50	− 139	− 104	− 80	− 87	− 65	− 50	− 43	− 33	− 25	0		
> 50 to 80	− 173	− 130	− 100	− 104	− 78	− 60	− 52	− 39	− 30	0		
> 80 to 120	− 208	− 156	− 120	− 125	− 94	− 72	− 62	− 47	− 36	0		
> 120 to 180	− 251	− 189	− 145	− 147	− 111	− 85	− 74	− 56	− 43	0		
> 180 to 250	− 294	− 222	− 170	− 173	− 130	− 100	− 87	− 65	− 50	0		
> 250 to 315	− 329	− 248	− 190	− 191	− 143	− 110	− 97	− 73	− 56	0		
> 315 to 400	− 364	− 274	− 210	− 217	− 163	− 125	− 107	− 81	− 62	0		
> 400 to 500	− 398	− 300	− 230	− 234	− 176	− 135	− 118	− 89	− 68	0		
> 500 to 630	− 450	− 339	− 260	− 251	− 189	− 145	− 132	− 99	− 76	0		
> 630 to 800	− 502	− 378	− 290	− 277	− 209	− 160	− 139	− 104	− 80	0		
> 800 to 1 000	− 554	− 417	− 320	− 294	− 222	− 170	− 149	− 112	− 86	0		

1) For $S_{v\,max}$ and S_{min} see section two — tables of dimensions.

$\tan\alpha_D$ 30° = 0,577 33

$\tan\alpha_D$ 37,5° = 0,767 33

$\tan\alpha_D$ 45° = 1

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Table 9 — Tolerances for minor diameter — internal spline (D_{ii})
Tolerances for major diameter — external spline (D_{ee})

1 µm = 0,001 mm

Diameter $D_{ii\ min}$ or $D_{ee\ max}$ mm	Tolerances for D_{ii}, µm for modules m			Tolerances for D_{ee}, µm for modules m		
	0,25 to 0,75	1 to 1,75	2 to 10	0,25 to 0,75	1 to 1,75	2 to 10
	H10	H11	H12	h10	h11	h12
⩽ 3	+ 40 / 0			0 / − 40		
> 3 to 6	+ 48 / 0	+ 75 / 0		0 / − 48	0 / − 75	
> 6 to 10	+ 58 / 0	+ 90 / 0		0 / − 58	0 / − 90	
> 10 to 18	+ 70 / 0	+ 110 / 0	+ 180 / 0	0 / − 70	0 / − 110	0 / − 180
> 18 to 30	+ 84 / 0	+ 130 / 0	+ 210 / 0	0 / − 84	0 / − 130	0 / − 210
> 30 to 50	+ 100 / 0	+ 160 / 0	+ 250 / 0	0 / − 100	0 / − 160	0 / − 250
> 50 to 80	+ 120 / 0	+ 190 / 0	+ 300 / 0	0 / − 120	0 / − 190	0 / − 300
> 80 to 120		+ 220 / 0	+ 350 / 0		0 / − 220	0 / − 350
> 120 to 180		+ 250 / 0	+ 400 / 0		0 / − 250	0 / − 400
> 180 to 250			+ 460 / 0			0 / − 460
> 250 to 315			+ 520 / 0			0 / − 520
> 315 to 400			+ 570 / 0			0 / − 570
> 400 to 500			+ 630 / 0			0 / − 630
> 500 to 630			+ 700 / 0			0 / − 700
>630 to 800			+ 800 / 0			0 / − 800
> 800 to 1 000			+ 900 / 0			0 / − 900

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TABLE 10 — **Minimum fillet radius of internal or external splines resulting from fillet radius of basic racks (see 7.5)**

Module	Minimum radius, mm, for			
	$\alpha_D = 30°$ (fig. 3)	$\alpha_D = 30°$ (fig. 4)	$\alpha_D = 37{,}5°$ (fig. 5)	$\alpha_D = 45°$ (fig. 6)
m	0,2 m	0,4 m	0,3 m	0,25 m
10	2,00	4,00	3,00	
8	1,60	3,20	2,40	
6	1,20	2,40	1,80	
5	1,00	2,00	1,50	
4	0,80	1,60	1,20	
3	0,60	1,20	0,90	
2,5	0,50	1,00	0,75	0,62
2	0,40	0,80	0,60	0,50
1,75	0,35	0,70	0,52	0,44
1,5	0,30	0,60	0,45	0,38
1,25	0,25	0,50	0,38	0,31
1	0,20	0,40	0,30	0,25
0,75	0,15	0,30	0,22	0,19
0,5	0,10	0,20	0,15	0,12
0,25				0,06

8.7.2.3 In the manufacture of external splines with a standard deviation allowance, standard cutters conforming to the basic rack can be used by shifting the basic rack reference line radially from its position touching the spline pitch circle. The spline tooth profiles remain as involutes; merely different parts of the same involutes, lying further inward or outward with respect to the pitch circle, are used. The amount of this radial displacement is equivalent to 0,5 $es_v/\tan \alpha_D$.

8.7.2.4 The effect of the various magnitudes of upper deviation (es_v) on the tooth form have an effect on the circular tip thickness, at the major diameter of the external spline, which varies when the upper deviation (es_v) varies. The following checks should be made when applying deviation allowances :

a) Check for tip thickness at major maximum diameter of external spline

Tip thickness less than 0,25 m should be avoided. Tip thickness is computed as follows, considering $D_{ee\ max}$

$$S_{ee} = D_{ee\ max}\,[(S_{min}/D) + \text{inv}\ \alpha_D - \text{inv}\ \alpha_{Dee}]$$

where

S_{ee} is the tip thickness;

α_D is the pressure angle at the pitch diameter;

α_{Dee} is the pressure angle at the maximum major diameter, $\cos \alpha_{Dee} = D_b/D_{ee\ max}$

$\text{inv}\ \alpha_D = \tan \alpha_D - \alpha_D$

$\text{inv}\ \alpha_{Dee} = \tan \alpha_{Dee} - \alpha_{Dee}$

S_{min} is the minimum actual tooth thickness resulting from the deviation allowance.

b) Undercut fillet at the root circle (interference)

When a fit with looseness is selected, generating tools may produce undercut fillets on the external spline. Calculation using the appropriate tool data should be made to establish the presence or absence of undercutting and, if it exists, further calculations or a layout are then required to determine whether the degree of undercutting is acceptable.

Low tooth numbers and pressure angles introduce the risk of undercutting which occurs with basic rack generation when :

$$(h_s + 0{,}5\,\Delta\, D_{ie}) > 0{,}5\, D \sin^2 \alpha_D$$

9 Effect of spline variations

9.1 Index variations

These variations cause looseness or interference from one set of mating tooth sides to another. Since the fit depends on the areas with minimum looseness or interference, index variations reduce the effective looseness or increase the effective interference.

9.2 Profile variations (see figure 7)

Profile variations reduce contact area. Positive profile variations affect the fit by reducing effective looseness. Negative profile variations do not affect the effective looseness.

9.3 Lead variations

The variations cause clearance variations and therefore reduce the effective looseness.

10 Effective and actual dimensions for splines

10.1 Effective and actual space width

Figure 9 a) illustrates an internal spline with variations of index and profile. Figure 9 b) shows that a perfect external spline contour (without variations) does not fit, even though each tooth has the same width as the mating space. To allow the perfect external spline to fit in any position, all spaces of the internal spline must be widened by the amount of interference. This width, as shown in figure 9 c), is the actual space width of the internal spline. The effective space width is the tooth thickness of the perfect mating spline.

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10.2 Effective and actual tooth thickness

The same reasoning applied to the external spline leads to the concept of effective tooth thickness which exceeds the actual tooth thickness by the effective variation (see figure 10).

10.3 Effective clearance (looseness or interference)

The effective space width of the internal spline minus the effective tooth thickness of the external spline is the effective clearance (looseness or interference), which defines the fit of mating parts. (This is strictly true only if high points — crests — of mating parts come into contact.) Positive effective clearance represents looseness or backlash; negative effective clearance represents tightness or interference.

10.4 Space width and tooth thickness limits

The variations of the actual space width and actual tooth thickness within the machining tolerance cause corresponding variations of their effective dimensions. Thus, there are four limit dimensions for space width (minimum effective, maximum effective, minimum actual and maximum actual) and four limit dimensions for tooth thickness (maximum effective, minimum effective, maximum actual and minimum actual), as illustrated in figure 11.

10.4.1 The minimum effective space width ($E_{v\,min}$), maximum effective tooth thickness ($S_{v\,max}$), and minimum effective clearance ($c_{v\,min}$) for the spline fit class H/h are as follows :

$$E_{v\,min} = S_{v\,max} = 0{,}5\,\pi\,m\ (E_{basic}\text{ or }S_{basic})$$

$$c_{v\,min} = 0\ \text{(no backlash)}.$$

10.4.2 The maximum effective space width ($E_{v\,max}$), minimum effective tooth thickness ($S_{v\,min}$), and maximum effective clearance ($c_{v\,max}$) for the spline fit class H/h are as follows :

$$E_{v\,max} = 0{,}5\,\pi\,m + T$$

$$S_{v\,min} = 0{,}5\,\pi\,m - T$$

$$c_{v\,max} = 2\,T$$

10.4.3 The minimum actual space width (E_{min}), maximum actual tooth thickness (S_{max}), and minimum theoretical clearance (c_{min}) for spline fit class H/h are as follows :

$$E_{min} = 0{,}5\,\pi\,m + \lambda$$

$$S_{max} = 0{,}5\,\pi\,m - \lambda$$

$$c_{min} = 2\,\lambda$$

10.4.4 The maximum actual space width (E_{max}), minimum actual tooth thickness (S_{min}), and maximum theoretical clearance (c_{max}) for spline fit class H/h are as follows :

$$E_{max} = 0{,}5\,\pi\,m + (T + \lambda)$$

$$S_{min} = 0{,}5\,\pi\,m - (T + \lambda)$$

$$c_{max} = 2\,(T + \lambda)$$

10.4.5 Where the external spline has a deviation allowance other than h, the above effective and theoretical values, c_v and c (in 10.4.1 to 10.4.4) must be modified by the amount of the quantity resulting from these deviation allowances (see table 7).

11 Use of effective and actual dimensions for space width and tooth thickness

11.1 Minimum effective space width and maximum effective tooth thickness

These dimensions define the maximum material condition which ensures that the splines will assemble. These dimensions shall be specified for all splines inspected by composite spline GO gauges controlling the minimum effective clearance ($c_{v\,min}$).

11.2 Minimum actual space width and maximum actual tooth thickness

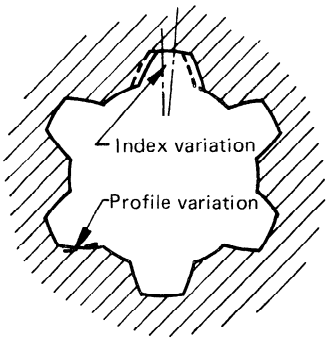
These dimensions should be specified as auxiliary dimensions (AUX) and are not used for acceptance or rejection of parts inspected by composite spline GO gauges controlling the maximum material limit. If the measured actual space width is less than the auxiliary minimum actual space width, and the internal spline accepts the composite plug GO gauge, or if the measured actual tooth thickness is more than the auxiliary maximum actual tooth thickness, and the external spline accepts the composite ring GO gauge, the cumulative effect of the individual spline variation errors is less than the variation allowance λ; such parts are acceptable because the maximum material condition has not been exceeded. The specification of these actual dimensions as auxiliary dimensions is desirable in order to control space width size and tooth thickness size.

The machining tolerance includes all variations of section. Any variation of section will affect tooth thickness and flank parallelism measurements.

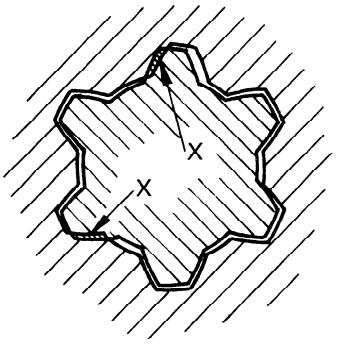
11.3 Maximum actual space width and minimum actual tooth thickness

These dimensions define the minimum material condition and shall be specified for all splines for acceptance or rejection of parts.

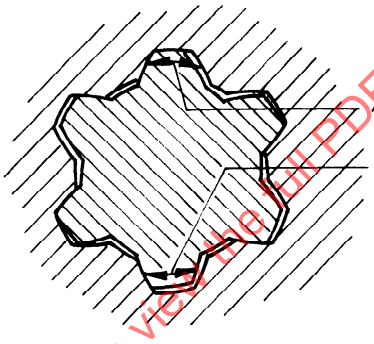
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a) Each space is basic width

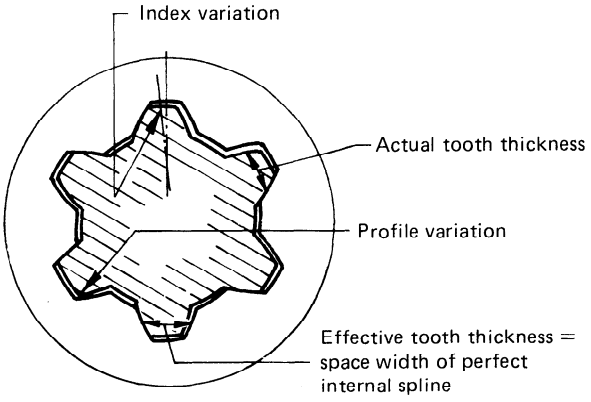


b) The perfect external spline with basic tooth thickness interference at X



c) The perfect external spline fits in any position, if all spaces are widened by the amount of the interference

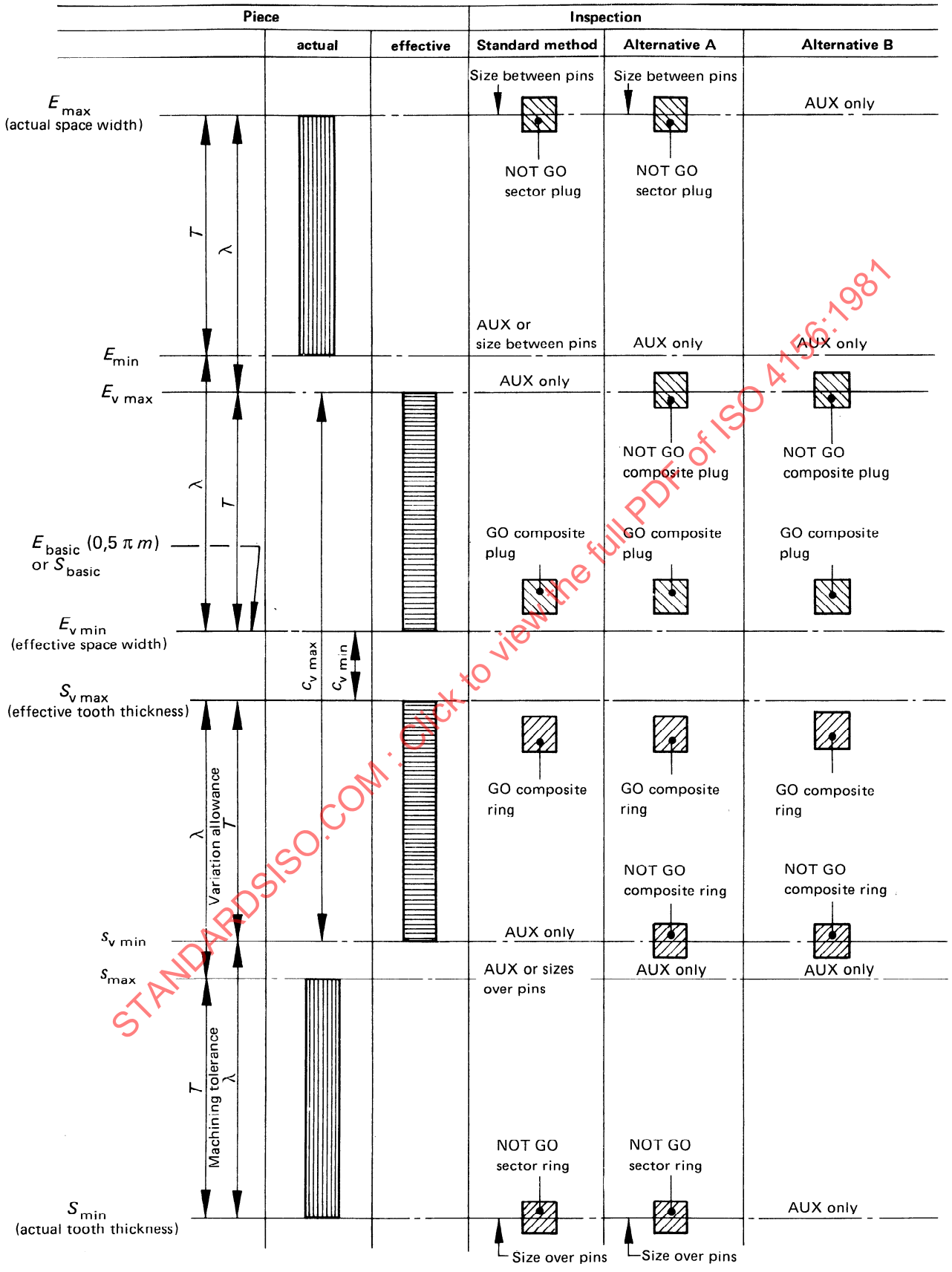
Figure 9 — Effect of variations on internal spline



The perfect internal spline fits in any position, if all teeth of the external spline are narrowed by the amount of the interference

Figure 10 — Effect of variations on external spline

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Figure 11 — Specification guide for space width and tooth thickness for splines

11.4 Maximum effective space width and minimum effective tooth thickness

These dimensions define the maximum effective clearance for spline fit class H/h, but they do not limit the effective variation.

11.4.1 They may be used, in addition to the limits of 11.3, in order to prevent the increase of maximum effective clearance, due to reduction of effective variations. See figure 11, alternative method A. This method requires inspection by NOT GO composite gauges as well as GO composite gauges, which increases the gauging requirements. The notation "inspection optional" may be added where maximum effective clearance is an assembly requirement, but does not need absolute control. It will indicate, without necessarily adding inspection time and equipment, that in this case the actual space width of the internal spline must be held below the maximum, or the actual tooth thickness of the external spline above the minimum, if machining methods result in less than allowable variations.

11.4.2 Where spline variations require no control, alternative method B shown in figure 11 shall be used. When alternative method B is used and it is necessary to control the spline variations by laboratory inspection, the following data shall be added to the spline specifications :

a)	total involute profile variation	0,0XX
	positive variation within central one-third of flank depth	+ 0,0XX
b)	total index variation over any sector of one-half circumference	0,0XX max.
c)	total lead variation, g_γ = XX,XX	0,0XX

These values result from the formulae given in 8.3, 8.4 and 8.5.

12 Drawing data

It is important that uniform specifications be used to show complete information on detail drawings of splines. Much misunderstanding will be avoided by following the suggested arrangement of dimensions and data, as shown on data sheets. The number of X s indicates the number of decimal places normally used. With this charted type of spline specifications, it is usually not necessary to give a graphical illustration of the spline teeth.

12.1 Spline data and basic dimensions

Spline data are used for engineering and manufacturing purposes. Pitch and pressure angle are not subject to individual inspection. Basic dimensions are defined in 2.45.

12.2 Combinations of types

12.2.1 Flat root side fit internal splines may be used with fillet root external splines where the larger radius is desired on the external spline for control of stress concentrations. This combination of spline roots may also be permitted as a design option by specifying, for the minimum root diameter of the external spline, the value of the minimum root diameter of the fillet root external spline, and noting this as "optional root".

12.2.2 A design option may also be permitted to provide either flat root internal or fillet root internal by specifying, for the maximum major diameter, the value of the maximum major diameter of the fillet root internal spline and noting this as "optional root".

NOTE (concerning 12.2.1 and 12.2.2) — The major diameter of a flat root internal spline and, if needed, the diameter at the tangence point of radius, should be placed between the form diameter and the maximum major diameter of the fillet root internal spline.

In all cases, the GO gauge should be accepted by the piece.

12.3 Designation

The mating parts of straight cylindrical involute splines (metric module, side fit) are designated in the following order :

a) Internal spline = INT
   External spline = EXT
   Mating splines = INT/EXT
b) Number of teeth = Z (preceded by the number)
c) Module = m (preceded by the value)
d) Pressure angle = 30° flat root = 30 P
   Pressure angle = 30° fillet root = 30 R
   Pressure angle = 37,5° = 37,5
   Pressure angle = 45° = 45
e) Tolerance classes = 4 — 5 — 6 — 7
f) Fit class, internal spline = H
   Fit classes, external spline = k — j_s — h — f — e — d
g) ISO 4156

Example : Mating splines, 24 teeth — module 2,5 — pressure angle 30° fillet root — tolerance class 5 — fit H/f

mating : INT/EXT 24Z × 2,5 m × 30R × 5H/5f
ISO 4156

internal spline : INT 24Z × 2,5 m × 30R × 5H
ISO 4156

external spline : EXT 24Z × 2,5 m × 30R × 5f
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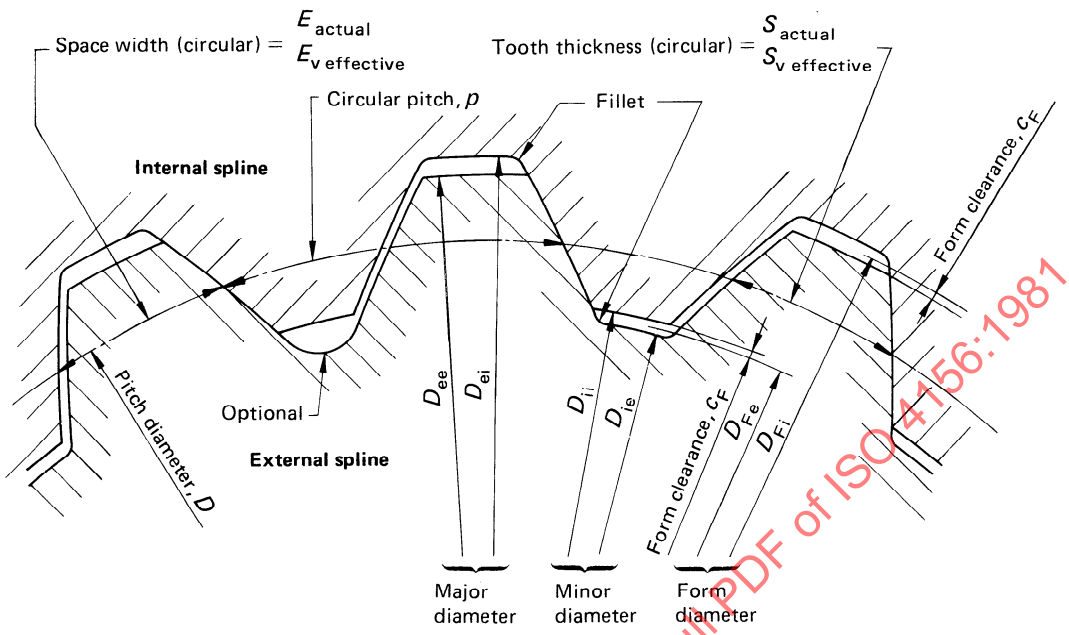


Figure 12 — Flat root spline — Pressure angle α_D = 30° — Modules 0,5 to 10

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Table 11 — Spline terms, symbols and drawing data, 30° pressure angle, flat root side fit

Internal spline			External spline		
Number of teeth	z	.....	Number of teeth	z	.....
Module	m	.....	Module	m	.....
Pressure angle	α_D	30°	Pressure angle	α_D	30°
Base diameter	D_b	xx,xxxx Ref*	Base diameter	D_b	xx,xxxx
Pitch diameter	D	xx,xxxx Ref*	Pitch diameter	D	
Major diameter	D_{ei}	xx,xx max. xx,xx min.	Major diameter	D_{ee}	xx,xx — tol. h...
Form diameter	D_{Fi}	xx,xx min.	Form diameter	D_{Fe}	xx,xx max.
Minor diameter	D_{ii}	xx,xx + tol. H...	Minor diameter	D_{ie}	xx,xx min. xx,xx max.
Base pitch	p_b	xx,xxxx	Base pitch	p_b	xx,xxxx
Circular space width			Circular tooth thickness		
max. actual	E_{max}	xx,xxx	max. effective	$S_{v\ max}$	xx,xxx
min. actual	E_{min}	xx,xxx Ref*	min. effective	$S_{v\ min}$	xx,xxx
max. effective	$E_{v\ max}$	xx,xxx	max. actual	S_{max}	xx,xxx Ref*
min. effective	$E_{v\ min}$	xx,xxx	min. actual	S_{min}	xx,xxx
Measurement between pins	M_{Ri}	xx,xxx-xx,xxx	Measurement over pins	M_{Re}	xx,xxx-xx,xxx
Pin diameter	D_{Ri}	x,xxx	Pin diameter	D_{Re}	xx,xxx
Fillet radius	see table 10		Fillet radius	see table 10	

* Non measurable or values measurable with difficulty used for determination of dimensions to be controlled.

The above drawing data are required for the spline specifications. The standard system is shown; for control alternatives and combinations of types, see 11.4 and 12.2.

This fit is used in restricted areas (as with tubular parts with wall thickness too small to permit use of fillet roots, and to allow hobbing closer to shoulders, etc.) and for economy (when hobbing, shaping, etc. and shorter broaches for the internal member). See section two, tables 16 to 43.

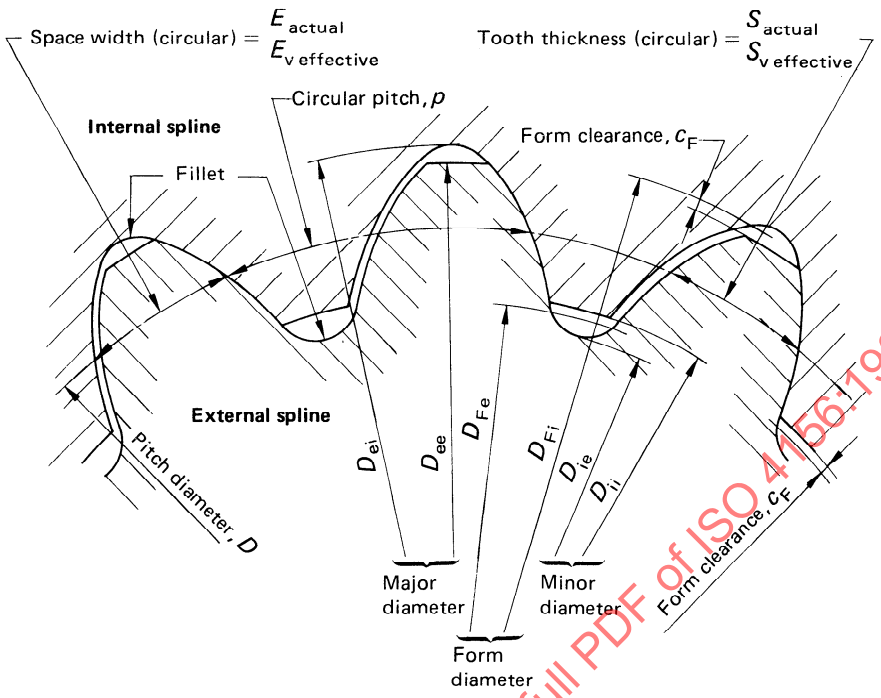


Figure 13 — Fillet root spline — Pressure angle α_D = 30° — Modules 0,5 to 10

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Table 12 — Spline terms, symbols and drawing data, 30° pressure angle, fillet root side fit

Internal spline			External spline		
Number of teeth	z	.....	Number of teeth	z	.....
Module	m	.....	Module	m	.....
Pressure angle	α_D	30°	Pressure angle	α_D	30°
Base diameter	D_b	xx,xxxx Ref*	Base diameter	D_b	xx,xxxx
Pitch diameter	D	xx,xxxx Ref*	Pitch diameter	D	xx,xxxx
Major diameter	D_{ei}	xx,xx max. xx,xx min.	Major diameter	D_{ee}	xx,xx tol. h...
Form diameter	D_{Fi}	xx,xx min.	Form diameter	D_{Fe}	xx,xx max.
Minor diameter	D_{ii}	xx,xx + tol. H...	Minor diameter	D_{ie}	xx,xx min. xx,xx max.
Base pitch	p_b	xx,xxxx	Base pitch	p_b	xx,xxxx
Circular space width			Circular tooth thickness		
max. actual	E_{max}	xx,xxx	max. effective	$S_{v\ max}$	xx,xxx
min. actual	E_{min}	xx,xxx Ref*	min. effective	$S_{v\ min}$	xx,xxx
max. effective	$E_{v\ max}$	xx,xxx	max. actual	S_{max}	xx,xxx Ref*
min. effective	$E_{v\ min}$	xx,xxx	min. actual	S_{min}	xx,xxx
Measurement between pins	M_{Ri}	xx,xxx-xx,xxx	Measurement over pins	M_{Re}	xx,xxx-xx,xxx
Pin diameter	D_{Ri}	x,xxx	Pin diameter	D_{Re}	xx,xxx
Fillet radius	see table 10		Fillet radius	see table 10	

* Non measurable or values measurable with difficulty used for determination of dimensions to be controlled.

The above drawing data are required for the spline specifications. The standard system is shown; for control alternatives and combinations of types, see 11.4 and 12.2.

The fillet radius permits heavier loading and effects greater fatigue resistance than flat roots, through absence of stress raisers. See section two, tables 44 to 71.

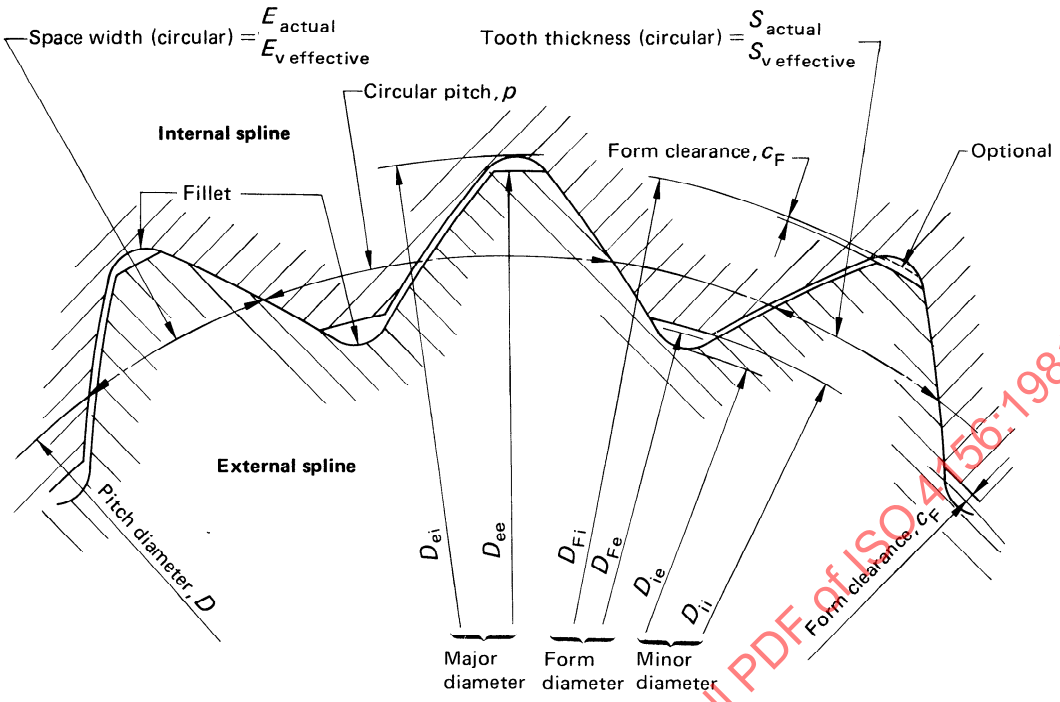


Figure 14 — Fillet root spline — Pressure angle α_D = 37,5° — Modules 0,5 to 10

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Table 13 — Spline terms, symbols and drawing data, 37,5° pressure angle, fillet root side fit

Internal spline			External spline		
Number of teeth	z	.....	Number of teeth	z	.....
Module	m	.....	Module	m	.....
Pressure angle	α_D	37,5°	Pressure angle	α_D	37,5°
Base diameter	D_b	xx,xxxx Ref*	Base diameter	D_b	xx,xxxx
Pitch diameter	D	xx,xxxx Ref*	Pitch diameter	D	xx,xxxx
Major diameter	D_{ei}	xx,xx max. xx,xx min.	Major diameter	D_{ee}	xx,xx — tol. h...
Form diameter	D_{Fi}	xx,xx min.	Form diameter	D_{Fe}	xx,xx max.
Minor diameter	D_{ii}	xx,xx + tol. H...	Minor diameter	D_{ie}	xx,xx min. xx,xx max.
Base pitch	p_b	xx,xxxx	Base pitch	p_b	xx,xxxx
Circular space width			Circular tooth thickness		
max. actual	E_{max}	xx,xxx	max. effective	$S_{v\ max}$	xx,xxx
min. actual	E_{min}	xx,xxx Ref*	min. effective	$S_{v\ min}$	xx,xxx
max. effective	$E_{v\ max}$	xx,xxx	max. actual	S_{max}	xx,xxx Ref*
min. effective	$E_{v\ min}$	xx,xxx	min. actual	S_{min}	xx,xxx
Measurement between pins	M_{Ri}	xx,xxx-xx,xxx	Measurement over pins	M_{Re}	xx,xxx-xx,xxx
Pin diameter	D_{Ri}	x,xxx	Pin diameter	D_{Re}	xx,xxx
Fillet radius	see table 10		Fillet radius	see table 10	

* Non measurable or values measurable with difficulty used for determination of dimensions to be controlled.

The above drawing data are required for the spline specifications. The standard system is shown; for control alternatives and combinations of types, see 11.4 and 12.2.

The pressure angle and proportions of this spline are a direct compromise of the 30° and 45° pressure angle splines. It is often used on couplings where the external spline is to be cold formed, especially where a 45° pressure angle spline will not satisfy functional requirements and the shaft material is above the hardness limitation of 30° pressure angle cold-forming tools. See section two, tables 72 to 99.

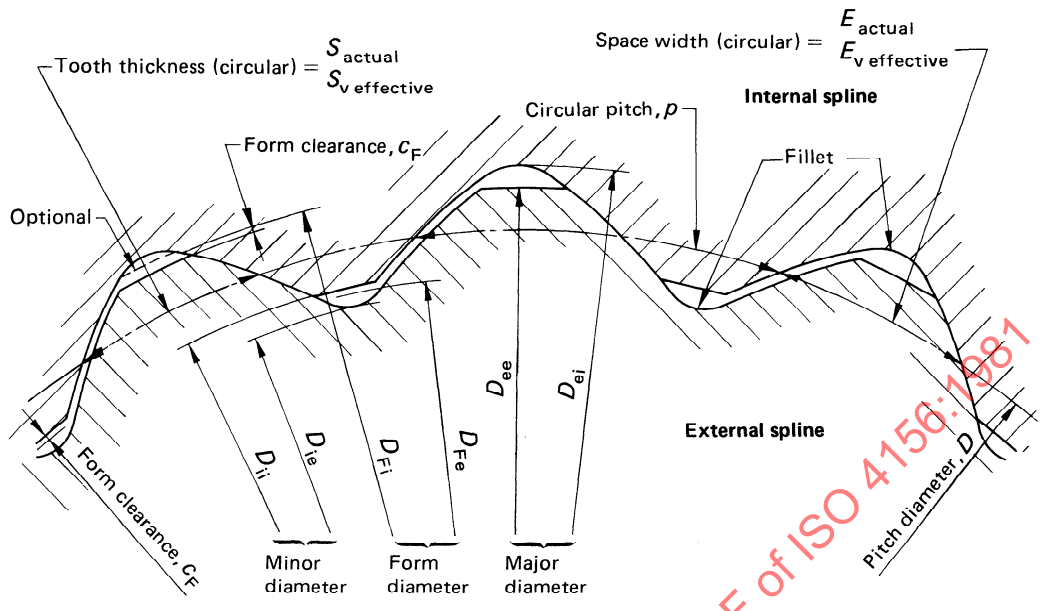


Figure 15 — Fillet root spline — Pressure angle α_D = 45° — Modules 0,25 to 2,5

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Table 14 — Spline terms, symbols and drawing data, 45° pressure angle, fillet root side fit

Internal spline			External spline		
Number of teeth	Z	.....	Number of teeth	Z	.....
Module	m	.....	Module	m	.....
Pressure angle	α_D	45°	Pressure angle	α_D	45°
Base diameter	D_b	xx,xxxx Ref*	Base diameter	D_b	xx,xxxx
Pitch diameter	D	xx,xxxx Ref*	Pitch diameter	D	xx,xxxx
Major diameter	D_{ei}	xx,xx max. xx,xx min.	Major diameter	D_{ee}	xx,xx − tol. h...
Form diameter	D_{Fi}	xx,xx min.	Form diameter	D_{Fe}	xx,xx max.
Minor diameter	D_{ii}	xx,xx + tol. H...	Minor diameter	D_{ie}	xx,xx min. xx,xx max.
Base pitch	p_b	xx,xxxx	Base pitch	p_b	xx,xxxx
Circular space width			Circular tooth thickness		
max. actual	E_{max}	xx,xxx	max. effective	$S_{v\ max}$	xx,xxx
min. actual	E_{min}	xx,xxx Ref*	min. effective	$S_{v\ min}$	xx,xxx
max. effective	$E_{v\ max}$	xx,xxx	max. actual	S_{max}	xx,xxx Ref*
min. effective	$E_{v\ min}$	xx,xxx	min. actual	S_{min}	xx,xxx
Measurement between pins	M_{Ri}	xx,xxx-xx,xxx	Measurement over pins	M_{Re}	xx,xxx-xx,xxx
Pin diameter	D_{Ri}	x,xxx	Pin diameter	D_{Re}	xx,xxx
Fillet radius	see table 10		Fillet radius	see table 10	

* Non measurable or values measurable with difficulty used for determination of dimensions to be controlled.

The above drawing data are required for the spline specifications. The standard system is shown; for control alternatives and combinations of types, see 11.4 and 12.2.

Involute splines with 45° pressure angle are used where the toothed member delivers torque only (does not slide under load) and where wall thicknesses are great enough to resist bursting tendencies. The 45° pressure angle spline is highly suitable for cold forming. See section two, tables 100 to 117.

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Section two : Dimensions

13 Introduction

The spline tables in this section are based on spline fit class H/h, which gives a minimum effective clearance equal to zero. Selection of a spline fit class having a different deviation allowance requires adjustment to the external spline dimensions (see section one, sub-clause 8.7.2.2).

Tables 15 to 70 give dimensions for 30° pressure angle flat root side fit and fillet root side fit splines for tolerance classes 4, 5, 6 and 7 for spline fit class H/h. Tables 71 to 98 give dimensions for 37,5° pressure angle fillet root side fit splines for tolerance classes 4, 5, 6 and 7 for spline fit class H/h. Tables 99 to 116 give dimensions for 45° pressure angle fillet root side fit splines for tolerance classes 4, 5, 6 and 7 for spline fit class H/h.

14 Dimensions and tolerances

The dimensions and tolerances listed in the tables in this section are derived from the formulae listed in table 2 of section one. Space width and tooth thickness tolerances are based on formulae given in clause 6 and sub-clauses 8.1 and 8.2 of section one.

NOTE — In the following tables a point is used as the decimal marker. (See also the note in sub-clause 3.1 regarding EDP printing of symbols.)

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Table 15 — Internal spline

30 degree pressure angle — Side fit — Flat root — Module = 10.00

E_{vmin} = minimum effective space width, circular = 15.708

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	60.0000	51.9615	75.44	72.00	54.31	15.772	15.810	15.868	15.964
7	70.0000	60.6218	85.45	82.00	63.61	15.773	15.812	15.870	15.968
8	80.0000	69.2820	95.46	92.00	73.11	15.774	15.813	15.873	15.972
9	90.0000	77.9423	105.46	102.00	82.72	15.775	15.815	15.875	15.975
10	100.0000	86.6025	115.47	112.00	92.42	15.776	15.816	15.877	15.978
11	110.0000	95.2628	125.47	122.00	102.18	15.776	15.817	15.879	15.981
12	120.0000	103.9231	135.48	132.00	111.98	15.777	15.819	15.881	15.984
13	130.0000	112.5833	145.48	142.00	121.82	15.778	15.820	15.882	15.987
14	140.0000	121.2436	155.49	152.00	131.68	15.778	15.821	15.884	15.990
15	150.0000	129.9038	165.49	162.00	141.56	15.779	15.822	15.886	15.992
16	160.0000	138.5641	175.50	172.00	151.45	15.780	15.823	15.887	15.995
17	170.0000	147.2243	185.50	182.00	161.36	15.780	15.824	15.889	15.997
18	180.0000	155.8846	195.51	192.00	171.28	15.781	15.825	15.890	16.000
19	190.0000	164.5448	205.51	202.00	181.21	15.781	15.826	15.892	16.002
20	200.0000	173.2051	215.51	212.00	191.15	15.782	15.826	15.893	16.004
21	210.0000	181.8653	225.52	222.00	201.09	15.783	15.827	15.894	16.006
22	220.0000	190.5256	235.52	232.00	211.04	15.783	15.828	15.896	16.008
23	230.0000	199.1859	245.52	242.00	220.99	15.784	15.829	15.897	16.010
24	240.0000	207.8461	255.53	252.00	230.95	15.784	15.830	15.898	16.012
25	250.0000	216.5064	265.53	262.00	240.91	15.785	15.830	15.899	16.014
26	260.0000	225.1666	275.53	272.00	250.87	15.785	15.831	15.901	16.016
27	270.0000	233.8269	285.54	282.00	260.84	15.785	15.832	15.902	16.018
28	280.0000	242.4871	295.54	292.00	270.80	15.786	15.833	15.903	16.020
29	290.0000	251.1474	305.54	302.00	280.78	15.786	15.833	15.904	16.022
30	300.0000	259.8076	315.55	312.00	290.75	15.787	15.834	15.905	16.023
31	310.0000	268.4679	325.55	322.00	300.72	15.787	15.835	15.906	16.025
32	320.0000	277.1281	335.55	332.00	310.70	15.788	15.835	15.907	16.027
33	330.0000	285.7884	345.55	342.00	320.68	15.788	15.836	15.908	16.028
34	340.0000	294.4487	355.56	352.00	330.66	15.788	15.837	15.909	16.030
35	350.0000	303.1089	365.56	362.00	340.64	15.789	15.837	15.910	16.032
36	360.0000	311.7692	375.56	372.00	350.62	15.789	15.838	15.911	16.033
37	370.0000	320.4294	385.57	382.00	360.60	15.790	15.839	15.912	16.035
38	380.0000	329.0897	395.57	392.00	370.59	15.790	15.839	15.913	16.036
39	390.0000	337.7499	405.57	402.00	380.57	15.790	15.840	15.914	16.038
40	400.0000	346.4102	415.57	412.00	390.56	15.791	15.841	15.915	16.039
41	410.0000	355.0704	425.58	422.00	400.54	15.791	15.841	15.916	16.041
42	420.0000	363.7307	435.58	432.00	410.53	15.792	15.842	15.917	16.042
43	430.0000	372.3909	445.58	442.00	420.52	15.792	15.842	15.918	16.044
44	440.0000	381.0512	455.58	452.00	430.50	15.793	15.843	15.919	16.045
45	450.0000	389.7115	465.59	462.00	440.49	15.793	15.843	15.920	16.047
46	460.0000	398.3717	475.59	472.00	450.48	15.793	15.844	15.921	16.048
47	470.0000	407.0320	485.59	482.00	460.47	15.793	15.845	15.921	16.050
48	480.0000	415.6922	495.59	492.00	470.46	15.794	15.845	15.922	16.051
49	490.0000	424.3525	505.60	502.00	480.45	15.794	15.846	15.923	16.052
50	500.0000	433.0127	515.60	512.00	490.44	15.794	15.846	15.924	16.054
51	510.0000	441.6730	525.60	522.00	500.43	15.795	15.847	15.926	16.056
52	520.0000	450.3332	535.61	532.00	510.43	15.795	15.848	15.927	16.058
53	530.0000	458.9935	545.61	542.00	520.42	15.796	15.849	15.928	16.060
54	540.0000	467.6537	555.61	552.00	530.41	15.796	15.849	15.929	16.061
55	550.0000	476.3140	565.61	562.00	540.40	15.797	15.850	15.930	16.063
56	560.0000	484.9743	575.62	572.00	550.39	15.797	15.851	15.931	16.064
57	570.0000	493.6345	585.62	582.00	560.39	15.797	15.851	15.932	16.066
58	580.0000	502.2948	595.62	592.00	570.38	15.798	15.852	15.933	16.068
59	590.0000	510.9550	605.63	602.00	580.37	15.798	15.852	15.934	16.069
60	600.0000	519.6153	615.63	612.00	590.37	15.799	15.853	15.935	16.071
61	610.0000	528.2755	625.63	622.00	600.36	15.799	15.854	15.936	16.072
62	620.0000	536.9358	635.63	632.00	610.36	15.799	15.854	15.937	16.074
63	630.0000	545.5960	645.64	642.00	620.35	15.800	15.855	15.938	16.076
64	640.0000	554.2563	655.64	652.00	630.34	15.800	15.856	15.939	16.077
65	650.0000	562.9165	665.64	662.00	640.34	15.801	15.856	15.940	16.079
66	660.0000	571.5768	675.65	672.00	650.33	15.801	15.857	15.941	16.080
67	670.0000	580.2371	685.65	682.00	660.33	15.801	15.858	15.942	16.082
68	680.0000	588.8973	695.65	692.00	670.32	15.802	15.858	15.943	16.084
69	690.0000	597.5576	705.65	702.00	680.32	15.802	15.859	15.944	16.085
70	700.0000	606.2178	715.66	712.00	690.31	15.803	15.859	15.945	16.087
71	710.0000	614.8781	725.66	722.00	700.31	15.803	15.860	15.946	16.088
72	720.0000	623.5383	735.66	732.00	710.31	15.803	15.861	15.947	16.090
73	730.0000	632.1986	745.66	742.00	720.30	15.804	15.861	15.948	16.092
74	740.0000	640.8588	755.67	752.00	730.30	15.804	15.862	15.949	16.093
75	750.0000	649.5191	765.67	762.00	740.29	15.805	15.863	15.950	16.095
76	760.0000	658.1793	775.67	772.00	750.29	15.805	15.863	15.951	16.096
77	770.0000	666.8396	785.68	782.00	760.28	15.805	15.864	15.952	16.098
78	780.0000	675.4999	795.68	792.00	770.28	15.806	15.865	15.953	16.100
79	790.0000	684.1601	805.68	802.00	780.28	15.806	15.865	15.954	16.101
80	800.0000	692.8204	815.68	812.00	790.27	15.807	15.866	15.955	16.103
81	810.0000	701.4806	825.69	822.00	800.27	15.807	15.867	15.956	16.104
82	820.0000	710.1409	835.69	832.00	810.27	15.807	15.867	15.957	16.106
83	830.0000	718.8011	845.69	842.00	820.26	15.808	15.868	15.958	16.108
84	840.0000	727.4614	855.69	852.00	830.26	15.808	15.868	15.959	16.109
85	850.0000	736.1216	865.70	862.00	840.26	15.809	15.869	15.960	16.111
86	860.0000	744.7819	875.70	872.00	850.25	15.809	15.870	15.961	16.112
87	870.0000	753.4421	885.70	882.00	860.25	15.809	15.870	15.962	16.114
88	880.0000	762.1024	895.71	892.00	870.25	15.810	15.871	15.963	16.116
89	890.0000	770.7627	905.71	902.00	880.25	15.810	15.872	15.964	16.117
90	900.0000	779.4229	915.71	912.00	890.24	15.811	15.872	15.965	16.119
91	910.0000	788.0832	925.71	922.00	900.24	15.811	15.873	15.966	16.120
92	920.0000	796.7434	935.72	932.00	910.24	15.811	15.874	15.967	16.122
93	930.0000	805.4037	945.72	942.00	920.24	15.812	15.874	15.968	16.124
94	940.0000	814.0639	955.72	952.00	930.23	15.812	15.875	15.969	16.125
95	950.0000	822.7242	965.73	962.00	940.23	15.813	15.875	15.970	16.127
96	960.0000	831.3844	975.73	972.00	950.23	15.813	15.876	15.971	16.128
97	970.0000	840.0447	985.73	982.00	960.23	15.813	15.877	15.972	16.130
98	980.0000	848.7049	995.73	992.00	970.22	15.814	15.877	15.973	16.132
99	990.0000	857.3652	1005.74	1002.00	980.22	15.814	15.878	15.974	16.133
100	1000.0000	866.0255	1015.74	1012.00	990.22	15.815	15.879	15.975	16.135

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Table 16 — External spline

30 degree pressure angle — Side fit — Flat root — Module = 10.00

S_{vmax} = maximum effective tooth thickness, circular = 15.708

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	60.0000	51.9615	70.00	52.31	44.56	15.644	15.606	15.548	15.452
7	70.0000	60.6218	80.00	61.61	54.55	15.643	15.604	15.546	15.448
8	80.0000	69.2820	90.00	71.11	64.54	15.642	15.603	15.543	15.444
9	90.0000	77.9423	100.00	80.72	74.54	15.641	15.601	15.541	15.441
10	100.0000	86.6025	110.00	90.42	84.53	15.640	15.600	15.539	15.438
11	110.0000	95.2628	120.00	100.18	94.53	15.640	15.599	15.537	15.434
12	120.0000	103.9231	130.00	109.98	104.52	15.639	15.597	15.535	15.432
13	130.0000	112.5833	140.00	119.82	114.52	15.638	15.596	15.533	15.429
14	140.0000	121.2436	150.00	129.68	124.51	15.637	15.595	15.532	15.426
15	150.0000	129.9038	160.00	139.56	134.51	15.637	15.594	15.530	15.423
16	160.0000	138.5641	170.00	149.45	144.50	15.636	15.593	15.529	15.421
17	170.0000	147.2243	180.00	159.36	154.50	15.636	15.592	15.527	15.419
18	180.0000	155.8846	190.00	169.28	164.49	15.635	15.591	15.526	15.416
19	190.0000	164.5448	200.00	179.21	174.49	15.634	15.590	15.524	15.414
20	200.0000	173.2051	210.00	189.15	184.49	15.634	15.590	15.523	15.412
21	210.0000	181.8653	220.00	199.09	194.48	15.633	15.589	15.522	15.410
22	220.0000	190.5256	230.00	209.04	204.48	15.633	15.588	15.520	15.408
23	230.0000	199.1859	240.00	218.99	214.48	15.632	15.587	15.519	15.406
24	240.0000	207.8461	250.00	228.95	224.47	15.632	15.586	15.518	15.404
25	250.0000	216.5064	260.00	238.91	234.47	15.631	15.585	15.517	15.402
26	260.0000	225.1666	270.00	248.87	244.47	15.631	15.585	15.515	15.400
27	270.0000	233.8269	280.00	258.84	254.46	15.630	15.584	15.514	15.398
28	280.0000	242.4871	290.00	268.80	264.46	15.630	15.583	15.513	15.396
29	290.0000	251.1474	300.00	278.78	274.46	15.630	15.583	15.512	15.394
30	300.0000	259.8076	310.00	288.75	284.45	15.629	15.582	15.511	15.393
31	310.0000	268.4679	320.00	298.72	294.45	15.629	15.581	15.510	15.391
32	320.0000	277.1281	330.00	308.70	304.45	15.628	15.580	15.509	15.389
33	330.0000	285.7884	340.00	318.68	314.45	15.628	15.580	15.508	15.388
34	340.0000	294.4487	350.00	328.66	324.44	15.627	15.579	15.507	15.386
35	350.0000	303.1089	360.00	338.64	334.44	15.627	15.578	15.506	15.384
36	360.0000	311.7692	370.00	348.62	344.44	15.627	15.578	15.505	15.383
37	370.0000	320.4294	380.00	358.60	354.43	15.626	15.577	15.504	15.381
38	380.0000	329.0897	390.00	368.59	364.43	15.626	15.577	15.503	15.380
39	390.0000	337.7499	400.00	378.57	374.43	15.625	15.576	15.502	15.378
40	400.0000	346.4102	410.00	388.56	384.43	15.625	15.575	15.501	15.377
41	410.0000	355.0704	420.00	398.54	394.42	15.625	15.575	15.500	15.375
42	420.0000	363.7307	430.00	408.53	404.42	15.624	15.574	15.499	15.374
43	430.0000	372.3909	440.00	418.52	414.42	15.624	15.574	15.498	15.372
44	440.0000	381.0512	450.00	428.50	424.42	15.624	15.573	15.497	15.371
45	450.0000	389.7115	460.00	438.49	434.41	15.623	15.572	15.496	15.369
46	460.0000	398.3717	470.00	448.48	444.41	15.623	15.572	15.495	15.368
47	470.0000	407.0320	480.00	458.47	454.41	15.623	15.571	15.494	15.366
48	480.0000	415.6922	490.00	468.46	464.41	15.622	15.571	15.494	15.365
49	490.0000	424.3525	500.00	478.45	474.40	15.622	15.570	15.493	15.364
50	500.0000	433.0127	510.00	488.44	484.40	15.622	15.570	15.492	15.362
51	510.0000	441.6730	520.00	498.43	494.40	15.621	15.569	15.490	15.360
52	520.0000	450.3332	530.00	508.43	504.39	15.620	15.568	15.489	15.358
53	530.0000	458.9935	540.00	518.42	514.39	15.620	15.567	15.488	15.356
54	540.0000	467.6537	550.00	528.41	524.39	15.620	15.567	15.487	15.355
55	550.0000	476.3140	560.00	538.40	534.39	15.619	15.566	15.486	15.353
56	560.0000	484.9743	570.00	548.39	544.38	15.619	15.565	15.485	15.352
57	570.0000	493.6345	580.00	558.39	554.38	15.618	15.565	15.484	15.350
58	580.0000	502.2948	590.00	568.38	564.38	15.618	15.564	15.483	15.348
59	590.0000	510.9550	600.00	578.37	574.37	15.618	15.563	15.482	15.347
60	600.0000	519.6153	610.00	588.37	584.37	15.617	15.563	15.481	15.345
61	610.0000	528.2755	620.00	598.36	594.37	15.617	15.562	15.480	15.344
62	620.0000	536.9358	630.00	608.36	604.37	15.616	15.562	15.479	15.342
63	630.0000	545.5960	640.00	618.35	614.36	15.616	15.561	15.478	15.340
64	640.0000	554.2563	650.00	628.34	624.36	15.616	15.560	15.477	15.339
65	650.0000	562.9165	660.00	638.34	634.36	15.615	15.560	15.476	15.337
66	660.0000	571.5768	670.00	648.33	644.35	15.615	15.559	15.475	15.336
67	670.0000	580.2371	680.00	658.33	654.35	15.614	15.558	15.474	15.334
68	680.0000	588.8973	690.00	668.32	664.35	15.614	15.558	15.473	15.332
69	690.0000	597.5576	700.00	678.32	674.35	15.614	15.557	15.472	15.331
70	700.0000	606.2178	710.00	688.31	684.34	15.613	15.556	15.471	15.329
71	710.0000	614.8781	720.00	698.31	694.34	15.613	15.556	15.470	15.328
72	720.0000	623.5383	730.00	708.31	704.34	15.612	15.555	15.469	15.326
73	730.0000	632.1986	740.00	718.30	714.34	15.612	15.555	15.468	15.324
74	740.0000	640.8588	750.00	728.30	724.33	15.612	15.554	15.467	15.323
75	750.0000	649.5191	760.00	738.29	734.33	15.611	15.553	15.466	15.321
76	760.0000	658.1793	770.00	748.29	744.33	15.611	15.553	15.465	15.320
77	770.0000	666.8396	780.00	758.28	754.32	15.610	15.552	15.464	15.318
78	780.0000	675.4999	790.00	768.28	764.32	15.610	15.551	15.463	15.316
79	790.0000	684.1601	800.00	778.28	774.32	15.610	15.551	15.462	15.315
80	800.0000	692.8204	810.00	788.27	784.32	15.609	15.550	15.461	15.313
81	810.0000	701.4806	820.00	798.27	794.31	15.609	15.549	15.460	15.312
82	820.0000	710.1409	830.00	808.27	804.31	15.608	15.549	15.459	15.310
83	830.0000	718.8011	840.00	818.26	814.31	15.608	15.548	15.458	15.308
84	840.0000	727.4614	850.00	828.26	824.31	15.608	15.547	15.457	15.307
85	850.0000	736.1216	860.00	838.26	834.30	15.607	15.547	15.456	15.305
86	860.0000	744.7819	870.00	848.25	844.30	15.607	15.546	15.455	15.304
87	870.0000	753.4421	880.00	858.25	854.30	15.606	15.546	15.454	15.302
88	880.0000	762.1024	890.00	868.25	864.29	15.606	15.545	15.453	15.300
89	890.0000	770.7627	900.00	878.25	874.29	15.606	15.544	15.452	15.299
90	900.0000	779.4229	910.00	888.24	884.29	15.605	15.544	15.451	15.297
91	910.0000	788.0832	920.00	898.24	894.29	15.605	15.543	15.450	15.296
92	920.0000	796.7434	930.00	908.24	904.28	15.604	15.542	15.449	15.294
93	930.0000	805.4037	940.00	918.24	914.28	15.604	15.542	15.448	15.292
94	940.0000	814.0639	950.00	928.23	924.28	15.604	15.541	15.447	15.291
95	950.0000	822.7242	960.00	938.23	934.27	15.603	15.540	15.446	15.289
96	960.0000	831.3844	970.00	948.23	944.27	15.603	15.540	15.445	15.288
97	970.0000	840.0447	980.00	958.23	954.27	15.602	15.539	15.444	15.286
98	980.0000	848.7049	990.00	968.22	964.27	15.602	15.539	15.443	15.284
99	990.0000	857.3652	1000.00	978.22	974.26	15.602	15.538	15.442	15.283
100	1000.0000	866.0255	1010.00	988.22	984.26	15.601	15.537	15.441	15.281

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Table 17 — Internal spline

30 degree pressure angle — Side fit — Flat root — Module = 8.00

E_{vmin} = minimum effective space width, circular = 12.566

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	48.0000	41.5692	60.41	57.60	43.45	12.626	12.661	12.714	12.803
7	56.0000	48.4974	68.42	65.60	50.89	12.626	12.663	12.717	12.807
8	64.0000	55.4256	76.42	73.60	58.48	12.627	12.664	12.719	12.810
9	72.0000	62.3538	84.43	81.60	66.18	12.628	12.665	12.721	12.814
10	80.0000	69.2820	92.43	89.60	73.94	12.629	12.666	12.723	12.817
11	88.0000	76.2102	100.44	97.60	81.74	12.630	12.668	12.724	12.819
12	96.0000	83.1384	108.44	105.60	89.59	12.630	12.669	12.726	12.822
13	104.0000	90.0666	116.45	113.60	97.45	12.631	12.670	12.728	12.825
14	112.0000	96.9949	124.45	121.60	105.34	12.632	12.671	12.729	12.827
15	120.0000	103.9231	132.46	129.60	113.25	12.632	12.672	12.731	12.829
16	128.0000	110.8513	140.46	137.60	121.16	12.633	12.672	12.732	12.832
17	136.0000	117.7795	148.46	145.60	129.09	12.633	12.673	12.733	12.834
18	144.0000	124.7077	156.47	153.60	137.02	12.634	12.674	12.735	12.836
19	152.0000	131.6359	164.47	161.60	144.97	12.634	12.675	12.736	12.838
20	160.0000	138.5641	172.47	169.60	152.92	12.635	12.676	12.737	12.840
21	168.0000	145.4923	180.48	177.60	160.87	12.635	12.677	12.739	12.842
22	176.0000	152.4205	188.48	185.60	168.83	12.636	12.677	12.740	12.844
23	184.0000	159.3487	196.48	193.60	176.79	12.636	12.678	12.741	12.846
24	192.0000	166.2769	204.49	201.60	184.76	12.637	12.679	12.742	12.847
25	200.0000	173.2051	212.49	209.60	192.72	12.637	12.679	12.743	12.849
26	208.0000	180.1333	220.49	217.60	200.70	12.637	12.680	12.744	12.851
27	216.0000	187.0615	228.50	225.60	208.67	12.638	12.681	12.745	12.852
28	224.0000	193.9897	236.50	233.60	216.64	12.638	12.681	12.746	12.854
29	232.0000	200.9179	244.50	241.60	224.62	12.639	12.682	12.747	12.856
30	240.0000	207.8461	252.50	249.60	232.60	12.639	12.683	12.748	12.857
31	248.0000	214.7743	260.51	257.60	240.58	12.639	12.683	12.749	12.859
32	256.0000	221.7025	268.51	265.60	248.56	12.640	12.684	12.750	12.860
33	264.0000	228.6307	276.51	273.60	256.54	12.640	12.685	12.751	12.862
34	272.0000	235.5589	284.51	281.60	264.53	12.641	12.685	12.752	12.863
35	280.0000	242.4871	292.52	289.60	272.51	12.641	12.686	12.753	12.865
36	288.0000	249.4153	300.52	297.60	280.50	12.641	12.686	12.754	12.866
37	296.0000	256.3435	308.52	305.60	288.48	12.642	12.687	12.755	12.868
38	304.0000	263.2717	316.52	313.60	296.47	12.642	12.687	12.755	12.869
39	312.0000	270.1999	324.53	321.60	304.46	12.642	12.688	12.756	12.870
40	320.0000	277.1281	332.53	329.60	312.45	12.643	12.688	12.757	12.872
41	328.0000	284.0563	340.53	337.60	320.43	12.643	12.689	12.758	12.873
42	336.0000	290.9846	348.53	345.60	328.42	12.643	12.690	12.759	12.874
43	344.0000	297.9128	356.54	353.60	336.41	12.644	12.690	12.760	12.876
44	352.0000	304.8410	364.54	361.60	344.40	12.644	12.691	12.760	12.877
45	360.0000	311.7692	372.54	369.60	352.39	12.644	12.691	12.761	12.878
46	368.0000	318.6974	380.54	377.60	360.39	12.645	12.692	12.762	12.879
47	376.0000	325.6256	388.54	385.60	368.38	12.645	12.692	12.763	12.881
48	384.0000	332.5538	396.55	393.60	376.37	12.645	12.693	12.764	12.882
49	392.0000	339.4820	404.55	401.60	384.36	12.646	12.693	12.764	12.883
50	400.0000	346.4102	412.55	409.60	392.35	12.646	12.694	12.765	12.884
51	408.0000	353.3384	420.55	417.60	400.35	12.646	12.694	12.766	12.886
52	416.0000	360.2666	428.55	425.60	408.34	12.646	12.695	12.767	12.887
53	424.0000	367.1948	436.56	433.60	416.33	12.647	12.695	12.767	12.888
54	432.0000	374.1230	444.56	441.60	424.33	12.647	12.695	12.768	12.889
55	440.0000	381.0512	452.56	449.60	432.32	12.647	12.696	12.769	12.890
56	448.0000	387.9794	460.56	457.60	440.32	12.648	12.696	12.770	12.891
57	456.0000	394.9076	468.56	465.60	448.31	12.648	12.697	12.770	12.893
58	464.0000	401.8358	476.57	473.60	456.30	12.648	12.697	12.771	12.894
59	472.0000	408.7640	484.57	481.60	464.30	12.648	12.698	12.772	12.895
60	480.0000	415.6922	492.57	489.60	472.29	12.649	12.698	12.772	12.896
61	488.0000	422.6204	500.57	497.60	480.29	12.649	12.699	12.773	12.897
62	496.0000	429.5486	508.57	505.60	488.28	12.649	12.699	12.774	12.898
63	504.0000	436.4768	516.58	513.60	496.28	12.650	12.700	12.775	12.900
64	512.0000	443.4050	524.58	521.60	504.28	12.650	12.700	12.776	12.902
65	520.0000	450.3332	532.58	529.60	512.27	12.651	12.701	12.777	12.903
66	528.0000	457.2614	540.59	537.60	520.27	12.651	12.702	12.778	12.904
67	536.0000	464.1896	548.59	545.60	528.26	12.651	12.702	12.778	12.906
68	544.0000	471.1178	556.59	553.60	536.26	12.651	12.703	12.779	12.907
69	552.0000	478.0461	564.59	561.60	544.25	12.652	12.703	12.780	12.908
70	560.0000	484.9743	572.59	569.60	552.25	12.652	12.704	12.781	12.909
71	568.0000	491.9025	580.60	577.60	560.25	12.652	12.704	12.782	12.911
72	576.0000	498.8307	588.60	585.60	568.24	12.653	12.705	12.782	12.912
73	584.0000	505.7589	596.60	593.60	576.24	12.653	12.705	12.783	12.913
74	592.0000	512.6871	604.60	601.60	584.24	12.653	12.706	12.784	12.914
75	600.0000	519.6153	612.61	609.60	592.23	12.654	12.706	12.785	12.916
76	608.0000	526.5435	620.61	617.60	600.23	12.654	12.707	12.786	12.917
77	616.0000	533.4717	628.61	625.60	608.23	12.654	12.707	12.786	12.918
78	624.0000	540.3999	636.61	633.60	616.22	12.655	12.708	12.787	12.920
79	632.0000	547.3281	644.61	641.60	624.22	12.655	12.708	12.788	12.921
80	640.0000	554.2563	652.62	649.60	632.22	12.655	12.709	12.789	12.922
81	648.0000	561.1845	660.62	657.60	640.22	12.656	12.709	12.790	12.923
82	656.0000	568.1127	668.62	665.60	648.21	12.656	12.710	12.790	12.925
83	664.0000	575.0409	676.62	673.60	656.21	12.656	12.710	12.791	12.926
84	672.0000	581.9691	684.63	681.60	664.21	12.657	12.711	12.792	12.927
85	680.0000	588.8973	692.63	689.60	672.21	12.657	12.711	12.793	12.929
86	688.0000	595.8255	700.63	697.60	680.20	12.657	12.712	12.794	12.930
87	696.0000	602.7537	708.63	705.60	688.20	12.658	12.712	12.794	12.931
88	704.0000	609.6819	716.63	713.60	696.20	12.658	12.713	12.795	12.932
89	712.0000	616.6101	724.64	721.60	704.20	12.658	12.713	12.796	12.934
90	720.0000	623.5383	732.64	729.60	712.19	12.659	12.714	12.797	12.935
91	728.0000	630.4665	740.64	737.60	720.19	12.659	12.714	12.798	12.936
92	736.0000	637.3947	748.64	745.60	728.19	12.659	12.715	12.798	12.938
93	744.0000	644.3229	756.65	753.60	736.19	12.659	12.715	12.799	12.939
94	752.0000	651.2511	764.65	761.60	744.19	12.660	12.716	12.800	12.940
95	760.0000	658.1793	772.65	769.60	752.18	12.660	12.716	12.801	12.941
96	768.0000	665.1076	780.65	777.60	760.18	12.660	12.717	12.802	12.943
97	776.0000	672.0358	788.65	785.60	768.18	12.661	12.717	12.802	12.944
98	784.0000	678.9640	796.66	793.60	776.18	12.661	12.718	12.803	12.945
99	792.0000	685.8922	804.66	801.60	784.18	12.661	12.718	12.804	12.946
100	800.0000	692.8204	812.66	809.60	792.17	12.662	12.719	12.805	12.948

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Table 18 — External spline

30 degree pressure angle — Side fit — Flat root — Module = 8.00

S_{vmax} = maximum effective tooth thickness, circular = 12.566

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	48.0000	41.5692	56.00	41.85	35.59	12.507	12.472	12.418	12.330
7	56.0000	48.4974	64.00	49.29	43.58	12.506	12.470	12.416	12.326
8	64.0000	55.4256	72.00	56.88	51.58	12.505	12.469	12.414	12.322
9	72.0000	62.3538	80.00	64.58	59.57	12.505	12.468	12.412	12.319
10	80.0000	69.2820	88.00	72.34	67.57	12.504	12.466	12.410	12.316
11	88.0000	76.2102	96.00	80.14	75.56	12.503	12.465	12.408	12.313
12	96.0000	83.1384	104.00	87.99	83.56	12.502	12.464	12.407	12.311
13	104.0000	90.0666	112.00	95.85	91.55	12.502	12.463	12.405	12.308
14	112.0000	96.9949	120.00	103.74	99.55	12.501	12.462	12.403	12.306
15	120.0000	103.9231	128.00	111.65	107.54	12.501	12.461	12.402	12.303
16	128.0000	110.8513	136.00	119.56	115.54	12.500	12.460	12.401	12.301
17	136.0000	117.7795	144.00	127.49	123.54	12.500	12.459	12.399	12.299
18	144.0000	124.7077	152.00	135.42	131.53	12.499	12.459	12.398	12.297
19	152.0000	131.6359	160.00	143.37	139.53	12.498	12.458	12.397	12.295
20	160.0000	138.5641	168.00	151.32	147.53	12.498	12.457	12.395	12.293
21	168.0000	145.4923	176.00	159.27	155.52	12.498	12.456	12.394	12.291
22	176.0000	152.4205	184.00	167.23	163.52	12.497	12.455	12.393	12.289
23	184.0000	159.3487	192.00	175.19	171.52	12.497	12.455	12.392	12.287
24	192.0000	166.2769	200.00	183.16	179.51	12.496	12.454	12.391	12.285
25	200.0000	173.2051	208.00	191.12	187.51	12.496	12.453	12.390	12.284
26	208.0000	180.1333	216.00	199.10	195.51	12.495	12.453	12.389	12.282
27	216.0000	187.0615	224.00	207.07	203.50	12.495	12.452	12.388	12.280
28	224.0000	193.9897	232.00	215.04	211.50	12.494	12.451	12.387	12.279
29	232.0000	200.9179	240.00	223.02	219.50	12.494	12.451	12.386	12.277
30	240.0000	207.8461	248.00	231.00	227.50	12.494	12.450	12.385	12.276
31	248.0000	214.7743	256.00	238.98	235.49	12.493	12.449	12.384	12.274
32	256.0000	221.7025	264.00	246.96	243.49	12.493	12.449	12.383	12.272
33	264.0000	228.6307	272.00	254.94	251.49	12.493	12.448	12.382	12.271
34	272.0000	235.5589	280.00	262.93	259.49	12.492	12.448	12.381	12.269
35	280.0000	242.4871	288.00	270.91	267.48	12.492	12.447	12.380	12.268
36	288.0000	249.4153	296.00	278.90	275.48	12.491	12.446	12.379	12.267
37	296.0000	256.3435	304.00	286.88	283.48	12.491	12.446	12.378	12.265
38	304.0000	263.2717	312.00	294.87	291.48	12.491	12.445	12.377	12.264
39	312.0000	270.1999	320.00	302.86	299.47	12.490	12.445	12.376	12.262
40	320.0000	277.1281	328.00	310.85	307.47	12.490	12.444	12.376	12.261
41	328.0000	284.0563	336.00	318.83	315.47	12.490	12.444	12.375	12.260
42	336.0000	290.9846	344.00	326.82	323.47	12.489	12.443	12.374	12.258
43	344.0000	297.9128	352.00	334.81	331.46	12.489	12.443	12.373	12.257
44	352.0000	304.8410	360.00	342.80	339.46	12.489	12.442	12.372	12.256
45	360.0000	311.7692	368.00	350.79	347.46	12.488	12.442	12.371	12.255
46	368.0000	318.6974	376.00	358.79	355.46	12.488	12.441	12.371	12.253
47	376.0000	325.6256	384.00	366.78	363.46	12.488	12.441	12.370	12.252
48	384.0000	332.5538	392.00	374.77	371.45	12.487	12.440	12.369	12.251
49	392.0000	339.4820	400.00	382.76	379.45	12.487	12.440	12.368	12.250
50	400.0000	346.4102	408.00	390.76	387.45	12.487	12.439	12.368	12.248
51	408.0000	353.3384	416.00	398.75	395.45	12.487	12.439	12.367	12.247
52	416.0000	360.2666	424.00	406.74	403.45	12.486	12.438	12.366	12.246
53	424.0000	367.1948	432.00	414.73	411.44	12.486	12.438	12.365	12.245
54	432.0000	374.1230	440.00	422.73	419.44	12.486	12.437	12.365	12.244
55	440.0000	381.0512	448.00	430.72	427.44	12.485	12.437	12.364	12.242
56	448.0000	387.9794	456.00	438.72	435.44	12.485	12.436	12.363	12.241
57	456.0000	394.9076	464.00	446.71	443.44	12.485	12.436	12.362	12.240
58	464.0000	401.8358	472.00	454.70	451.43	12.485	12.435	12.362	12.239
59	472.0000	408.7640	480.00	462.70	459.43	12.484	12.435	12.361	12.238
60	480.0000	415.6922	488.00	470.69	467.43	12.484	12.435	12.360	12.237
61	488.0000	422.6204	496.00	478.69	475.43	12.484	12.434	12.360	12.236
62	496.0000	429.5486	504.00	486.68	483.43	12.483	12.434	12.359	12.235
63	504.0000	436.4768	512.00	494.68	491.42	12.483	12.433	12.358	12.232
64	512.0000	443.4050	520.00	502.68	499.42	12.483	12.432	12.357	12.231
65	520.0000	450.3332	528.00	510.67	507.42	12.482	12.432	12.356	12.230
66	528.0000	457.2614	536.00	518.67	515.41	12.482	12.431	12.355	12.228
67	536.0000	464.1896	544.00	526.66	523.41	12.482	12.431	12.354	12.227
68	544.0000	471.1178	552.00	534.66	531.41	12.481	12.430	12.354	12.226
69	552.0000	478.0461	560.00	542.65	539.41	12.481	12.430	12.353	12.225
70	560.0000	484.9743	568.00	550.65	547.41	12.481	12.429	12.352	12.223
71	568.0000	491.9025	576.00	558.65	555.40	12.480	12.429	12.351	12.222
72	576.0000	498.8307	584.00	566.64	563.40	12.480	12.428	12.350	12.221
73	584.0000	505.7589	592.00	574.64	571.40	12.480	12.428	12.350	12.220
74	592.0000	512.6871	600.00	582.64	579.40	12.479	12.427	12.349	12.218
75	600.0000	519.6153	608.00	590.63	587.39	12.479	12.427	12.348	12.217
76	608.0000	526.5435	616.00	598.63	595.39	12.479	12.426	12.347	12.216
77	616.0000	533.4717	624.00	606.63	603.39	12.478	12.426	12.346	12.214
78	624.0000	540.3999	632.00	614.62	611.39	12.478	12.425	12.346	12.213
79	632.0000	547.3281	640.00	622.62	619.39	12.478	12.425	12.345	12.212
80	640.0000	554.2563	648.00	630.62	627.38	12.477	12.424	12.344	12.211
81	648.0000	561.1845	656.00	638.62	635.38	12.477	12.424	12.343	12.209
82	656.0000	568.1127	664.00	646.61	643.38	12.477	12.423	12.342	12.208
83	664.0000	575.0409	672.00	654.61	651.38	12.476	12.423	12.342	12.207
84	672.0000	581.9691	680.00	662.61	659.37	12.476	12.422	12.341	12.205
85	680.0000	588.8973	688.00	670.61	667.37	12.476	12.421	12.340	12.204
86	688.0000	595.8255	696.00	678.60	675.37	12.475	12.421	12.339	12.203
87	696.0000	602.7537	704.00	686.60	683.37	12.475	12.420	12.338	12.202
88	704.0000	609.6819	712.00	694.60	691.37	12.475	12.420	12.338	12.200
89	712.0000	616.6101	720.00	702.60	699.36	12.475	12.419	12.337	12.199
90	720.0000	623.5383	728.00	710.59	707.36	12.474	12.419	12.336	12.198
91	728.0000	630.4665	736.00	718.59	715.36	12.474	12.418	12.335	12.196
92	736.0000	637.3947	744.00	726.59	723.36	12.474	12.418	12.334	12.195
93	744.0000	644.3229	752.00	734.59	731.35	12.473	12.417	12.334	12.194
94	752.0000	651.2511	760.00	742.59	739.35	12.473	12.417	12.333	12.193
95	760.0000	658.1793	768.00	750.58	747.35	12.473	12.416	12.332	12.191
96	768.0000	665.1076	776.00	758.58	755.35	12.472	12.416	12.331	12.190
97	776.0000	672.0358	784.00	766.58	763.35	12.472	12.415	12.330	12.189
98	784.0000	678.9640	792.00	774.58	771.34	12.472	12.415	12.330	12.188
99	792.0000	685.8922	800.00	782.58	779.34	12.471	12.414	12.329	12.186
100	800.0000	692.8204	808.00	790.57	787.34	12.471	12.414	12.328	12.185

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Table 19 — Internal spline

30 degree pressure angle — Side fit — Flat root — Module = 6.00

E_{vmin} = minimum effective space width, circular = 9.425

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	36.0000	31.1769	45.37	43.20	32.58	9.478	9.511	9.559	9.639
7	42.0000	36.3731	51.38	49.20	38.17	9.479	9.512	9.561	9.643
8	48.0000	41.5692	57.38	55.20	43.86	9.480	9.513	9.563	9.646
9	54.0000	46.7654	63.39	61.20	49.63	9.481	9.514	9.565	9.649
10	60.0000	51.9615	69.39	67.20	55.45	9.481	9.515	9.566	9.651
11	66.0000	57.1577	75.40	73.20	61.31	9.482	9.516	9.568	9.654
12	72.0000	62.3538	81.40	79.20	67.19	9.483	9.517	9.569	9.656
13	78.0000	67.5500	87.40	85.20	73.09	9.483	9.518	9.571	9.658
14	84.0000	72.7461	93.41	91.20	79.01	9.484	9.519	9.572	9.661
15	90.0000	77.9423	99.41	97.20	84.93	9.484	9.520	9.573	9.663
16	96.0000	83.1384	105.42	103.20	90.87	9.485	9.521	9.575	9.665
17	102.0000	88.3346	111.42	109.20	96.82	9.485	9.521	9.576	9.667
18	108.0000	93.5307	117.42	115.20	102.77	9.486	9.522	9.577	9.668
19	114.0000	98.7269	123.43	121.20	108.73	9.486	9.523	9.578	9.670
20	120.0000	103.9231	129.43	127.20	114.69	9.487	9.524	9.579	9.672
21	126.0000	109.1192	135.43	133.20	120.65	9.487	9.524	9.580	9.674
22	132.0000	114.3154	141.43	139.20	126.62	9.487	9.525	9.581	9.675
23	138.0000	119.5115	147.44	145.20	132.59	9.488	9.526	9.582	9.677
24	144.0000	124.7077	153.44	151.20	138.57	9.488	9.526	9.583	9.678
25	150.0000	129.9038	159.44	157.20	144.54	9.489	9.527	9.584	9.680
26	156.0000	135.1000	165.44	163.20	150.52	9.489	9.527	9.585	9.682
27	162.0000	140.2961	171.45	169.20	156.50	9.489	9.528	9.586	9.683
28	168.0000	145.4923	177.45	175.20	162.48	9.490	9.529	9.587	9.684
29	174.0000	150.6884	183.45	181.20	168.47	9.490	9.529	9.588	9.686
30	180.0000	155.8846	189.45	187.20	174.45	9.490	9.530	9.589	9.687
31	186.0000	161.0807	195.46	193.20	180.43	9.491	9.530	9.590	9.689
32	192.0000	166.2769	201.46	199.20	186.42	9.491	9.531	9.590	9.690
33	198.0000	171.4730	207.46	205.20	192.41	9.491	9.531	9.591	9.691
34	204.0000	176.6692	213.46	211.20	198.39	9.492	9.532	9.592	9.692
35	210.0000	181.8653	219.47	217.20	204.38	9.492	9.532	9.593	9.694
36	216.0000	187.0615	225.47	223.20	210.37	9.492	9.533	9.594	9.695
37	222.0000	192.2577	231.47	229.20	216.36	9.493	9.533	9.594	9.696
38	228.0000	197.4538	237.47	235.20	222.35	9.493	9.534	9.595	9.697
39	234.0000	202.6500	243.47	241.20	228.34	9.493	9.534	9.596	9.699
40	240.0000	207.8461	249.48	247.20	234.33	9.494	9.535	9.597	9.700
41	246.0000	213.0423	255.48	253.20	240.33	9.494	9.535	9.597	9.701
42	252.0000	218.2384	261.48	259.20	246.32	9.494	9.536	9.598	9.702
43	258.0000	223.4346	267.48	265.20	252.31	9.494	9.536	9.599	9.703
44	264.0000	228.6307	273.48	271.20	258.30	9.495	9.537	9.600	9.704
45	270.0000	233.8269	279.49	277.20	264.30	9.495	9.537	9.600	9.706
46	276.0000	239.0230	285.49	283.20	270.29	9.495	9.538	9.601	9.707
47	282.0000	244.2192	291.49	289.20	276.28	9.496	9.538	9.602	9.708
48	288.0000	249.4153	297.49	295.20	282.28	9.496	9.538	9.602	9.709
49	294.0000	254.6115	303.49	301.20	288.27	9.496	9.539	9.603	9.710
50	300.0000	259.8076	309.50	307.20	294.27	9.496	9.539	9.604	9.711
51	306.0000	265.0038	315.50	313.20	300.26	9.497	9.540	9.604	9.712
52	312.0000	270.1999	321.50	319.20	306.26	9.497	9.540	9.605	9.713
53	318.0000	275.3961	327.50	325.20	312.25	9.497	9.540	9.606	9.714
54	324.0000	280.5922	333.50	331.20	318.25	9.497	9.541	9.606	9.715
55	330.0000	285.7884	339.50	337.20	324.24	9.498	9.541	9.607	9.716
56	336.0000	290.9846	345.51	343.20	330.24	9.498	9.542	9.607	9.717
57	342.0000	296.1807	351.51	349.20	336.23	9.498	9.542	9.608	9.718
58	348.0000	301.3769	357.51	355.20	342.23	9.498	9.542	9.609	9.719
59	354.0000	306.5730	363.51	361.20	348.22	9.499	9.543	9.609	9.720
60	360.0000	311.7692	369.51	367.20	354.22	9.499	9.543	9.610	9.721
61	366.0000	316.9653	375.51	373.20	360.22	9.499	9.544	9.610	9.722
62	372.0000	322.1615	381.52	379.20	366.21	9.499	9.544	9.611	9.723
63	378.0000	327.3576	387.52	385.20	372.21	9.499	9.544	9.612	9.724
64	384.0000	332.5538	393.52	391.20	378.21	9.500	9.545	9.612	9.725
65	390.0000	337.7499	399.52	397.20	384.20	9.500	9.545	9.613	9.725
66	396.0000	342.9461	405.52	403.20	390.20	9.500	9.545	9.613	9.726
67	402.0000	348.1422	411.52	409.20	396.20	9.500	9.546	9.614	9.727
68	408.0000	353.3384	417.53	415.20	402.19	9.501	9.546	9.614	9.728
69	414.0000	358.5345	423.53	421.20	408.19	9.501	9.546	9.615	9.729
70	420.0000	363.7307	429.53	427.20	414.19	9.501	9.547	9.616	9.730
71	426.0000	368.9268	435.53	433.20	420.19	9.501	9.547	9.616	9.731
72	432.0000	374.1230	441.53	439.20	426.18	9.502	9.548	9.617	9.732
73	438.0000	379.3191	447.53	445.20	432.18	9.502	9.548	9.617	9.733
74	444.0000	384.5153	453.53	451.20	438.18	9.502	9.548	9.618	9.733
75	450.0000	389.7115	459.54	457.20	444.18	9.502	9.549	9.618	9.734
76	456.0000	394.9076	465.54	463.20	450.17	9.502	9.549	9.619	9.735
77	462.0000	400.1038	471.54	469.20	456.17	9.503	9.549	9.619	9.736
78	468.0000	405.2999	477.54	475.20	462.17	9.503	9.550	9.620	9.737
79	474.0000	410.4961	483.54	481.20	468.17	9.503	9.550	9.620	9.738
80	480.0000	415.6922	489.54	487.20	474.16	9.503	9.550	9.621	9.739
81	486.0000	420.8884	495.54	493.20	480.16	9.503	9.551	9.621	9.739
82	492.0000	426.0845	501.55	499.20	486.16	9.504	9.551	9.622	9.740
83	498.0000	431.2807	507.55	505.20	492.16	9.504	9.551	9.622	9.741
84	504.0000	436.4768	513.55	511.20	498.16	9.504	9.552	9.624	9.743
85	510.0000	441.6730	519.55	517.20	504.15	9.505	9.552	9.624	9.744
86	516.0000	446.8691	525.55	523.20	510.15	9.505	9.553	9.625	9.745
87	522.0000	452.0653	531.56	529.20	516.15	9.505	9.553	9.625	9.746
88	528.0000	457.2614	537.56	535.20	522.15	9.505	9.554	9.626	9.747
89	534.0000	462.4576	543.56	541.20	528.15	9.506	9.554	9.627	9.748
90	540.0000	467.6537	549.56	547.20	534.15	9.506	9.554	9.627	9.749
91	546.0000	472.8499	555.56	553.20	540.14	9.506	9.555	9.628	9.750
92	552.0000	478.0461	561.56	559.20	546.14	9.506	9.555	9.628	9.751
93	558.0000	483.2422	567.57	565.20	552.14	9.506	9.556	9.629	9.752
94	564.0000	488.4384	573.57	571.20	558.14	9.507	9.556	9.630	9.753
95	570.0000	493.6345	579.57	577.20	564.14	9.507	9.556	9.630	9.754
96	576.0000	498.8307	585.57	583.20	570.14	9.507	9.557	9.631	9.755
97	582.0000	504.0268	591.57	589.20	576.14	9.507	9.557	9.631	9.755
98	588.0000	509.2230	597.57	595.20	582.13	9.508	9.557	9.632	9.756
99	594.0000	514.4191	603.58	601.20	588.13	9.508	9.558	9.633	9.757
100	600.0000	519.6153	609.58	607.20	594.13	9.508	9.558	9.633	9.758

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Table 20 — External spline

30 degree pressure angle — Side fit — Flat root — Module = 6.00

S_{vmax} = maximum effective tooth thickness, circular = 9.425

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	36.0000	31.1769	42.00	31.38	26.63	9.371	9.339	9.291	9.210
7	42.0000	36.3731	48.00	36.97	32.62	9.370	9.338	9.289	9.207
8	48.0000	41.5692	54.00	42.66	38.62	9.370	9.336	9.287	9.204
9	54.0000	46.7654	60.00	48.43	44.61	9.369	9.335	9.285	9.201
10	60.0000	51.9615	66.00	54.25	50.61	9.368	9.334	9.283	9.198
11	66.0000	57.1577	72.00	60.11	56.60	9.368	9.333	9.282	9.196
12	72.0000	62.3538	78.00	65.99	62.60	9.367	9.332	9.280	9.193
13	78.0000	67.5500	84.00	71.89	68.60	9.366	9.331	9.279	9.191
14	84.0000	72.7461	90.00	77.81	74.59	9.366	9.330	9.277	9.189
15	90.0000	77.9423	96.00	83.73	80.59	9.365	9.330	9.276	9.187
16	96.0000	83.1384	102.00	89.67	86.58	9.365	9.329	9.275	9.185
17	102.0000	88.3346	108.00	95.62	92.58	9.364	9.328	9.274	9.183
18	108.0000	93.5307	114.00	101.57	98.58	9.364	9.327	9.273	9.181
19	114.0000	98.7269	120.00	107.53	104.57	9.363	9.327	9.271	9.179
20	120.0000	103.9231	126.00	113.49	110.57	9.363	9.326	9.270	9.178
21	126.0000	109.1192	132.00	119.45	116.57	9.363	9.325	9.269	9.176
22	132.0000	114.3154	138.00	125.42	122.57	9.362	9.325	9.268	9.174
23	138.0000	119.5115	144.00	131.39	128.56	9.362	9.324	9.267	9.173
24	144.0000	124.7077	150.00	137.37	134.56	9.361	9.323	9.266	9.171
25	150.0000	129.9038	156.00	143.34	140.56	9.361	9.323	9.265	9.170
26	156.0000	135.1000	162.00	149.32	146.56	9.361	9.322	9.264	9.168
27	162.0000	140.2961	168.00	155.30	152.55	9.360	9.321	9.263	9.167
28	168.0000	145.4923	174.00	161.28	158.55	9.360	9.321	9.263	9.165
29	174.0000	150.6884	180.00	167.27	164.55	9.360	9.320	9.262	9.164
30	180.0000	155.8846	186.00	173.25	170.55	9.359	9.320	9.261	9.162
31	186.0000	161.0807	192.00	179.23	176.54	9.359	9.319	9.260	9.161
32	192.0000	166.2769	198.00	185.22	182.54	9.358	9.319	9.259	9.160
33	198.0000	171.4730	204.00	191.21	188.54	9.358	9.318	9.258	9.158
34	204.0000	176.6692	210.00	197.19	194.54	9.358	9.318	9.257	9.157
35	210.0000	181.8653	216.00	203.18	200.53	9.358	9.317	9.257	9.156
36	216.0000	187.0615	222.00	209.17	206.53	9.357	9.317	9.256	9.155
37	222.0000	192.2577	228.00	215.16	212.53	9.357	9.316	9.255	9.153
38	228.0000	197.4538	234.00	221.15	218.53	9.357	9.316	9.254	9.152
39	234.0000	202.6500	240.00	227.14	224.53	9.356	9.315	9.254	9.151
40	240.0000	207.8461	246.00	233.13	230.52	9.356	9.315	9.253	9.150
41	246.0000	213.0423	252.00	239.13	236.52	9.356	9.314	9.252	9.149
42	252.0000	218.2384	258.00	245.12	242.52	9.355	9.314	9.251	9.147
43	258.0000	223.4346	264.00	251.11	248.52	9.355	9.313	9.251	9.146
44	264.0000	228.6307	270.00	257.10	254.52	9.355	9.313	9.250	9.145
45	270.0000	233.8269	276.00	263.10	260.51	9.355	9.312	9.249	9.144
46	276.0000	239.0230	282.00	269.09	266.51	9.354	9.312	9.249	9.143
47	282.0000	244.2192	288.00	275.08	272.51	9.354	9.312	9.248	9.142
48	288.0000	249.4153	294.00	281.08	278.51	9.354	9.311	9.247	9.141
49	294.0000	254.6115	300.00	287.07	284.51	9.354	9.311	9.247	9.140
50	300.0000	259.8076	306.00	293.07	290.50	9.353	9.310	9.246	9.139
51	306.0000	265.0038	312.00	299.06	296.50	9.353	9.310	9.245	9.138
52	312.0000	270.1999	318.00	305.06	302.50	9.353	9.310	9.245	9.137
53	318.0000	275.3961	324.00	311.05	308.50	9.352	9.309	9.244	9.136
54	324.0000	280.5922	330.00	317.05	314.50	9.352	9.309	9.243	9.135
55	330.0000	285.7884	336.00	323.04	320.50	9.352	9.308	9.243	9.134
56	336.0000	290.9846	342.00	329.04	326.49	9.352	9.308	9.242	9.133
57	342.0000	296.1807	348.00	335.03	332.49	9.351	9.308	9.242	9.132
58	348.0000	301.3769	354.00	341.03	338.49	9.351	9.307	9.241	9.131
59	354.0000	306.5730	360.00	347.02	344.49	9.351	9.307	9.240	9.130
60	360.0000	311.7692	366.00	353.02	350.49	9.351	9.306	9.240	9.129
61	366.0000	316.9653	372.00	359.02	356.49	9.351	9.306	9.239	9.128
62	372.0000	322.1615	378.00	365.01	362.48	9.350	9.306	9.239	9.127
63	378.0000	327.3576	384.00	371.01	368.48	9.350	9.305	9.238	9.126
64	384.0000	332.5538	390.00	377.01	374.48	9.350	9.305	9.237	9.125
65	390.0000	337.7499	396.00	383.00	380.48	9.350	9.304	9.237	9.124
66	396.0000	342.9461	402.00	389.00	386.48	9.349	9.304	9.236	9.123
67	402.0000	348.1422	408.00	395.00	392.48	9.349	9.304	9.236	9.122
68	408.0000	353.3384	414.00	400.99	398.47	9.349	9.303	9.235	9.121
69	414.0000	358.5345	420.00	406.99	404.47	9.349	9.303	9.235	9.120
70	420.0000	363.7307	426.00	412.99	410.47	9.348	9.303	9.234	9.120
71	426.0000	368.9268	432.00	418.99	416.47	9.348	9.302	9.233	9.119
72	432.0000	374.1230	438.00	424.98	422.47	9.348	9.302	9.233	9.118
73	438.0000	379.3191	444.00	430.98	428.47	9.348	9.302	9.232	9.117
74	444.0000	384.5153	450.00	436.98	434.47	9.348	9.301	9.232	9.116
75	450.0000	389.7115	456.00	442.98	440.46	9.347	9.301	9.231	9.115
76	456.0000	394.9076	462.00	448.97	446.46	9.347	9.301	9.231	9.114
77	462.0000	400.1038	468.00	454.97	452.46	9.347	9.300	9.230	9.114
78	468.0000	405.2999	474.00	460.97	458.46	9.347	9.300	9.230	9.113
79	474.0000	410.4961	480.00	466.97	464.46	9.347	9.300	9.229	9.112
80	480.0000	415.6922	486.00	472.96	470.46	9.346	9.299	9.229	9.111
81	486.0000	420.8884	492.00	478.96	476.46	9.346	9.299	9.228	9.110
82	492.0000	426.0845	498.00	484.96	482.45	9.346	9.299	9.228	9.109
83	498.0000	431.2807	504.00	490.96	488.45	9.346	9.298	9.227	9.109
84	504.0000	436.4768	510.00	496.96	494.45	9.345	9.297	9.226	9.107
85	510.0000	441.6730	516.00	502.95	500.45	9.345	9.297	9.225	9.106
86	516.0000	446.8691	522.00	508.95	506.45	9.345	9.297	9.225	9.105
87	522.0000	452.0653	528.00	514.95	512.44	9.344	9.296	9.224	9.104
88	528.0000	457.2614	534.00	520.95	518.44	9.344	9.296	9.223	9.103
89	534.0000	462.4576	540.00	526.95	524.44	9.344	9.296	9.223	9.102
90	540.0000	467.6537	546.00	532.95	530.44	9.344	9.295	9.222	9.101
91	546.0000	472.8499	552.00	538.94	536.44	9.344	9.295	9.222	9.100
92	552.0000	478.0461	558.00	544.94	542.44	9.343	9.294	9.221	9.099
93	558.0000	483.2422	564.00	550.94	548.43	9.343	9.294	9.220	9.098
94	564.0000	488.4384	570.00	556.94	554.43	9.343	9.294	9.220	9.097
95	570.0000	493.6345	576.00	562.94	560.43	9.343	9.293	9.219	9.096
96	576.0000	498.8307	582.00	568.94	566.43	9.342	9.293	9.219	9.095
97	582.0000	504.0268	588.00	574.94	572.43	9.342	9.292	9.218	9.094
98	588.0000	509.2230	594.00	580.93	578.43	9.342	9.292	9.217	9.093
99	594.0000	514.4191	600.00	586.93	584.42	9.342	9.292	9.217	9.092
100	600.0000	519.6153	606.00	592.93	590.42	9.341	9.291	9.216	9.091

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Table 21 — Internal spline

30 degree pressure angle — Side fit — Flat root — Module = 5.00

E_{vmin} = minimum effective space width, circular = 7.854

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	30.0000	25.9808	37.85	36.00	27.15	7.904	7.935	7.980	8.055
7	35.0000	30.3109	42.85	41.00	31.81	7.905	7.936	7.982	8.059
8	40.0000	34.6410	47.86	46.00	36.55	7.906	7.937	7.984	8.062
9	45.0000	38.9711	52.86	51.00	41.36	7.907	7.938	7.985	8.064
10	50.0000	43.3013	57.87	56.00	46.21	7.907	7.939	7.987	8.067
11	55.0000	47.6314	62.87	61.00	51.09	7.908	7.940	7.988	8.069
12	60.0000	51.9615	67.88	66.00	55.99	7.908	7.941	7.990	8.071
13	65.0000	56.2917	72.88	71.00	60.91	7.909	7.942	7.991	8.073
14	70.0000	60.6218	77.88	76.00	65.84	7.909	7.943	7.992	8.075
15	75.0000	64.9519	82.89	81.00	70.78	7.910	7.943	7.994	8.077
16	80.0000	69.2820	87.89	86.00	75.73	7.910	7.944	7.995	8.079
17	85.0000	73.6122	92.89	91.00	80.68	7.911	7.945	7.996	8.081
18	90.0000	77.9423	97.90	96.00	85.64	7.911	7.945	7.997	8.083
19	95.0000	82.2724	102.90	101.00	90.60	7.912	7.946	7.998	8.084
20	100.0000	86.6025	107.90	106.00	95.57	7.912	7.947	7.999	8.086
21	105.0000	90.9327	112.90	111.00	100.54	7.912	7.947	8.000	8.087
22	110.0000	95.2628	117.91	116.00	105.52	7.913	7.948	8.001	8.089
23	115.0000	99.5929	122.91	121.00	110.49	7.913	7.949	8.002	8.090
24	120.0000	103.9231	127.91	126.00	115.47	7.913	7.949	8.003	8.092
25	125.0000	108.2532	132.91	131.00	120.45	7.914	7.950	8.004	8.093
26	130.0000	112.5833	137.92	136.00	125.43	7.914	7.950	8.004	8.095
27	135.0000	116.9134	142.92	141.00	130.42	7.915	7.951	8.005	8.096
28	140.0000	121.2436	147.92	146.00	135.40	7.915	7.951	8.006	8.097
29	145.0000	125.5737	152.92	151.00	140.39	7.915	7.952	8.007	8.099
30	150.0000	129.9038	157.93	156.00	145.37	7.915	7.952	8.008	8.100
31	155.0000	134.2339	162.93	161.00	150.36	7.916	7.953	8.009	8.101
32	160.0000	138.5641	167.93	166.00	155.35	7.916	7.953	8.009	8.102
33	165.0000	142.8942	172.93	171.00	160.34	7.916	7.954	8.010	8.104
34	170.0000	147.2243	177.93	176.00	165.33	7.917	7.954	8.011	8.105
35	175.0000	151.5545	182.94	181.00	170.32	7.917	7.955	8.012	8.106
36	180.0000	155.8846	187.94	186.00	175.31	7.917	7.955	8.012	8.107
37	185.0000	160.2147	192.94	191.00	180.30	7.918	7.956	8.013	8.108
38	190.0000	164.5448	197.94	196.00	185.29	7.918	7.956	8.014	8.109
39	195.0000	168.8750	202.94	201.00	190.29	7.918	7.957	8.014	8.111
40	200.0000	173.2051	207.95	206.00	195.28	7.918	7.957	8.015	8.112
41	205.0000	177.5352	212.95	211.00	200.27	7.919	7.957	8.016	8.113
42	210.0000	181.8653	217.95	216.00	205.26	7.919	7.958	8.016	8.114
43	215.0000	186.1955	222.95	221.00	210.26	7.919	7.958	8.017	8.115
44	220.0000	190.5256	227.95	226.00	215.25	7.919	7.959	8.018	8.116
45	225.0000	194.8557	232.96	231.00	220.25	7.920	7.959	8.018	8.117
46	230.0000	199.1859	237.96	236.00	225.24	7.920	7.960	8.019	8.118
47	235.0000	203.5160	242.96	241.00	230.24	7.920	7.960	8.020	8.119
48	240.0000	207.8461	247.96	246.00	235.23	7.920	7.960	8.020	8.120
49	245.0000	212.1762	252.96	251.00	240.23	7.921	7.961	8.021	8.121
50	250.0000	216.5064	257.96	256.00	245.22	7.921	7.961	8.021	8.122
51	255.0000	220.8365	262.97	261.00	250.22	7.921	7.961	8.022	8.123
52	260.0000	225.1666	267.97	266.00	255.21	7.921	7.962	8.023	8.124
53	265.0000	229.4967	272.97	271.00	260.21	7.922	7.962	8.023	8.125
54	270.0000	233.8269	277.97	276.00	265.20	7.922	7.963	8.024	8.125
55	275.0000	238.1570	282.97	281.00	270.20	7.922	7.963	8.024	8.126
56	280.0000	242.4871	287.97	286.00	275.20	7.922	7.963	8.025	8.127
57	285.0000	246.8173	292.97	291.00	280.19	7.923	7.964	8.025	8.128
58	290.0000	251.1474	297.98	296.00	285.19	7.923	7.964	8.026	8.129
59	295.0000	255.4775	302.98	301.00	290.19	7.923	7.964	8.026	8.130
60	300.0000	259.8076	307.98	306.00	295.18	7.923	7.965	8.027	8.131
61	305.0000	264.1378	312.98	311.00	300.18	7.923	7.965	8.028	8.132
62	310.0000	268.4679	317.98	316.00	305.18	7.924	7.965	8.028	8.133
63	315.0000	272.7980	322.98	321.00	310.17	7.924	7.966	8.029	8.133
64	320.0000	277.1281	327.99	326.00	315.17	7.924	7.966	8.029	8.134
65	325.0000	281.4583	332.99	331.00	320.17	7.924	7.966	8.030	8.135
66	330.0000	285.7884	337.99	336.00	325.17	7.924	7.967	8.030	8.136
67	335.0000	290.1185	342.99	341.00	330.16	7.925	7.967	8.031	8.137
68	340.0000	294.4487	347.99	346.00	335.16	7.925	7.967	8.031	8.138
69	345.0000	298.7788	352.99	351.00	340.16	7.925	7.968	8.032	8.138
70	350.0000	303.1089	357.99	356.00	345.16	7.925	7.968	8.032	8.139
71	355.0000	307.4390	363.00	361.00	350.15	7.925	7.968	8.033	8.140
72	360.0000	311.7692	368.00	366.00	355.15	7.926	7.969	8.033	8.141
73	365.0000	316.0993	373.00	371.00	360.15	7.926	7.969	8.034	8.142
74	370.0000	320.4294	378.00	376.00	365.15	7.926	7.969	8.034	8.142
75	375.0000	324.7595	383.00	381.00	370.15	7.926	7.970	8.035	8.143
76	380.0000	329.0897	388.00	386.00	375.14	7.926	7.970	8.035	8.144
77	385.0000	333.4198	393.00	391.00	380.14	7.927	7.970	8.036	8.145
78	390.0000	337.7499	398.00	396.00	385.14	7.927	7.971	8.036	8.145
79	395.0000	342.0801	403.01	401.00	390.14	7.927	7.971	8.037	8.146
80	400.0000	346.4102	408.01	406.00	395.14	7.927	7.971	8.037	8.147
81	405.0000	350.7403	413.01	411.00	400.14	7.927	7.971	8.038	8.148
82	410.0000	355.0704	418.01	416.00	405.13	7.928	7.972	8.038	8.148
83	415.0000	359.4006	423.01	421.00	410.13	7.928	7.972	8.039	8.149
84	420.0000	363.7307	428.01	426.00	415.13	7.928	7.972	8.039	8.150
85	425.0000	368.0608	433.01	431.00	420.13	7.928	7.973	8.039	8.151
86	430.0000	372.3909	438.02	436.00	425.13	7.928	7.973	8.040	8.151
87	435.0000	376.7211	443.02	441.00	430.13	7.929	7.973	8.040	8.152
88	440.0000	381.0512	448.02	446.00	435.12	7.929	7.974	8.041	8.153
89	445.0000	385.3813	453.02	451.00	440.12	7.929	7.974	8.041	8.154
90	450.0000	389.7115	458.02	456.00	445.12	7.929	7.974	8.042	8.154
91	455.0000	394.0416	463.02	461.00	450.12	7.929	7.974	8.042	8.155
92	460.0000	398.3717	468.02	466.00	455.12	7.929	7.975	8.043	8.156
93	465.0000	402.7018	473.02	471.00	460.12	7.930	7.975	8.043	8.156
94	470.0000	407.0320	478.03	476.00	465.12	7.930	7.975	8.043	8.157
95	475.0000	411.3621	483.03	481.00	470.12	7.930	7.976	8.044	8.158
96	480.0000	415.6922	488.03	486.00	475.11	7.930	7.976	8.044	8.158
97	485.0000	420.0223	493.03	491.00	480.11	7.930	7.976	8.045	8.159
98	490.0000	424.3525	498.03	496.00	485.11	7.930	7.976	8.045	8.160
99	495.0000	428.6826	503.03	501.00	490.11	7.931	7.977	8.046	8.161
100	500.0000	433.0127	508.03	506.00	495.11	7.931	7.977	8.046	8.161

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Table 22 — External spline

30 degree pressure angle — Side fit — Flat root — Module = 5.00

S_{vmax} = maximum effective tooth thickness, circular = 7.854

$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	4 H	5 H	6 H	7 H
6	30.0000	25.9808	35.00	26.15	22.15	7.804	7.773	7.728	7.652
7	35.0000	30.3109	40.00	30.81	27.15	7.803	7.772	7.726	7.649
8	40.0000	34.6410	45.00	35.55	32.14	7.802	7.771	7.724	7.646
9	45.0000	38.9711	50.00	40.36	37.14	7.801	7.770	7.723	7.644
10	50.0000	43.3013	55.00	45.21	42.13	7.801	7.769	7.721	7.641
11	55.0000	47.6314	60.00	50.09	47.13	7.800	7.768	7.720	7.639
12	60.0000	51.9615	65.00	54.99	52.12	7.800	7.767	7.718	7.637
13	65.0000	56.2917	70.00	59.91	57.12	7.799	7.766	7.717	7.635
14	70.0000	60.6218	75.00	64.84	62.12	7.799	7.765	7.716	7.633
15	75.0000	64.9519	80.00	69.78	67.11	7.798	7.765	7.714	7.631
16	80.0000	69.2820	85.00	74.73	72.11	7.798	7.764	7.713	7.629
17	85.0000	73.6122	90.00	79.68	77.11	7.797	7.763	7.712	7.627
18	90.0000	77.9423	95.00	84.64	82.10	7.797	7.763	7.711	7.625
19	95.0000	82.2724	100.00	89.60	87.10	7.796	7.762	7.710	7.624
20	100.0000	86.6025	105.00	94.57	92.10	7.796	7.761	7.709	7.622
21	105.0000	90.9327	110.00	99.54	97.10	7.796	7.761	7.708	7.620
22	110.0000	95.2628	115.00	104.52	102.09	7.795	7.760	7.707	7.619
23	115.0000	99.5929	120.00	109.49	107.09	7.795	7.759	7.706	7.617
24	120.0000	103.9231	125.00	114.47	112.08	7.794	7.759	7.705	7.616
25	125.0000	108.2532	130.00	119.45	117.09	7.794	7.758	7.704	7.615
26	130.0000	112.5833	135.00	124.43	122.08	7.794	7.758	7.704	7.613
27	135.0000	116.9134	140.00	129.42	127.08	7.793	7.757	7.703	7.612
28	140.0000	121.2436	145.00	134.40	132.08	7.793	7.757	7.702	7.611
29	145.0000	125.5737	150.00	139.39	137.08	7.793	7.756	7.701	7.609
30	150.0000	129.9038	155.00	144.37	142.07	7.792	7.756	7.700	7.608
31	155.0000	134.2339	160.00	149.36	147.07	7.792	7.755	7.699	7.607
32	160.0000	138.5641	165.00	154.35	152.07	7.792	7.755	7.699	7.605
33	165.0000	142.8942	170.00	159.34	157.07	7.792	7.754	7.698	7.604
34	170.0000	147.2243	175.00	164.33	162.07	7.791	7.754	7.697	7.603
35	175.0000	151.5545	180.00	169.32	167.06	7.791	7.753	7.696	7.602
36	180.0000	155.8846	185.00	174.31	172.06	7.791	7.753	7.696	7.601
37	185.0000	160.2147	190.00	179.30	177.06	7.790	7.752	7.695	7.600
38	190.0000	164.5448	195.00	184.29	182.06	7.790	7.752	7.694	7.599
39	195.0000	168.8750	200.00	189.29	187.06	7.790	7.751	7.694	7.597
40	200.0000	173.2051	205.00	194.28	192.05	7.790	7.751	7.693	7.596
41	205.0000	177.5352	210.00	199.27	197.05	7.789	7.750	7.692	7.595
42	210.0000	181.8653	215.00	204.26	202.05	7.789	7.750	7.692	7.594
43	215.0000	186.1955	220.00	209.26	207.05	7.789	7.750	7.691	7.593
44	220.0000	190.5256	225.00	214.25	212.05	7.789	7.749	7.690	7.592
45	225.0000	194.8557	230.00	219.25	217.04	7.788	7.749	7.690	7.591
46	230.0000	199.1859	235.00	224.24	222.04	7.788	7.748	7.689	7.590
47	235.0000	203.5160	240.00	229.24	227.04	7.788	7.748	7.688	7.589
48	240.0000	207.8461	245.00	234.23	232.04	7.788	7.748	7.688	7.588
49	245.0000	212.1762	250.00	239.23	237.04	7.787	7.747	7.687	7.587
50	250.0000	216.5064	255.00	244.22	242.04	7.787	7.747	7.687	7.586
51	255.0000	220.8365	260.00	249.22	247.03	7.787	7.746	7.686	7.585
52	260.0000	225.1666	265.00	254.21	252.03	7.787	7.746	7.685	7.584
53	265.0000	229.4967	270.00	259.21	257.03	7.786	7.746	7.685	7.583
54	270.0000	233.8269	275.00	264.20	262.03	7.786	7.745	7.684	7.582
55	275.0000	238.1570	280.00	269.20	267.03	7.786	7.745	7.684	7.582
56	280.0000	242.4871	285.00	274.20	272.03	7.786	7.745	7.683	7.581
57	285.0000	246.8173	290.00	279.19	277.03	7.785	7.744	7.683	7.580
58	290.0000	251.1474	295.00	284.19	282.02	7.785	7.744	7.682	7.579
59	295.0000	255.4775	300.00	289.19	287.02	7.785	7.744	7.681	7.578
60	300.0000	259.8076	305.00	294.18	292.02	7.785	7.743	7.681	7.577
61	305.0000	264.1378	310.00	299.18	297.02	7.785	7.743	7.680	7.576
62	310.0000	268.4679	315.00	304.18	302.02	7.784	7.743	7.680	7.575
63	315.0000	272.7980	320.00	309.17	307.02	7.784	7.742	7.679	7.575
64	320.0000	277.1281	325.00	314.17	312.01	7.784	7.742	7.679	7.574
65	325.0000	281.4583	330.00	319.17	317.01	7.784	7.742	7.678	7.573
66	330.0000	285.7884	335.00	324.17	322.01	7.783	7.741	7.678	7.572
67	335.0000	290.1185	340.00	329.16	327.01	7.783	7.741	7.677	7.571
68	340.0000	294.4487	345.00	334.16	332.01	7.783	7.741	7.677	7.570
69	345.0000	298.7788	350.00	339.16	337.01	7.783	7.740	7.676	7.570
70	350.0000	303.1089	355.00	344.16	342.01	7.783	7.740	7.676	7.569
71	355.0000	307.4390	360.00	349.15	347.00	7.782	7.740	7.675	7.568
72	360.0000	311.7692	365.00	354.15	352.00	7.782	7.739	7.675	7.567
73	365.0000	316.0993	370.00	359.15	357.00	7.782	7.739	7.674	7.566
74	370.0000	320.4294	375.00	364.15	362.00	7.782	7.739	7.674	7.566
75	375.0000	324.7595	380.00	369.15	367.00	7.782	7.738	7.673	7.565
76	380.0000	329.0897	385.00	374.14	372.00	7.781	7.738	7.673	7.564
77	385.0000	333.4198	390.00	379.14	377.00	7.781	7.738	7.672	7.563
78	390.0000	337.7499	395.00	384.14	382.00	7.781	7.737	7.672	7.562
79	395.0000	342.0801	400.00	389.14	386.99	7.781	7.737	7.671	7.562
80	400.0000	346.4102	405.00	394.14	391.99	7.781	7.737	7.671	7.561
81	405.0000	350.7403	410.00	399.14	396.99	7.781	7.736	7.670	7.560
82	410.0000	355.0704	415.00	404.13	401.99	7.780	7.736	7.670	7.559
83	415.0000	359.4006	420.00	409.13	406.99	7.780	7.736	7.669	7.559
84	420.0000	363.7307	425.00	414.13	411.99	7.780	7.736	7.669	7.558
85	425.0000	368.0608	430.00	419.13	416.99	7.780	7.735	7.669	7.557
86	430.0000	372.3909	435.00	424.13	421.98	7.780	7.735	7.668	7.557
87	435.0000	376.7211	440.00	429.13	426.98	7.779	7.735	7.668	7.556
88	440.0000	381.0512	445.00	434.12	431.98	7.779	7.734	7.667	7.555
89	445.0000	385.3813	450.00	439.12	436.98	7.779	7.734	7.667	7.554
90	450.0000	389.7115	455.00	444.12	441.98	7.779	7.734	7.666	7.554
91	455.0000	394.0416	460.00	449.12	446.98	7.779	7.734	7.666	7.553
92	460.0000	398.3717	465.00	454.12	451.98	7.779	7.733	7.665	7.552
93	465.0000	402.7018	470.00	459.12	456.98	7.778	7.733	7.665	7.552
94	470.0000	407.0320	475.00	464.12	461.97	7.778	7.733	7.665	7.551
95	475.0000	411.3621	480.00	469.12	466.97	7.778	7.732	7.664	7.550
96	480.0000	415.6922	485.00	474.11	471.97	7.778	7.732	7.664	7.549
97	485.0000	420.0223	490.00	479.11	476.97	7.778	7.732	7.663	7.549
98	490.0000	424.3525	495.00	484.11	481.97	7.778	7.732	7.663	7.548
99	495.0000	428.6826	500.00	489.11	486.97	7.777	7.731	7.662	7.547
100	500.0000	433.0127	505.00	494.11	491.97	7.777	7.731	7.662	7.547

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Table 23 — Internal spline

30 degree pressure angle — Side fit — Flat root — Module = 4.00

E_{vmin} = minimum effective space width, circular = 6.283

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	24.0000	20.7846	30.32	28.80	21.72	6.330	6.358	6.400	6.470
7	28.0000	24.2487	34.33	32.80	25.44	6.331	6.359	6.402	6.473
8	32.0000	27.7128	38.33	36.80	29.24	6.331	6.360	6.403	6.475
9	36.0000	31.1769	42.34	40.80	33.09	6.332	6.361	6.405	6.478
10	40.0000	34.6410	46.34	44.80	36.97	6.332	6.362	6.406	6.480
11	44.0000	38.1051	50.34	48.80	40.87	6.333	6.363	6.408	6.482
12	48.0000	41.5692	54.35	52.80	44.79	6.333	6.364	6.409	6.484
13	52.0000	45.0333	58.35	56.80	48.73	6.334	6.364	6.410	6.486
14	56.0000	48.4974	62.36	60.80	52.67	6.334	6.365	6.411	6.488
15	60.0000	51.9615	66.36	64.80	56.62	6.335	6.366	6.412	6.490
16	64.0000	55.4256	70.36	68.80	60.58	6.335	6.367	6.413	6.492
17	68.0000	58.8897	74.36	72.80	64.54	6.336	6.367	6.414	6.493
18	72.0000	62.3538	78.37	76.80	68.51	6.336	6.368	6.415	6.495
19	76.0000	65.8179	82.37	80.80	72.48	6.336	6.368	6.416	6.496
20	80.0000	69.2820	86.37	84.80	76.46	6.337	6.369	6.417	6.498
21	84.0000	72.7461	90.37	88.80	80.44	6.337	6.370	6.418	6.499
22	88.0000	76.2102	94.38	92.80	84.41	6.338	6.370	6.419	6.501
23	92.0000	79.6743	98.38	96.80	88.40	6.338	6.371	6.420	6.502
24	96.0000	83.1384	102.38	100.80	92.38	6.338	6.371	6.421	6.503
25	100.0000	86.6025	106.38	104.80	96.36	6.339	6.372	6.422	6.505
26	104.0000	90.0666	110.39	108.80	100.35	6.339	6.372	6.422	6.506
27	108.0000	93.5307	114.39	112.80	104.33	6.339	6.373	6.423	6.507
28	112.0000	96.9949	118.39	116.80	108.32	6.339	6.373	6.424	6.508
29	116.0000	100.4590	122.39	120.80	112.31	6.340	6.374	6.425	6.509
30	120.0000	103.9231	126.39	124.80	116.30	6.340	6.374	6.425	6.511
31	124.0000	107.3872	130.40	128.80	120.29	6.340	6.375	6.426	6.512
32	128.0000	110.8513	134.40	132.80	124.28	6.341	6.375	6.427	6.513
33	132.0000	114.3154	138.40	136.80	128.27	6.341	6.376	6.427	6.514
34	136.0000	117.7795	142.40	140.80	132.26	6.341	6.376	6.428	6.515
35	140.0000	121.2436	146.40	144.80	136.26	6.341	6.376	6.429	6.516
36	144.0000	124.7077	150.41	148.80	140.25	6.342	6.377	6.429	6.517
37	148.0000	128.1718	154.41	152.80	144.24	6.342	6.377	6.430	6.518
38	152.0000	131.6359	158.41	156.80	148.23	6.342	6.378	6.431	6.519
39	156.0000	135.1000	162.41	160.80	152.23	6.342	6.378	6.431	6.520
40	160.0000	138.5641	166.41	164.80	156.22	6.343	6.378	6.432	6.521
41	164.0000	142.0282	170.41	168.80	160.22	6.343	6.379	6.433	6.522
42	168.0000	145.4923	174.42	172.80	164.21	6.343	6.379	6.433	6.523
43	172.0000	148.9564	178.42	176.80	168.21	6.343	6.380	6.434	6.524
44	176.0000	152.4205	182.42	180.80	172.20	6.344	6.380	6.434	6.525
45	180.0000	155.8846	186.42	184.80	176.20	6.344	6.380	6.435	6.526
46	184.0000	159.3487	190.42	188.80	180.19	6.344	6.381	6.435	6.527
47	188.0000	162.8128	194.42	192.80	184.19	6.344	6.381	6.436	6.528
48	192.0000	166.2769	198.43	196.80	188.18	6.345	6.381	6.437	6.529
49	196.0000	169.7410	202.43	200.80	192.18	6.345	6.382	6.437	6.529
50	200.0000	173.2051	206.43	204.80	196.18	6.345	6.382	6.438	6.530
51	204.0000	176.6692	210.43	208.80	200.17	6.345	6.382	6.438	6.531
52	208.0000	180.1333	214.43	212.80	204.17	6.345	6.383	6.439	6.532
53	212.0000	183.5974	218.43	216.80	208.17	6.346	6.383	6.439	6.533
54	216.0000	187.0615	222.43	220.80	212.16	6.346	6.383	6.440	6.534
55	220.0000	190.5256	226.44	224.80	216.16	6.346	6.384	6.440	6.535
56	224.0000	193.9897	230.44	228.80	220.16	6.346	6.384	6.441	6.535
57	228.0000	197.4538	234.44	232.80	224.15	6.346	6.384	6.441	6.536
58	232.0000	200.9179	238.44	236.80	228.15	6.347	6.385	6.442	6.537
59	236.0000	204.3820	242.44	240.80	232.15	6.347	6.385	6.442	6.538
60	240.0000	207.8461	246.44	244.80	236.15	6.347	6.385	6.443	6.539
61	244.0000	211.3102	250.44	248.80	240.14	6.347	6.386	6.443	6.539
62	248.0000	214.7743	254.44	252.80	244.14	6.347	6.386	6.444	6.540
63	252.0000	218.2384	258.45	256.80	248.14	6.348	6.386	6.444	6.541
64	256.0000	221.7025	262.45	260.80	252.14	6.348	6.387	6.445	6.542
65	260.0000	225.1666	266.45	264.80	256.14	6.348	6.387	6.445	6.542
66	264.0000	228.6307	270.45	268.80	260.13	6.348	6.387	6.446	6.543
67	268.0000	232.0948	274.45	272.80	264.13	6.348	6.387	6.446	6.544
68	272.0000	235.5589	278.45	276.80	268.13	6.349	6.388	6.447	6.545
69	276.0000	239.0230	282.45	280.80	272.13	6.349	6.388	6.447	6.545
70	280.0000	242.4871	286.46	284.80	276.13	6.349	6.388	6.447	6.546
71	284.0000	245.9512	290.46	288.80	280.12	6.349	6.389	6.448	6.547
72	288.0000	249.4153	294.46	292.80	284.12	6.349	6.389	6.448	6.547
73	292.0000	252.8794	298.46	296.80	288.12	6.349	6.389	6.449	6.548
74	296.0000	256.3435	302.46	300.80	292.12	6.350	6.389	6.449	6.549
75	300.0000	259.8076	306.46	304.80	296.12	6.350	6.390	6.450	6.550
76	304.0000	263.2717	310.46	308.80	300.12	6.350	6.390	6.450	6.550
77	308.0000	266.7358	314.46	312.80	304.11	6.350	6.390	6.451	6.551
78	312.0000	270.1999	318.46	316.80	308.11	6.350	6.391	6.451	6.552
79	316.0000	273.6640	322.47	320.80	312.11	6.350	6.391	6.451	6.552
80	320.0000	277.1281	326.47	324.80	316.11	6.351	6.391	6.452	6.553
81	324.0000	280.5922	330.47	328.80	320.11	6.351	6.391	6.452	6.554
82	328.0000	284.0563	334.47	332.80	324.11	6.351	6.392	6.453	6.554
83	332.0000	287.5205	338.47	336.80	328.11	6.351	6.392	6.453	6.555
84	336.0000	290.9846	342.47	340.80	332.10	6.351	6.392	6.453	6.556
85	340.0000	294.4487	346.47	344.80	336.10	6.351	6.392	6.454	6.556
86	344.0000	297.9128	350.47	348.80	340.10	6.352	6.393	6.454	6.557
87	348.0000	301.3769	354.48	352.80	344.10	6.352	6.393	6.455	6.558
88	352.0000	304.8410	358.48	356.80	348.10	6.352	6.393	6.455	6.558
89	356.0000	308.3051	362.48	360.80	352.10	6.352	6.393	6.455	6.559
90	360.0000	311.7692	366.48	364.80	356.10	6.352	6.394	6.456	6.559
91	364.0000	315.2333	370.48	368.80	360.10	6.352	6.394	6.456	6.560
92	368.0000	318.6974	374.48	372.80	364.10	6.353	6.394	6.457	6.561
93	372.0000	322.1615	378.48	376.80	368.09	6.353	6.394	6.457	6.561
94	376.0000	325.6256	382.48	380.80	372.09	6.353	6.395	6.457	6.562
95	380.0000	329.0897	386.48	384.80	376.09	6.353	6.395	6.458	6.563
96	384.0000	332.5538	390.49	388.80	380.09	6.353	6.395	6.458	6.563
97	388.0000	336.0179	394.49	392.80	384.09	6.353	6.395	6.459	6.564
98	392.0000	339.4820	398.49	396.80	388.09	6.354	6.396	6.459	6.564
99	396.0000	342.9461	402.49	400.80	392.09	6.354	6.396	6.459	6.565
100	400.0000	346.4102	406.49	404.80	396.09	6.354	6.396	6.460	6.566

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Table 24 — External spline

30 degree pressure angle — Side fit — Flat root — Module = 4.00

S_{vmax} = maximum effective tooth thickness, circular = 6.283

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	24.0000	20.7846	28.00	20.92	17.68	6.236	6.208	6.166	6.056
7	28.0000	24.2487	32.00	24.64	21.67	6.236	6.207	6.165	6.094
8	32.0000	27.7128	36.00	28.44	25.67	6.235	6.206	6.163	6.091
9	36.0000	31.1769	40.00	32.29	29.66	6.234	6.205	6.161	6.088
10	40.0000	34.6410	44.00	36.17	33.66	6.234	6.204	6.160	6.086
11	44.0000	38.1051	48.00	40.07	37.66	6.233	6.204	6.159	6.084
12	48.0000	41.5692	52.00	43.99	41.65	6.233	6.203	6.157	6.082
13	52.0000	45.0333	56.00	47.93	45.65	6.232	6.202	6.156	6.080
14	56.0000	48.4974	60.00	51.87	49.64	6.232	6.201	6.155	6.078
15	60.0000	51.9615	64.00	55.82	53.64	6.232	6.200	6.154	6.076
16	64.0000	55.4256	68.00	59.78	57.64	6.231	6.200	6.153	6.075
17	68.0000	58.8897	72.00	63.74	61.64	6.231	6.199	6.152	6.073
18	72.0000	62.3538	76.00	67.71	65.63	6.230	6.199	6.151	6.072
19	76.0000	65.8179	80.00	71.68	69.63	6.230	6.198	6.150	6.070
20	80.0000	69.2820	84.00	75.66	73.63	6.230	6.197	6.149	6.069
21	84.0000	72.7461	88.00	79.64	77.63	6.229	6.197	6.148	6.067
22	88.0000	76.2102	92.00	83.61	81.62	6.229	6.196	6.147	6.066
23	92.0000	79.6743	96.00	87.60	85.62	6.228	6.196	6.146	6.064
24	96.0000	83.1384	100.00	91.58	89.62	6.228	6.195	6.146	6.063
25	100.0000	86.6025	104.00	95.56	93.62	6.228	6.195	6.145	6.062
26	104.0000	90.0666	108.00	99.55	97.61	6.228	6.194	6.144	6.061
27	108.0000	93.5307	112.00	103.53	101.61	6.227	6.194	6.143	6.059
28	112.0000	96.9949	116.00	107.52	105.61	6.227	6.193	6.142	6.058
29	116.0000	100.4590	120.00	111.51	109.61	6.227	6.193	6.142	6.057
30	120.0000	103.9231	124.00	115.50	113.61	6.226	6.192	6.141	6.056
31	124.0000	107.3872	128.00	119.49	117.60	6.226	6.192	6.140	6.055
32	128.0000	110.8513	132.00	123.48	121.60	6.226	6.191	6.140	6.053
33	132.0000	114.3154	136.00	127.47	125.60	6.225	6.191	6.139	6.052
34	136.0000	117.7795	140.00	131.46	129.60	6.225	6.190	6.138	6.051
35	140.0000	121.2436	144.00	135.46	133.60	6.225	6.190	6.138	6.050
36	144.0000	124.7077	148.00	139.45	137.59	6.225	6.190	6.137	6.049
37	148.0000	128.1718	152.00	143.44	141.59	6.224	6.189	6.136	6.048
38	152.0000	131.6359	156.00	147.43	145.59	6.224	6.189	6.136	6.047
39	156.0000	135.1000	160.00	151.43	149.59	6.224	6.188	6.135	6.046
40	160.0000	138.5641	164.00	155.42	153.59	6.224	6.188	6.134	6.045
41	164.0000	142.0282	168.00	159.42	157.59	6.223	6.188	6.134	6.044
42	168.0000	145.4923	172.00	163.41	161.58	6.223	6.187	6.133	6.043
43	172.0000	148.9564	176.00	167.41	165.58	6.223	6.187	6.133	6.042
44	176.0000	152.4205	180.00	171.40	169.58	6.223	6.186	6.132	6.041
45	180.0000	155.8846	184.00	175.40	173.58	6.223	6.186	6.131	6.040
46	184.0000	159.3487	188.00	179.39	177.58	6.222	6.186	6.131	6.040
47	188.0000	162.8128	192.00	183.39	181.58	6.222	6.185	6.130	6.039
48	192.0000	166.2769	196.00	187.38	185.57	6.222	6.185	6.130	6.038
49	196.0000	169.7410	200.00	191.38	189.57	6.222	6.185	6.129	6.037
50	200.0000	173.2051	204.00	195.38	193.57	6.221	6.184	6.129	6.036
51	204.0000	176.6692	208.00	199.37	197.57	6.221	6.184	6.128	6.035
52	208.0000	180.1333	212.00	203.37	201.57	6.221	6.184	6.128	6.034
53	212.0000	183.5974	216.00	207.37	205.57	6.221	6.183	6.127	6.034
54	216.0000	187.0615	220.00	211.36	209.57	6.221	6.183	6.127	6.033
55	220.0000	190.5256	224.00	215.36	213.56	6.220	6.183	6.126	6.032
56	224.0000	193.9897	228.00	219.36	217.56	6.220	6.182	6.126	6.031
57	228.0000	197.4538	232.00	223.35	221.56	6.220	6.182	6.125	6.030
58	232.0000	200.9179	236.00	227.35	225.56	6.220	6.182	6.125	6.029
59	236.0000	204.3820	240.00	231.35	229.56	6.220	6.181	6.124	6.029
60	240.0000	207.8461	244.00	235.35	233.56	6.219	6.181	6.124	6.028
61	244.0000	211.3102	248.00	239.34	237.56	6.219	6.181	6.123	6.027
62	248.0000	214.7743	252.00	243.34	241.56	6.219	6.180	6.123	6.026
63	252.0000	218.2384	256.00	247.34	245.55	6.219	6.180	6.122	6.026
64	256.0000	221.7025	260.00	251.34	249.55	6.219	6.180	6.122	6.025
65	260.0000	225.1666	264.00	255.34	253.55	6.218	6.180	6.121	6.024
66	264.0000	228.6307	268.00	259.33	257.55	6.218	6.179	6.121	6.023
67	268.0000	232.0948	272.00	263.33	261.55	6.218	6.179	6.120	6.023
68	272.0000	235.5589	276.00	267.33	265.55	6.218	6.179	6.120	6.022
69	276.0000	239.0230	280.00	271.33	269.55	6.218	6.178	6.119	6.021
70	280.0000	242.4871	284.00	275.33	273.54	6.217	6.178	6.119	6.020
71	284.0000	245.9512	288.00	279.32	277.54	6.217	6.178	6.118	6.020
72	288.0000	249.4153	292.00	283.32	281.54	6.217	6.177	6.118	6.019
73	292.0000	252.8794	296.00	287.32	285.54	6.217	6.177	6.118	6.018
74	296.0000	256.3435	300.00	291.32	289.54	6.217	6.177	6.117	6.018
75	300.0000	259.8076	304.00	295.32	293.54	6.217	6.177	6.117	6.017
76	304.0000	263.2717	308.00	299.32	297.54	6.216	6.176	6.116	6.016
77	308.0000	266.7358	312.00	303.31	301.54	6.216	6.176	6.116	6.015
78	312.0000	270.1999	316.00	307.31	305.54	6.216	6.176	6.115	6.015
79	316.0000	273.6640	320.00	311.31	309.53	6.216	6.176	6.115	6.014
80	320.0000	277.1281	324.00	315.31	313.53	6.216	6.175	6.115	6.013
81	324.0000	280.5922	328.00	319.31	317.53	6.216	6.175	6.114	6.013
82	328.0000	284.0563	332.00	323.31	321.53	6.215	6.175	6.114	6.012
83	332.0000	287.5205	336.00	327.31	325.53	6.215	6.174	6.113	6.011
84	336.0000	290.9846	340.00	331.30	329.53	6.215	6.174	6.113	6.011
85	340.0000	294.4487	344.00	335.30	333.53	6.215	6.174	6.112	6.010
86	344.0000	297.9128	348.00	339.30	337.53	6.215	6.174	6.112	6.009
87	348.0000	301.3769	352.00	343.30	341.52	6.215	6.173	6.112	6.009
88	352.0000	304.8410	356.00	347.30	345.52	6.214	6.173	6.111	6.008
89	356.0000	308.3051	360.00	351.30	349.52	6.214	6.173	6.111	6.008
90	360.0000	311.7692	364.00	355.30	353.52	6.214	6.173	6.110	6.007
91	364.0000	315.2333	368.00	359.30	357.52	6.214	6.172	6.110	6.006
92	368.0000	318.6974	372.00	363.30	361.52	6.214	6.172	6.110	6.006
93	372.0000	322.1615	376.00	367.29	365.52	6.214	6.172	6.109	6.005
94	376.0000	325.6256	380.00	371.29	369.52	6.213	6.172	6.109	6.004
95	380.0000	329.0897	384.00	375.29	373.52	6.213	6.171	6.109	6.004
96	384.0000	332.5538	388.00	379.29	377.51	6.213	6.171	6.108	6.003
97	388.0000	336.0179	392.00	383.29	381.51	6.213	6.171	6.108	6.003
98	392.0000	339.4820	396.00	387.29	385.51	6.213	6.171	6.107	6.002
99	396.0000	342.9461	400.00	391.29	389.51	6.213	6.170	6.107	6.001
100	400.0000	346.4102	404.00	395.29	393.51	6.213	6.170	6.107	6.001

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Table 25 — Internal spline

30 degree pressure angle — Side fit — Flat root — Module = 3.00

E_{vmin} = minimum effective space width, circular = 4.712

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	18.0000	15.5885	22.79	21.60	16.29	4.755	4.780	4.818	4.882
7	21.0000	18.1865	25.80	24.60	19.08	4.755	4.781	4.820	4.884
8	24.0000	20.7846	28.80	27.60	21.93	4.756	4.782	4.821	4.887
9	27.0000	23.3827	31.81	30.60	24.82	4.757	4.783	4.823	4.889
10	30.0000	25.9808	34.81	33.60	27.73	4.757	4.784	4.824	4.891
11	33.0000	28.5788	37.81	36.60	30.65	4.758	4.785	4.825	4.893
12	36.0000	31.1769	40.82	39.60	33.59	4.758	4.785	4.826	4.895
13	39.0000	33.7750	43.82	42.60	36.54	4.758	4.786	4.827	4.896
14	42.0000	36.3731	46.82	45.60	39.50	4.759	4.787	4.828	4.898
15	45.0000	38.9711	49.82	48.60	42.47	4.759	4.787	4.829	4.900
16	48.0000	41.5692	52.83	51.60	45.44	4.760	4.788	4.830	4.901
17	51.0000	44.1673	55.83	54.60	48.41	4.760	4.788	4.831	4.903
18	54.0000	46.7654	58.83	57.60	51.38	4.760	4.789	4.832	4.904
19	57.0000	49.3635	61.83	60.60	54.36	4.761	4.790	4.833	4.905
20	60.0000	51.9615	64.84	63.60	57.34	4.761	4.790	4.834	4.907
21	63.0000	54.5596	67.84	66.60	60.33	4.761	4.791	4.835	4.908
22	66.0000	57.1577	70.84	69.60	63.31	4.762	4.791	4.835	4.909
23	69.0000	59.7558	73.84	72.60	66.30	4.762	4.792	4.836	4.910
24	72.0000	62.3538	76.85	75.60	69.28	4.762	4.792	4.837	4.912
25	75.0000	64.9519	79.85	78.60	72.27	4.762	4.793	4.838	4.913
26	78.0000	67.5500	82.85	81.60	75.26	4.763	4.793	4.838	4.914
27	81.0000	70.1481	85.85	84.60	78.25	4.763	4.793	4.839	4.915
28	84.0000	72.7461	88.85	87.60	81.24	4.763	4.794	4.840	4.916
29	87.0000	75.3442	91.85	90.60	84.23	4.764	4.794	4.840	4.917
30	90.0000	77.9423	94.86	93.60	87.22	4.764	4.795	4.841	4.918
31	93.0000	80.5404	97.86	96.60	90.22	4.764	4.795	4.842	4.919
32	96.0000	83.1384	100.86	99.60	93.21	4.764	4.795	4.842	4.920
33	99.0000	85.7365	103.86	102.60	96.20	4.765	4.796	4.843	4.921
34	102.0000	88.3346	106.86	105.60	99.20	4.765	4.796	4.843	4.922
35	105.0000	90.9327	109.86	108.60	102.19	4.765	4.797	4.844	4.923
36	108.0000	93.5307	112.87	111.60	105.19	4.765	4.797	4.845	4.924
37	111.0000	96.1288	115.87	114.60	108.18	4.765	4.797	4.845	4.925
38	114.0000	98.7269	118.87	117.60	111.18	4.766	4.798	4.846	4.926
39	117.0000	101.3250	121.87	120.60	114.17	4.766	4.798	4.846	4.927
40	120.0000	103.9231	124.87	123.60	117.17	4.766	4.798	4.847	4.927
41	123.0000	106.5211	127.87	126.60	120.16	4.766	4.799	4.847	4.928
42	126.0000	109.1192	130.88	129.60	123.16	4.767	4.799	4.848	4.929
43	129.0000	111.7173	133.88	132.60	126.15	4.767	4.799	4.848	4.930
44	132.0000	114.3154	136.88	135.60	129.15	4.767	4.800	4.849	4.931
45	135.0000	116.9134	139.88	138.60	132.15	4.767	4.800	4.849	4.932
46	138.0000	119.5115	142.88	141.60	135.14	4.767	4.800	4.850	4.932
47	141.0000	122.1096	145.88	144.60	138.14	4.768	4.801	4.850	4.933
48	144.0000	124.7077	148.88	147.60	141.14	4.768	4.801	4.851	4.934
49	147.0000	127.3057	151.89	150.60	144.14	4.768	4.801	4.851	4.935
50	150.0000	129.9038	154.89	153.60	147.13	4.768	4.802	4.852	4.935
51	153.0000	132.5019	157.89	156.60	150.13	4.768	4.802	4.852	4.936
52	156.0000	135.1000	160.89	159.60	153.13	4.769	4.802	4.853	4.937
53	159.0000	137.6980	163.89	162.60	156.13	4.769	4.803	4.853	4.938
54	162.0000	140.2961	166.89	165.60	159.12	4.769	4.803	4.854	4.938
55	165.0000	142.8942	169.89	168.60	162.12	4.769	4.803	4.854	4.939
56	168.0000	145.4923	172.89	171.60	165.12	4.769	4.803	4.855	4.940
57	171.0000	148.0904	175.90	174.60	168.12	4.769	4.804	4.855	4.941
58	174.0000	150.6884	178.90	177.60	171.11	4.770	4.804	4.855	4.941
59	177.0000	153.2865	181.90	180.60	174.11	4.770	4.804	4.856	4.942
60	180.0000	155.8846	184.90	183.60	177.11	4.770	4.805	4.856	4.943
61	183.0000	158.4827	187.90	186.60	180.11	4.770	4.805	4.857	4.943
62	186.0000	161.0807	190.90	189.60	183.11	4.770	4.805	4.857	4.944
63	189.0000	163.6788	193.90	192.60	186.10	4.770	4.805	4.858	4.945
64	192.0000	166.2769	196.90	195.60	189.10	4.771	4.806	4.858	4.945
65	195.0000	168.8750	199.90	198.60	192.10	4.771	4.806	4.858	4.946
66	198.0000	171.4730	202.91	201.60	195.10	4.771	4.806	4.859	4.947
67	201.0000	174.0711	205.91	204.60	198.10	4.771	4.806	4.859	4.947
68	204.0000	176.6692	208.91	207.60	201.10	4.771	4.807	4.860	4.948
69	207.0000	179.2673	211.91	210.60	204.10	4.771	4.807	4.860	4.949
70	210.0000	181.8653	214.91	213.60	207.09	4.772	4.807	4.860	4.949
71	213.0000	184.4634	217.91	216.60	210.09	4.772	4.807	4.861	4.950
72	216.0000	187.0615	220.91	219.60	213.09	4.772	4.808	4.861	4.950
73	219.0000	189.6596	223.91	222.60	216.09	4.772	4.808	4.862	4.951
74	222.0000	192.2577	226.91	225.60	219.09	4.772	4.808	4.862	4.952
75	225.0000	194.8557	229.92	228.60	222.09	4.772	4.808	4.862	4.952
76	228.0000	197.4538	232.92	231.60	225.09	4.773	4.809	4.863	4.953
77	231.0000	200.0519	235.92	234.60	228.09	4.773	4.809	4.863	4.954
78	234.0000	202.6500	238.92	237.60	231.08	4.773	4.809	4.863	4.954
79	237.0000	205.2480	241.92	240.60	234.08	4.773	4.809	4.864	4.955
80	240.0000	207.8461	244.92	243.60	237.08	4.773	4.810	4.864	4.955
81	243.0000	210.4442	247.92	246.60	240.08	4.773	4.810	4.865	4.956
82	246.0000	213.0423	250.92	249.60	243.08	4.773	4.810	4.865	4.956
83	249.0000	215.6403	253.92	252.60	246.08	4.774	4.810	4.865	4.957
84	252.0000	218.2384	256.92	255.60	249.08	4.774	4.810	4.866	4.958
85	255.0000	220.8365	259.93	258.60	252.08	4.774	4.811	4.866	4.958
86	258.0000	223.4346	262.93	261.60	255.08	4.774	4.811	4.866	4.959
87	261.0000	226.0326	265.93	264.60	258.08	4.774	4.811	4.867	4.959
88	264.0000	228.6307	268.93	267.60	261.07	4.774	4.811	4.867	4.960
89	267.0000	231.2288	271.93	270.60	264.07	4.774	4.812	4.867	4.960
90	270.0000	233.8269	274.93	273.60	267.07	4.775	4.812	4.868	4.961
91	273.0000	236.4249	277.93	276.60	270.07	4.775	4.812	4.868	4.962
92	276.0000	239.0230	280.93	279.60	273.07	4.775	4.812	4.868	4.962
93	279.0000	241.6211	283.93	282.60	276.07	4.775	4.812	4.869	4.963
94	282.0000	244.2192	286.93	285.60	279.07	4.775	4.813	4.869	4.963
95	285.0000	246.8173	289.94	288.60	282.07	4.775	4.813	4.869	4.964
96	288.0000	249.4153	292.94	291.60	285.07	4.775	4.813	4.870	4.964
97	291.0000	252.0134	295.94	294.60	288.07	4.775	4.813	4.870	4.965
98	294.0000	254.6115	298.94	297.60	291.07	4.776	4.814	4.870	4.965
99	297.0000	257.2096	301.94	300.60	294.07	4.776	4.814	4.871	4.966
100	300.0000	259.8076	304.94	303.60	297.07	4.776	4.814	4.871	4.966

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Table 26 — External spline

30 degree pressure angle — Side fit — Flat root — Module = 3.00

S_{vmax} = maximum effective tooth thickness, circular = 4.712

$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	4 H	5 H	6 H	7 H
6	18.0000	15.5885	21.00	15.69	13.21	4.670	4.645	4.607	4.543
7	21.0000	18.1865	24.00	18.48	16.20	4.669	4.644	4.605	4.540
8	24.0000	20.7846	27.00	21.33	19.20	4.669	4.643	4.603	4.538
9	27.0000	23.3827	30.00	24.22	22.19	4.668	4.642	4.602	4.536
10	30.0000	25.9808	33.00	27.13	25.19	4.668	4.641	4.601	4.534
11	33.0000	28.5788	36.00	30.05	28.19	4.667	4.640	4.600	4.532
12	36.0000	31.1769	39.00	32.99	31.18	4.667	4.639	4.598	4.530
13	39.0000	33.7750	42.00	35.94	34.18	4.666	4.639	4.597	4.528
14	42.0000	36.3731	45.00	38.90	37.18	4.666	4.638	4.596	4.527
15	45.0000	38.9711	48.00	41.87	40.18	4.666	4.637	4.595	4.525
16	48.0000	41.5692	51.00	44.84	43.17	4.665	4.637	4.594	4.524
17	51.0000	44.1673	54.00	47.81	46.17	4.665	4.636	4.593	4.522
18	54.0000	46.7654	57.00	50.78	49.17	4.664	4.636	4.593	4.521
19	57.0000	49.3635	60.00	53.76	52.17	4.664	4.635	4.592	4.519
20	60.0000	51.9615	63.00	56.74	55.16	4.664	4.635	4.591	4.518
21	63.0000	54.5596	66.00	59.73	58.16	4.663	4.634	4.590	4.517
22	66.0000	57.1577	69.00	62.71	61.16	4.663	4.634	4.589	4.516
23	69.0000	59.7558	72.00	65.70	64.16	4.663	4.633	4.589	4.514
24	72.0000	62.3538	75.00	68.68	67.15	4.663	4.633	4.588	4.513
25	75.0000	64.9519	78.00	71.67	70.15	4.662	4.632	4.587	4.512
26	78.0000	67.5500	81.00	74.66	73.15	4.662	4.632	4.586	4.511
27	81.0000	70.1481	84.00	77.65	76.15	4.662	4.631	4.586	4.510
28	84.0000	72.7461	87.00	80.64	79.15	4.661	4.631	4.585	4.509
29	87.0000	75.3442	90.00	83.63	82.15	4.661	4.630	4.584	4.508
30	90.0000	77.9423	93.00	86.62	85.14	4.661	4.630	4.584	4.507
31	93.0000	80.5404	96.00	89.62	88.14	4.661	4.630	4.583	4.506
32	96.0000	83.1384	99.00	92.61	91.14	4.660	4.629	4.583	4.505
33	99.0000	85.7365	102.00	95.60	94.14	4.660	4.629	4.582	4.504
34	102.0000	88.3346	105.00	98.60	97.14	4.660	4.629	4.581	4.503
35	105.0000	90.9327	108.00	101.59	100.14	4.660	4.628	4.581	4.502
36	108.0000	93.5307	111.00	104.59	103.13	4.660	4.628	4.580	4.501
37	111.0000	96.1288	114.00	107.58	106.13	4.659	4.627	4.580	4.500
38	114.0000	98.7269	117.00	110.58	109.13	4.659	4.627	4.579	4.499
39	117.0000	101.3250	120.00	113.57	112.13	4.659	4.627	4.579	4.498
40	120.0000	103.9231	123.00	116.57	115.13	4.659	4.626	4.578	4.497
41	123.0000	106.5211	126.00	119.56	118.13	4.658	4.626	4.577	4.496
42	126.0000	109.1192	129.00	122.56	121.12	4.658	4.626	4.577	4.496
43	129.0000	111.7173	132.00	125.55	124.12	4.658	4.625	4.576	4.495
44	132.0000	114.3154	135.00	128.55	127.12	4.658	4.625	4.576	4.494
45	135.0000	116.9134	138.00	131.55	130.12	4.658	4.625	4.575	4.493
46	138.0000	119.5115	141.00	134.54	133.12	4.657	4.624	4.575	4.492
47	141.0000	122.1096	144.00	137.54	136.12	4.657	4.624	4.574	4.492
48	144.0000	124.7077	147.00	140.54	139.12	4.657	4.624	4.574	4.491
49	147.0000	127.3057	150.00	143.54	142.11	4.657	4.623	4.573	4.490
50	150.0000	129.9038	153.00	146.53	145.11	4.657	4.623	4.573	4.489
51	153.0000	132.5019	156.00	149.53	148.11	4.656	4.623	4.572	4.489
52	156.0000	135.1000	159.00	152.53	151.11	4.656	4.623	4.572	4.488
53	159.0000	137.6980	162.00	155.53	154.11	4.656	4.622	4.572	4.487
54	162.0000	140.2961	165.00	158.52	157.11	4.656	4.622	4.571	4.486
55	165.0000	142.8942	168.00	161.52	160.11	4.656	4.622	4.571	4.486
56	168.0000	145.4923	171.00	164.52	163.11	4.656	4.621	4.570	4.485
57	171.0000	148.0904	174.00	167.52	166.10	4.655	4.621	4.570	4.484
58	174.0000	150.6884	177.00	170.51	169.10	4.655	4.621	4.569	4.483
59	177.0000	153.2865	180.00	173.51	172.10	4.655	4.621	4.569	4.483
60	180.0000	155.8846	183.00	176.51	175.10	4.655	4.620	4.568	4.482
61	183.0000	158.4827	186.00	179.51	178.10	4.655	4.620	4.568	4.481
62	186.0000	161.0807	189.00	182.51	181.10	4.654	4.620	4.568	4.481
63	189.0000	163.6788	192.00	185.50	184.10	4.654	4.619	4.567	4.480
64	192.0000	166.2769	195.00	188.50	187.10	4.654	4.619	4.567	4.479
65	195.0000	168.8750	198.00	191.50	190.10	4.654	4.619	4.566	4.479
66	198.0000	171.4730	201.00	194.50	193.09	4.654	4.619	4.566	4.478
67	201.0000	174.0711	204.00	197.50	196.09	4.654	4.618	4.566	4.477
68	204.0000	176.6692	207.00	200.50	199.09	4.653	4.618	4.565	4.477
69	207.0000	179.2673	210.00	203.50	202.09	4.653	4.618	4.565	4.476
70	210.0000	181.8653	213.00	206.49	205.09	4.653	4.618	4.564	4.476
71	213.0000	184.4634	216.00	209.49	208.09	4.653	4.617	4.564	4.475
72	216.0000	187.0615	219.00	212.49	211.09	4.653	4.617	4.564	4.474
73	219.0000	189.6596	222.00	215.49	214.09	4.653	4.617	4.563	4.474
74	222.0000	192.2577	225.00	218.49	217.09	4.653	4.617	4.563	4.473
75	225.0000	194.8557	228.00	221.49	220.08	4.652	4.616	4.562	4.472
76	228.0000	197.4538	231.00	224.49	223.08	4.652	4.616	4.562	4.472
77	231.0000	200.0519	234.00	227.49	226.08	4.652	4.616	4.562	4.471
78	234.0000	202.6500	237.00	230.48	229.08	4.652	4.616	4.561	4.471
79	237.0000	205.2480	240.00	233.48	232.08	4.652	4.615	4.561	4.470
80	240.0000	207.8461	243.00	236.48	235.08	4.652	4.615	4.561	4.469
81	243.0000	210.4442	246.00	239.48	238.08	4.652	4.615	4.560	4.469
82	246.0000	213.0423	249.00	242.48	241.08	4.651	4.615	4.560	4.468
83	249.0000	215.6403	252.00	245.48	244.08	4.651	4.615	4.559	4.468
84	252.0000	218.2384	255.00	248.48	247.08	4.651	4.614	4.559	4.467
85	255.0000	220.8365	258.00	251.48	250.07	4.651	4.614	4.559	4.467
86	258.0000	223.4346	261.00	254.48	253.07	4.651	4.614	4.558	4.466
87	261.0000	226.0326	264.00	257.48	256.07	4.651	4.614	4.558	4.465
88	264.0000	228.6307	267.00	260.47	259.07	4.651	4.613	4.558	4.465
89	267.0000	231.2288	270.00	263.47	262.07	4.650	4.613	4.557	4.464
90	270.0000	233.8269	273.00	266.47	265.07	4.650	4.613	4.557	4.464
91	273.0000	236.4249	276.00	269.47	268.07	4.650	4.613	4.557	4.463
92	276.0000	239.0230	279.00	272.47	271.07	4.650	4.613	4.556	4.463
93	279.0000	241.6211	282.00	275.47	274.07	4.650	4.612	4.556	4.462
94	282.0000	244.2192	285.00	278.47	277.07	4.650	4.612	4.556	4.462
95	285.0000	246.8173	288.00	281.47	280.06	4.650	4.612	4.555	4.461
96	288.0000	249.4153	291.00	284.47	283.06	4.649	4.612	4.555	4.461
97	291.0000	252.0134	294.00	287.47	286.06	4.649	4.611	4.555	4.460
98	294.0000	254.6115	297.00	290.47	289.06	4.649	4.611	4.554	4.459
99	297.0000	257.2096	300.00	293.47	292.06	4.649	4.611	4.554	4.459
100	300.0000	259.8076	303.00	296.47	295.06	4.649	4.611	4.554	4.458

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Table 27 — Internal spline

30 degree pressure angle — Side fit — Flat root — Module = 2.50

E_{vmin} = minimum effective space width, circular = 3.927

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular 4 H	5 H	6 H	7 H
6	15.0000	12.9904	19.03	18.00	13.58	3.967	3.991	4.026	4.086
7	17.5000	15.1554	21.53	20.50	15.90	3.967	3.992	4.028	4.089
8	20.0000	17.3205	24.03	23.00	18.28	3.968	3.993	4.029	4.091
9	22.5000	19.4856	26.54	25.50	20.68	3.968	3.993	4.031	4.093
10	25.0000	21.6506	29.04	28.00	23.11	3.969	3.994	4.032	4.095
11	27.5000	23.8157	31.54	30.50	25.54	3.969	3.995	4.033	4.097
12	30.0000	25.9808	34.05	33.00	28.00	3.970	3.996	4.034	4.098
13	32.5000	28.1458	36.55	35.50	30.45	3.970	3.996	4.035	4.100
14	35.0000	30.3109	39.05	38.00	32.92	3.971	3.997	4.036	4.101
15	37.5000	32.4760	41.55	40.50	35.39	3.971	3.997	4.037	4.103
16	40.0000	34.6410	44.06	43.00	37.86	3.971	3.998	4.038	4.104
17	42.5000	36.8061	46.56	45.50	40.34	3.972	3.998	4.039	4.106
18	45.0000	38.9711	49.06	48.00	42.82	3.972	3.999	4.040	4.107
19	47.5000	41.1362	51.56	50.50	45.30	3.972	4.000	4.040	4.108
20	50.0000	43.3013	54.07	53.00	47.79	3.973	4.000	4.041	4.110
21	52.5000	45.4663	56.57	55.50	50.27	3.973	4.000	4.042	4.111
22	55.0000	47.6314	59.07	58.00	52.76	3.973	4.001	4.043	4.112
23	57.5000	49.7965	61.57	60.50	55.25	3.973	4.001	4.043	4.113
24	60.0000	51.9615	64.07	63.00	57.74	3.974	4.002	4.044	4.114
25	62.5000	54.1266	66.58	65.50	60.23	3.974	4.002	4.045	4.115
26	65.0000	56.2917	69.08	68.00	62.72	3.974	4.003	4.045	4.116
27	67.5000	58.4567	71.58	70.50	65.21	3.975	4.003	4.046	4.117
28	70.0000	60.6218	74.08	73.00	67.70	3.975	4.003	4.046	4.118
29	72.5000	62.7868	76.58	75.50	70.19	3.975	4.004	4.047	4.119
30	75.0000	64.9519	79.08	78.00	72.69	3.975	4.004	4.048	4.120
31	77.5000	67.1170	81.59	80.50	75.18	3.976	4.005	4.048	4.121
32	80.0000	69.2820	84.09	83.00	77.68	3.976	4.005	4.049	4.122
33	82.5000	71.4471	86.59	85.50	80.17	3.976	4.005	4.049	4.123
34	85.0000	73.6122	89.09	88.00	82.66	3.976	4.006	4.050	4.124
35	87.5000	75.7772	91.59	90.50	85.16	3.976	4.006	4.051	4.125
36	90.0000	77.9423	94.09	93.00	87.66	3.977	4.006	4.051	4.125
37	92.5000	80.1074	96.60	95.50	90.15	3.977	4.007	4.052	4.126
38	95.0000	82.2724	99.10	98.00	92.65	3.977	4.007	4.052	4.127
39	97.5000	84.4375	101.60	100.50	95.14	3.977	4.007	4.053	4.128
40	100.0000	86.6025	104.10	103.00	97.64	3.977	4.008	4.053	4.129
41	102.5000	88.7676	106.60	105.50	100.14	3.978	4.008	4.054	4.130
42	105.0000	90.9327	109.10	108.00	102.63	3.978	4.008	4.054	4.130
43	107.5000	93.0977	111.60	110.50	105.13	3.978	4.009	4.055	4.131
44	110.0000	95.2628	114.10	113.00	107.63	3.978	4.009	4.055	4.132
45	112.5000	97.4279	116.61	115.50	110.12	3.978	4.009	4.055	4.133
46	115.0000	99.5929	119.11	118.00	112.62	3.979	4.010	4.056	4.133
47	117.5000	101.7580	121.61	120.50	115.12	3.979	4.010	4.056	4.134
48	120.0000	103.9231	124.11	123.00	117.62	3.979	4.010	4.057	4.135
49	122.5000	106.0881	126.61	125.50	120.11	3.979	4.010	4.057	4.136
50	125.0000	108.2532	129.11	128.00	122.61	3.979	4.011	4.058	4.136
51	127.5000	110.4182	131.61	130.50	125.11	3.979	4.011	4.058	4.137
52	130.0000	112.5833	134.11	133.00	127.61	3.980	4.011	4.059	4.138
53	132.5000	114.7484	136.62	135.50	130.10	3.980	4.012	4.059	4.138
54	135.0000	116.9134	139.12	138.00	132.60	3.980	4.012	4.059	4.139
55	137.5000	119.0785	141.62	140.50	135.10	3.980	4.012	4.060	4.140
56	140.0000	121.2436	144.12	143.00	137.60	3.980	4.012	4.060	4.140
57	142.5000	123.4086	146.62	145.50	140.10	3.980	4.013	4.061	4.141
58	145.0000	125.5737	149.12	148.00	142.60	3.981	4.013	4.061	4.142
59	147.5000	127.7388	151.62	150.50	145.09	3.981	4.013	4.062	4.142
60	150.0000	129.9038	154.12	153.00	147.59	3.981	4.013	4.062	4.143
61	152.5000	132.0689	156.62	155.50	150.09	3.981	4.014	4.062	4.143
62	155.0000	134.2339	159.13	158.00	152.59	3.981	4.014	4.063	4.144
63	157.5000	136.3990	161.63	160.50	155.09	3.981	4.014	4.063	4.145
64	160.0000	138.5641	164.13	163.00	157.59	3.982	4.014	4.063	4.145
65	162.5000	140.7291	166.63	165.50	160.08	3.982	4.015	4.064	4.146
66	165.0000	142.8942	169.13	168.00	162.58	3.982	4.015	4.064	4.147
67	167.5000	145.0593	171.63	170.50	165.08	3.982	4.015	4.065	4.147
68	170.0000	147.2243	174.13	173.00	167.58	3.982	4.015	4.065	4.148
69	172.5000	149.3894	176.63	175.50	170.08	3.982	4.016	4.065	4.148
70	175.0000	151.5545	179.13	178.00	172.58	3.982	4.016	4.066	4.149
71	177.5000	153.7195	181.64	180.50	175.08	3.983	4.016	4.066	4.149
72	180.0000	155.8846	184.14	183.00	177.58	3.983	4.016	4.066	4.150
73	182.5000	158.0496	186.64	185.50	180.08	3.983	4.016	4.067	4.151
74	185.0000	160.2147	189.14	188.00	182.57	3.983	4.017	4.067	4.151
75	187.5000	162.3798	191.64	190.50	185.07	3.983	4.017	4.067	4.152
76	190.0000	164.5448	194.14	193.00	187.57	3.983	4.017	4.068	4.152
77	192.5000	166.7099	196.64	195.50	190.07	3.983	4.017	4.068	4.153
78	195.0000	168.8750	199.14	198.00	192.57	3.984	4.018	4.068	4.153
79	197.5000	171.0400	201.64	200.50	195.07	3.984	4.018	4.069	4.154
80	200.0000	173.2051	204.14	203.00	197.57	3.984	4.018	4.069	4.154
81	202.5000	175.3702	206.64	205.50	200.07	3.984	4.018	4.070	4.155
82	205.0000	177.5352	209.15	208.00	202.57	3.984	4.018	4.070	4.156
83	207.5000	179.7003	211.65	210.50	205.07	3.984	4.019	4.070	4.156
84	210.0000	181.8653	214.15	213.00	207.57	3.984	4.019	4.070	4.157
85	212.5000	184.0304	216.65	215.50	210.06	3.985	4.019	4.071	4.157
86	215.0000	186.1955	219.15	218.00	212.56	3.985	4.019	4.071	4.158
87	217.5000	188.3605	221.65	220.50	215.06	3.985	4.019	4.071	4.158
88	220.0000	190.5256	224.15	223.00	217.56	3.985	4.020	4.072	4.159
89	222.5000	192.6907	226.65	225.50	220.06	3.985	4.020	4.072	4.159
90	225.0000	194.8557	229.15	228.00	222.56	3.985	4.020	4.072	4.160
91	227.5000	197.0208	231.65	230.50	225.06	3.985	4.020	4.073	4.160
92	230.0000	199.1859	234.15	233.00	227.56	3.985	4.020	4.073	4.161
93	232.5000	201.3509	236.66	235.50	230.06	3.986	4.021	4.073	4.161
94	235.0000	203.5160	239.16	238.00	232.56	3.986	4.021	4.074	4.162
95	237.5000	205.6810	241.66	240.50	235.06	3.986	4.021	4.074	4.162
96	240.0000	207.8461	244.16	243.00	237.56	3.986	4.021	4.074	4.163
97	242.5000	210.0112	246.66	245.50	240.06	3.986	4.021	4.075	4.163
98	245.0000	212.1762	249.16	248.00	242.56	3.986	4.022	4.075	4.164
99	247.5000	214.3413	251.66	250.50	245.06	3.986	4.022	4.075	4.164
100	250.0000	216.5064	254.16	253.00	247.55	3.986	4.022	4.075	4.165

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Table 28 — External spline

30 degree pressure angle — Side fit — Flat root — Module = 2.50

S_{vmax} = maximum effective tooth thickness, circular = 3.927

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	12.0000	10.3923	15.26	14.40	10.86	3.179	3.201	3.234	3.289
7	14.0000	12.1244	17.26	16.40	12.72	3.179	3.202	3.235	3.291
8	16.0000	13.8564	19.26	18.40	14.62	3.180	3.202	3.237	3.294
9	18.0000	15.5885	21.27	20.40	16.54	3.180	3.203	3.238	3.295
10	20.0000	17.3205	23.27	22.40	18.48	3.180	3.204	3.239	3.297
11	22.0000	19.0526	25.27	24.40	20.44	3.181	3.205	3.240	3.299
12	24.0000	20.7846	27.28	26.40	22.40	3.181	3.205	3.241	3.300
13	26.0000	22.5167	29.28	28.40	24.36	3.182	3.206	3.242	3.302
14	28.0000	24.2487	31.28	30.40	26.34	3.182	3.206	3.243	3.303
15	30.0000	25.9808	33.28	32.40	28.31	3.182	3.207	3.244	3.305
16	32.0000	27.7128	35.28	34.40	30.29	3.183	3.207	3.244	3.306
17	34.0000	29.4449	37.29	36.40	32.27	3.183	3.208	3.245	3.307
18	36.0000	31.1769	39.29	38.40	34.26	3.183	3.208	3.246	3.308
19	38.0000	32.9090	41.29	40.40	36.24	3.184	3.209	3.247	3.310
20	40.0000	34.6410	43.29	42.40	38.23	3.184	3.209	3.247	3.311
21	42.0000	36.3731	45.29	44.40	40.22	3.184	3.210	3.248	3.312
22	44.0000	38.1051	47.30	46.40	42.21	3.184	3.210	3.249	3.313
23	46.0000	39.8372	49.30	48.40	44.20	3.185	3.211	3.249	3.314
24	48.0000	41.5692	51.30	50.40	46.19	3.185	3.211	3.250	3.315
25	50.0000	43.3013	53.30	52.40	48.18	3.185	3.211	3.251	3.316
26	52.0000	45.0333	55.30	54.40	50.17	3.185	3.212	3.251	3.317
27	54.0000	46.7654	57.31	56.40	52.17	3.186	3.212	3.252	3.318
28	56.0000	48.4974	59.31	58.40	54.16	3.186	3.212	3.252	3.319
29	58.0000	50.2295	61.31	60.40	56.16	3.186	3.213	3.253	3.320
30	60.0000	51.9615	63.31	62.40	58.15	3.186	3.213	3.253	3.320
31	62.0000	53.6936	65.31	64.40	60.14	3.187	3.213	3.254	3.321
32	64.0000	55.4256	67.31	66.40	62.14	3.187	3.214	3.254	3.322
33	66.0000	57.1577	69.31	68.40	64.14	3.187	3.214	3.255	3.323
34	68.0000	58.8897	71.32	70.40	66.13	3.187	3.214	3.255	3.324
35	70.0000	60.6218	73.32	72.40	68.13	3.187	3.215	3.256	3.325
36	72.0000	62.3538	75.32	74.40	70.12	3.188	3.215	3.256	3.325
37	74.0000	64.0859	77.32	76.40	72.12	3.188	3.215	3.257	3.326
38	76.0000	65.8179	79.32	78.40	74.12	3.188	3.216	3.257	3.327
39	78.0000	67.5500	81.32	80.40	76.11	3.188	3.216	3.258	3.328
40	80.0000	69.2820	83.32	82.40	78.11	3.188	3.216	3.258	3.328
41	82.0000	71.0141	85.32	84.40	80.11	3.188	3.217	3.259	3.329
42	84.0000	72.7461	87.33	86.40	82.11	3.189	3.217	3.259	3.330
43	86.0000	74.4782	89.33	88.40	84.10	3.189	3.217	3.260	3.330
44	88.0000	76.2102	91.33	90.40	86.10	3.189	3.217	3.260	3.331
45	90.0000	77.9423	93.33	92.40	88.10	3.189	3.218	3.260	3.332
46	92.0000	79.6743	95.33	94.40	90.10	3.189	3.218	3.261	3.332
47	94.0000	81.4064	97.33	96.40	92.09	3.189	3.218	3.261	3.333
48	96.0000	83.1384	99.33	98.40	94.09	3.190	3.218	3.262	3.334
49	98.0000	84.8705	101.33	100.40	96.09	3.190	3.219	3.262	3.334
50	100.0000	86.6025	103.34	102.40	98.09	3.190	3.219	3.263	3.335
51	102.0000	88.3346	105.34	104.40	100.09	3.190	3.219	3.263	3.336
52	104.0000	90.0666	107.34	106.40	102.09	3.190	3.219	3.263	3.336
53	106.0000	91.7987	109.34	108.40	104.08	3.190	3.220	3.264	3.337
54	108.0000	93.5307	111.34	110.40	106.08	3.191	3.220	3.264	3.338
55	110.0000	95.2628	113.34	112.40	108.08	3.191	3.220	3.264	3.338
56	112.0000	96.9949	115.34	114.40	110.08	3.191	3.220	3.265	3.339
57	114.0000	98.7269	117.34	116.40	112.08	3.191	3.221	3.265	3.339
58	116.0000	100.4590	119.34	118.40	114.08	3.191	3.221	3.266	3.340
59	118.0000	102.1910	121.34	120.40	116.07	3.191	3.221	3.266	3.341
60	120.0000	103.9231	123.35	122.40	118.07	3.191	3.221	3.266	3.341
61	122.0000	105.6551	125.35	124.40	120.07	3.192	3.222	3.267	3.342
62	124.0000	107.3872	127.35	126.40	122.07	3.192	3.222	3.267	3.342
63	126.0000	109.1192	129.35	128.40	124.07	3.192	3.222	3.267	3.343
64	128.0000	110.8513	131.35	130.40	126.07	3.192	3.222	3.268	3.343
65	130.0000	112.5833	133.35	132.40	128.07	3.192	3.223	3.268	3.344
66	132.0000	114.3154	135.35	134.40	130.07	3.192	3.223	3.268	3.344
67	134.0000	116.0474	137.35	136.40	132.07	3.192	3.223	3.269	3.345
68	136.0000	117.7795	139.35	138.40	134.06	3.193	3.223	3.269	3.346
69	138.0000	119.5115	141.35	140.40	136.06	3.193	3.223	3.269	3.346
70	140.0000	121.2436	143.36	142.40	138.06	3.193	3.224	3.270	3.347
71	142.0000	122.9756	145.36	144.40	140.06	3.193	3.224	3.270	3.347
72	144.0000	124.7077	147.36	146.40	142.06	3.193	3.224	3.270	3.348
73	146.0000	126.4397	149.36	148.40	144.06	3.193	3.224	3.271	3.348
74	148.0000	128.1718	151.36	150.40	146.06	3.193	3.224	3.271	3.349
75	150.0000	129.9038	153.36	152.40	148.06	3.193	3.225	3.271	3.349
76	152.0000	131.6359	155.36	154.40	150.06	3.194	3.225	3.272	3.350
77	154.0000	133.3679	157.36	156.40	152.06	3.194	3.225	3.272	3.350
78	156.0000	135.1000	159.36	158.40	154.06	3.194	3.225	3.272	3.351
79	158.0000	136.8320	161.36	160.40	156.06	3.194	3.225	3.273	3.351
80	160.0000	138.5641	163.36	162.40	158.05	3.194	3.226	3.273	3.352
81	162.0000	140.2961	165.36	164.40	160.05	3.194	3.226	3.273	3.352
82	164.0000	142.0282	167.37	166.40	162.05	3.194	3.226	3.273	3.353
83	166.0000	143.7602	169.37	168.40	164.05	3.194	3.226	3.274	3.353
84	168.0000	145.4923	171.37	170.40	166.05	3.195	3.226	3.274	3.354
85	170.0000	147.2243	173.37	172.40	168.05	3.195	3.227	3.274	3.354
86	172.0000	148.9564	175.37	174.40	170.05	3.195	3.227	3.275	3.355
87	174.0000	150.6884	177.37	176.40	172.05	3.195	3.227	3.275	3.355
88	176.0000	152.4205	179.37	178.40	174.05	3.195	3.227	3.275	3.355
89	178.0000	154.1525	181.37	180.40	176.05	3.195	3.227	3.276	3.356
90	180.0000	155.8846	183.37	182.40	178.05	3.195	3.228	3.276	3.356
91	182.0000	157.6166	185.37	184.40	180.05	3.195	3.228	3.276	3.357
92	184.0000	159.3487	187.37	186.40	182.05	3.196	3.228	3.276	3.357
93	186.0000	161.0807	189.37	188.40	184.05	3.196	3.228	3.277	3.358
94	188.0000	162.8128	191.38	190.40	186.05	3.196	3.228	3.277	3.358
95	190.0000	164.5448	193.38	192.40	188.05	3.196	3.228	3.277	3.359
96	192.0000	166.2769	195.38	194.40	190.05	3.196	3.229	3.278	3.359
97	194.0000	168.0089	197.38	196.40	192.05	3.196	3.229	3.278	3.360
98	196.0000	169.7410	199.38	198.40	194.04	3.196	3.229	3.278	3.360
99	198.0000	171.4730	201.38	200.40	196.04	3.196	3.229	3.278	3.360
100	200.0000	173.2051	203.38	202.40	198.04	3.196	3.229	3.279	3.361

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Table 29 — Internal spline

30 degree pressure angle — Side fit — Flat root — Module = 2.00

E_{vmin} = minimum effective space width, circular = 3.142

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular 4 H	5 H	6 H	7 H
6	15.0000	12.9904	17.50	13.08	10.97	3.887	3.863	3.827	3.768
7	17.5000	15.1554	20.00	15.40	13.47	3.887	3.862	3.826	3.765
8	20.0000	17.3205	22.50	17.78	15.97	3.886	3.861	3.825	3.763
9	22.5000	19.4856	25.00	20.18	18.46	3.886	3.861	3.823	3.761
10	25.0000	21.6506	27.50	22.61	20.96	3.885	3.860	3.822	3.759
11	27.5000	23.8157	30.00	25.04	23.46	3.885	3.859	3.821	3.757
12	30.0000	25.9808	32.50	27.50	25.95	3.884	3.858	3.820	3.756
13	32.5000	28.1458	35.00	29.95	28.45	3.884	3.858	3.819	3.754
14	35.0000	30.3109	37.50	32.42	30.95	3.883	3.857	3.818	3.752
15	37.5000	32.4760	40.00	34.89	33.45	3.883	3.857	3.817	3.751
16	40.0000	34.6410	42.50	37.36	35.94	3.883	3.856	3.816	3.750
17	42.5000	36.8061	45.00	39.84	38.44	3.882	3.855	3.815	3.748
18	45.0000	38.9711	47.50	42.32	40.94	3.882	3.855	3.814	3.747
19	47.5000	41.1362	50.00	44.80	43.44	3.882	3.854	3.814	3.746
20	50.0000	43.3013	52.50	47.29	45.93	3.881	3.854	3.813	3.744
21	52.5000	45.4663	55.00	49.77	48.43	3.881	3.854	3.812	3.743
22	55.0000	47.6314	57.50	52.26	50.93	3.881	3.853	3.811	3.742
23	57.5000	49.7965	60.00	54.75	53.43	3.880	3.853	3.811	3.741
24	60.0000	51.9615	62.50	57.24	55.93	3.880	3.852	3.810	3.740
25	62.5000	54.1266	65.00	59.73	58.42	3.880	3.852	3.809	3.739
26	65.0000	56.2917	67.50	62.22	60.92	3.880	3.851	3.809	3.738
27	67.5000	58.4567	70.00	64.71	63.42	3.879	3.851	3.808	3.737
28	70.0000	60.6218	72.50	67.20	65.92	3.879	3.851	3.807	3.736
29	72.5000	62.7868	75.00	69.69	68.42	3.879	3.850	3.807	3.735
30	75.0000	64.9519	77.50	72.19	70.92	3.879	3.850	3.806	3.734
31	77.5000	67.1170	80.00	74.68	73.41	3.878	3.849	3.806	3.733
32	80.0000	69.2820	82.50	77.18	75.91	3.878	3.849	3.805	3.732
33	82.5000	71.4471	85.00	79.67	78.41	3.878	3.849	3.805	3.731
34	85.0000	73.6122	87.50	82.16	80.91	3.878	3.848	3.804	3.730
35	87.5000	75.7772	90.00	84.66	83.41	3.878	3.848	3.803	3.729
36	90.0000	77.9423	92.50	87.16	85.91	3.877	3.848	3.803	3.729
37	92.5000	80.1074	95.00	89.65	88.40	3.877	3.847	3.802	3.728
38	95.0000	82.2724	97.50	92.15	90.90	3.877	3.847	3.802	3.727
39	97.5000	84.4375	100.00	94.64	93.40	3.877	3.847	3.801	3.726
40	100.0000	86.6025	102.50	97.14	95.90	3.877	3.846	3.801	3.725
41	102.5000	88.7676	105.00	99.64	98.40	3.876	3.846	3.800	3.724
42	105.0000	90.9327	107.50	102.13	100.90	3.876	3.846	3.800	3.724
43	107.5000	93.0977	110.00	104.63	103.40	3.876	3.845	3.799	3.723
44	110.0000	95.2628	112.50	107.13	105.90	3.876	3.845	3.799	3.722
45	112.5000	97.4279	115.00	109.62	108.39	3.876	3.845	3.798	3.721
46	115.0000	99.5929	117.50	112.12	110.89	3.875	3.844	3.798	3.721
47	117.5000	101.7580	120.00	114.62	113.39	3.875	3.844	3.798	3.720
48	120.0000	103.9231	122.50	117.12	115.89	3.875	3.844	3.797	3.719
49	122.5000	106.0881	125.00	119.61	118.39	3.875	3.844	3.797	3.718
50	125.0000	108.2532	127.50	122.11	120.89	3.875	3.843	3.796	3.718
51	127.5000	110.4182	130.00	124.61	123.39	3.875	3.843	3.796	3.717
52	130.0000	112.5833	132.50	127.11	125.89	3.874	3.843	3.795	3.716
53	132.5000	114.7484	135.00	129.60	128.38	3.874	3.842	3.795	3.716
54	135.0000	116.9134	137.50	132.10	130.88	3.874	3.842	3.795	3.715
55	137.5000	119.0785	140.00	134.60	133.38	3.874	3.842	3.794	3.714
56	140.0000	121.2436	142.50	137.10	135.88	3.874	3.842	3.794	3.714
57	142.5000	123.4086	145.00	139.60	138.38	3.874	3.841	3.793	3.713
58	145.0000	125.5737	147.50	142.10	140.88	3.873	3.841	3.793	3.712
59	147.5000	127.7388	150.00	144.59	143.38	3.873	3.841	3.792	3.712
60	150.0000	129.9038	152.50	147.09	145.88	3.873	3.841	3.792	3.711
61	152.5000	132.0689	155.00	149.59	148.38	3.873	3.840	3.792	3.711
62	155.0000	134.2339	157.50	152.09	150.87	3.873	3.840	3.791	3.710
63	157.5000	136.3990	160.00	154.59	153.37	3.873	3.840	3.791	3.709
64	160.0000	138.5641	162.50	157.09	155.87	3.872	3.840	3.791	3.709
65	162.5000	140.7291	165.00	159.58	158.37	3.872	3.839	3.790	3.708
66	165.0000	142.8942	167.50	162.08	160.87	3.872	3.839	3.790	3.707
67	167.5000	145.0593	170.00	164.58	163.37	3.872	3.839	3.789	3.707
68	170.0000	147.2243	172.50	167.08	165.87	3.872	3.839	3.789	3.706
69	172.5000	149.3894	175.00	169.58	168.37	3.872	3.838	3.789	3.706
70	175.0000	151.5545	177.50	172.08	170.87	3.872	3.838	3.788	3.705
71	177.5000	153.7195	180.00	174.58	173.36	3.871	3.838	3.788	3.705
72	180.0000	155.8846	182.50	177.08	175.86	3.871	3.838	3.788	3.704
73	182.5000	158.0496	185.00	179.58	178.36	3.871	3.838	3.787	3.703
74	185.0000	160.2147	187.50	182.07	180.86	3.871	3.837	3.787	3.703
75	187.5000	162.3798	190.00	184.57	183.36	3.871	3.837	3.787	3.702
76	190.0000	164.5448	192.50	187.07	185.86	3.871	3.837	3.786	3.702
77	192.5000	166.7099	195.00	189.57	188.36	3.871	3.837	3.786	3.701
78	195.0000	168.8750	197.50	192.07	190.86	3.870	3.836	3.785	3.701
79	197.5000	171.0400	200.00	194.57	193.36	3.870	3.836	3.785	3.700
80	200.0000	173.2051	202.50	197.07	195.86	3.870	3.836	3.785	3.700
81	202.5000	175.3702	205.00	199.57	198.36	3.870	3.836	3.784	3.699
82	205.0000	177.5352	207.50	202.07	200.85	3.870	3.836	3.784	3.698
83	207.5000	179.7003	210.00	204.57	203.35	3.870	3.835	3.784	3.698
84	210.0000	181.8653	212.50	207.07	205.85	3.870	3.835	3.783	3.697
85	212.5000	184.0304	215.00	209.56	208.35	3.869	3.835	3.783	3.697
86	215.0000	186.1955	217.50	212.06	210.85	3.869	3.835	3.783	3.696
87	217.5000	188.3605	220.00	214.56	213.35	3.869	3.835	3.783	3.696
88	220.0000	190.5256	222.50	217.06	215.85	3.869	3.834	3.782	3.695
89	222.5000	192.6907	225.00	219.56	218.35	3.869	3.834	3.782	3.695
90	225.0000	194.8557	227.50	222.06	220.85	3.869	3.834	3.782	3.694
91	227.5000	197.0208	230.00	224.56	223.35	3.869	3.834	3.781	3.694
92	230.0000	199.1859	232.50	227.06	225.85	3.869	3.834	3.781	3.693
93	232.5000	201.3509	235.00	229.56	228.34	3.868	3.833	3.781	3.693
94	235.0000	203.5160	237.50	232.06	230.84	3.868	3.833	3.780	3.692
95	237.5000	205.6810	240.00	234.56	233.34	3.868	3.833	3.780	3.692
96	240.0000	207.8461	242.50	237.06	235.84	3.868	3.833	3.780	3.691
97	242.5000	210.0112	245.00	239.56	238.34	3.868	3.833	3.779	3.691
98	245.0000	212.1762	247.50	242.06	240.84	3.868	3.832	3.779	3.690
99	247.5000	214.3413	250.00	244.56	243.34	3.868	3.832	3.779	3.690
100	250.0000	216.5064	252.50	247.05	245.84	3.868	3.832	3.778	3.689

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Table 30 — External spline

30 degree pressure angle — Side fit — Flat root — Module = 2.00

S_{vmax} = maximum effective tooth thickness, circular = 3.142

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	12.0000	10.3923	14.00	10.46	8.74	3.105	3.083	3.049	2.994
7	14.0000	12.1244	16.00	12.32	10.74	3.104	3.082	3.048	2.992
8	16.0000	13.8564	18.00	14.22	12.74	3.104	3.081	3.047	2.990
9	18.0000	15.5885	20.00	16.14	14.73	3.103	3.080	3.045	2.988
10	20.0000	17.3205	22.00	18.08	16.73	3.103	3.079	3.044	2.986
11	22.0000	19.0526	24.00	20.04	18.73	3.102	3.079	3.043	2.984
12	24.0000	20.7846	26.00	22.00	20.72	3.102	3.078	3.042	2.983
13	26.0000	22.5167	28.00	23.96	22.72	3.102	3.077	3.041	2.981
14	28.0000	24.2487	30.00	25.94	24.72	3.101	3.077	3.041	2.980
15	30.0000	25.9808	32.00	27.91	26.72	3.101	3.076	3.040	2.979
16	32.0000	27.7128	34.00	29.89	28.72	3.100	3.076	3.039	2.977
17	34.0000	29.4449	36.00	31.87	30.71	3.100	3.075	3.038	2.976
18	36.0000	31.1769	38.00	33.86	32.71	3.100	3.075	3.037	2.975
19	38.0000	32.9090	40.00	35.84	34.71	3.100	3.074	3.037	2.974
20	40.0000	34.6410	42.00	37.83	36.71	3.099	3.074	3.036	2.972
21	42.0000	36.3731	44.00	39.82	38.71	3.099	3.074	3.035	2.971
22	44.0000	38.1051	46.00	41.81	40.70	3.099	3.073	3.035	2.970
23	46.0000	39.8372	48.00	43.80	42.70	3.099	3.073	3.034	2.969
24	48.0000	41.5692	50.00	45.79	44.70	3.098	3.072	3.033	2.968
25	50.0000	43.3013	52.00	47.78	46.70	3.098	3.072	3.033	2.967
26	52.0000	45.0333	54.00	49.77	48.70	3.098	3.072	3.032	2.966
27	54.0000	46.7654	56.00	51.77	50.69	3.098	3.071	3.031	2.965
28	56.0000	48.4974	58.00	53.76	52.69	3.097	3.071	3.031	2.965
29	58.0000	50.2295	60.00	55.76	54.69	3.097	3.070	3.030	2.964
30	60.0000	51.9615	62.00	57.75	56.69	3.097	3.070	3.030	2.963
31	62.0000	53.6936	64.00	59.74	58.69	3.097	3.070	3.029	2.962
32	64.0000	55.4256	66.00	61.74	60.69	3.096	3.069	3.029	2.961
33	66.0000	57.1577	68.00	63.74	62.69	3.096	3.069	3.028	2.960
34	68.0000	58.8897	70.00	65.73	64.68	3.096	3.069	3.028	2.959
35	70.0000	60.6218	72.00	67.73	66.68	3.096	3.068	3.027	2.959
36	72.0000	62.3538	74.00	69.72	68.68	3.096	3.068	3.027	2.958
37	74.0000	64.0859	76.00	71.72	70.68	3.095	3.068	3.026	2.957
38	76.0000	65.8179	78.00	73.72	72.68	3.095	3.067	3.026	2.956
39	78.0000	67.5500	80.00	75.71	74.68	3.095	3.067	3.025	2.956
40	80.0000	69.2820	82.00	77.71	76.68	3.095	3.067	3.025	2.955
41	82.0000	71.0141	84.00	79.71	78.68	3.095	3.067	3.024	2.954
42	84.0000	72.7461	86.00	81.71	80.67	3.095	3.066	3.024	2.953
43	86.0000	74.4782	88.00	83.70	82.67	3.094	3.066	3.024	2.953
44	88.0000	76.2102	90.00	85.70	84.67	3.094	3.066	3.023	2.952
45	90.0000	77.9423	92.00	87.70	86.67	3.094	3.066	3.023	2.951
46	92.0000	79.6743	94.00	89.70	88.67	3.094	3.065	3.022	2.951
47	94.0000	81.4064	96.00	91.69	90.67	3.094	3.065	3.022	2.950
48	96.0000	83.1384	98.00	93.69	92.67	3.094	3.065	3.021	2.949
49	98.0000	84.8705	100.00	95.69	94.67	3.093	3.064	3.021	2.949
50	100.0000	86.6025	102.00	97.69	96.66	3.093	3.064	3.021	2.948
51	102.0000	88.3346	104.00	99.69	98.66	3.093	3.064	3.020	2.947
52	104.0000	90.0666	106.00	101.69	100.66	3.093	3.064	3.020	2.947
53	106.0000	91.7987	108.00	103.68	102.66	3.093	3.063	3.019	2.946
54	108.0000	93.5307	110.00	105.68	104.66	3.093	3.063	3.019	2.946
55	110.0000	95.2628	112.00	107.68	106.66	3.092	3.063	3.019	2.945
56	112.0000	96.9949	114.00	109.68	108.66	3.092	3.063	3.018	2.944
57	114.0000	98.7269	116.00	111.68	110.66	3.092	3.062	3.018	2.944
58	116.0000	100.4590	118.00	113.68	112.66	3.092	3.062	3.018	2.943
59	118.0000	102.1910	120.00	115.67	114.66	3.092	3.062	3.017	2.943
60	120.0000	103.9231	122.00	117.67	116.65	3.092	3.062	3.017	2.942
61	122.0000	105.6551	124.00	119.67	118.65	3.092	3.062	3.017	2.941
62	124.0000	107.3872	126.00	121.67	120.65	3.091	3.061	3.016	2.941
63	126.0000	109.1192	128.00	123.67	122.65	3.091	3.061	3.016	2.940
64	128.0000	110.8513	130.00	125.67	124.65	3.091	3.061	3.015	2.940
65	130.0000	112.5833	132.00	127.67	126.65	3.091	3.061	3.015	2.939
66	132.0000	114.3154	134.00	129.67	128.65	3.091	3.060	3.015	2.939
67	134.0000	116.0474	136.00	131.67	130.65	3.091	3.060	3.014	2.938
68	136.0000	117.7795	138.00	133.66	132.65	3.091	3.060	3.014	2.938
69	138.0000	119.5115	140.00	135.66	134.65	3.090	3.060	3.014	2.937
70	140.0000	121.2436	142.00	137.66	136.64	3.090	3.060	3.013	2.937
71	142.0000	122.9756	144.00	139.66	138.64	3.090	3.059	3.013	2.936
72	144.0000	124.7077	146.00	141.66	140.64	3.090	3.059	3.013	2.936
73	146.0000	126.4397	148.00	143.66	142.64	3.090	3.059	3.012	2.935
74	148.0000	128.1718	150.00	145.66	144.64	3.090	3.059	3.012	2.935
75	150.0000	129.9038	152.00	147.66	146.64	3.090	3.059	3.012	2.934
76	152.0000	131.6359	154.00	149.66	148.64	3.090	3.058	3.012	2.933
77	154.0000	133.3679	156.00	151.66	150.64	3.089	3.058	3.011	2.933
78	156.0000	135.1000	158.00	153.66	152.64	3.089	3.058	3.011	2.933
79	158.0000	136.8320	160.00	155.66	154.64	3.089	3.058	3.011	2.932
80	160.0000	138.5641	162.00	157.65	156.64	3.089	3.058	3.010	2.932
81	162.0000	140.2961	164.00	159.65	158.64	3.089	3.057	3.010	2.931
82	164.0000	142.0282	166.00	161.65	160.63	3.089	3.057	3.010	2.931
83	166.0000	143.7602	168.00	163.65	162.63	3.089	3.057	3.009	2.930
84	168.0000	145.4923	170.00	165.65	164.63	3.089	3.057	3.009	2.930
85	170.0000	147.2243	172.00	167.65	166.63	3.088	3.057	3.009	2.929
86	172.0000	148.9564	174.00	169.65	168.63	3.088	3.056	3.009	2.929
87	174.0000	150.6884	176.00	171.65	170.63	3.088	3.056	3.008	2.928
88	176.0000	152.4205	178.00	173.65	172.63	3.088	3.056	3.008	2.928
89	178.0000	154.1525	180.00	175.65	174.63	3.088	3.056	3.008	2.927
90	180.0000	155.8846	182.00	177.65	176.63	3.088	3.056	3.007	2.927
91	182.0000	157.6166	184.00	179.65	178.63	3.088	3.055	3.007	2.926
92	184.0000	159.3487	186.00	181.65	180.63	3.088	3.055	3.007	2.926
93	186.0000	161.0807	188.00	183.65	182.63	3.088	3.055	3.007	2.925
94	188.0000	162.8128	190.00	185.65	184.62	3.087	3.055	3.006	2.925
95	190.0000	164.5448	192.00	187.65	186.62	3.087	3.055	3.006	2.925
96	192.0000	166.2769	194.00	189.65	188.62	3.087	3.055	3.006	2.924
97	194.0000	168.0089	196.00	191.65	190.62	3.087	3.054	3.005	2.924
98	196.0000	169.7410	198.00	193.64	192.62	3.087	3.054	3.005	2.923
99	198.0000	171.4730	200.00	195.64	194.62	3.087	3.054	3.005	2.923
100	200.0000	173.2051	202.00	197.64	196.62	3.087	3.054	3.005	2.922

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Table 31 — Internal spline

30 degree pressure angle — Side fit — Flat root — Module = 1.75

E_{vmin} = minimum effective space width, circular = 2.749

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	10.5000	9.0933	13.37	12.60	9.50	2.784	2.805	2.837	2.890
7	12.2500	10.6088	15.12	14.35	11.13	2.785	2.806	2.838	2.892
8	14.0000	12.1244	16.88	16.10	12.79	2.785	2.807	2.840	2.894
9	15.7500	13.6399	18.63	17.85	14.48	2.786	2.808	2.841	2.896
10	17.5000	15.1554	20.38	19.60	16.17	2.786	2.808	2.842	2.898
11	19.2500	16.6710	22.14	21.35	17.88	2.786	2.809	2.843	2.899
12	21.0000	18.1865	23.89	23.10	19.60	2.787	2.810	2.844	2.901
13	22.7500	19.7021	25.64	24.85	21.32	2.787	2.810	2.845	2.902
14	24.5000	21.2176	27.39	26.60	23.04	2.788	2.811	2.845	2.903
15	26.2500	22.7332	29.14	28.35	24.77	2.788	2.811	2.846	2.905
16	28.0000	24.2487	30.90	30.10	26.50	2.788	2.812	2.847	2.906
17	29.7500	25.7643	32.65	31.85	28.24	2.788	2.812	2.848	2.907
18	31.5000	27.2798	34.40	33.60	29.97	2.789	2.813	2.849	2.908
19	33.2500	28.7953	36.15	35.35	31.71	2.789	2.813	2.849	2.909
20	35.0000	30.3109	37.90	37.10	33.45	2.789	2.814	2.850	2.910
21	36.7500	31.8264	39.66	38.85	35.19	2.790	2.814	2.851	2.912
22	38.5000	33.3420	41.41	40.60	36.93	2.790	2.814	2.851	2.913
23	40.2500	34.8575	43.16	42.35	38.67	2.790	2.815	2.852	2.913
24	42.0000	36.3731	44.91	44.10	40.42	2.790	2.815	2.852	2.914
25	43.7500	37.8886	46.66	45.85	42.16	2.791	2.815	2.853	2.915
26	45.5000	39.4042	48.41	47.60	43.90	2.791	2.816	2.854	2.916
27	47.2500	40.9197	50.17	49.35	45.65	2.791	2.816	2.854	2.917
28	49.0000	42.4352	51.92	51.10	47.39	2.791	2.817	2.855	2.918
29	50.7500	43.9508	53.67	52.85	49.14	2.791	2.817	2.855	2.919
30	52.5000	45.4663	55.42	54.60	50.88	2.792	2.817	2.856	2.920
31	54.2500	46.9819	57.17	56.35	52.63	2.792	2.818	2.856	2.921
32	56.0000	48.4974	58.92	58.10	54.37	2.792	2.818	2.857	2.921
33	57.7500	50.0130	60.67	59.85	56.12	2.792	2.818	2.857	2.922
34	59.5000	51.5285	62.43	61.60	57.87	2.792	2.818	2.858	2.923
35	61.2500	53.0441	64.18	63.35	59.61	2.793	2.819	2.858	2.924
36	63.0000	54.5596	65.93	65.10	61.36	2.793	2.819	2.859	2.924
37	64.7500	56.0751	67.68	66.85	63.11	2.793	2.819	2.859	2.925
38	66.5000	57.5907	69.43	68.60	64.85	2.793	2.820	2.859	2.926
39	68.2500	59.1062	71.18	70.35	66.60	2.793	2.820	2.860	2.926
40	70.0000	60.6218	72.93	72.10	68.35	2.793	2.820	2.860	2.927
41	71.7500	62.1373	74.68	73.85	70.09	2.794	2.820	2.861	2.928
42	73.5000	63.6529	76.44	75.60	71.84	2.794	2.821	2.861	2.929
43	75.2500	65.1684	78.19	77.35	73.59	2.795	2.821	2.862	2.929
44	77.0000	66.6840	79.94	79.10	75.34	2.795	2.821	2.862	2.930
45	78.7500	68.1995	81.69	80.85	77.09	2.794	2.822	2.862	2.930
46	80.5000	69.7150	83.44	82.60	78.83	2.794	2.822	2.863	2.931
47	82.2500	71.2306	85.19	84.35	80.58	2.795	2.822	2.863	2.932
48	84.0000	72.7461	86.94	86.10	82.33	2.795	2.822	2.864	2.932
49	85.7500	74.2617	88.69	87.85	84.08	2.795	2.823	2.864	2.933
50	87.5000	75.7772	90.44	89.60	85.83	2.795	2.823	2.864	2.934
51	89.2500	77.2928	92.20	91.35	87.58	2.795	2.823	2.865	2.934
52	91.0000	78.8083	93.95	93.10	89.32	2.795	2.823	2.865	2.935
53	92.7500	80.3239	95.70	94.85	91.07	2.796	2.823	2.865	2.935
54	94.5000	81.8394	97.45	96.60	92.82	2.796	2.824	2.866	2.936
55	96.2500	83.3550	99.20	98.35	94.57	2.796	2.824	2.866	2.937
56	98.0000	84.8705	100.95	100.10	96.32	2.796	2.824	2.867	2.937
57	99.7500	86.3860	102.70	101.85	98.07	2.796	2.824	2.867	2.938
58	101.5000	87.9016	104.45	103.60	99.82	2.796	2.825	2.867	2.938
59	103.2500	89.4171	106.20	105.35	101.57	2.796	2.825	2.868	2.939
60	105.0000	90.9327	107.95	107.10	103.31	2.796	2.825	2.868	2.939
61	106.7500	92.4482	109.71	108.85	105.06	2.797	2.825	2.868	2.940
62	108.5000	93.9638	111.46	110.60	106.81	2.797	2.825	2.869	2.940
63	110.2500	95.4793	113.21	112.35	108.56	2.797	2.826	2.869	2.941
64	112.0000	96.9948	114.96	114.10	110.31	2.797	2.826	2.869	2.941
65	113.7500	98.5104	116.71	115.85	112.06	2.797	2.826	2.870	2.942
66	115.5000	100.0259	118.46	117.60	113.81	2.797	2.826	2.870	2.942
67	117.2500	101.5415	120.21	119.35	115.56	2.797	2.827	2.870	2.943
68	119.0000	103.0570	121.96	121.10	117.31	2.798	2.827	2.871	2.943
69	120.7500	104.5726	123.71	122.85	119.06	2.798	2.827	2.871	2.944
70	122.5000	106.0881	125.46	124.60	120.80	2.798	2.827	2.871	2.944
71	124.2500	107.6037	127.21	126.35	122.55	2.798	2.827	2.871	2.945
72	126.0000	109.1192	128.97	128.10	124.30	2.798	2.828	2.872	2.945
73	127.7500	110.6348	130.72	129.85	126.05	2.798	2.828	2.872	2.946
74	129.5000	112.1503	132.47	131.60	127.80	2.798	2.828	2.872	2.946
75	131.2500	113.6658	134.22	133.35	129.55	2.798	2.828	2.873	2.947
76	133.0000	115.1814	135.97	135.10	131.30	2.799	2.828	2.873	2.947
77	134.7500	116.6969	137.72	136.85	133.05	2.799	2.828	2.873	2.948
78	136.5000	118.2125	139.47	138.60	134.80	2.799	2.829	2.874	2.948
79	138.2500	119.7280	141.22	140.35	136.55	2.799	2.829	2.874	2.949
80	140.0000	121.2436	142.97	142.10	138.30	2.799	2.829	2.874	2.949
81	141.7500	122.7591	144.72	143.85	140.05	2.799	2.829	2.874	2.950
82	143.5000	124.2747	146.47	145.60	141.80	2.799	2.829	2.875	2.950
83	145.2500	125.7902	148.22	147.35	143.55	2.799	2.830	2.875	2.951
84	147.0000	127.3057	149.98	149.10	145.30	2.799	2.830	2.875	2.951
85	148.7500	128.8213	151.73	150.85	147.05	2.800	2.830	2.876	2.952
86	150.5000	130.3368	153.48	152.60	148.79	2.800	2.830	2.876	2.952
87	152.2500	131.8524	155.23	154.35	150.54	2.800	2.830	2.876	2.952
88	154.0000	133.3679	156.98	156.10	152.29	2.800	2.830	2.876	2.953
89	155.7500	134.8835	158.73	157.85	154.04	2.800	2.831	2.877	2.953
90	157.5000	136.3990	160.48	159.60	155.79	2.800	2.831	2.877	2.954
91	159.2500	137.9146	162.23	161.35	157.54	2.800	2.831	2.877	2.954
92	161.0000	139.4301	163.98	163.10	159.29	2.800	2.831	2.877	2.955
93	162.7500	140.9456	165.73	164.85	161.04	2.800	2.831	2.878	2.955
94	164.5000	142.4612	167.48	166.60	162.79	2.801	2.831	2.878	2.955
95	166.2500	143.9767	169.23	168.35	164.54	2.801	2.832	2.878	2.956
96	168.0000	145.4923	170.98	170.10	166.29	2.801	2.832	2.878	2.956
97	169.7500	147.0078	172.73	171.85	168.04	2.801	2.832	2.879	2.957
98	171.5000	148.5234	174.49	173.60	169.79	2.801	2.832	2.879	2.957
99	173.2500	150.0389	176.24	175.35	171.54	2.801	2.832	2.879	2.957
100	175.0000	151.5545	177.99	177.10	173.29	2.801	2.832	2.880	2.958

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Table 32 — External spline

30 degree pressure angle — Side fit — Flat root — Module = 1.75

S_{vmax} = maximum effective tooth thickness, circular = 2.749

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	10.5000	9.0933	12.25	9.15	7.63	2.714	2.692	2.661	2.608
7	12.2500	10.6088	14.00	10.78	9.38	2.713	2.692	2.659	2.606
8	14.0000	12.1244	15.75	12.44	11.12	2.713	2.691	2.658	2.604
9	15.7500	13.6399	17.50	14.13	12.87	2.712	2.690	2.657	2.602
10	17.5000	15.1554	19.25	15.82	14.62	2.712	2.689	2.656	2.600
11	19.2500	16.6710	21.00	17.53	16.36	2.711	2.689	2.655	2.599
12	21.0000	18.1865	22.75	19.25	18.11	2.711	2.688	2.654	2.597
13	22.7500	19.7021	24.50	20.97	19.86	2.711	2.688	2.653	2.596
14	24.5000	21.2176	26.25	22.69	21.61	2.710	2.687	2.652	2.594
15	26.2500	22.7332	28.00	24.42	23.36	2.710	2.687	2.651	2.593
16	28.0000	24.2487	29.75	26.15	25.10	2.710	2.686	2.651	2.592
17	29.7500	25.7643	31.50	27.89	26.85	2.709	2.686	2.650	2.591
18	31.5000	27.2798	33.25	29.62	28.60	2.709	2.685	2.649	2.589
19	33.2500	28.7953	35.00	31.36	30.35	2.709	2.685	2.649	2.588
20	35.0000	30.3109	36.75	33.10	32.10	2.708	2.684	2.648	2.587
21	36.7500	31.8264	38.50	34.84	33.84	2.708	2.684	2.647	2.586
22	38.5000	33.3420	40.25	36.58	35.59	2.708	2.683	2.647	2.585
23	40.2500	34.8575	42.00	38.32	37.34	2.708	2.683	2.646	2.584
24	42.0000	36.3731	43.75	40.07	39.09	2.708	2.683	2.645	2.583
25	43.7500	37.8886	45.50	41.81	40.84	2.707	2.682	2.645	2.582
26	45.5000	39.4042	47.25	43.55	42.59	2.707	2.682	2.644	2.582
27	47.2500	40.9197	49.00	45.30	44.33	2.707	2.682	2.644	2.581
28	49.0000	42.4352	50.75	47.04	46.08	2.707	2.681	2.643	2.580
29	50.7500	43.9508	52.50	48.79	47.83	2.706	2.681	2.643	2.579
30	52.5000	45.4663	54.25	50.53	49.58	2.706	2.681	2.642	2.578
31	54.2500	46.9819	56.00	52.28	51.33	2.706	2.680	2.642	2.577
32	56.0000	48.4974	57.75	54.02	53.08	2.706	2.680	2.641	2.576
33	57.7500	50.0130	59.50	55.77	54.83	2.706	2.680	2.641	2.576
34	59.5000	51.5285	61.25	57.52	56.57	2.705	2.679	2.640	2.575
35	61.2500	53.0441	63.00	59.26	58.32	2.705	2.679	2.640	2.574
36	63.0000	54.5596	64.75	61.01	60.07	2.705	2.679	2.639	2.573
37	64.7500	56.0751	66.50	62.76	61.82	2.705	2.678	2.639	2.573
38	66.5000	57.5907	68.25	64.50	63.57	2.705	2.678	2.638	2.572
39	68.2500	59.1062	70.00	66.25	65.32	2.704	2.678	2.638	2.571
40	70.0000	60.6218	71.75	68.00	67.07	2.704	2.678	2.637	2.571
41	71.7500	62.1373	73.50	69.74	68.82	2.704	2.677	2.637	2.570
42	73.5000	63.6529	75.25	71.49	70.56	2.704	2.677	2.637	2.569
43	75.2500	65.1684	77.00	73.24	72.31	2.704	2.677	2.636	2.569
44	77.0000	66.6840	78.75	74.99	74.06	2.704	2.677	2.636	2.568
45	78.7500	68.1995	80.50	76.74	75.81	2.703	2.676	2.635	2.567
46	80.5000	69.7150	82.25	78.48	77.56	2.703	2.676	2.635	2.567
47	82.2500	71.2306	84.00	80.23	79.32	2.703	2.676	2.635	2.566
48	84.0000	72.7461	85.75	81.98	81.06	2.703	2.675	2.634	2.565
49	85.7500	74.2617	87.50	83.73	82.81	2.703	2.675	2.634	2.565
50	87.5000	75.7772	89.25	85.48	84.56	2.703	2.675	2.633	2.564
51	89.2500	77.2928	91.00	87.23	86.30	2.703	2.675	2.633	2.564
52	91.0000	78.8083	92.75	88.97	88.05	2.702	2.675	2.633	2.563
53	92.7500	80.3239	94.50	90.72	89.80	2.702	2.674	2.632	2.562
54	94.5000	81.8394	96.25	92.47	91.55	2.702	2.674	2.632	2.562
55	96.2500	83.3550	98.00	94.22	93.30	2.702	2.674	2.632	2.561
56	98.0000	84.8705	99.75	95.97	95.05	2.702	2.674	2.631	2.561
57	99.7500	86.3860	101.50	97.72	96.80	2.702	2.673	2.631	2.560
58	101.5000	87.9016	103.25	99.47	98.55	2.702	2.673	2.631	2.560
59	103.2500	89.4171	105.00	101.22	100.30	2.701	2.673	2.630	2.559
60	105.0000	90.9327	106.75	102.96	102.05	2.701	2.673	2.630	2.558
61	106.7500	92.4482	108.50	104.71	103.79	2.701	2.673	2.630	2.558
62	108.5000	93.9638	110.25	106.46	105.54	2.701	2.672	2.629	2.557
63	110.2500	95.4793	112.00	108.21	107.29	2.701	2.672	2.629	2.557
64	112.0000	96.9949	113.75	109.96	109.04	2.701	2.672	2.629	2.556
65	113.7500	98.5104	115.50	111.71	110.79	2.701	2.672	2.628	2.556
66	115.5000	100.0259	117.25	113.46	112.54	2.700	2.671	2.628	2.555
67	117.2500	101.5415	119.00	115.21	114.29	2.700	2.671	2.628	2.555
68	119.0000	103.0570	120.75	116.96	116.04	2.700	2.671	2.627	2.554
69	120.7500	104.5726	122.50	118.71	117.79	2.700	2.671	2.627	2.554
70	122.5000	106.0881	124.25	120.45	119.54	2.700	2.671	2.627	2.553
71	124.2500	107.6037	126.00	122.20	121.29	2.700	2.670	2.626	2.553
72	126.0000	109.1192	127.75	123.95	123.03	2.700	2.670	2.626	2.552
73	127.7500	110.6348	129.50	125.70	124.78	2.700	2.670	2.626	2.552
74	129.5000	112.1503	131.25	127.45	126.53	2.700	2.670	2.625	2.551
75	131.2500	113.6658	133.00	129.20	128.28	2.699	2.670	2.625	2.551
76	133.0000	115.1814	134.75	130.95	130.03	2.699	2.669	2.625	2.550
77	134.7500	116.6969	136.50	132.70	131.78	2.699	2.669	2.625	2.550
78	136.5000	118.2125	138.25	134.45	133.53	2.699	2.669	2.624	2.549
79	138.2500	119.7280	140.00	136.20	135.28	2.699	2.669	2.624	2.549
80	140.0000	121.2436	141.75	137.95	137.03	2.699	2.669	2.624	2.549
81	141.7500	122.7591	143.50	139.70	138.78	2.699	2.669	2.623	2.548
82	143.5000	124.2747	145.25	141.45	140.53	2.699	2.668	2.623	2.548
83	145.2500	125.7902	147.00	143.20	142.28	2.698	2.668	2.623	2.547
84	147.0000	127.3057	148.75	144.95	144.02	2.698	2.668	2.623	2.547
85	148.7500	128.8213	150.50	146.70	145.77	2.698	2.668	2.622	2.546
86	150.5000	130.3368	152.25	148.44	147.52	2.698	2.668	2.622	2.546
87	152.2500	131.8524	154.00	150.19	149.27	2.698	2.667	2.622	2.545
88	154.0000	133.3679	155.75	151.94	151.02	2.698	2.667	2.621	2.545
89	155.7500	134.8835	157.50	153.69	152.77	2.698	2.667	2.621	2.545
90	157.5000	136.3990	159.25	155.44	154.52	2.698	2.667	2.621	2.544
91	159.2500	137.9146	161.00	157.19	156.27	2.698	2.667	2.621	2.544
92	161.0000	139.4301	162.75	158.94	158.02	2.697	2.667	2.620	2.543
93	162.7500	140.9456	164.50	160.69	159.77	2.697	2.666	2.620	2.543
94	164.5000	142.4612	166.25	162.44	161.52	2.697	2.666	2.620	2.542
95	166.2500	143.9767	168.00	164.19	163.27	2.697	2.666	2.620	2.542
96	168.0000	145.4923	169.75	165.94	165.02	2.697	2.666	2.619	2.542
97	169.7500	147.0078	171.50	167.69	166.77	2.697	2.666	2.619	2.541
98	171.5000	148.5234	173.25	169.44	168.51	2.697	2.666	2.619	2.541
99	173.2500	150.0389	175.00	171.19	170.26	2.697	2.665	2.619	2.540
100	175.0000	151.5545	176.75	172.94	172.01	2.697	2.665	2.618	2.540

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Table 33 — Internal spline

30 degree pressure angle — Side fit — Flat root — Module = 1.50

E_{vmin} = minimum effective space width, circular = 2.356

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	9.0000	7.7942	11.48	10.80	8.15	2.390	2.410	2.440	2.490
7	10.5000	9.0933	12.99	12.30	9.54	2.390	2.411	2.441	2.492
8	12.0000	10.3923	14.49	13.80	10.97	2.391	2.411	2.442	2.494
9	13.5000	11.6913	15.99	15.30	12.41	2.391	2.412	2.443	2.496
10	15.0000	12.9904	17.49	16.80	13.86	2.391	2.413	2.444	2.497
11	16.5000	14.2894	19.00	18.30	15.33	2.392	2.413	2.445	2.499
12	18.0000	15.5885	20.50	19.80	16.80	2.392	2.414	2.446	2.500
13	19.5000	16.8875	22.00	21.30	18.27	2.393	2.414	2.447	2.502
14	21.0000	18.1865	23.50	22.80	19.75	2.393	2.415	2.448	2.503
15	22.5000	19.4856	25.01	24.30	21.23	2.393	2.415	2.449	2.504
16	24.0000	20.7846	26.51	25.80	22.72	2.393	2.416	2.449	2.505
17	25.5000	22.0836	28.01	27.30	24.20	2.394	2.416	2.450	2.506
18	27.0000	23.3827	29.51	28.80	25.69	2.394	2.417	2.451	2.507
19	28.5000	24.6817	31.01	30.30	27.18	2.394	2.417	2.451	2.509
20	30.0000	25.9808	32.52	31.80	28.67	2.395	2.418	2.452	2.510
21	31.5000	27.2798	34.02	33.30	30.16	2.395	2.418	2.453	2.510
22	33.0000	28.5788	35.52	34.80	31.66	2.395	2.418	2.453	2.511
23	34.5000	29.8779	37.02	36.30	33.15	2.395	2.419	2.454	2.512
24	36.0000	31.1769	38.52	37.80	34.64	2.395	2.419	2.454	2.513
25	37.5000	32.4760	40.02	39.30	36.14	2.396	2.419	2.455	2.514
26	39.0000	33.7750	41.53	40.80	37.63	2.396	2.420	2.455	2.515
27	40.5000	35.0740	43.03	42.30	39.13	2.396	2.420	2.456	2.516
28	42.0000	36.3731	44.53	43.80	40.62	2.396	2.420	2.456	2.517
29	43.5000	37.6721	46.03	45.30	42.12	2.397	2.421	2.457	2.517
30	45.0000	38.9711	47.53	46.80	43.61	2.397	2.421	2.457	2.518
31	46.5000	40.2702	49.03	48.30	45.11	2.397	2.421	2.458	2.519
32	48.0000	41.5692	50.53	49.80	46.61	2.397	2.422	2.458	2.520
33	49.5000	42.8683	52.03	51.30	48.10	2.397	2.422	2.459	2.520
34	51.0000	44.1673	53.54	52.80	49.60	2.397	2.422	2.459	2.521
35	52.5000	45.4663	55.04	54.30	51.10	2.398	2.422	2.460	2.522
36	54.0000	46.7654	56.54	55.80	52.59	2.398	2.423	2.460	2.523
37	55.5000	48.0644	58.04	57.30	54.09	2.398	2.423	2.461	2.523
38	57.0000	49.3635	59.54	58.80	55.59	2.398	2.423	2.461	2.524
39	58.5000	50.6625	61.04	60.30	57.09	2.398	2.424	2.461	2.525
40	60.0000	51.9615	62.54	61.80	58.58	2.398	2.424	2.462	2.525
41	61.5000	53.2606	64.04	63.30	60.08	2.399	2.424	2.462	2.526
42	63.0000	54.5596	65.55	64.80	61.58	2.399	2.424	2.463	2.527
43	64.5000	55.8586	67.05	66.30	63.08	2.399	2.425	2.463	2.527
44	66.0000	57.1577	68.55	67.80	64.58	2.399	2.425	2.463	2.528
45	67.5000	58.4567	70.05	69.30	66.07	2.399	2.425	2.464	2.528
46	69.0000	59.7558	71.55	70.80	67.57	2.399	2.425	2.464	2.529
47	70.5000	61.0548	73.05	72.30	69.07	2.400	2.426	2.465	2.530
48	72.0000	62.3538	74.55	73.80	70.57	2.400	2.426	2.465	2.530
49	73.5000	63.6529	76.05	75.30	72.07	2.400	2.426	2.465	2.531
50	75.0000	64.9519	77.55	76.80	73.57	2.400	2.426	2.466	2.531
51	76.5000	66.2509	79.05	78.30	75.07	2.400	2.426	2.466	2.532
52	78.0000	67.5500	80.56	79.80	76.56	2.400	2.427	2.466	2.532
53	79.5000	68.8490	82.06	81.30	78.06	2.400	2.427	2.467	2.533
54	81.0000	70.1481	83.56	82.80	79.56	2.401	2.427	2.467	2.534
55	82.5000	71.4471	85.06	84.30	81.06	2.401	2.427	2.467	2.534
56	84.0000	72.7461	86.56	85.80	82.56	2.401	2.428	2.468	2.535
57	85.5000	74.0452	88.06	87.30	84.06	2.401	2.428	2.468	2.535
58	87.0000	75.3442	89.56	88.80	85.56	2.401	2.428	2.468	2.536
59	88.5000	76.6433	91.06	90.30	87.06	2.401	2.428	2.469	2.536
60	90.0000	77.9423	92.56	91.80	88.56	2.401	2.428	2.469	2.537
61	91.5000	79.2413	94.06	93.30	90.05	2.401	2.429	2.469	2.537
62	93.0000	80.5404	95.56	94.80	91.55	2.402	2.429	2.470	2.538
63	94.5000	81.8394	97.07	96.30	93.05	2.402	2.429	2.470	2.538
64	96.0000	83.1384	98.57	97.80	94.55	2.402	2.429	2.470	2.539
65	97.5000	84.4375	100.07	99.30	96.05	2.402	2.429	2.471	2.539
66	99.0000	85.7365	101.57	100.80	97.55	2.402	2.430	2.471	2.540
67	100.5000	87.0356	103.07	102.30	99.05	2.402	2.430	2.471	2.540
68	102.0000	88.3346	104.57	103.80	100.55	2.402	2.430	2.471	2.541
69	103.5000	89.6336	106.07	105.30	102.05	2.402	2.430	2.472	2.541
70	105.0000	90.9327	107.57	106.80	103.55	2.403	2.430	2.472	2.541
71	106.5000	92.2317	109.07	108.30	105.05	2.403	2.431	2.472	2.542
72	108.0000	93.5307	110.57	109.80	106.55	2.403	2.431	2.473	2.542
73	109.5000	94.8298	112.07	111.30	108.05	2.403	2.431	2.473	2.543
74	111.0000	96.1288	113.57	112.80	109.54	2.403	2.431	2.473	2.543
75	112.5000	97.4279	115.07	114.30	111.04	2.403	2.431	2.473	2.544
76	114.0000	98.7269	116.58	115.80	112.54	2.403	2.431	2.474	2.544
77	115.5000	100.0259	118.08	117.30	114.04	2.403	2.432	2.474	2.545
78	117.0000	101.3250	119.58	118.80	115.54	2.403	2.432	2.474	2.545
79	118.5000	102.6240	121.08	120.30	117.04	2.404	2.432	2.475	2.546
80	120.0000	103.9231	122.58	121.80	118.54	2.404	2.432	2.475	2.546
81	121.5000	105.2221	124.08	123.30	120.04	2.404	2.432	2.475	2.546
82	123.0000	106.5211	125.58	124.80	121.54	2.404	2.432	2.475	2.547
83	124.5000	107.8202	127.08	126.30	123.04	2.404	2.433	2.476	2.547
84	126.0000	109.1192	128.58	127.80	124.54	2.404	2.433	2.476	2.548
85	127.5000	110.4182	130.08	129.30	126.04	2.404	2.433	2.476	2.548
86	129.0000	111.7173	131.58	130.80	127.54	2.404	2.433	2.476	2.548
87	130.5000	113.0163	133.08	132.30	129.04	2.404	2.433	2.477	2.549
88	132.0000	114.3154	134.58	133.80	130.54	2.404	2.433	2.477	2.549
89	133.5000	115.6144	136.09	135.30	132.04	2.405	2.434	2.477	2.550
90	135.0000	116.9134	137.59	136.80	133.54	2.405	2.434	2.477	2.550
91	136.5000	118.2125	139.09	138.30	135.04	2.405	2.434	2.478	2.551
92	138.0000	119.5115	140.59	139.80	136.54	2.405	2.434	2.478	2.551
93	139.5000	120.8106	142.09	141.30	138.04	2.405	2.434	2.478	2.551
94	141.0000	122.1096	143.59	142.80	139.53	2.405	2.434	2.478	2.552
95	142.5000	123.4086	145.09	144.30	141.03	2.405	2.435	2.479	2.552
96	144.0000	124.7077	146.59	145.80	142.53	2.405	2.435	2.479	2.552
97	145.5000	126.0067	148.09	147.30	144.03	2.405	2.435	2.479	2.553
98	147.0000	127.3057	149.59	148.80	145.53	2.405	2.435	2.479	2.553
99	148.5000	128.6048	151.09	150.30	147.03	2.406	2.435	2.480	2.554
100	150.0000	129.9038	152.59	151.80	148.53	2.406	2.435	2.480	2.554

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Table 34 — External spline

30 degree pressure angle — Side fit — Flat root — Module = 1.50

S_{vmax} = maximum effective tooth thickness, circular = 2.356

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	9.0000	7.7942	10.50	7.85	6.52	2.323	2.303	2.272	2.222
7	10.5000	9.0933	12.00	9.24	8.01	2.322	2.302	2.271	2.220
8	12.0000	10.3923	13.50	10.67	9.51	2.322	2.301	2.270	2.218
9	13.5000	11.6913	15.00	12.11	11.01	2.321	2.300	2.269	2.217
10	15.0000	12.9904	16.50	13.56	12.51	2.321	2.300	2.268	2.215
11	16.5000	14.2894	18.00	15.03	14.00	2.321	2.299	2.267	2.214
12	18.0000	15.5885	19.50	16.50	15.50	2.320	2.299	2.266	2.212
13	19.5000	16.8875	21.00	17.97	17.00	2.320	2.298	2.265	2.211
14	21.0000	18.1865	22.50	19.45	18.50	2.320	2.298	2.265	2.210
15	22.5000	19.4856	24.00	20.93	19.99	2.319	2.297	2.264	2.208
16	24.0000	20.7846	25.50	22.42	21.49	2.319	2.297	2.263	2.207
17	25.5000	22.0836	27.00	23.90	22.99	2.319	2.296	2.262	2.206
18	27.0000	23.3827	28.50	25.39	24.49	2.318	2.296	2.262	2.205
19	28.5000	24.6817	30.00	26.88	25.99	2.318	2.295	2.261	2.204
20	30.0000	25.9808	31.50	28.37	27.48	2.318	2.295	2.260	2.203
21	31.5000	27.2798	33.00	29.86	28.98	2.318	2.294	2.260	2.202
22	33.0000	28.5788	34.50	31.36	30.48	2.317	2.294	2.259	2.201
23	34.5000	29.8779	36.00	32.85	31.98	2.317	2.294	2.259	2.200
24	36.0000	31.1769	37.50	34.34	33.48	2.317	2.293	2.258	2.199
25	37.5000	32.4760	39.00	35.84	34.98	2.317	2.293	2.257	2.198
26	39.0000	33.7750	40.50	37.33	36.47	2.316	2.293	2.257	2.197
27	40.5000	35.0740	42.00	38.83	37.97	2.316	2.292	2.256	2.197
28	42.0000	36.3731	43.50	40.32	39.47	2.316	2.292	2.256	2.196
29	43.5000	37.6721	45.00	41.82	40.97	2.316	2.292	2.255	2.195
30	45.0000	38.9711	46.50	43.31	42.47	2.316	2.291	2.255	2.194
31	46.5000	40.2702	48.00	44.81	43.97	2.316	2.291	2.254	2.193
32	48.0000	41.5692	49.50	46.31	45.47	2.315	2.291	2.254	2.193
33	49.5000	42.8683	51.00	47.80	46.97	2.315	2.290	2.254	2.192
34	51.0000	44.1673	52.50	49.30	48.46	2.315	2.290	2.253	2.191
35	52.5000	45.4663	54.00	50.80	49.96	2.315	2.290	2.253	2.191
36	54.0000	46.7654	55.50	52.29	51.46	2.315	2.290	2.252	2.190
37	55.5000	48.0644	57.00	53.79	52.96	2.314	2.289	2.252	2.189
38	57.0000	49.3635	58.50	55.29	54.46	2.314	2.289	2.251	2.188
39	58.5000	50.6625	60.00	56.79	55.96	2.314	2.289	2.251	2.188
40	60.0000	51.9615	61.50	58.28	57.46	2.314	2.289	2.251	2.187
41	61.5000	53.2606	63.00	59.78	58.96	2.314	2.288	2.250	2.186
42	63.0000	54.5596	64.50	61.28	60.45	2.314	2.288	2.250	2.186
43	64.5000	55.8586	66.00	62.78	61.95	2.313	2.288	2.249	2.185
44	66.0000	57.1577	67.50	64.28	63.45	2.313	2.288	2.249	2.185
45	67.5000	58.4567	69.00	65.77	64.95	2.313	2.287	2.249	2.184
46	69.0000	59.7558	70.50	67.27	66.45	2.313	2.287	2.248	2.183
47	70.5000	61.0548	72.00	68.77	67.95	2.313	2.287	2.248	2.183
48	72.0000	62.3538	73.50	70.27	69.45	2.313	2.287	2.247	2.182
49	73.5000	63.6529	75.00	71.77	70.95	2.313	2.286	2.247	2.182
50	75.0000	64.9519	76.50	73.27	72.45	2.312	2.286	2.247	2.181
51	76.5000	66.2509	78.00	74.77	73.95	2.312	2.286	2.246	2.181
52	78.0000	67.5500	79.50	76.26	75.44	2.312	2.286	2.246	2.180
53	79.5000	68.8490	81.00	77.76	76.94	2.312	2.285	2.246	2.179
54	81.0000	70.1481	82.50	79.26	78.44	2.312	2.285	2.245	2.179
55	82.5000	71.4471	84.00	80.76	79.94	2.312	2.285	2.245	2.178
56	84.0000	72.7461	85.50	82.26	81.44	2.312	2.285	2.245	2.178
57	85.5000	74.0452	87.00	83.76	82.94	2.311	2.285	2.244	2.177
58	87.0000	75.3442	88.50	85.26	84.44	2.311	2.284	2.244	2.177
59	88.5000	76.6433	90.00	86.76	85.94	2.311	2.284	2.244	2.176
60	90.0000	77.9423	91.50	88.26	87.44	2.311	2.284	2.243	2.176
61	91.5000	79.2413	93.00	89.75	88.94	2.311	2.284	2.243	2.175
62	93.0000	80.5404	94.50	91.25	90.44	2.311	2.284	2.243	2.175
63	94.5000	81.8394	96.00	92.75	91.93	2.311	2.283	2.242	2.174
64	96.0000	83.1384	97.50	94.25	93.43	2.311	2.283	2.242	2.174
65	97.5000	84.4375	99.00	95.75	94.93	2.310	2.283	2.242	2.173
66	99.0000	85.7365	100.50	97.25	96.43	2.310	2.283	2.242	2.173
67	100.5000	87.0356	102.00	98.75	97.93	2.310	2.283	2.241	2.172
68	102.0000	88.3346	103.50	100.25	99.43	2.310	2.282	2.241	2.172
69	103.5000	89.6336	105.00	101.75	100.93	2.310	2.282	2.241	2.171
70	105.0000	90.9327	106.50	103.25	102.43	2.310	2.282	2.240	2.171
71	106.5000	92.2317	108.00	104.75	103.93	2.310	2.282	2.240	2.170
72	108.0000	93.5307	109.50	106.25	105.43	2.310	2.282	2.240	2.170
73	109.5000	94.8298	111.00	107.75	106.93	2.310	2.282	2.240	2.170
74	111.0000	96.1288	112.50	109.24	108.43	2.309	2.281	2.239	2.169
75	112.5000	97.4279	114.00	110.74	109.93	2.309	2.281	2.239	2.169
76	114.0000	98.7269	115.50	112.24	111.42	2.309	2.281	2.239	2.168
77	115.5000	100.0259	117.00	113.74	112.92	2.309	2.281	2.238	2.168
78	117.0000	101.3250	118.50	115.24	114.42	2.309	2.281	2.238	2.167
79	118.5000	102.6240	120.00	116.74	115.92	2.309	2.280	2.238	2.167
80	120.0000	103.9231	121.50	118.24	117.42	2.309	2.280	2.238	2.166
81	121.5000	105.2221	123.00	119.74	118.92	2.309	2.280	2.237	2.166
82	123.0000	106.5211	124.50	121.24	120.42	2.309	2.280	2.237	2.166
83	124.5000	107.8202	126.00	122.74	121.92	2.308	2.280	2.237	2.165
84	126.0000	109.1192	127.50	124.24	123.42	2.308	2.280	2.237	2.165
85	127.5000	110.4182	129.00	125.74	124.92	2.308	2.279	2.236	2.164
86	129.0000	111.7173	130.50	127.24	126.42	2.308	2.279	2.236	2.164
87	130.5000	113.0163	132.00	128.74	127.92	2.308	2.279	2.236	2.163
88	132.0000	114.3154	133.50	130.24	129.42	2.308	2.279	2.235	2.163
89	133.5000	115.6144	135.00	131.74	130.91	2.308	2.279	2.235	2.163
90	135.0000	116.9134	136.50	133.24	132.41	2.308	2.279	2.235	2.162
91	136.5000	118.2125	138.00	134.74	133.91	2.308	2.278	2.235	2.162
92	138.0000	119.5115	139.50	136.24	135.41	2.308	2.278	2.234	2.161
93	139.5000	120.8106	141.00	137.74	136.91	2.307	2.278	2.234	2.161
94	141.0000	122.1096	142.50	139.23	138.41	2.307	2.278	2.234	2.161
95	142.5000	123.4086	144.00	140.73	139.91	2.307	2.278	2.234	2.160
96	144.0000	124.7077	145.50	142.23	141.41	2.307	2.278	2.234	2.160
97	145.5000	126.0067	147.00	143.73	142.91	2.307	2.278	2.233	2.160
98	147.0000	127.3057	148.50	145.23	144.41	2.307	2.277	2.233	2.159
99	148.5000	128.6048	150.00	146.73	145.91	2.307	2.277	2.233	2.159
100	150.0000	129.9038	151.50	148.23	147.41	2.307	2.277	2.233	2.158

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Table 35 — Internal spline

30 degree pressure angle — Side fit — Flat root — Module = 1.25

E_{vmin} = minimum effective space width, circular = 1.963

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	7.5000	6.4952	9.59	9.00	6.79	1.995	2.014	2.042	2.090
7	8.7500	7.5777	10.85	10.25	7.95	1.995	2.015	2.043	2.091
8	10.0000	8.6603	12.10	11.50	9.14	1.996	2.015	2.045	2.093
9	11.2500	9.7428	13.35	12.75	10.34	1.996	2.016	2.046	2.095
10	12.5000	10.8253	14.60	14.00	11.55	1.997	2.017	2.046	2.096
11	13.7500	11.9079	15.86	15.25	12.77	1.997	2.017	2.047	2.098
12	15.0000	12.9904	17.11	16.50	14.00	1.997	2.018	2.048	2.099
13	16.2500	14.0729	18.36	17.75	15.23	1.998	2.018	2.049	2.100
14	17.5000	15.1554	19.61	19.00	16.46	1.998	2.019	2.050	2.101
15	18.7500	16.2380	20.87	20.25	17.69	1.998	2.019	2.050	2.103
16	20.0000	17.3205	22.12	21.50	18.93	1.999	2.020	2.051	2.104
17	21.2500	18.4030	23.37	22.75	20.17	1.999	2.020	2.052	2.105
18	22.5000	19.4856	24.62	24.00	21.41	1.999	2.020	2.052	2.106
19	23.7500	20.5681	25.87	25.25	22.65	1.999	2.021	2.053	2.107
20	25.0000	21.6506	27.12	26.50	23.89	2.000	2.021	2.054	2.108
21	26.2500	22.7332	28.38	27.75	25.14	2.000	2.022	2.054	2.109
22	27.5000	23.8157	29.63	29.00	26.38	2.000	2.022	2.055	2.109
23	28.7500	24.8982	30.88	30.25	27.62	2.000	2.022	2.055	2.110
24	30.0000	25.9808	32.13	31.50	28.87	2.000	2.023	2.056	2.111
25	31.2500	27.0633	33.38	32.75	30.11	2.001	2.023	2.056	2.112
26	32.5000	28.1458	34.63	34.00	31.36	2.001	2.023	2.057	2.113
27	33.7500	29.2284	35.88	35.25	32.60	2.001	2.023	2.057	2.113
28	35.0000	30.3109	37.14	36.50	33.85	2.001	2.024	2.058	2.114
29	36.2500	31.3934	38.39	37.75	35.10	2.001	2.024	2.058	2.115
30	37.5000	32.4760	39.64	39.00	36.34	2.002	2.024	2.059	2.116
31	38.7500	33.5585	40.89	40.25	37.59	2.002	2.025	2.059	2.116
32	40.0000	34.6410	42.14	41.50	38.84	2.002	2.025	2.060	2.117
33	41.2500	35.7236	43.39	42.75	40.08	2.002	2.025	2.060	2.118
34	42.5000	36.8061	44.64	44.00	41.33	2.002	2.026	2.060	2.118
35	43.7500	37.8886	45.89	45.25	42.58	2.002	2.026	2.061	2.119
36	45.0000	38.9711	47.15	46.50	43.83	2.003	2.026	2.061	2.120
37	46.2500	40.0537	48.40	47.75	45.08	2.003	2.026	2.062	2.120
38	47.5000	41.1362	49.65	49.00	46.32	2.003	2.027	2.062	2.121
39	48.7500	42.2187	50.90	50.25	47.57	2.003	2.027	2.062	2.122
40	50.0000	43.3013	52.15	51.50	48.82	2.003	2.027	2.063	2.122
41	51.2500	44.3838	53.40	52.75	50.07	2.003	2.027	2.063	2.123
42	52.5000	45.4663	54.65	54.00	51.32	2.003	2.027	2.063	2.123
43	53.7500	46.5489	55.90	55.25	52.56	2.004	2.028	2.064	2.124
44	55.0000	47.6314	57.15	56.50	53.81	2.004	2.028	2.064	2.125
45	56.2500	48.7139	58.41	57.75	55.06	2.004	2.028	2.065	2.125
46	57.5000	49.7965	59.66	59.00	56.31	2.004	2.028	2.065	2.126
47	58.7500	50.8790	60.91	60.25	57.56	2.004	2.029	2.065	2.126
48	60.0000	51.9615	62.16	61.50	58.81	2.004	2.029	2.066	2.127
49	61.2500	53.0441	63.41	62.75	60.06	2.004	2.029	2.066	2.127
50	62.5000	54.1266	64.66	64.00	61.31	2.005	2.029	2.066	2.128
51	63.7500	55.2091	65.91	65.25	62.55	2.005	2.029	2.067	2.128
52	65.0000	56.2917	67.16	66.50	63.80	2.005	2.030	2.067	2.129
53	66.2500	57.3742	68.41	67.75	65.05	2.005	2.030	2.067	2.129
54	67.5000	58.4567	69.66	69.00	66.30	2.005	2.030	2.068	2.130
55	68.7500	59.5393	70.91	70.25	67.55	2.005	2.030	2.068	2.130
56	70.0000	60.6218	72.17	71.50	68.80	2.005	2.030	2.068	2.131
57	71.2500	61.7043	73.42	72.75	70.05	2.005	2.031	2.068	2.131
58	72.5000	62.7868	74.67	74.00	71.30	2.006	2.031	2.069	2.132
59	73.7500	63.8694	75.92	75.25	72.55	2.006	2.031	2.069	2.132
60	75.0000	64.9519	77.17	76.50	73.80	2.006	2.031	2.069	2.133
61	76.2500	66.0344	78.42	77.75	75.05	2.006	2.031	2.070	2.133
62	77.5000	67.1170	79.67	79.00	76.29	2.006	2.032	2.070	2.134
63	78.7500	68.1995	80.92	80.25	77.54	2.006	2.032	2.070	2.134
64	80.0000	69.2820	82.17	81.50	78.79	2.006	2.032	2.071	2.135
65	81.2500	70.3646	83.42	82.75	80.04	2.006	2.032	2.071	2.135
66	82.5000	71.4471	84.67	84.00	81.29	2.007	2.032	2.071	2.136
67	83.7500	72.5296	85.92	85.25	82.54	2.007	2.033	2.071	2.136
68	85.0000	73.6122	87.17	86.50	83.79	2.007	2.033	2.072	2.137
69	86.2500	74.6947	88.43	87.75	85.04	2.007	2.033	2.072	2.137
70	87.5000	75.7772	89.68	89.00	86.29	2.007	2.033	2.072	2.137
71	88.7500	76.8598	90.93	90.25	87.54	2.007	2.033	2.072	2.138
72	90.0000	77.9423	92.18	91.50	88.79	2.007	2.033	2.073	2.138
73	91.2500	79.0248	93.43	92.75	90.04	2.007	2.034	2.073	2.139
74	92.5000	80.1074	94.68	94.00	91.29	2.007	2.034	2.073	2.139
75	93.7500	81.1899	95.93	95.25	92.54	2.007	2.034	2.073	2.139
76	95.0000	82.2724	97.18	96.50	93.79	2.008	2.034	2.074	2.140
77	96.2500	83.3550	98.43	97.75	95.04	2.008	2.034	2.074	2.140
78	97.5000	84.4375	99.68	99.00	96.29	2.008	2.034	2.074	2.141
79	98.7500	85.5200	100.93	100.25	97.53	2.008	2.035	2.075	2.141
80	100.0000	86.6025	102.18	101.50	98.78	2.008	2.035	2.075	2.142
81	101.2500	87.6851	103.43	102.75	100.03	2.008	2.035	2.075	2.142
82	102.5000	88.7676	104.68	104.00	101.28	2.008	2.035	2.075	2.142
83	103.7500	89.8501	105.94	105.25	102.53	2.008	2.035	2.075	2.143
84	105.0000	90.9327	107.19	106.50	103.78	2.008	2.035	2.076	2.143
85	106.2500	92.0152	108.44	107.75	105.03	2.008	2.035	2.076	2.143
86	107.5000	93.0977	109.69	109.00	106.28	2.009	2.036	2.076	2.144
87	108.7500	94.1803	110.94	110.25	107.53	2.009	2.036	2.076	2.144
88	110.0000	95.2628	112.19	111.50	108.78	2.009	2.036	2.077	2.145
89	111.2500	96.3453	113.44	112.75	110.03	2.009	2.036	2.077	2.145
90	112.5000	97.4279	114.69	114.00	111.28	2.009	2.036	2.077	2.145
91	113.7500	98.5104	115.94	115.25	112.53	2.009	2.036	2.077	2.146
92	115.0000	99.5929	117.19	116.50	113.78	2.009	2.037	2.078	2.146
93	116.2500	100.6755	118.44	117.75	115.03	2.009	2.037	2.078	2.146
94	117.5000	101.7580	119.69	119.00	116.28	2.009	2.037	2.078	2.147
95	118.7500	102.8405	120.94	120.25	117.53	2.009	2.037	2.078	2.147
96	120.0000	103.9231	122.19	121.50	118.78	2.010	2.037	2.079	2.148
97	121.2500	105.0056	123.44	122.75	120.03	2.010	2.037	2.079	2.148
98	122.5000	106.0881	124.70	124.00	121.28	2.010	2.037	2.079	2.148
99	123.7500	107.1707	125.95	125.25	122.53	2.010	2.038	2.079	2.149
100	125.0000	108.2532	127.20	126.50	123.78	2.010	2.038	2.079	2.149

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Table 36 — External spline

30 degree pressure angle — Side fit — Flat root — Module = 1.25

S_{vmax} = maximum effective tooth thickness, circular = 1.963

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	7.5000	6.4952	8.75	6.54	5.41	1.932	1.913	1.885	1.837
7	8.7500	7.5777	10.00	7.70	6.65	1.932	1.912	1.884	1.836
8	10.0000	8.6603	11.25	8.89	7.90	1.931	1.912	1.882	1.834
9	11.2500	9.7428	12.50	10.09	9.15	1.931	1.911	1.881	1.832
10	12.5000	10.8253	13.75	11.30	10.40	1.930	1.910	1.881	1.831
11	13.7500	11.9079	15.00	12.52	11.64	1.930	1.910	1.880	1.829
12	15.0000	12.9904	16.25	13.75	12.89	1.930	1.909	1.879	1.828
13	16.2500	14.0729	17.50	14.98	14.14	1.929	1.909	1.878	1.827
14	17.5000	15.1554	18.75	16.21	15.39	1.929	1.908	1.877	1.826
15	18.7500	16.2380	20.00	17.44	16.63	1.929	1.908	1.877	1.824
16	20.0000	17.3205	21.25	18.68	17.88	1.928	1.907	1.876	1.823
17	21.2500	18.4030	22.50	19.92	19.13	1.928	1.907	1.875	1.822
18	22.5000	19.4856	23.75	21.16	20.38	1.928	1.907	1.875	1.821
19	23.7500	20.5681	25.00	22.40	21.63	1.928	1.906	1.874	1.820
20	25.0000	21.6506	26.25	23.64	22.88	1.927	1.906	1.873	1.819
21	26.2500	22.7332	27.50	24.89	24.12	1.927	1.905	1.873	1.818
22	27.5000	23.8157	28.75	26.13	25.37	1.927	1.905	1.872	1.818
23	28.7500	24.8982	30.00	27.37	26.62	1.927	1.905	1.872	1.817
24	30.0000	25.9808	31.25	28.62	27.87	1.927	1.904	1.871	1.816
25	31.2500	27.0633	32.50	29.86	29.12	1.926	1.904	1.871	1.815
26	32.5000	28.1458	33.75	31.11	30.37	1.926	1.904	1.870	1.814
27	33.7500	29.2284	35.00	32.35	31.62	1.926	1.903	1.870	1.814
28	35.0000	30.3109	36.25	33.60	32.86	1.926	1.903	1.869	1.813
29	36.2500	31.3934	37.50	34.85	34.11	1.926	1.903	1.869	1.812
30	37.5000	32.4760	38.75	36.09	35.36	1.925	1.903	1.868	1.811
31	38.7500	33.5585	40.00	37.34	36.61	1.925	1.902	1.868	1.811
32	40.0000	34.6410	41.25	38.59	37.86	1.925	1.902	1.867	1.810
33	41.2500	35.7236	42.50	39.83	39.11	1.925	1.902	1.867	1.809
34	42.5000	36.8061	43.75	41.08	40.36	1.925	1.901	1.867	1.809
35	43.7500	37.8886	45.00	42.33	41.61	1.925	1.901	1.866	1.808
36	45.0000	38.9711	46.25	43.58	42.85	1.924	1.901	1.866	1.807
37	46.2500	40.0537	47.50	44.83	44.10	1.924	1.901	1.865	1.807
38	47.5000	41.1362	48.75	46.07	45.35	1.924	1.900	1.865	1.806
39	48.7500	42.2187	50.00	47.32	46.60	1.924	1.900	1.865	1.805
40	50.0000	43.3013	51.25	48.57	47.85	1.924	1.900	1.864	1.805
41	51.2500	44.3838	52.50	49.82	49.10	1.924	1.900	1.864	1.804
42	52.5000	45.4663	53.75	51.07	50.35	1.924	1.900	1.864	1.804
43	53.7500	46.5489	55.00	52.31	51.60	1.923	1.899	1.863	1.803
44	55.0000	47.6314	56.25	53.56	52.85	1.923	1.899	1.863	1.802
45	56.2500	48.7139	57.50	54.81	54.09	1.923	1.899	1.862	1.802
46	57.5000	49.7965	58.75	56.06	55.34	1.923	1.899	1.862	1.801
47	58.7500	50.8790	60.00	57.31	56.59	1.923	1.898	1.862	1.801
48	60.0000	51.9615	61.25	58.56	57.84	1.923	1.898	1.861	1.800
49	61.2500	53.0441	62.50	59.81	59.09	1.923	1.898	1.861	1.800
50	62.5000	54.1266	63.75	61.06	60.34	1.922	1.898	1.861	1.799
51	63.7500	55.2091	65.00	62.30	61.59	1.922	1.898	1.860	1.799
52	65.0000	56.2917	66.25	63.55	62.84	1.922	1.897	1.860	1.798
53	66.2500	57.3742	67.50	64.80	64.09	1.922	1.897	1.860	1.798
54	67.5000	58.4567	68.75	66.05	65.34	1.922	1.897	1.859	1.797
55	68.7500	59.5393	70.00	67.30	66.59	1.922	1.897	1.859	1.797
56	70.0000	60.6218	71.25	68.55	67.83	1.922	1.897	1.859	1.796
57	71.2500	61.7043	72.50	69.80	69.08	1.922	1.896	1.859	1.796
58	72.5000	62.7868	73.75	71.05	70.33	1.921	1.896	1.858	1.795
59	73.7500	63.8694	75.00	72.30	71.58	1.921	1.896	1.858	1.795
60	75.0000	64.9519	76.25	73.55	72.83	1.921	1.896	1.858	1.794
61	76.2500	66.0344	77.50	74.80	74.08	1.921	1.896	1.857	1.794
62	77.5000	67.1170	78.75	76.04	75.33	1.921	1.895	1.857	1.793
63	78.7500	68.1995	80.00	77.29	76.58	1.921	1.895	1.857	1.793
64	80.0000	69.2820	81.25	78.54	77.83	1.921	1.895	1.856	1.792
65	81.2500	70.3646	82.50	79.79	79.08	1.921	1.895	1.856	1.792
66	82.5000	71.4471	83.75	81.04	80.33	1.920	1.895	1.856	1.791
67	83.7500	72.5296	85.00	82.29	81.58	1.920	1.894	1.856	1.791
68	85.0000	73.6122	86.25	83.54	82.83	1.920	1.894	1.855	1.790
69	86.2500	74.6947	87.50	84.79	84.07	1.920	1.894	1.855	1.790
70	87.5000	75.7772	88.75	86.04	85.32	1.920	1.894	1.855	1.790
71	88.7500	76.8598	90.00	87.29	86.57	1.920	1.894	1.855	1.789
72	90.0000	77.9423	91.25	88.54	87.82	1.920	1.894	1.854	1.789
73	91.2500	79.0248	92.50	89.79	89.07	1.920	1.893	1.854	1.788
74	92.5000	80.1074	93.75	91.04	90.32	1.920	1.893	1.854	1.788
75	93.7500	81.1899	95.00	92.29	91.57	1.919	1.893	1.853	1.788
76	95.0000	82.2724	96.25	93.54	92.82	1.919	1.893	1.853	1.787
77	96.2500	83.3550	97.50	94.79	94.07	1.919	1.893	1.853	1.787
78	97.5000	84.4375	98.75	96.04	95.32	1.919	1.893	1.853	1.786
79	98.7500	85.5200	100.00	97.28	96.57	1.919	1.892	1.852	1.786
80	100.0000	86.6025	101.25	98.53	97.82	1.919	1.892	1.852	1.785
81	101.2500	87.6851	102.50	99.78	99.07	1.919	1.892	1.852	1.785
82	102.5000	88.7676	103.75	101.03	100.32	1.919	1.892	1.852	1.785
83	103.7500	89.8501	105.00	102.28	101.56	1.919	1.892	1.851	1.784
84	105.0000	90.9327	106.25	103.53	102.81	1.919	1.892	1.851	1.784
85	106.2500	92.0152	107.50	104.78	104.06	1.919	1.892	1.851	1.784
86	107.5000	93.0977	108.75	106.03	105.31	1.918	1.891	1.851	1.783
87	108.7500	94.1803	110.00	107.28	106.56	1.918	1.891	1.851	1.783
88	110.0000	95.2628	111.25	108.53	107.81	1.918	1.891	1.850	1.782
89	111.2500	96.3453	112.50	109.78	109.06	1.918	1.891	1.850	1.782
90	112.5000	97.4279	113.75	111.03	110.31	1.918	1.891	1.850	1.782
91	113.7500	98.5104	115.00	112.28	111.56	1.918	1.891	1.850	1.781
92	115.0000	99.5929	116.25	113.53	112.81	1.918	1.890	1.849	1.781
93	116.2500	100.6755	117.50	114.78	114.06	1.918	1.890	1.849	1.781
94	117.5000	101.7580	118.75	116.03	115.31	1.918	1.890	1.849	1.780
95	118.7500	102.8405	120.00	117.28	116.56	1.918	1.890	1.849	1.780
96	120.0000	103.9231	121.25	118.53	117.81	1.917	1.890	1.848	1.779
97	121.2500	105.0056	122.50	119.78	119.06	1.917	1.890	1.848	1.779
98	122.5000	106.0881	123.75	121.03	120.30	1.917	1.890	1.848	1.779
99	123.7500	107.1707	125.00	122.28	121.55	1.917	1.889	1.848	1.778
100	125.0000	108.2532	126.25	123.53	122.80	1.917	1.889	1.848	1.778

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Table 37 — Internal spline

30 degree pressure angle — Side fit — Flat root — Module = 1.00

E_{vmin} = minimum effective space width, circular = 1.571

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	6.0000	5.1962	7.70	7.20	5.43	1.600	1.618	1.644	1.688
7	7.0000	6.0622	8.71	8.20	6.36	1.600	1.618	1.645	1.689
8	8.0000	6.9282	9.71	9.20	7.31	1.601	1.619	1.646	1.691
9	9.0000	7.7942	10.71	10.20	8.27	1.601	1.619	1.647	1.693
10	10.0000	8.6603	11.71	11.20	9.24	1.602	1.620	1.648	1.694
11	11.0000	9.5263	12.72	12.20	10.22	1.602	1.621	1.649	1.695
12	12.0000	10.3923	13.72	13.20	11.20	1.602	1.621	1.649	1.696
13	13.0000	11.2583	14.72	14.20	12.18	1.602	1.622	1.650	1.698
14	14.0000	12.1244	15.72	15.20	13.17	1.603	1.622	1.651	1.699
15	15.0000	12.9904	16.72	16.20	14.16	1.603	1.622	1.651	1.700
16	16.0000	13.8564	17.73	17.20	15.15	1.603	1.623	1.652	1.701
17	17.0000	14.7224	18.73	18.20	16.14	1.604	1.623	1.653	1.702
18	18.0000	15.5885	19.73	19.20	17.13	1.604	1.624	1.653	1.703
19	19.0000	16.4545	20.73	20.20	18.12	1.604	1.624	1.654	1.704
20	20.0000	17.3205	21.73	21.20	19.11	1.604	1.624	1.654	1.704
21	21.0000	18.1865	22.73	22.20	20.11	1.604	1.625	1.655	1.705
22	22.0000	19.0526	23.73	23.20	21.10	1.605	1.625	1.655	1.706
23	23.0000	19.9186	24.74	24.20	22.10	1.605	1.625	1.656	1.707
24	24.0000	20.7846	25.74	25.20	23.09	1.605	1.626	1.656	1.708
25	25.0000	21.6506	26.74	26.20	24.09	1.605	1.626	1.657	1.708
26	26.0000	22.5167	27.74	27.20	25.09	1.605	1.626	1.657	1.709
27	27.0000	23.3827	28.74	28.20	26.08	1.606	1.626	1.658	1.710
28	28.0000	24.2487	29.74	29.20	27.08	1.606	1.627	1.658	1.711
29	29.0000	25.1147	30.74	30.20	28.08	1.606	1.627	1.659	1.711
30	30.0000	25.9808	31.74	31.20	29.07	1.606	1.627	1.659	1.712
31	31.0000	26.8468	32.75	32.20	30.07	1.606	1.627	1.659	1.713
32	32.0000	27.7128	33.75	33.20	31.07	1.606	1.628	1.660	1.713
33	33.0000	28.5788	34.75	34.20	32.07	1.607	1.628	1.660	1.714
34	34.0000	29.4449	35.75	35.20	33.07	1.607	1.628	1.661	1.714
35	35.0000	30.3109	36.75	36.20	34.06	1.607	1.628	1.661	1.715
36	36.0000	31.1769	37.75	37.20	35.06	1.607	1.629	1.661	1.716
37	37.0000	32.0429	38.75	38.20	36.06	1.607	1.629	1.662	1.716
38	38.0000	32.9090	39.75	39.20	37.06	1.607	1.629	1.662	1.717
39	39.0000	33.7750	40.75	40.20	38.06	1.607	1.629	1.662	1.717
40	40.0000	34.6410	41.75	41.20	39.06	1.608	1.630	1.663	1.718
41	41.0000	35.5070	42.76	42.20	40.05	1.608	1.630	1.663	1.718
42	42.0000	36.3731	43.76	43.20	41.05	1.608	1.630	1.663	1.719
43	43.0000	37.2391	44.76	44.20	42.05	1.608	1.630	1.664	1.720
44	44.0000	38.1051	45.76	45.20	43.05	1.608	1.630	1.664	1.720
45	45.0000	38.9711	46.76	46.20	44.05	1.608	1.631	1.664	1.721
46	46.0000	39.8372	47.76	47.20	45.05	1.608	1.631	1.665	1.721
47	47.0000	40.7032	48.76	48.20	46.05	1.608	1.631	1.665	1.722
48	48.0000	41.5692	49.76	49.20	47.05	1.609	1.631	1.665	1.722
49	49.0000	42.4352	50.76	50.20	48.05	1.609	1.632	1.666	1.723
50	50.0000	43.3013	51.76	51.20	49.04	1.609	1.632	1.666	1.723
51	51.0000	44.1673	52.76	52.20	50.04	1.609	1.632	1.666	1.724
52	52.0000	45.0333	53.77	53.20	51.04	1.609	1.632	1.667	1.724
53	53.0000	45.8993	54.77	54.20	52.04	1.609	1.632	1.667	1.724
54	54.0000	46.7654	55.77	55.20	53.04	1.609	1.632	1.667	1.725
55	55.0000	47.6314	56.77	56.20	54.04	1.609	1.633	1.667	1.725
56	56.0000	48.4974	57.77	57.20	55.04	1.610	1.633	1.668	1.726
57	57.0000	49.3635	58.77	58.20	56.04	1.610	1.633	1.668	1.726
58	58.0000	50.2295	59.77	59.20	57.04	1.610	1.633	1.668	1.727
59	59.0000	51.0955	60.77	60.20	58.04	1.610	1.633	1.669	1.727
60	60.0000	51.9615	61.77	61.20	59.04	1.610	1.634	1.669	1.728
61	61.0000	52.8276	62.77	62.20	60.04	1.610	1.634	1.669	1.728
62	62.0000	53.6936	63.77	63.20	61.04	1.610	1.634	1.669	1.728
63	63.0000	54.5596	64.77	64.20	62.03	1.610	1.634	1.670	1.729
64	64.0000	55.4256	65.77	65.20	63.03	1.610	1.634	1.670	1.729
65	65.0000	56.2917	66.78	66.20	64.03	1.611	1.634	1.670	1.730
66	66.0000	57.1577	67.78	67.20	65.03	1.611	1.635	1.670	1.730
67	67.0000	58.0237	68.78	68.20	66.03	1.611	1.635	1.671	1.731
68	68.0000	58.8897	69.78	69.20	67.03	1.611	1.635	1.671	1.731
69	69.0000	59.7558	70.78	70.20	68.03	1.611	1.635	1.671	1.731
70	70.0000	60.6218	71.78	71.20	69.03	1.611	1.635	1.671	1.732
71	71.0000	61.4878	72.78	72.20	70.03	1.611	1.635	1.672	1.732
72	72.0000	62.3538	73.78	73.20	71.03	1.611	1.635	1.672	1.733
73	73.0000	63.2199	74.78	74.20	72.03	1.611	1.636	1.672	1.733
74	74.0000	64.0859	75.78	75.20	73.03	1.611	1.636	1.672	1.733
75	75.0000	64.9519	76.78	76.20	74.03	1.612	1.636	1.673	1.734
76	76.0000	65.8179	77.78	77.20	75.03	1.612	1.636	1.673	1.734
77	77.0000	66.6840	78.78	78.20	76.03	1.612	1.636	1.673	1.734
78	78.0000	67.5500	79.78	79.20	77.03	1.612	1.636	1.673	1.735
79	79.0000	68.4160	80.78	80.20	78.03	1.612	1.637	1.674	1.735
80	80.0000	69.2820	81.79	81.20	79.03	1.612	1.637	1.674	1.736
81	81.0000	70.1481	82.79	82.20	80.03	1.612	1.637	1.674	1.736
82	82.0000	71.0141	83.79	83.20	81.03	1.612	1.637	1.674	1.736
83	83.0000	71.8801	84.79	84.20	82.03	1.612	1.637	1.674	1.737
84	84.0000	72.7461	85.79	85.20	83.03	1.612	1.637	1.675	1.737
85	85.0000	73.6122	86.79	86.20	84.03	1.612	1.637	1.675	1.737
86	86.0000	74.4782	87.79	87.20	85.03	1.613	1.638	1.675	1.738
87	87.0000	75.3442	88.79	88.20	86.03	1.613	1.638	1.675	1.738
88	88.0000	76.2102	89.79	89.20	87.02	1.613	1.638	1.676	1.738
89	89.0000	77.0763	90.79	90.20	88.02	1.613	1.638	1.676	1.739
90	90.0000	77.9423	91.79	91.20	89.02	1.613	1.638	1.676	1.739
91	91.0000	78.8083	92.79	92.20	90.02	1.613	1.638	1.676	1.739
92	92.0000	79.6743	93.79	93.20	91.02	1.613	1.638	1.676	1.740
93	93.0000	80.5404	94.79	94.20	92.02	1.613	1.638	1.677	1.740
94	94.0000	81.4064	95.79	95.20	93.02	1.613	1.639	1.677	1.740
95	95.0000	82.2724	96.79	96.20	94.02	1.613	1.639	1.677	1.741
96	96.0000	83.1384	97.79	97.20	95.02	1.613	1.639	1.677	1.741
97	97.0000	84.0045	98.80	98.20	96.02	1.613	1.639	1.677	1.741
98	98.0000	84.8705	99.80	99.20	97.02	1.614	1.639	1.678	1.742
99	99.0000	85.7365	100.80	100.20	98.02	1.614	1.639	1.678	1.742
100	100.0000	86.6025	101.80	101.20	99.02	1.614	1.639	1.678	1.742

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Table 38 — External spline

30 degree pressure angle — Side fit — Flat root — Module = 1.00

S_{vmax} = maximum effective tooth thickness, circular = 1.571

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	6.0000	5.1962	7.00	5.23	4.30	1.542	1.524	1.498	1.454
7	7.0000	6.0622	8.00	6.16	5.29	1.541	1.523	1.497	1.452
8	8.0000	6.9282	9.00	7.11	6.29	1.541	1.523	1.496	1.451
9	9.0000	7.7942	10.00	8.07	7.29	1.540	1.522	1.495	1.449
10	10.0000	8.6603	11.00	9.04	8.29	1.540	1.522	1.494	1.448
11	11.0000	9.5263	12.00	10.02	9.28	1.540	1.521	1.493	1.446
12	12.0000	10.3923	13.00	11.00	10.28	1.539	1.521	1.492	1.445
13	13.0000	11.2583	14.00	11.98	11.28	1.539	1.520	1.492	1.444
14	14.0000	12.1244	15.00	12.97	12.28	1.539	1.520	1.491	1.443
15	15.0000	12.9904	16.00	13.96	13.28	1.539	1.519	1.490	1.442
16	16.0000	13.8564	17.00	14.95	14.27	1.538	1.519	1.490	1.441
17	17.0000	14.7224	18.00	15.94	15.27	1.538	1.518	1.489	1.440
18	18.0000	15.5885	19.00	16.93	16.27	1.538	1.518	1.488	1.439
19	19.0000	16.4545	20.00	17.92	17.27	1.538	1.518	1.488	1.438
20	20.0000	17.3205	21.00	18.91	18.27	1.537	1.517	1.487	1.437
21	21.0000	18.1865	22.00	19.91	19.27	1.537	1.517	1.487	1.436
22	22.0000	19.0526	23.00	20.90	20.27	1.537	1.517	1.486	1.436
23	23.0000	19.9186	24.00	21.90	21.26	1.537	1.516	1.486	1.435
24	24.0000	20.7846	25.00	22.89	22.26	1.537	1.516	1.485	1.434
25	25.0000	21.6506	26.00	23.89	23.26	1.536	1.516	1.485	1.433
26	26.0000	22.5167	27.00	24.89	24.26	1.536	1.515	1.484	1.432
27	27.0000	23.3827	28.00	25.88	25.26	1.536	1.515	1.484	1.432
28	28.0000	24.2487	29.00	26.88	26.26	1.536	1.515	1.483	1.431
29	29.0000	25.1147	30.00	27.88	27.26	1.536	1.515	1.483	1.430
30	30.0000	25.9808	31.00	28.87	28.26	1.536	1.514	1.483	1.430
31	31.0000	26.8468	32.00	29.87	29.25	1.535	1.514	1.482	1.429
32	32.0000	27.7128	33.00	30.87	30.25	1.535	1.514	1.482	1.428
33	33.0000	28.5788	34.00	31.87	31.25	1.535	1.514	1.481	1.428
34	34.0000	29.4449	35.00	32.87	32.25	1.535	1.513	1.481	1.427
35	35.0000	30.3109	36.00	33.86	33.25	1.535	1.513	1.481	1.427
36	36.0000	31.1769	37.00	34.86	34.25	1.535	1.513	1.480	1.426
37	37.0000	32.0429	38.00	35.86	35.25	1.534	1.513	1.480	1.425
38	38.0000	32.9090	39.00	36.86	36.25	1.534	1.512	1.480	1.425
39	39.0000	33.7750	40.00	37.86	37.25	1.534	1.512	1.479	1.424
40	40.0000	34.6410	41.00	38.86	38.25	1.534	1.512	1.479	1.424
41	41.0000	35.5070	42.00	39.85	39.24	1.534	1.512	1.479	1.423
42	42.0000	36.3731	43.00	40.85	40.24	1.534	1.512	1.478	1.423
43	43.0000	37.2391	44.00	41.85	41.24	1.534	1.511	1.478	1.422
44	44.0000	38.1051	45.00	42.85	42.24	1.533	1.511	1.478	1.422
45	45.0000	38.9711	46.00	43.85	43.24	1.533	1.511	1.477	1.421
46	46.0000	39.8372	47.00	44.85	44.24	1.533	1.511	1.477	1.421
47	47.0000	40.7032	48.00	45.85	45.24	1.533	1.510	1.477	1.420
48	48.0000	41.5692	49.00	46.85	46.24	1.533	1.510	1.476	1.420
49	49.0000	42.4352	50.00	47.85	47.24	1.533	1.510	1.476	1.419
50	50.0000	43.3013	51.00	48.84	48.24	1.533	1.510	1.476	1.419
51	51.0000	44.1673	52.00	49.84	49.24	1.533	1.510	1.475	1.418
52	52.0000	45.0333	53.00	50.84	50.23	1.532	1.510	1.475	1.418
53	53.0000	45.8993	54.00	51.84	51.23	1.532	1.509	1.475	1.417
54	54.0000	46.7654	55.00	52.84	52.23	1.532	1.509	1.474	1.417
55	55.0000	47.6314	56.00	53.84	53.23	1.532	1.509	1.474	1.416
56	56.0000	48.4974	57.00	54.84	54.23	1.532	1.509	1.474	1.416
57	57.0000	49.3635	58.00	55.84	55.23	1.532	1.509	1.474	1.415
58	58.0000	50.2295	59.00	56.84	56.23	1.532	1.508	1.473	1.415
59	59.0000	51.0955	60.00	57.84	57.23	1.532	1.508	1.473	1.414
60	60.0000	51.9615	61.00	58.84	58.23	1.532	1.508	1.473	1.414
61	61.0000	52.8276	62.00	59.84	59.23	1.531	1.508	1.473	1.414
62	62.0000	53.6936	63.00	60.84	60.23	1.531	1.508	1.472	1.413
63	63.0000	54.5596	64.00	61.83	61.23	1.531	1.508	1.472	1.413
64	64.0000	55.4256	65.00	62.83	62.23	1.531	1.507	1.472	1.412
65	65.0000	56.2917	66.00	63.83	63.22	1.531	1.507	1.471	1.412
66	66.0000	57.1577	67.00	64.83	64.22	1.531	1.507	1.471	1.411
67	67.0000	58.0237	68.00	65.83	65.22	1.531	1.507	1.471	1.411
68	68.0000	58.8897	69.00	66.83	66.22	1.531	1.507	1.471	1.411
69	69.0000	59.7558	70.00	67.83	67.22	1.531	1.507	1.470	1.410
70	70.0000	60.6218	71.00	68.83	68.22	1.531	1.506	1.470	1.410
71	71.0000	61.4878	72.00	69.83	69.22	1.530	1.506	1.470	1.409
72	72.0000	62.3538	73.00	70.83	70.22	1.530	1.506	1.470	1.409
73	73.0000	63.2199	74.00	71.83	71.22	1.530	1.506	1.469	1.409
74	74.0000	64.0859	75.00	72.83	72.22	1.530	1.506	1.469	1.408
75	75.0000	64.9519	76.00	73.83	73.22	1.530	1.506	1.469	1.408
76	76.0000	65.8179	77.00	74.83	74.22	1.530	1.506	1.469	1.408
77	77.0000	66.6840	78.00	75.83	75.22	1.530	1.505	1.469	1.407
78	78.0000	67.5500	79.00	76.83	76.22	1.530	1.505	1.468	1.407
79	79.0000	68.4160	80.00	77.83	77.22	1.530	1.505	1.468	1.406
80	80.0000	69.2820	81.00	78.83	78.21	1.530	1.505	1.468	1.406
81	81.0000	70.1481	82.00	79.83	79.21	1.530	1.505	1.468	1.406
82	82.0000	71.0141	83.00	80.83	80.21	1.529	1.505	1.467	1.405
83	83.0000	71.8801	84.00	81.83	81.21	1.529	1.504	1.467	1.405
84	84.0000	72.7461	85.00	82.83	82.21	1.529	1.504	1.467	1.405
85	85.0000	73.6122	86.00	83.83	83.21	1.529	1.504	1.467	1.404
86	86.0000	74.4782	87.00	84.83	84.21	1.529	1.504	1.467	1.404
87	87.0000	75.3442	88.00	85.83	85.21	1.529	1.504	1.466	1.404
88	88.0000	76.2102	89.00	86.82	86.21	1.529	1.504	1.466	1.403
89	89.0000	77.0763	90.00	87.82	87.21	1.529	1.504	1.466	1.403
90	90.0000	77.9423	91.00	88.82	88.21	1.529	1.504	1.466	1.403
91	91.0000	78.8083	92.00	89.82	89.21	1.529	1.503	1.465	1.402
92	92.0000	79.6743	93.00	90.82	90.21	1.529	1.503	1.465	1.402
93	93.0000	80.5404	94.00	91.82	91.21	1.528	1.503	1.465	1.402
94	94.0000	81.4064	95.00	92.82	92.21	1.528	1.503	1.465	1.401
95	95.0000	82.2724	96.00	93.82	93.21	1.528	1.503	1.465	1.401
96	96.0000	83.1384	97.00	94.82	94.21	1.528	1.503	1.464	1.401
97	97.0000	84.0045	98.00	95.82	95.20	1.528	1.503	1.464	1.400
98	98.0000	84.8705	99.00	96.82	96.20	1.528	1.502	1.464	1.400
99	99.0000	85.7365	100.00	97.82	97.20	1.528	1.502	1.464	1.400
100	100.0000	86.6025	101.00	98.82	98.20	1.528	1.502	1.464	1.399

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Table 39 — Internal spline

30 degree pressure angle — Side fit — Flat root — Module = 0.75

E_{vmin} = minimum effective space width, circular = 1.178

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	4.5000	3.8971	5.81	5.40	4.07	1.205	1.221	1.244	1.284
7	5.2500	4.5466	6.56	6.15	4.77	1.205	1.221	1.245	1.286
8	6.0000	5.1962	7.31	6.90	5.48	1.205	1.222	1.246	1.287
9	6.7500	5.8457	8.07	7.65	6.20	1.206	1.222	1.247	1.289
10	7.5000	6.4952	8.82	8.40	6.93	1.206	1.223	1.248	1.290
11	8.2500	7.1447	9.57	9.15	7.66	1.206	1.223	1.249	1.291
12	9.0000	7.7942	10.32	9.90	8.40	1.207	1.224	1.249	1.292
13	9.7500	8.4437	11.07	10.65	9.14	1.207	1.224	1.250	1.293
14	10.5000	9.0933	11.83	11.40	9.88	1.207	1.225	1.251	1.294
15	11.2500	9.7428	12.58	12.15	10.62	1.207	1.225	1.251	1.295
16	12.0000	10.3923	13.33	12.90	11.36	1.208	1.225	1.252	1.296
17	12.7500	11.0418	14.08	13.65	12.10	1.208	1.226	1.252	1.297
18	13.5000	11.6913	14.83	14.40	12.85	1.208	1.226	1.253	1.298
19	14.2500	12.3409	15.58	15.15	13.59	1.208	1.226	1.253	1.299
20	15.0000	12.9904	16.33	15.90	14.34	1.208	1.227	1.254	1.299
21	15.7500	13.6399	17.09	16.65	15.08	1.209	1.227	1.254	1.300
22	16.5000	14.2894	17.84	17.40	15.83	1.209	1.227	1.255	1.301
23	17.2500	14.9389	18.59	18.15	16.57	1.209	1.227	1.255	1.302
24	18.0000	15.5885	19.34	18.90	17.32	1.209	1.228	1.256	1.302
25	18.7500	16.2380	20.09	19.65	18.07	1.209	1.228	1.256	1.303
26	19.5000	16.8875	20.84	20.40	18.82	1.209	1.228	1.257	1.304
27	20.2500	17.5370	21.59	21.15	19.56	1.210	1.229	1.257	1.304
28	21.0000	18.1865	22.34	21.90	20.31	1.210	1.229	1.257	1.305
29	21.7500	18.8361	23.10	22.65	21.06	1.210	1.229	1.258	1.305
30	22.5000	19.4856	23.85	23.40	21.81	1.210	1.229	1.258	1.306
31	23.2500	20.1351	24.60	24.15	22.55	1.210	1.230	1.258	1.307
32	24.0000	20.7846	25.35	24.90	23.30	1.210	1.230	1.259	1.307
33	24.7500	21.4341	26.10	25.65	24.05	1.211	1.230	1.259	1.308
34	25.5000	22.0836	26.85	26.40	24.80	1.211	1.230	1.259	1.308
35	26.2500	22.7332	27.60	27.15	25.55	1.211	1.230	1.260	1.309
36	27.0000	23.3827	28.35	27.90	26.30	1.211	1.231	1.260	1.309
37	27.7500	24.0322	29.10	28.65	27.05	1.211	1.231	1.260	1.310
38	28.5000	24.6817	29.85	29.40	27.79	1.211	1.231	1.261	1.310
39	29.2500	25.3312	30.61	30.15	28.54	1.211	1.231	1.261	1.311
40	30.0000	25.9808	31.36	30.90	29.29	1.211	1.231	1.261	1.311
41	30.7500	26.6303	32.11	31.65	30.04	1.212	1.232	1.262	1.312
42	31.5000	27.2798	32.86	32.40	30.79	1.212	1.232	1.262	1.312
43	32.2500	27.9293	33.61	33.15	31.54	1.212	1.232	1.262	1.313
44	33.0000	28.5788	34.36	33.90	32.29	1.212	1.232	1.263	1.313
45	33.7500	29.2284	35.11	34.65	33.04	1.212	1.232	1.263	1.314
46	34.5000	29.8779	35.86	35.40	33.79	1.212	1.233	1.263	1.314
47	35.2500	30.5274	36.61	36.15	34.54	1.212	1.233	1.264	1.315
48	36.0000	31.1769	37.36	36.90	35.28	1.212	1.233	1.264	1.315
49	36.7500	31.8264	38.11	37.65	36.03	1.212	1.233	1.264	1.316
50	37.5000	32.4760	38.86	38.40	36.78	1.213	1.233	1.264	1.316
51	38.2500	33.1255	39.61	39.15	37.53	1.213	1.233	1.265	1.317
52	39.0000	33.7750	40.37	39.90	38.28	1.213	1.234	1.265	1.317
53	39.7500	34.4245	41.12	40.65	39.03	1.213	1.234	1.265	1.317
54	40.5000	35.0740	41.87	41.40	39.78	1.213	1.234	1.265	1.318
55	41.2500	35.7236	42.62	42.15	40.53	1.213	1.234	1.266	1.318
56	42.0000	36.3731	43.37	42.90	41.28	1.213	1.234	1.266	1.319
57	42.7500	37.0226	44.12	43.65	42.03	1.213	1.234	1.266	1.319
58	43.5000	37.6721	44.87	44.40	42.78	1.213	1.235	1.266	1.319
59	44.2500	38.3216	45.62	45.15	43.53	1.214	1.235	1.267	1.320
60	45.0000	38.9711	46.37	45.90	44.28	1.214	1.235	1.267	1.320
61	45.7500	39.6207	47.12	46.65	45.03	1.214	1.235	1.267	1.321
62	46.5000	40.2702	47.87	47.40	45.78	1.214	1.235	1.267	1.321
63	47.2500	40.9197	48.62	48.15	46.53	1.214	1.235	1.268	1.321
64	48.0000	41.5692	49.37	48.90	47.28	1.214	1.236	1.268	1.322
65	48.7500	42.2187	50.12	49.65	48.03	1.214	1.236	1.268	1.322
66	49.5000	42.8683	50.87	50.40	48.77	1.214	1.236	1.268	1.322
67	50.2500	43.5178	51.63	51.15	49.52	1.214	1.236	1.269	1.323
68	51.0000	44.1673	52.38	51.90	50.27	1.214	1.236	1.269	1.323
69	51.7500	44.8168	53.13	52.65	51.02	1.214	1.236	1.269	1.323
70	52.5000	45.4663	53.88	53.40	51.77	1.215	1.236	1.269	1.324
71	53.2500	46.1159	54.63	54.15	52.52	1.215	1.237	1.269	1.324
72	54.0000	46.7654	55.38	54.90	53.27	1.215	1.237	1.270	1.325
73	54.7500	47.4149	56.13	55.65	54.02	1.215	1.237	1.270	1.325
74	55.5000	48.0644	56.88	56.40	54.77	1.215	1.237	1.270	1.325
75	56.2500	48.7139	57.63	57.15	55.52	1.215	1.237	1.270	1.326
76	57.0000	49.3635	58.38	57.90	56.27	1.215	1.237	1.270	1.326
77	57.7500	50.0130	59.13	58.65	57.02	1.215	1.237	1.271	1.326
78	58.5000	50.6625	59.88	59.40	57.77	1.215	1.237	1.271	1.327
79	59.2500	51.3120	60.63	60.15	58.52	1.215	1.238	1.271	1.327
80	60.0000	51.9615	61.38	60.90	59.27	1.215	1.238	1.271	1.327
81	60.7500	52.6110	62.13	61.65	60.02	1.215	1.238	1.271	1.328
82	61.5000	53.2606	62.88	62.40	60.77	1.216	1.238	1.272	1.328
83	62.2500	53.9101	63.63	63.15	61.52	1.216	1.238	1.272	1.328
84	63.0000	54.5596	64.39	63.90	62.27	1.216	1.238	1.272	1.328
85	63.7500	55.2091	65.14	64.65	63.02	1.216	1.238	1.272	1.329
86	64.5000	55.8586	65.89	65.40	63.77	1.216	1.238	1.272	1.329
87	65.2500	56.5082	66.64	66.15	64.52	1.216	1.239	1.273	1.329
88	66.0000	57.1577	67.39	66.90	65.27	1.216	1.239	1.273	1.330
89	66.7500	57.8072	68.14	67.65	66.02	1.216	1.239	1.273	1.330
90	67.5000	58.4567	68.89	68.40	66.77	1.216	1.239	1.273	1.330
91	68.2500	59.1062	69.64	69.15	67.52	1.216	1.239	1.273	1.331
92	69.0000	59.7558	70.39	69.90	68.27	1.216	1.239	1.274	1.331
93	69.7500	60.4053	71.14	70.65	69.02	1.216	1.239	1.274	1.331
94	70.5000	61.0548	71.89	71.40	69.77	1.216	1.239	1.274	1.332
95	71.2500	61.7043	72.64	72.15	70.52	1.217	1.240	1.274	1.332
96	72.0000	62.3538	73.39	72.90	71.27	1.217	1.240	1.274	1.332
97	72.7500	63.0034	74.14	73.65	72.02	1.217	1.240	1.275	1.332
98	73.5000	63.6529	74.89	74.40	72.77	1.217	1.240	1.275	1.333
99	74.2500	64.3024	75.64	75.15	73.52	1.217	1.240	1.275	1.333
100	75.0000	64.9519	76.39	75.90	74.27	1.217	1.240	1.275	1.333

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Table 40 — External spline

30 degree pressure angle — Side fit — Flat root — Module = 0.75

S_{vmax} = maximum effective tooth thickness, circular = 1.178

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	4.5000	3.8971	5.25	3.92	3.19	1.152	1.136	1.112	1.072
7	5.2500	4.5466	6.00	4.62	3.94	1.151	1.135	1.111	1.070
8	6.0000	5.1962	6.75	5.33	4.69	1.151	1.134	1.110	1.069
9	6.7500	5.8457	7.50	6.05	5.43	1.150	1.134	1.109	1.068
10	7.5000	6.4952	8.25	6.78	6.18	1.150	1.133	1.108	1.066
11	8.2500	7.1447	9.00	7.51	6.93	1.150	1.133	1.108	1.065
12	9.0000	7.7942	9.75	8.25	7.68	1.150	1.132	1.107	1.064
13	9.7500	8.4437	10.50	8.99	8.43	1.149	1.132	1.106	1.063
14	10.5000	9.0933	11.25	9.73	9.17	1.149	1.132	1.106	1.062
15	11.2500	9.7428	12.00	10.47	9.92	1.149	1.131	1.105	1.061
16	12.0000	10.3923	12.75	11.21	10.67	1.149	1.131	1.104	1.060
17	12.7500	11.0418	13.50	11.95	11.42	1.148	1.131	1.104	1.059
18	13.5000	11.6913	14.25	12.70	12.17	1.148	1.130	1.103	1.058
19	14.2500	12.3409	15.00	13.44	12.92	1.148	1.130	1.103	1.058
20	15.0000	12.9904	15.75	14.19	13.67	1.148	1.130	1.102	1.057
21	15.7500	13.6399	16.50	14.93	14.41	1.148	1.129	1.102	1.056
22	16.5000	14.2894	17.25	15.68	15.16	1.147	1.129	1.101	1.055
23	17.2500	14.9389	18.00	16.42	15.91	1.147	1.129	1.101	1.055
24	18.0000	15.5885	18.75	17.17	16.66	1.147	1.128	1.101	1.054
25	18.7500	16.2380	19.50	17.92	17.41	1.147	1.128	1.100	1.053
26	19.5000	16.8875	20.25	18.67	18.16	1.147	1.128	1.100	1.053
27	20.2500	17.5370	21.00	19.41	18.91	1.147	1.128	1.099	1.052
28	21.0000	18.1865	21.75	20.16	19.66	1.146	1.127	1.099	1.051
29	21.7500	18.8361	22.50	20.91	20.40	1.146	1.127	1.099	1.051
30	22.5000	19.4856	23.25	21.66	21.15	1.146	1.127	1.098	1.050
31	23.2500	20.1351	24.00	22.40	21.90	1.146	1.127	1.098	1.050
32	24.0000	20.7846	24.75	23.15	22.65	1.146	1.126	1.097	1.049
33	24.7500	21.4341	25.50	23.90	23.40	1.146	1.126	1.097	1.048
34	25.5000	22.0836	26.25	24.65	24.15	1.146	1.126	1.097	1.048
35	26.2500	22.7332	27.00	25.40	24.90	1.145	1.126	1.096	1.047
36	27.0000	23.3827	27.75	26.15	25.65	1.145	1.126	1.096	1.047
37	27.7500	24.0322	28.50	26.90	26.40	1.145	1.125	1.096	1.046
38	28.5000	24.6817	29.25	27.64	27.15	1.145	1.125	1.095	1.046
39	29.2500	25.3312	30.00	28.39	27.89	1.145	1.125	1.095	1.045
40	30.0000	25.9808	30.75	29.14	28.64	1.145	1.125	1.095	1.045
41	30.7500	26.6303	31.50	29.89	29.39	1.145	1.125	1.094	1.044
42	31.5000	27.2798	32.25	30.64	30.14	1.145	1.124	1.094	1.044
43	32.2500	27.9293	33.00	31.39	30.89	1.144	1.124	1.094	1.043
44	33.0000	28.5788	33.75	32.14	31.64	1.144	1.124	1.094	1.043
45	33.7500	29.2284	34.50	32.89	32.39	1.144	1.124	1.093	1.042
46	34.5000	29.8779	35.25	33.64	33.14	1.144	1.124	1.093	1.042
47	35.2500	30.5274	36.00	34.39	33.89	1.144	1.123	1.093	1.041
48	36.0000	31.1769	36.75	35.13	34.64	1.144	1.123	1.092	1.041
49	36.7500	31.8264	37.50	35.88	35.39	1.144	1.123	1.092	1.041
50	37.5000	32.4760	38.25	36.63	36.14	1.144	1.123	1.092	1.040
51	38.2500	33.1255	39.00	37.38	36.89	1.143	1.123	1.092	1.040
52	39.0000	33.7750	39.75	38.13	37.63	1.143	1.123	1.091	1.039
53	39.7500	34.4245	40.50	38.88	38.38	1.143	1.122	1.091	1.039
54	40.5000	35.0740	41.25	39.63	39.13	1.143	1.122	1.091	1.038
55	41.2500	35.7236	42.00	40.38	39.88	1.143	1.122	1.091	1.038
56	42.0000	36.3731	42.75	41.13	40.63	1.143	1.122	1.090	1.038
57	42.7500	37.0226	43.50	41.88	41.38	1.143	1.122	1.090	1.037
58	43.5000	37.6721	44.25	42.63	42.13	1.143	1.122	1.090	1.037
59	44.2500	38.3216	45.00	43.38	42.88	1.143	1.121	1.090	1.036
60	45.0000	38.9711	45.75	44.13	43.63	1.143	1.121	1.089	1.036
61	45.7500	39.6207	46.50	44.88	44.38	1.142	1.121	1.089	1.036
62	46.5000	40.2702	47.25	45.63	45.13	1.142	1.121	1.089	1.035
63	47.2500	40.9197	48.00	46.38	45.88	1.142	1.121	1.089	1.035
64	48.0000	41.5692	48.75	47.13	46.63	1.142	1.121	1.088	1.035
65	48.7500	42.2187	49.50	47.88	47.38	1.142	1.121	1.088	1.034
66	49.5000	42.8683	50.25	48.62	48.13	1.142	1.120	1.088	1.034
67	50.2500	43.5178	51.00	49.37	48.87	1.142	1.120	1.088	1.033
68	51.0000	44.1673	51.75	50.12	49.62	1.142	1.120	1.087	1.033
69	51.7500	44.8168	52.50	50.87	50.37	1.142	1.120	1.087	1.033
70	52.5000	45.4663	53.25	51.62	51.12	1.142	1.120	1.087	1.032
71	53.2500	46.1159	54.00	52.37	51.87	1.142	1.120	1.087	1.032
72	54.0000	46.7654	54.75	53.12	52.62	1.141	1.120	1.087	1.032
73	54.7500	47.4149	55.50	53.87	53.37	1.141	1.119	1.086	1.031
74	55.5000	48.0644	56.25	54.62	54.12	1.141	1.119	1.086	1.031
75	56.2500	48.7139	57.00	55.37	54.87	1.141	1.119	1.086	1.031
76	57.0000	49.3635	57.75	56.12	55.62	1.141	1.119	1.086	1.030
77	57.7500	50.0130	58.50	56.87	56.37	1.141	1.119	1.086	1.030
78	58.5000	50.6625	59.25	57.62	57.12	1.141	1.119	1.085	1.030
79	59.2500	51.3120	60.00	58.37	57.87	1.141	1.119	1.085	1.029
80	60.0000	51.9615	60.75	59.12	58.62	1.141	1.118	1.085	1.029
81	60.7500	52.6110	61.50	59.87	59.37	1.141	1.118	1.085	1.029
82	61.5000	53.2606	62.25	60.62	60.12	1.141	1.118	1.085	1.028
83	62.2500	53.9101	63.00	61.37	60.87	1.141	1.118	1.084	1.028
84	63.0000	54.5596	63.75	62.12	61.61	1.141	1.118	1.084	1.028
85	63.7500	55.2091	64.50	62.87	62.36	1.140	1.118	1.084	1.027
86	64.5000	55.8586	65.25	63.62	63.11	1.140	1.118	1.084	1.027
87	65.2500	56.5082	66.00	64.37	63.86	1.140	1.118	1.084	1.027
88	66.0000	57.1577	66.75	65.12	64.61	1.140	1.117	1.083	1.026
89	66.7500	57.8072	67.50	65.87	65.36	1.140	1.117	1.083	1.026
90	67.5000	58.4567	68.25	66.62	66.11	1.140	1.117	1.083	1.026
91	68.2500	59.1062	69.00	67.37	66.86	1.140	1.117	1.083	1.026
92	69.0000	59.7558	69.75	68.12	67.61	1.140	1.117	1.083	1.025
93	69.7500	60.4053	70.50	68.87	68.36	1.140	1.117	1.082	1.025
94	70.5000	61.0548	71.25	69.62	69.11	1.140	1.117	1.082	1.025
95	71.2500	61.7043	72.00	70.37	69.86	1.140	1.117	1.082	1.024
96	72.0000	62.3538	72.75	71.12	70.61	1.140	1.116	1.082	1.024
97	72.7500	63.0034	73.50	71.87	71.36	1.140	1.116	1.082	1.024
98	73.5000	63.6529	74.25	72.62	72.11	1.139	1.116	1.081	1.024
99	74.2500	64.3024	75.00	73.37	72.86	1.139	1.116	1.081	1.023
100	75.0000	64.9519	75.75	74.12	73.61	1.139	1.116	1.081	1.023

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Table 41 — Internal spline

30 degree pressure angle — Side fit — Flat root — Module = 0.50

E_{vmin} = minimum effective space width, circular = 0.785

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	3.0000	2.5981	3.91	3.60	2.72	0.809	0.822	0.843	0.878
7	3.5000	3.0311	4.41	4.10	3.18	0.809	0.823	0.844	0.879
8	4.0000	3.4641	4.92	4.60	3.66	0.809	0.824	0.845	0.881
9	4.5000	3.8971	5.42	5.10	4.14	0.810	0.824	0.846	0.882
10	5.0000	4.3301	5.92	5.60	4.62	0.810	0.824	0.846	0.883
11	5.5000	4.7631	6.42	6.10	5.11	0.810	0.825	0.847	0.884
12	6.0000	5.1962	6.92	6.60	5.60	0.810	0.825	0.848	0.885
13	6.5000	5.6292	7.42	7.10	6.09	0.811	0.826	0.848	0.886
14	7.0000	6.0622	7.93	7.60	6.58	0.811	0.826	0.849	0.887
15	7.5000	6.4952	8.43	8.10	7.08	0.811	0.826	0.849	0.887
16	8.0000	6.9282	8.93	8.60	7.57	0.811	0.827	0.850	0.888
17	8.5000	7.3612	9.43	9.10	8.07	0.811	0.827	0.850	0.889
18	9.0000	7.7942	9.93	9.60	8.56	0.811	0.827	0.851	0.890
19	9.5000	8.2272	10.43	10.10	9.06	0.812	0.827	0.851	0.890
20	10.0000	8.6603	10.93	10.60	9.56	0.812	0.828	0.851	0.891
21	10.5000	9.0933	11.43	11.10	10.05	0.812	0.828	0.852	0.892
22	11.0000	9.5263	11.94	11.60	10.55	0.812	0.828	0.852	0.892
23	11.5000	9.9593	12.44	12.10	11.05	0.812	0.828	0.853	0.893
24	12.0000	10.3923	12.94	12.60	11.55	0.812	0.829	0.853	0.894
25	12.5000	10.8253	13.44	13.10	12.05	0.813	0.829	0.853	0.894
26	13.0000	11.2583	13.94	13.60	12.54	0.813	0.829	0.854	0.895
27	13.5000	11.6913	14.44	14.10	13.04	0.813	0.829	0.854	0.895
28	14.0000	12.1244	14.94	14.60	13.54	0.813	0.830	0.854	0.896
29	14.5000	12.5574	15.44	15.10	14.04	0.813	0.830	0.855	0.896
30	15.0000	12.9904	15.94	15.60	14.54	0.813	0.830	0.855	0.897
31	15.5000	13.4234	16.44	16.10	15.04	0.813	0.830	0.855	0.897
32	16.0000	13.8564	16.94	16.60	15.54	0.814	0.830	0.856	0.898
33	16.5000	14.2894	17.45	17.10	16.03	0.814	0.831	0.856	0.898
34	17.0000	14.7224	17.95	17.60	16.53	0.814	0.831	0.856	0.899
35	17.5000	15.1554	18.45	18.10	17.03	0.814	0.831	0.857	0.899
36	18.0000	15.5885	18.95	18.60	17.53	0.814	0.831	0.857	0.900
37	18.5000	16.0215	19.45	19.10	18.03	0.814	0.831	0.857	0.900
38	19.0000	16.4545	19.95	19.60	18.53	0.814	0.832	0.857	0.901
39	19.5000	16.8875	20.45	20.10	19.03	0.814	0.832	0.858	0.901
40	20.0000	17.3205	20.95	20.60	19.53	0.814	0.832	0.858	0.902
41	20.5000	17.7535	21.45	21.10	20.03	0.815	0.832	0.858	0.902
42	21.0000	18.1865	21.95	21.60	20.53	0.815	0.832	0.859	0.902
43	21.5000	18.6195	22.45	22.10	21.03	0.815	0.832	0.859	0.903
44	22.0000	19.0526	22.95	22.60	21.53	0.815	0.833	0.859	0.903
45	22.5000	19.4856	23.45	23.10	22.02	0.815	0.833	0.859	0.904
46	23.0000	19.9186	23.96	23.60	22.52	0.815	0.833	0.860	0.904
47	23.5000	20.3516	24.46	24.10	23.02	0.815	0.833	0.860	0.904
48	24.0000	20.7846	24.96	24.60	23.52	0.815	0.833	0.860	0.905
49	24.5000	21.2176	25.46	25.10	24.02	0.815	0.833	0.860	0.905
50	25.0000	21.6506	25.96	25.60	24.52	0.815	0.833	0.861	0.906
51	25.5000	22.0836	26.46	26.10	25.02	0.816	0.834	0.861	0.906
52	26.0000	22.5167	26.96	26.60	25.52	0.816	0.834	0.861	0.906
53	26.5000	22.9497	27.46	27.10	26.02	0.816	0.834	0.861	0.907
54	27.0000	23.3827	27.96	27.60	26.52	0.816	0.834	0.861	0.907
55	27.5000	23.8157	28.46	28.10	27.02	0.816	0.834	0.862	0.907
56	28.0000	24.2487	28.96	28.60	27.52	0.816	0.834	0.862	0.908
57	28.5000	24.6817	29.46	29.10	28.02	0.816	0.834	0.862	0.908
58	29.0000	25.1147	29.96	29.60	28.52	0.816	0.835	0.862	0.908
59	29.5000	25.5478	30.46	30.10	29.02	0.816	0.835	0.862	0.909
60	30.0000	25.9808	30.96	30.60	29.52	0.816	0.835	0.863	0.909
61	30.5000	26.4138	31.46	31.10	30.02	0.816	0.835	0.863	0.909
62	31.0000	26.8468	31.97	31.60	30.52	0.816	0.835	0.863	0.910
63	31.5000	27.2798	32.47	32.10	31.02	0.817	0.835	0.863	0.910
64	32.0000	27.7128	32.97	32.60	31.52	0.817	0.835	0.864	0.910
65	32.5000	28.1458	33.47	33.10	32.02	0.817	0.836	0.864	0.911
66	33.0000	28.5788	33.97	33.60	32.52	0.817	0.836	0.864	0.911
67	33.5000	29.0119	34.47	34.10	33.02	0.817	0.836	0.864	0.911
68	34.0000	29.4449	34.97	34.60	33.52	0.817	0.836	0.864	0.912
69	34.5000	29.8779	35.47	35.10	34.02	0.817	0.836	0.864	0.912
70	35.0000	30.3109	35.97	35.60	34.52	0.817	0.836	0.865	0.912
71	35.5000	30.7439	36.47	36.10	35.02	0.817	0.836	0.865	0.913
72	36.0000	31.1769	36.97	36.60	35.52	0.817	0.836	0.865	0.913
73	36.5000	31.6099	37.47	37.10	36.02	0.817	0.836	0.865	0.913
74	37.0000	32.0429	37.97	37.60	36.51	0.817	0.837	0.865	0.913
75	37.5000	32.4760	38.47	38.10	37.01	0.817	0.837	0.866	0.914
76	38.0000	32.9090	38.97	38.60	37.51	0.818	0.837	0.866	0.914
77	38.5000	33.3420	39.47	39.10	38.01	0.818	0.837	0.866	0.914
78	39.0000	33.7750	39.97	39.60	38.51	0.818	0.837	0.866	0.915
79	39.5000	34.2080	40.47	40.10	39.01	0.818	0.837	0.866	0.915
80	40.0000	34.6410	40.97	40.60	39.51	0.818	0.837	0.866	0.915
81	40.5000	35.0740	41.48	41.10	40.01	0.818	0.837	0.867	0.915
82	41.0000	35.5070	41.98	41.60	40.51	0.818	0.838	0.867	0.916
83	41.5000	35.9401	42.48	42.10	41.01	0.818	0.838	0.867	0.916
84	42.0000	36.3731	42.98	42.60	41.51	0.818	0.838	0.867	0.916
85	42.5000	36.8061	43.48	43.10	42.01	0.818	0.838	0.867	0.916
86	43.0000	37.2391	43.98	43.60	42.51	0.818	0.838	0.867	0.917
87	43.5000	37.6721	44.48	44.10	43.01	0.818	0.838	0.868	0.917
88	44.0000	38.1051	44.98	44.60	43.51	0.818	0.838	0.868	0.917
89	44.5000	38.5381	45.48	45.10	44.01	0.818	0.838	0.868	0.918
90	45.0000	38.9711	45.98	45.60	44.51	0.818	0.838	0.868	0.918
91	45.5000	39.4042	46.48	46.10	45.01	0.819	0.838	0.868	0.918
92	46.0000	39.8372	46.98	46.60	45.51	0.819	0.839	0.868	0.918
93	46.5000	40.2702	47.48	47.10	46.01	0.819	0.839	0.869	0.919
94	47.0000	40.7032	47.98	47.60	46.51	0.819	0.839	0.869	0.919
95	47.5000	41.1362	48.48	48.10	47.01	0.819	0.839	0.869	0.919
96	48.0000	41.5692	48.98	48.60	47.51	0.819	0.839	0.869	0.919
97	48.5000	42.0022	49.48	49.10	48.01	0.819	0.839	0.869	0.920
98	49.0000	42.4352	49.98	49.60	48.51	0.819	0.839	0.869	0.920
99	49.5000	42.8683	50.48	50.10	49.01	0.819	0.839	0.870	0.920
100	50.0000	43.3013	50.98	50.60	49.51	0.819	0.839	0.870	0.920

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Table 42 — External spline

30 degree pressure angle — Side fit — Flat root — Module = 0.50

S_{vmax} = maximum effective tooth thickness, circular = 0.785

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	3.0000	2.5981	3.50	2.62	2.09	0.762	0.748	0.728	0.693
7	3.5000	3.0311	4.00	3.08	2.59	0.762	0.748	0.727	0.691
8	4.0000	3.4641	4.50	3.56	3.08	0.762	0.747	0.726	0.690
9	4.5000	3.8971	5.00	4.04	3.58	0.761	0.747	0.725	0.689
10	5.0000	4.3301	5.50	4.52	4.08	0.761	0.746	0.724	0.688
11	5.5000	4.7631	6.00	5.01	4.58	0.761	0.746	0.724	0.687
12	6.0000	5.1962	6.50	5.50	5.08	0.761	0.746	0.723	0.686
13	6.5000	5.6292	7.00	5.99	5.58	0.760	0.745	0.723	0.685
14	7.0000	6.0622	7.50	6.48	6.07	0.760	0.745	0.722	0.684
15	7.5000	6.4952	8.00	6.98	6.57	0.760	0.745	0.722	0.683
16	8.0000	6.9282	8.50	7.47	7.07	0.760	0.744	0.721	0.683
17	8.5000	7.3612	9.00	7.97	7.57	0.759	0.744	0.721	0.682
18	9.0000	7.7942	9.50	8.46	8.07	0.759	0.744	0.720	0.681
19	9.5000	8.2272	10.00	8.96	8.57	0.759	0.743	0.720	0.680
20	10.0000	8.6603	10.50	9.46	9.07	0.759	0.743	0.719	0.680
21	10.5000	9.0933	11.00	9.95	9.57	0.759	0.743	0.719	0.679
22	11.0000	9.5263	11.50	10.45	10.06	0.759	0.743	0.719	0.678
23	11.5000	9.9593	12.00	10.95	10.56	0.758	0.742	0.718	0.678
24	12.0000	10.3923	12.50	11.45	11.06	0.758	0.742	0.718	0.677
25	12.5000	10.8253	13.00	11.95	11.56	0.758	0.742	0.717	0.677
26	13.0000	11.2583	13.50	12.44	12.06	0.758	0.742	0.717	0.676
27	13.5000	11.6913	14.00	12.94	12.56	0.758	0.741	0.717	0.675
28	14.0000	12.1244	14.50	13.44	13.06	0.758	0.741	0.716	0.675
29	14.5000	12.5574	15.00	13.94	13.56	0.758	0.741	0.716	0.674
30	15.0000	12.9904	15.50	14.44	14.06	0.758	0.741	0.716	0.674
31	15.5000	13.4234	16.00	14.94	14.56	0.757	0.741	0.715	0.673
32	16.0000	13.8564	16.50	15.44	15.06	0.757	0.740	0.715	0.673
33	16.5000	14.2894	17.00	15.93	15.55	0.757	0.740	0.715	0.672
34	17.0000	14.7224	17.50	16.43	16.05	0.757	0.740	0.714	0.672
35	17.5000	15.1554	18.00	16.93	16.55	0.757	0.740	0.714	0.671
36	18.0000	15.5885	18.50	17.43	17.05	0.757	0.740	0.714	0.671
37	18.5000	16.0215	19.00	17.93	17.55	0.757	0.739	0.714	0.670
38	19.0000	16.4545	19.50	18.43	18.05	0.757	0.739	0.713	0.670
39	19.5000	16.8875	20.00	18.93	18.55	0.756	0.739	0.713	0.670
40	20.0000	17.3205	20.50	19.43	19.05	0.756	0.739	0.713	0.669
41	20.5000	17.7535	21.00	19.93	19.55	0.756	0.739	0.712	0.669
42	21.0000	18.1865	21.50	20.43	20.05	0.756	0.739	0.712	0.668
43	21.5000	18.6195	22.00	20.93	20.55	0.756	0.738	0.712	0.668
44	22.0000	19.0526	22.50	21.43	21.05	0.756	0.738	0.712	0.668
45	22.5000	19.4856	23.00	21.92	21.55	0.756	0.738	0.711	0.667
46	23.0000	19.9186	23.50	22.42	22.04	0.756	0.738	0.711	0.667
47	23.5000	20.3516	24.00	22.92	22.54	0.756	0.738	0.711	0.666
48	24.0000	20.7846	24.50	23.42	23.04	0.756	0.738	0.711	0.666
49	24.5000	21.2176	25.00	23.92	23.54	0.755	0.737	0.711	0.666
50	25.0000	21.6506	25.50	24.42	24.04	0.755	0.737	0.710	0.665
51	25.5000	22.0836	26.00	24.92	24.54	0.755	0.737	0.710	0.665
52	26.0000	22.5167	26.50	25.42	25.04	0.755	0.737	0.710	0.664
53	26.5000	22.9497	27.00	25.92	25.54	0.755	0.737	0.710	0.664
54	27.0000	23.3827	27.50	26.42	26.04	0.755	0.737	0.709	0.664
55	27.5000	23.8157	28.00	26.92	26.54	0.755	0.737	0.709	0.663
56	28.0000	24.2487	28.50	27.42	27.04	0.755	0.736	0.709	0.663
57	28.5000	24.6817	29.00	27.92	27.54	0.755	0.736	0.709	0.663
58	29.0000	25.1147	29.50	28.42	28.04	0.755	0.736	0.709	0.662
59	29.5000	25.5478	30.00	28.92	28.54	0.755	0.736	0.708	0.662
60	30.0000	25.9808	30.50	29.42	29.04	0.754	0.736	0.708	0.662
61	30.5000	26.4138	31.00	29.92	29.54	0.754	0.736	0.708	0.661
62	31.0000	26.8468	31.50	30.42	30.03	0.754	0.736	0.708	0.661
63	31.5000	27.2798	32.00	30.92	30.53	0.754	0.736	0.707	0.661
64	32.0000	27.7128	32.50	31.42	31.03	0.754	0.735	0.707	0.660
65	32.5000	28.1458	33.00	31.92	31.53	0.754	0.735	0.707	0.660
66	33.0000	28.5788	33.50	32.42	32.03	0.754	0.735	0.707	0.660
67	33.5000	29.0119	34.00	32.92	32.53	0.754	0.735	0.707	0.659
68	34.0000	29.4449	34.50	33.42	33.03	0.754	0.735	0.707	0.659
69	34.5000	29.8779	35.00	33.92	33.53	0.754	0.735	0.706	0.659
70	35.0000	30.3109	35.50	34.42	34.03	0.754	0.735	0.706	0.659
71	35.5000	30.7439	36.00	34.92	34.53	0.754	0.735	0.706	0.658
72	36.0000	31.1769	36.50	35.42	35.03	0.754	0.734	0.706	0.658
73	36.5000	31.6099	37.00	35.92	35.53	0.753	0.734	0.706	0.658
74	37.0000	32.0429	37.50	36.41	36.03	0.753	0.734	0.705	0.657
75	37.5000	32.4760	38.00	36.91	36.53	0.753	0.734	0.705	0.657
76	38.0000	32.9090	38.50	37.41	37.03	0.753	0.734	0.705	0.657
77	38.5000	33.3420	39.00	37.91	37.53	0.753	0.734	0.705	0.657
78	39.0000	33.7750	39.50	38.41	38.03	0.753	0.734	0.705	0.656
79	39.5000	34.2080	40.00	38.91	38.53	0.753	0.734	0.704	0.656
80	40.0000	34.6410	40.50	39.41	39.03	0.753	0.734	0.704	0.656
81	40.5000	35.0740	41.00	39.91	39.52	0.753	0.733	0.704	0.655
82	41.0000	35.5070	41.50	40.41	40.02	0.753	0.733	0.704	0.655
83	41.5000	35.9401	42.00	40.91	40.52	0.753	0.733	0.704	0.655
84	42.0000	36.3731	42.50	41.41	41.02	0.753	0.733	0.704	0.655
85	42.5000	36.8061	43.00	41.91	41.52	0.753	0.733	0.703	0.654
86	43.0000	37.2391	43.50	42.41	42.02	0.753	0.733	0.703	0.654
87	43.5000	37.6721	44.00	42.91	42.52	0.752	0.733	0.703	0.654
88	44.0000	38.1051	44.50	43.41	43.02	0.752	0.733	0.703	0.654
89	44.5000	38.5381	45.00	43.91	43.52	0.752	0.733	0.703	0.653
90	45.0000	38.9711	45.50	44.41	44.02	0.752	0.732	0.703	0.653
91	45.5000	39.4042	46.00	44.91	44.52	0.752	0.732	0.703	0.653
92	46.0000	39.8372	46.50	45.41	45.02	0.752	0.732	0.702	0.653
93	46.5000	40.2702	47.00	45.91	45.52	0.752	0.732	0.702	0.652
94	47.0000	40.7032	47.50	46.41	46.02	0.752	0.732	0.702	0.652
95	47.5000	41.1362	48.00	46.91	46.52	0.752	0.732	0.702	0.652
96	48.0000	41.5692	48.50	47.41	47.02	0.752	0.732	0.702	0.652
97	48.5000	42.0022	49.00	47.91	47.52	0.752	0.732	0.702	0.651
98	49.0000	42.4352	49.50	48.41	48.02	0.752	0.732	0.701	0.651
99	49.5000	42.8683	50.00	48.91	48.52	0.752	0.732	0.701	0.651
100	50.0000	43.3013	50.50	49.41	49.02	0.752	0.731	0.701	0.651

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Table 43 — Internal spline

30 degree pressure angle — Side fit — Fillet root — Module = 10.00

E_{vmin} = minimum effective space width, circular = 15.708

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	60.0000	51.9615	78.44	72.00	54.31	15.772	15.810	15.868	15.964
7	70.0000	60.6218	88.45	82.00	63.61	15.773	15.812	15.870	15.968
8	80.0000	69.2820	98.46	92.00	73.11	15.774	15.813	15.873	15.972
9	90.0000	77.9423	108.46	102.00	82.72	15.775	15.815	15.875	15.975
10	100.0000	86.6025	118.47	112.00	92.42	15.776	15.816	15.877	15.978
11	110.0000	95.2628	128.47	122.00	102.18	15.776	15.817	15.879	15.981
12	120.0000	103.9231	138.48	132.00	111.98	15.777	15.819	15.881	15.984
13	130.0000	112.5833	148.48	142.00	121.82	15.778	15.820	15.882	15.987
14	140.0000	121.2436	158.49	152.00	131.68	15.778	15.821	15.884	15.990
15	150.0000	129.9038	168.49	162.00	141.56	15.779	15.822	15.886	15.992
16	160.0000	138.5641	178.50	172.00	151.45	15.780	15.823	15.887	15.995
17	170.0000	147.2243	188.50	182.00	161.36	15.780	15.824	15.889	15.997
18	180.0000	155.8846	198.51	192.00	171.28	15.781	15.825	15.890	16.000
19	190.0000	164.5448	208.51	202.00	181.21	15.781	15.826	15.892	16.002
20	200.0000	173.2051	218.51	212.00	191.15	15.782	15.826	15.893	16.004
21	210.0000	181.8653	228.52	222.00	201.09	15.783	15.827	15.894	16.006
22	220.0000	190.5256	238.52	232.00	211.04	15.783	15.828	15.896	16.008
23	230.0000	199.1859	248.52	242.00	220.99	15.784	15.829	15.897	16.010
24	240.0000	207.8461	258.53	252.00	230.95	15.784	15.830	15.898	16.012
25	250.0000	216.5064	268.53	262.00	240.91	15.785	15.830	15.899	16.014
26	260.0000	225.1666	278.53	272.00	250.87	15.785	15.831	15.901	16.016
27	270.0000	233.8269	288.54	282.00	260.84	15.785	15.832	15.902	16.018
28	280.0000	242.4871	298.54	292.00	270.80	15.786	15.833	15.903	16.020
29	290.0000	251.1474	308.54	302.00	280.78	15.786	15.833	15.904	16.022
30	300.0000	259.8076	318.55	312.00	290.75	15.787	15.834	15.905	16.023
31	310.0000	268.4679	328.55	322.00	300.72	15.787	15.835	15.906	16.025
32	320.0000	277.1281	338.55	332.00	310.70	15.788	15.835	15.907	16.027
33	330.0000	285.7884	348.55	342.00	320.68	15.788	15.836	15.908	16.028
34	340.0000	294.4487	358.56	352.00	330.66	15.788	15.837	15.909	16.030
35	350.0000	303.1089	368.56	362.00	340.64	15.789	15.837	15.910	16.032
36	360.0000	311.7692	378.56	372.00	350.62	15.789	15.838	15.911	16.033
37	370.0000	320.4294	388.57	382.00	360.60	15.790	15.839	15.912	16.035
38	380.0000	329.0897	398.57	392.00	370.59	15.790	15.839	15.913	16.036
39	390.0000	337.7499	408.57	402.00	380.57	15.790	15.840	15.914	16.038
40	400.0000	346.4102	418.57	412.00	390.56	15.791	15.841	15.915	16.039
41	410.0000	355.0704	428.58	422.00	400.54	15.791	15.841	15.916	16.041
42	420.0000	363.7307	438.58	432.00	410.53	15.792	15.842	15.917	16.042
43	430.0000	372.3909	448.58	442.00	420.52	15.792	15.842	15.918	16.044
44	440.0000	381.0512	458.58	452.00	430.50	15.792	15.843	15.919	16.045
45	450.0000	389.7115	468.59	462.00	440.49	15.793	15.843	15.920	16.047
46	460.0000	398.3717	478.59	472.00	450.48	15.793	15.844	15.921	16.048
47	470.0000	407.0320	488.59	482.00	460.47	15.793	15.845	15.921	16.050
48	480.0000	415.6922	498.59	492.00	470.46	15.794	15.845	15.922	16.051
49	490.0000	424.3525	508.60	502.00	480.45	15.794	15.846	15.923	16.052
50	500.0000	433.0127	518.60	512.00	490.44	15.794	15.846	15.924	16.054
51	510.0000	441.6730	528.60	522.00	500.43	15.795	15.847	15.926	16.056
52	520.0000	450.3332	538.61	532.00	510.43	15.795	15.848	15.927	16.058
53	530.0000	458.9935	548.61	542.00	520.42	15.796	15.849	15.928	16.060
54	540.0000	467.6537	558.61	552.00	530.41	15.796	15.849	15.929	16.061
55	550.0000	476.3140	568.61	562.00	540.40	15.797	15.850	15.930	16.063
56	560.0000	484.9743	578.62	572.00	550.39	15.797	15.851	15.931	16.064
57	570.0000	493.6345	588.62	582.00	560.39	15.797	15.851	15.932	16.066
58	580.0000	502.2948	598.62	592.00	570.38	15.798	15.852	15.933	16.068
59	590.0000	510.9550	608.63	602.00	580.37	15.798	15.852	15.934	16.069
60	600.0000	519.6153	618.63	612.00	590.37	15.799	15.853	15.935	16.071
61	610.0000	528.2755	628.63	622.00	600.36	15.799	15.854	15.936	16.072
62	620.0000	536.9358	638.63	632.00	610.36	15.799	15.854	15.937	16.074
63	630.0000	545.5960	648.64	642.00	620.35	15.800	15.855	15.938	16.076
64	640.0000	554.2563	658.64	652.00	630.34	15.800	15.856	15.939	16.077
65	650.0000	562.9165	668.64	662.00	640.34	15.801	15.856	15.940	16.079
66	660.0000	571.5768	678.65	672.00	650.33	15.801	15.857	15.941	16.080
67	670.0000	580.2371	688.65	682.00	660.33	15.801	15.858	15.942	16.082
68	680.0000	588.8973	698.65	692.00	670.32	15.802	15.858	15.943	16.084
69	690.0000	597.5576	708.65	702.00	680.32	15.802	15.859	15.944	16.085
70	700.0000	606.2178	718.66	712.00	690.31	15.803	15.859	15.945	16.087
71	710.0000	614.8781	728.66	722.00	700.31	15.803	15.860	15.946	16.088
72	720.0000	623.5383	738.66	732.00	710.31	15.803	15.861	15.947	16.090
73	730.0000	632.1986	748.66	742.00	720.30	15.804	15.861	15.948	16.092
74	740.0000	640.8588	758.67	752.00	730.30	15.804	15.862	15.949	16.093
75	750.0000	649.5191	768.67	762.00	740.29	15.805	15.863	15.950	16.095
76	760.0000	658.1793	778.67	772.00	750.29	15.805	15.863	15.951	16.096
77	770.0000	666.8396	788.68	782.00	760.28	15.805	15.864	15.952	16.098
78	780.0000	675.4999	798.68	792.00	770.28	15.806	15.865	15.953	16.100
79	790.0000	684.1601	808.68	802.00	780.28	15.806	15.865	15.954	16.101
80	800.0000	692.8204	818.68	812.00	790.27	15.807	15.866	15.955	16.103
81	810.0000	701.4806	828.69	822.00	800.27	15.807	15.867	15.956	16.104
82	820.0000	710.1409	838.69	832.00	810.27	15.807	15.867	15.957	16.106
83	830.0000	718.8011	848.69	842.00	820.26	15.808	15.868	15.958	16.108
84	840.0000	727.4614	858.69	852.00	830.26	15.808	15.868	15.959	16.109
85	850.0000	736.1216	868.70	862.00	840.26	15.809	15.869	15.960	16.111
86	860.0000	744.7819	878.70	872.00	850.25	15.809	15.870	15.961	16.112
87	870.0000	753.4421	888.70	882.00	860.25	15.809	15.870	15.962	16.114
88	880.0000	762.1024	898.71	892.00	870.25	15.810	15.871	15.963	16.116
89	890.0000	770.7627	908.71	902.00	880.25	15.810	15.872	15.964	16.117
90	900.0000	779.4229	918.71	912.00	890.24	15.811	15.872	15.965	16.119
91	910.0000	788.0832	928.71	922.00	900.24	15.811	15.873	15.966	16.120
92	920.0000	796.7434	938.72	932.00	910.24	15.811	15.874	15.967	16.122
93	930.0000	805.4037	948.72	942.00	920.24	15.812	15.874	15.968	16.124
94	940.0000	814.0639	958.72	952.00	930.23	15.812	15.875	15.969	16.125
95	950.0000	822.7242	968.73	962.00	940.23	15.813	15.875	15.970	16.127
96	960.0000	831.3844	978.73	972.00	950.23	15.813	15.876	15.971	16.128
97	970.0000	840.0447	988.73	982.00	960.23	15.813	15.877	15.972	16.130
98	980.0000	848.7049	998.73	992.00	970.22	15.814	15.877	15.973	16.132
99	990.0000	857.3652	1008.74	1002.00	980.22	15.814	15.878	15.974	16.133
100	1000.0000	866.0255	1018.74	1012.00	990.22	15.815	15.879	15.975	16.135

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Table 44 — External spline

30 degree pressure angle — Side fit — Fillet root — Module = 10.00

S_{vmax} = maximum effective tooth thickness, circular = 15.708

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	60.0000	51.9615	70.00	52.31	41.56	15.644	15.606	15.548	15.452
7	70.0000	60.6218	80.00	61.61	51.55	15.643	15.604	15.546	15.448
8	80.0000	69.2820	90.00	71.11	61.54	15.642	15.603	15.543	15.444
9	90.0000	77.9423	100.00	80.72	71.54	15.641	15.601	15.541	15.441
10	100.0000	86.6025	110.00	90.42	81.53	15.640	15.600	15.539	15.438
11	110.0000	95.2628	120.00	100.18	91.53	15.640	15.599	15.537	15.434
12	120.0000	103.9231	130.00	109.98	101.52	15.639	15.597	15.535	15.432
13	130.0000	112.5833	140.00	119.82	111.52	15.638	15.596	15.533	15.429
14	140.0000	121.2436	150.00	129.68	121.51	15.637	15.595	15.532	15.426
15	150.0000	129.9038	160.00	139.56	131.51	15.637	15.594	15.530	15.423
16	160.0000	138.5641	170.00	149.45	141.50	15.636	15.593	15.529	15.421
17	170.0000	147.2243	180.00	159.36	151.50	15.636	15.592	15.527	15.419
18	180.0000	155.8846	190.00	169.28	161.49	15.635	15.591	15.526	15.416
19	190.0000	164.5448	200.00	179.21	171.49	15.634	15.590	15.524	15.414
20	200.0000	173.2051	210.00	189.15	181.49	15.634	15.590	15.523	15.412
21	210.0000	181.8653	220.00	199.09	191.48	15.633	15.589	15.522	15.410
22	220.0000	190.5256	230.00	209.04	201.48	15.633	15.588	15.520	15.408
23	230.0000	199.1859	240.00	218.99	211.48	15.632	15.587	15.519	15.406
24	240.0000	207.8461	250.00	228.95	221.47	15.632	15.586	15.518	15.404
25	250.0000	216.5064	260.00	238.91	231.47	15.631	15.585	15.517	15.402
26	260.0000	225.1666	270.00	248.87	241.47	15.631	15.585	15.515	15.400
27	270.0000	233.8269	280.00	258.84	251.46	15.630	15.584	15.514	15.398
28	280.0000	242.4871	290.00	268.80	261.46	15.630	15.583	15.513	15.396
29	290.0000	251.1474	300.00	278.78	271.46	15.630	15.583	15.512	15.394
30	300.0000	259.8076	310.00	288.75	281.45	15.629	15.582	15.511	15.393
31	310.0000	268.4679	320.00	298.72	291.45	15.629	15.581	15.510	15.391
32	320.0000	277.1281	330.00	308.70	301.45	15.628	15.580	15.509	15.389
33	330.0000	285.7884	340.00	318.68	311.45	15.628	15.580	15.508	15.388
34	340.0000	294.4487	350.00	328.66	321.44	15.627	15.579	15.507	15.386
35	350.0000	303.1089	360.00	338.64	331.44	15.627	15.578	15.506	15.384
36	360.0000	311.7692	370.00	348.62	341.44	15.627	15.578	15.505	15.383
37	370.0000	320.4294	380.00	358.60	351.43	15.626	15.577	15.504	15.381
38	380.0000	329.0897	390.00	368.59	361.43	15.626	15.577	15.503	15.380
39	390.0000	337.7499	400.00	378.57	371.43	15.625	15.576	15.502	15.378
40	400.0000	346.4102	410.00	388.56	381.43	15.625	15.575	15.501	15.377
41	410.0000	355.0704	420.00	398.54	391.42	15.625	15.575	15.500	15.375
42	420.0000	363.7307	430.00	408.53	401.42	15.624	15.574	15.499	15.374
43	430.0000	372.3909	440.00	418.52	411.42	15.624	15.574	15.498	15.372
44	440.0000	381.0512	450.00	428.50	421.42	15.624	15.573	15.497	15.371
45	450.0000	389.7115	460.00	438.49	431.41	15.623	15.572	15.496	15.369
46	460.0000	398.3717	470.00	448.48	441.41	15.623	15.572	15.495	15.368
47	470.0000	407.0320	480.00	458.47	451.41	15.623	15.571	15.494	15.366
48	480.0000	415.6922	490.00	468.46	461.41	15.622	15.571	15.494	15.365
49	490.0000	424.3525	500.00	478.45	471.40	15.622	15.570	15.493	15.364
50	500.0000	433.0127	510.00	488.44	481.40	15.622	15.570	15.492	15.362
51	510.0000	441.6730	520.00	498.43	491.40	15.621	15.569	15.490	15.360
52	520.0000	450.3332	530.00	508.43	501.39	15.620	15.568	15.489	15.358
53	530.0000	458.9935	540.00	518.42	511.39	15.620	15.567	15.488	15.356
54	540.0000	467.6537	550.00	528.41	521.39	15.620	15.567	15.487	15.355
55	550.0000	476.3140	560.00	538.40	531.39	15.619	15.566	15.486	15.353
56	560.0000	484.9743	570.00	548.39	541.38	15.619	15.565	15.485	15.352
57	570.0000	493.6345	580.00	558.39	551.38	15.618	15.565	15.484	15.350
58	580.0000	502.2948	590.00	568.38	561.38	15.618	15.564	15.483	15.348
59	590.0000	510.9550	600.00	578.37	571.37	15.618	15.563	15.482	15.347
60	600.0000	519.6153	610.00	588.37	581.37	15.617	15.563	15.481	15.345
61	610.0000	528.2755	620.00	598.36	591.37	15.617	15.562	15.480	15.344
62	620.0000	536.9358	630.00	608.36	601.37	15.616	15.562	15.479	15.342
63	630.0000	545.5960	640.00	618.35	611.36	15.616	15.561	15.478	15.340
64	640.0000	554.2563	650.00	628.34	621.36	15.616	15.560	15.477	15.339
65	650.0000	562.9165	660.00	638.34	631.36	15.615	15.560	15.476	15.337
66	660.0000	571.5768	670.00	648.33	641.35	15.615	15.559	15.475	15.336
67	670.0000	580.2371	680.00	658.33	651.35	15.614	15.558	15.474	15.334
68	680.0000	588.8973	690.00	668.32	661.35	15.614	15.558	15.473	15.332
69	690.0000	597.5576	700.00	678.32	671.35	15.614	15.557	15.472	15.331
70	700.0000	606.2178	710.00	688.31	681.34	15.613	15.556	15.471	15.329
71	710.0000	614.8781	720.00	698.31	691.34	15.613	15.556	15.470	15.328
72	720.0000	623.5383	730.00	708.31	701.34	15.612	15.555	15.469	15.326
73	730.0000	632.1986	740.00	718.30	711.34	15.612	15.555	15.468	15.324
74	740.0000	640.8588	750.00	728.30	721.33	15.612	15.554	15.467	15.323
75	750.0000	649.5191	760.00	738.29	731.33	15.611	15.553	15.466	15.321
76	760.0000	658.1793	770.00	748.29	741.33	15.611	15.553	15.465	15.320
77	770.0000	666.8396	780.00	758.28	751.32	15.610	15.552	15.464	15.318
78	780.0000	675.4999	790.00	768.28	761.32	15.610	15.551	15.463	15.316
79	790.0000	684.1601	800.00	778.28	771.32	15.610	15.551	15.462	15.315
80	800.0000	692.8204	810.00	788.27	781.32	15.609	15.550	15.461	15.313
81	810.0000	701.4806	820.00	798.27	791.31	15.609	15.549	15.460	15.312
82	820.0000	710.1409	830.00	808.27	801.31	15.608	15.549	15.459	15.310
83	830.0000	718.8011	840.00	818.26	811.31	15.608	15.548	15.458	15.308
84	840.0000	727.4614	850.00	828.26	821.31	15.608	15.547	15.457	15.307
85	850.0000	736.1216	860.00	838.26	831.30	15.607	15.547	15.456	15.305
86	860.0000	744.7819	870.00	848.25	841.30	15.607	15.546	15.455	15.304
87	870.0000	753.4421	880.00	858.25	851.30	15.606	15.546	15.454	15.302
88	880.0000	762.1024	890.00	868.25	861.29	15.606	15.545	15.453	15.300
89	890.0000	770.7627	900.00	878.25	871.29	15.606	15.544	15.452	15.299
90	900.0000	779.4229	910.00	888.24	881.29	15.605	15.544	15.451	15.297
91	910.0000	788.0832	920.00	898.24	891.29	15.605	15.543	15.450	15.296
92	920.0000	796.7434	930.00	908.24	901.28	15.604	15.542	15.449	15.294
93	930.0000	805.4037	940.00	918.24	911.28	15.604	15.542	15.448	15.292
94	940.0000	814.0639	950.00	928.23	921.28	15.604	15.541	15.447	15.291
95	950.0000	822.7242	960.00	938.23	931.27	15.603	15.540	15.446	15.289
96	960.0000	831.3844	970.00	948.23	941.27	15.603	15.540	15.445	15.288
97	970.0000	840.0447	980.00	958.23	951.27	15.602	15.539	15.444	15.286
98	980.0000	848.7049	990.00	968.22	961.27	15.602	15.539	15.443	15.284
99	990.0000	857.3652	1000.00	978.22	971.26	15.602	15.538	15.442	15.283
100	1000.0000	866.0255	1010.00	988.22	981.26	15.601	15.537	15.441	15.281

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Table 45 — Internal spline

30 degree pressure angle — Side fit — Fillet root — Module = 8.00

E_{vmin} = minimum effective space width, circular = 12.566

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{Ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular 4 H	5 H	6 H	7 H
6	48.0000	41.5692	62.81	57.60	43.45	12.626	12.661	12.714	12.803
7	56.0000	48.4974	70.82	65.60	50.89	12.626	12.663	12.717	12.807
8	64.0000	55.4256	78.82	73.60	58.48	12.627	12.664	12.719	12.810
9	72.0000	62.3538	86.83	81.60	66.18	12.628	12.665	12.721	12.814
10	80.0000	69.2820	94.83	89.60	73.94	12.629	12.666	12.723	12.817
11	88.0000	76.2102	102.84	97.60	81.74	12.630	12.668	12.724	12.819
12	96.0000	83.1384	110.84	105.60	89.59	12.630	12.669	12.726	12.822
13	104.0000	90.0666	118.85	113.60	97.45	12.631	12.670	12.728	12.825
14	112.0000	96.9949	126.85	121.60	105.34	12.632	12.671	12.729	12.827
15	120.0000	103.9231	134.86	129.60	113.25	12.632	12.672	12.731	12.829
16	128.0000	110.8513	142.86	137.60	121.16	12.633	12.672	12.732	12.832
17	136.0000	117.7795	150.86	145.60	129.09	12.633	12.673	12.733	12.834
18	144.0000	124.7077	158.87	153.60	137.02	12.634	12.674	12.735	12.836
19	152.0000	131.6359	166.87	161.60	144.97	12.634	12.675	12.736	12.838
20	160.0000	138.5641	174.87	169.60	152.92	12.635	12.676	12.737	12.840
21	168.0000	145.4923	182.88	177.60	160.87	12.635	12.677	12.739	12.842
22	176.0000	152.4205	190.88	185.60	168.83	12.636	12.677	12.740	12.844
23	184.0000	159.3487	198.88	193.60	176.79	12.636	12.678	12.741	12.846
24	192.0000	166.2769	206.89	201.60	184.76	12.637	12.679	12.742	12.847
25	200.0000	173.2051	214.89	209.60	192.72	12.637	12.679	12.743	12.849
26	208.0000	180.1333	222.89	217.60	200.70	12.637	12.680	12.744	12.851
27	216.0000	187.0615	230.90	225.60	208.67	12.638	12.681	12.745	12.852
28	224.0000	193.9897	238.90	233.60	216.64	12.638	12.681	12.746	12.854
29	232.0000	200.9179	246.90	241.60	224.62	12.639	12.682	12.747	12.856
30	240.0000	207.8461	254.90	249.60	232.60	12.639	12.683	12.748	12.857
31	248.0000	214.7743	262.91	257.60	240.58	12.639	12.683	12.749	12.859
32	256.0000	221.7025	270.91	265.60	248.56	12.640	12.684	12.750	12.860
33	264.0000	228.6307	278.91	273.60	256.54	12.640	12.685	12.751	12.862
34	272.0000	235.5589	286.91	281.60	264.53	12.641	12.685	12.752	12.863
35	280.0000	242.4871	294.92	289.60	272.51	12.641	12.686	12.753	12.865
36	288.0000	249.4153	302.92	297.60	280.50	12.641	12.686	12.754	12.866
37	296.0000	256.3435	310.92	305.60	288.48	12.642	12.687	12.755	12.868
38	304.0000	263.2717	318.92	313.60	296.47	12.642	12.687	12.755	12.869
39	312.0000	270.1999	326.93	321.60	304.46	12.642	12.688	12.756	12.870
40	320.0000	277.1281	334.93	329.60	312.45	12.643	12.688	12.757	12.872
41	328.0000	284.0563	342.93	337.60	320.43	12.643	12.689	12.758	12.873
42	336.0000	290.9846	350.93	345.60	328.42	12.643	12.690	12.759	12.874
43	344.0000	297.9128	358.94	353.60	336.41	12.644	12.690	12.760	12.876
44	352.0000	304.8410	366.94	361.60	344.40	12.644	12.691	12.760	12.877
45	360.0000	311.7692	374.94	369.60	352.39	12.644	12.691	12.761	12.878
46	368.0000	318.6974	382.94	377.60	360.39	12.645	12.692	12.762	12.879
47	376.0000	325.6256	390.94	385.60	368.38	12.645	12.692	12.763	12.881
48	384.0000	332.5538	398.95	393.60	376.37	12.645	12.693	12.764	12.882
49	392.0000	339.4820	406.95	401.60	384.36	12.646	12.693	12.764	12.883
50	400.0000	346.4102	414.95	409.60	392.35	12.646	12.694	12.765	12.884
51	408.0000	353.3384	422.95	417.60	400.35	12.646	12.694	12.766	12.886
52	416.0000	360.2666	430.95	425.60	408.34	12.646	12.695	12.767	12.887
53	424.0000	367.1948	438.96	433.60	416.33	12.647	12.695	12.767	12.888
54	432.0000	374.1230	446.96	441.60	424.33	12.647	12.695	12.768	12.889
55	440.0000	381.0512	454.96	449.60	432.32	12.647	12.696	12.769	12.890
56	448.0000	387.9794	462.96	457.60	440.32	12.648	12.696	12.770	12.891
57	456.0000	394.9076	470.96	465.60	448.31	12.648	12.697	12.770	12.893
58	464.0000	401.8358	478.97	473.60	456.30	12.648	12.697	12.771	12.894
59	472.0000	408.7640	486.97	481.60	464.30	12.648	12.698	12.772	12.895
60	480.0000	415.6922	494.97	489.60	472.29	12.649	12.698	12.772	12.896
61	488.0000	422.6204	502.97	497.60	480.29	12.649	12.699	12.773	12.897
62	496.0000	429.5486	510.97	505.60	488.28	12.649	12.699	12.774	12.898
63	504.0000	436.4768	518.98	513.60	496.28	12.650	12.700	12.775	12.900
64	512.0000	443.4050	526.98	521.60	504.28	12.650	12.700	12.776	12.902
65	520.0000	450.3333	534.98	529.60	512.27	12.651	12.701	12.777	12.903
66	528.0000	457.2614	542.99	537.60	520.27	12.651	12.702	12.778	12.904
67	536.0000	464.1896	550.99	545.60	528.26	12.651	12.702	12.778	12.906
68	544.0000	471.1178	558.99	553.60	536.26	12.651	12.703	12.779	12.907
69	552.0000	478.0461	566.99	561.60	544.25	12.652	12.703	12.780	12.908
70	560.0000	484.9743	574.99	569.60	552.25	12.652	12.704	12.781	12.909
71	568.0000	491.9025	583.00	577.60	560.25	12.652	12.704	12.782	12.911
72	576.0000	498.8307	591.00	585.60	568.24	12.653	12.705	12.782	12.912
73	584.0000	505.7589	599.00	593.60	576.24	12.653	12.705	12.783	12.913
74	592.0000	512.6871	607.00	601.60	584.24	12.653	12.706	12.784	12.914
75	600.0000	519.6153	615.01	609.60	592.23	12.654	12.706	12.785	12.916
76	608.0000	526.5435	623.01	617.60	600.23	12.654	12.707	12.786	12.917
77	616.0000	533.4717	631.01	625.60	608.23	12.654	12.707	12.786	12.918
78	624.0000	540.3999	639.01	633.60	616.22	12.655	12.708	12.787	12.920
79	632.0000	547.3281	647.01	641.60	624.22	12.655	12.708	12.788	12.921
80	640.0000	554.2563	655.02	649.60	632.22	12.655	12.709	12.789	12.922
81	648.0000	561.1845	663.02	657.60	640.22	12.656	12.709	12.790	12.923
82	656.0000	568.1127	671.02	665.60	648.21	12.656	12.710	12.790	12.925
83	664.0000	575.0409	679.02	673.60	656.21	12.656	12.710	12.791	12.926
84	672.0000	581.9691	687.03	681.60	664.21	12.657	12.711	12.792	12.927
85	680.0000	588.8973	695.03	689.60	672.21	12.657	12.711	12.793	12.929
86	688.0000	595.8255	703.03	697.60	680.20	12.657	12.712	12.794	12.930
87	696.0000	602.7537	711.03	705.60	688.20	12.658	12.712	12.794	12.931
88	704.0000	609.6819	719.03	713.60	696.20	12.658	12.713	12.795	12.932
89	712.0000	616.6101	727.04	721.60	704.20	12.658	12.713	12.796	12.934
90	720.0000	623.5383	735.04	729.60	712.19	12.659	12.714	12.797	12.935
91	728.0000	630.4665	743.04	737.60	720.19	12.659	12.714	12.798	12.936
92	736.0000	637.3947	751.04	745.60	728.19	12.659	12.715	12.798	12.938
93	744.0000	644.3229	759.05	753.60	736.19	12.659	12.715	12.799	12.939
94	752.0000	651.2511	767.05	761.60	744.19	12.660	12.716	12.800	12.940
95	760.0000	658.1793	775.05	769.60	752.18	12.660	12.716	12.801	12.941
96	768.0000	665.1076	783.05	777.60	760.18	12.660	12.717	12.802	12.943
97	776.0000	672.0358	791.05	785.60	768.18	12.661	12.717	12.802	12.944
98	784.0000	678.9640	799.06	793.60	776.18	12.661	12.718	12.803	12.945
99	792.0000	685.8922	807.06	801.60	784.18	12.661	12.718	12.804	12.946
100	800.0000	692.8204	815.06	809.60	792.17	12.662	12.719	12.805	12.948

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Table 46 — External spline

30 degree pressure angle — Side fit — Fillet root — Module = 8.00

S_{vmax} = maximum effective tooth thickness, circular = 12.566

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	48.0000	41.5692	56.00	41.85	33.19	12.507	12.472	12.418	12.330
7	56.0000	48.4974	64.00	49.29	41.18	12.506	12.470	12.416	12.326
8	64.0000	55.4256	72.00	56.88	49.18	12.505	12.469	12.414	12.322
9	72.0000	62.3538	80.00	64.58	57.17	12.505	12.468	12.412	12.319
10	80.0000	69.2820	88.00	72.34	65.17	12.504	12.466	12.410	12.316
11	88.0000	76.2102	96.00	80.14	73.16	12.503	12.465	12.408	12.313
12	96.0000	83.1384	104.00	87.99	81.16	12.502	12.464	12.407	12.311
13	104.0000	90.0666	112.00	95.85	89.15	12.502	12.463	12.405	12.308
14	112.0000	96.9949	120.00	103.74	97.15	12.501	12.462	12.403	12.306
15	120.0000	103.9231	128.00	111.65	105.14	12.501	12.461	12.402	12.303
16	128.0000	110.8513	136.00	119.56	113.14	12.500	12.460	12.401	12.301
17	136.0000	117.7795	144.00	127.49	121.14	12.500	12.459	12.399	12.299
18	144.0000	124.7077	152.00	135.42	129.13	12.499	12.459	12.398	12.297
19	152.0000	131.6359	160.00	143.37	137.13	12.498	12.458	12.397	12.295
20	160.0000	138.5641	168.00	151.32	145.13	12.498	12.457	12.395	12.293
21	168.0000	145.4923	176.00	159.27	153.12	12.498	12.456	12.394	12.291
22	176.0000	152.4205	184.00	167.23	161.12	12.497	12.455	12.393	12.289
23	184.0000	159.3487	192.00	175.19	169.12	12.497	12.455	12.392	12.287
24	192.0000	166.2769	200.00	183.16	177.11	12.496	12.454	12.391	12.285
25	200.0000	173.2051	208.00	191.12	185.11	12.496	12.453	12.390	12.284
26	208.0000	180.1333	216.00	199.10	193.11	12.495	12.453	12.389	12.282
27	216.0000	187.0615	224.00	207.07	201.10	12.495	12.452	12.388	12.280
28	224.0000	193.9897	232.00	215.04	209.10	12.494	12.451	12.387	12.279
29	232.0000	200.9179	240.00	223.02	217.10	12.494	12.451	12.386	12.277
30	240.0000	207.8461	248.00	231.00	225.10	12.494	12.450	12.385	12.276
31	248.0000	214.7743	256.00	238.98	233.09	12.493	12.449	12.384	12.274
32	256.0000	221.7025	264.00	246.96	241.09	12.493	12.449	12.383	12.272
33	264.0000	228.6307	272.00	254.94	249.09	12.493	12.448	12.382	12.271
34	272.0000	235.5589	280.00	262.93	257.09	12.492	12.448	12.381	12.269
35	280.0000	242.4871	288.00	270.91	265.08	12.492	12.447	12.380	12.268
36	288.0000	249.4153	296.00	278.90	273.08	12.491	12.446	12.379	12.267
37	296.0000	256.3435	304.00	286.88	281.08	12.491	12.446	12.378	12.265
38	304.0000	263.2717	312.00	294.87	289.08	12.491	12.445	12.377	12.264
39	312.0000	270.1999	320.00	302.86	297.07	12.490	12.445	12.376	12.262
40	320.0000	277.1281	328.00	310.85	305.07	12.490	12.444	12.376	12.261
41	328.0000	284.0563	336.00	318.83	313.07	12.490	12.444	12.375	12.260
42	336.0000	290.9846	344.00	326.82	321.07	12.489	12.443	12.374	12.258
43	344.0000	297.9128	352.00	334.81	329.06	12.489	12.443	12.373	12.257
44	352.0000	304.8410	360.00	342.80	337.06	12.489	12.442	12.372	12.256
45	360.0000	311.7692	368.00	350.79	345.06	12.488	12.442	12.371	12.255
46	368.0000	318.6974	376.00	358.79	353.06	12.488	12.441	12.371	12.253
47	376.0000	325.6256	384.00	366.78	361.06	12.488	12.441	12.370	12.252
48	384.0000	332.5538	392.00	374.77	369.05	12.487	12.440	12.369	12.251
49	392.0000	339.4820	400.00	382.76	377.05	12.487	12.440	12.368	12.250
50	400.0000	346.4102	408.00	390.75	385.05	12.487	12.439	12.368	12.248
51	408.0000	353.3384	416.00	398.75	393.05	12.487	12.439	12.367	12.247
52	416.0000	360.2666	424.00	406.74	401.05	12.486	12.438	12.366	12.246
53	424.0000	367.1948	432.00	414.73	409.04	12.486	12.438	12.365	12.245
54	432.0000	374.1230	440.00	422.73	417.04	12.486	12.437	12.365	12.244
55	440.0000	381.0512	448.00	430.72	425.04	12.485	12.437	12.364	12.242
56	448.0000	387.9794	456.00	438.72	433.04	12.485	12.436	12.363	12.241
57	456.0000	394.9076	464.00	446.71	441.04	12.485	12.436	12.362	12.240
58	464.0000	401.8358	472.00	454.70	449.03	12.485	12.435	12.362	12.239
59	472.0000	408.7640	480.00	462.70	457.03	12.484	12.435	12.361	12.238
60	480.0000	415.6922	488.00	470.69	465.03	12.484	12.435	12.360	12.237
61	488.0000	422.6204	496.00	478.69	473.03	12.484	12.434	12.360	12.236
62	496.0000	429.5486	504.00	486.68	481.03	12.483	12.434	12.359	12.235
63	504.0000	436.4768	512.00	494.68	489.02	12.483	12.433	12.358	12.232
64	512.0000	443.4050	520.00	502.68	497.02	12.483	12.432	12.357	12.231
65	520.0000	450.3332	528.00	510.67	505.02	12.482	12.432	12.356	12.230
66	528.0000	457.2614	536.00	518.67	513.01	12.482	12.431	12.355	12.228
67	536.0000	464.1896	544.00	526.66	521.01	12.482	12.431	12.354	12.227
68	544.0000	471.1178	552.00	534.66	529.01	12.481	12.430	12.354	12.226
69	552.0000	478.0461	560.00	542.65	537.01	12.481	12.430	12.353	12.225
70	560.0000	484.9743	568.00	550.65	545.01	12.481	12.429	12.352	12.223
71	568.0000	491.9025	576.00	558.65	553.00	12.480	12.429	12.351	12.222
72	576.0000	498.8307	584.00	566.64	561.00	12.480	12.428	12.350	12.221
73	584.0000	505.7589	592.00	574.64	569.00	12.480	12.428	12.350	12.220
74	592.0000	512.6871	600.00	582.64	577.00	12.479	12.427	12.349	12.218
75	600.0000	519.6153	608.00	590.63	584.99	12.479	12.427	12.348	12.217
76	608.0000	526.5435	616.00	598.63	592.99	12.479	12.426	12.347	12.216
77	616.0000	533.4717	624.00	606.63	600.99	12.478	12.426	12.346	12.214
78	624.0000	540.3999	632.00	614.62	608.99	12.478	12.425	12.346	12.213
79	632.0000	547.3281	640.00	622.62	616.99	12.478	12.425	12.345	12.212
80	640.0000	554.2563	648.00	630.62	624.98	12.477	12.424	12.344	12.211
81	648.0000	561.1845	656.00	638.62	632.98	12.477	12.424	12.343	12.209
82	656.0000	568.1127	664.00	646.61	640.98	12.477	12.423	12.342	12.208
83	664.0000	575.0409	672.00	654.61	648.98	12.476	12.423	12.342	12.207
84	672.0000	581.9691	680.00	662.61	656.97	12.476	12.422	12.341	12.205
85	680.0000	588.8973	688.00	670.61	664.97	12.476	12.421	12.340	12.204
86	688.0000	595.8255	696.00	678.60	672.97	12.475	12.421	12.339	12.203
87	696.0000	602.7537	704.00	686.60	680.97	12.475	12.420	12.338	12.202
88	704.0000	609.6819	712.00	694.60	688.97	12.475	12.420	12.338	12.200
89	712.0000	616.6101	720.00	702.60	696.96	12.475	12.419	12.337	12.199
90	720.0000	623.5383	728.00	710.59	704.96	12.474	12.419	12.336	12.198
91	728.0000	630.4665	736.00	718.59	712.96	12.474	12.418	12.335	12.196
92	736.0000	637.3947	744.00	726.59	720.96	12.474	12.418	12.334	12.195
93	744.0000	644.3229	752.00	734.59	728.95	12.473	12.417	12.334	12.194
94	752.0000	651.2511	760.00	742.59	736.95	12.473	12.417	12.333	12.193
95	760.0000	658.1793	768.00	750.58	744.95	12.473	12.416	12.332	12.191
96	768.0000	665.1076	776.00	758.58	752.95	12.472	12.416	12.331	12.190
97	776.0000	672.0358	784.00	766.58	760.95	12.472	12.415	12.330	12.189
98	784.0000	678.9640	792.00	774.58	768.94	12.472	12.415	12.330	12.188
99	792.0000	685.8922	800.00	782.58	776.94	12.471	12.414	12.329	12.186
100	800.0000	692.8204	808.00	790.57	784.94	12.471	12.414	12.328	12.185

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Table 47 — Internal spline

30 degree pressure angle — Side fit — Fillet root — Module = 6.00

E_{vmin} = minimum effective space width, circular = 9.425

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	36.0000	31.1769	47.17	43.20	32.58	9.478	9.511	9.559	9.639
7	42.0000	36.3731	53.18	49.20	38.17	9.479	9.512	9.561	9.643
8	48.0000	41.5692	59.18	55.20	43.86	9.480	9.513	9.563	9.646
9	54.0000	46.7654	65.19	61.20	49.63	9.481	9.514	9.565	9.649
10	60.0000	51.9615	71.19	67.20	55.45	9.481	9.515	9.566	9.651
11	66.0000	57.1577	77.20	73.20	61.31	9.482	9.516	9.568	9.654
12	72.0000	62.3538	83.20	79.20	67.19	9.483	9.517	9.569	9.656
13	78.0000	67.5500	89.20	85.20	73.09	9.483	9.518	9.571	9.658
14	84.0000	72.7461	95.21	91.20	79.01	9.484	9.519	9.572	9.661
15	90.0000	77.9423	101.21	97.20	84.93	9.484	9.520	9.573	9.663
16	96.0000	83.1384	107.22	103.20	90.87	9.485	9.521	9.575	9.665
17	102.0000	88.3346	113.22	109.20	96.82	9.485	9.521	9.576	9.667
18	108.0000	93.5307	119.22	115.20	102.77	9.486	9.522	9.577	9.668
19	114.0000	98.7269	125.23	121.20	108.73	9.486	9.523	9.578	9.670
20	120.0000	103.9231	131.23	127.20	114.69	9.487	9.524	9.579	9.672
21	126.0000	109.1192	137.23	133.20	120.65	9.487	9.524	9.580	9.674
22	132.0000	114.3154	143.23	139.20	126.62	9.487	9.525	9.581	9.675
23	138.0000	119.5115	149.24	145.20	132.59	9.488	9.526	9.582	9.677
24	144.0000	124.7077	155.24	151.20	138.57	9.488	9.526	9.583	9.678
25	150.0000	129.9038	161.24	157.20	144.54	9.489	9.527	9.584	9.680
26	156.0000	135.1000	167.24	163.20	150.52	9.489	9.527	9.585	9.682
27	162.0000	140.2961	173.25	169.20	156.50	9.489	9.528	9.586	9.683
28	168.0000	145.4923	179.25	175.20	162.48	9.490	9.529	9.587	9.684
29	174.0000	150.6884	185.25	181.20	168.47	9.490	9.529	9.588	9.686
30	180.0000	155.8846	191.25	187.20	174.45	9.490	9.530	9.589	9.687
31	186.0000	161.0807	197.26	193.20	180.43	9.491	9.530	9.590	9.689
32	192.0000	166.2769	203.26	199.20	186.42	9.491	9.531	9.590	9.690
33	198.0000	171.4730	209.26	205.20	192.41	9.491	9.531	9.591	9.691
34	204.0000	176.6692	215.26	211.20	198.39	9.492	9.532	9.592	9.692
35	210.0000	181.8653	221.27	217.20	204.38	9.492	9.532	9.593	9.694
36	216.0000	187.0615	227.27	223.20	210.37	9.492	9.533	9.594	9.695
37	222.0000	192.2577	233.27	229.20	216.36	9.493	9.533	9.594	9.696
38	228.0000	197.4538	239.27	235.20	222.35	9.493	9.534	9.595	9.697
39	234.0000	202.6500	245.27	241.20	228.34	9.493	9.534	9.596	9.699
40	240.0000	207.8461	251.28	247.20	234.33	9.494	9.535	9.597	9.700
41	246.0000	213.0423	257.28	253.20	240.33	9.494	9.535	9.597	9.701
42	252.0000	218.2384	263.28	259.20	246.32	9.494	9.536	9.598	9.702
43	258.0000	223.4346	269.28	265.20	252.31	9.494	9.536	9.599	9.703
44	264.0000	228.6307	275.28	271.20	258.30	9.495	9.537	9.600	9.704
45	270.0000	233.8269	281.29	277.20	264.30	9.495	9.537	9.600	9.706
46	276.0000	239.0230	287.29	283.20	270.29	9.495	9.538	9.601	9.707
47	282.0000	244.2192	293.29	289.20	276.28	9.496	9.538	9.602	9.708
48	288.0000	249.4153	299.29	295.20	282.28	9.496	9.538	9.602	9.709
49	294.0000	254.6115	305.29	301.20	288.27	9.496	9.539	9.603	9.710
50	300.0000	259.8076	311.30	307.20	294.27	9.496	9.539	9.604	9.711
51	306.0000	265.0038	317.30	313.20	300.26	9.497	9.540	9.604	9.712
52	312.0000	270.1999	323.30	319.20	306.26	9.497	9.540	9.605	9.713
53	318.0000	275.3961	329.30	325.20	312.25	9.497	9.540	9.606	9.714
54	324.0000	280.5922	335.30	331.20	318.25	9.497	9.541	9.606	9.715
55	330.0000	285.7884	341.30	337.20	324.24	9.498	9.541	9.607	9.716
56	336.0000	290.9846	347.31	343.20	330.24	9.498	9.542	9.607	9.717
57	342.0000	296.1807	353.31	349.20	336.23	9.498	9.542	9.608	9.718
58	348.0000	301.3769	359.31	355.20	342.23	9.498	9.542	9.609	9.719
59	354.0000	306.5730	365.31	361.20	348.22	9.499	9.543	9.609	9.720
60	360.0000	311.7692	371.31	367.20	354.22	9.499	9.543	9.610	9.721
61	366.0000	316.9653	377.31	373.20	360.22	9.499	9.544	9.610	9.722
62	372.0000	322.1615	383.32	379.20	366.21	9.499	9.544	9.611	9.723
63	378.0000	327.3576	389.32	385.20	372.21	9.499	9.544	9.612	9.724
64	384.0000	332.5538	395.32	391.20	378.21	9.500	9.545	9.612	9.725
65	390.0000	337.7499	401.32	397.20	384.20	9.500	9.545	9.613	9.725
66	396.0000	342.9461	407.32	403.20	390.20	9.500	9.545	9.613	9.726
67	402.0000	348.1422	413.32	409.20	396.20	9.500	9.546	9.614	9.727
68	408.0000	353.3384	419.33	415.20	402.19	9.501	9.546	9.614	9.728
69	414.0000	358.5345	425.33	421.20	408.19	9.501	9.546	9.615	9.729
70	420.0000	363.7307	431.33	427.20	414.19	9.501	9.547	9.616	9.730
71	426.0000	368.9268	437.33	433.20	420.19	9.501	9.547	9.616	9.731
72	432.0000	374.1230	443.33	439.20	426.18	9.502	9.548	9.617	9.732
73	438.0000	379.3191	449.33	445.20	432.18	9.502	9.548	9.617	9.733
74	444.0000	384.5153	455.33	451.20	438.18	9.502	9.548	9.618	9.733
75	450.0000	389.7115	461.34	457.20	444.18	9.502	9.549	9.618	9.734
76	456.0000	394.9076	467.34	463.20	450.17	9.502	9.549	9.619	9.735
77	462.0000	400.1038	473.34	469.20	456.17	9.503	9.549	9.619	9.736
78	468.0000	405.2999	479.34	475.20	462.17	9.503	9.550	9.620	9.737
79	474.0000	410.4961	485.34	481.20	468.17	9.503	9.550	9.620	9.738
80	480.0000	415.6922	491.34	487.20	474.16	9.503	9.550	9.621	9.739
81	486.0000	420.8884	497.34	493.20	480.16	9.503	9.551	9.621	9.739
82	492.0000	426.0845	503.35	499.20	486.16	9.504	9.551	9.622	9.740
83	498.0000	431.2807	509.35	505.20	492.16	9.504	9.551	9.622	9.741
84	504.0000	436.4768	515.35	511.20	498.16	9.504	9.552	9.624	9.743
85	510.0000	441.6730	521.35	517.20	504.15	9.505	9.552	9.624	9.744
86	516.0000	446.8691	527.35	523.20	510.15	9.505	9.553	9.625	9.745
87	522.0000	452.0653	533.36	529.20	516.15	9.505	9.553	9.625	9.746
88	528.0000	457.2614	539.36	535.20	522.15	9.505	9.554	9.626	9.747
89	534.0000	462.4576	545.36	541.20	528.15	9.506	9.554	9.627	9.748
90	540.0000	467.6537	551.36	547.20	534.15	9.506	9.554	9.627	9.749
91	546.0000	472.8499	557.36	553.20	540.14	9.506	9.555	9.628	9.750
92	552.0000	478.0461	563.36	559.20	546.14	9.506	9.555	9.628	9.751
93	558.0000	483.2422	569.37	565.20	552.14	9.506	9.556	9.629	9.752
94	564.0000	488.4384	575.37	571.20	558.14	9.507	9.556	9.630	9.753
95	570.0000	493.6345	581.37	577.20	564.14	9.507	9.556	9.630	9.754
96	576.0000	498.8307	587.37	583.20	570.14	9.507	9.557	9.631	9.755
97	582.0000	504.0268	593.37	589.20	576.14	9.507	9.557	9.631	9.755
98	588.0000	509.2230	599.37	595.20	582.13	9.508	9.557	9.632	9.756
99	594.0000	514.4191	605.38	601.20	588.13	9.508	9.558	9.633	9.757
100	600.0000	519.6153	611.38	607.20	594.13	9.508	9.558	9.633	9.758

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Table 48 — External spline

30 degree pressure angle — Side fit — Fillet root — Module = 6.00

S_{vmax} = maximum effective tooth thickness, circular = 9.425

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	36.0000	31.1769	42.00	31.38	24.83	9.371	9.339	9.291	9.210
7	42.0000	36.3731	48.00	36.97	30.82	9.370	9.338	9.289	9.207
8	48.0000	41.5692	54.00	42.66	36.82	9.370	9.336	9.287	9.204
9	54.0000	46.7654	60.00	48.43	42.81	9.369	9.335	9.285	9.201
10	60.0000	51.9615	66.00	54.25	48.81	9.368	9.334	9.283	9.198
11	66.0000	57.1577	72.00	60.11	54.80	9.368	9.333	9.282	9.196
12	72.0000	62.3538	78.00	65.99	60.80	9.367	9.332	9.280	9.193
13	78.0000	67.5500	84.00	71.89	66.80	9.366	9.331	9.279	9.191
14	84.0000	72.7461	90.00	77.81	72.79	9.366	9.330	9.277	9.189
15	90.0000	77.9423	96.00	83.73	78.79	9.365	9.330	9.276	9.187
16	96.0000	83.1384	102.00	89.67	84.78	9.365	9.329	9.275	9.185
17	102.0000	88.3346	108.00	95.62	90.78	9.364	9.328	9.274	9.183
18	108.0000	93.5307	114.00	101.57	96.78	9.364	9.327	9.273	9.181
19	114.0000	98.7269	120.00	107.53	102.77	9.363	9.327	9.271	9.179
20	120.0000	103.9231	126.00	113.49	108.77	9.363	9.326	9.270	9.178
21	126.0000	109.1192	132.00	119.45	114.77	9.363	9.325	9.269	9.176
22	132.0000	114.3154	138.00	125.42	120.77	9.362	9.325	9.268	9.174
23	138.0000	119.5115	144.00	131.39	126.76	9.362	9.324	9.267	9.173
24	144.0000	124.7077	150.00	137.37	132.76	9.361	9.323	9.266	9.171
25	150.0000	129.9038	156.00	143.34	138.76	9.361	9.323	9.265	9.170
26	156.0000	135.1000	162.00	149.32	144.76	9.361	9.322	9.264	9.168
27	162.0000	140.2961	168.00	155.30	150.75	9.360	9.321	9.263	9.167
28	168.0000	145.4923	174.00	161.28	156.75	9.360	9.321	9.263	9.165
29	174.0000	150.6884	180.00	167.27	162.75	9.360	9.320	9.262	9.164
30	180.0000	155.8846	186.00	173.25	168.75	9.359	9.320	9.261	9.162
31	186.0000	161.0807	192.00	179.23	174.74	9.359	9.319	9.260	9.161
32	192.0000	166.2769	198.00	185.22	180.74	9.358	9.319	9.259	9.160
33	198.0000	171.4730	204.00	191.21	186.74	9.358	9.318	9.258	9.158
34	204.0000	176.6692	210.00	197.19	192.74	9.358	9.318	9.257	9.157
35	210.0000	181.8653	216.00	203.18	198.73	9.358	9.317	9.257	9.156
36	216.0000	187.0615	222.00	209.17	204.73	9.357	9.317	9.256	9.155
37	222.0000	192.2577	228.00	215.16	210.73	9.357	9.316	9.255	9.153
38	228.0000	197.4538	234.00	221.15	216.73	9.357	9.316	9.254	9.152
39	234.0000	202.6500	240.00	227.14	222.73	9.356	9.315	9.254	9.151
40	240.0000	207.8461	246.00	233.13	228.72	9.356	9.315	9.253	9.150
41	246.0000	213.0423	252.00	239.13	234.72	9.356	9.314	9.252	9.149
42	252.0000	218.2384	258.00	245.12	240.72	9.355	9.314	9.251	9.147
43	258.0000	223.4346	264.00	251.11	246.72	9.355	9.313	9.251	9.146
44	264.0000	228.6307	270.00	257.10	252.72	9.355	9.313	9.250	9.145
45	270.0000	233.8269	276.00	263.10	258.71	9.355	9.312	9.249	9.144
46	276.0000	239.0230	282.00	269.09	264.71	9.354	9.312	9.249	9.143
47	282.0000	244.2192	288.00	275.08	270.71	9.354	9.312	9.248	9.142
48	288.0000	249.4153	294.00	281.08	276.71	9.354	9.311	9.247	9.141
49	294.0000	254.6115	300.00	287.07	282.71	9.354	9.311	9.247	9.140
50	300.0000	259.8076	306.00	293.07	288.70	9.353	9.310	9.246	9.139
51	306.0000	265.0038	312.00	299.06	294.70	9.353	9.310	9.245	9.138
52	312.0000	270.1999	318.00	305.06	300.70	9.353	9.310	9.245	9.137
53	318.0000	275.3961	324.00	311.05	306.70	9.352	9.309	9.244	9.136
54	324.0000	280.5922	330.00	317.05	312.70	9.352	9.309	9.243	9.135
55	330.0000	285.7884	336.00	323.04	318.70	9.352	9.308	9.243	9.134
56	336.0000	290.9846	342.00	329.04	324.69	9.352	9.308	9.242	9.133
57	342.0000	296.1807	348.00	335.03	330.69	9.351	9.308	9.242	9.132
58	348.0000	301.3769	354.00	341.03	336.69	9.351	9.307	9.241	9.131
59	354.0000	306.5730	360.00	347.02	342.69	9.351	9.307	9.240	9.130
60	360.0000	311.7692	366.00	353.02	348.69	9.351	9.306	9.240	9.129
61	366.0000	316.9653	372.00	359.02	354.69	9.351	9.306	9.239	9.128
62	372.0000	322.1615	378.00	365.01	360.68	9.350	9.306	9.239	9.127
63	378.0000	327.3576	384.00	371.01	366.68	9.350	9.305	9.238	9.126
64	384.0000	332.5538	390.00	377.01	372.68	9.350	9.305	9.237	9.125
65	390.0000	337.7499	396.00	383.00	378.68	9.350	9.304	9.237	9.124
66	396.0000	342.9461	402.00	389.00	384.68	9.349	9.304	9.236	9.123
67	402.0000	348.1422	408.00	395.00	390.68	9.349	9.304	9.236	9.122
68	408.0000	353.3384	414.00	400.99	396.67	9.349	9.303	9.235	9.121
69	414.0000	358.5345	420.00	406.99	402.67	9.349	9.303	9.235	9.120
70	420.0000	363.7307	426.00	412.99	408.67	9.348	9.303	9.234	9.120
71	426.0000	368.9268	432.00	418.99	414.67	9.348	9.302	9.233	9.119
72	432.0000	374.1230	438.00	424.98	420.67	9.348	9.302	9.233	9.118
73	438.0000	379.3191	444.00	430.98	426.67	9.348	9.302	9.232	9.117
74	444.0000	384.5153	450.00	436.98	432.67	9.348	9.301	9.232	9.116
75	450.0000	389.7115	456.00	442.98	438.66	9.347	9.301	9.231	9.115
76	456.0000	394.9076	462.00	448.97	444.66	9.347	9.301	9.231	9.114
77	462.0000	400.1038	468.00	454.97	450.66	9.347	9.300	9.230	9.114
78	468.0000	405.2999	474.00	460.97	456.66	9.347	9.300	9.230	9.113
79	474.0000	410.4961	480.00	466.97	462.66	9.347	9.300	9.229	9.112
80	480.0000	415.6922	486.00	472.96	468.66	9.346	9.299	9.229	9.111
81	486.0000	420.8884	492.00	478.96	474.66	9.346	9.299	9.228	9.110
82	492.0000	426.0845	498.00	484.96	480.65	9.346	9.299	9.228	9.109
83	498.0000	431.2807	504.00	490.96	486.65	9.346	9.298	9.227	9.109
84	504.0000	436.4768	510.00	496.96	492.65	9.345	9.297	9.226	9.107
85	510.0000	441.6730	516.00	502.95	498.65	9.345	9.297	9.225	9.106
86	516.0000	446.8691	522.00	508.95	504.65	9.345	9.297	9.225	9.105
87	522.0000	452.0653	528.00	514.95	510.64	9.344	9.296	9.224	9.104
88	528.0000	457.2614	534.00	520.95	516.64	9.344	9.296	9.223	9.103
89	534.0000	462.4576	540.00	526.95	522.64	9.344	9.296	9.223	9.102
90	540.0000	467.6537	546.00	532.95	528.64	9.344	9.295	9.222	9.101
91	546.0000	472.8499	552.00	538.94	534.64	9.344	9.295	9.222	9.100
92	552.0000	478.0461	558.00	544.94	540.64	9.343	9.294	9.221	9.099
93	558.0000	483.2422	564.00	550.94	546.63	9.343	9.294	9.220	9.098
94	564.0000	488.4384	570.00	556.94	552.63	9.343	9.294	9.220	9.097
95	570.0000	493.6345	576.00	562.94	558.63	9.343	9.293	9.219	9.096
96	576.0000	498.8307	582.00	568.94	564.63	9.342	9.293	9.219	9.095
97	582.0000	504.0268	588.00	574.94	570.63	9.342	9.292	9.218	9.094
98	588.0000	509.2230	594.00	580.93	576.63	9.342	9.292	9.217	9.093
99	594.0000	514.4191	600.00	586.93	582.62	9.342	9.292	9.217	9.092
100	600.0000	519.6153	606.00	592.93	588.62	9.341	9.291	9.216	9.091

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Table 49 — Internal spline

30 degree pressure angle — Side fit — Fillet root — Module = 5.00

E_{vmin} = minimum effective space width, circular = 7.854

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{Ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular 4 H	5 H	6 H	7 H
6	30.0000	25.9808	39.35	36.00	27.15	7.904	7.935	7.980	8.055
7	35.0000	30.3109	44.35	41.00	31.81	7.905	7.936	7.982	8.059
8	40.0000	34.6410	49.36	46.00	36.55	7.906	7.937	7.984	8.062
9	45.0000	38.9711	54.36	51.00	41.36	7.907	7.938	7.985	8.064
10	50.0000	43.3013	59.37	56.00	46.21	7.907	7.939	7.987	8.067
11	55.0000	47.6314	64.37	61.00	51.09	7.908	7.940	7.988	8.069
12	60.0000	51.9615	69.38	66.00	55.99	7.908	7.941	7.990	8.071
13	65.0000	56.2917	74.38	71.00	60.91	7.909	7.942	7.991	8.073
14	70.0000	60.6218	79.38	76.00	65.84	7.909	7.943	7.992	8.075
15	75.0000	64.9519	84.39	81.00	70.78	7.910	7.943	7.994	8.077
16	80.0000	69.2820	89.39	86.00	75.73	7.910	7.944	7.995	8.079
17	85.0000	73.6122	94.39	91.00	80.68	7.911	7.945	7.996	8.081
18	90.0000	77.9423	99.40	96.00	85.64	7.911	7.945	7.997	8.083
19	95.0000	82.2724	104.40	101.00	90.60	7.912	7.946	7.998	8.084
20	100.0000	86.6025	109.40	106.00	95.57	7.912	7.947	7.999	8.086
21	105.0000	90.9327	114.40	111.00	100.54	7.912	7.947	8.000	8.087
22	110.0000	95.2628	119.41	116.00	105.52	7.913	7.948	8.001	8.089
23	115.0000	99.5929	124.41	121.00	110.49	7.913	7.949	8.002	8.090
24	120.0000	103.9231	129.41	126.00	115.47	7.913	7.949	8.003	8.092
25	125.0000	108.2532	134.41	131.00	120.45	7.914	7.950	8.004	8.093
26	130.0000	112.5833	139.42	136.00	125.43	7.914	7.950	8.004	8.095
27	135.0000	116.9134	144.42	141.00	130.42	7.915	7.951	8.005	8.096
28	140.0000	121.2436	149.42	146.00	135.40	7.915	7.951	8.006	8.097
29	145.0000	125.5737	154.42	151.00	140.39	7.915	7.952	8.007	8.099
30	150.0000	129.9038	159.43	156.00	145.37	7.915	7.952	8.008	8.100
31	155.0000	134.2339	164.43	161.00	150.36	7.916	7.953	8.009	8.101
32	160.0000	138.5641	169.43	166.00	155.35	7.916	7.953	8.009	8.102
33	165.0000	142.8942	174.43	171.00	160.34	7.916	7.954	8.010	8.104
34	170.0000	147.2243	179.43	176.00	165.33	7.917	7.954	8.011	8.105
35	175.0000	151.5545	184.44	181.00	170.32	7.917	7.955	8.012	8.106
36	180.0000	155.8846	189.44	186.00	175.31	7.917	7.955	8.012	8.107
37	185.0000	160.2147	194.44	191.00	180.30	7.918	7.956	8.013	8.108
38	190.0000	164.5448	199.44	196.00	185.29	7.918	7.956	8.014	8.109
39	195.0000	168.8750	204.44	201.00	190.29	7.918	7.957	8.014	8.111
40	200.0000	173.2051	209.45	206.00	195.28	7.918	7.957	8.015	8.112
41	205.0000	177.5352	214.45	211.00	200.27	7.919	7.957	8.016	8.113
42	210.0000	181.8653	219.45	216.00	205.26	7.919	7.958	8.016	8.114
43	215.0000	186.1955	224.45	221.00	210.26	7.919	7.958	8.017	8.115
44	220.0000	190.5256	229.45	226.00	215.25	7.919	7.959	8.018	8.116
45	225.0000	194.8557	234.46	231.00	220.25	7.920	7.959	8.018	8.117
46	230.0000	199.1859	239.46	236.00	225.24	7.920	7.960	8.019	8.118
47	235.0000	203.5160	244.46	241.00	230.24	7.920	7.960	8.020	8.119
48	240.0000	207.8461	249.46	246.00	235.23	7.920	7.960	8.020	8.120
49	245.0000	212.1762	254.46	251.00	240.23	7.921	7.961	8.021	8.121
50	250.0000	216.5064	259.46	256.00	245.22	7.921	7.961	8.021	8.122
51	255.0000	220.8365	264.47	261.00	250.22	7.921	7.961	8.022	8.123
52	260.0000	225.1666	269.47	266.00	255.21	7.921	7.962	8.023	8.124
53	265.0000	229.4967	274.47	271.00	260.21	7.922	7.962	8.023	8.125
54	270.0000	233.8269	279.47	276.00	265.20	7.922	7.963	8.024	8.125
55	275.0000	238.1570	284.47	281.00	270.20	7.922	7.963	8.024	8.126
56	280.0000	242.4871	289.47	286.00	275.20	7.922	7.963	8.025	8.127
57	285.0000	246.8173	294.47	291.00	280.19	7.923	7.964	8.025	8.128
58	290.0000	251.1474	299.48	296.00	285.19	7.923	7.964	8.026	8.129
59	295.0000	255.4775	304.48	301.00	290.19	7.923	7.964	8.026	8.130
60	300.0000	259.8076	309.48	306.00	295.18	7.923	7.965	8.027	8.131
61	305.0000	264.1378	314.48	311.00	300.18	7.923	7.965	8.028	8.132
62	310.0000	268.4679	319.48	316.00	305.18	7.924	7.965	8.028	8.133
63	315.0000	272.7980	324.48	321.00	310.17	7.924	7.966	8.029	8.133
64	320.0000	277.1281	329.49	326.00	315.17	7.924	7.966	8.029	8.134
65	325.0000	281.4583	334.49	331.00	320.17	7.924	7.966	8.030	8.135
66	330.0000	285.7884	339.49	336.00	325.17	7.924	7.967	8.030	8.136
67	335.0000	290.1185	344.49	341.00	330.16	7.925	7.967	8.031	8.137
68	340.0000	294.4487	349.49	346.00	335.16	7.925	7.967	8.031	8.138
69	345.0000	298.7788	354.49	351.00	340.16	7.925	7.968	8.032	8.138
70	350.0000	303.1089	359.49	356.00	345.16	7.925	7.968	8.032	8.139
71	355.0000	307.4390	364.50	361.00	350.15	7.925	7.968	8.033	8.140
72	360.0000	311.7692	369.50	366.00	355.15	7.926	7.969	8.033	8.141
73	365.0000	316.0993	374.50	371.00	360.15	7.926	7.969	8.034	8.142
74	370.0000	320.4294	379.50	376.00	365.15	7.926	7.969	8.034	8.142
75	375.0000	324.7595	384.50	381.00	370.15	7.926	7.970	8.035	8.143
76	380.0000	329.0897	389.50	386.00	375.14	7.926	7.970	8.035	8.144
77	385.0000	333.4198	394.50	391.00	380.14	7.927	7.970	8.036	8.145
78	390.0000	337.7499	399.50	396.00	385.14	7.927	7.971	8.036	8.145
79	395.0000	342.0801	404.51	401.00	390.14	7.927	7.971	8.037	8.146
80	400.0000	346.4102	409.51	406.00	395.14	7.927	7.971	8.037	8.147
81	405.0000	350.7403	414.51	411.00	400.14	7.927	7.971	8.038	8.148
82	410.0000	355.0704	419.51	416.00	405.13	7.928	7.972	8.038	8.148
83	415.0000	359.4006	424.51	421.00	410.13	7.928	7.972	8.039	8.149
84	420.0000	363.7307	429.51	426.00	415.13	7.928	7.972	8.039	8.150
85	425.0000	368.0608	434.51	431.00	420.13	7.928	7.973	8.039	8.151
86	430.0000	372.3909	439.52	436.00	425.13	7.928	7.973	8.040	8.151
87	435.0000	376.7211	444.52	441.00	430.13	7.929	7.973	8.040	8.152
88	440.0000	381.0512	449.52	446.00	435.12	7.929	7.974	8.041	8.153
89	445.0000	385.3813	454.52	451.00	440.12	7.929	7.974	8.041	8.154
90	450.0000	389.7115	459.52	456.00	445.12	7.929	7.974	8.042	8.154
91	455.0000	394.0416	464.52	461.00	450.12	7.929	7.974	8.042	8.155
92	460.0000	398.3717	469.52	466.00	455.12	7.929	7.975	8.043	8.156
93	465.0000	402.7018	474.52	471.00	460.12	7.930	7.975	8.043	8.156
94	470.0000	407.0320	479.53	476.00	465.12	7.930	7.975	8.043	8.157
95	475.0000	411.3621	484.53	481.00	470.12	7.930	7.976	8.044	8.158
96	480.0000	415.6922	489.53	486.00	475.11	7.930	7.976	8.044	8.158
97	485.0000	420.0223	494.53	491.00	480.11	7.930	7.976	8.045	8.159
98	490.0000	424.3525	499.53	496.00	485.11	7.930	7.976	8.045	8.160
99	495.0000	428.6826	504.53	501.00	490.11	7.931	7.977	8.046	8.161
100	500.0000	433.0127	509.53	506.00	495.11	7.931	7.977	8.046	8.161

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Table 50 — External spline

30 degree pressure angle — Side fit — Fillet root — Module = 5.00

S_{vmax} = maximum effective tooth thickness, circular = 7.854

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	30.0000	25.9808	35.00	26.15	20.65	7.804	7.773	7.728	7.652
7	35.0000	30.3109	40.00	30.81	25.65	7.803	7.772	7.726	7.649
8	40.0000	34.6410	45.00	35.55	30.64	7.802	7.771	7.724	7.646
9	45.0000	38.9711	50.00	40.36	35.64	7.801	7.770	7.723	7.644
10	50.0000	43.3013	55.00	45.21	40.63	7.801	7.769	7.721	7.641
11	55.0000	47.6314	60.00	50.09	45.63	7.800	7.768	7.720	7.639
12	60.0000	51.9615	65.00	54.99	50.62	7.800	7.767	7.718	7.637
13	65.0000	56.2917	70.00	59.91	55.62	7.799	7.766	7.717	7.635
14	70.0000	60.6218	75.00	64.84	60.62	7.799	7.765	7.716	7.633
15	75.0000	64.9519	80.00	69.78	65.61	7.798	7.765	7.714	7.631
16	80.0000	69.2820	85.00	74.73	70.61	7.798	7.764	7.713	7.629
17	85.0000	73.6122	90.00	79.68	75.61	7.797	7.763	7.712	7.627
18	90.0000	77.9423	95.00	84.64	80.60	7.797	7.763	7.711	7.625
19	95.0000	82.2724	100.00	89.60	85.60	7.796	7.762	7.710	7.624
20	100.0000	86.6025	105.00	94.57	90.60	7.796	7.761	7.709	7.622
21	105.0000	90.9327	110.00	99.54	95.60	7.796	7.761	7.708	7.620
22	110.0000	95.2628	115.00	104.52	100.59	7.795	7.760	7.707	7.619
23	115.0000	99.5929	120.00	109.49	105.59	7.795	7.759	7.706	7.617
24	120.0000	103.9231	125.00	114.47	110.59	7.794	7.759	7.705	7.616
25	125.0000	108.2532	130.00	119.45	115.59	7.794	7.758	7.704	7.615
26	130.0000	112.5833	135.00	124.43	120.58	7.794	7.758	7.704	7.613
27	135.0000	116.9134	140.00	129.42	125.58	7.793	7.757	7.703	7.612
28	140.0000	121.2436	145.00	134.40	130.58	7.793	7.757	7.702	7.611
29	145.0000	125.5737	150.00	139.39	135.58	7.793	7.756	7.701	7.609
30	150.0000	129.9038	155.00	144.37	140.57	7.792	7.756	7.700	7.608
31	155.0000	134.2339	160.00	149.36	145.57	7.792	7.755	7.699	7.607
32	160.0000	138.5641	165.00	154.35	150.57	7.792	7.755	7.699	7.605
33	165.0000	142.8942	170.00	159.34	155.57	7.792	7.754	7.698	7.604
34	170.0000	147.2243	175.00	164.33	160.57	7.791	7.754	7.697	7.603
35	175.0000	151.5545	180.00	169.32	165.56	7.791	7.753	7.696	7.602
36	180.0000	155.8846	185.00	174.31	170.56	7.791	7.753	7.696	7.601
37	185.0000	160.2147	190.00	179.30	175.56	7.790	7.752	7.695	7.600
38	190.0000	164.5448	195.00	184.29	180.56	7.790	7.752	7.694	7.599
39	195.0000	168.8750	200.00	189.29	185.56	7.790	7.751	7.694	7.597
40	200.0000	173.2051	205.00	194.28	190.55	7.790	7.751	7.693	7.596
41	205.0000	177.5352	210.00	199.27	195.55	7.789	7.750	7.692	7.595
42	210.0000	181.8653	215.00	204.26	200.55	7.789	7.750	7.692	7.594
43	215.0000	186.1955	220.00	209.26	205.55	7.789	7.750	7.691	7.593
44	220.0000	190.5256	225.00	214.25	210.55	7.789	7.749	7.690	7.592
45	225.0000	194.8557	230.00	219.25	215.54	7.788	7.749	7.690	7.591
46	230.0000	199.1859	235.00	224.24	220.54	7.788	7.748	7.689	7.590
47	235.0000	203.5160	240.00	229.24	225.54	7.788	7.748	7.688	7.589
48	240.0000	207.8461	245.00	234.23	230.54	7.788	7.748	7.688	7.588
49	245.0000	212.1762	250.00	239.23	235.54	7.787	7.747	7.687	7.587
50	250.0000	216.5064	255.00	244.22	240.54	7.787	7.747	7.687	7.586
51	255.0000	220.8365	260.00	249.22	245.53	7.787	7.746	7.686	7.585
52	260.0000	225.1666	265.00	254.21	250.53	7.787	7.746	7.685	7.584
53	265.0000	229.4967	270.00	259.21	255.53	7.786	7.746	7.685	7.583
54	270.0000	233.8269	275.00	264.20	260.53	7.786	7.745	7.684	7.582
55	275.0000	238.1570	280.00	269.20	265.53	7.786	7.745	7.684	7.582
56	280.0000	242.4871	285.00	274.20	270.53	7.786	7.745	7.683	7.581
57	285.0000	246.8173	290.00	279.19	275.53	7.785	7.744	7.683	7.580
58	290.0000	251.1474	295.00	284.19	280.52	7.785	7.744	7.682	7.579
59	295.0000	255.4775	300.00	289.19	285.52	7.785	7.744	7.681	7.578
60	300.0000	259.8076	305.00	294.18	290.52	7.785	7.743	7.681	7.577
61	305.0000	264.1378	310.00	299.18	295.52	7.785	7.743	7.680	7.576
62	310.0000	268.4679	315.00	304.18	300.52	7.784	7.743	7.680	7.575
63	315.0000	272.7980	320.00	309.17	305.52	7.784	7.742	7.679	7.575
64	320.0000	277.1281	325.00	314.17	310.51	7.784	7.742	7.679	7.574
65	325.0000	281.4583	330.00	319.17	315.51	7.784	7.742	7.678	7.573
66	330.0000	285.7884	335.00	324.17	320.51	7.783	7.741	7.678	7.572
67	335.0000	290.1185	340.00	329.16	325.51	7.783	7.741	7.677	7.571
68	340.0000	294.4487	345.00	334.16	330.51	7.783	7.741	7.677	7.570
69	345.0000	298.7788	350.00	339.16	335.51	7.783	7.740	7.676	7.570
70	350.0000	303.1089	355.00	344.16	340.51	7.783	7.740	7.676	7.569
71	355.0000	307.4390	360.00	349.15	345.50	7.782	7.740	7.675	7.568
72	360.0000	311.7692	365.00	354.15	350.50	7.782	7.739	7.675	7.567
73	365.0000	316.0993	370.00	359.15	355.50	7.782	7.739	7.674	7.566
74	370.0000	320.4294	375.00	364.15	360.50	7.782	7.739	7.674	7.566
75	375.0000	324.7595	380.00	369.15	365.50	7.782	7.738	7.673	7.565
76	380.0000	329.0897	385.00	374.14	370.50	7.781	7.738	7.673	7.564
77	385.0000	333.4198	390.00	379.14	375.50	7.781	7.738	7.672	7.563
78	390.0000	337.7499	395.00	384.14	380.50	7.781	7.737	7.672	7.562
79	395.0000	342.0801	400.00	389.14	385.49	7.781	7.737	7.671	7.562
80	400.0000	346.4102	405.00	394.14	390.49	7.781	7.737	7.671	7.561
81	405.0000	350.7403	410.00	399.14	395.49	7.781	7.736	7.670	7.560
82	410.0000	355.0704	415.00	404.13	400.49	7.780	7.736	7.670	7.559
83	415.0000	359.4006	420.00	409.13	405.49	7.780	7.736	7.669	7.559
84	420.0000	363.7307	425.00	414.13	410.49	7.780	7.736	7.669	7.558
85	425.0000	368.0608	430.00	419.13	415.49	7.780	7.735	7.669	7.557
86	430.0000	372.3909	435.00	424.13	420.48	7.780	7.735	7.668	7.557
87	435.0000	376.7211	440.00	429.13	425.48	7.779	7.735	7.668	7.556
88	440.0000	381.0512	445.00	434.12	430.48	7.779	7.734	7.667	7.555
89	445.0000	385.3813	450.00	439.12	435.48	7.779	7.734	7.667	7.554
90	450.0000	389.7115	455.00	444.12	440.48	7.779	7.734	7.666	7.554
91	455.0000	394.0416	460.00	449.12	445.48	7.779	7.734	7.666	7.553
92	460.0000	398.3717	465.00	454.12	450.48	7.779	7.733	7.665	7.552
93	465.0000	402.7018	470.00	459.12	455.48	7.778	7.733	7.665	7.552
94	470.0000	407.0320	475.00	464.12	460.47	7.778	7.733	7.665	7.551
95	475.0000	411.3621	480.00	469.12	465.47	7.778	7.732	7.664	7.550
96	480.0000	415.6922	485.00	474.11	470.47	7.778	7.732	7.664	7.549
97	485.0000	420.0223	490.00	479.11	475.47	7.778	7.732	7.663	7.549
98	490.0000	424.3525	495.00	484.11	480.47	7.778	7.732	7.663	7.548
99	495.0000	428.6826	500.00	489.11	485.47	7.777	7.731	7.662	7.547
100	500.0000	433.0127	505.00	494.11	490.47	7.777	7.731	7.662	7.547

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Table 51 — Internal spline

30 degree pressure angle — Side fit — Fillet root — Module = 4.00

E_{vmin} = minimum effective space width, circular = 6.283

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	24.0000	20.7846	31.52	28.80	21.72	6.330	6.358	6.400	6.470
7	28.0000	24.2487	35.53	32.80	25.44	6.331	6.359	6.402	6.473
8	32.0000	27.7128	39.53	36.80	29.24	6.331	6.360	6.403	6.475
9	36.0000	31.1769	43.54	40.80	33.09	6.332	6.361	6.405	6.478
10	40.0000	34.6410	47.54	44.80	36.97	6.332	6.362	6.406	6.480
11	44.0000	38.1051	51.54	48.80	40.87	6.333	6.363	6.408	6.482
12	48.0000	41.5692	55.55	52.80	44.79	6.333	6.364	6.409	6.484
13	52.0000	45.0333	59.55	56.80	48.73	6.334	6.364	6.410	6.486
14	56.0000	48.4974	63.56	60.80	52.67	6.334	6.365	6.411	6.488
15	60.0000	51.9615	67.56	64.80	56.62	6.335	6.366	6.412	6.490
16	64.0000	55.4256	71.56	68.80	60.58	6.335	6.367	6.413	6.492
17	68.0000	58.8897	75.56	72.80	64.54	6.336	6.367	6.414	6.493
18	72.0000	62.3538	79.57	76.80	68.51	6.336	6.368	6.415	6.495
19	76.0000	65.8179	83.57	80.80	72.48	6.336	6.368	6.416	6.496
20	80.0000	69.2820	87.57	84.80	76.46	6.337	6.369	6.417	6.498
21	84.0000	72.7461	91.57	88.80	80.44	6.337	6.370	6.418	6.499
22	88.0000	76.2102	95.58	92.80	84.41	6.338	6.370	6.419	6.501
23	92.0000	79.6743	99.58	96.80	88.40	6.338	6.371	6.420	6.502
24	96.0000	83.1384	103.58	100.80	92.38	6.338	6.371	6.421	6.503
25	100.0000	86.6025	107.58	104.80	96.36	6.339	6.372	6.422	6.505
26	104.0000	90.0666	111.59	108.80	100.35	6.339	6.372	6.422	6.506
27	108.0000	93.5307	115.59	112.80	104.33	6.339	6.373	6.423	6.507
28	112.0000	96.9949	119.59	116.80	108.32	6.339	6.373	6.424	6.508
29	116.0000	100.4590	123.59	120.80	112.31	6.340	6.374	6.425	6.509
30	120.0000	103.9231	127.59	124.80	116.30	6.340	6.374	6.425	6.511
31	124.0000	107.3872	131.60	128.80	120.29	6.340	6.375	6.426	6.512
32	128.0000	110.8513	135.60	132.80	124.28	6.341	6.375	6.427	6.513
33	132.0000	114.3154	139.60	136.80	128.27	6.341	6.376	6.427	6.514
34	136.0000	117.7795	143.60	140.80	132.26	6.341	6.376	6.428	6.515
35	140.0000	121.2436	147.60	144.80	136.26	6.341	6.376	6.429	6.516
36	144.0000	124.7077	151.61	148.80	140.25	6.342	6.377	6.429	6.517
37	148.0000	128.1718	155.61	152.80	144.24	6.342	6.377	6.430	6.518
38	152.0000	131.6359	159.61	156.80	148.23	6.342	6.378	6.431	6.519
39	156.0000	135.1000	163.61	160.80	152.23	6.342	6.378	6.431	6.520
40	160.0000	138.5641	167.61	164.80	156.22	6.343	6.378	6.432	6.521
41	164.0000	142.0282	171.61	168.80	160.22	6.343	6.379	6.433	6.522
42	168.0000	145.4923	175.62	172.80	164.21	6.343	6.379	6.433	6.523
43	172.0000	148.9564	179.62	176.80	168.21	6.343	6.380	6.434	6.524
44	176.0000	152.4205	183.62	180.80	172.20	6.344	6.380	6.434	6.525
45	180.0000	155.8846	187.62	184.80	176.20	6.344	6.380	6.435	6.526
46	184.0000	159.3487	191.62	188.80	180.19	6.344	6.381	6.435	6.527
47	188.0000	162.8128	195.62	192.80	184.19	6.344	6.381	6.436	6.528
48	192.0000	166.2769	199.63	196.80	188.18	6.345	6.381	6.437	6.529
49	196.0000	169.7410	203.63	200.80	192.18	6.345	6.382	6.437	6.529
50	200.0000	173.2051	207.63	204.80	196.18	6.345	6.382	6.438	6.530
51	204.0000	176.6692	211.63	208.80	200.17	6.345	6.382	6.438	6.531
52	208.0000	180.1333	215.63	212.80	204.17	6.345	6.383	6.439	6.532
53	212.0000	183.5974	219.63	216.80	208.17	6.346	6.383	6.439	6.533
54	216.0000	187.0615	223.63	220.80	212.16	6.346	6.383	6.440	6.534
55	220.0000	190.5256	227.64	224.80	216.16	6.346	6.384	6.440	6.535
56	224.0000	193.9897	231.64	228.80	220.16	6.346	6.384	6.441	6.535
57	228.0000	197.4538	235.64	232.80	224.15	6.346	6.384	6.441	6.536
58	232.0000	200.9179	239.64	236.80	228.15	6.347	6.385	6.442	6.537
59	236.0000	204.3820	243.64	240.80	232.15	6.347	6.385	6.442	6.538
60	240.0000	207.8461	247.64	244.80	236.15	6.347	6.385	6.443	6.539
61	244.0000	211.3102	251.64	248.80	240.14	6.347	6.386	6.443	6.539
62	248.0000	214.7743	255.64	252.80	244.14	6.347	6.386	6.444	6.540
63	252.0000	218.2384	259.65	256.80	248.14	6.348	6.386	6.444	6.541
64	256.0000	221.7025	263.65	260.80	252.14	6.348	6.387	6.445	6.542
65	260.0000	225.1666	267.65	264.80	256.14	6.348	6.387	6.445	6.542
66	264.0000	228.6307	271.65	268.80	260.13	6.348	6.387	6.446	6.543
67	268.0000	232.0948	275.65	272.80	264.13	6.348	6.387	6.446	6.544
68	272.0000	235.5589	279.65	276.80	268.13	6.349	6.388	6.447	6.545
69	276.0000	239.0230	283.65	280.80	272.13	6.349	6.388	6.447	6.545
70	280.0000	242.4871	287.66	284.80	276.13	6.349	6.388	6.447	6.546
71	284.0000	245.9512	291.66	288.80	280.12	6.349	6.389	6.448	6.547
72	288.0000	249.4153	295.66	292.80	284.12	6.349	6.389	6.448	6.547
73	292.0000	252.8794	299.66	296.80	288.12	6.349	6.389	6.449	6.548
74	296.0000	256.3435	303.66	300.80	292.12	6.350	6.389	6.449	6.549
75	300.0000	259.8076	307.66	304.80	296.12	6.350	6.390	6.450	6.550
76	304.0000	263.2717	311.66	308.80	300.12	6.350	6.390	6.450	6.550
77	308.0000	266.7358	315.66	312.80	304.11	6.350	6.390	6.451	6.551
78	312.0000	270.1999	319.66	316.80	308.11	6.350	6.391	6.451	6.552
79	316.0000	273.6640	323.67	320.80	312.11	6.350	6.391	6.451	6.552
80	320.0000	277.1281	327.67	324.80	316.11	6.351	6.391	6.452	6.553
81	324.0000	280.5922	331.67	328.80	320.11	6.351	6.391	6.452	6.554
82	328.0000	284.0563	335.67	332.80	324.11	6.351	6.392	6.453	6.554
83	332.0000	287.5205	339.67	336.80	328.11	6.351	6.392	6.453	6.555
84	336.0000	290.9846	343.67	340.80	332.10	6.351	6.392	6.453	6.556
85	340.0000	294.4487	347.67	344.80	336.10	6.351	6.392	6.454	6.556
86	344.0000	297.9128	351.67	348.80	340.10	6.352	6.393	6.454	6.557
87	348.0000	301.3769	355.68	352.80	344.10	6.352	6.393	6.455	6.558
88	352.0000	304.8410	359.68	356.80	348.10	6.352	6.393	6.455	6.558
89	356.0000	308.3051	363.68	360.80	352.10	6.352	6.393	6.455	6.559
90	360.0000	311.7692	367.68	364.80	356.10	6.352	6.394	6.456	6.559
91	364.0000	315.2333	371.68	368.80	360.10	6.352	6.394	6.456	6.560
92	368.0000	318.6974	375.68	372.80	364.10	6.353	6.394	6.457	6.561
93	372.0000	322.1615	379.68	376.80	368.09	6.353	6.394	6.457	6.561
94	376.0000	325.6256	383.68	380.80	372.09	6.353	6.395	6.457	6.562
95	380.0000	329.0897	387.68	384.80	376.09	6.353	6.395	6.458	6.563
96	384.0000	332.5538	391.69	388.80	380.09	6.353	6.395	6.458	6.563
97	388.0000	336.0179	395.69	392.80	384.09	6.353	6.395	6.459	6.564
98	392.0000	339.4820	399.69	396.80	388.09	6.354	6.396	6.459	6.564
99	396.0000	342.9461	403.69	400.80	392.09	6.354	6.396	6.459	6.565
100	400.0000	346.4102	407.69	404.80	396.09	6.354	6.396	6.460	6.566

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Table 52 — External spline

30 degree pressure angle — Side fit — Fillet root — Module = 4.00

S_{vmax} = maximum effective tooth thickness, circular = 6.283

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	24.0000	20.7846	28.00	20.92	16.48	6.236	6.208	6.166	6.056
7	28.0000	24.2487	32.00	24.64	20.47	6.236	6.207	6.165	6.054
8	32.0000	27.7128	36.00	28.44	24.47	6.235	6.206	6.163	6.091
9	36.0000	31.1769	40.00	32.29	28.46	6.234	6.205	6.161	6.088
10	40.0000	34.6410	44.00	36.17	32.46	6.234	6.204	6.160	6.086
11	44.0000	38.1051	48.00	40.07	36.46	6.233	6.204	6.159	6.084
12	48.0000	41.5692	52.00	43.99	40.45	6.233	6.203	6.157	6.082
13	52.0000	45.0333	56.00	47.93	44.45	6.232	6.202	6.156	6.080
14	56.0000	48.4974	60.00	51.87	48.44	6.232	6.201	6.155	6.078
15	60.0000	51.9615	64.00	55.82	52.44	6.232	6.200	6.154	6.076
16	64.0000	55.4256	68.00	59.78	56.44	6.231	6.200	6.153	6.075
17	68.0000	58.8897	72.00	63.74	60.44	6.231	6.199	6.152	6.073
18	72.0000	62.3538	76.00	67.71	64.43	6.230	6.199	6.151	6.072
19	76.0000	65.8179	80.00	71.68	68.43	6.230	6.198	6.150	6.070
20	80.0000	69.2820	84.00	75.66	72.43	6.230	6.197	6.149	6.069
21	84.0000	72.7461	88.00	79.64	76.43	6.229	6.197	6.148	6.067
22	88.0000	76.2102	92.00	83.61	80.42	6.229	6.196	6.147	6.066
23	92.0000	79.6743	96.00	87.60	84.42	6.228	6.196	6.146	6.064
24	96.0000	83.1384	100.00	91.58	88.42	6.228	6.195	6.146	6.063
25	100.0000	86.6025	104.00	95.56	92.42	6.228	6.195	6.145	6.062
26	104.0000	90.0666	108.00	99.55	96.41	6.228	6.194	6.144	6.061
27	108.0000	93.5307	112.00	103.53	100.41	6.227	6.194	6.143	6.059
28	112.0000	96.9949	116.00	107.52	104.41	6.227	6.193	6.142	6.058
29	116.0000	100.4590	120.00	111.51	108.41	6.227	6.193	6.142	6.057
30	120.0000	103.9231	124.00	115.50	112.41	6.226	6.192	6.141	6.056
31	124.0000	107.3872	128.00	119.49	116.40	6.226	6.192	6.140	6.055
32	128.0000	110.8513	132.00	123.48	120.40	6.226	6.191	6.140	6.053
33	132.0000	114.3154	136.00	127.47	124.40	6.225	6.191	6.139	6.052
34	136.0000	117.7795	140.00	131.46	128.40	6.225	6.190	6.138	6.051
35	140.0000	121.2436	144.00	135.46	132.40	6.225	6.190	6.138	6.050
36	144.0000	124.7077	148.00	139.45	136.39	6.225	6.190	6.137	6.049
37	148.0000	128.1718	152.00	143.44	140.39	6.224	6.189	6.136	6.048
38	152.0000	131.6359	156.00	147.43	144.39	6.224	6.189	6.136	6.047
39	156.0000	135.1000	160.00	151.43	148.39	6.224	6.188	6.135	6.046
40	160.0000	138.5641	164.00	155.42	152.39	6.224	6.188	6.134	6.045
41	164.0000	142.0282	168.00	159.42	156.39	6.223	6.188	6.134	6.044
42	168.0000	145.4923	172.00	163.41	160.38	6.223	6.187	6.133	6.043
43	172.0000	148.9564	176.00	167.41	164.38	6.223	6.187	6.133	6.042
44	176.0000	152.4205	180.00	171.40	168.38	6.223	6.186	6.132	6.041
45	180.0000	155.8846	184.00	175.40	172.38	6.223	6.186	6.131	6.040
46	184.0000	159.3487	188.00	179.39	176.38	6.222	6.186	6.131	6.040
47	188.0000	162.8128	192.00	183.39	180.38	6.222	6.185	6.130	6.039
48	192.0000	166.2769	196.00	187.38	184.37	6.222	6.185	6.130	6.038
49	196.0000	169.7410	200.00	191.38	188.37	6.222	6.185	6.129	6.037
50	200.0000	173.2051	204.00	195.38	192.37	6.221	6.184	6.129	6.036
51	204.0000	176.6692	208.00	199.37	196.37	6.221	6.184	6.128	6.035
52	208.0000	180.1333	212.00	203.37	200.37	6.221	6.184	6.128	6.034
53	212.0000	183.5974	216.00	207.37	204.37	6.221	6.183	6.127	6.034
54	216.0000	187.0615	220.00	211.36	208.37	6.221	6.183	6.127	6.033
55	220.0000	190.5256	224.00	215.36	212.36	6.220	6.183	6.126	6.032
56	224.0000	193.9897	228.00	219.36	216.36	6.220	6.182	6.126	6.031
57	228.0000	197.4538	232.00	223.35	220.36	6.220	6.182	6.125	6.030
58	232.0000	200.9179	236.00	227.35	224.36	6.220	6.182	6.125	6.029
59	236.0000	204.3820	240.00	231.35	228.36	6.220	6.181	6.124	6.029
60	240.0000	207.8461	244.00	235.35	232.36	6.219	6.181	6.124	6.028
61	244.0000	211.3102	248.00	239.34	236.36	6.219	6.181	6.123	6.027
62	248.0000	214.7743	252.00	243.34	240.36	6.219	6.180	6.123	6.026
63	252.0000	218.2384	256.00	247.34	244.35	6.219	6.180	6.122	6.026
64	256.0000	221.7025	260.00	251.34	248.35	6.219	6.180	6.122	6.025
65	260.0000	225.1666	264.00	255.34	252.35	6.218	6.180	6.121	6.024
66	264.0000	228.6307	268.00	259.33	256.35	6.218	6.179	6.121	6.023
67	268.0000	232.0948	272.00	263.33	260.35	6.218	6.179	6.120	6.023
68	272.0000	235.5589	276.00	267.33	264.35	6.218	6.179	6.120	6.022
69	276.0000	239.0230	280.00	271.33	268.35	6.218	6.178	6.119	6.021
70	280.0000	242.4871	284.00	275.33	272.34	6.217	6.178	6.119	6.020
71	284.0000	245.9512	288.00	279.32	276.34	6.217	6.178	6.118	6.020
72	288.0000	249.4153	292.00	283.32	280.34	6.217	6.177	6.118	6.019
73	292.0000	252.8794	296.00	287.32	284.34	6.217	6.177	6.118	6.018
74	296.0000	256.3435	300.00	291.32	288.34	6.217	6.177	6.117	6.018
75	300.0000	259.8076	304.00	295.32	292.34	6.217	6.177	6.117	6.017
76	304.0000	263.2717	308.00	299.32	296.34	6.216	6.176	6.116	6.016
77	308.0000	266.7358	312.00	303.31	300.34	6.216	6.176	6.116	6.015
78	312.0000	270.1999	316.00	307.31	304.34	6.216	6.176	6.115	6.015
79	316.0000	273.6640	320.00	311.31	308.33	6.216	6.176	6.115	6.014
80	320.0000	277.1281	324.00	315.31	312.33	6.216	6.175	6.115	6.013
81	324.0000	280.5922	328.00	319.31	316.33	6.216	6.175	6.114	6.013
82	328.0000	284.0563	332.00	323.31	320.33	6.215	6.175	6.114	6.012
83	332.0000	287.5205	336.00	327.31	324.33	6.215	6.174	6.113	6.011
84	336.0000	290.9846	340.00	331.30	328.33	6.215	6.174	6.113	6.011
85	340.0000	294.4487	344.00	335.30	332.33	6.215	6.174	6.112	6.010
86	344.0000	297.9128	348.00	339.30	336.33	6.215	6.174	6.112	6.009
87	348.0000	301.3769	352.00	343.30	340.32	6.215	6.173	6.112	6.009
88	352.0000	304.8410	356.00	347.30	344.32	6.214	6.173	6.111	6.008
89	356.0000	308.3051	360.00	351.30	348.32	6.214	6.173	6.111	6.008
90	360.0000	311.7692	364.00	355.30	352.32	6.214	6.173	6.110	6.007
91	364.0000	315.2333	368.00	359.30	356.32	6.214	6.172	6.110	6.006
92	368.0000	318.6974	372.00	363.30	360.32	6.214	6.172	6.110	6.006
93	372.0000	322.1615	376.00	367.29	364.32	6.214	6.172	6.109	6.005
94	376.0000	325.6256	380.00	371.29	368.32	6.213	6.172	6.109	6.004
95	380.0000	329.0897	384.00	375.29	372.32	6.213	6.171	6.109	6.004
96	384.0000	332.5538	388.00	379.29	376.31	6.213	6.171	6.108	6.003
97	388.0000	336.0179	392.00	383.29	380.31	6.213	6.171	6.108	6.003
98	392.0000	339.4820	396.00	387.29	384.31	6.213	6.171	6.107	6.002
99	396.0000	342.9461	400.00	391.29	388.31	6.213	6.170	6.107	6.001
100	400.0000	346.4102	404.00	395.29	392.31	6.213	6.170	6.107	6.001

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Table 53 — Internal spline

30 degree pressure angle — Side fit — Fillet root — Module = 3.00

E_{vmin} = minimum effective space width, circular = 4.712

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular 4 H	5 H	6 H	7 H
6	18.0000	15.5885	23.69	21.60	16.29	4.755	4.780	4.818	4.882
7	21.0000	18.1865	26.70	24.60	19.08	4.755	4.781	4.820	4.884
8	24.0000	20.7846	29.70	27.60	21.93	4.756	4.782	4.821	4.887
9	27.0000	23.3827	32.71	30.60	24.82	4.757	4.783	4.823	4.889
10	30.0000	25.9808	35.71	33.60	27.73	4.757	4.784	4.824	4.891
11	33.0000	28.5788	38.71	36.60	30.65	4.758	4.785	4.825	4.893
12	36.0000	31.1769	41.72	39.60	33.59	4.758	4.785	4.826	4.895
13	39.0000	33.7750	44.72	42.60	36.54	4.758	4.786	4.827	4.896
14	42.0000	36.3731	47.72	45.60	39.50	4.759	4.787	4.828	4.898
15	45.0000	38.9711	50.72	48.60	42.47	4.759	4.787	4.829	4.900
16	48.0000	41.5692	53.73	51.60	45.44	4.760	4.788	4.830	4.901
17	51.0000	44.1673	56.73	54.60	48.41	4.760	4.788	4.831	4.903
18	54.0000	46.7654	59.73	57.60	51.38	4.760	4.789	4.832	4.904
19	57.0000	49.3635	62.73	60.60	54.36	4.761	4.790	4.833	4.905
20	60.0000	51.9615	65.74	63.60	57.34	4.761	4.790	4.834	4.907
21	63.0000	54.5596	68.74	66.60	60.33	4.761	4.791	4.835	4.908
22	66.0000	57.1577	71.74	69.60	63.31	4.762	4.791	4.835	4.909
23	69.0000	59.7558	74.74	72.60	66.30	4.762	4.792	4.836	4.910
24	72.0000	62.3538	77.75	75.60	69.28	4.762	4.792	4.837	4.912
25	75.0000	64.9519	80.75	78.60	72.27	4.762	4.793	4.838	4.913
26	78.0000	67.5500	83.75	81.60	75.26	4.763	4.793	4.838	4.914
27	81.0000	70.1481	86.75	84.60	78.25	4.763	4.793	4.839	4.915
28	84.0000	72.7461	89.75	87.60	81.24	4.763	4.794	4.840	4.916
29	87.0000	75.3442	92.75	90.60	84.23	4.764	4.794	4.840	4.917
30	90.0000	77.9423	95.76	93.60	87.22	4.764	4.795	4.841	4.918
31	93.0000	80.5404	98.76	96.60	90.22	4.764	4.795	4.842	4.919
32	96.0000	83.1384	101.76	99.60	93.21	4.764	4.795	4.842	4.920
33	99.0000	85.7365	104.76	102.60	96.20	4.765	4.796	4.843	4.921
34	102.0000	88.3346	107.76	105.60	99.20	4.765	4.796	4.843	4.922
35	105.0000	90.9327	110.76	108.60	102.19	4.765	4.797	4.844	4.923
36	108.0000	93.5307	113.77	111.60	105.19	4.765	4.797	4.845	4.924
37	111.0000	96.1288	116.77	114.60	108.18	4.765	4.797	4.845	4.925
38	114.0000	98.7269	119.77	117.60	111.18	4.766	4.798	4.846	4.926
39	117.0000	101.3250	122.77	120.60	114.17	4.766	4.798	4.846	4.927
40	120.0000	103.9231	125.77	123.60	117.17	4.766	4.798	4.847	4.927
41	123.0000	106.5211	128.77	126.60	120.16	4.766	4.799	4.847	4.928
42	126.0000	109.1192	131.78	129.60	123.16	4.767	4.799	4.848	4.929
43	129.0000	111.7173	134.78	132.60	126.15	4.767	4.799	4.848	4.930
44	132.0000	114.3154	137.78	135.60	129.15	4.767	4.800	4.849	4.931
45	135.0000	116.9134	140.78	138.60	132.15	4.767	4.800	4.849	4.932
46	138.0000	119.5115	143.78	141.60	135.14	4.767	4.800	4.850	4.932
47	141.0000	122.1096	146.78	144.60	138.14	4.768	4.801	4.850	4.933
48	144.0000	124.7077	149.78	147.60	141.14	4.768	4.801	4.851	4.934
49	147.0000	127.3057	152.79	150.60	144.14	4.768	4.801	4.851	4.935
50	150.0000	129.9038	155.79	153.60	147.13	4.768	4.802	4.852	4.935
51	153.0000	132.5019	158.79	156.60	150.13	4.768	4.802	4.852	4.936
52	156.0000	135.1000	161.79	159.60	153.13	4.769	4.802	4.853	4.937
53	159.0000	137.6980	164.79	162.60	156.13	4.769	4.803	4.853	4.938
54	162.0000	140.2961	167.79	165.60	159.12	4.769	4.803	4.854	4.938
55	165.0000	142.8942	170.79	168.60	162.12	4.769	4.803	4.854	4.939
56	168.0000	145.4923	173.79	171.60	165.12	4.769	4.803	4.855	4.940
57	171.0000	148.0904	176.80	174.60	168.12	4.769	4.804	4.855	4.941
58	174.0000	150.6884	179.80	177.60	171.11	4.770	4.804	4.855	4.941
59	177.0000	153.2865	182.80	180.60	174.11	4.770	4.804	4.856	4.942
60	180.0000	155.8846	185.80	183.60	177.11	4.770	4.805	4.856	4.943
61	183.0000	158.4827	188.80	186.60	180.11	4.770	4.805	4.857	4.943
62	186.0000	161.0807	191.80	189.60	183.11	4.770	4.805	4.857	4.944
63	189.0000	163.6788	194.80	192.60	186.10	4.770	4.805	4.858	4.945
64	192.0000	166.2769	197.80	195.60	189.10	4.771	4.806	4.858	4.945
65	195.0000	168.8750	200.80	198.60	192.10	4.771	4.806	4.858	4.946
66	198.0000	171.4730	203.81	201.60	195.10	4.771	4.806	4.859	4.947
67	201.0000	174.0711	206.81	204.60	198.10	4.771	4.806	4.859	4.947
68	204.0000	176.6692	209.81	207.60	201.10	4.771	4.807	4.860	4.948
69	207.0000	179.2673	212.81	210.60	204.10	4.771	4.807	4.860	4.949
70	210.0000	181.8653	215.81	213.60	207.09	4.772	4.807	4.860	4.949
71	213.0000	184.4634	218.81	216.60	210.09	4.772	4.807	4.861	4.950
72	216.0000	187.0615	221.81	219.60	213.09	4.772	4.808	4.861	4.950
73	219.0000	189.6596	224.81	222.60	216.09	4.772	4.808	4.862	4.951
74	222.0000	192.2577	227.81	225.60	219.09	4.772	4.808	4.862	4.952
75	225.0000	194.8557	230.82	228.60	222.09	4.772	4.808	4.862	4.952
76	228.0000	197.4538	233.82	231.60	225.09	4.773	4.809	4.863	4.953
77	231.0000	200.0519	236.82	234.60	228.09	4.773	4.809	4.863	4.954
78	234.0000	202.6500	239.82	237.60	231.08	4.773	4.809	4.863	4.954
79	237.0000	205.2480	242.82	240.60	234.08	4.773	4.809	4.864	4.955
80	240.0000	207.8461	245.82	243.60	237.08	4.773	4.810	4.864	4.955
81	243.0000	210.4442	248.82	246.60	240.08	4.773	4.810	4.865	4.956
82	246.0000	213.0423	251.82	249.60	243.08	4.773	4.810	4.865	4.956
83	249.0000	215.6403	254.82	252.60	246.08	4.774	4.810	4.865	4.957
84	252.0000	218.2384	257.82	255.60	249.08	4.774	4.810	4.866	4.958
85	255.0000	220.8365	260.83	258.60	252.08	4.774	4.811	4.866	4.958
86	258.0000	223.4346	263.83	261.60	255.08	4.774	4.811	4.866	4.959
87	261.0000	226.0326	266.83	264.60	258.08	4.774	4.811	4.867	4.959
88	264.0000	228.6307	269.83	267.60	261.07	4.774	4.811	4.867	4.960
89	267.0000	231.2288	272.83	270.60	264.07	4.774	4.812	4.867	4.960
90	270.0000	233.8269	275.83	273.60	267.07	4.775	4.812	4.868	4.961
91	273.0000	236.4249	278.83	276.60	270.07	4.775	4.812	4.868	4.962
92	276.0000	239.0230	281.83	279.60	273.07	4.775	4.812	4.868	4.962
93	279.0000	241.6211	284.83	282.60	276.07	4.775	4.812	4.869	4.963
94	282.0000	244.2192	287.83	285.60	279.07	4.775	4.813	4.869	4.963
95	285.0000	246.8173	290.84	288.60	282.07	4.775	4.813	4.869	4.964
96	288.0000	249.4153	293.84	291.60	285.07	4.775	4.813	4.870	4.964
97	291.0000	252.0134	296.84	294.60	288.07	4.775	4.813	4.870	4.965
98	294.0000	254.6115	299.84	297.60	291.07	4.776	4.814	4.870	4.965
99	297.0000	257.2096	302.84	300.60	294.07	4.776	4.814	4.871	4.966
100	300.0000	259.8076	305.84	303.60	297.07	4.776	4.814	4.871	4.966

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Table 54 — External spline

30 degree pressure angle — Side fit — Fillet root — Module = 3.00

S_{vmax} = maximum effective tooth thickness, circular = 4.712

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	18.0000	15.5885	21.00	15.69	12.31	4.670	4.645	4.607	4.543
7	21.0000	18.1865	24.00	18.48	15.30	4.665	4.644	4.605	4.540
8	24.0000	20.7846	27.00	21.33	18.30	4.669	4.643	4.603	4.538
9	27.0000	23.3827	30.00	24.22	21.29	4.668	4.642	4.602	4.536
10	30.0000	25.9808	33.00	27.13	24.29	4.668	4.641	4.601	4.534
11	33.0000	28.5788	36.00	30.05	27.29	4.667	4.640	4.600	4.532
12	36.0000	31.1769	39.00	32.99	30.28	4.667	4.639	4.598	4.530
13	39.0000	33.7750	42.00	35.94	33.28	4.666	4.639	4.597	4.528
14	42.0000	36.3731	45.00	38.90	36.28	4.666	4.638	4.596	4.527
15	45.0000	38.9711	48.00	41.87	39.28	4.666	4.637	4.595	4.525
16	48.0000	41.5692	51.00	44.84	42.27	4.665	4.637	4.594	4.524
17	51.0000	44.1673	54.00	47.81	45.27	4.665	4.636	4.593	4.522
18	54.0000	46.7654	57.00	50.78	48.27	4.664	4.636	4.593	4.521
19	57.0000	49.3635	60.00	53.76	51.27	4.664	4.635	4.592	4.519
20	60.0000	51.9615	63.00	56.74	54.26	4.664	4.635	4.591	4.518
21	63.0000	54.5596	66.00	59.73	57.26	4.663	4.634	4.590	4.517
22	66.0000	57.1577	69.00	62.71	60.26	4.663	4.634	4.589	4.516
23	69.0000	59.7558	72.00	65.70	63.26	4.663	4.633	4.589	4.514
24	72.0000	62.3538	75.00	68.68	66.25	4.663	4.633	4.588	4.513
25	75.0000	64.9519	78.00	71.67	69.25	4.662	4.632	4.587	4.512
26	78.0000	67.5500	81.00	74.66	72.25	4.662	4.632	4.586	4.511
27	81.0000	70.1481	84.00	77.65	75.25	4.662	4.631	4.586	4.510
28	84.0000	72.7461	87.00	80.64	78.25	4.661	4.631	4.585	4.509
29	87.0000	75.3442	90.00	83.63	81.25	4.661	4.631	4.584	4.508
30	90.0000	77.9423	93.00	86.62	84.24	4.661	4.630	4.584	4.507
31	93.0000	80.5404	96.00	89.62	87.24	4.661	4.630	4.583	4.506
32	96.0000	83.1384	99.00	92.61	90.24	4.660	4.629	4.583	4.505
33	99.0000	85.7365	102.00	95.60	93.24	4.660	4.629	4.582	4.504
34	102.0000	88.3346	105.00	98.60	96.24	4.660	4.629	4.581	4.503
35	105.0000	90.9327	108.00	101.59	99.24	4.660	4.628	4.581	4.502
36	108.0000	93.5307	111.00	104.59	102.23	4.660	4.628	4.580	4.501
37	111.0000	96.1288	114.00	107.58	105.23	4.659	4.627	4.580	4.500
38	114.0000	98.7269	117.00	110.58	108.23	4.659	4.627	4.579	4.499
39	117.0000	101.3250	120.00	113.57	111.23	4.659	4.627	4.579	4.498
40	120.0000	103.9231	123.00	116.57	114.23	4.659	4.626	4.578	4.497
41	123.0000	106.5211	126.00	119.56	117.23	4.658	4.626	4.577	4.496
42	126.0000	109.1192	129.00	122.56	120.22	4.658	4.626	4.577	4.496
43	129.0000	111.7173	132.00	125.55	123.22	4.658	4.625	4.576	4.495
44	132.0000	114.3154	135.00	128.55	126.22	4.658	4.625	4.576	4.494
45	135.0000	116.9134	138.00	131.55	129.22	4.658	4.625	4.575	4.493
46	138.0000	119.5115	141.00	134.54	132.22	4.657	4.624	4.575	4.492
47	141.0000	122.1096	144.00	137.54	135.22	4.657	4.624	4.574	4.492
48	144.0000	124.7077	147.00	140.54	138.22	4.657	4.624	4.574	4.491
49	147.0000	127.3057	150.00	143.54	141.21	4.657	4.623	4.573	4.490
50	150.0000	129.9038	153.00	146.53	144.21	4.657	4.623	4.573	4.489
51	153.0000	132.5019	156.00	149.53	147.21	4.656	4.623	4.572	4.489
52	156.0000	135.1000	159.00	152.53	150.21	4.656	4.623	4.572	4.488
53	159.0000	137.6980	162.00	155.53	153.21	4.656	4.622	4.572	4.487
54	162.0000	140.2961	165.00	158.52	156.21	4.656	4.622	4.571	4.486
55	165.0000	142.8942	168.00	161.52	159.21	4.656	4.622	4.571	4.486
56	168.0000	145.4923	171.00	164.52	162.21	4.656	4.621	4.570	4.485
57	171.0000	148.0904	174.00	167.52	165.20	4.655	4.621	4.570	4.484
58	174.0000	150.6884	177.00	170.51	168.20	4.655	4.621	4.569	4.483
59	177.0000	153.2865	180.00	173.51	171.20	4.655	4.621	4.569	4.483
60	180.0000	155.8846	183.00	176.51	174.20	4.655	4.620	4.568	4.482
61	183.0000	158.4827	186.00	179.51	177.20	4.655	4.620	4.568	4.481
62	186.0000	161.0807	189.00	182.51	180.20	4.654	4.620	4.568	4.481
63	189.0000	163.6788	192.00	185.50	183.20	4.654	4.619	4.567	4.480
64	192.0000	166.2769	195.00	188.50	186.20	4.654	4.619	4.567	4.479
65	195.0000	168.8750	198.00	191.50	189.20	4.654	4.619	4.566	4.479
66	198.0000	171.4730	201.00	194.50	192.19	4.654	4.619	4.566	4.478
67	201.0000	174.0711	204.00	197.50	195.19	4.654	4.618	4.566	4.477
68	204.0000	176.6692	207.00	200.50	198.19	4.653	4.618	4.565	4.477
69	207.0000	179.2673	210.00	203.50	201.19	4.653	4.618	4.565	4.476
70	210.0000	181.8653	213.00	206.49	204.19	4.653	4.618	4.564	4.476
71	213.0000	184.4634	216.00	209.49	207.19	4.653	4.617	4.564	4.475
72	216.0000	187.0615	219.00	212.49	210.19	4.653	4.617	4.564	4.474
73	219.0000	189.6596	222.00	215.49	213.19	4.653	4.617	4.563	4.474
74	222.0000	192.2577	225.00	218.49	216.19	4.653	4.617	4.563	4.473
75	225.0000	194.8557	228.00	221.49	219.18	4.652	4.616	4.562	4.472
76	228.0000	197.4538	231.00	224.49	222.18	4.652	4.616	4.562	4.472
77	231.0000	200.0519	234.00	227.49	225.18	4.652	4.616	4.562	4.471
78	234.0000	202.6500	237.00	230.48	228.18	4.652	4.616	4.561	4.471
79	237.0000	205.2480	240.00	233.48	231.18	4.652	4.615	4.561	4.470
80	240.0000	207.8461	243.00	236.48	234.18	4.652	4.615	4.561	4.469
81	243.0000	210.4442	246.00	239.48	237.18	4.652	4.615	4.560	4.469
82	246.0000	213.0423	249.00	242.48	240.18	4.651	4.615	4.560	4.468
83	249.0000	215.6403	252.00	245.48	243.18	4.651	4.615	4.559	4.468
84	252.0000	218.2384	255.00	248.48	246.18	4.651	4.614	4.559	4.467
85	255.0000	220.8365	258.00	251.48	249.17	4.651	4.614	4.559	4.467
86	258.0000	223.4346	261.00	254.48	252.17	4.651	4.614	4.558	4.466
87	261.0000	226.0326	264.00	257.48	255.17	4.651	4.614	4.558	4.465
88	264.0000	228.6307	267.00	260.47	258.17	4.651	4.613	4.558	4.465
89	267.0000	231.2288	270.00	263.47	261.17	4.650	4.613	4.557	4.464
90	270.0000	233.8269	273.00	266.47	264.17	4.650	4.613	4.557	4.464
91	273.0000	236.4249	276.00	269.47	267.17	4.650	4.613	4.557	4.463
92	276.0000	239.0230	279.00	272.47	270.17	4.650	4.613	4.556	4.463
93	279.0000	241.6211	282.00	275.47	273.17	4.650	4.612	4.556	4.462
94	282.0000	244.2192	285.00	278.47	276.17	4.650	4.612	4.556	4.462
95	285.0000	246.8173	288.00	281.47	279.16	4.650	4.612	4.555	4.461
96	288.0000	249.4153	291.00	284.47	282.16	4.649	4.612	4.555	4.461
97	291.0000	252.0134	294.00	287.47	285.16	4.649	4.611	4.555	4.460
98	294.0000	254.6115	297.00	290.47	288.16	4.649	4.611	4.554	4.459
99	297.0000	257.2096	300.00	293.47	291.16	4.649	4.611	4.554	4.459
100	300.0000	259.8076	303.00	296.47	294.16	4.649	4.611	4.554	4.458

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Table 55 — Internal spline

30 degree pressure angle — Side fit — Fillet root — Module = 2.50

E_{vmin} = minimum effective space width, circular = 3.927

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	15.0000	12.9904	19.78	18.00	13.58	3.967	3.991	4.026	4.086
7	17.5000	15.1554	22.28	20.50	15.90	3.967	3.992	4.028	4.089
8	20.0000	17.3205	24.78	23.00	18.28	3.968	3.993	4.029	4.091
9	22.5000	19.4856	27.29	25.50	20.68	3.968	3.993	4.031	4.093
10	25.0000	21.6506	29.79	28.00	23.11	3.969	3.994	4.032	4.095
11	27.5000	23.8157	32.29	30.50	25.54	3.969	3.995	4.033	4.097
12	30.0000	25.9808	34.80	33.00	28.00	3.970	3.996	4.034	4.098
13	32.5000	28.1458	37.30	35.50	30.45	3.970	3.996	4.035	4.100
14	35.0000	30.3109	39.80	38.00	32.92	3.971	3.997	4.036	4.101
15	37.5000	32.4760	42.30	40.50	35.39	3.971	3.997	4.037	4.103
16	40.0000	34.6410	44.81	43.00	37.86	3.971	3.998	4.038	4.104
17	42.5000	36.8061	47.31	45.50	40.34	3.972	3.998	4.039	4.106
18	45.0000	38.9711	49.81	48.00	42.82	3.972	3.999	4.040	4.107
19	47.5000	41.1362	52.31	50.50	45.30	3.972	4.000	4.040	4.108
20	50.0000	43.3013	54.82	53.00	47.79	3.973	4.000	4.041	4.110
21	52.5000	45.4663	57.32	55.50	50.27	3.973	4.000	4.042	4.111
22	55.0000	47.6314	59.82	58.00	52.76	3.973	4.001	4.043	4.112
23	57.5000	49.7965	62.32	60.50	55.25	3.973	4.001	4.043	4.113
24	60.0000	51.9615	64.82	63.00	57.74	3.974	4.002	4.044	4.114
25	62.5000	54.1266	67.33	65.50	60.23	3.974	4.002	4.045	4.115
26	65.0000	56.2917	69.83	68.00	62.72	3.974	4.003	4.045	4.116
27	67.5000	58.4567	72.33	70.50	65.21	3.975	4.003	4.046	4.117
28	70.0000	60.6218	74.83	73.00	67.70	3.975	4.003	4.046	4.118
29	72.5000	62.7868	77.33	75.50	70.19	3.975	4.004	4.047	4.119
30	75.0000	64.9519	79.83	78.00	72.69	3.975	4.004	4.048	4.120
31	77.5000	67.1170	82.34	80.50	75.18	3.976	4.005	4.048	4.121
32	80.0000	69.2820	84.84	83.00	77.68	3.976	4.005	4.049	4.122
33	82.5000	71.4471	87.34	85.50	80.17	3.976	4.005	4.049	4.123
34	85.0000	73.6122	89.84	88.00	82.66	3.976	4.006	4.050	4.124
35	87.5000	75.7772	92.34	90.50	85.16	3.976	4.006	4.051	4.125
36	90.0000	77.9423	94.84	93.00	87.66	3.977	4.006	4.051	4.125
37	92.5000	80.1074	97.35	95.50	90.15	3.977	4.007	4.052	4.126
38	95.0000	82.2724	99.85	98.00	92.65	3.977	4.007	4.052	4.127
39	97.5000	84.4375	102.35	100.50	95.14	3.977	4.007	4.053	4.128
40	100.0000	86.6025	104.85	103.00	97.64	3.977	4.008	4.053	4.129
41	102.5000	88.7676	107.35	105.50	100.14	3.978	4.008	4.054	4.130
42	105.0000	90.9327	109.85	108.00	102.63	3.978	4.008	4.054	4.130
43	107.5000	93.0977	112.35	110.50	105.13	3.978	4.009	4.055	4.131
44	110.0000	95.2628	114.85	113.00	107.63	3.978	4.009	4.055	4.132
45	112.5000	97.4279	117.36	115.50	110.12	3.978	4.009	4.055	4.133
46	115.0000	99.5929	119.86	118.00	112.62	3.979	4.010	4.056	4.133
47	117.5000	101.7580	122.36	120.50	115.12	3.979	4.010	4.056	4.134
48	120.0000	103.9231	124.86	123.00	117.62	3.979	4.010	4.057	4.135
49	122.5000	106.0881	127.36	125.50	120.11	3.979	4.010	4.057	4.136
50	125.0000	108.2532	129.86	128.00	122.61	3.979	4.011	4.058	4.136
51	127.5000	110.4182	132.36	130.50	125.11	3.979	4.011	4.058	4.137
52	130.0000	112.5833	134.86	133.00	127.61	3.980	4.011	4.059	4.138
53	132.5000	114.7484	137.37	135.50	130.10	3.980	4.012	4.059	4.138
54	135.0000	116.9134	139.87	138.00	132.60	3.980	4.012	4.059	4.139
55	137.5000	119.0785	142.37	140.50	135.10	3.980	4.012	4.060	4.140
56	140.0000	121.2436	144.87	143.00	137.60	3.980	4.012	4.060	4.140
57	142.5000	123.4086	147.37	145.50	140.10	3.980	4.013	4.061	4.141
58	145.0000	125.5737	149.87	148.00	142.60	3.981	4.013	4.061	4.142
59	147.5000	127.7388	152.37	150.50	145.09	3.981	4.013	4.062	4.142
60	150.0000	129.9038	154.87	153.00	147.59	3.981	4.013	4.062	4.143
61	152.5000	132.0689	157.37	155.50	150.09	3.981	4.014	4.062	4.143
62	155.0000	134.2339	159.88	158.00	152.59	3.981	4.014	4.063	4.144
63	157.5000	136.3990	162.38	160.50	155.09	3.981	4.014	4.063	4.145
64	160.0000	138.5641	164.88	163.00	157.59	3.982	4.014	4.063	4.145
65	162.5000	140.7291	167.38	165.50	160.08	3.982	4.015	4.064	4.146
66	165.0000	142.8942	169.88	168.00	162.58	3.982	4.015	4.064	4.147
67	167.5000	145.0593	172.38	170.50	165.08	3.982	4.015	4.065	4.147
68	170.0000	147.2243	174.88	173.00	167.58	3.982	4.015	4.065	4.148
69	172.5000	149.3894	177.38	175.50	170.08	3.982	4.016	4.065	4.148
70	175.0000	151.5545	179.88	178.00	172.58	3.982	4.016	4.066	4.149
71	177.5000	153.7195	182.39	180.50	175.08	3.983	4.016	4.066	4.149
72	180.0000	155.8846	184.89	183.00	177.58	3.983	4.016	4.066	4.150
73	182.5000	158.0496	187.39	185.50	180.08	3.983	4.016	4.067	4.151
74	185.0000	160.2147	189.89	188.00	182.57	3.983	4.017	4.067	4.151
75	187.5000	162.3798	192.39	190.50	185.07	3.983	4.017	4.067	4.152
76	190.0000	164.5448	194.89	193.00	187.57	3.983	4.017	4.068	4.152
77	192.5000	166.7099	197.39	195.50	190.07	3.983	4.017	4.068	4.153
78	195.0000	168.8750	199.89	198.00	192.57	3.984	4.018	4.068	4.153
79	197.5000	171.0400	202.39	200.50	195.07	3.984	4.018	4.069	4.154
80	200.0000	173.2051	204.89	203.00	197.57	3.984	4.018	4.069	4.154
81	202.5000	175.3702	207.39	205.50	200.07	3.984	4.018	4.070	4.155
82	205.0000	177.5352	209.90	208.00	202.57	3.984	4.018	4.070	4.156
83	207.5000	179.7003	212.40	210.50	205.07	3.984	4.019	4.070	4.156
84	210.0000	181.8653	214.90	213.00	207.57	3.984	4.019	4.070	4.157
85	212.5000	184.0304	217.40	215.50	210.06	3.985	4.019	4.071	4.157
86	215.0000	186.1955	219.90	218.00	212.56	3.985	4.019	4.071	4.158
87	217.5000	188.3605	222.40	220.50	215.06	3.985	4.019	4.071	4.158
88	220.0000	190.5256	224.90	223.00	217.56	3.985	4.020	4.072	4.159
89	222.5000	192.6907	227.40	225.50	220.06	3.985	4.020	4.072	4.159
90	225.0000	194.8557	229.90	228.00	222.56	3.985	4.020	4.072	4.160
91	227.5000	197.0208	232.40	230.50	225.06	3.985	4.020	4.073	4.160
92	230.0000	199.1859	234.90	233.00	227.56	3.985	4.020	4.073	4.161
93	232.5000	201.3509	237.41	235.50	230.06	3.986	4.021	4.073	4.161
94	235.0000	203.5160	239.91	238.00	232.56	3.986	4.021	4.074	4.162
95	237.5000	205.6810	242.41	240.50	235.06	3.986	4.021	4.074	4.162
96	240.0000	207.8461	244.91	243.00	237.56	3.986	4.021	4.074	4.163
97	242.5000	210.0112	247.41	245.50	240.06	3.986	4.021	4.075	4.163
98	245.0000	212.1762	249.91	248.00	242.56	3.986	4.022	4.075	4.164
99	247.5000	214.3413	252.41	250.50	245.06	3.986	4.022	4.075	4.164
100	250.0000	216.5064	254.91	253.00	247.55	3.986	4.022	4.075	4.165

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Table 56 — External spline

30 degree pressure angle — Side fit — Fillet root — Module = 2.50

S_{vmax} = maximum effective tooth thickness, circular = 3.927

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	15.0000	12.9904	17.50	13.08	10.22	3.887	3.863	3.827	3.768
7	17.5000	15.1554	20.00	15.40	12.72	3.887	3.862	3.826	3.765
8	20.0000	17.3205	22.50	17.78	15.22	3.886	3.861	3.825	3.763
9	22.5000	19.4856	25.00	20.18	17.71	3.886	3.861	3.823	3.761
10	25.0000	21.6506	27.50	22.61	20.21	3.885	3.860	3.822	3.759
11	27.5000	23.8157	30.00	25.04	22.71	3.885	3.859	3.821	3.757
12	30.0000	25.9808	32.50	27.50	25.20	3.884	3.858	3.820	3.756
13	32.5000	28.1458	35.00	29.95	27.70	3.884	3.858	3.819	3.754
14	35.0000	30.3109	37.50	32.42	30.20	3.883	3.857	3.818	3.752
15	37.5000	32.4760	40.00	34.89	32.70	3.883	3.857	3.817	3.751
16	40.0000	34.6410	42.50	37.36	35.19	3.883	3.856	3.816	3.750
17	42.5000	36.8061	45.00	39.84	37.69	3.882	3.855	3.815	3.748
18	45.0000	38.9711	47.50	42.32	40.19	3.882	3.855	3.814	3.747
19	47.5000	41.1362	50.00	44.80	42.69	3.882	3.854	3.813	3.746
20	50.0000	43.3013	52.50	47.29	45.18	3.881	3.854	3.813	3.744
21	52.5000	45.4663	55.00	49.77	47.68	3.881	3.854	3.812	3.743
22	55.0000	47.6314	57.50	52.26	50.18	3.881	3.853	3.811	3.742
23	57.5000	49.7965	60.00	54.75	52.68	3.880	3.853	3.811	3.741
24	60.0000	51.9615	62.50	57.24	55.18	3.880	3.852	3.810	3.740
25	62.5000	54.1266	65.00	59.73	57.67	3.880	3.852	3.809	3.739
26	65.0000	56.2917	67.50	62.22	60.17	3.880	3.851	3.809	3.738
27	67.5000	58.4567	70.00	64.71	62.67	3.879	3.851	3.808	3.737
28	70.0000	60.6218	72.50	67.20	65.17	3.879	3.851	3.807	3.736
29	72.5000	62.7868	75.00	69.69	67.67	3.879	3.850	3.807	3.735
30	75.0000	64.9519	77.50	72.19	70.17	3.879	3.850	3.806	3.734
31	77.5000	67.1170	80.00	74.68	72.66	3.878	3.849	3.806	3.733
32	80.0000	69.2820	82.50	77.18	75.16	3.878	3.849	3.805	3.732
33	82.5000	71.4471	85.00	79.67	77.66	3.878	3.849	3.805	3.731
34	85.0000	73.6122	87.50	82.16	80.16	3.878	3.848	3.804	3.730
35	87.5000	75.7772	90.00	84.66	82.66	3.878	3.848	3.803	3.729
36	90.0000	77.9423	92.50	87.16	85.16	3.877	3.848	3.803	3.729
37	92.5000	80.1074	95.00	89.65	87.65	3.877	3.847	3.802	3.728
38	95.0000	82.2724	97.50	92.15	90.15	3.877	3.847	3.802	3.727
39	97.5000	84.4375	100.00	94.64	92.65	3.877	3.847	3.801	3.726
40	100.0000	86.6025	102.50	97.14	95.15	3.877	3.846	3.801	3.725
41	102.5000	88.7676	105.00	99.64	97.65	3.876	3.846	3.800	3.724
42	105.0000	90.9327	107.50	102.13	100.15	3.876	3.846	3.800	3.724
43	107.5000	93.0977	110.00	104.63	102.65	3.876	3.845	3.799	3.723
44	110.0000	95.2628	112.50	107.13	105.15	3.876	3.845	3.799	3.722
45	112.5000	97.4279	115.00	109.62	107.64	3.876	3.845	3.798	3.721
46	115.0000	99.5929	117.50	112.12	110.14	3.875	3.844	3.798	3.721
47	117.5000	101.7580	120.00	114.62	112.64	3.875	3.844	3.798	3.720
48	120.0000	103.9231	122.50	117.12	115.14	3.875	3.844	3.797	3.719
49	122.5000	106.0881	125.00	119.61	117.64	3.875	3.844	3.797	3.718
50	125.0000	108.2532	127.50	122.11	120.14	3.875	3.843	3.796	3.718
51	127.5000	110.4182	130.00	124.61	122.64	3.875	3.843	3.796	3.717
52	130.0000	112.5833	132.50	127.11	125.14	3.874	3.843	3.795	3.716
53	132.5000	114.7484	135.00	129.60	127.63	3.874	3.842	3.795	3.716
54	135.0000	116.9134	137.50	132.10	130.13	3.874	3.842	3.795	3.715
55	137.5000	119.0785	140.00	134.60	132.63	3.874	3.842	3.794	3.714
56	140.0000	121.2436	142.50	137.10	135.13	3.874	3.842	3.794	3.714
57	142.5000	123.4086	145.00	139.60	137.63	3.874	3.841	3.793	3.713
58	145.0000	125.5737	147.50	142.10	140.13	3.873	3.841	3.793	3.712
59	147.5000	127.7388	150.00	144.59	142.63	3.873	3.841	3.792	3.712
60	150.0000	129.9038	152.50	147.09	145.13	3.873	3.841	3.792	3.711
61	152.5000	132.0689	155.00	149.59	147.63	3.873	3.840	3.792	3.711
62	155.0000	134.2339	157.50	152.09	150.12	3.873	3.840	3.791	3.710
63	157.5000	136.3990	160.00	154.59	152.62	3.873	3.840	3.791	3.709
64	160.0000	138.5641	162.50	157.09	155.12	3.872	3.840	3.791	3.709
65	162.5000	140.7291	165.00	159.58	157.62	3.872	3.839	3.790	3.708
66	165.0000	142.8942	167.50	162.08	160.12	3.872	3.839	3.790	3.707
67	167.5000	145.0593	170.00	164.58	162.62	3.872	3.839	3.789	3.707
68	170.0000	147.2243	172.50	167.08	165.12	3.872	3.839	3.789	3.706
69	172.5000	149.3894	175.00	169.58	167.62	3.872	3.838	3.789	3.706
70	175.0000	151.5545	177.50	172.08	170.12	3.872	3.838	3.788	3.705
71	177.5000	153.7195	180.00	174.58	172.61	3.871	3.838	3.788	3.705
72	180.0000	155.8846	182.50	177.08	175.11	3.871	3.838	3.788	3.704
73	182.5000	158.0496	185.00	179.58	177.61	3.871	3.838	3.787	3.703
74	185.0000	160.2147	187.50	182.07	180.11	3.871	3.837	3.787	3.703
75	187.5000	162.3798	190.00	184.57	182.61	3.871	3.837	3.787	3.702
76	190.0000	164.5448	192.50	187.07	185.11	3.871	3.837	3.786	3.702
77	192.5000	166.7099	195.00	189.57	187.61	3.871	3.837	3.786	3.701
78	195.0000	168.8750	197.50	192.07	190.11	3.870	3.836	3.785	3.701
79	197.5000	171.0400	200.00	194.57	192.61	3.870	3.836	3.785	3.700
80	200.0000	173.2051	202.50	197.07	195.11	3.870	3.836	3.785	3.700
81	202.5000	175.3702	205.00	199.57	197.61	3.870	3.836	3.784	3.699
82	205.0000	177.5352	207.50	202.07	200.10	3.870	3.836	3.784	3.698
83	207.5000	179.7003	210.00	204.57	202.60	3.870	3.835	3.784	3.698
84	210.0000	181.8653	212.50	207.07	205.10	3.870	3.835	3.783	3.697
85	212.5000	184.0304	215.00	209.56	207.60	3.869	3.835	3.783	3.697
86	215.0000	186.1955	217.50	212.06	210.10	3.869	3.835	3.783	3.696
87	217.5000	188.3605	220.00	214.56	212.60	3.869	3.835	3.783	3.696
88	220.0000	190.5256	222.50	217.06	215.10	3.869	3.834	3.782	3.695
89	222.5000	192.6907	225.00	219.56	217.60	3.869	3.834	3.782	3.695
90	225.0000	194.8557	227.50	222.06	220.10	3.869	3.834	3.782	3.694
91	227.5000	197.0208	230.00	224.56	222.60	3.869	3.834	3.781	3.694
92	230.0000	199.1859	232.50	227.06	225.10	3.869	3.834	3.781	3.693
93	232.5000	201.3509	235.00	229.56	227.59	3.868	3.833	3.781	3.693
94	235.0000	203.5160	237.50	232.06	230.09	3.868	3.833	3.780	3.692
95	237.5000	205.6810	240.00	234.56	232.59	3.868	3.833	3.780	3.692
96	240.0000	207.8461	242.50	237.06	235.09	3.868	3.833	3.780	3.691
97	242.5000	210.0112	245.00	239.56	237.59	3.868	3.833	3.779	3.691
98	245.0000	212.1762	247.50	242.06	240.09	3.868	3.832	3.779	3.690
99	247.5000	214.3413	250.00	244.56	242.59	3.868	3.832	3.779	3.690
100	250.0000	216.5064	252.50	247.05	245.09	3.868	3.832	3.778	3.689

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Table 57 — Internal spline

30 degree pressure angle — Side fit — Fillet root — Module = 2.00

E_{vmin} = minimum effective space width, circular = 3.142

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular 4 H	5 H	6 H	7 H
6	12.0000	10.3923	15.86	14.40	10.86	3.179	3.201	3.234	3.289
7	14.0000	12.1244	17.86	16.40	12.72	3.179	3.202	3.235	3.291
8	16.0000	13.8564	19.86	18.40	14.62	3.180	3.202	3.237	3.294
9	18.0000	15.5885	21.87	20.40	16.54	3.180	3.203	3.238	3.295
10	20.0000	17.3205	23.87	22.40	18.48	3.180	3.204	3.239	3.297
11	22.0000	19.0526	25.87	24.40	20.44	3.181	3.205	3.240	3.299
12	24.0000	20.7846	27.88	26.40	22.40	3.181	3.205	3.241	3.300
13	26.0000	22.5167	29.88	28.40	24.36	3.182	3.206	3.242	3.302
14	28.0000	24.2487	31.88	30.40	26.34	3.182	3.206	3.243	3.303
15	30.0000	25.9808	33.88	32.40	28.31	3.182	3.207	3.244	3.305
16	32.0000	27.7128	35.88	34.40	30.29	3.183	3.207	3.244	3.306
17	34.0000	29.4449	37.89	36.40	32.27	3.183	3.208	3.245	3.307
18	36.0000	31.1769	39.89	38.40	34.26	3.183	3.208	3.246	3.308
19	38.0000	32.9090	41.89	40.40	36.24	3.184	3.209	3.247	3.310
20	40.0000	34.6410	43.89	42.40	38.23	3.184	3.209	3.247	3.311
21	42.0000	36.3731	45.89	44.40	40.22	3.184	3.210	3.248	3.312
22	44.0000	38.1051	47.90	46.40	42.21	3.184	3.210	3.249	3.313
23	46.0000	39.8372	49.90	48.40	44.20	3.185	3.211	3.249	3.314
24	48.0000	41.5692	51.90	50.40	46.19	3.185	3.211	3.250	3.315
25	50.0000	43.3013	53.90	52.40	48.18	3.185	3.211	3.251	3.316
26	52.0000	45.0333	55.90	54.40	50.17	3.185	3.212	3.251	3.317
27	54.0000	46.7654	57.91	56.40	52.17	3.186	3.212	3.252	3.318
28	56.0000	48.4974	59.91	58.40	54.16	3.186	3.212	3.252	3.319
29	58.0000	50.2295	61.91	60.40	56.16	3.186	3.213	3.253	3.320
30	60.0000	51.9615	63.91	62.40	58.15	3.186	3.213	3.253	3.320
31	62.0000	53.6936	65.91	64.40	60.14	3.187	3.213	3.254	3.321
32	64.0000	55.4256	67.91	66.40	62.14	3.187	3.214	3.254	3.322
33	66.0000	57.1577	69.91	68.40	64.14	3.187	3.214	3.255	3.323
34	68.0000	58.8897	71.92	70.40	66.13	3.187	3.214	3.255	3.324
35	70.0000	60.6218	73.92	72.40	68.13	3.187	3.215	3.256	3.325
36	72.0000	62.3538	75.92	74.40	70.12	3.188	3.215	3.256	3.325
37	74.0000	64.0859	77.92	76.40	72.12	3.188	3.215	3.257	3.326
38	76.0000	65.8179	79.92	78.40	74.12	3.188	3.216	3.257	3.327
39	78.0000	67.5500	81.92	80.40	76.11	3.188	3.216	3.258	3.328
40	80.0000	69.2820	83.92	82.40	78.11	3.188	3.216	3.258	3.328
41	82.0000	71.0141	85.92	84.40	80.11	3.188	3.217	3.259	3.329
42	84.0000	72.7461	87.93	86.40	82.11	3.189	3.217	3.259	3.330
43	86.0000	74.4782	89.93	88.40	84.10	3.189	3.217	3.260	3.330
44	88.0000	76.2102	91.93	90.40	86.10	3.189	3.217	3.260	3.331
45	90.0000	77.9423	93.93	92.40	88.10	3.189	3.218	3.260	3.332
46	92.0000	79.6743	95.93	94.40	90.10	3.189	3.218	3.261	3.332
47	94.0000	81.4064	97.93	96.40	92.09	3.189	3.218	3.261	3.333
48	96.0000	83.1384	99.93	98.40	94.09	3.190	3.218	3.262	3.334
49	98.0000	84.8705	101.93	100.40	96.09	3.190	3.219	3.262	3.334
50	100.0000	86.6025	103.94	102.40	98.09	3.190	3.219	3.263	3.335
51	102.0000	88.3346	105.94	104.40	100.09	3.190	3.219	3.263	3.336
52	104.0000	90.0666	107.94	106.40	102.09	3.190	3.219	3.263	3.336
53	106.0000	91.7987	109.94	108.40	104.08	3.190	3.220	3.264	3.337
54	108.0000	93.5307	111.94	110.40	106.08	3.191	3.220	3.264	3.338
55	110.0000	95.2628	113.94	112.40	108.08	3.191	3.220	3.264	3.338
56	112.0000	96.9949	115.94	114.40	110.08	3.191	3.220	3.265	3.339
57	114.0000	98.7269	117.94	116.40	112.08	3.191	3.221	3.265	3.339
58	116.0000	100.4590	119.94	118.40	114.08	3.191	3.221	3.266	3.340
59	118.0000	102.1910	121.94	120.40	116.07	3.191	3.221	3.266	3.341
60	120.0000	103.9231	123.95	122.40	118.07	3.191	3.221	3.266	3.341
61	122.0000	105.6551	125.95	124.40	120.07	3.192	3.222	3.267	3.342
62	124.0000	107.3872	127.95	126.40	122.07	3.192	3.222	3.267	3.342
63	126.0000	109.1192	129.95	128.40	124.07	3.192	3.222	3.267	3.343
64	128.0000	110.8513	131.95	130.40	126.07	3.192	3.222	3.268	3.343
65	130.0000	112.5833	133.95	132.40	128.07	3.192	3.223	3.268	3.344
66	132.0000	114.3154	135.95	134.40	130.07	3.192	3.223	3.268	3.344
67	134.0000	116.0474	137.95	136.40	132.07	3.192	3.223	3.269	3.345
68	136.0000	117.7795	139.95	138.40	134.06	3.193	3.223	3.269	3.346
69	138.0000	119.5115	141.95	140.40	136.06	3.193	3.223	3.269	3.346
70	140.0000	121.2436	143.96	142.40	138.06	3.193	3.224	3.270	3.347
71	142.0000	122.9756	145.96	144.40	140.06	3.193	3.224	3.270	3.347
72	144.0000	124.7077	147.96	146.40	142.06	3.193	3.224	3.270	3.348
73	146.0000	126.4397	149.96	148.40	144.06	3.193	3.224	3.271	3.348
74	148.0000	128.1718	151.96	150.40	146.06	3.193	3.224	3.271	3.349
75	150.0000	129.9038	153.96	152.40	148.06	3.193	3.225	3.271	3.349
76	152.0000	131.6359	155.96	154.40	150.06	3.194	3.225	3.272	3.350
77	154.0000	133.3679	157.96	156.40	152.06	3.194	3.225	3.272	3.350
78	156.0000	135.1000	159.96	158.40	154.06	3.194	3.225	3.272	3.351
79	158.0000	136.8320	161.96	160.40	156.06	3.194	3.225	3.273	3.351
80	160.0000	138.5641	163.96	162.40	158.05	3.194	3.226	3.273	3.352
81	162.0000	140.2961	165.96	164.40	160.05	3.194	3.226	3.273	3.352
82	164.0000	142.0282	167.97	166.40	162.05	3.194	3.226	3.273	3.353
83	166.0000	143.7602	169.97	168.40	164.05	3.194	3.226	3.274	3.353
84	168.0000	145.4923	171.97	170.40	166.05	3.195	3.226	3.274	3.354
85	170.0000	147.2243	173.97	172.40	168.05	3.195	3.227	3.274	3.354
86	172.0000	148.9564	175.97	174.40	170.05	3.195	3.227	3.275	3.355
87	174.0000	150.6884	177.97	176.40	172.05	3.195	3.227	3.275	3.355
88	176.0000	152.4205	179.97	178.40	174.05	3.195	3.227	3.275	3.355
89	178.0000	154.1525	181.97	180.40	176.05	3.195	3.227	3.276	3.356
90	180.0000	155.8846	183.97	182.40	178.05	3.195	3.228	3.276	3.356
91	182.0000	157.6166	185.97	184.40	180.05	3.195	3.228	3.276	3.357
92	184.0000	159.3487	187.97	186.40	182.05	3.196	3.228	3.276	3.357
93	186.0000	161.0807	189.97	188.40	184.05	3.196	3.228	3.277	3.358
94	188.0000	162.8128	191.98	190.40	186.05	3.196	3.228	3.277	3.358
95	190.0000	164.5448	193.98	192.40	188.05	3.196	3.228	3.277	3.359
96	192.0000	166.2769	195.98	194.40	190.05	3.196	3.229	3.278	3.359
97	194.0000	168.0089	197.98	196.40	192.05	3.196	3.229	3.278	3.360
98	196.0000	169.7410	199.98	198.40	194.04	3.196	3.229	3.278	3.360
99	198.0000	171.4730	201.98	200.40	196.04	3.196	3.229	3.278	3.360
100	200.0000	173.2051	203.98	202.40	198.04	3.196	3.229	3.279	3.361

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Table 58 — External spline

30 degree pressure angle — Side fit — Fillet root — Module = 2.00

S_{vmax} = maximum effective tooth thickness, circular = 3.142

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	12.0000	10.3923	14.00	10.46	8.14	3.105	3.083	3.049	2.994
7	14.0000	12.1244	16.00	12.32	10.14	3.104	3.082	3.048	2.992
8	16.0000	13.8564	18.00	14.22	12.14	3.104	3.081	3.047	2.990
9	18.0000	15.5885	20.00	16.14	14.13	3.103	3.080	3.045	2.988
10	20.0000	17.3205	22.00	18.08	16.13	3.103	3.079	3.044	2.986
11	22.0000	19.0526	24.00	20.04	18.13	3.102	3.079	3.043	2.984
12	24.0000	20.7846	26.00	22.00	20.12	3.102	3.078	3.042	2.983
13	26.0000	22.5167	28.00	23.96	22.12	3.102	3.077	3.041	2.981
14	28.0000	24.2487	30.00	25.94	24.12	3.101	3.077	3.041	2.980
15	30.0000	25.9808	32.00	27.91	26.12	3.101	3.076	3.040	2.979
16	32.0000	27.7128	34.00	29.89	28.12	3.100	3.076	3.039	2.977
17	34.0000	29.4449	36.00	31.87	30.11	3.100	3.075	3.038	2.976
18	36.0000	31.1769	38.00	33.86	32.11	3.100	3.075	3.037	2.975
19	38.0000	32.9090	40.00	35.84	34.11	3.100	3.074	3.037	2.974
20	40.0000	34.6410	42.00	37.83	36.11	3.099	3.074	3.036	2.972
21	42.0000	36.3731	44.00	39.82	38.11	3.099	3.074	3.035	2.971
22	44.0000	38.1051	46.00	41.81	40.10	3.099	3.073	3.035	2.970
23	46.0000	39.8372	48.00	43.80	42.10	3.099	3.073	3.034	2.969
24	48.0000	41.5692	50.00	45.79	44.10	3.098	3.072	3.033	2.968
25	50.0000	43.3013	52.00	47.78	46.10	3.098	3.072	3.033	2.967
26	52.0000	45.0333	54.00	49.77	48.10	3.098	3.072	3.032	2.966
27	54.0000	46.7654	56.00	51.77	50.09	3.098	3.071	3.031	2.965
28	56.0000	48.4974	58.00	53.76	52.09	3.097	3.071	3.031	2.965
29	58.0000	50.2295	60.00	55.76	54.09	3.097	3.070	3.030	2.964
30	60.0000	51.9615	62.00	57.75	56.09	3.097	3.070	3.030	2.963
31	62.0000	53.6936	64.00	59.74	58.09	3.097	3.070	3.029	2.962
32	64.0000	55.4256	66.00	61.74	60.09	3.096	3.069	3.029	2.961
33	66.0000	57.1577	68.00	63.74	62.09	3.096	3.069	3.028	2.960
34	68.0000	58.8897	70.00	65.73	64.08	3.096	3.069	3.028	2.959
35	70.0000	60.6218	72.00	67.73	66.08	3.096	3.068	3.027	2.959
36	72.0000	62.3538	74.00	69.72	68.08	3.096	3.068	3.027	2.958
37	74.0000	64.0859	76.00	71.72	70.08	3.095	3.068	3.026	2.957
38	76.0000	65.8179	78.00	73.72	72.08	3.095	3.067	3.026	2.956
39	78.0000	67.5500	80.00	75.71	74.08	3.095	3.067	3.025	2.956
40	80.0000	69.2820	82.00	77.71	76.08	3.095	3.067	3.025	2.955
41	82.0000	71.0141	84.00	79.71	78.08	3.095	3.067	3.024	2.954
42	84.0000	72.7461	86.00	81.71	80.07	3.095	3.066	3.024	2.953
43	86.0000	74.4782	88.00	83.70	82.07	3.094	3.066	3.024	2.953
44	88.0000	76.2102	90.00	85.70	84.07	3.094	3.066	3.023	2.952
45	90.0000	77.9423	92.00	87.70	86.07	3.094	3.066	3.023	2.951
46	92.0000	79.6743	94.00	89.70	88.07	3.094	3.065	3.022	2.951
47	94.0000	81.4064	96.00	91.69	90.07	3.094	3.065	3.022	2.950
48	96.0000	83.1384	98.00	93.69	92.07	3.094	3.065	3.021	2.949
49	98.0000	84.8705	100.00	95.69	94.07	3.093	3.064	3.021	2.949
50	100.0000	86.6025	102.00	97.69	96.06	3.093	3.064	3.021	2.948
51	102.0000	88.3346	104.00	99.69	98.06	3.093	3.064	3.020	2.947
52	104.0000	90.0666	106.00	101.69	100.06	3.093	3.064	3.020	2.947
53	106.0000	91.7987	108.00	103.68	102.06	3.093	3.063	3.019	2.946
54	108.0000	93.5307	110.00	105.68	104.06	3.093	3.063	3.019	2.946
55	110.0000	95.2628	112.00	107.68	106.06	3.092	3.063	3.019	2.945
56	112.0000	96.9949	114.00	109.68	108.06	3.092	3.063	3.018	2.944
57	114.0000	98.7269	116.00	111.68	110.06	3.092	3.062	3.018	2.944
58	116.0000	100.4590	118.00	113.68	112.06	3.092	3.062	3.018	2.943
59	118.0000	102.1910	120.00	115.67	114.06	3.092	3.062	3.017	2.943
60	120.0000	103.9231	122.00	117.67	116.05	3.092	3.062	3.017	2.942
61	122.0000	105.6551	124.00	119.67	118.05	3.092	3.062	3.017	2.941
62	124.0000	107.3872	126.00	121.67	120.05	3.091	3.061	3.016	2.941
63	126.0000	109.1192	128.00	123.67	122.05	3.091	3.061	3.016	2.940
64	128.0000	110.8513	130.00	125.67	124.05	3.091	3.061	3.015	2.940
65	130.0000	112.5833	132.00	127.67	126.05	3.091	3.061	3.015	2.939
66	132.0000	114.3154	134.00	129.67	128.05	3.091	3.060	3.015	2.939
67	134.0000	116.0474	136.00	131.67	130.05	3.091	3.060	3.014	2.938
68	136.0000	117.7795	138.00	133.66	132.05	3.091	3.060	3.014	2.938
69	138.0000	119.5115	140.00	135.66	134.05	3.090	3.060	3.014	2.937
70	140.0000	121.2436	142.00	137.66	136.04	3.090	3.060	3.013	2.937
71	142.0000	122.9756	144.00	139.66	138.04	3.090	3.059	3.013	2.936
72	144.0000	124.7077	146.00	141.66	140.04	3.090	3.059	3.013	2.936
73	146.0000	126.4397	148.00	143.66	142.04	3.090	3.059	3.012	2.935
74	148.0000	128.1718	150.00	145.66	144.04	3.090	3.059	3.012	2.935
75	150.0000	129.9038	152.00	147.66	146.04	3.090	3.059	3.012	2.934
76	152.0000	131.6359	154.00	149.66	148.04	3.090	3.058	3.012	2.933
77	154.0000	133.3679	156.00	151.66	150.04	3.089	3.058	3.011	2.933
78	156.0000	135.1000	158.00	153.66	152.04	3.089	3.058	3.011	2.933
79	158.0000	136.8320	160.00	155.66	154.04	3.089	3.058	3.011	2.932
80	160.0000	138.5641	162.00	157.65	156.04	3.089	3.058	3.010	2.932
81	162.0000	140.2961	164.00	159.65	158.04	3.089	3.057	3.010	2.931
82	164.0000	142.0282	166.00	161.65	160.03	3.089	3.057	3.010	2.931
83	166.0000	143.7602	168.00	163.65	162.03	3.089	3.057	3.009	2.930
84	168.0000	145.4923	170.00	165.65	164.03	3.089	3.057	3.009	2.930
85	170.0000	147.2243	172.00	167.65	166.03	3.088	3.057	3.009	2.929
86	172.0000	148.9564	174.00	169.65	168.03	3.088	3.056	3.009	2.929
87	174.0000	150.6884	176.00	171.65	170.03	3.088	3.056	3.008	2.928
88	176.0000	152.4205	178.00	173.65	172.03	3.088	3.056	3.008	2.928
89	178.0000	154.1525	180.00	175.65	174.03	3.088	3.056	3.008	2.927
90	180.0000	155.8846	182.00	177.65	176.03	3.088	3.056	3.007	2.927
91	182.0000	157.6166	184.00	179.65	178.03	3.088	3.055	3.007	2.926
92	184.0000	159.3487	186.00	181.65	180.03	3.088	3.055	3.007	2.926
93	186.0000	161.0807	188.00	183.65	182.03	3.088	3.055	3.007	2.925
94	188.0000	162.8128	190.00	185.65	184.02	3.087	3.055	3.006	2.925
95	190.0000	164.5448	192.00	187.65	186.02	3.087	3.055	3.006	2.925
96	192.0000	166.2769	194.00	189.65	188.02	3.087	3.055	3.006	2.924
97	194.0000	168.0089	196.00	191.65	190.02	3.087	3.054	3.005	2.924
98	196.0000	169.7410	198.00	193.64	192.02	3.087	3.054	3.005	2.923
99	198.0000	171.4730	200.00	195.64	194.02	3.087	3.054	3.005	2.923
100	200.0000	173.2051	202.00	197.64	196.02	3.087	3.054	3.005	2.922

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Table 59 — Internal spline

30 degree pressure angle — Side fit — Fillet root — Module = 1.75

E_{vmin} = minimum effective space width, circular = 2.749

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	10.5000	9.0933	13.89	12.60	9.50	2.784	2.805	2.837	2.890
7	12.2500	10.6088	15.65	14.35	11.13	2.785	2.806	2.838	2.892
8	14.0000	12.1244	17.40	16.10	12.79	2.785	2.807	2.840	2.894
9	15.7500	13.6399	19.15	17.85	14.48	2.786	2.808	2.841	2.896
10	17.5000	15.1554	20.91	19.60	16.17	2.786	2.808	2.842	2.898
11	19.2500	16.6710	22.66	21.35	17.88	2.786	2.809	2.843	2.899
12	21.0000	18.1865	24.41	23.10	19.60	2.787	2.810	2.844	2.901
13	22.7500	19.7021	26.17	24.85	21.32	2.787	2.810	2.845	2.902
14	24.5000	21.2176	27.92	26.60	23.04	2.788	2.811	2.845	2.903
15	26.2500	22.7332	29.67	28.35	24.77	2.788	2.811	2.846	2.905
16	28.0000	24.2487	31.42	30.10	26.50	2.788	2.812	2.847	2.906
17	29.7500	25.7643	33.17	31.85	28.24	2.788	2.812	2.848	2.907
18	31.5000	27.2798	34.93	33.60	29.97	2.789	2.813	2.849	2.908
19	33.2500	28.7953	36.68	35.35	31.71	2.789	2.813	2.849	2.909
20	35.0000	30.3109	38.43	37.10	33.45	2.789	2.814	2.850	2.910
21	36.7500	31.8264	40.18	38.85	35.19	2.790	2.814	2.851	2.912
22	38.5000	33.3420	41.93	40.60	36.93	2.790	2.814	2.851	2.913
23	40.2500	34.8575	43.69	42.35	38.67	2.790	2.815	2.852	2.913
24	42.0000	36.3731	45.44	44.10	40.42	2.790	2.815	2.852	2.914
25	43.7500	37.8886	47.19	45.85	42.16	2.791	2.815	2.853	2.915
26	45.5000	39.4042	48.94	47.60	43.90	2.791	2.816	2.854	2.916
27	47.2500	40.9197	50.69	49.35	45.65	2.791	2.816	2.854	2.917
28	49.0000	42.4352	52.44	51.10	47.39	2.791	2.817	2.855	2.918
29	50.7500	43.9508	54.19	52.85	49.14	2.791	2.817	2.855	2.919
30	52.5000	45.4663	55.95	54.60	50.88	2.792	2.817	2.856	2.920
31	54.2500	46.9819	57.70	56.35	52.63	2.792	2.818	2.856	2.921
32	56.0000	48.4974	59.45	58.10	54.37	2.792	2.818	2.857	2.921
33	57.7500	50.0130	61.20	59.85	56.12	2.792	2.818	2.857	2.922
34	59.5000	51.5285	62.95	61.60	57.87	2.792	2.818	2.858	2.923
35	61.2500	53.0441	64.70	63.35	59.61	2.793	2.819	2.858	2.924
36	63.0000	54.5596	66.45	65.10	61.36	2.793	2.819	2.859	2.924
37	64.7500	56.0751	68.21	66.85	63.11	2.793	2.819	2.859	2.925
38	66.5000	57.5907	69.96	68.60	64.85	2.793	2.820	2.859	2.926
39	68.2500	59.1062	71.71	70.35	66.60	2.793	2.820	2.860	2.926
40	70.0000	60.6218	73.46	72.10	68.35	2.793	2.820	2.860	2.927
41	71.7500	62.1373	75.21	73.85	70.09	2.794	2.820	2.861	2.928
42	73.5000	63.6529	76.96	75.60	71.84	2.794	2.821	2.861	2.929
43	75.2500	65.1684	78.71	77.35	73.59	2.794	2.821	2.862	2.929
44	77.0000	66.6840	80.46	79.10	75.34	2.794	2.821	2.862	2.930
45	78.7500	68.1995	82.21	80.85	77.09	2.794	2.822	2.862	2.930
46	80.5000	69.7150	83.97	82.60	78.83	2.794	2.822	2.863	2.931
47	82.2500	71.2306	85.72	84.35	80.58	2.795	2.822	2.863	2.932
48	84.0000	72.7461	87.47	86.10	82.33	2.795	2.822	2.864	2.932
49	85.7500	74.2617	89.22	87.85	84.08	2.795	2.823	2.864	2.933
50	87.5000	75.7772	90.97	89.60	85.83	2.795	2.823	2.864	2.934
51	89.2500	77.2928	92.72	91.35	87.58	2.795	2.823	2.865	2.934
52	91.0000	78.8083	94.47	93.10	89.32	2.795	2.823	2.865	2.935
53	92.7500	80.3239	96.22	94.85	91.07	2.796	2.823	2.865	2.935
54	94.5000	81.8394	97.97	96.60	92.82	2.796	2.824	2.866	2.936
55	96.2500	83.3550	99.73	98.35	94.57	2.796	2.824	2.866	2.937
56	98.0000	84.8705	101.48	100.10	96.32	2.796	2.824	2.867	2.937
57	99.7500	86.3860	103.23	101.85	98.07	2.796	2.824	2.867	2.938
58	101.5000	87.9016	104.98	103.60	99.82	2.796	2.825	2.867	2.938
59	103.2500	89.4171	106.73	105.35	101.57	2.796	2.825	2.868	2.939
60	105.0000	90.9327	108.48	107.10	103.31	2.796	2.825	2.868	2.939
61	106.7500	92.4482	110.23	108.85	105.06	2.797	2.825	2.868	2.940
62	108.5000	93.9638	111.98	110.60	106.81	2.797	2.825	2.869	2.940
63	110.2500	95.4793	113.73	112.35	108.56	2.797	2.826	2.869	2.941
64	112.0000	96.9948	115.48	114.10	110.31	2.797	2.826	2.869	2.941
65	113.7500	98.5104	117.23	115.85	112.06	2.797	2.826	2.870	2.942
66	115.5000	100.0259	118.99	117.60	113.81	2.797	2.826	2.870	2.942
67	117.2500	101.5415	120.74	119.35	115.56	2.797	2.827	2.870	2.943
68	119.0000	103.0570	122.49	121.10	117.31	2.798	2.827	2.871	2.943
69	120.7500	104.5726	124.24	122.85	119.06	2.798	2.827	2.871	2.944
70	122.5000	106.0881	125.99	124.60	120.80	2.798	2.827	2.871	2.944
71	124.2500	107.6037	127.74	126.35	122.55	2.798	2.827	2.871	2.945
72	126.0000	109.1192	129.49	128.10	124.30	2.798	2.828	2.872	2.945
73	127.7500	110.6348	131.24	129.85	126.05	2.798	2.828	2.872	2.946
74	129.5000	112.1503	132.99	131.60	127.80	2.798	2.828	2.872	2.946
75	131.2500	113.6658	134.74	133.35	129.55	2.798	2.828	2.873	2.947
76	133.0000	115.1814	136.49	135.10	131.30	2.799	2.828	2.873	2.947
77	134.7500	116.6969	138.24	136.85	133.05	2.799	2.828	2.873	2.948
78	136.5000	118.2125	140.00	138.60	134.80	2.799	2.829	2.874	2.948
79	138.2500	119.7280	141.75	140.35	136.55	2.799	2.829	2.874	2.949
80	140.0000	121.2436	143.50	142.10	138.30	2.799	2.829	2.874	2.949
81	141.7500	122.7591	145.25	143.85	140.05	2.799	2.829	2.874	2.950
82	143.5000	124.2747	147.00	145.60	141.80	2.799	2.829	2.875	2.950
83	145.2500	125.7902	148.75	147.35	143.55	2.799	2.830	2.875	2.951
84	147.0000	127.3057	150.50	149.10	145.30	2.799	2.830	2.875	2.951
85	148.7500	128.8213	152.25	150.85	147.05	2.800	2.830	2.876	2.952
86	150.5000	130.3368	154.00	152.60	148.79	2.800	2.830	2.876	2.952
87	152.2500	131.8524	155.75	154.35	150.54	2.800	2.830	2.876	2.952
88	154.0000	133.3679	157.50	156.10	152.29	2.800	2.830	2.876	2.953
89	155.7500	134.8835	159.25	157.85	154.04	2.800	2.831	2.877	2.953
90	157.5000	136.3990	161.00	159.60	155.79	2.800	2.831	2.877	2.954
91	159.2500	137.9146	162.76	161.35	157.54	2.800	2.831	2.877	2.954
92	161.0000	139.4301	164.51	163.10	159.29	2.800	2.831	2.877	2.955
93	162.7500	140.9456	166.26	164.85	161.04	2.800	2.831	2.878	2.955
94	164.5000	142.4612	168.01	166.60	162.79	2.801	2.831	2.878	2.955
95	166.2500	143.9767	169.76	168.35	164.54	2.801	2.832	2.878	2.956
96	168.0000	145.4923	171.51	170.10	166.29	2.801	2.832	2.878	2.956
97	169.7500	147.0078	173.26	171.85	168.04	2.801	2.832	2.879	2.957
98	171.5000	148.5234	175.01	173.60	169.79	2.801	2.832	2.879	2.957
99	173.2500	150.0389	176.76	175.35	171.54	2.801	2.832	2.879	2.957
100	175.0000	151.5545	178.51	177.10	173.29	2.801	2.832	2.880	2.958

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Table 60 — External spline

30 degree pressure angle — Side fit — Fillet root — Module = 1.75

S_{vmax} = maximum effective tooth thickness, circular = 2.749

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	10.5000	9.0933	12.25	9.15	7.11	2.714	2.692	2.661	2.608
7	12.2500	10.6088	14.00	10.78	8.85	2.713	2.692	2.659	2.606
8	14.0000	12.1244	15.75	12.44	10.60	2.713	2.691	2.658	2.604
9	15.7500	13.6399	17.50	14.13	12.35	2.712	2.690	2.657	2.602
10	17.5000	15.1554	19.25	15.82	14.09	2.712	2.689	2.656	2.600
11	19.2500	16.6710	21.00	17.53	15.84	2.711	2.689	2.655	2.599
12	21.0000	18.1865	22.75	19.25	17.59	2.711	2.688	2.654	2.597
13	22.7500	19.7021	24.50	20.97	19.33	2.711	2.688	2.653	2.596
14	24.5000	21.2176	26.25	22.65	21.08	2.710	2.687	2.652	2.594
15	26.2500	22.7332	28.00	24.42	22.83	2.710	2.687	2.651	2.593
16	28.0000	24.2487	29.75	26.15	24.58	2.710	2.686	2.651	2.592
17	29.7500	25.7643	31.50	27.89	26.33	2.709	2.686	2.650	2.591
18	31.5000	27.2798	33.25	29.62	28.07	2.709	2.685	2.649	2.589
19	33.2500	28.7953	35.00	31.36	29.82	2.709	2.685	2.649	2.588
20	35.0000	30.3109	36.75	33.10	31.57	2.708	2.684	2.648	2.587
21	36.7500	31.8264	38.50	34.84	33.32	2.708	2.684	2.647	2.586
22	38.5000	33.3420	40.25	36.58	35.07	2.708	2.683	2.647	2.585
23	40.2500	34.8575	42.00	38.32	36.81	2.708	2.683	2.646	2.584
24	42.0000	36.3731	43.75	40.07	38.56	2.708	2.683	2.645	2.583
25	43.7500	37.8886	45.50	41.81	40.31	2.707	2.682	2.645	2.582
26	45.5000	39.4042	47.25	43.55	42.06	2.707	2.682	2.644	2.582
27	47.2500	40.9197	49.00	45.30	43.81	2.707	2.682	2.644	2.581
28	49.0000	42.4352	50.75	47.04	45.56	2.707	2.681	2.643	2.580
29	50.7500	43.9508	52.50	48.79	47.31	2.706	2.681	2.643	2.579
30	52.5000	45.4663	54.25	50.53	49.05	2.706	2.681	2.642	2.578
31	54.2500	46.9819	56.00	52.28	50.80	2.706	2.680	2.642	2.577
32	56.0000	48.4974	57.75	54.02	52.55	2.706	2.680	2.641	2.576
33	57.7500	50.0130	59.50	55.77	54.30	2.706	2.680	2.641	2.576
34	59.5000	51.5285	61.25	57.52	56.05	2.705	2.679	2.640	2.575
35	61.2500	53.0441	63.00	59.26	57.80	2.705	2.679	2.640	2.574
36	63.0000	54.5596	64.75	61.01	59.55	2.705	2.679	2.639	2.573
37	64.7500	56.0751	66.50	62.76	61.29	2.705	2.678	2.639	2.573
38	66.5000	57.5907	68.25	64.50	63.04	2.705	2.678	2.638	2.572
39	68.2500	59.1062	70.00	66.25	64.79	2.704	2.678	2.638	2.571
40	70.0000	60.6218	71.75	68.00	66.54	2.704	2.678	2.637	2.571
41	71.7500	62.1373	73.50	69.74	68.29	2.704	2.677	2.637	2.570
42	73.5000	63.6529	75.25	71.49	70.04	2.704	2.677	2.637	2.569
43	75.2500	65.1684	77.00	73.24	71.79	2.704	2.677	2.636	2.569
44	77.0000	66.6840	78.75	74.99	73.54	2.704	2.677	2.636	2.568
45	78.7500	68.1995	80.50	76.74	75.29	2.703	2.676	2.635	2.567
46	80.5000	69.7150	82.25	78.48	77.03	2.703	2.676	2.635	2.567
47	82.2500	71.2306	84.00	80.23	78.78	2.703	2.676	2.635	2.566
48	84.0000	72.7461	85.75	81.98	80.53	2.703	2.675	2.634	2.565
49	85.7500	74.2617	87.50	83.73	82.28	2.703	2.675	2.634	2.565
50	87.5000	75.7772	89.25	85.48	84.03	2.703	2.675	2.633	2.564
51	89.2500	77.2928	91.00	87.23	85.78	2.703	2.675	2.633	2.564
52	91.0000	78.8083	92.75	88.97	87.53	2.702	2.675	2.633	2.563
53	92.7500	80.3239	94.50	90.72	89.28	2.702	2.674	2.632	2.562
54	94.5000	81.8394	96.25	92.47	91.03	2.702	2.674	2.632	2.562
55	96.2500	83.3550	98.00	94.22	92.77	2.702	2.674	2.632	2.561
56	98.0000	84.8705	99.75	95.97	94.52	2.702	2.674	2.631	2.561
57	99.7500	86.3860	101.50	97.72	96.27	2.702	2.673	2.631	2.560
58	101.5000	87.9016	103.25	99.47	98.02	2.702	2.673	2.631	2.560
59	103.2500	89.4171	105.00	101.22	99.77	2.701	2.673	2.630	2.559
60	105.0000	90.9327	106.75	102.96	101.52	2.701	2.673	2.630	2.558
61	106.7500	92.4482	108.50	104.71	103.27	2.701	2.673	2.630	2.558
62	108.5000	93.9638	110.25	106.46	105.02	2.701	2.672	2.629	2.557
63	110.2500	95.4793	112.00	108.21	106.77	2.701	2.672	2.629	2.557
64	112.0000	96.9949	113.75	109.96	108.52	2.701	2.672	2.629	2.556
65	113.7500	98.5104	115.50	111.71	110.27	2.701	2.672	2.628	2.556
66	115.5000	100.0259	117.25	113.46	112.01	2.700	2.671	2.628	2.555
67	117.2500	101.5415	119.00	115.21	113.76	2.700	2.671	2.628	2.555
68	119.0000	103.0570	120.75	116.96	115.51	2.700	2.671	2.627	2.554
69	120.7500	104.5726	122.50	118.71	117.26	2.700	2.671	2.627	2.554
70	122.5000	106.0881	124.25	120.45	119.01	2.700	2.671	2.627	2.553
71	124.2500	107.6037	126.00	122.20	120.76	2.700	2.670	2.626	2.553
72	126.0000	109.1192	127.75	123.95	122.51	2.700	2.670	2.626	2.552
73	127.7500	110.6348	129.50	125.70	124.26	2.700	2.670	2.626	2.552
74	129.5000	112.1503	131.25	127.45	126.01	2.700	2.670	2.625	2.551
75	131.2500	113.6658	133.00	129.20	127.76	2.699	2.670	2.625	2.551
76	133.0000	115.1814	134.75	130.95	129.51	2.699	2.669	2.625	2.550
77	134.7500	116.6969	136.50	132.70	131.26	2.699	2.669	2.625	2.550
78	136.5000	118.2125	138.25	134.45	133.00	2.699	2.669	2.624	2.549
79	138.2500	119.7280	140.00	136.20	134.75	2.699	2.669	2.624	2.549
80	140.0000	121.2436	141.75	137.95	136.50	2.699	2.669	2.624	2.549
81	141.7500	122.7591	143.50	139.70	138.25	2.699	2.669	2.623	2.548
82	143.5000	124.2747	145.25	141.45	140.00	2.699	2.668	2.623	2.548
83	145.2500	125.7902	147.00	143.20	141.75	2.698	2.668	2.623	2.547
84	147.0000	127.3057	148.75	144.95	143.50	2.698	2.668	2.623	2.547
85	148.7500	128.8213	150.50	146.70	145.25	2.698	2.668	2.622	2.546
86	150.5000	130.3368	152.25	148.44	147.00	2.698	2.668	2.622	2.546
87	152.2500	131.8524	154.00	150.19	148.75	2.698	2.667	2.622	2.545
88	154.0000	133.3679	155.75	151.94	150.50	2.698	2.667	2.621	2.545
89	155.7500	134.8835	157.50	153.69	152.25	2.698	2.667	2.621	2.545
90	157.5000	136.3990	159.25	155.44	154.00	2.698	2.667	2.621	2.544
91	159.2500	137.9146	161.00	157.19	155.74	2.698	2.667	2.621	2.544
92	161.0000	139.4301	162.75	158.94	157.49	2.697	2.667	2.620	2.543
93	162.7500	140.9456	164.50	160.69	159.24	2.697	2.666	2.620	2.543
94	164.5000	142.4612	166.25	162.44	160.99	2.697	2.666	2.620	2.542
95	166.2500	143.9767	168.00	164.19	162.74	2.697	2.666	2.620	2.542
96	168.0000	145.4923	169.75	165.94	164.49	2.697	2.666	2.619	2.542
97	169.7500	147.0078	171.50	167.69	166.24	2.697	2.666	2.619	2.541
98	171.5000	148.5234	173.25	169.44	167.99	2.697	2.666	2.619	2.541
99	173.2500	150.0389	175.00	171.19	169.74	2.697	2.665	2.619	2.540
100	175.0000	151.5545	176.75	172.94	171.49	2.697	2.665	2.618	2.540

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Table 61 — Internal spline

30 degree pressure angle — Side fit — Fillet root — Module = 1.50

E_{vmin} = minimum effective space width, circular = 2.356

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	9.0000	7.7942	11.93	10.80	8.15	2.390	2.410	2.440	2.490
7	10.5000	9.0933	13.44	12.30	9.54	2.390	2.411	2.441	2.492
8	12.0000	10.3923	14.94	13.80	10.97	2.391	2.411	2.442	2.494
9	13.5000	11.6913	16.44	15.30	12.41	2.391	2.412	2.443	2.496
10	15.0000	12.9904	17.94	16.80	13.86	2.391	2.413	2.444	2.497
11	16.5000	14.2894	19.45	18.30	15.33	2.392	2.413	2.445	2.499
12	18.0000	15.5885	20.95	19.80	16.80	2.392	2.414	2.446	2.500
13	19.5000	16.8875	22.45	21.30	18.27	2.393	2.414	2.447	2.502
14	21.0000	18.1865	23.95	22.80	19.75	2.393	2.415	2.448	2.503
15	22.5000	19.4856	25.46	24.30	21.23	2.393	2.415	2.449	2.504
16	24.0000	20.7846	26.96	25.80	22.72	2.393	2.416	2.449	2.505
17	25.5000	22.0836	28.46	27.30	24.20	2.394	2.416	2.450	2.506
18	27.0000	23.3827	29.96	28.80	25.69	2.394	2.417	2.451	2.507
19	28.5000	24.6817	31.46	30.30	27.18	2.394	2.417	2.451	2.509
20	30.0000	25.9808	32.97	31.80	28.67	2.395	2.418	2.452	2.510
21	31.5000	27.2798	34.47	33.30	30.16	2.395	2.418	2.453	2.510
22	33.0000	28.5788	35.97	34.80	31.66	2.395	2.418	2.453	2.511
23	34.5000	29.8779	37.47	36.30	33.15	2.395	2.419	2.454	2.512
24	36.0000	31.1769	38.97	37.80	34.64	2.395	2.419	2.454	2.513
25	37.5000	32.4760	40.47	39.30	36.14	2.396	2.419	2.455	2.514
26	39.0000	33.7750	41.98	40.80	37.63	2.396	2.420	2.455	2.515
27	40.5000	35.0740	43.48	42.30	39.13	2.396	2.420	2.456	2.516
28	42.0000	36.3731	44.98	43.80	40.62	2.396	2.420	2.456	2.517
29	43.5000	37.6721	46.48	45.30	42.12	2.397	2.421	2.457	2.517
30	45.0000	38.9711	47.98	46.80	43.61	2.397	2.421	2.457	2.518
31	46.5000	40.2702	49.48	48.30	45.11	2.397	2.421	2.458	2.519
32	48.0000	41.5692	50.98	49.80	46.61	2.397	2.422	2.458	2.520
33	49.5000	42.8683	52.48	51.30	48.10	2.397	2.422	2.459	2.520
34	51.0000	44.1673	53.99	52.80	49.60	2.397	2.422	2.459	2.521
35	52.5000	45.4663	55.49	54.30	51.10	2.398	2.422	2.460	2.522
36	54.0000	46.7654	56.99	55.80	52.59	2.398	2.423	2.460	2.523
37	55.5000	48.0644	58.49	57.30	54.09	2.398	2.423	2.461	2.523
38	57.0000	49.3635	59.99	58.80	55.59	2.398	2.423	2.461	2.524
39	58.5000	50.6625	61.49	60.30	57.09	2.398	2.424	2.461	2.525
40	60.0000	51.9615	62.99	61.80	58.58	2.398	2.424	2.462	2.525
41	61.5000	53.2606	64.49	63.30	60.08	2.399	2.424	2.462	2.526
42	63.0000	54.5596	66.00	64.80	61.58	2.399	2.424	2.463	2.527
43	64.5000	55.8586	67.50	66.30	63.08	2.399	2.425	2.463	2.527
44	66.0000	57.1577	69.00	67.80	64.58	2.399	2.425	2.463	2.528
45	67.5000	58.4567	70.50	69.30	66.07	2.399	2.425	2.464	2.528
46	69.0000	59.7558	72.00	70.80	67.57	2.399	2.425	2.464	2.529
47	70.5000	61.0548	73.50	72.30	69.07	2.400	2.426	2.465	2.530
48	72.0000	62.3538	75.00	73.80	70.57	2.400	2.426	2.465	2.530
49	73.5000	63.6529	76.50	75.30	72.07	2.400	2.426	2.465	2.531
50	75.0000	64.9519	78.00	76.80	73.57	2.400	2.426	2.466	2.531
51	76.5000	66.2509	79.50	78.30	75.07	2.400	2.426	2.466	2.532
52	78.0000	67.5500	81.01	79.80	76.56	2.400	2.427	2.466	2.532
53	79.5000	68.8490	82.51	81.30	78.06	2.400	2.427	2.467	2.533
54	81.0000	70.1481	84.01	82.80	79.56	2.401	2.427	2.467	2.534
55	82.5000	71.4471	85.51	84.30	81.06	2.401	2.427	2.467	2.534
56	84.0000	72.7461	87.01	85.80	82.56	2.401	2.428	2.468	2.535
57	85.5000	74.0452	88.51	87.30	84.06	2.401	2.428	2.468	2.535
58	87.0000	75.3442	90.01	88.80	85.56	2.401	2.428	2.468	2.536
59	88.5000	76.6433	91.51	90.30	87.06	2.401	2.428	2.469	2.536
60	90.0000	77.9423	93.01	91.80	88.56	2.401	2.428	2.469	2.537
61	91.5000	79.2413	94.51	93.30	90.05	2.401	2.429	2.469	2.537
62	93.0000	80.5404	96.01	94.80	91.55	2.402	2.429	2.470	2.538
63	94.5000	81.8394	97.52	96.30	93.05	2.402	2.429	2.470	2.538
64	96.0000	83.1384	99.02	97.80	94.55	2.402	2.429	2.470	2.539
65	97.5000	84.4375	100.52	99.30	96.05	2.402	2.429	2.471	2.539
66	99.0000	85.7365	102.02	100.80	97.55	2.402	2.430	2.471	2.540
67	100.5000	87.0356	103.52	102.30	99.05	2.402	2.430	2.471	2.540
68	102.0000	88.3346	105.02	103.80	100.55	2.402	2.430	2.471	2.541
69	103.5000	89.6336	106.52	105.30	102.05	2.402	2.430	2.472	2.541
70	105.0000	90.9327	108.02	106.80	103.55	2.403	2.430	2.472	2.541
71	106.5000	92.2317	109.52	108.30	105.05	2.403	2.431	2.472	2.542
72	108.0000	93.5307	111.02	109.80	106.55	2.403	2.431	2.473	2.542
73	109.5000	94.8298	112.52	111.30	108.05	2.403	2.431	2.473	2.543
74	111.0000	96.1288	114.02	112.80	109.54	2.403	2.431	2.473	2.543
75	112.5000	97.4279	115.52	114.30	111.04	2.403	2.431	2.473	2.544
76	114.0000	98.7269	117.03	115.80	112.54	2.403	2.431	2.474	2.544
77	115.5000	100.0259	118.53	117.30	114.04	2.403	2.432	2.474	2.545
78	117.0000	101.3250	120.03	118.80	115.54	2.403	2.432	2.474	2.545
79	118.5000	102.6240	121.53	120.30	117.04	2.404	2.432	2.475	2.546
80	120.0000	103.9231	123.03	121.80	118.54	2.404	2.432	2.475	2.546
81	121.5000	105.2221	124.53	123.30	120.04	2.404	2.432	2.475	2.546
82	123.0000	106.5211	126.03	124.80	121.54	2.404	2.432	2.475	2.547
83	124.5000	107.8202	127.53	126.30	123.04	2.404	2.433	2.476	2.547
84	126.0000	109.1192	129.03	127.80	124.54	2.404	2.433	2.476	2.548
85	127.5000	110.4182	130.53	129.30	126.04	2.404	2.433	2.476	2.548
86	129.0000	111.7173	132.03	130.80	127.54	2.404	2.433	2.476	2.548
87	130.5000	113.0163	133.53	132.30	129.04	2.404	2.433	2.477	2.549
88	132.0000	114.3154	135.03	133.80	130.54	2.404	2.433	2.477	2.549
89	133.5000	115.6144	136.54	135.30	132.04	2.405	2.434	2.477	2.550
90	135.0000	116.9134	138.04	136.80	133.54	2.405	2.434	2.477	2.550
91	136.5000	118.2125	139.54	138.30	135.04	2.405	2.434	2.478	2.551
92	138.0000	119.5115	141.04	139.80	136.54	2.405	2.434	2.478	2.551
93	139.5000	120.8106	142.54	141.30	138.04	2.405	2.434	2.478	2.551
94	141.0000	122.1096	144.04	142.80	139.53	2.405	2.434	2.478	2.552
95	142.5000	123.4086	145.54	144.30	141.03	2.405	2.435	2.479	2.552
96	144.0000	124.7077	147.04	145.80	142.53	2.405	2.435	2.479	2.552
97	145.5000	126.0067	148.54	147.30	144.03	2.405	2.435	2.479	2.553
98	147.0000	127.3057	150.04	148.80	145.53	2.405	2.435	2.479	2.553
99	148.5000	128.6048	151.54	150.30	147.03	2.406	2.435	2.480	2.554
100	150.0000	129.9038	153.04	151.80	148.53	2.406	2.435	2.480	2.554

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Table 62 — External spline

30 degree pressure angle — Side fit — Fillet root — Module = 1.50

S_{vmax} = maximum effective tooth thickness, circular = 2.356

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	9.0000	7.7942	10.50	7.85	6.07	2.323	2.303	2.272	2.222
7	10.5000	9.0933	12.00	9.24	7.56	2.322	2.302	2.271	2.220
8	12.0000	10.3923	13.50	10.67	9.06	2.322	2.301	2.270	2.218
9	13.5000	11.6913	15.00	12.11	10.56	2.321	2.300	2.269	2.217
10	15.0000	12.9904	16.50	13.56	12.06	2.321	2.300	2.268	2.215
11	16.5000	14.2894	18.00	15.03	13.55	2.321	2.299	2.267	2.214
12	18.0000	15.5885	19.50	16.50	15.05	2.320	2.299	2.266	2.212
13	19.5000	16.8875	21.00	17.97	16.55	2.320	2.298	2.265	2.211
14	21.0000	18.1865	22.50	19.45	18.05	2.320	2.298	2.265	2.210
15	22.5000	19.4856	24.00	20.93	19.54	2.319	2.297	2.264	2.208
16	24.0000	20.7846	25.50	22.42	21.04	2.319	2.297	2.263	2.207
17	25.5000	22.0836	27.00	23.90	22.54	2.319	2.296	2.262	2.206
18	27.0000	23.3827	28.50	25.39	24.04	2.318	2.296	2.262	2.205
19	28.5000	24.6817	30.00	26.88	25.54	2.318	2.295	2.261	2.204
20	30.0000	25.9808	31.50	28.37	27.03	2.318	2.295	2.260	2.203
21	31.5000	27.2798	33.00	29.86	28.53	2.318	2.294	2.260	2.202
22	33.0000	28.5788	34.50	31.36	30.03	2.317	2.294	2.259	2.201
23	34.5000	29.8779	36.00	32.85	31.53	2.317	2.294	2.259	2.200
24	36.0000	31.1769	37.50	34.34	33.03	2.317	2.293	2.258	2.199
25	37.5000	32.4760	39.00	35.84	34.53	2.317	2.293	2.257	2.198
26	39.0000	33.7750	40.50	37.33	36.02	2.316	2.293	2.257	2.197
27	40.5000	35.0740	42.00	38.83	37.52	2.316	2.292	2.256	2.197
28	42.0000	36.3731	43.50	40.32	39.02	2.316	2.292	2.256	2.196
29	43.5000	37.6721	45.00	41.82	40.52	2.316	2.292	2.255	2.195
30	45.0000	38.9711	46.50	43.31	42.02	2.316	2.291	2.255	2.194
31	46.5000	40.2702	48.00	44.81	43.52	2.316	2.291	2.254	2.193
32	48.0000	41.5692	49.50	46.31	45.02	2.315	2.291	2.254	2.193
33	49.5000	42.8683	51.00	47.80	46.52	2.315	2.290	2.254	2.192
34	51.0000	44.1673	52.50	49.30	48.01	2.315	2.290	2.253	2.191
35	52.5000	45.4663	54.00	50.80	49.51	2.315	2.290	2.253	2.191
36	54.0000	46.7654	55.50	52.29	51.01	2.315	2.290	2.252	2.190
37	55.5000	48.0644	57.00	53.79	52.51	2.314	2.289	2.252	2.189
38	57.0000	49.3635	58.50	55.29	54.01	2.314	2.289	2.251	2.188
39	58.5000	50.6625	60.00	56.79	55.51	2.314	2.289	2.251	2.188
40	60.0000	51.9615	61.50	58.28	57.01	2.314	2.289	2.251	2.187
41	61.5000	53.2606	63.00	59.78	58.51	2.314	2.288	2.250	2.186
42	63.0000	54.5596	64.50	61.28	60.00	2.314	2.288	2.250	2.186
43	64.5000	55.8586	66.00	62.78	61.50	2.313	2.288	2.249	2.185
44	66.0000	57.1577	67.50	64.28	63.00	2.313	2.288	2.249	2.185
45	67.5000	58.4567	69.00	65.77	64.50	2.313	2.287	2.249	2.184
46	69.0000	59.7558	70.50	67.27	66.00	2.313	2.287	2.248	2.183
47	70.5000	61.0548	72.00	68.77	67.50	2.313	2.287	2.248	2.183
48	72.0000	62.3538	73.50	70.27	69.00	2.313	2.287	2.247	2.182
49	73.5000	63.6529	75.00	71.77	70.50	2.313	2.286	2.247	2.182
50	75.0000	64.9519	76.50	73.27	72.00	2.312	2.286	2.247	2.181
51	76.5000	66.2509	78.00	74.77	73.50	2.312	2.286	2.246	2.181
52	78.0000	67.5500	79.50	76.26	74.99	2.312	2.286	2.246	2.180
53	79.5000	68.8490	81.00	77.76	76.49	2.312	2.285	2.246	2.179
54	81.0000	70.1481	82.50	79.26	77.99	2.312	2.285	2.245	2.179
55	82.5000	71.4471	84.00	80.76	79.49	2.312	2.285	2.245	2.178
56	84.0000	72.7461	85.50	82.26	80.99	2.312	2.285	2.245	2.178
57	85.5000	74.0452	87.00	83.76	82.49	2.311	2.285	2.244	2.177
58	87.0000	75.3442	88.50	85.26	83.99	2.311	2.284	2.244	2.177
59	88.5000	76.6433	90.00	86.76	85.49	2.311	2.284	2.244	2.176
60	90.0000	77.9423	91.50	88.26	86.99	2.311	2.284	2.243	2.176
61	91.5000	79.2413	93.00	89.75	88.49	2.311	2.284	2.243	2.175
62	93.0000	80.5404	94.50	91.25	89.99	2.311	2.284	2.243	2.175
63	94.5000	81.8394	96.00	92.75	91.48	2.311	2.283	2.242	2.174
64	96.0000	83.1384	97.50	94.25	92.98	2.311	2.283	2.242	2.174
65	97.5000	84.4375	99.00	95.75	94.48	2.310	2.283	2.242	2.173
66	99.0000	85.7365	100.50	97.25	95.98	2.310	2.283	2.242	2.173
67	100.5000	87.0356	102.00	98.75	97.48	2.310	2.283	2.241	2.172
68	102.0000	88.3346	103.50	100.25	98.98	2.310	2.282	2.241	2.172
69	103.5000	89.6336	105.00	101.75	100.48	2.310	2.282	2.241	2.171
70	105.0000	90.9327	106.50	103.25	101.98	2.310	2.282	2.240	2.171
71	106.5000	92.2317	108.00	104.75	103.48	2.310	2.282	2.240	2.170
72	108.0000	93.5307	109.50	106.25	104.98	2.310	2.282	2.240	2.170
73	109.5000	94.8298	111.00	107.75	106.48	2.310	2.282	2.240	2.170
74	111.0000	96.1288	112.50	109.24	107.98	2.309	2.281	2.239	2.169
75	112.5000	97.4279	114.00	110.74	109.48	2.309	2.281	2.239	2.169
76	114.0000	98.7269	115.50	112.24	110.97	2.309	2.281	2.239	2.168
77	115.5000	100.0259	117.00	113.74	112.47	2.309	2.281	2.238	2.168
78	117.0000	101.3250	118.50	115.24	113.97	2.309	2.281	2.238	2.167
79	118.5000	102.6240	120.00	116.74	115.47	2.309	2.280	2.238	2.167
80	120.0000	103.9231	121.50	118.24	116.97	2.309	2.280	2.238	2.166
81	121.5000	105.2221	123.00	119.74	118.47	2.309	2.280	2.237	2.166
82	123.0000	106.5211	124.50	121.24	119.97	2.309	2.280	2.237	2.166
83	124.5000	107.8202	126.00	122.74	121.47	2.308	2.280	2.237	2.165
84	126.0000	109.1192	127.50	124.24	122.97	2.308	2.280	2.237	2.165
85	127.5000	110.4182	129.00	125.74	124.47	2.308	2.279	2.236	2.164
86	129.0000	111.7173	130.50	127.24	125.97	2.308	2.279	2.236	2.164
87	130.5000	113.0163	132.00	128.74	127.47	2.308	2.279	2.236	2.163
88	132.0000	114.3154	133.50	130.24	128.97	2.308	2.279	2.235	2.163
89	133.5000	115.6144	135.00	131.74	130.46	2.308	2.279	2.235	2.163
90	135.0000	116.9134	136.50	133.24	131.96	2.308	2.279	2.235	2.162
91	136.5000	118.2125	138.00	134.74	133.46	2.308	2.278	2.235	2.162
92	138.0000	119.5115	139.50	136.24	134.96	2.308	2.278	2.234	2.161
93	139.5000	120.8106	141.00	137.74	136.46	2.307	2.278	2.234	2.161
94	141.0000	122.1096	142.50	139.23	137.96	2.307	2.278	2.234	2.161
95	142.5000	123.4086	144.00	140.73	139.46	2.307	2.278	2.234	2.160
96	144.0000	124.7077	145.50	142.23	140.96	2.307	2.278	2.234	2.160
97	145.5000	126.0067	147.00	143.73	142.46	2.307	2.278	2.233	2.160
98	147.0000	127.3057	148.50	145.23	143.96	2.307	2.277	2.233	2.159
99	148.5000	128.6048	150.00	146.73	145.46	2.307	2.277	2.233	2.159
100	150.0000	129.9038	151.50	148.23	146.96	2.307	2.277	2.233	2.158

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Table 63 — Internal spline

30 degree pressure angle — Side fit — Fillet root — Module = 1.25

E_{vmin} = minimum effective space width, circular = 1.963

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	7.5000	6.4952	9.97	9.00	6.79	1.995	2.014	2.042	2.090
7	8.7500	7.5777	11.22	10.25	7.95	1.995	2.015	2.043	2.091
8	10.0000	8.6603	12.47	11.50	9.14	1.996	2.015	2.045	2.093
9	11.2500	9.7428	13.73	12.75	10.34	1.996	2.016	2.046	2.095
10	12.5000	10.8253	14.98	14.00	11.55	1.997	2.017	2.046	2.096
11	13.7500	11.9079	16.23	15.25	12.77	1.997	2.017	2.047	2.098
12	15.0000	12.9904	17.48	16.50	14.00	1.997	2.018	2.048	2.099
13	16.2500	14.0729	18.74	17.75	15.23	1.998	2.018	2.049	2.100
14	17.5000	15.1554	19.99	19.00	16.46	1.998	2.019	2.050	2.101
15	18.7500	16.2380	21.24	20.25	17.69	1.998	2.019	2.050	2.103
16	20.0000	17.3205	22.49	21.50	18.93	1.999	2.020	2.051	2.104
17	21.2500	18.4030	23.74	22.75	20.17	1.999	2.020	2.052	2.105
18	22.5000	19.4856	25.00	24.00	21.41	1.999	2.020	2.052	2.106
19	23.7500	20.5681	26.25	25.25	22.65	1.999	2.021	2.053	2.107
20	25.0000	21.6506	27.50	26.50	23.89	2.000	2.021	2.054	2.108
21	26.2500	22.7332	28.75	27.75	25.14	2.000	2.022	2.054	2.109
22	27.5000	23.8157	30.00	29.00	26.38	2.000	2.022	2.055	2.109
23	28.7500	24.8982	31.25	30.25	27.62	2.000	2.022	2.055	2.110
24	30.0000	25.9808	32.51	31.50	28.87	2.000	2.023	2.056	2.111
25	31.2500	27.0633	33.76	32.75	30.11	2.001	2.023	2.056	2.112
26	32.5000	28.1458	35.01	34.00	31.36	2.001	2.023	2.057	2.113
27	33.7500	29.2284	36.26	35.25	32.60	2.001	2.024	2.057	2.113
28	35.0000	30.3109	37.51	36.50	33.85	2.001	2.024	2.058	2.114
29	36.2500	31.3934	38.76	37.75	35.10	2.001	2.024	2.058	2.115
30	37.5000	32.4760	40.01	39.00	36.34	2.002	2.024	2.059	2.116
31	38.7500	33.5585	41.26	40.25	37.59	2.002	2.025	2.059	2.116
32	40.0000	34.6410	42.52	41.50	38.84	2.002	2.025	2.060	2.117
33	41.2500	35.7236	43.77	42.75	40.08	2.002	2.025	2.060	2.118
34	42.5000	36.8061	45.02	44.00	41.33	2.002	2.025	2.060	2.118
35	43.7500	37.8886	46.27	45.25	42.58	2.002	2.026	2.061	2.119
36	45.0000	38.9711	47.52	46.50	43.83	2.003	2.026	2.061	2.120
37	46.2500	40.0537	48.77	47.75	45.08	2.003	2.026	2.062	2.120
38	47.5000	41.1362	50.02	49.00	46.32	2.003	2.027	2.062	2.121
39	48.7500	42.2187	51.27	50.25	47.57	2.003	2.027	2.062	2.122
40	50.0000	43.3013	52.53	51.50	48.82	2.003	2.027	2.063	2.122
41	51.2500	44.3838	53.78	52.75	50.07	2.003	2.027	2.063	2.123
42	52.5000	45.4663	55.03	54.00	51.32	2.003	2.027	2.063	2.123
43	53.7500	46.5489	56.28	55.25	52.56	2.004	2.028	2.064	2.124
44	55.0000	47.6314	57.53	56.50	53.81	2.004	2.028	2.064	2.125
45	56.2500	48.7139	58.78	57.75	55.06	2.004	2.028	2.065	2.125
46	57.5000	49.7965	60.03	59.00	56.31	2.004	2.028	2.065	2.126
47	58.7500	50.8790	61.28	60.25	57.56	2.004	2.029	2.065	2.126
48	60.0000	51.9615	62.53	61.50	58.81	2.004	2.029	2.066	2.127
49	61.2500	53.0441	63.78	62.75	60.06	2.004	2.029	2.066	2.127
50	62.5000	54.1266	65.03	64.00	61.31	2.005	2.029	2.066	2.128
51	63.7500	55.2091	66.29	65.25	62.55	2.005	2.029	2.067	2.128
52	65.0000	56.2917	67.54	66.50	63.80	2.005	2.030	2.067	2.129
53	66.2500	57.3742	68.79	67.75	65.05	2.005	2.030	2.067	2.129
54	67.5000	58.4567	70.04	69.00	66.30	2.005	2.030	2.068	2.130
55	68.7500	59.5393	71.29	70.25	67.55	2.005	2.030	2.068	2.130
56	70.0000	60.6218	72.54	71.50	68.80	2.005	2.030	2.068	2.131
57	71.2500	61.7043	73.79	72.75	70.05	2.005	2.031	2.068	2.131
58	72.5000	62.7868	75.04	74.00	71.30	2.006	2.031	2.069	2.132
59	73.7500	63.8694	76.29	75.25	72.55	2.006	2.031	2.069	2.132
60	75.0000	64.9519	77.54	76.50	73.80	2.006	2.031	2.069	2.133
61	76.2500	66.0344	78.79	77.75	75.05	2.006	2.031	2.070	2.133
62	77.5000	67.1170	80.04	79.00	76.29	2.006	2.032	2.070	2.134
63	78.7500	68.1995	81.30	80.25	77.54	2.006	2.032	2.070	2.134
64	80.0000	69.2820	82.55	81.50	78.79	2.006	2.032	2.071	2.135
65	81.2500	70.3646	83.80	82.75	80.04	2.006	2.032	2.071	2.135
66	82.5000	71.4471	85.05	84.00	81.29	2.007	2.032	2.071	2.136
67	83.7500	72.5296	86.30	85.25	82.54	2.007	2.033	2.071	2.136
68	85.0000	73.6122	87.55	86.50	83.79	2.007	2.033	2.072	2.137
69	86.2500	74.6947	88.80	87.75	85.04	2.007	2.033	2.072	2.137
70	87.5000	75.7772	90.05	89.00	86.29	2.007	2.033	2.072	2.137
71	88.7500	76.8598	91.30	90.25	87.54	2.007	2.033	2.072	2.138
72	90.0000	77.9423	92.55	91.50	88.79	2.007	2.033	2.073	2.138
73	91.2500	79.0248	93.80	92.75	90.04	2.007	2.034	2.073	2.139
74	92.5000	80.1074	95.05	94.00	91.29	2.007	2.034	2.073	2.139
75	93.7500	81.1899	96.30	95.25	92.54	2.007	2.034	2.073	2.139
76	95.0000	82.2724	97.56	96.50	93.79	2.008	2.034	2.074	2.140
77	96.2500	83.3550	98.81	97.75	95.04	2.008	2.034	2.074	2.140
78	97.5000	84.4375	100.06	99.00	96.29	2.008	2.034	2.074	2.141
79	98.7500	85.5200	101.31	100.25	97.53	2.008	2.035	2.075	2.141
80	100.0000	86.6025	102.56	101.50	98.78	2.008	2.035	2.075	2.142
81	101.2500	87.6851	103.81	102.75	100.03	2.008	2.035	2.075	2.142
82	102.5000	88.7676	105.06	104.00	101.28	2.008	2.035	2.075	2.142
83	103.7500	89.8501	106.31	105.25	102.53	2.008	2.035	2.075	2.143
84	105.0000	90.9327	107.56	106.50	103.78	2.008	2.035	2.076	2.143
85	106.2500	92.0152	108.81	107.75	105.03	2.008	2.035	2.076	2.143
86	107.5000	93.0977	110.06	109.00	106.28	2.009	2.036	2.076	2.144
87	108.7500	94.1803	111.31	110.25	107.53	2.009	2.036	2.076	2.144
88	110.0000	95.2628	112.56	111.50	108.78	2.009	2.036	2.077	2.145
89	111.2500	96.3453	113.81	112.75	110.03	2.009	2.036	2.077	2.145
90	112.5000	97.4279	115.07	114.00	111.28	2.009	2.036	2.077	2.145
91	113.7500	98.5104	116.32	115.25	112.53	2.009	2.036	2.077	2.146
92	115.0000	99.5929	117.57	116.50	113.78	2.009	2.037	2.078	2.146
93	116.2500	100.6755	118.82	117.75	115.03	2.009	2.037	2.078	2.146
94	117.5000	101.7580	120.07	119.00	116.28	2.009	2.037	2.078	2.147
95	118.7500	102.8405	121.32	120.25	117.53	2.009	2.037	2.078	2.147
96	120.0000	103.9231	122.57	121.50	118.78	2.010	2.037	2.079	2.148
97	121.2500	105.0056	123.82	122.75	120.03	2.010	2.037	2.079	2.148
98	122.5000	106.0881	125.07	124.00	121.28	2.010	2.037	2.079	2.148
99	123.7500	107.1707	126.32	125.25	122.53	2.010	2.038	2.079	2.149
100	125.0000	108.2532	127.57	126.50	123.78	2.010	2.038	2.079	2.149

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Table 64 — External spline

30 degree pressure angle — Side fit — Fillet root — Module = 1.25

S_{vmax} = maximum effective tooth thickness, circular = 1.963

$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	4 H	5 H	6 H	7 H
6	7.5000	6.4952	8.75	6.54	5.03	1.932	1.913	1.885	1.837
7	8.7500	7.5777	10.00	7.70	6.28	1.932	1.912	1.884	1.836
8	10.0000	8.6603	11.25	8.89	7.53	1.931	1.912	1.882	1.834
9	11.2500	9.7428	12.50	10.09	8.77	1.931	1.911	1.881	1.832
10	12.5000	10.8253	13.75	11.30	10.02	1.930	1.910	1.881	1.831
11	13.7500	11.9079	15.00	12.52	11.27	1.930	1.910	1.880	1.829
12	15.0000	12.9904	16.25	13.75	12.52	1.930	1.909	1.879	1.828
13	16.2500	14.0729	17.50	14.98	13.76	1.929	1.909	1.878	1.827
14	17.5000	15.1554	18.75	16.21	15.01	1.929	1.908	1.877	1.826
15	18.7500	16.2380	20.00	17.44	16.26	1.929	1.908	1.877	1.824
16	20.0000	17.3205	21.25	18.68	17.51	1.928	1.907	1.876	1.823
17	21.2500	18.4030	22.50	19.92	18.76	1.928	1.907	1.875	1.822
18	22.5000	19.4856	23.75	21.16	20.00	1.928	1.907	1.875	1.821
19	23.7500	20.5681	25.00	22.40	21.25	1.928	1.906	1.874	1.820
20	25.0000	21.6506	26.25	23.64	22.50	1.927	1.906	1.873	1.819
21	26.2500	22.7332	27.50	24.89	23.75	1.927	1.905	1.873	1.818
22	27.5000	23.8157	28.75	26.13	25.00	1.927	1.905	1.872	1.818
23	28.7500	24.8982	30.00	27.37	26.25	1.927	1.905	1.872	1.817
24	30.0000	25.9808	31.25	28.62	27.49	1.927	1.904	1.871	1.816
25	31.2500	27.0633	32.50	29.86	28.74	1.926	1.904	1.871	1.815
26	32.5000	28.1458	33.75	31.11	29.99	1.926	1.904	1.870	1.814
27	33.7500	29.2284	35.00	32.35	31.24	1.926	1.903	1.870	1.814
28	35.0000	30.3109	36.25	33.60	32.49	1.926	1.903	1.869	1.813
29	36.2500	31.3934	37.50	34.85	33.74	1.926	1.903	1.869	1.812
30	37.5000	32.4760	38.75	36.09	34.99	1.925	1.903	1.868	1.811
31	38.7500	33.5585	40.00	37.34	36.24	1.925	1.902	1.868	1.811
32	40.0000	34.6410	41.25	38.59	37.48	1.925	1.902	1.867	1.810
33	41.2500	35.7236	42.50	39.83	38.73	1.925	1.902	1.867	1.809
34	42.5000	36.8061	43.75	41.08	39.98	1.925	1.901	1.867	1.809
35	43.7500	37.8886	45.00	42.33	41.23	1.925	1.901	1.866	1.808
36	45.0000	38.9711	46.25	43.58	42.48	1.924	1.901	1.866	1.807
37	46.2500	40.0537	47.50	44.83	43.73	1.924	1.901	1.865	1.807
38	47.5000	41.1362	48.75	46.07	44.98	1.924	1.900	1.865	1.806
39	48.7500	42.2187	50.00	47.32	46.23	1.924	1.900	1.865	1.805
40	50.0000	43.3013	51.25	48.57	47.47	1.924	1.900	1.864	1.805
41	51.2500	44.3838	52.50	49.82	48.72	1.924	1.900	1.864	1.804
42	52.5000	45.4663	53.75	51.07	49.97	1.924	1.900	1.864	1.804
43	53.7500	46.5489	55.00	52.31	51.22	1.923	1.899	1.863	1.803
44	55.0000	47.6314	56.25	53.56	52.47	1.923	1.899	1.863	1.802
45	56.2500	48.7139	57.50	54.81	53.72	1.923	1.899	1.862	1.802
46	57.5000	49.7965	58.75	56.06	54.97	1.923	1.899	1.862	1.801
47	58.7500	50.8790	60.00	57.31	56.22	1.923	1.898	1.862	1.801
48	60.0000	51.9615	61.25	58.56	57.47	1.923	1.898	1.861	1.800
49	61.2500	53.0441	62.50	59.81	58.72	1.923	1.898	1.861	1.800
50	62.5000	54.1266	63.75	61.06	59.97	1.922	1.898	1.861	1.799
51	63.7500	55.2091	65.00	62.30	61.21	1.922	1.898	1.860	1.799
52	65.0000	56.2917	66.25	63.55	62.46	1.922	1.897	1.860	1.798
53	66.2500	57.3742	67.50	64.80	63.71	1.922	1.897	1.860	1.798
54	67.5000	58.4567	68.75	66.05	64.96	1.922	1.897	1.859	1.797
55	68.7500	59.5393	70.00	67.30	66.21	1.922	1.897	1.859	1.797
56	70.0000	60.6218	71.25	68.55	67.46	1.922	1.897	1.859	1.796
57	71.2500	61.7043	72.50	69.80	68.71	1.922	1.896	1.859	1.796
58	72.5000	62.7868	73.75	71.05	69.96	1.921	1.896	1.858	1.795
59	73.7500	63.8694	75.00	72.30	71.21	1.921	1.896	1.858	1.795
60	75.0000	64.9519	76.25	73.55	72.46	1.921	1.896	1.858	1.794
61	76.2500	66.0344	77.50	74.80	73.71	1.921	1.896	1.857	1.794
62	77.5000	67.1170	78.75	76.04	74.96	1.921	1.895	1.857	1.793
63	78.7500	68.1995	80.00	77.29	76.20	1.921	1.895	1.857	1.793
64	80.0000	69.2820	81.25	78.54	77.45	1.921	1.895	1.856	1.792
65	81.2500	70.3646	82.50	79.79	78.70	1.921	1.895	1.856	1.792
66	82.5000	71.4471	83.75	81.04	79.95	1.920	1.895	1.856	1.791
67	83.7500	72.5296	85.00	82.29	81.20	1.920	1.894	1.856	1.791
68	85.0000	73.6122	86.25	83.54	82.45	1.920	1.894	1.855	1.790
69	86.2500	74.6947	87.50	84.79	83.70	1.920	1.894	1.855	1.790
70	87.5000	75.7772	88.75	86.04	84.95	1.920	1.894	1.855	1.790
71	88.7500	76.8598	90.00	87.29	86.20	1.920	1.894	1.855	1.789
72	90.0000	77.9423	91.25	88.54	87.45	1.920	1.894	1.854	1.789
73	91.2500	79.0248	92.50	89.79	88.70	1.920	1.893	1.854	1.788
74	92.5000	80.1074	93.75	91.04	89.95	1.920	1.893	1.854	1.788
75	93.7500	81.1899	95.00	92.29	91.20	1.919	1.893	1.853	1.788
76	95.0000	82.2724	96.25	93.54	92.44	1.919	1.893	1.853	1.787
77	96.2500	83.3550	97.50	94.79	93.69	1.919	1.893	1.853	1.787
78	97.5000	84.4375	98.75	96.04	94.94	1.919	1.893	1.853	1.786
79	98.7500	85.5200	100.00	97.28	96.19	1.919	1.892	1.852	1.786
80	100.0000	86.6025	101.25	98.53	97.44	1.919	1.892	1.852	1.785
81	101.2500	87.6851	102.50	99.78	98.69	1.919	1.892	1.852	1.785
82	102.5000	88.7676	103.75	101.03	99.94	1.919	1.892	1.852	1.785
83	103.7500	89.8501	105.00	102.28	101.19	1.919	1.892	1.851	1.784
84	105.0000	90.9327	106.25	103.53	102.44	1.919	1.892	1.851	1.784
85	106.2500	92.0152	107.50	104.78	103.69	1.919	1.892	1.851	1.784
86	107.5000	93.0977	108.75	106.03	104.94	1.918	1.891	1.851	1.783
87	108.7500	94.1803	110.00	107.28	106.19	1.918	1.891	1.851	1.783
88	110.0000	95.2628	111.25	108.53	107.44	1.918	1.891	1.850	1.782
89	111.2500	96.3453	112.50	109.78	108.69	1.918	1.891	1.850	1.782
90	112.5000	97.4279	113.75	111.03	109.93	1.918	1.891	1.850	1.782
91	113.7500	98.5104	115.00	112.28	111.18	1.918	1.891	1.850	1.781
92	115.0000	99.5929	116.25	113.53	112.43	1.918	1.890	1.849	1.781
93	116.2500	100.6755	117.50	114.78	113.68	1.918	1.890	1.849	1.781
94	117.5000	101.7580	118.75	116.03	114.93	1.918	1.890	1.849	1.780
95	118.7500	102.8405	120.00	117.28	116.18	1.918	1.890	1.849	1.780
96	120.0000	103.9231	121.25	118.53	117.43	1.917	1.890	1.848	1.779
97	121.2500	105.0056	122.50	119.78	118.68	1.917	1.890	1.848	1.779
98	122.5000	106.0881	123.75	121.03	119.93	1.917	1.890	1.848	1.779
99	123.7500	107.1707	125.00	122.28	121.18	1.917	1.889	1.848	1.778
100	125.0000	108.2532	126.25	123.53	122.43	1.917	1.889	1.848	1.778

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Table 65 — Internal spline

30 degree pressure angle — Side fit — Fillet root — Module = 1.00

$F_{\nu min}$ = minimum effective space width, circular = 1.571

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{\nu min} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	6.0000	5.1962	8.00	7.20	5.43	1.600	1.616	1.644	1.688
7	7.0000	6.0622	9.01	8.20	6.36	1.600	1.618	1.645	1.689
8	8.0000	6.9282	10.01	9.20	7.31	1.601	1.619	1.646	1.691
9	9.0000	7.7942	11.01	10.20	8.27	1.601	1.619	1.647	1.693
10	10.0000	8.6603	12.01	11.20	9.24	1.602	1.620	1.648	1.694
11	11.0000	9.5263	13.02	12.20	10.22	1.602	1.621	1.649	1.695
12	12.0000	10.3923	14.02	13.20	11.20	1.602	1.621	1.649	1.696
13	13.0000	11.2583	15.02	14.20	12.18	1.602	1.622	1.650	1.698
14	14.0000	12.1244	16.02	15.20	13.17	1.603	1.622	1.651	1.699
15	15.0000	12.9904	17.02	16.20	14.16	1.603	1.622	1.651	1.700
16	16.0000	13.8564	18.03	17.20	15.15	1.603	1.623	1.652	1.701
17	17.0000	14.7224	19.03	18.20	16.14	1.604	1.623	1.653	1.702
18	18.0000	15.5885	20.03	19.20	17.13	1.604	1.624	1.653	1.703
19	19.0000	16.4545	21.03	20.20	18.12	1.604	1.624	1.654	1.704
20	20.0000	17.3205	22.03	21.20	19.11	1.604	1.624	1.654	1.704
21	21.0000	18.1865	23.03	22.20	20.11	1.604	1.625	1.655	1.705
22	22.0000	19.0526	24.03	23.20	21.10	1.605	1.625	1.655	1.706
23	23.0000	19.9186	25.04	24.20	22.10	1.605	1.625	1.656	1.707
24	24.0000	20.7846	26.04	25.20	23.09	1.605	1.626	1.656	1.708
25	25.0000	21.6506	27.04	26.20	24.09	1.605	1.626	1.657	1.708
26	26.0000	22.5167	28.04	27.20	25.09	1.605	1.626	1.657	1.709
27	27.0000	23.3827	29.04	28.20	26.08	1.606	1.626	1.658	1.710
28	28.0000	24.2487	30.04	29.20	27.08	1.606	1.627	1.658	1.711
29	29.0000	25.1147	31.04	30.20	28.08	1.606	1.627	1.659	1.711
30	30.0000	25.9808	32.04	31.20	29.07	1.606	1.627	1.659	1.712
31	31.0000	26.8468	33.05	32.20	30.07	1.606	1.627	1.659	1.713
32	32.0000	27.7128	34.05	33.20	31.07	1.606	1.628	1.660	1.713
33	33.0000	28.5788	35.05	34.20	32.07	1.607	1.628	1.660	1.714
34	34.0000	29.4449	36.05	35.20	33.07	1.607	1.628	1.661	1.714
35	35.0000	30.3109	37.05	36.20	34.06	1.607	1.628	1.661	1.715
36	36.0000	31.1769	38.05	37.20	35.06	1.607	1.629	1.661	1.716
37	37.0000	32.0429	39.05	38.20	36.06	1.607	1.629	1.662	1.716
38	38.0000	32.9090	40.05	39.20	37.06	1.607	1.629	1.662	1.717
39	39.0000	33.7750	41.05	40.20	38.06	1.607	1.629	1.662	1.717
40	40.0000	34.6410	42.05	41.20	39.06	1.608	1.630	1.663	1.718
41	41.0000	35.5070	43.06	42.20	40.05	1.608	1.630	1.663	1.718
42	42.0000	36.3731	44.06	43.20	41.05	1.608	1.630	1.663	1.719
43	43.0000	37.2391	45.06	44.20	42.05	1.608	1.630	1.664	1.720
44	44.0000	38.1051	46.06	45.20	43.05	1.608	1.630	1.664	1.720
45	45.0000	38.9711	47.06	46.20	44.05	1.608	1.631	1.664	1.721
46	46.0000	39.8372	48.06	47.20	45.05	1.608	1.631	1.665	1.721
47	47.0000	40.7032	49.06	48.20	46.05	1.608	1.631	1.665	1.722
48	48.0000	41.5692	50.06	49.20	47.05	1.609	1.631	1.665	1.722
49	49.0000	42.4352	51.06	50.20	48.05	1.609	1.632	1.666	1.723
50	50.0000	43.3013	52.06	51.20	49.04	1.609	1.632	1.666	1.723
51	51.0000	44.1673	53.06	52.20	50.04	1.609	1.632	1.666	1.724
52	52.0000	45.0333	54.07	53.20	51.04	1.609	1.632	1.667	1.724
53	53.0000	45.8993	55.07	54.20	52.04	1.609	1.632	1.667	1.724
54	54.0000	46.7654	56.07	55.20	53.04	1.609	1.632	1.667	1.725
55	55.0000	47.6314	57.07	56.20	54.04	1.609	1.633	1.667	1.725
56	56.0000	48.4974	58.07	57.20	55.04	1.610	1.633	1.668	1.726
57	57.0000	49.3635	59.07	58.20	56.04	1.610	1.633	1.668	1.726
58	58.0000	50.2295	60.07	59.20	57.04	1.610	1.633	1.668	1.727
59	59.0000	51.0955	61.07	60.20	58.04	1.610	1.633	1.669	1.727
60	60.0000	51.9615	62.07	61.20	59.04	1.610	1.634	1.669	1.728
61	61.0000	52.8276	63.07	62.20	60.04	1.610	1.634	1.669	1.728
62	62.0000	53.6936	64.07	63.20	61.04	1.610	1.634	1.669	1.728
63	63.0000	54.5596	65.07	64.20	62.03	1.610	1.634	1.670	1.729
64	64.0000	55.4256	66.07	65.20	63.03	1.610	1.634	1.670	1.729
65	65.0000	56.2917	67.08	66.20	64.03	1.611	1.634	1.670	1.730
66	66.0000	57.1577	68.08	67.20	65.03	1.611	1.635	1.670	1.730
67	67.0000	58.0237	69.08	68.20	66.03	1.611	1.635	1.671	1.731
68	68.0000	58.8897	70.08	69.20	67.03	1.611	1.635	1.671	1.731
69	69.0000	59.7558	71.08	70.20	68.03	1.611	1.635	1.671	1.731
70	70.0000	60.6218	72.08	71.20	69.03	1.611	1.635	1.671	1.732
71	71.0000	61.4878	73.08	72.20	70.03	1.611	1.635	1.672	1.732
72	72.0000	62.3538	74.08	73.20	71.03	1.611	1.635	1.672	1.733
73	73.0000	63.2199	75.08	74.20	72.03	1.611	1.636	1.672	1.733
74	74.0000	64.0859	76.08	75.20	73.03	1.611	1.636	1.672	1.733
75	75.0000	64.9519	77.08	76.20	74.03	1.612	1.636	1.673	1.734
76	76.0000	65.8179	78.08	77.20	75.03	1.612	1.636	1.673	1.734
77	77.0000	66.6840	79.08	78.20	76.03	1.612	1.636	1.673	1.734
78	78.0000	67.5500	80.08	79.20	77.03	1.612	1.636	1.673	1.735
79	79.0000	68.4160	81.08	80.20	78.03	1.612	1.637	1.674	1.735
80	80.0000	69.2820	82.09	81.20	79.03	1.612	1.637	1.674	1.736
81	81.0000	70.1481	83.09	82.20	80.03	1.612	1.637	1.674	1.736
82	82.0000	71.0141	84.09	83.20	81.03	1.612	1.637	1.674	1.736
83	83.0000	71.8801	85.09	84.20	82.03	1.612	1.637	1.674	1.737
84	84.0000	72.7461	86.09	85.20	83.03	1.612	1.637	1.675	1.737
85	85.0000	73.6122	87.09	86.20	84.03	1.612	1.637	1.675	1.737
86	86.0000	74.4782	88.09	87.20	85.03	1.613	1.638	1.675	1.738
87	87.0000	75.3442	89.09	88.20	86.03	1.613	1.638	1.675	1.738
88	88.0000	76.2102	90.09	89.20	87.02	1.613	1.638	1.676	1.738
89	89.0000	77.0763	91.09	90.20	88.02	1.613	1.638	1.676	1.739
90	90.0000	77.9423	92.09	91.20	89.02	1.613	1.638	1.676	1.739
91	91.0000	78.8083	93.09	92.20	90.02	1.613	1.638	1.676	1.739
92	92.0000	79.6743	94.09	93.20	91.02	1.613	1.638	1.676	1.740
93	93.0000	80.5404	95.09	94.20	92.02	1.613	1.638	1.677	1.740
94	94.0000	81.4064	96.09	95.20	93.02	1.613	1.639	1.677	1.740
95	95.0000	82.2724	97.09	96.20	94.02	1.613	1.639	1.677	1.741
96	96.0000	83.1384	98.09	97.20	95.02	1.613	1.639	1.677	1.741
97	97.0000	84.0045	99.10	98.20	96.02	1.613	1.639	1.677	1.741
98	98.0000	84.8705	100.10	99.20	97.02	1.614	1.639	1.678	1.742
99	99.0000	85.7365	101.10	100.20	98.02	1.614	1.639	1.678	1.742
100	100.0000	86.6025	102.10	101.20	99.02	1.614	1.639	1.678	1.742

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Table 66 — External spline

30 degree pressure angle — Side fit — Fillet root — Module = 1.00

S_{vmax} = maximum effective tooth thickness, circular = 1.571

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	6.0000	5.1962	7.00	5.23	4.00	1.542	1.524	1.498	1.454
7	7.0000	6.0622	8.00	6.16	4.95	1.541	1.523	1.497	1.452
8	8.0000	6.9282	9.00	7.11	5.95	1.541	1.523	1.496	1.451
9	9.0000	7.7942	10.00	8.07	6.99	1.540	1.522	1.495	1.449
10	10.0000	8.6603	11.00	9.04	7.99	1.540	1.522	1.494	1.448
11	11.0000	9.5263	12.00	10.02	8.98	1.540	1.521	1.493	1.446
12	12.0000	10.3923	13.00	11.00	9.98	1.539	1.521	1.492	1.445
13	13.0000	11.2583	14.00	11.98	10.98	1.539	1.520	1.492	1.444
14	14.0000	12.1244	15.00	12.97	11.98	1.539	1.520	1.491	1.443
15	15.0000	12.9904	16.00	13.96	12.98	1.539	1.519	1.490	1.442
16	16.0000	13.8564	17.00	14.95	13.97	1.538	1.519	1.490	1.441
17	17.0000	14.7224	18.00	15.94	14.97	1.538	1.518	1.489	1.440
18	18.0000	15.5885	19.00	16.93	15.97	1.538	1.518	1.488	1.439
19	19.0000	16.4545	20.00	17.92	16.97	1.538	1.518	1.488	1.438
20	20.0000	17.3205	21.00	18.91	17.97	1.537	1.517	1.487	1.437
21	21.0000	18.1865	22.00	19.91	18.97	1.537	1.517	1.487	1.436
22	22.0000	19.0526	23.00	20.90	19.97	1.537	1.517	1.486	1.436
23	23.0000	19.9186	24.00	21.90	20.96	1.537	1.516	1.486	1.435
24	24.0000	20.7846	25.00	22.89	21.96	1.537	1.516	1.485	1.434
25	25.0000	21.6506	26.00	23.89	22.96	1.536	1.516	1.485	1.433
26	26.0000	22.5167	27.00	24.89	23.96	1.536	1.515	1.484	1.432
27	27.0000	23.3827	28.00	25.88	24.96	1.536	1.515	1.484	1.432
28	28.0000	24.2487	29.00	26.88	25.96	1.536	1.515	1.483	1.431
29	29.0000	25.1147	30.00	27.88	26.96	1.536	1.515	1.483	1.430
30	30.0000	25.9808	31.00	28.87	27.96	1.536	1.514	1.483	1.430
31	31.0000	26.8468	32.00	29.87	28.95	1.535	1.514	1.482	1.429
32	32.0000	27.7128	33.00	30.87	29.95	1.535	1.514	1.482	1.428
33	33.0000	28.5788	34.00	31.87	30.95	1.535	1.514	1.481	1.428
34	34.0000	29.4449	35.00	32.87	31.95	1.535	1.513	1.481	1.427
35	35.0000	30.3109	36.00	33.86	32.95	1.535	1.513	1.481	1.427
36	36.0000	31.1769	37.00	34.86	33.95	1.535	1.513	1.480	1.426
37	37.0000	32.0429	38.00	35.86	34.95	1.534	1.513	1.480	1.425
38	38.0000	32.9090	39.00	36.86	35.95	1.534	1.512	1.480	1.425
39	39.0000	33.7750	40.00	37.86	36.95	1.534	1.512	1.479	1.424
40	40.0000	34.6410	41.00	38.86	37.95	1.534	1.512	1.479	1.424
41	41.0000	35.5070	42.00	39.85	38.94	1.534	1.512	1.479	1.423
42	42.0000	36.3731	43.00	40.85	39.94	1.534	1.512	1.478	1.423
43	43.0000	37.2391	44.00	41.85	40.94	1.534	1.511	1.478	1.422
44	44.0000	38.1051	45.00	42.85	41.94	1.533	1.511	1.478	1.422
45	45.0000	38.9711	46.00	43.85	42.94	1.533	1.511	1.477	1.421
46	46.0000	39.8372	47.00	44.85	43.94	1.533	1.511	1.477	1.421
47	47.0000	40.7032	48.00	45.85	44.94	1.533	1.510	1.477	1.420
48	48.0000	41.5692	49.00	46.85	45.94	1.533	1.510	1.476	1.420
49	49.0000	42.4352	50.00	47.85	46.94	1.533	1.510	1.476	1.419
50	50.0000	43.3013	51.00	48.84	47.94	1.533	1.510	1.476	1.419
51	51.0000	44.1673	52.00	49.84	48.94	1.533	1.510	1.475	1.418
52	52.0000	45.0333	53.00	50.84	49.93	1.532	1.510	1.475	1.418
53	53.0000	45.8993	54.00	51.84	50.93	1.532	1.509	1.475	1.417
54	54.0000	46.7654	55.00	52.84	51.93	1.532	1.509	1.474	1.417
55	55.0000	47.6314	56.00	53.84	52.93	1.532	1.509	1.474	1.416
56	56.0000	48.4974	57.00	54.84	53.93	1.532	1.509	1.474	1.416
57	57.0000	49.3635	58.00	55.84	54.93	1.532	1.509	1.474	1.415
58	58.0000	50.2295	59.00	56.84	55.93	1.532	1.508	1.473	1.415
59	59.0000	51.0955	60.00	57.84	56.93	1.532	1.508	1.473	1.414
60	60.0000	51.9615	61.00	58.84	57.93	1.532	1.508	1.473	1.414
61	61.0000	52.8276	62.00	59.84	58.93	1.531	1.508	1.473	1.414
62	62.0000	53.6936	63.00	60.84	59.93	1.531	1.508	1.472	1.413
63	63.0000	54.5596	64.00	61.83	60.93	1.531	1.508	1.472	1.413
64	64.0000	55.4256	65.00	62.83	61.93	1.531	1.507	1.472	1.412
65	65.0000	56.2917	66.00	63.83	62.92	1.531	1.507	1.471	1.412
66	66.0000	57.1577	67.00	64.83	63.92	1.531	1.507	1.471	1.411
67	67.0000	58.0237	68.00	65.83	64.92	1.531	1.507	1.471	1.411
68	68.0000	58.8897	69.00	66.83	65.92	1.531	1.507	1.471	1.411
69	69.0000	59.7558	70.00	67.83	66.92	1.531	1.507	1.470	1.410
70	70.0000	60.6218	71.00	68.83	67.92	1.531	1.506	1.470	1.410
71	71.0000	61.4878	72.00	69.83	68.92	1.530	1.506	1.470	1.409
72	72.0000	62.3538	73.00	70.83	69.92	1.530	1.506	1.470	1.409
73	73.0000	63.2199	74.00	71.83	70.92	1.530	1.506	1.469	1.409
74	74.0000	64.0859	75.00	72.83	71.92	1.530	1.506	1.469	1.408
75	75.0000	64.9519	76.00	73.83	72.92	1.530	1.506	1.469	1.408
76	76.0000	65.8179	77.00	74.83	73.92	1.530	1.506	1.469	1.408
77	77.0000	66.6840	78.00	75.83	74.92	1.530	1.505	1.469	1.407
78	78.0000	67.5500	79.00	76.83	75.92	1.530	1.505	1.468	1.407
79	79.0000	68.4160	80.00	77.83	76.92	1.530	1.505	1.468	1.406
80	80.0000	69.2820	81.00	78.83	77.91	1.530	1.505	1.468	1.406
81	81.0000	70.1481	82.00	79.83	78.91	1.530	1.505	1.468	1.406
82	82.0000	71.0141	83.00	80.83	79.91	1.529	1.505	1.467	1.405
83	83.0000	71.8801	84.00	81.83	80.91	1.529	1.504	1.467	1.405
84	84.0000	72.7461	85.00	82.83	81.91	1.529	1.504	1.467	1.405
85	85.0000	73.6122	86.00	83.83	82.91	1.529	1.504	1.467	1.404
86	86.0000	74.4782	87.00	84.83	83.91	1.529	1.504	1.467	1.404
87	87.0000	75.3442	88.00	85.83	84.91	1.529	1.504	1.466	1.404
88	88.0000	76.2102	89.00	86.82	85.91	1.529	1.504	1.466	1.403
89	89.0000	77.0763	90.00	87.82	86.91	1.529	1.504	1.466	1.403
90	90.0000	77.9423	91.00	88.82	87.91	1.529	1.504	1.466	1.403
91	91.0000	78.8083	92.00	89.82	88.91	1.529	1.503	1.465	1.402
92	92.0000	79.6743	93.00	90.82	89.91	1.529	1.503	1.465	1.402
93	93.0000	80.5404	94.00	91.82	90.91	1.528	1.503	1.465	1.402
94	94.0000	81.4064	95.00	92.82	91.91	1.528	1.503	1.465	1.401
95	95.0000	82.2724	96.00	93.82	92.91	1.528	1.503	1.465	1.401
96	96.0000	83.1384	97.00	94.82	93.91	1.528	1.503	1.464	1.401
97	97.0000	84.0045	98.00	95.82	94.90	1.528	1.503	1.464	1.400
98	98.0000	84.8705	99.00	96.82	95.90	1.528	1.502	1.464	1.400
99	99.0000	85.7365	100.00	97.82	96.90	1.528	1.502	1.464	1.400
100	100.0000	86.6025	101.00	98.82	97.90	1.528	1.502	1.464	1.399

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Table 67 — Internal spline

30 degree pressure angle — Side fit — Fillet root — Module = 0.75

E_{vmin} = minimum effective space width, circular = 1.178

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	4.5000	3.8971	6.03	5.40	4.07	1.205	1.221	1.244	1.284
7	5.2500	4.5466	6.79	6.15	4.77	1.205	1.221	1.245	1.286
8	6.0000	5.1962	7.54	6.90	5.48	1.205	1.222	1.246	1.287
9	6.7500	5.8457	8.29	7.65	6.20	1.206	1.222	1.247	1.289
10	7.5000	6.4952	9.04	8.40	6.93	1.206	1.223	1.248	1.290
11	8.2500	7.1447	9.80	9.15	7.66	1.206	1.223	1.249	1.291
12	9.0000	7.7942	10.55	9.90	8.40	1.207	1.224	1.249	1.292
13	9.7500	8.4437	11.30	10.65	9.14	1.207	1.224	1.250	1.293
14	10.5000	9.0933	12.05	11.40	9.88	1.207	1.225	1.251	1.294
15	11.2500	9.7428	12.80	12.15	10.62	1.207	1.225	1.251	1.295
16	12.0000	10.3923	13.55	12.90	11.36	1.208	1.225	1.252	1.296
17	12.7500	11.0418	14.31	13.65	12.10	1.208	1.226	1.252	1.297
18	13.5000	11.6913	15.06	14.40	12.85	1.208	1.226	1.253	1.298
19	14.2500	12.3409	15.81	15.15	13.59	1.208	1.226	1.253	1.299
20	15.0000	12.9904	16.56	15.90	14.34	1.208	1.227	1.254	1.299
21	15.7500	13.6399	17.31	16.65	15.08	1.209	1.227	1.254	1.300
22	16.5000	14.2894	18.06	17.40	15.83	1.209	1.227	1.255	1.301
23	17.2500	14.9389	18.81	18.15	16.57	1.209	1.227	1.255	1.302
24	18.0000	15.5885	19.56	18.90	17.32	1.209	1.228	1.256	1.302
25	18.7500	16.2380	20.32	19.65	18.07	1.209	1.228	1.256	1.303
26	19.5000	16.8875	21.07	20.40	18.82	1.209	1.228	1.257	1.304
27	20.2500	17.5370	21.82	21.15	19.56	1.210	1.229	1.257	1.304
28	21.0000	18.1865	22.57	21.90	20.31	1.210	1.229	1.257	1.305
29	21.7500	18.8361	23.32	22.65	21.06	1.210	1.229	1.258	1.305
30	22.5000	19.4856	24.07	23.40	21.81	1.210	1.229	1.258	1.306
31	23.2500	20.1351	24.82	24.15	22.55	1.210	1.230	1.258	1.307
32	24.0000	20.7846	25.57	24.90	23.30	1.210	1.230	1.259	1.307
33	24.7500	21.4341	26.32	25.65	24.05	1.211	1.230	1.259	1.308
34	25.5000	22.0836	27.08	26.40	24.80	1.211	1.230	1.259	1.308
35	26.2500	22.7332	27.83	27.15	25.55	1.211	1.230	1.260	1.309
36	27.0000	23.3827	28.58	27.90	26.30	1.211	1.231	1.260	1.309
37	27.7500	24.0322	29.33	28.65	27.05	1.211	1.231	1.260	1.310
38	28.5000	24.6817	30.08	29.40	27.79	1.211	1.231	1.261	1.310
39	29.2500	25.3312	30.83	30.15	28.54	1.211	1.231	1.261	1.311
40	30.0000	25.9808	31.58	30.90	29.29	1.211	1.231	1.261	1.311
41	30.7500	26.6303	32.33	31.65	30.04	1.212	1.232	1.262	1.312
42	31.5000	27.2798	33.08	32.40	30.79	1.212	1.232	1.262	1.312
43	32.2500	27.9293	33.83	33.15	31.54	1.212	1.232	1.262	1.313
44	33.0000	28.5788	34.58	33.90	32.29	1.212	1.232	1.263	1.313
45	33.7500	29.2284	35.34	34.65	33.04	1.212	1.232	1.263	1.314
46	34.5000	29.8779	36.09	35.40	33.79	1.212	1.233	1.263	1.314
47	35.2500	30.5274	36.84	36.15	34.54	1.212	1.233	1.264	1.315
48	36.0000	31.1769	37.59	36.90	35.28	1.212	1.233	1.264	1.315
49	36.7500	31.8264	38.34	37.65	36.03	1.212	1.233	1.264	1.316
50	37.5000	32.4760	39.09	38.40	36.78	1.213	1.233	1.264	1.316
51	38.2500	33.1255	39.84	39.15	37.53	1.213	1.233	1.265	1.317
52	39.0000	33.7750	40.59	39.90	38.28	1.213	1.234	1.265	1.317
53	39.7500	34.4245	41.34	40.65	39.03	1.213	1.234	1.265	1.317
54	40.5000	35.0740	42.09	41.40	39.78	1.213	1.234	1.265	1.318
55	41.2500	35.7236	42.84	42.15	40.53	1.213	1.234	1.266	1.318
56	42.0000	36.3731	43.59	42.90	41.28	1.213	1.234	1.266	1.319
57	42.7500	37.0226	44.34	43.65	42.03	1.213	1.234	1.266	1.319
58	43.5000	37.6721	45.09	44.40	42.78	1.213	1.235	1.266	1.319
59	44.2500	38.3216	45.85	45.15	43.53	1.214	1.235	1.267	1.320
60	45.0000	38.9711	46.60	45.90	44.28	1.214	1.235	1.267	1.320
61	45.7500	39.6207	47.35	46.65	45.03	1.214	1.235	1.267	1.321
62	46.5000	40.2702	48.10	47.40	45.78	1.214	1.235	1.267	1.321
63	47.2500	40.9197	48.85	48.15	46.53	1.214	1.235	1.268	1.321
64	48.0000	41.5692	49.60	48.90	47.28	1.214	1.236	1.268	1.322
65	48.7500	42.2187	50.35	49.65	48.03	1.214	1.236	1.268	1.322
66	49.5000	42.8683	51.10	50.40	48.77	1.214	1.236	1.268	1.322
67	50.2500	43.5178	51.85	51.15	49.52	1.214	1.236	1.269	1.323
68	51.0000	44.1673	52.60	51.90	50.27	1.214	1.236	1.269	1.323
69	51.7500	44.8168	53.35	52.65	51.02	1.214	1.236	1.269	1.323
70	52.5000	45.4663	54.10	53.40	51.77	1.215	1.236	1.269	1.324
71	53.2500	46.1159	54.85	54.15	52.52	1.215	1.237	1.269	1.324
72	54.0000	46.7654	55.60	54.90	53.27	1.215	1.237	1.270	1.325
73	54.7500	47.4149	56.35	55.65	54.02	1.215	1.237	1.270	1.325
74	55.5000	48.0644	57.10	56.40	54.77	1.215	1.237	1.270	1.325
75	56.2500	48.7139	57.86	57.15	55.52	1.215	1.237	1.270	1.326
76	57.0000	49.3635	58.61	57.90	56.27	1.215	1.237	1.270	1.326
77	57.7500	50.0130	59.36	58.65	57.02	1.215	1.237	1.271	1.326
78	58.5000	50.6625	60.11	59.40	57.77	1.215	1.237	1.271	1.327
79	59.2500	51.3120	60.86	60.15	58.52	1.215	1.238	1.271	1.327
80	60.0000	51.9615	61.61	60.90	59.27	1.215	1.238	1.271	1.327
81	60.7500	52.6110	62.36	61.65	60.02	1.215	1.238	1.271	1.328
82	61.5000	53.2606	63.11	62.40	60.77	1.216	1.238	1.272	1.328
83	62.2500	53.9101	63.86	63.15	61.52	1.216	1.238	1.272	1.328
84	63.0000	54.5596	64.61	63.90	62.27	1.216	1.238	1.272	1.328
85	63.7500	55.2091	65.36	64.65	63.02	1.216	1.238	1.272	1.329
86	64.5000	55.8586	66.11	65.40	63.77	1.216	1.238	1.272	1.329
87	65.2500	56.5082	66.86	66.15	64.52	1.216	1.239	1.273	1.329
88	66.0000	57.1577	67.61	66.90	65.27	1.216	1.239	1.273	1.330
89	66.7500	57.8072	68.36	67.65	66.02	1.216	1.239	1.273	1.330
90	67.5000	58.4567	69.11	68.40	66.77	1.216	1.239	1.273	1.330
91	68.2500	59.1062	69.86	69.15	67.52	1.216	1.239	1.273	1.331
92	69.0000	59.7558	70.61	69.90	68.27	1.216	1.239	1.274	1.331
93	69.7500	60.4053	71.37	70.65	69.02	1.216	1.239	1.274	1.331
94	70.5000	61.0548	72.12	71.40	69.77	1.216	1.239	1.274	1.332
95	71.2500	61.7043	72.87	72.15	70.52	1.217	1.240	1.274	1.332
96	72.0000	62.3538	73.62	72.90	71.27	1.217	1.240	1.274	1.332
97	72.7500	63.0034	74.37	73.65	72.02	1.217	1.240	1.275	1.332
98	73.5000	63.6529	75.12	74.40	72.77	1.217	1.240	1.275	1.333
99	74.2500	64.3024	75.87	75.15	73.52	1.217	1.240	1.275	1.333
100	75.0000	64.9519	76.62	75.90	74.27	1.217	1.240	1.275	1.333

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Table 68 — External spline

30 degree pressure angle — Side fit — Fillet root — Module = 0.75

S_{vmax} = maximum effective tooth thickness, circular = 1.178

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	4.5000	3.8971	5.25	3.92	2.97	1.152	1.136	1.112	1.072
7	5.2500	4.5466	6.00	4.62	3.71	1.151	1.135	1.111	1.070
8	6.0000	5.1962	6.75	5.33	4.46	1.151	1.134	1.110	1.069
9	6.7500	5.8457	7.50	6.05	5.21	1.150	1.134	1.109	1.068
10	7.5000	6.4952	8.25	6.78	5.96	1.150	1.133	1.108	1.066
11	8.2500	7.1447	9.00	7.51	6.70	1.150	1.133	1.108	1.065
12	9.0000	7.7942	9.75	8.25	7.45	1.150	1.132	1.107	1.064
13	9.7500	8.4437	10.50	8.99	8.20	1.149	1.132	1.106	1.063
14	10.5000	9.0933	11.25	9.73	8.95	1.149	1.132	1.106	1.062
15	11.2500	9.7428	12.00	10.47	9.70	1.149	1.131	1.105	1.061
16	12.0000	10.3923	12.75	11.21	10.45	1.149	1.131	1.104	1.060
17	12.7500	11.0418	13.50	11.95	11.19	1.148	1.131	1.104	1.059
18	13.5000	11.6913	14.25	12.70	11.94	1.148	1.130	1.103	1.058
19	14.2500	12.3409	15.00	13.44	12.69	1.148	1.130	1.103	1.058
20	15.0000	12.9904	15.75	14.19	13.44	1.148	1.130	1.102	1.057
21	15.7500	13.6399	16.50	14.93	14.19	1.148	1.129	1.102	1.056
22	16.5000	14.2894	17.25	15.68	14.94	1.147	1.129	1.101	1.055
23	17.2500	14.9389	18.00	16.42	15.69	1.147	1.129	1.101	1.055
24	18.0000	15.5885	18.75	17.17	16.44	1.147	1.128	1.101	1.054
25	18.7500	16.2380	19.50	17.92	17.18	1.147	1.128	1.100	1.053
26	19.5000	16.8875	20.25	18.67	17.93	1.147	1.128	1.100	1.053
27	20.2500	17.5370	21.00	19.41	18.68	1.147	1.128	1.099	1.052
28	21.0000	18.1865	21.75	20.16	19.43	1.146	1.127	1.099	1.051
29	21.7500	18.8361	22.50	20.91	20.18	1.146	1.127	1.099	1.051
30	22.5000	19.4856	23.25	21.66	20.93	1.146	1.127	1.098	1.050
31	23.2500	20.1351	24.00	22.40	21.68	1.146	1.127	1.098	1.050
32	24.0000	20.7846	24.75	23.15	22.43	1.146	1.126	1.097	1.049
33	24.7500	21.4341	25.50	23.90	23.18	1.146	1.126	1.097	1.048
34	25.5000	22.0836	26.25	24.65	23.92	1.146	1.126	1.097	1.048
35	26.2500	22.7332	27.00	25.40	24.67	1.145	1.126	1.096	1.047
36	27.0000	23.3827	27.75	26.15	25.42	1.145	1.126	1.096	1.047
37	27.7500	24.0322	28.50	26.90	26.17	1.145	1.125	1.096	1.046
38	28.5000	24.6817	29.25	27.64	26.92	1.145	1.125	1.095	1.046
39	29.2500	25.3312	30.00	28.39	27.67	1.145	1.125	1.095	1.045
40	30.0000	25.9808	30.75	29.14	28.42	1.145	1.125	1.095	1.045
41	30.7500	26.6303	31.50	29.89	29.17	1.145	1.125	1.094	1.044
42	31.5000	27.2798	32.25	30.64	29.92	1.145	1.124	1.094	1.044
43	32.2500	27.9293	33.00	31.39	30.67	1.144	1.124	1.094	1.043
44	33.0000	28.5788	33.75	32.14	31.42	1.144	1.124	1.094	1.043
45	33.7500	29.2284	34.50	32.89	32.16	1.144	1.124	1.093	1.042
46	34.5000	29.8779	35.25	33.64	32.91	1.144	1.124	1.093	1.042
47	35.2500	30.5274	36.00	34.39	33.66	1.144	1.123	1.093	1.041
48	36.0000	31.1769	36.75	35.13	34.41	1.144	1.123	1.092	1.041
49	36.7500	31.8264	37.50	35.88	35.16	1.144	1.123	1.092	1.041
50	37.5000	32.4760	38.25	36.63	35.91	1.144	1.123	1.092	1.040
51	38.2500	33.1255	39.00	37.38	36.66	1.143	1.123	1.092	1.040
52	39.0000	33.7750	39.75	38.13	37.41	1.143	1.123	1.091	1.039
53	39.7500	34.4245	40.50	38.88	38.16	1.143	1.122	1.091	1.039
54	40.5000	35.0740	41.25	39.63	38.91	1.143	1.122	1.091	1.038
55	41.2500	35.7236	42.00	40.38	39.66	1.143	1.122	1.091	1.038
56	42.0000	36.3731	42.75	41.13	40.41	1.143	1.122	1.090	1.038
57	42.7500	37.0226	43.50	41.88	41.16	1.143	1.122	1.090	1.037
58	43.5000	37.6721	44.25	42.63	41.91	1.143	1.122	1.090	1.037
59	44.2500	38.3216	45.00	43.38	42.65	1.143	1.121	1.090	1.036
60	45.0000	38.9711	45.75	44.13	43.40	1.143	1.121	1.089	1.036
61	45.7500	39.6207	46.50	44.88	44.15	1.142	1.121	1.089	1.036
62	46.5000	40.2702	47.25	45.63	44.90	1.142	1.121	1.089	1.035
63	47.2500	40.9197	48.00	46.38	45.65	1.142	1.121	1.089	1.035
64	48.0000	41.5692	48.75	47.13	46.40	1.142	1.121	1.088	1.035
65	48.7500	42.2187	49.50	47.88	47.15	1.142	1.121	1.088	1.034
66	49.5000	42.8683	50.25	48.62	47.90	1.142	1.120	1.088	1.034
67	50.2500	43.5178	51.00	49.37	48.65	1.142	1.120	1.088	1.033
68	51.0000	44.1673	51.75	50.12	49.40	1.142	1.120	1.087	1.033
69	51.7500	44.8168	52.50	50.87	50.15	1.142	1.120	1.087	1.033
70	52.5000	45.4663	53.25	51.62	50.90	1.142	1.120	1.087	1.032
71	53.2500	46.1159	54.00	52.37	51.65	1.142	1.120	1.087	1.032
72	54.0000	46.7654	54.75	53.12	52.40	1.141	1.120	1.087	1.032
73	54.7500	47.4149	55.50	53.87	53.15	1.141	1.119	1.086	1.031
74	55.5000	48.0644	56.25	54.62	53.90	1.141	1.119	1.086	1.031
75	56.2500	48.7139	57.00	55.37	54.64	1.141	1.119	1.086	1.031
76	57.0000	49.3635	57.75	56.12	55.39	1.141	1.119	1.086	1.030
77	57.7500	50.0130	58.50	56.87	56.14	1.141	1.119	1.086	1.030
78	58.5000	50.6625	59.25	57.62	56.89	1.141	1.119	1.085	1.030
79	59.2500	51.3120	60.00	58.37	57.64	1.141	1.119	1.085	1.029
80	60.0000	51.9615	60.75	59.12	58.39	1.141	1.118	1.085	1.029
81	60.7500	52.6110	61.50	59.87	59.14	1.141	1.118	1.085	1.029
82	61.5000	53.2606	62.25	60.62	59.89	1.141	1.118	1.085	1.028
83	62.2500	53.9101	63.00	61.37	60.64	1.141	1.118	1.084	1.028
84	63.0000	54.5596	63.75	62.12	61.39	1.141	1.118	1.084	1.028
85	63.7500	55.2091	64.50	62.87	62.14	1.140	1.118	1.084	1.027
86	64.5000	55.8586	65.25	63.62	62.89	1.140	1.118	1.084	1.027
87	65.2500	56.5082	66.00	64.37	63.64	1.140	1.118	1.084	1.027
88	66.0000	57.1577	66.75	65.12	64.39	1.140	1.117	1.083	1.026
89	66.7500	57.8072	67.50	65.87	65.14	1.140	1.117	1.083	1.026
90	67.5000	58.4567	68.25	66.62	65.89	1.140	1.117	1.083	1.026
91	68.2500	59.1062	69.00	67.37	66.64	1.140	1.117	1.083	1.026
92	69.0000	59.7558	69.75	68.12	67.39	1.140	1.117	1.083	1.025
93	69.7500	60.4053	70.50	68.87	68.13	1.140	1.117	1.082	1.025
94	70.5000	61.0548	71.25	69.62	68.88	1.140	1.117	1.082	1.025
95	71.2500	61.7043	72.00	70.37	69.63	1.140	1.117	1.082	1.024
96	72.0000	62.3538	72.75	71.12	70.38	1.140	1.116	1.082	1.024
97	72.7500	63.0034	73.50	71.87	71.13	1.140	1.116	1.082	1.024
98	73.5000	63.6529	74.25	72.62	71.88	1.139	1.116	1.081	1.024
99	74.2500	64.3024	75.00	73.37	72.63	1.139	1.116	1.081	1.023
100	75.0000	64.9519	75.75	74.12	73.38	1.139	1.116	1.081	1.023

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Table 69 — Internal spline

30 degree pressure angle — Side fit — Fillet root — Module = 0.50

E_{vmin} = minimum effective space width, circular = 0.785

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	3.0000	2.5981	4.06	3.60	2.72	0.809	0.822	0.843	0.878
7	3.5000	3.0311	4.56	4.10	3.18	0.809	0.823	0.844	0.879
8	4.0000	3.4641	5.07	4.60	3.66	0.809	0.824	0.845	0.881
9	4.5000	3.8971	5.57	5.10	4.14	0.810	0.824	0.846	0.882
10	5.0000	4.3301	6.07	5.60	4.62	0.810	0.824	0.846	0.883
11	5.5000	4.7631	6.57	6.10	5.11	0.810	0.825	0.847	0.884
12	6.0000	5.1962	7.07	6.60	5.60	0.810	0.825	0.848	0.885
13	6.5000	5.6292	7.57	7.10	6.09	0.811	0.826	0.848	0.886
14	7.0000	6.0622	8.08	7.60	6.58	0.811	0.826	0.849	0.887
15	7.5000	6.4952	8.58	8.10	7.08	0.811	0.826	0.849	0.887
16	8.0000	6.9282	9.08	8.60	7.57	0.811	0.827	0.850	0.888
17	8.5000	7.3612	9.58	9.10	8.07	0.811	0.827	0.850	0.889
18	9.0000	7.7942	10.08	9.60	8.56	0.811	0.827	0.851	0.890
19	9.5000	8.2272	10.58	10.10	9.06	0.812	0.827	0.851	0.890
20	10.0000	8.6603	11.08	10.60	9.56	0.812	0.828	0.851	0.891
21	10.5000	9.0933	11.58	11.10	10.05	0.812	0.828	0.852	0.892
22	11.0000	9.5263	12.09	11.60	10.55	0.812	0.828	0.852	0.892
23	11.5000	9.9593	12.59	12.10	11.05	0.812	0.828	0.853	0.893
24	12.0000	10.3923	13.09	12.60	11.55	0.812	0.829	0.853	0.894
25	12.5000	10.8253	13.59	13.10	12.05	0.813	0.829	0.853	0.894
26	13.0000	11.2583	14.09	13.60	12.54	0.813	0.829	0.854	0.895
27	13.5000	11.6913	14.59	14.10	13.04	0.813	0.829	0.854	0.895
28	14.0000	12.1244	15.09	14.60	13.54	0.813	0.830	0.854	0.896
29	14.5000	12.5574	15.59	15.10	14.04	0.813	0.830	0.855	0.896
30	15.0000	12.9904	16.09	15.60	14.54	0.813	0.830	0.855	0.897
31	15.5000	13.4234	16.59	16.10	15.04	0.813	0.830	0.855	0.897
32	16.0000	13.8564	17.09	16.60	15.54	0.814	0.830	0.856	0.898
33	16.5000	14.2894	17.60	17.10	16.03	0.814	0.831	0.856	0.898
34	17.0000	14.7224	18.10	17.60	16.53	0.814	0.831	0.856	0.899
35	17.5000	15.1554	18.60	18.10	17.03	0.814	0.831	0.857	0.899
36	18.0000	15.5885	19.10	18.60	17.53	0.814	0.831	0.857	0.900
37	18.5000	16.0215	19.60	19.10	18.03	0.814	0.831	0.857	0.900
38	19.0000	16.4545	20.10	19.60	18.53	0.814	0.832	0.857	0.901
39	19.5000	16.8875	20.60	20.10	19.03	0.814	0.832	0.858	0.901
40	20.0000	17.3205	21.10	20.60	19.53	0.814	0.832	0.858	0.902
41	20.5000	17.7535	21.60	21.10	20.03	0.815	0.832	0.858	0.902
42	21.0000	18.1865	22.10	21.60	20.53	0.815	0.832	0.859	0.902
43	21.5000	18.6195	22.60	22.10	21.03	0.815	0.832	0.859	0.903
44	22.0000	19.0526	23.10	22.60	21.53	0.815	0.833	0.859	0.903
45	22.5000	19.4856	23.60	23.10	22.02	0.815	0.833	0.859	0.904
46	23.0000	19.9186	24.11	23.60	22.52	0.815	0.833	0.860	0.904
47	23.5000	20.3516	24.61	24.10	23.02	0.815	0.833	0.860	0.904
48	24.0000	20.7846	25.11	24.60	23.52	0.815	0.833	0.860	0.905
49	24.5000	21.2176	25.61	25.10	24.02	0.815	0.833	0.860	0.905
50	25.0000	21.6506	26.11	25.60	24.52	0.815	0.833	0.861	0.906
51	25.5000	22.0836	26.61	26.10	25.02	0.816	0.834	0.861	0.906
52	26.0000	22.5167	27.11	26.60	25.52	0.816	0.834	0.861	0.906
53	26.5000	22.9497	27.61	27.10	26.02	0.816	0.834	0.861	0.907
54	27.0000	23.3827	28.11	27.60	26.52	0.816	0.834	0.861	0.907
55	27.5000	23.8157	28.61	28.10	27.02	0.816	0.834	0.862	0.907
56	28.0000	24.2487	29.11	28.60	27.52	0.816	0.834	0.862	0.908
57	28.5000	24.6817	29.61	29.10	28.02	0.816	0.834	0.862	0.908
58	29.0000	25.1147	30.11	29.60	28.52	0.816	0.835	0.862	0.908
59	29.5000	25.5478	30.61	30.10	29.02	0.816	0.835	0.862	0.909
60	30.0000	25.9808	31.11	30.60	29.52	0.816	0.835	0.863	0.909
61	30.5000	26.4138	31.61	31.10	30.02	0.816	0.835	0.863	0.909
62	31.0000	26.8468	32.12	31.60	30.52	0.816	0.835	0.863	0.910
63	31.5000	27.2798	32.62	32.10	31.02	0.817	0.835	0.863	0.910
64	32.0000	27.7128	33.12	32.60	31.52	0.817	0.835	0.864	0.910
65	32.5000	28.1458	33.62	33.10	32.02	0.817	0.836	0.864	0.911
66	33.0000	28.5788	34.12	33.60	32.52	0.817	0.836	0.864	0.911
67	33.5000	29.0119	34.62	34.10	33.02	0.817	0.836	0.864	0.911
68	34.0000	29.4449	35.12	34.60	33.52	0.817	0.836	0.864	0.912
69	34.5000	29.8779	35.62	35.10	34.02	0.817	0.836	0.864	0.912
70	35.0000	30.3109	36.12	35.60	34.52	0.817	0.836	0.865	0.912
71	35.5000	30.7439	36.62	36.10	35.02	0.817	0.836	0.865	0.913
72	36.0000	31.1769	37.12	36.60	35.52	0.817	0.836	0.865	0.913
73	36.5000	31.6099	37.62	37.10	36.02	0.817	0.836	0.865	0.913
74	37.0000	32.0429	38.12	37.60	36.51	0.817	0.837	0.865	0.913
75	37.5000	32.4760	38.62	38.10	37.01	0.817	0.837	0.866	0.914
76	38.0000	32.9090	39.12	38.60	37.51	0.818	0.837	0.866	0.914
77	38.5000	33.3420	39.62	39.10	38.01	0.818	0.837	0.866	0.914
78	39.0000	33.7750	40.12	39.60	38.51	0.818	0.837	0.866	0.915
79	39.5000	34.2080	40.62	40.10	39.01	0.818	0.837	0.866	0.915
80	40.0000	34.6410	41.12	40.60	39.51	0.818	0.837	0.866	0.915
81	40.5000	35.0740	41.63	41.10	40.01	0.818	0.837	0.867	0.915
82	41.0000	35.5070	42.13	41.60	40.51	0.818	0.838	0.867	0.916
83	41.5000	35.9401	42.63	42.10	41.01	0.818	0.838	0.867	0.916
84	42.0000	36.3731	43.13	42.60	41.51	0.818	0.838	0.867	0.916
85	42.5000	36.8061	43.63	43.10	42.01	0.818	0.838	0.867	0.916
86	43.0000	37.2391	44.13	43.60	42.51	0.818	0.838	0.867	0.917
87	43.5000	37.6721	44.63	44.10	43.01	0.818	0.838	0.868	0.917
88	44.0000	38.1051	45.13	44.60	43.51	0.818	0.838	0.868	0.917
89	44.5000	38.5381	45.63	45.10	44.01	0.818	0.838	0.868	0.918
90	45.0000	38.9711	46.13	45.60	44.51	0.818	0.838	0.868	0.918
91	45.5000	39.4042	46.63	46.10	45.01	0.819	0.838	0.868	0.918
92	46.0000	39.8372	47.13	46.60	45.51	0.819	0.839	0.868	0.918
93	46.5000	40.2702	47.63	47.10	46.01	0.819	0.839	0.869	0.919
94	47.0000	40.7032	48.13	47.60	46.51	0.819	0.839	0.869	0.919
95	47.5000	41.1362	48.63	48.10	47.01	0.819	0.839	0.869	0.919
96	48.0000	41.5692	49.13	48.60	47.51	0.819	0.839	0.869	0.919
97	48.5000	42.0022	49.63	49.10	48.01	0.819	0.839	0.869	0.920
98	49.0000	42.4352	50.13	49.60	48.51	0.819	0.839	0.869	0.920
99	49.5000	42.8683	50.63	50.10	49.01	0.819	0.839	0.870	0.920
100	50.0000	43.3013	51.13	50.60	49.51	0.819	0.839	0.870	0.920

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Table 70 — External spline

30 degree pressure angle — Side fit — Fillet root — Module = 0.50

S_{vmax} = maximum effective tooth thickness, circular = 0.785

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	3.0000	2.5981	3.50	2.62	1.94	0.762	0.748	0.728	0.693
7	3.5000	3.0311	4.00	3.08	2.44	0.762	0.748	0.727	0.691
8	4.0000	3.4641	4.50	3.56	2.93	0.762	0.747	0.726	0.690
9	4.5000	3.8971	5.00	4.04	3.43	0.761	0.747	0.725	0.689
10	5.0000	4.3301	5.50	4.52	3.93	0.761	0.746	0.724	0.688
11	5.5000	4.7631	6.00	5.01	4.43	0.761	0.746	0.724	0.687
12	6.0000	5.1962	6.50	5.50	4.93	0.761	0.746	0.723	0.686
13	6.5000	5.6292	7.00	5.99	5.43	0.760	0.745	0.723	0.685
14	7.0000	6.0622	7.50	6.48	5.92	0.760	0.745	0.722	0.684
15	7.5000	6.4952	8.00	6.98	6.42	0.760	0.745	0.722	0.683
16	8.0000	6.9282	8.50	7.47	6.92	0.760	0.744	0.721	0.683
17	8.5000	7.3612	9.00	7.97	7.42	0.759	0.744	0.721	0.682
18	9.0000	7.7942	9.50	8.46	7.92	0.759	0.744	0.720	0.681
19	9.5000	8.2272	10.00	8.96	8.42	0.759	0.743	0.720	0.680
20	10.0000	8.6603	10.50	9.46	8.92	0.759	0.743	0.719	0.680
21	10.5000	9.0933	11.00	9.95	9.42	0.759	0.743	0.719	0.679
22	11.0000	9.5263	11.50	10.45	9.91	0.759	0.743	0.719	0.678
23	11.5000	9.9593	12.00	10.95	10.41	0.758	0.742	0.718	0.678
24	12.0000	10.3923	12.50	11.45	10.91	0.758	0.742	0.718	0.677
25	12.5000	10.8253	13.00	11.95	11.41	0.758	0.742	0.717	0.677
26	13.0000	11.2583	13.50	12.44	11.91	0.758	0.742	0.717	0.676
27	13.5000	11.6913	14.00	12.94	12.41	0.758	0.741	0.717	0.675
28	14.0000	12.1244	14.50	13.44	12.91	0.758	0.741	0.716	0.675
29	14.5000	12.5574	15.00	13.94	13.41	0.758	0.741	0.716	0.674
30	15.0000	12.9904	15.50	14.44	13.91	0.758	0.741	0.716	0.674
31	15.5000	13.4234	16.00	14.94	14.41	0.757	0.741	0.715	0.673
32	16.0000	13.8564	16.50	15.44	14.91	0.757	0.740	0.715	0.673
33	16.5000	14.2894	17.00	15.93	15.40	0.757	0.740	0.715	0.672
34	17.0000	14.7224	17.50	16.43	15.90	0.757	0.740	0.714	0.672
35	17.5000	15.1554	18.00	16.93	16.40	0.757	0.740	0.714	0.671
36	18.0000	15.5885	18.50	17.43	16.90	0.757	0.740	0.714	0.671
37	18.5000	16.0215	19.00	17.93	17.40	0.757	0.739	0.714	0.670
38	19.0000	16.4545	19.50	18.43	17.90	0.757	0.739	0.713	0.670
39	19.5000	16.8875	20.00	18.93	18.40	0.756	0.739	0.713	0.670
40	20.0000	17.3205	20.50	19.43	18.90	0.756	0.739	0.713	0.669
41	20.5000	17.7535	21.00	19.93	19.40	0.756	0.739	0.712	0.669
42	21.0000	18.1865	21.50	20.43	19.90	0.756	0.739	0.712	0.668
43	21.5000	18.6195	22.00	20.93	20.40	0.756	0.738	0.712	0.668
44	22.0000	19.0526	22.50	21.43	20.90	0.756	0.738	0.712	0.668
45	22.5000	19.4856	23.00	21.92	21.40	0.756	0.738	0.711	0.667
46	23.0000	19.9186	23.50	22.42	21.89	0.756	0.738	0.711	0.667
47	23.5000	20.3516	24.00	22.92	22.39	0.756	0.738	0.711	0.666
48	24.0000	20.7846	24.50	23.42	22.89	0.756	0.738	0.711	0.666
49	24.5000	21.2176	25.00	23.92	23.39	0.755	0.737	0.711	0.666
50	25.0000	21.6506	25.50	24.42	23.89	0.755	0.737	0.710	0.665
51	25.5000	22.0836	26.00	24.92	24.39	0.755	0.737	0.710	0.665
52	26.0000	22.5167	26.50	25.42	24.89	0.755	0.737	0.710	0.664
53	26.5000	22.9497	27.00	25.92	25.39	0.755	0.737	0.710	0.664
54	27.0000	23.3827	27.50	26.42	25.89	0.755	0.737	0.709	0.664
55	27.5000	23.8157	28.00	26.92	26.39	0.755	0.737	0.709	0.663
56	28.0000	24.2487	28.50	27.42	26.89	0.755	0.736	0.709	0.663
57	28.5000	24.6817	29.00	27.92	27.39	0.755	0.736	0.709	0.663
58	29.0000	25.1147	29.50	28.42	27.89	0.755	0.736	0.709	0.662
59	29.5000	25.5478	30.00	28.92	28.39	0.755	0.736	0.708	0.662
60	30.0000	25.9808	30.50	29.42	28.89	0.754	0.736	0.708	0.662
61	30.5000	26.4138	31.00	29.92	29.39	0.754	0.736	0.708	0.661
62	31.0000	26.8468	31.50	30.42	29.88	0.754	0.736	0.708	0.661
63	31.5000	27.2798	32.00	30.92	30.38	0.754	0.736	0.707	0.661
64	32.0000	27.7128	32.50	31.42	30.88	0.754	0.735	0.707	0.660
65	32.5000	28.1458	33.00	31.92	31.38	0.754	0.735	0.707	0.660
66	33.0000	28.5788	33.50	32.42	31.88	0.754	0.735	0.707	0.660
67	33.5000	29.0119	34.00	32.92	32.38	0.754	0.735	0.707	0.659
68	34.0000	29.4449	34.50	33.42	32.88	0.754	0.735	0.707	0.659
69	34.5000	29.8779	35.00	33.92	33.38	0.754	0.735	0.706	0.659
70	35.0000	30.3109	35.50	34.42	33.88	0.754	0.735	0.706	0.659
71	35.5000	30.7439	36.00	34.92	34.38	0.754	0.735	0.706	0.658
72	36.0000	31.1769	36.50	35.42	34.88	0.754	0.734	0.706	0.658
73	36.5000	31.6099	37.00	35.92	35.38	0.753	0.734	0.706	0.658
74	37.0000	32.0429	37.50	36.41	35.88	0.753	0.734	0.705	0.657
75	37.5000	32.4760	38.00	36.91	36.38	0.753	0.734	0.705	0.657
76	38.0000	32.9090	38.50	37.41	36.88	0.753	0.734	0.705	0.657
77	38.5000	33.3420	39.00	37.91	37.38	0.753	0.734	0.705	0.657
78	39.0000	33.7750	39.50	38.41	37.88	0.753	0.734	0.705	0.656
79	39.5000	34.2080	40.00	38.91	38.38	0.753	0.734	0.704	0.656
80	40.0000	34.6410	40.50	39.41	38.88	0.753	0.734	0.704	0.656
81	40.5000	35.0740	41.00	39.91	39.37	0.753	0.733	0.704	0.655
82	41.0000	35.5070	41.50	40.41	39.87	0.753	0.733	0.704	0.655
83	41.5000	35.9401	42.00	40.91	40.37	0.753	0.733	0.704	0.655
84	42.0000	36.3731	42.50	41.41	40.87	0.753	0.733	0.704	0.655
85	42.5000	36.8061	43.00	41.91	41.37	0.753	0.733	0.703	0.654
86	43.0000	37.2391	43.50	42.41	41.87	0.753	0.733	0.703	0.654
87	43.5000	37.6721	44.00	42.91	42.37	0.752	0.733	0.703	0.654
88	44.0000	38.1051	44.50	43.41	42.87	0.752	0.733	0.703	0.654
89	44.5000	38.5381	45.00	43.91	43.37	0.752	0.733	0.703	0.653
90	45.0000	38.9711	45.50	44.41	43.87	0.752	0.732	0.703	0.653
91	45.5000	39.4042	46.00	44.91	44.37	0.752	0.732	0.703	0.653
92	46.0000	39.8372	46.50	45.41	44.87	0.752	0.732	0.702	0.653
93	46.5000	40.2702	47.00	45.91	45.37	0.752	0.732	0.702	0.652
94	47.0000	40.7032	47.50	46.41	45.87	0.752	0.732	0.702	0.652
95	47.5000	41.1362	48.00	46.91	46.37	0.752	0.732	0.702	0.652
96	48.0000	41.5692	48.50	47.41	46.87	0.752	0.732	0.702	0.652
97	48.5000	42.0022	49.00	47.91	47.37	0.752	0.732	0.702	0.651
98	49.0000	42.4352	49.50	48.41	47.87	0.752	0.732	0.701	0.651
99	49.5000	42.8683	50.00	48.91	48.37	0.752	0.732	0.701	0.651
100	50.0000	43.3013	50.50	49.41	48.87	0.752	0.731	0.701	0.651

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Table 71 — Internal spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 10.00

E_{vmin} = minimum effective space width, circular = 15.708

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular 4 H	5 H	6 H	7 H
6	60.0000	47.6012	74.33	71.00	53.05	15.772	15.810	15.868	15.964
7	70.0000	55.5347	84.34	81.00	62.72	15.773	15.812	15.870	15.968
8	80.0000	63.4683	94.34	91.00	72.47	15.774	15.813	15.873	15.972
9	90.0000	71.4018	104.35	101.00	82.29	15.775	15.815	15.875	15.975
10	100.0000	79.3353	114.35	111.00	92.15	15.776	15.816	15.877	15.978
11	110.0000	87.2689	124.36	121.00	102.03	15.776	15.817	15.879	15.981
12	120.0000	95.2024	134.36	131.00	111.94	15.777	15.819	15.881	15.984
13	130.0000	103.1359	144.36	141.00	121.86	15.778	15.820	15.882	15.987
14	140.0000	111.0695	154.37	151.00	131.79	15.778	15.821	15.884	15.990
15	150.0000	119.0030	164.37	161.00	141.74	15.779	15.822	15.886	15.992
16	160.0000	126.9365	174.37	171.00	151.69	15.780	15.823	15.887	15.995
17	170.0000	134.8701	184.38	181.00	161.64	15.780	15.824	15.889	15.997
18	180.0000	142.8036	194.38	191.00	171.61	15.781	15.825	15.890	16.000
19	190.0000	150.7371	204.38	201.00	181.57	15.781	15.826	15.892	16.002
20	200.0000	158.6707	214.39	211.00	191.54	15.782	15.826	15.893	16.004
21	210.0000	166.6042	224.39	221.00	201.52	15.783	15.827	15.894	16.006
22	220.0000	174.5378	234.39	231.00	211.49	15.783	15.828	15.896	16.008
23	230.0000	182.4713	244.39	241.00	221.47	15.784	15.829	15.897	16.010
24	240.0000	190.4048	254.40	251.00	231.45	15.784	15.830	15.898	16.012
25	250.0000	198.3384	264.40	261.00	241.43	15.785	15.830	15.899	16.014
26	260.0000	206.2719	274.40	271.00	251.41	15.785	15.831	15.901	16.016
27	270.0000	214.2054	284.40	281.00	261.40	15.785	15.832	15.902	16.018
28	280.0000	222.1390	294.41	291.00	271.38	15.786	15.833	15.903	16.020
29	290.0000	230.0725	304.41	301.00	281.37	15.786	15.833	15.904	16.022
30	300.0000	238.0060	314.41	311.00	291.36	15.787	15.834	15.905	16.023
31	310.0000	245.9396	324.41	321.00	301.34	15.787	15.835	15.906	16.025
32	320.0000	253.8731	334.42	331.00	311.33	15.788	15.835	15.907	16.027
33	330.0000	261.8066	344.42	341.00	321.32	15.788	15.836	15.908	16.028
34	340.0000	269.7402	354.42	351.00	331.31	15.788	15.837	15.909	16.030
35	350.0000	277.6737	364.42	361.00	341.30	15.789	15.837	15.910	16.032
36	360.0000	285.6072	374.42	371.00	351.29	15.789	15.838	15.911	16.033
37	370.0000	293.5408	384.43	381.00	361.29	15.790	15.839	15.912	16.035
38	380.0000	301.4743	394.43	391.00	371.28	15.790	15.839	15.913	16.036
39	390.0000	309.4078	404.43	401.00	381.27	15.790	15.840	15.914	16.038
40	400.0000	317.3414	414.43	411.00	391.26	15.791	15.841	15.915	16.039
41	410.0000	325.2749	424.43	421.00	401.26	15.791	15.841	15.916	16.041
42	420.0000	333.2084	434.44	431.00	411.25	15.792	15.842	15.917	16.042
43	430.0000	341.1420	444.44	441.00	421.25	15.792	15.842	15.918	16.044
44	440.0000	349.0755	454.44	451.00	431.24	15.793	15.843	15.919	16.045
45	450.0000	357.0090	464.44	461.00	441.23	15.793	15.843	15.920	16.047
46	460.0000	364.9426	474.44	471.00	451.23	15.793	15.844	15.921	16.048
47	470.0000	372.8761	484.45	481.00	461.22	15.793	15.845	15.921	16.050
48	480.0000	380.8096	494.45	491.00	471.22	15.794	15.845	15.922	16.051
49	490.0000	388.7432	504.45	501.00	481.21	15.794	15.846	15.923	16.052
50	500.0000	396.6767	514.45	511.00	491.21	15.794	15.846	15.924	16.054
51	510.0000	404.6102	524.45	521.00	501.21	15.795	15.847	15.926	16.056
52	520.0000	412.5438	534.46	531.00	511.20	15.795	15.848	15.927	16.058
53	530.0000	420.4773	544.46	541.00	521.20	15.796	15.849	15.928	16.060
54	540.0000	428.4108	554.46	551.00	531.19	15.796	15.849	15.929	16.061
55	550.0000	436.3444	564.46	561.00	541.19	15.797	15.850	15.930	16.063
56	560.0000	444.2779	574.46	571.00	551.19	15.797	15.851	15.931	16.064
57	570.0000	452.2114	584.47	581.00	561.18	15.797	15.851	15.932	16.066
58	580.0000	460.1450	594.47	591.00	571.18	15.798	15.852	15.933	16.068
59	590.0000	468.0785	604.47	601.00	581.18	15.798	15.852	15.934	16.069
60	600.0000	476.0121	614.47	611.00	591.17	15.799	15.853	15.935	16.071
61	610.0000	483.9456	624.47	621.00	601.17	15.799	15.854	15.936	16.072
62	620.0000	491.8791	634.48	631.00	611.17	15.799	15.854	15.937	16.074
63	630.0000	499.8127	644.48	641.00	621.17	15.800	15.855	15.938	16.076
64	640.0000	507.7462	654.48	651.00	631.16	15.800	15.856	15.939	16.077
65	650.0000	515.6797	664.48	661.00	641.16	15.801	15.856	15.940	16.079
66	660.0000	523.6133	674.49	671.00	651.16	15.801	15.857	15.941	16.080
67	670.0000	531.5468	684.49	681.00	661.16	15.801	15.858	15.942	16.082
68	680.0000	539.4803	694.49	691.00	671.15	15.802	15.858	15.943	16.084
69	690.0000	547.4139	704.49	701.00	681.15	15.802	15.859	15.944	16.085
70	700.0000	555.3474	714.49	711.00	691.15	15.803	15.859	15.945	16.087
71	710.0000	563.2809	724.50	721.00	701.15	15.803	15.860	15.946	16.088
72	720.0000	571.2145	734.50	731.00	711.14	15.803	15.861	15.947	16.090
73	730.0000	579.1480	744.50	741.00	721.14	15.804	15.861	15.948	16.092
74	740.0000	587.0815	754.50	751.00	731.14	15.804	15.862	15.949	16.093
75	750.0000	595.0151	764.50	761.00	741.14	15.805	15.863	15.950	16.095
76	760.0000	602.9486	774.51	771.00	751.14	15.805	15.863	15.951	16.096
77	770.0000	610.8821	784.51	781.00	761.14	15.805	15.864	15.952	16.098
78	780.0000	618.8157	794.51	791.00	771.13	15.806	15.865	15.953	16.100
79	790.0000	626.7492	804.51	801.00	781.13	15.806	15.865	15.954	16.101
80	800.0000	634.6827	814.51	811.00	791.13	15.807	15.866	15.955	16.103
81	810.0000	642.6163	824.52	821.00	801.13	15.807	15.867	15.956	16.104
82	820.0000	650.5498	834.52	831.00	811.13	15.807	15.867	15.957	16.106
83	830.0000	658.4833	844.52	841.00	821.13	15.808	15.868	15.958	16.108
84	840.0000	666.4169	854.52	851.00	831.12	15.808	15.868	15.959	16.109
85	850.0000	674.3504	864.52	861.00	841.12	15.809	15.869	15.960	16.111
86	860.0000	682.2839	874.53	871.00	851.12	15.809	15.870	15.961	16.112
87	870.0000	690.2175	884.53	881.00	861.12	15.809	15.870	15.962	16.114
88	880.0000	698.1510	894.53	891.00	871.12	15.810	15.871	15.963	16.116
89	890.0000	706.0845	904.53	901.00	881.12	15.810	15.872	15.964	16.117
90	900.0000	714.0181	914.54	911.00	891.12	15.811	15.872	15.965	16.119
91	910.0000	721.9516	924.54	921.00	901.11	15.811	15.873	15.966	16.120
92	920.0000	729.8851	934.54	931.00	911.11	15.811	15.874	15.967	16.122
93	930.0000	737.8187	944.54	941.00	921.11	15.812	15.874	15.968	16.124
94	940.0000	745.7522	954.54	951.00	931.11	15.812	15.875	15.969	16.125
95	950.0000	753.6857	964.55	961.00	941.11	15.813	15.875	15.970	16.127
96	960.0000	761.6193	974.55	971.00	951.11	15.813	15.876	15.971	16.128
97	970.0000	769.5528	984.55	981.00	961.11	15.813	15.877	15.972	16.130
98	980.0000	777.4864	994.55	991.00	971.11	15.814	15.877	15.973	16.132
99	990.0000	785.4199	1004.55	1001.00	981.10	15.814	15.878	15.974	16.133
100	1000.0000	793.3534	1014.56	1011.00	991.10	15.815	15.879	15.975	16.135

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Table 72 — External spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 10.00

S_{vmax} = maximum effective tooth thickness, circular = 15.708

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	60.0000	47.6012	69.00	51.05	45.67	15.644	15.606	15.548	15.452
7	70.0000	55.5347	79.00	60.72	55.66	15.643	15.604	15.546	15.448
8	80.0000	63.4683	89.00	70.47	65.66	15.642	15.603	15.543	15.444
9	90.0000	71.4018	99.00	80.29	75.65	15.641	15.601	15.541	15.441
10	100.0000	79.3353	109.00	90.15	85.65	15.640	15.600	15.539	15.438
11	110.0000	87.2689	119.00	100.03	95.64	15.640	15.599	15.537	15.434
12	120.0000	95.2024	129.00	109.94	105.64	15.639	15.597	15.535	15.432
13	130.0000	103.1359	139.00	119.86	115.64	15.638	15.596	15.533	15.429
14	140.0000	111.0695	149.00	129.79	125.63	15.637	15.595	15.532	15.426
15	150.0000	119.0030	159.00	139.74	135.63	15.637	15.594	15.530	15.423
16	160.0000	126.9365	169.00	149.69	145.63	15.636	15.593	15.529	15.421
17	170.0000	134.8701	179.00	159.64	155.62	15.636	15.592	15.527	15.419
18	180.0000	142.8036	189.00	169.61	165.62	15.635	15.591	15.526	15.416
19	190.0000	150.7371	199.00	179.57	175.62	15.634	15.590	15.524	15.414
20	200.0000	158.6707	209.00	189.54	185.61	15.634	15.590	15.523	15.412
21	210.0000	166.6042	219.00	199.52	195.61	15.633	15.589	15.522	15.410
22	220.0000	174.5378	229.00	209.49	205.61	15.633	15.588	15.520	15.408
23	230.0000	182.4713	239.00	219.47	215.61	15.632	15.587	15.519	15.406
24	240.0000	190.4048	249.00	229.45	225.60	15.632	15.586	15.518	15.404
25	250.0000	198.3384	259.00	239.43	235.60	15.631	15.585	15.517	15.402
26	260.0000	206.2719	269.00	249.41	245.60	15.631	15.585	15.515	15.400
27	270.0000	214.2054	279.00	259.40	255.60	15.630	15.584	15.514	15.398
28	280.0000	222.1390	289.00	269.38	265.59	15.630	15.583	15.513	15.396
29	290.0000	230.0725	299.00	279.37	275.59	15.630	15.583	15.512	15.394
30	300.0000	238.0060	309.00	289.36	285.59	15.629	15.582	15.511	15.393
31	310.0000	245.9396	319.00	299.34	295.59	15.629	15.581	15.510	15.391
32	320.0000	253.8731	329.00	309.33	305.58	15.628	15.580	15.509	15.389
33	330.0000	261.8066	339.00	319.32	315.58	15.628	15.580	15.508	15.388
34	340.0000	269.7402	349.00	329.31	325.58	15.627	15.579	15.507	15.386
35	350.0000	277.6737	359.00	339.30	335.58	15.627	15.578	15.506	15.384
36	360.0000	285.6072	369.00	349.29	345.58	15.627	15.578	15.505	15.383
37	370.0000	293.5408	379.00	359.29	355.57	15.626	15.577	15.504	15.381
38	380.0000	301.4743	389.00	369.28	365.57	15.626	15.577	15.503	15.380
39	390.0000	309.4078	399.00	379.27	375.57	15.625	15.576	15.502	15.378
40	400.0000	317.3414	409.00	389.26	385.57	15.625	15.575	15.501	15.377
41	410.0000	325.2749	419.00	399.26	395.57	15.625	15.575	15.500	15.375
42	420.0000	333.2084	429.00	409.25	405.56	15.624	15.574	15.499	15.374
43	430.0000	341.1420	439.00	419.25	415.56	15.624	15.574	15.498	15.372
44	440.0000	349.0755	449.00	429.24	425.56	15.624	15.573	15.497	15.371
45	450.0000	357.0090	459.00	439.23	435.56	15.623	15.572	15.496	15.369
46	460.0000	364.9426	469.00	449.23	445.56	15.623	15.572	15.495	15.368
47	470.0000	372.8761	479.00	459.22	455.55	15.623	15.571	15.494	15.366
48	480.0000	380.8096	489.00	469.22	465.55	15.622	15.571	15.494	15.365
49	490.0000	388.7432	499.00	479.21	475.55	15.622	15.570	15.493	15.364
50	500.0000	396.6767	509.00	489.21	485.55	15.622	15.570	15.492	15.362
51	510.0000	404.6102	519.00	499.21	495.55	15.621	15.569	15.490	15.360
52	520.0000	412.5438	529.00	509.20	505.54	15.620	15.568	15.489	15.358
53	530.0000	420.4773	539.00	519.20	515.54	15.620	15.567	15.488	15.356
54	540.0000	428.4108	549.00	529.19	525.54	15.620	15.567	15.487	15.355
55	550.0000	436.3444	559.00	539.19	535.54	15.619	15.566	15.486	15.353
56	560.0000	444.2779	569.00	549.19	545.54	15.619	15.565	15.485	15.352
57	570.0000	452.2114	579.00	559.18	555.53	15.618	15.565	15.484	15.350
58	580.0000	460.1450	589.00	569.18	565.53	15.618	15.564	15.483	15.348
59	590.0000	468.0785	599.00	579.18	575.53	15.618	15.563	15.482	15.347
60	600.0000	476.0121	609.00	589.17	585.53	15.617	15.563	15.481	15.345
61	610.0000	483.9456	619.00	599.17	595.53	15.617	15.562	15.480	15.344
62	620.0000	491.8791	629.00	609.17	605.52	15.616	15.562	15.479	15.342
63	630.0000	499.8127	639.00	619.17	615.52	15.616	15.561	15.478	15.340
64	640.0000	507.7462	649.00	629.16	625.52	15.616	15.560	15.477	15.339
65	650.0000	515.6797	659.00	639.16	635.52	15.615	15.560	15.476	15.337
66	660.0000	523.6133	669.00	649.16	645.51	15.615	15.559	15.475	15.336
67	670.0000	531.5468	679.00	659.16	655.51	15.614	15.558	15.474	15.334
68	680.0000	539.4803	689.00	669.15	665.51	15.614	15.558	15.473	15.332
69	690.0000	547.4139	699.00	679.15	675.51	15.614	15.557	15.472	15.331
70	700.0000	555.3474	709.00	689.15	685.51	15.613	15.556	15.471	15.329
71	710.0000	563.2809	719.00	699.15	695.50	15.613	15.556	15.470	15.328
72	720.0000	571.2145	729.00	709.14	705.50	15.612	15.555	15.469	15.326
73	730.0000	579.1480	739.00	719.14	715.50	15.612	15.555	15.468	15.324
74	740.0000	587.0815	749.00	729.14	725.50	15.612	15.554	15.467	15.323
75	750.0000	595.0151	759.00	739.14	735.50	15.611	15.553	15.466	15.321
76	760.0000	602.9486	769.00	749.14	745.49	15.611	15.553	15.465	15.320
77	770.0000	610.8821	779.00	759.14	755.49	15.610	15.552	15.464	15.318
78	780.0000	618.8157	789.00	769.13	765.49	15.610	15.551	15.463	15.316
79	790.0000	626.7492	799.00	779.13	775.49	15.610	15.551	15.462	15.315
80	800.0000	634.6827	809.00	789.13	785.49	15.609	15.550	15.461	15.313
81	810.0000	642.6163	819.00	799.13	795.48	15.609	15.549	15.460	15.312
82	820.0000	650.5498	829.00	809.13	805.48	15.608	15.549	15.459	15.310
83	830.0000	658.4833	839.00	819.13	815.48	15.608	15.548	15.458	15.308
84	840.0000	666.4169	849.00	829.12	825.48	15.608	15.547	15.457	15.307
85	850.0000	674.3504	859.00	839.12	835.48	15.607	15.547	15.456	15.305
86	860.0000	682.2839	869.00	849.12	845.47	15.607	15.546	15.455	15.304
87	870.0000	690.2175	879.00	859.12	855.47	15.606	15.546	15.454	15.302
88	880.0000	698.1510	889.00	869.12	865.47	15.606	15.545	15.453	15.300
89	890.0000	706.0845	899.00	879.12	875.47	15.606	15.544	15.452	15.299
90	900.0000	714.0181	909.00	889.12	885.46	15.605	15.544	15.451	15.297
91	910.0000	721.9516	919.00	899.11	895.46	15.605	15.543	15.450	15.296
92	920.0000	729.8851	929.00	909.11	905.46	15.604	15.542	15.449	15.294
93	930.0000	737.8187	939.00	919.11	915.46	15.604	15.542	15.448	15.292
94	940.0000	745.7522	949.00	929.11	925.46	15.604	15.541	15.447	15.291
95	950.0000	753.6857	959.00	939.11	935.45	15.603	15.540	15.446	15.289
96	960.0000	761.6193	969.00	949.11	945.45	15.603	15.540	15.445	15.288
97	970.0000	769.5528	979.00	959.11	955.45	15.602	15.539	15.444	15.286
98	980.0000	777.4864	989.00	969.11	965.45	15.602	15.539	15.443	15.284
99	990.0000	785.4199	999.00	979.10	975.45	15.602	15.538	15.442	15.283
100	1000.0000	793.3534	1009.00	989.10	985.44	15.601	15.537	15.441	15.281

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Table 73 — Internal spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 8.00

E_{vmin} = minimum effective space width, circular = 12.566

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular 4 H	5 H	6 H	7 H
6	48.0000	38.0810	59.51	56.80	42.44	12.626	12.661	12.714	12.803
7	56.0000	44.4278	67.51	64.80	50.17	12.626	12.663	12.717	12.807
8	64.0000	50.7746	75.52	72.80	57.98	12.627	12.664	12.719	12.810
9	72.0000	57.1214	83.52	80.80	65.83	12.628	12.665	12.721	12.814
10	80.0000	63.4683	91.53	88.80	73.72	12.629	12.666	12.723	12.817
11	88.0000	69.8151	99.53	96.80	81.63	12.630	12.668	12.724	12.819
12	96.0000	76.1619	107.53	104.80	89.55	12.630	12.669	12.726	12.822
13	104.0000	82.5088	115.54	112.80	97.49	12.631	12.670	12.728	12.825
14	112.0000	88.8556	123.54	120.80	105.44	12.632	12.671	12.729	12.827
15	120.0000	95.2024	131.54	128.80	113.39	12.632	12.672	12.731	12.829
16	128.0000	101.5492	139.55	136.80	121.35	12.633	12.672	12.732	12.832
17	136.0000	107.8961	147.55	144.80	129.32	12.633	12.673	12.733	12.834
18	144.0000	114.2429	155.55	152.80	137.29	12.634	12.674	12.735	12.836
19	152.0000	120.5897	163.55	160.80	145.26	12.634	12.675	12.736	12.838
20	160.0000	126.9365	171.56	168.80	153.23	12.635	12.676	12.737	12.840
21	168.0000	133.2834	179.56	176.80	161.21	12.635	12.677	12.739	12.842
22	176.0000	139.6302	187.56	184.80	169.19	12.636	12.677	12.740	12.844
23	184.0000	145.9770	195.56	192.80	177.17	12.636	12.678	12.741	12.846
24	192.0000	152.3239	203.57	200.80	185.16	12.637	12.679	12.742	12.847
25	200.0000	158.6707	211.57	208.80	193.14	12.637	12.679	12.743	12.849
26	208.0000	165.0175	219.57	216.80	201.13	12.637	12.680	12.744	12.851
27	216.0000	171.3643	227.57	224.80	209.12	12.638	12.681	12.745	12.852
28	224.0000	177.7112	235.57	232.80	217.11	12.638	12.681	12.746	12.854
29	232.0000	184.0580	243.58	240.80	225.09	12.639	12.682	12.747	12.856
30	240.0000	190.4048	251.58	248.80	233.08	12.639	12.683	12.748	12.857
31	248.0000	196.7516	259.58	256.80	241.07	12.639	12.683	12.749	12.859
32	256.0000	203.0985	267.58	264.80	249.07	12.640	12.684	12.750	12.860
33	264.0000	209.4453	275.59	272.80	257.06	12.640	12.685	12.751	12.862
34	272.0000	215.7921	283.59	280.80	265.05	12.641	12.685	12.752	12.863
35	280.0000	222.1390	291.59	288.80	273.04	12.641	12.686	12.753	12.865
36	288.0000	228.4858	299.59	296.80	281.04	12.641	12.686	12.754	12.866
37	296.0000	234.8326	307.59	304.80	289.03	12.642	12.687	12.755	12.868
38	304.0000	241.1794	315.59	312.80	297.02	12.642	12.687	12.755	12.869
39	312.0000	247.5263	323.60	320.80	305.02	12.642	12.688	12.756	12.870
40	320.0000	253.8731	331.60	328.80	313.01	12.643	12.688	12.757	12.872
41	328.0000	260.2199	339.60	336.80	321.01	12.643	12.689	12.758	12.873
42	336.0000	266.5667	347.60	344.80	329.00	12.643	12.690	12.759	12.874
43	344.0000	272.9136	355.60	352.80	337.00	12.644	12.690	12.760	12.876
44	352.0000	279.2604	363.60	360.80	344.99	12.644	12.691	12.760	12.877
45	360.0000	285.6072	371.61	368.80	352.99	12.644	12.691	12.761	12.878
46	368.0000	291.9541	379.61	376.80	360.98	12.645	12.692	12.762	12.879
47	376.0000	298.3009	387.61	384.80	368.98	12.645	12.692	12.763	12.881
48	384.0000	304.6477	395.61	392.80	376.98	12.645	12.693	12.764	12.882
49	392.0000	310.9945	403.61	400.80	384.97	12.646	12.693	12.764	12.883
50	400.0000	317.3414	411.61	408.80	392.97	12.646	12.694	12.765	12.884
51	408.0000	323.6882	419.62	416.80	400.96	12.646	12.694	12.766	12.886
52	416.0000	330.0350	427.62	424.80	408.96	12.646	12.695	12.767	12.887
53	424.0000	336.3819	435.62	432.80	416.96	12.647	12.695	12.767	12.888
54	432.0000	342.7287	443.62	440.80	424.96	12.647	12.695	12.768	12.889
55	440.0000	349.0755	451.62	448.80	432.95	12.647	12.696	12.769	12.890
56	448.0000	355.4223	459.62	456.80	440.95	12.648	12.696	12.770	12.891
57	456.0000	361.7692	467.63	464.80	448.95	12.648	12.697	12.770	12.893
58	464.0000	368.1160	475.63	472.80	456.94	12.648	12.697	12.771	12.894
59	472.0000	374.4628	483.63	480.80	464.94	12.648	12.698	12.772	12.895
60	480.0000	380.8096	491.63	488.80	472.94	12.649	12.698	12.772	12.896
61	488.0000	387.1565	499.63	496.80	480.94	12.649	12.699	12.773	12.897
62	496.0000	393.5033	507.63	504.80	488.93	12.649	12.699	12.774	12.898
63	504.0000	399.8501	515.64	512.80	496.93	12.650	12.700	12.775	12.900
64	512.0000	406.1970	523.64	520.80	504.93	12.650	12.700	12.776	12.902
65	520.0000	412.5438	531.64	528.80	512.93	12.651	12.701	12.777	12.903
66	528.0000	418.8906	539.64	536.80	520.93	12.651	12.702	12.778	12.904
67	536.0000	425.2374	547.64	544.80	528.92	12.651	12.702	12.778	12.906
68	544.0000	431.5843	555.64	552.80	536.92	12.651	12.703	12.779	12.907
69	552.0000	437.9311	563.65	560.80	544.92	12.652	12.703	12.780	12.908
70	560.0000	444.2779	571.65	568.80	552.92	12.652	12.704	12.781	12.909
71	568.0000	450.6247	579.65	576.80	560.92	12.652	12.704	12.782	12.911
72	576.0000	456.9716	587.65	584.80	568.92	12.653	12.705	12.782	12.912
73	584.0000	463.3184	595.65	592.80	576.91	12.653	12.705	12.783	12.913
74	592.0000	469.6652	603.65	600.80	584.91	12.653	12.706	12.784	12.914
75	600.0000	476.0121	611.66	608.80	592.91	12.654	12.706	12.785	12.916
76	608.0000	482.3589	619.66	616.80	600.91	12.654	12.707	12.786	12.917
77	616.0000	488.7057	627.66	624.80	608.91	12.654	12.707	12.786	12.918
78	624.0000	495.0525	635.66	632.80	616.91	12.655	12.708	12.787	12.920
79	632.0000	501.3994	643.66	640.80	624.91	12.655	12.708	12.788	12.921
80	640.0000	507.7462	651.66	648.80	632.90	12.655	12.709	12.789	12.922
81	648.0000	514.0930	659.67	656.80	640.90	12.656	12.709	12.790	12.923
82	656.0000	520.4398	667.67	664.80	648.90	12.656	12.710	12.790	12.925
83	664.0000	526.7867	675.67	672.80	656.90	12.656	12.710	12.791	12.926
84	672.0000	533.1335	683.67	680.80	664.90	12.657	12.711	12.792	12.927
85	680.0000	539.4803	691.67	688.80	672.90	12.657	12.711	12.793	12.929
86	688.0000	545.8272	699.67	696.80	680.90	12.657	12.712	12.794	12.930
87	696.0000	552.1740	707.68	704.80	688.90	12.658	12.712	12.794	12.931
88	704.0000	558.5208	715.68	712.80	696.89	12.658	12.713	12.795	12.932
89	712.0000	564.8676	723.68	720.80	704.89	12.658	12.713	12.796	12.934
90	720.0000	571.2145	731.68	728.80	712.89	12.659	12.714	12.797	12.935
91	728.0000	577.5613	739.68	736.80	720.89	12.659	12.714	12.798	12.936
92	736.0000	583.9081	747.68	744.80	728.89	12.659	12.715	12.798	12.938
93	744.0000	590.2549	755.69	752.80	736.89	12.659	12.715	12.799	12.939
94	752.0000	596.6018	763.69	760.80	744.89	12.660	12.716	12.800	12.940
95	760.0000	602.9486	771.69	768.80	752.89	12.660	12.716	12.801	12.941
96	768.0000	609.2954	779.69	776.80	760.89	12.660	12.717	12.802	12.943
97	776.0000	615.6423	787.69	784.80	768.89	12.661	12.717	12.802	12.944
98	784.0000	621.9891	795.69	792.80	776.88	12.661	12.718	12.803	12.945
99	792.0000	628.3359	803.70	800.80	784.88	12.661	12.718	12.804	12.946
100	800.0000	634.6827	811.70	808.80	792.88	12.662	12.719	12.805	12.948

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Table 74 — External spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 8.00

S_{vmax} = maximum effective tooth thickness, circular = 12.566

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	48.0000	38.0810	55.20	40.84	36.49	12.507	12.472	12.418	12.330
7	56.0000	44.4278	63.20	48.57	44.49	12.506	12.470	12.416	12.326
8	64.0000	50.7746	71.20	56.38	52.48	12.505	12.469	12.414	12.322
9	72.0000	57.1214	79.20	64.23	60.48	12.505	12.468	12.412	12.319
10	80.0000	63.4683	87.20	72.12	68.47	12.504	12.466	12.410	12.316
11	88.0000	69.8151	95.20	80.03	76.47	12.503	12.465	12.408	12.313
12	96.0000	76.1619	103.20	87.95	84.47	12.502	12.464	12.407	12.311
13	104.0000	82.5088	111.20	95.89	92.46	12.502	12.463	12.405	12.308
14	112.0000	88.8556	119.20	103.84	100.46	12.501	12.462	12.403	12.306
15	120.0000	95.2024	127.20	111.79	108.46	12.501	12.461	12.402	12.303
16	128.0000	101.5492	135.20	119.75	116.45	12.500	12.460	12.401	12.301
17	136.0000	107.8961	143.20	127.72	124.45	12.500	12.459	12.399	12.299
18	144.0000	114.2429	151.20	135.69	132.45	12.499	12.459	12.398	12.297
19	152.0000	120.5897	159.20	143.66	140.45	12.498	12.458	12.397	12.295
20	160.0000	126.9365	167.20	151.63	148.44	12.498	12.457	12.395	12.293
21	168.0000	133.2834	175.20	159.61	156.44	12.498	12.456	12.394	12.291
22	176.0000	139.6302	183.20	167.59	164.44	12.497	12.455	12.393	12.289
23	184.0000	145.9770	191.20	175.57	172.44	12.497	12.455	12.392	12.287
24	192.0000	152.3239	199.20	183.56	180.43	12.496	12.454	12.391	12.285
25	200.0000	158.6707	207.20	191.54	188.43	12.496	12.453	12.390	12.284
26	208.0000	165.0175	215.20	199.53	196.43	12.495	12.453	12.389	12.282
27	216.0000	171.3643	223.20	207.52	204.43	12.495	12.452	12.388	12.280
28	224.0000	177.7112	231.20	215.51	212.43	12.494	12.451	12.387	12.279
29	232.0000	184.0580	239.20	223.49	220.42	12.494	12.451	12.386	12.277
30	240.0000	190.4048	247.20	231.48	228.42	12.494	12.450	12.385	12.276
31	248.0000	196.7516	255.20	239.47	236.42	12.493	12.449	12.384	12.274
32	256.0000	203.0985	263.20	247.47	244.42	12.493	12.449	12.383	12.272
33	264.0000	209.4453	271.20	255.46	252.41	12.493	12.448	12.382	12.271
34	272.0000	215.7921	279.20	263.45	260.41	12.492	12.448	12.381	12.269
35	280.0000	222.1390	287.20	271.44	268.41	12.492	12.447	12.380	12.268
36	288.0000	228.4858	295.20	279.44	276.41	12.491	12.446	12.379	12.267
37	296.0000	234.8326	303.20	287.43	284.41	12.491	12.446	12.378	12.265
38	304.0000	241.1794	311.20	295.42	292.41	12.491	12.445	12.377	12.264
39	312.0000	247.5263	319.20	303.42	300.40	12.490	12.445	12.376	12.262
40	320.0000	253.8731	327.20	311.41	308.40	12.490	12.444	12.376	12.261
41	328.0000	260.2199	335.20	319.41	316.40	12.490	12.444	12.375	12.260
42	336.0000	266.5667	343.20	327.40	324.40	12.489	12.443	12.374	12.258
43	344.0000	272.9136	351.20	335.40	332.40	12.489	12.443	12.373	12.257
44	352.0000	279.2604	359.20	343.39	340.40	12.489	12.442	12.372	12.256
45	360.0000	285.6072	367.20	351.39	348.39	12.488	12.442	12.371	12.255
46	368.0000	291.9541	375.20	359.38	356.39	12.488	12.441	12.371	12.253
47	376.0000	298.3009	383.20	367.38	364.39	12.488	12.441	12.370	12.252
48	384.0000	304.6477	391.20	375.38	372.39	12.487	12.440	12.369	12.251
49	392.0000	310.9945	399.20	383.37	380.39	12.487	12.440	12.368	12.250
50	400.0000	317.3414	407.20	391.37	388.39	12.487	12.439	12.368	12.248
51	408.0000	323.6882	415.20	399.36	396.38	12.487	12.439	12.367	12.247
52	416.0000	330.0350	423.20	407.36	404.38	12.486	12.438	12.366	12.246
53	424.0000	336.3819	431.20	415.36	412.38	12.486	12.438	12.365	12.245
54	432.0000	342.7287	439.20	423.36	420.38	12.486	12.437	12.365	12.244
55	440.0000	349.0755	447.20	431.35	428.38	12.485	12.437	12.364	12.242
56	448.0000	355.4223	455.20	439.35	436.38	12.485	12.436	12.363	12.241
57	456.0000	361.7692	463.20	447.35	444.37	12.485	12.436	12.362	12.240
58	464.0000	368.1160	471.20	455.34	452.37	12.485	12.435	12.362	12.239
59	472.0000	374.4628	479.20	463.34	460.37	12.484	12.435	12.361	12.238
60	480.0000	380.8096	487.20	471.34	468.37	12.484	12.435	12.360	12.237
61	488.0000	387.1565	495.20	479.34	476.37	12.484	12.434	12.360	12.236
62	496.0000	393.5033	503.20	487.33	484.37	12.483	12.434	12.359	12.235
63	504.0000	399.8501	511.20	495.33	492.36	12.483	12.433	12.358	12.232
64	512.0000	406.1970	519.20	503.33	500.36	12.483	12.432	12.357	12.231
65	520.0000	412.5438	527.20	511.33	508.36	12.482	12.432	12.356	12.230
66	528.0000	418.8906	535.20	519.33	516.36	12.482	12.431	12.355	12.228
67	536.0000	425.2374	543.20	527.32	524.36	12.482	12.431	12.354	12.227
68	544.0000	431.5843	551.20	535.32	532.36	12.481	12.430	12.354	12.226
69	552.0000	437.9311	559.20	543.32	540.35	12.481	12.430	12.353	12.225
70	560.0000	444.2779	567.20	551.32	548.35	12.481	12.429	12.352	12.223
71	568.0000	450.6247	575.20	559.32	556.35	12.480	12.429	12.351	12.222
72	576.0000	456.9716	583.20	567.32	564.35	12.480	12.428	12.350	12.221
73	584.0000	463.3184	591.20	575.31	572.35	12.480	12.428	12.350	12.220
74	592.0000	469.6652	599.20	583.31	580.35	12.479	12.427	12.349	12.218
75	600.0000	476.0121	607.20	591.31	588.34	12.479	12.427	12.348	12.217
76	608.0000	482.3589	615.20	599.31	596.34	12.479	12.426	12.347	12.216
77	616.0000	488.7057	623.20	607.31	604.34	12.478	12.426	12.346	12.214
78	624.0000	495.0525	631.20	615.31	612.34	12.478	12.425	12.346	12.213
79	632.0000	501.3994	639.20	623.31	620.34	12.478	12.425	12.345	12.212
80	640.0000	507.7462	647.20	631.30	628.34	12.477	12.424	12.344	12.211
81	648.0000	514.0930	655.20	639.30	636.33	12.477	12.424	12.343	12.209
82	656.0000	520.4398	663.20	647.30	644.33	12.477	12.423	12.342	12.208
83	664.0000	526.7867	671.20	655.30	652.33	12.476	12.423	12.342	12.207
84	672.0000	533.1335	679.20	663.30	660.33	12.476	12.422	12.341	12.205
85	680.0000	539.4803	687.20	671.30	668.33	12.476	12.421	12.340	12.204
86	688.0000	545.8272	695.20	679.30	676.33	12.475	12.421	12.339	12.203
87	696.0000	552.1740	703.20	687.30	684.32	12.475	12.420	12.338	12.202
88	704.0000	558.5208	711.20	695.29	692.32	12.475	12.420	12.338	12.200
89	712.0000	564.8676	719.20	703.29	700.32	12.475	12.419	12.337	12.199
90	720.0000	571.2145	727.20	711.29	708.32	12.474	12.419	12.336	12.198
91	728.0000	577.5613	735.20	719.29	716.32	12.474	12.418	12.335	12.196
92	736.0000	583.9081	743.20	727.29	724.32	12.474	12.418	12.334	12.195
93	744.0000	590.2549	751.20	735.29	732.31	12.473	12.417	12.334	12.194
94	752.0000	596.6018	759.20	743.29	740.31	12.473	12.417	12.333	12.193
95	760.0000	602.9486	767.20	751.29	748.31	12.473	12.416	12.332	12.191
96	768.0000	609.2954	775.20	759.29	756.31	12.472	12.416	12.331	12.190
97	776.0000	615.6423	783.20	767.29	764.31	12.472	12.415	12.330	12.189
98	784.0000	621.9891	791.20	775.28	772.31	12.472	12.415	12.330	12.188
99	792.0000	628.3359	799.20	783.28	780.30	12.471	12.414	12.329	12.186
100	800.0000	634.6827	807.20	791.28	788.30	12.471	12.414	12.328	12.185

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Table 75 — Internal spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 6.00

E_{vmin} = minimum effective space width, circular = 9.425

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	36.0000	28.5607	44.68	42.60	31.83	9.478	9.511	9.559	9.639
7	42.0000	33.3208	50.68	48.60	37.63	9.479	9.512	9.561	9.643
8	48.0000	38.0810	56.69	54.60	43.48	9.480	9.513	9.563	9.646
9	54.0000	42.8411	62.69	60.60	49.37	9.481	9.514	9.565	9.649
10	60.0000	47.6012	68.70	66.60	55.29	9.481	9.515	9.566	9.651
11	66.0000	52.3613	74.70	72.60	61.22	9.482	9.516	9.568	9.654
12	72.0000	57.1214	80.70	78.60	67.16	9.483	9.517	9.569	9.656
13	78.0000	61.8816	86.70	84.60	73.12	9.483	9.518	9.571	9.658
14	84.0000	66.6417	92.71	90.60	79.08	9.484	9.519	9.572	9.661
15	90.0000	71.4018	98.71	96.60	85.04	9.484	9.520	9.573	9.663
16	96.0000	76.1619	104.71	102.60	91.01	9.485	9.521	9.575	9.665
17	102.0000	80.9220	110.72	108.60	96.98	9.485	9.521	9.576	9.667
18	108.0000	85.6822	116.72	114.60	102.96	9.486	9.522	9.577	9.668
19	114.0000	90.4423	122.72	120.60	108.94	9.486	9.523	9.578	9.670
20	120.0000	95.2024	128.72	126.60	114.93	9.487	9.524	9.579	9.672
21	126.0000	99.9625	134.72	132.60	120.91	9.487	9.524	9.580	9.674
22	132.0000	104.7227	140.73	138.60	126.89	9.487	9.525	9.581	9.675
23	138.0000	109.4828	146.73	144.60	132.88	9.488	9.526	9.582	9.677
24	144.0000	114.2429	152.73	150.60	138.87	9.488	9.526	9.583	9.678
25	150.0000	119.0030	158.73	156.60	144.86	9.489	9.527	9.584	9.680
26	156.0000	123.7631	164.73	162.60	150.85	9.489	9.527	9.585	9.682
27	162.0000	128.5233	170.74	168.60	156.84	9.489	9.528	9.586	9.683
28	168.0000	133.2834	176.74	174.60	162.83	9.490	9.529	9.587	9.684
29	174.0000	138.0435	182.74	180.60	168.82	9.490	9.529	9.588	9.686
30	180.0000	142.8036	188.74	186.60	174.81	9.490	9.530	9.589	9.687
31	186.0000	147.5637	194.74	192.60	180.81	9.491	9.530	9.590	9.689
32	192.0000	152.3239	200.75	198.60	186.80	9.491	9.531	9.590	9.690
33	198.0000	157.0840	206.75	204.60	192.79	9.491	9.531	9.591	9.691
34	204.0000	161.8441	212.75	210.60	198.79	9.492	9.532	9.592	9.692
35	210.0000	166.6042	218.75	216.60	204.78	9.492	9.532	9.593	9.694
36	216.0000	171.3643	224.75	222.60	210.78	9.492	9.533	9.594	9.695
37	222.0000	176.1245	230.75	228.60	216.77	9.493	9.533	9.594	9.696
38	228.0000	180.8846	236.76	234.60	222.77	9.493	9.534	9.595	9.697
39	234.0000	185.6447	242.76	240.60	228.76	9.493	9.534	9.596	9.699
40	240.0000	190.4048	248.76	246.60	234.76	9.494	9.535	9.597	9.700
41	246.0000	195.1649	254.76	252.60	240.75	9.494	9.535	9.597	9.701
42	252.0000	199.9251	260.76	258.60	246.75	9.494	9.536	9.598	9.702
43	258.0000	204.6852	266.76	264.60	252.75	9.494	9.536	9.599	9.703
44	264.0000	209.4453	272.76	270.60	258.74	9.495	9.537	9.600	9.704
45	270.0000	214.2054	278.77	276.60	264.74	9.495	9.537	9.600	9.706
46	276.0000	218.9655	284.77	282.60	270.74	9.495	9.538	9.601	9.707
47	282.0000	223.7257	290.77	288.60	276.73	9.496	9.538	9.602	9.708
48	288.0000	228.4858	296.77	294.60	282.73	9.496	9.538	9.602	9.709
49	294.0000	233.2459	302.77	300.60	288.73	9.496	9.539	9.603	9.710
50	300.0000	238.0060	308.77	306.60	294.73	9.496	9.539	9.604	9.711
51	306.0000	242.7661	314.77	312.60	300.72	9.497	9.540	9.604	9.712
52	312.0000	247.5263	320.78	318.60	306.72	9.497	9.540	9.605	9.713
53	318.0000	252.2864	326.78	324.60	312.72	9.497	9.540	9.606	9.714
54	324.0000	257.0465	332.78	330.60	318.72	9.497	9.541	9.606	9.715
55	330.0000	261.8066	338.78	336.60	324.71	9.498	9.541	9.607	9.716
56	336.0000	266.5667	344.78	342.60	330.71	9.498	9.542	9.607	9.717
57	342.0000	271.3269	350.78	348.60	336.71	9.498	9.542	9.608	9.718
58	348.0000	276.0870	356.78	354.60	342.71	9.498	9.542	9.609	9.719
59	354.0000	280.8471	362.78	360.60	348.71	9.499	9.543	9.609	9.720
60	360.0000	285.6072	368.79	366.60	354.70	9.499	9.543	9.610	9.721
61	366.0000	290.3674	374.79	372.60	360.70	9.499	9.544	9.610	9.722
62	372.0000	295.1275	380.79	378.60	366.70	9.499	9.544	9.611	9.723
63	378.0000	299.8876	386.79	384.60	372.70	9.499	9.544	9.612	9.724
64	384.0000	304.6477	392.79	390.60	378.70	9.500	9.545	9.612	9.725
65	390.0000	309.4078	398.79	396.60	384.70	9.500	9.545	9.613	9.725
66	396.0000	314.1680	404.79	402.60	390.69	9.500	9.545	9.613	9.726
67	402.0000	318.9281	410.79	408.60	396.69	9.500	9.546	9.614	9.727
68	408.0000	323.6882	416.80	414.60	402.69	9.501	9.546	9.614	9.728
69	414.0000	328.4483	422.80	420.60	408.69	9.501	9.546	9.615	9.729
70	420.0000	333.2084	428.80	426.60	414.69	9.501	9.547	9.616	9.730
71	426.0000	337.9686	434.80	432.60	420.69	9.501	9.547	9.616	9.731
72	432.0000	342.7287	440.80	438.60	426.69	9.502	9.548	9.617	9.732
73	438.0000	347.4888	446.80	444.60	432.69	9.502	9.548	9.617	9.733
74	444.0000	352.2489	452.80	450.60	438.68	9.502	9.548	9.618	9.733
75	450.0000	357.0090	458.80	456.60	444.68	9.502	9.549	9.618	9.734
76	456.0000	361.7692	464.80	462.60	450.68	9.502	9.549	9.619	9.735
77	462.0000	366.5293	470.81	468.60	456.68	9.503	9.549	9.619	9.736
78	468.0000	371.2894	476.81	474.60	462.68	9.503	9.550	9.620	9.737
79	474.0000	376.0495	482.81	480.60	468.68	9.503	9.550	9.620	9.738
80	480.0000	380.8096	488.81	486.60	474.68	9.503	9.550	9.621	9.739
81	486.0000	385.5698	494.81	492.60	480.68	9.503	9.551	9.621	9.739
82	492.0000	390.3299	500.81	498.60	486.68	9.504	9.551	9.622	9.740
83	498.0000	395.0900	506.81	504.60	492.68	9.504	9.551	9.622	9.741
84	504.0000	399.8501	512.81	510.60	498.67	9.504	9.552	9.624	9.743
85	510.0000	404.6102	518.82	516.60	504.67	9.505	9.552	9.624	9.744
86	516.0000	409.3704	524.82	522.60	510.67	9.505	9.553	9.625	9.745
87	522.0000	414.1305	530.82	528.60	516.67	9.505	9.553	9.625	9.746
88	528.0000	418.8906	536.82	534.60	522.67	9.505	9.554	9.626	9.747
89	534.0000	423.6507	542.82	540.60	528.67	9.506	9.554	9.627	9.748
90	540.0000	428.4108	548.82	546.60	534.67	9.506	9.554	9.627	9.749
91	546.0000	433.1710	554.82	552.60	540.67	9.506	9.555	9.628	9.750
92	552.0000	437.9311	560.82	558.60	546.67	9.506	9.555	9.628	9.751
93	558.0000	442.6912	566.83	564.60	552.67	9.506	9.556	9.629	9.752
94	564.0000	447.4513	572.83	570.60	558.67	9.507	9.556	9.630	9.753
95	570.0000	452.2114	578.83	576.60	564.67	9.507	9.556	9.630	9.754
96	576.0000	456.9716	584.83	582.60	570.66	9.507	9.557	9.631	9.755
97	582.0000	461.7317	590.83	588.60	576.66	9.507	9.557	9.631	9.755
98	588.0000	466.4918	596.83	594.60	582.66	9.508	9.557	9.632	9.756
99	594.0000	471.2519	602.83	600.60	588.66	9.508	9.558	9.633	9.757
100	600.0000	476.0121	608.83	606.60	594.66	9.508	9.558	9.633	9.758

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Table 76 — External spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 6.00

S_{vmax} = maximum effective tooth thickness, circular = 9.425

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	36.0000	28.5607	41.40	30.63	27.32	9.371	9.339	9.291	9.210
7	42.0000	33.3208	47.40	36.43	33.32	9.370	9.338	9.289	9.207
8	48.0000	38.0810	53.40	42.28	39.31	9.370	9.336	9.287	9.204
9	54.0000	42.8411	59.40	48.17	45.31	9.369	9.335	9.285	9.201
10	60.0000	47.6012	65.40	54.09	51.30	9.368	9.334	9.283	9.198
11	66.0000	52.3613	71.40	60.02	57.30	9.368	9.333	9.282	9.196
12	72.0000	57.1214	77.40	65.96	63.30	9.367	9.332	9.280	9.193
13	78.0000	61.8816	83.40	71.92	69.30	9.366	9.331	9.279	9.191
14	84.0000	66.6417	89.40	77.88	75.29	9.366	9.330	9.277	9.189
15	90.0000	71.4018	95.40	83.84	81.29	9.365	9.330	9.276	9.187
16	96.0000	76.1619	101.40	89.81	87.29	9.365	9.329	9.275	9.185
17	102.0000	80.9220	107.40	95.79	93.28	9.364	9.328	9.274	9.183
18	108.0000	85.6822	113.40	101.76	99.28	9.364	9.327	9.273	9.181
19	114.0000	90.4423	119.40	107.74	105.28	9.363	9.327	9.271	9.179
20	120.0000	95.2024	125.40	113.73	111.28	9.363	9.326	9.270	9.178
21	126.0000	99.9625	131.40	119.71	117.28	9.363	9.325	9.269	9.176
22	132.0000	104.7227	137.40	125.69	123.27	9.362	9.325	9.268	9.174
23	138.0000	109.4828	143.40	131.68	129.27	9.362	9.324	9.267	9.173
24	144.0000	114.2429	149.40	137.67	135.27	9.361	9.323	9.266	9.171
25	150.0000	119.0030	155.40	143.66	141.27	9.361	9.323	9.265	9.170
26	156.0000	123.7631	161.40	149.65	147.27	9.361	9.322	9.264	9.168
27	162.0000	128.5233	167.40	155.64	153.26	9.360	9.321	9.263	9.167
28	168.0000	133.2834	173.40	161.63	159.26	9.360	9.321	9.263	9.165
29	174.0000	138.0435	179.40	167.62	165.26	9.360	9.320	9.262	9.164
30	180.0000	142.8036	185.40	173.61	171.26	9.359	9.320	9.261	9.162
31	186.0000	147.5637	191.40	179.61	177.26	9.359	9.319	9.260	9.161
32	192.0000	152.3239	197.40	185.60	183.25	9.358	9.319	9.259	9.160
33	198.0000	157.0840	203.40	191.59	189.25	9.358	9.318	9.258	9.158
34	204.0000	161.8441	209.40	197.59	195.25	9.358	9.318	9.257	9.157
35	210.0000	166.6042	215.40	203.58	201.25	9.358	9.317	9.257	9.156
36	216.0000	171.3643	221.40	209.58	207.25	9.357	9.317	9.256	9.155
37	222.0000	176.1245	227.40	215.57	213.25	9.357	9.316	9.255	9.153
38	228.0000	180.8846	233.40	221.57	219.24	9.357	9.316	9.254	9.152
39	234.0000	185.6447	239.40	227.56	225.24	9.356	9.315	9.254	9.151
40	240.0000	190.4048	245.40	233.56	231.24	9.356	9.315	9.253	9.150
41	246.0000	195.1649	251.40	239.55	237.24	9.356	9.314	9.252	9.149
42	252.0000	199.9251	257.40	245.55	243.24	9.355	9.314	9.251	9.147
43	258.0000	204.6852	263.40	251.55	249.24	9.355	9.313	9.251	9.146
44	264.0000	209.4453	269.40	257.54	255.24	9.355	9.313	9.250	9.145
45	270.0000	214.2054	275.40	263.54	261.23	9.355	9.312	9.249	9.144
46	276.0000	218.9655	281.40	269.54	267.23	9.354	9.312	9.249	9.143
47	282.0000	223.7257	287.40	275.53	273.23	9.354	9.312	9.248	9.142
48	288.0000	228.4858	293.40	281.53	279.23	9.354	9.311	9.247	9.141
49	294.0000	233.2459	299.40	287.53	285.23	9.354	9.311	9.247	9.140
50	300.0000	238.0060	305.40	293.53	291.23	9.353	9.310	9.246	9.139
51	306.0000	242.7661	311.40	299.52	297.23	9.353	9.310	9.245	9.138
52	312.0000	247.5263	317.40	305.52	303.22	9.353	9.310	9.245	9.137
53	318.0000	252.2864	323.40	311.52	309.22	9.352	9.309	9.244	9.136
54	324.0000	257.0465	329.40	317.52	315.22	9.352	9.309	9.243	9.135
55	330.0000	261.8066	335.40	323.51	321.22	9.352	9.308	9.243	9.134
56	336.0000	266.5667	341.40	329.51	327.22	9.352	9.308	9.242	9.133
57	342.0000	271.3269	347.40	335.51	333.22	9.351	9.308	9.242	9.132
58	348.0000	276.0870	353.40	341.51	339.22	9.351	9.307	9.241	9.131
59	354.0000	280.8471	359.40	347.51	345.22	9.351	9.307	9.240	9.130
60	360.0000	285.6072	365.40	353.50	351.21	9.351	9.306	9.240	9.129
61	366.0000	290.3674	371.40	359.50	357.21	9.351	9.306	9.239	9.128
62	372.0000	295.1275	377.40	365.50	363.21	9.350	9.306	9.239	9.127
63	378.0000	299.8876	383.40	371.50	369.21	9.350	9.305	9.238	9.126
64	384.0000	304.6477	389.40	377.50	375.21	9.350	9.305	9.237	9.125
65	390.0000	309.4078	395.40	383.50	381.21	9.350	9.304	9.237	9.124
66	396.0000	314.1680	401.40	389.49	387.21	9.349	9.304	9.236	9.123
67	402.0000	318.9281	407.40	395.49	393.21	9.349	9.304	9.236	9.122
68	408.0000	323.6882	413.40	401.49	399.20	9.349	9.303	9.235	9.121
69	414.0000	328.4483	419.40	407.49	405.20	9.349	9.303	9.235	9.120
70	420.0000	333.2084	425.40	413.49	411.20	9.348	9.303	9.234	9.120
71	426.0000	337.9686	431.40	419.49	417.20	9.348	9.302	9.233	9.119
72	432.0000	342.7287	437.40	425.49	423.20	9.348	9.302	9.233	9.118
73	438.0000	347.4888	443.40	431.49	429.20	9.348	9.302	9.232	9.117
74	444.0000	352.2489	449.40	437.48	435.20	9.348	9.301	9.232	9.116
75	450.0000	357.0090	455.40	443.48	441.20	9.347	9.301	9.231	9.115
76	456.0000	361.7692	461.40	449.48	447.20	9.347	9.301	9.231	9.114
77	462.0000	366.5293	467.40	455.48	453.19	9.347	9.300	9.230	9.114
78	468.0000	371.2894	473.40	461.48	459.19	9.347	9.300	9.230	9.113
79	474.0000	376.0495	479.40	467.48	465.19	9.347	9.300	9.229	9.112
80	480.0000	380.8096	485.40	473.48	471.19	9.346	9.299	9.229	9.111
81	486.0000	385.5698	491.40	479.48	477.19	9.346	9.299	9.228	9.110
82	492.0000	390.3299	497.40	485.48	483.19	9.346	9.299	9.228	9.109
83	498.0000	395.0900	503.40	491.48	489.19	9.346	9.298	9.227	9.109
84	504.0000	399.8501	509.40	497.47	495.19	9.345	9.297	9.226	9.107
85	510.0000	404.6102	515.40	503.47	501.18	9.345	9.297	9.225	9.106
86	516.0000	409.3704	521.40	509.47	507.18	9.345	9.297	9.225	9.105
87	522.0000	414.1305	527.40	515.47	513.18	9.344	9.296	9.224	9.104
88	528.0000	418.8906	533.40	521.47	519.18	9.344	9.296	9.223	9.103
89	534.0000	423.6507	539.40	527.47	525.18	9.344	9.296	9.223	9.102
90	540.0000	428.4108	545.40	533.47	531.18	9.344	9.295	9.222	9.101
91	546.0000	433.1710	551.40	539.47	537.18	9.344	9.295	9.222	9.100
92	552.0000	437.9311	557.40	545.47	543.18	9.343	9.294	9.221	9.099
93	558.0000	442.6912	563.40	551.47	549.17	9.343	9.294	9.220	9.098
94	564.0000	447.4513	569.40	557.47	555.17	9.343	9.294	9.220	9.097
95	570.0000	452.2114	575.40	563.47	561.17	9.343	9.293	9.219	9.096
96	576.0000	456.9716	581.40	569.46	567.17	9.342	9.293	9.219	9.095
97	582.0000	461.7317	587.40	575.46	573.17	9.342	9.292	9.218	9.094
98	588.0000	466.4918	593.40	581.46	579.17	9.342	9.292	9.217	9.093
99	594.0000	471.2519	599.40	587.46	585.17	9.342	9.292	9.217	9.092
100	600.0000	476.0121	605.40	593.46	591.17	9.341	9.291	9.216	9.091

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Table 77 — Internal spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 5.00

E_{vmin} = minimum effective space width, circular = 7.854

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular 4 H	5 H	6 H	7 H
6	30.0000	23.8056	37.26	35.50	26.53	7.904	7.935	7.980	8.055
7	35.0000	27.7674	42.27	40.50	31.36	7.905	7.936	7.982	8.059
8	40.0000	31.7341	47.27	45.50	36.24	7.906	7.937	7.984	8.062
9	45.0000	35.7009	52.27	50.50	41.15	7.907	7.938	7.985	8.064
10	50.0000	39.6677	57.28	55.50	46.07	7.907	7.939	7.987	8.067
11	55.0000	43.6344	62.28	60.50	51.02	7.908	7.940	7.988	8.069
12	60.0000	47.6012	67.28	65.50	55.97	7.908	7.941	7.990	8.071
13	65.0000	51.5680	72.29	70.50	60.93	7.909	7.942	7.991	8.073
14	70.0000	55.5347	77.29	75.50	65.90	7.909	7.943	7.992	8.075
15	75.0000	59.5015	82.29	80.50	70.87	7.910	7.943	7.994	8.077
16	80.0000	63.4683	87.29	85.50	75.84	7.910	7.944	7.995	8.079
17	85.0000	67.4350	92.30	90.50	80.82	7.911	7.945	7.996	8.081
18	90.0000	71.4018	97.30	95.50	85.80	7.911	7.945	7.997	8.083
19	95.0000	75.3686	102.30	100.50	90.79	7.912	7.946	7.998	8.084
20	100.0000	79.3353	107.30	105.50	95.77	7.912	7.947	7.999	8.086
21	105.0000	83.3021	112.30	110.50	100.76	7.912	7.947	8.000	8.087
22	110.0000	87.2689	117.31	115.50	105.75	7.913	7.948	8.001	8.089
23	115.0000	91.2356	122.31	120.50	110.73	7.913	7.949	8.002	8.090
24	120.0000	95.2024	127.31	125.50	115.72	7.913	7.949	8.003	8.092
25	125.0000	99.1692	132.31	130.50	120.71	7.914	7.950	8.004	8.093
26	130.0000	103.1359	137.31	135.50	125.71	7.914	7.950	8.004	8.095
27	135.0000	107.1027	142.32	140.50	130.70	7.915	7.951	8.005	8.096
28	140.0000	111.0695	147.32	145.50	135.69	7.915	7.951	8.006	8.097
29	145.0000	115.0362	152.32	150.50	140.68	7.915	7.952	8.007	8.099
30	150.0000	119.0030	157.32	155.50	145.68	7.915	7.952	8.008	8.100
31	155.0000	122.9698	162.32	160.50	150.67	7.916	7.953	8.009	8.101
32	160.0000	126.9365	167.32	165.50	155.67	7.916	7.953	8.009	8.102
33	165.0000	130.9033	172.33	170.50	160.66	7.916	7.954	8.010	8.104
34	170.0000	134.8701	177.33	175.50	165.66	7.917	7.955	8.011	8.105
35	175.0000	138.8368	182.33	180.50	170.65	7.917	7.955	8.012	8.106
36	180.0000	142.8036	187.33	185.50	175.65	7.917	7.955	8.012	8.107
37	185.0000	146.7704	192.33	190.50	180.64	7.918	7.956	8.013	8.108
38	190.0000	150.7371	197.33	195.50	185.64	7.918	7.956	8.014	8.109
39	195.0000	154.7039	202.33	200.50	190.64	7.918	7.957	8.014	8.111
40	200.0000	158.6707	207.34	205.50	195.63	7.918	7.957	8.015	8.112
41	205.0000	162.6375	212.34	210.50	200.63	7.919	7.957	8.016	8.113
42	210.0000	166.6042	217.34	215.50	205.63	7.919	7.958	8.016	8.114
43	215.0000	170.5710	222.34	220.50	210.62	7.919	7.958	8.017	8.115
44	220.0000	174.5378	227.34	225.50	215.62	7.919	7.959	8.018	8.116
45	225.0000	178.5045	232.34	230.50	220.62	7.920	7.959	8.018	8.117
46	230.0000	182.4713	237.34	235.50	225.61	7.920	7.960	8.019	8.118
47	235.0000	186.4381	242.35	240.50	230.61	7.920	7.960	8.020	8.119
48	240.0000	190.4048	247.35	245.50	235.61	7.920	7.960	8.020	8.120
49	245.0000	194.3716	252.35	250.50	240.61	7.921	7.961	8.021	8.121
50	250.0000	198.3384	257.35	255.50	245.61	7.921	7.961	8.021	8.122
51	255.0000	202.3051	262.35	260.50	250.60	7.921	7.961	8.022	8.123
52	260.0000	206.2719	267.35	265.50	255.60	7.921	7.962	8.023	8.124
53	265.0000	210.2387	272.35	270.50	260.60	7.922	7.962	8.023	8.125
54	270.0000	214.2054	277.35	275.50	265.60	7.922	7.963	8.024	8.125
55	275.0000	218.1722	282.36	280.50	270.60	7.922	7.963	8.024	8.126
56	280.0000	222.1390	287.36	285.50	275.59	7.922	7.964	8.025	8.127
57	285.0000	226.1057	292.36	290.50	280.59	7.923	7.964	8.025	8.128
58	290.0000	230.0725	297.36	295.50	285.59	7.923	7.964	8.026	8.129
59	295.0000	234.0393	302.36	300.50	290.59	7.923	7.964	8.026	8.130
60	300.0000	238.0060	307.36	305.50	295.59	7.923	7.965	8.027	8.131
61	305.0000	241.9728	312.36	310.50	300.59	7.923	7.965	8.028	8.132
62	310.0000	245.9396	317.36	315.50	305.58	7.924	7.965	8.028	8.133
63	315.0000	249.9063	322.36	320.50	310.58	7.924	7.966	8.029	8.133
64	320.0000	253.8731	327.37	325.50	315.58	7.924	7.966	8.029	8.134
65	325.0000	257.8399	332.37	330.50	320.58	7.924	7.966	8.030	8.135
66	330.0000	261.8066	337.37	335.50	325.58	7.924	7.967	8.030	8.136
67	335.0000	265.7734	342.37	340.50	330.58	7.925	7.967	8.031	8.137
68	340.0000	269.7402	347.37	345.50	335.58	7.925	7.967	8.031	8.138
69	345.0000	273.7069	352.37	350.50	340.58	7.925	7.968	8.032	8.138
70	350.0000	277.6737	357.37	355.50	345.57	7.925	7.968	8.032	8.139
71	355.0000	281.6405	362.37	360.50	350.57	7.925	7.968	8.033	8.140
72	360.0000	285.6072	367.37	365.50	355.57	7.926	7.969	8.033	8.141
73	365.0000	289.5740	372.37	370.50	360.57	7.926	7.969	8.034	8.142
74	370.0000	293.5408	377.38	375.50	365.57	7.926	7.969	8.034	8.142
75	375.0000	297.5075	382.38	380.50	370.57	7.926	7.970	8.035	8.143
76	380.0000	301.4743	387.38	385.50	375.57	7.926	7.970	8.035	8.144
77	385.0000	305.4411	392.38	390.50	380.57	7.927	7.970	8.036	8.145
78	390.0000	309.4078	397.38	395.50	385.57	7.927	7.971	8.036	8.145
79	395.0000	313.3746	402.38	400.50	390.57	7.927	7.971	8.037	8.146
80	400.0000	317.3414	407.38	405.50	395.57	7.927	7.971	8.037	8.147
81	405.0000	321.3081	412.38	410.50	400.56	7.927	7.971	8.038	8.148
82	410.0000	325.2749	417.38	415.50	405.56	7.928	7.972	8.038	8.148
83	415.0000	329.2417	422.38	420.50	410.56	7.928	7.972	8.039	8.149
84	420.0000	333.2084	427.39	425.50	415.56	7.928	7.972	8.039	8.150
85	425.0000	337.1752	432.39	430.50	420.56	7.928	7.973	8.039	8.151
86	430.0000	341.1420	437.39	435.50	425.56	7.928	7.973	8.040	8.151
87	435.0000	345.1087	442.39	440.50	430.56	7.929	7.973	8.040	8.152
88	440.0000	349.0755	447.39	445.50	435.56	7.929	7.974	8.041	8.153
89	445.0000	353.0423	452.39	450.50	440.56	7.929	7.974	8.041	8.154
90	450.0000	357.0090	457.39	455.50	445.56	7.929	7.974	8.042	8.154
91	455.0000	360.9758	462.39	460.50	450.56	7.929	7.974	8.042	8.155
92	460.0000	364.9426	467.39	465.50	455.56	7.929	7.975	8.043	8.156
93	465.0000	368.9093	472.39	470.50	460.56	7.930	7.975	8.043	8.156
94	470.0000	372.8761	477.40	475.50	465.56	7.930	7.975	8.043	8.157
95	475.0000	376.8429	482.40	480.50	470.55	7.930	7.976	8.044	8.158
96	480.0000	380.8096	487.40	485.50	475.55	7.930	7.976	8.044	8.158
97	485.0000	384.7764	492.40	490.50	480.55	7.930	7.976	8.045	8.159
98	490.0000	388.7432	497.40	495.50	485.55	7.930	7.976	8.045	8.160
99	495.0000	392.7099	502.40	500.50	490.55	7.931	7.977	8.046	8.161
100	500.0000	396.6767	507.40	505.50	495.55	7.931	7.977	8.046	8.161

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Table 78 — External spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 5.00

S_{vmax} = maximum effective tooth thickness, circular = 7.854

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	30.0000	23.8006	34.50	25.53	22.74	7.804	7.773	7.728	7.652
7	35.0000	27.7674	39.50	30.36	27.73	7.803	7.772	7.726	7.649
8	40.0000	31.7341	44.50	35.24	32.73	7.802	7.771	7.724	7.646
9	45.0000	35.7009	49.50	40.15	37.73	7.801	7.770	7.723	7.644
10	50.0000	39.6677	54.50	45.07	42.72	7.801	7.769	7.721	7.641
11	55.0000	43.6344	59.50	50.02	47.72	7.800	7.768	7.720	7.639
12	60.0000	47.6012	64.50	54.97	52.72	7.800	7.767	7.718	7.637
13	65.0000	51.5680	69.50	59.93	57.71	7.799	7.766	7.717	7.635
14	70.0000	55.5347	74.50	64.90	62.71	7.799	7.765	7.716	7.633
15	75.0000	59.5015	79.50	69.87	67.71	7.798	7.765	7.714	7.631
16	80.0000	63.4683	84.50	74.84	72.71	7.798	7.764	7.713	7.629
17	85.0000	67.4350	89.50	79.82	77.70	7.797	7.763	7.712	7.627
18	90.0000	71.4018	94.50	84.80	82.70	7.797	7.763	7.711	7.625
19	95.0000	75.3686	99.50	89.79	87.70	7.796	7.762	7.710	7.624
20	100.0000	79.3353	104.50	94.77	92.70	7.796	7.761	7.709	7.622
21	105.0000	83.3021	109.50	99.76	97.70	7.796	7.761	7.708	7.620
22	110.0000	87.2689	114.50	104.75	102.69	7.795	7.760	7.707	7.619
23	115.0000	91.2356	119.50	109.73	107.69	7.795	7.759	7.706	7.617
24	120.0000	95.2024	124.50	114.72	112.69	7.794	7.759	7.705	7.616
25	125.0000	99.1692	129.50	119.71	117.69	7.794	7.758	7.704	7.615
26	130.0000	103.1359	134.50	124.71	122.69	7.794	7.758	7.704	7.613
27	135.0000	107.1027	139.50	129.70	127.68	7.793	7.757	7.703	7.612
28	140.0000	111.0695	144.50	134.69	132.68	7.793	7.757	7.702	7.611
29	145.0000	115.0362	149.50	139.68	137.68	7.793	7.756	7.701	7.609
30	150.0000	119.0030	154.50	144.68	142.68	7.792	7.756	7.700	7.608
31	155.0000	122.9698	159.50	149.67	147.68	7.792	7.755	7.699	7.607
32	160.0000	126.9365	164.50	154.67	152.68	7.792	7.755	7.699	7.605
33	165.0000	130.9033	169.50	159.66	157.67	7.792	7.754	7.698	7.604
34	170.0000	134.8701	174.50	164.66	162.67	7.791	7.754	7.697	7.603
35	175.0000	138.8368	179.50	169.65	167.67	7.791	7.753	7.696	7.602
36	180.0000	142.8036	184.50	174.65	172.67	7.791	7.753	7.696	7.601
37	185.0000	146.7704	189.50	179.64	177.67	7.790	7.752	7.695	7.600
38	190.0000	150.7371	194.50	184.64	182.67	7.790	7.752	7.694	7.599
39	195.0000	154.7039	199.50	189.64	187.67	7.790	7.751	7.694	7.597
40	200.0000	158.6707	204.50	194.63	192.66	7.790	7.751	7.693	7.596
41	205.0000	162.6375	209.50	199.63	197.66	7.789	7.750	7.692	7.595
42	210.0000	166.6042	214.50	204.63	202.66	7.789	7.750	7.692	7.594
43	215.0000	170.5710	219.50	209.62	207.66	7.789	7.750	7.691	7.593
44	220.0000	174.5378	224.50	214.62	212.66	7.789	7.749	7.690	7.592
45	225.0000	178.5045	229.50	219.62	217.66	7.788	7.749	7.690	7.591
46	230.0000	182.4713	234.50	224.61	222.66	7.788	7.748	7.689	7.590
47	235.0000	186.4381	239.50	229.61	227.65	7.788	7.748	7.688	7.589
48	240.0000	190.4048	244.50	234.61	232.65	7.788	7.748	7.688	7.588
49	245.0000	194.3716	249.50	239.61	237.65	7.787	7.747	7.687	7.587
50	250.0000	198.3384	254.50	244.61	242.65	7.787	7.747	7.687	7.586
51	255.0000	202.3051	259.50	249.60	247.65	7.787	7.746	7.686	7.585
52	260.0000	206.2719	264.50	254.60	252.65	7.787	7.746	7.685	7.584
53	265.0000	210.2387	269.50	259.60	257.65	7.786	7.746	7.685	7.583
54	270.0000	214.2054	274.50	264.60	262.65	7.786	7.745	7.684	7.582
55	275.0000	218.1722	279.50	269.60	267.64	7.786	7.745	7.684	7.582
56	280.0000	222.1390	284.50	274.59	272.64	7.786	7.745	7.683	7.581
57	285.0000	226.1057	289.50	279.59	277.64	7.785	7.744	7.683	7.580
58	290.0000	230.0725	294.50	284.59	282.64	7.785	7.744	7.682	7.579
59	295.0000	234.0393	299.50	289.59	287.64	7.785	7.744	7.681	7.578
60	300.0000	238.0060	304.50	294.59	292.64	7.785	7.743	7.681	7.577
61	305.0000	241.9728	309.50	299.59	297.64	7.785	7.743	7.680	7.576
62	310.0000	245.9396	314.50	304.58	302.64	7.784	7.743	7.680	7.575
63	315.0000	249.9063	319.50	309.58	307.64	7.784	7.742	7.679	7.575
64	320.0000	253.8731	324.50	314.58	312.63	7.784	7.742	7.679	7.574
65	325.0000	257.8399	329.50	319.58	317.63	7.784	7.742	7.678	7.573
66	330.0000	261.8066	334.50	324.58	322.63	7.783	7.741	7.678	7.572
67	335.0000	265.7734	339.50	329.58	327.63	7.783	7.741	7.677	7.571
68	340.0000	269.7402	344.50	334.58	332.63	7.783	7.741	7.677	7.570
69	345.0000	273.7069	349.50	339.58	337.63	7.783	7.740	7.676	7.570
70	350.0000	277.6737	354.50	344.57	342.63	7.783	7.740	7.676	7.569
71	355.0000	281.6405	359.50	349.57	347.63	7.782	7.740	7.675	7.568
72	360.0000	285.6072	364.50	354.57	352.63	7.782	7.739	7.675	7.567
73	365.0000	289.5740	369.50	359.57	357.63	7.782	7.739	7.674	7.566
74	370.0000	293.5408	374.50	364.57	362.62	7.782	7.739	7.674	7.566
75	375.0000	297.5075	379.50	369.57	367.62	7.782	7.738	7.673	7.565
76	380.0000	301.4743	384.50	374.57	372.62	7.781	7.738	7.673	7.564
77	385.0000	305.4411	389.50	379.57	377.62	7.781	7.738	7.672	7.563
78	390.0000	309.4078	394.50	384.57	382.62	7.781	7.737	7.672	7.562
79	395.0000	313.3746	399.50	389.57	387.62	7.781	7.737	7.671	7.562
80	400.0000	317.3414	404.50	394.57	392.62	7.781	7.737	7.671	7.561
81	405.0000	321.3081	409.50	399.56	397.62	7.781	7.736	7.670	7.560
82	410.0000	325.2749	414.50	404.56	402.62	7.780	7.736	7.670	7.559
83	415.0000	329.2417	419.50	409.56	407.62	7.780	7.736	7.669	7.559
84	420.0000	333.2084	424.50	414.56	412.61	7.780	7.736	7.669	7.558
85	425.0000	337.1752	429.50	419.56	417.61	7.780	7.735	7.669	7.557
86	430.0000	341.1420	434.50	424.56	422.61	7.780	7.735	7.668	7.557
87	435.0000	345.1087	439.50	429.56	427.61	7.779	7.735	7.668	7.556
88	440.0000	349.0755	444.50	434.56	432.61	7.779	7.734	7.667	7.555
89	445.0000	353.0423	449.50	439.56	437.61	7.779	7.734	7.667	7.554
90	450.0000	357.0090	454.50	444.56	442.61	7.779	7.734	7.666	7.554
91	455.0000	360.9758	459.50	449.56	447.61	7.779	7.734	7.666	7.553
92	460.0000	364.9426	464.50	454.56	452.61	7.779	7.733	7.665	7.552
93	465.0000	368.9093	469.50	459.56	457.61	7.778	7.733	7.665	7.552
94	470.0000	372.8761	474.50	464.56	462.60	7.778	7.733	7.665	7.551
95	475.0000	376.8429	479.50	469.55	467.60	7.778	7.732	7.664	7.550
96	480.0000	380.8096	484.50	474.55	472.60	7.778	7.732	7.664	7.549
97	485.0000	384.7764	489.50	479.55	477.60	7.778	7.732	7.663	7.549
98	490.0000	388.7432	494.50	484.55	482.60	7.778	7.732	7.663	7.548
99	495.0000	392.7099	499.50	489.55	487.60	7.777	7.731	7.662	7.547
100	500.0000	396.6767	504.50	494.55	492.60	7.777	7.731	7.662	7.547

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Table 79 — Internal spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 4.00

E_{vmin} = minimum effective space width, circular = 6.283

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	24.0000	19.0405	29.84	28.40	21.22	6.330	6.358	6.400	6.470
7	28.0000	22.2139	33.85	32.40	25.09	6.331	6.359	6.402	6.473
8	32.0000	25.3873	37.85	36.40	28.99	6.331	6.360	6.403	6.475
9	36.0000	28.5607	41.85	40.40	32.92	6.332	6.361	6.405	6.478
10	40.0000	31.7341	45.86	44.40	36.86	6.332	6.362	6.406	6.480
11	44.0000	34.9076	49.86	48.40	40.81	6.333	6.363	6.408	6.482
12	48.0000	38.0810	53.86	52.40	44.78	6.333	6.364	6.409	6.484
13	52.0000	41.2544	57.86	56.40	48.74	6.334	6.364	6.410	6.486
14	56.0000	44.4278	61.87	60.40	52.72	6.334	6.365	6.411	6.488
15	60.0000	47.6012	65.87	64.40	56.69	6.335	6.366	6.412	6.490
16	64.0000	50.7746	69.87	68.40	60.68	6.335	6.367	6.413	6.492
17	68.0000	53.9480	73.87	72.40	64.66	6.336	6.367	6.414	6.493
18	72.0000	57.1214	77.88	76.40	68.64	6.336	6.368	6.415	6.495
19	76.0000	60.2949	81.88	80.40	72.63	6.336	6.368	6.416	6.496
20	80.0000	63.4683	85.88	84.40	76.62	6.337	6.369	6.417	6.498
21	84.0000	66.6417	89.88	88.40	80.61	6.337	6.370	6.418	6.499
22	88.0000	69.8151	93.88	92.40	84.60	6.338	6.370	6.419	6.501
23	92.0000	72.9885	97.89	96.40	88.59	6.338	6.371	6.420	6.502
24	96.0000	76.1619	101.89	100.40	92.58	6.338	6.371	6.421	6.503
25	100.0000	79.3353	105.89	104.40	96.57	6.339	6.372	6.422	6.505
26	104.0000	82.5088	109.89	108.40	100.56	6.339	6.372	6.422	6.506
27	108.0000	85.6822	113.89	112.40	104.56	6.339	6.373	6.423	6.507
28	112.0000	88.8556	117.89	116.40	108.55	6.339	6.373	6.424	6.508
29	116.0000	92.0290	121.89	120.40	112.55	6.340	6.374	6.425	6.509
30	120.0000	95.2024	125.90	124.40	116.54	6.340	6.374	6.425	6.511
31	124.0000	98.3758	129.90	128.40	120.54	6.340	6.375	6.426	6.512
32	128.0000	101.5492	133.90	132.40	124.53	6.341	6.375	6.427	6.513
33	132.0000	104.7227	137.90	136.40	128.53	6.341	6.376	6.427	6.514
34	136.0000	107.8961	141.90	140.40	132.52	6.341	6.376	6.428	6.515
35	140.0000	111.0695	145.90	144.40	136.52	6.341	6.376	6.429	6.516
36	144.0000	114.2429	149.90	148.40	140.52	6.342	6.377	6.429	6.517
37	148.0000	117.4163	153.91	152.40	144.51	6.342	6.377	6.430	6.518
38	152.0000	120.5897	157.91	156.40	148.51	6.342	6.378	6.431	6.519
39	156.0000	123.7631	161.91	160.40	152.51	6.342	6.378	6.431	6.520
40	160.0000	126.9365	165.91	164.40	156.51	6.343	6.378	6.432	6.521
41	164.0000	130.1100	169.91	168.40	160.50	6.343	6.379	6.433	6.522
42	168.0000	133.2834	173.91	172.40	164.50	6.343	6.379	6.433	6.523
43	172.0000	136.4568	177.91	176.40	168.50	6.343	6.380	6.434	6.524
44	176.0000	139.6302	181.92	180.40	172.50	6.344	6.380	6.434	6.525
45	180.0000	142.8036	185.92	184.40	176.49	6.344	6.380	6.435	6.526
46	184.0000	145.9770	189.92	188.40	180.49	6.344	6.381	6.435	6.527
47	188.0000	149.1504	193.92	192.40	184.49	6.344	6.381	6.436	6.528
48	192.0000	152.3239	197.92	196.40	188.49	6.345	6.381	6.437	6.529
49	196.0000	155.4973	201.92	200.40	192.49	6.345	6.382	6.437	6.529
50	200.0000	158.6707	205.92	204.40	196.48	6.345	6.382	6.438	6.530
51	204.0000	161.8441	209.92	208.40	200.48	6.345	6.382	6.438	6.531
52	208.0000	165.0175	213.92	212.40	204.48	6.345	6.383	6.439	6.532
53	212.0000	168.1909	217.93	216.40	208.48	6.346	6.383	6.439	6.533
54	216.0000	171.3643	221.93	220.40	212.48	6.346	6.383	6.440	6.534
55	220.0000	174.5378	225.93	224.40	216.48	6.346	6.384	6.440	6.535
56	224.0000	177.7112	229.93	228.40	220.47	6.346	6.384	6.441	6.535
57	228.0000	180.8846	233.93	232.40	224.47	6.346	6.384	6.441	6.536
58	232.0000	184.0580	237.93	236.40	228.47	6.347	6.385	6.442	6.537
59	236.0000	187.2314	241.93	240.40	232.47	6.347	6.385	6.442	6.538
60	240.0000	190.4048	245.93	244.40	236.47	6.347	6.385	6.443	6.539
61	244.0000	193.5782	249.93	248.40	240.47	6.347	6.386	6.443	6.539
62	248.0000	196.7516	253.93	252.40	244.47	6.347	6.386	6.444	6.540
63	252.0000	199.9251	257.94	256.40	248.47	6.348	6.386	6.444	6.541
64	256.0000	203.0985	261.94	260.40	252.47	6.348	6.387	6.445	6.542
65	260.0000	206.2719	265.94	264.40	256.46	6.348	6.387	6.445	6.542
66	264.0000	209.4453	269.94	268.40	260.46	6.348	6.387	6.446	6.543
67	268.0000	212.6187	273.94	272.40	264.46	6.348	6.387	6.446	6.544
68	272.0000	215.7921	277.94	276.40	268.46	6.349	6.388	6.447	6.545
69	276.0000	218.9655	281.94	280.40	272.46	6.349	6.388	6.447	6.545
70	280.0000	222.1390	285.94	284.40	276.46	6.349	6.388	6.447	6.546
71	284.0000	225.3124	289.94	288.40	280.46	6.349	6.389	6.448	6.547
72	288.0000	228.4858	293.94	292.40	284.46	6.349	6.389	6.448	6.547
73	292.0000	231.6592	297.95	296.40	288.46	6.349	6.389	6.449	6.548
74	296.0000	234.8326	301.95	300.40	292.46	6.350	6.389	6.449	6.549
75	300.0000	238.0060	305.95	304.40	296.46	6.350	6.390	6.450	6.550
76	304.0000	241.1794	309.95	308.40	300.45	6.350	6.390	6.450	6.550
77	308.0000	244.3529	313.95	312.40	304.45	6.350	6.390	6.451	6.551
78	312.0000	247.5263	317.95	316.40	308.45	6.350	6.391	6.451	6.552
79	316.0000	250.6997	321.95	320.40	312.45	6.350	6.391	6.451	6.552
80	320.0000	253.8731	325.95	324.40	316.45	6.351	6.391	6.452	6.553
81	324.0000	257.0465	329.95	328.40	320.45	6.351	6.391	6.452	6.554
82	328.0000	260.2199	333.95	332.40	324.45	6.351	6.392	6.453	6.554
83	332.0000	263.3933	337.95	336.40	328.45	6.351	6.392	6.453	6.555
84	336.0000	266.5667	341.96	340.40	332.45	6.351	6.392	6.453	6.556
85	340.0000	269.7402	345.96	344.40	336.45	6.351	6.392	6.454	6.556
86	344.0000	272.9136	349.96	348.40	340.45	6.352	6.393	6.454	6.557
87	348.0000	276.0870	353.96	352.40	344.45	6.352	6.393	6.455	6.558
88	352.0000	279.2604	357.96	356.40	348.45	6.352	6.393	6.455	6.558
89	356.0000	282.4338	361.96	360.40	352.45	6.352	6.393	6.455	6.559
90	360.0000	285.6072	365.96	364.40	356.45	6.352	6.394	6.456	6.559
91	364.0000	288.7806	369.96	368.40	360.45	6.352	6.394	6.456	6.560
92	368.0000	291.9541	373.96	372.40	364.45	6.353	6.394	6.457	6.561
93	372.0000	295.1275	377.96	376.40	368.44	6.353	6.394	6.457	6.561
94	376.0000	298.3009	381.96	380.40	372.44	6.353	6.395	6.457	6.562
95	380.0000	301.4743	385.96	384.40	376.44	6.353	6.395	6.458	6.563
96	384.0000	304.6477	389.96	388.40	380.44	6.353	6.395	6.458	6.563
97	388.0000	307.8211	393.97	392.40	384.44	6.353	6.395	6.459	6.564
98	392.0000	310.9945	397.97	396.40	388.44	6.354	6.396	6.459	6.564
99	396.0000	314.1680	401.97	400.40	392.44	6.354	6.396	6.459	6.565
100	400.0000	317.3414	405.97	404.40	396.44	6.354	6.396	6.460	6.566

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Table 80 — External spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 4.00

S_{vmax} = maximum effective tooth thickness, circular = 6.283

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	24.0000	19.0405	27.60	20.42	18.16	6.236	6.208	6.166	6.056
7	28.0000	22.2139	31.60	24.29	22.15	6.236	6.207	6.165	6.054
8	32.0000	25.3873	35.60	28.19	26.15	6.235	6.206	6.163	6.051
9	36.0000	28.5607	39.60	32.12	30.15	6.234	6.205	6.161	6.088
10	40.0000	31.7341	43.60	36.06	34.14	6.234	6.204	6.160	6.086
11	44.0000	34.9076	47.60	40.01	38.14	6.233	6.204	6.159	6.084
12	48.0000	38.0810	51.60	43.98	42.14	6.233	6.203	6.157	6.082
13	52.0000	41.2544	55.60	47.94	46.14	6.232	6.202	6.156	6.080
14	56.0000	44.4278	59.60	51.92	50.13	6.232	6.201	6.155	6.078
15	60.0000	47.6012	63.60	55.89	54.13	6.232	6.200	6.154	6.076
16	64.0000	50.7746	67.60	59.88	58.13	6.231	6.200	6.153	6.075
17	68.0000	53.9480	71.60	63.86	62.13	6.231	6.199	6.152	6.073
18	72.0000	57.1214	75.60	67.84	66.12	6.230	6.199	6.151	6.072
19	76.0000	60.2949	79.60	71.83	70.12	6.230	6.198	6.150	6.070
20	80.0000	63.4683	83.60	75.82	74.12	6.230	6.197	6.149	6.069
21	84.0000	66.6417	87.60	79.81	78.12	6.229	6.197	6.148	6.067
22	88.0000	69.8151	91.60	83.80	82.12	6.229	6.196	6.147	6.066
23	92.0000	72.9885	95.60	87.79	86.11	6.228	6.196	6.146	6.064
24	96.0000	76.1619	99.60	91.78	90.11	6.228	6.195	6.146	6.063
25	100.0000	79.3353	103.60	95.77	94.11	6.228	6.195	6.145	6.062
26	104.0000	82.5088	107.60	99.76	98.11	6.228	6.194	6.144	6.061
27	108.0000	85.6822	111.60	103.76	102.11	6.227	6.194	6.143	6.059
28	112.0000	88.8556	115.60	107.75	106.11	6.227	6.193	6.142	6.058
29	116.0000	92.0290	119.60	111.75	110.11	6.227	6.193	6.142	6.057
30	120.0000	95.2024	123.60	115.74	114.10	6.226	6.192	6.141	6.056
31	124.0000	98.3758	127.60	119.74	118.10	6.226	6.192	6.140	6.055
32	128.0000	101.5492	131.60	123.73	122.10	6.226	6.191	6.140	6.053
33	132.0000	104.7227	135.60	127.73	126.10	6.225	6.191	6.139	6.052
34	136.0000	107.8961	139.60	131.72	130.10	6.225	6.190	6.138	6.051
35	140.0000	111.0695	143.60	135.72	134.10	6.225	6.190	6.138	6.050
36	144.0000	114.2429	147.60	139.72	138.10	6.225	6.190	6.137	6.049
37	148.0000	117.4163	151.60	143.71	142.09	6.224	6.189	6.136	6.048
38	152.0000	120.5897	155.60	147.71	146.09	6.224	6.189	6.136	6.047
39	156.0000	123.7631	159.60	151.71	150.09	6.224	6.188	6.135	6.046
40	160.0000	126.9365	163.60	155.71	154.09	6.224	6.188	6.134	6.045
41	164.0000	130.1100	167.60	159.70	158.09	6.223	6.188	6.134	6.044
42	168.0000	133.2834	171.60	163.70	162.09	6.223	6.187	6.133	6.043
43	172.0000	136.4568	175.60	167.70	166.09	6.223	6.187	6.133	6.042
44	176.0000	139.6302	179.60	171.70	170.08	6.223	6.186	6.132	6.041
45	180.0000	142.8036	183.60	175.69	174.08	6.223	6.186	6.131	6.040
46	184.0000	145.9770	187.60	179.69	178.08	6.222	6.186	6.131	6.040
47	188.0000	149.1504	191.60	183.69	182.08	6.222	6.185	6.130	6.039
48	192.0000	152.3239	195.60	187.69	186.08	6.222	6.185	6.130	6.038
49	196.0000	155.4973	199.60	191.69	190.08	6.222	6.185	6.129	6.037
50	200.0000	158.6707	203.60	195.68	194.08	6.221	6.184	6.129	6.036
51	204.0000	161.8441	207.60	199.68	198.08	6.221	6.184	6.128	6.035
52	208.0000	165.0175	211.60	203.68	202.08	6.221	6.184	6.128	6.034
53	212.0000	168.1909	215.60	207.68	206.07	6.221	6.183	6.127	6.034
54	216.0000	171.3643	219.60	211.68	210.07	6.221	6.183	6.127	6.033
55	220.0000	174.5378	223.60	215.68	214.07	6.220	6.183	6.126	6.032
56	224.0000	177.7112	227.60	219.67	218.07	6.220	6.182	6.126	6.031
57	228.0000	180.8846	231.60	223.67	222.07	6.220	6.182	6.125	6.030
58	232.0000	184.0580	235.60	227.67	226.07	6.220	6.182	6.125	6.029
59	236.0000	187.2314	239.60	231.67	230.07	6.220	6.181	6.124	6.029
60	240.0000	190.4048	243.60	235.67	234.07	6.219	6.181	6.124	6.028
61	244.0000	193.5782	247.60	239.67	238.07	6.219	6.181	6.123	6.027
62	248.0000	196.7516	251.60	243.67	242.07	6.219	6.180	6.123	6.026
63	252.0000	199.9251	255.60	247.67	246.06	6.219	6.180	6.122	6.026
64	256.0000	203.0985	259.60	251.67	250.06	6.219	6.180	6.122	6.025
65	260.0000	206.2719	263.60	255.66	254.06	6.218	6.180	6.121	6.024
66	264.0000	209.4453	267.60	259.66	258.06	6.218	6.179	6.121	6.023
67	268.0000	212.6187	271.60	263.66	262.06	6.218	6.179	6.120	6.023
68	272.0000	215.7921	275.60	267.66	266.06	6.218	6.179	6.120	6.022
69	276.0000	218.9655	279.60	271.66	270.06	6.218	6.178	6.119	6.021
70	280.0000	222.1390	283.60	275.66	274.06	6.217	6.178	6.119	6.020
71	284.0000	225.3124	287.60	279.66	278.06	6.217	6.178	6.118	6.020
72	288.0000	228.4858	291.60	283.66	282.06	6.217	6.177	6.118	6.019
73	292.0000	231.6592	295.60	287.66	286.05	6.217	6.177	6.118	6.018
74	296.0000	234.8326	299.60	291.66	290.05	6.217	6.177	6.117	6.018
75	300.0000	238.0060	303.60	295.66	294.05	6.217	6.177	6.117	6.017
76	304.0000	241.1794	307.60	299.65	298.05	6.216	6.176	6.116	6.016
77	308.0000	244.3529	311.60	303.65	302.05	6.216	6.176	6.116	6.015
78	312.0000	247.5263	315.60	307.65	306.05	6.216	6.176	6.115	6.015
79	316.0000	250.6997	319.60	311.65	310.05	6.216	6.176	6.115	6.014
80	320.0000	253.8731	323.60	315.65	314.05	6.216	6.175	6.115	6.013
81	324.0000	257.0465	327.60	319.65	318.05	6.216	6.175	6.114	6.013
82	328.0000	260.2199	331.60	323.65	322.05	6.215	6.175	6.114	6.012
83	332.0000	263.3933	335.60	327.65	326.05	6.215	6.174	6.113	6.011
84	336.0000	266.5667	339.60	331.65	330.04	6.215	6.174	6.113	6.011
85	340.0000	269.7402	343.60	335.65	334.04	6.215	6.174	6.112	6.010
86	344.0000	272.9136	347.60	339.65	338.04	6.215	6.174	6.112	6.009
87	348.0000	276.0870	351.60	343.65	342.04	6.215	6.173	6.112	6.009
88	352.0000	279.2604	355.60	347.65	346.04	6.214	6.173	6.111	6.008
89	356.0000	282.4338	359.60	351.65	350.04	6.214	6.173	6.111	6.008
90	360.0000	285.6072	363.60	355.65	354.04	6.214	6.173	6.110	6.007
91	364.0000	288.7806	367.60	359.65	358.04	6.214	6.172	6.110	6.006
92	368.0000	291.9541	371.60	363.65	362.04	6.214	6.172	6.110	6.006
93	372.0000	295.1275	375.60	367.64	366.04	6.214	6.172	6.109	6.005
94	376.0000	298.3009	379.60	371.64	370.04	6.213	6.172	6.109	6.004
95	380.0000	301.4743	383.60	375.64	374.04	6.213	6.171	6.109	6.004
96	384.0000	304.6477	387.60	379.64	378.04	6.213	6.171	6.108	6.003
97	388.0000	307.8211	391.60	383.64	382.03	6.213	6.171	6.108	6.003
98	392.0000	310.9945	395.60	387.64	386.03	6.213	6.171	6.107	6.002
99	396.0000	314.1680	399.60	391.64	390.03	6.213	6.170	6.107	6.001
100	400.0000	317.3414	403.60	395.64	394.03	6.213	6.170	6.107	6.001

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Table 81 — Internal spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 3.00

E_{vmin} = minimum effective space width, circular = 4.712

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	18.0000	14.2804	22.42	21.30	15.92	4.755	4.780	4.818	4.882
7	21.0000	16.6604	25.42	24.30	18.81	4.755	4.781	4.820	4.884
8	24.0000	19.0405	28.43	27.30	21.74	4.756	4.782	4.821	4.887
9	27.0000	21.4205	31.43	30.30	24.69	4.757	4.783	4.823	4.889
10	30.0000	23.8006	34.43	33.30	27.64	4.757	4.784	4.824	4.891
11	33.0000	26.1807	37.44	36.30	30.61	4.758	4.785	4.825	4.893
12	36.0000	28.5607	40.44	39.30	33.58	4.758	4.785	4.826	4.895
13	39.0000	30.9408	43.44	42.30	36.56	4.758	4.786	4.827	4.896
14	42.0000	33.3208	46.44	45.30	39.54	4.759	4.787	4.828	4.898
15	45.0000	35.7009	49.44	48.30	42.52	4.759	4.787	4.829	4.900
16	48.0000	38.0810	52.45	51.30	45.51	4.760	4.788	4.830	4.901
17	51.0000	40.4610	55.45	54.30	48.49	4.760	4.788	4.831	4.903
18	54.0000	42.8411	58.45	57.30	51.48	4.760	4.789	4.832	4.904
19	57.0000	45.2211	61.45	60.30	54.47	4.761	4.790	4.833	4.905
20	60.0000	47.6012	64.45	63.30	57.46	4.761	4.790	4.834	4.907
21	63.0000	49.9813	67.45	66.30	60.45	4.761	4.791	4.835	4.908
22	66.0000	52.3613	70.46	69.30	63.45	4.762	4.791	4.835	4.909
23	69.0000	54.7414	73.46	72.30	66.44	4.762	4.792	4.836	4.910
24	72.0000	57.1214	76.46	75.30	69.43	4.762	4.792	4.837	4.912
25	75.0000	59.5015	79.46	78.30	72.43	4.762	4.793	4.838	4.913
26	78.0000	61.8816	82.46	81.30	75.42	4.763	4.793	4.838	4.914
27	81.0000	64.2616	85.46	84.30	78.42	4.763	4.793	4.839	4.915
28	84.0000	66.6417	88.47	87.30	81.41	4.763	4.794	4.840	4.916
29	87.0000	69.0217	91.47	90.30	84.41	4.764	4.794	4.840	4.917
30	90.0000	71.4018	94.47	93.30	87.41	4.764	4.795	4.841	4.918
31	93.0000	73.7819	97.47	96.30	90.40	4.764	4.795	4.842	4.919
32	96.0000	76.1619	100.47	99.30	93.40	4.764	4.795	4.842	4.920
33	99.0000	78.5420	103.47	102.30	96.40	4.765	4.796	4.843	4.921
34	102.0000	80.9220	106.47	105.30	99.39	4.765	4.796	4.843	4.922
35	105.0000	83.3021	109.47	108.30	102.39	4.765	4.797	4.844	4.923
36	108.0000	85.6822	112.48	111.30	105.39	4.765	4.797	4.845	4.924
37	111.0000	88.0622	115.48	114.30	108.39	4.765	4.797	4.845	4.925
38	114.0000	90.4423	118.48	117.30	111.38	4.766	4.798	4.846	4.926
39	117.0000	92.8224	121.48	120.30	114.38	4.766	4.798	4.846	4.927
40	120.0000	95.2024	124.48	123.30	117.38	4.766	4.798	4.847	4.927
41	123.0000	97.5825	127.48	126.30	120.38	4.766	4.799	4.847	4.928
42	126.0000	99.9625	130.48	129.30	123.38	4.767	4.799	4.848	4.929
43	129.0000	102.3426	133.48	132.30	126.37	4.767	4.799	4.848	4.930
44	132.0000	104.7227	136.48	135.30	129.37	4.767	4.800	4.849	4.931
45	135.0000	107.1027	139.49	138.30	132.37	4.767	4.800	4.849	4.932
46	138.0000	109.4828	142.49	141.30	135.37	4.767	4.800	4.850	4.932
47	141.0000	111.8628	145.49	144.30	138.37	4.768	4.801	4.850	4.933
48	144.0000	114.2429	148.49	147.30	141.37	4.768	4.801	4.851	4.934
49	147.0000	116.6230	151.49	150.30	144.36	4.768	4.801	4.851	4.935
50	150.0000	119.0030	154.49	153.30	147.36	4.768	4.802	4.852	4.935
51	153.0000	121.3831	157.49	156.30	150.36	4.768	4.802	4.852	4.936
52	156.0000	123.7631	160.49	159.30	153.36	4.769	4.802	4.853	4.937
53	159.0000	126.1432	163.49	162.30	156.36	4.769	4.803	4.853	4.938
54	162.0000	128.5233	166.49	165.30	159.36	4.769	4.803	4.854	4.938
55	165.0000	130.9033	169.50	168.30	162.36	4.769	4.803	4.854	4.939
56	168.0000	133.2834	172.50	171.30	165.36	4.769	4.803	4.855	4.940
57	171.0000	135.6634	175.50	174.30	168.36	4.769	4.804	4.855	4.941
58	174.0000	138.0435	178.50	177.30	171.35	4.770	4.804	4.855	4.941
59	177.0000	140.4236	181.50	180.30	174.35	4.770	4.804	4.856	4.942
60	180.0000	142.8036	184.50	183.30	177.35	4.770	4.805	4.856	4.943
61	183.0000	145.1837	187.50	186.30	180.35	4.770	4.805	4.857	4.943
62	186.0000	147.5637	190.50	189.30	183.35	4.770	4.805	4.857	4.944
63	189.0000	149.9438	193.50	192.30	186.35	4.770	4.805	4.858	4.945
64	192.0000	152.3239	196.50	195.30	189.35	4.771	4.806	4.858	4.945
65	195.0000	154.7039	199.50	198.30	192.35	4.771	4.806	4.858	4.946
66	198.0000	157.0840	202.51	201.30	195.35	4.771	4.806	4.859	4.947
67	201.0000	159.4640	205.51	204.30	198.35	4.771	4.806	4.859	4.947
68	204.0000	161.8441	208.51	207.30	201.35	4.771	4.807	4.860	4.948
69	207.0000	164.2242	211.51	210.30	204.35	4.771	4.807	4.860	4.949
70	210.0000	166.6042	214.51	213.30	207.34	4.772	4.807	4.860	4.949
71	213.0000	168.9843	217.51	216.30	210.34	4.772	4.807	4.861	4.950
72	216.0000	171.3643	220.51	219.30	213.34	4.772	4.808	4.861	4.950
73	219.0000	173.7444	223.51	222.30	216.34	4.772	4.808	4.862	4.951
74	222.0000	176.1245	226.51	225.30	219.34	4.772	4.808	4.862	4.952
75	225.0000	178.5045	229.51	228.30	222.34	4.772	4.808	4.862	4.952
76	228.0000	180.8846	232.51	231.30	225.34	4.773	4.809	4.863	4.953
77	231.0000	183.2646	235.51	234.30	228.34	4.773	4.809	4.863	4.954
78	234.0000	185.6447	238.52	237.30	231.34	4.773	4.809	4.863	4.954
79	237.0000	188.0248	241.52	240.30	234.34	4.773	4.809	4.864	4.955
80	240.0000	190.4048	244.52	243.30	237.34	4.773	4.810	4.864	4.955
81	243.0000	192.7849	247.52	246.30	240.34	4.773	4.810	4.865	4.956
82	246.0000	195.1649	250.52	249.30	243.34	4.773	4.810	4.865	4.956
83	249.0000	197.5450	253.52	252.30	246.34	4.774	4.810	4.865	4.957
84	252.0000	199.9251	256.52	255.30	249.34	4.774	4.810	4.866	4.958
85	255.0000	202.3051	259.52	258.30	252.34	4.774	4.811	4.866	4.958
86	258.0000	204.6852	262.52	261.30	255.34	4.774	4.811	4.866	4.959
87	261.0000	207.0652	265.52	264.30	258.34	4.774	4.811	4.867	4.959
88	264.0000	209.4453	268.52	267.30	261.34	4.774	4.811	4.867	4.960
89	267.0000	211.8254	271.52	270.30	264.34	4.774	4.812	4.867	4.960
90	270.0000	214.2054	274.52	273.30	267.33	4.775	4.812	4.868	4.961
91	273.0000	216.5855	277.52	276.30	270.33	4.775	4.812	4.868	4.962
92	276.0000	218.9655	280.53	279.30	273.33	4.775	4.812	4.868	4.962
93	279.0000	221.3456	283.53	282.30	276.33	4.775	4.812	4.869	4.963
94	282.0000	223.7257	286.53	285.30	279.33	4.775	4.813	4.869	4.963
95	285.0000	226.1057	289.53	288.30	282.33	4.775	4.813	4.869	4.964
96	288.0000	228.4858	292.53	291.30	285.33	4.775	4.813	4.870	4.964
97	291.0000	230.8658	295.53	294.30	288.33	4.775	4.813	4.870	4.965
98	294.0000	233.2459	298.53	297.30	291.33	4.776	4.814	4.870	4.965
99	297.0000	235.6260	301.53	300.30	294.33	4.776	4.814	4.871	4.966
100	300.0000	238.0060	304.53	303.30	297.33	4.776	4.814	4.871	4.966

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Table 82 — External spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 3.00

S_{vmax} = maximum effective tooth thickness, circular = 4.712

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	18.0000	14.2804	20.70	15.32	13.58	4.670	4.645	4.607	4.543
7	21.0000	16.6604	23.70	18.21	16.58	4.669	4.644	4.605	4.540
8	24.0000	19.0405	26.70	21.14	19.57	4.669	4.643	4.603	4.538
9	27.0000	21.4205	29.70	24.09	22.57	4.668	4.642	4.602	4.536
10	30.0000	23.8006	32.70	27.04	25.57	4.668	4.641	4.601	4.534
11	33.0000	26.1807	35.70	30.01	28.56	4.667	4.640	4.600	4.532
12	36.0000	28.5607	38.70	32.98	31.56	4.667	4.639	4.598	4.530
13	39.0000	30.9408	41.70	35.96	34.56	4.666	4.639	4.597	4.528
14	42.0000	33.3208	44.70	38.94	37.56	4.666	4.638	4.596	4.527
15	45.0000	35.7009	47.70	41.92	40.56	4.666	4.637	4.595	4.525
16	48.0000	38.0810	50.70	44.91	43.55	4.665	4.637	4.594	4.524
17	51.0000	40.4610	53.70	47.89	46.55	4.665	4.636	4.593	4.522
18	54.0000	42.8411	56.70	50.88	49.55	4.664	4.636	4.593	4.521
19	57.0000	45.2211	59.70	53.87	52.55	4.664	4.635	4.592	4.519
20	60.0000	47.6012	62.70	56.86	55.55	4.664	4.635	4.591	4.518
21	63.0000	49.9813	65.70	59.85	58.55	4.663	4.634	4.590	4.517
22	66.0000	52.3613	68.70	62.85	61.54	4.663	4.634	4.589	4.516
23	69.0000	54.7414	71.70	65.84	64.54	4.663	4.633	4.589	4.514
24	72.0000	57.1214	74.70	68.83	67.54	4.663	4.633	4.588	4.513
25	75.0000	59.5015	77.70	71.83	70.54	4.662	4.632	4.587	4.512
26	78.0000	61.8816	80.70	74.82	73.54	4.662	4.632	4.586	4.511
27	81.0000	64.2616	83.70	77.82	76.54	4.662	4.631	4.586	4.510
28	84.0000	66.6417	86.70	80.81	79.53	4.661	4.631	4.585	4.509
29	87.0000	69.0217	89.70	83.81	82.53	4.661	4.631	4.584	4.508
30	90.0000	71.4018	92.70	86.81	85.53	4.661	4.630	4.584	4.507
31	93.0000	73.7819	95.70	89.80	88.53	4.661	4.630	4.583	4.506
32	96.0000	76.1619	98.70	92.80	91.53	4.660	4.629	4.583	4.505
33	99.0000	78.5420	101.70	95.80	94.53	4.660	4.629	4.582	4.504
34	102.0000	80.9220	104.70	98.79	97.53	4.660	4.629	4.581	4.503
35	105.0000	83.3021	107.70	101.79	100.53	4.660	4.628	4.581	4.502
36	108.0000	85.6822	110.70	104.79	103.52	4.660	4.628	4.580	4.501
37	111.0000	88.0622	113.70	107.79	106.52	4.659	4.627	4.580	4.500
38	114.0000	90.4423	116.70	110.78	109.52	4.659	4.627	4.579	4.499
39	117.0000	92.8224	119.70	113.78	112.52	4.659	4.627	4.579	4.498
40	120.0000	95.2024	122.70	116.78	115.52	4.659	4.626	4.578	4.497
41	123.0000	97.5825	125.70	119.78	118.52	4.658	4.626	4.577	4.496
42	126.0000	99.9625	128.70	122.78	121.52	4.658	4.626	4.577	4.496
43	129.0000	102.3426	131.70	125.77	124.52	4.658	4.625	4.576	4.495
44	132.0000	104.7227	134.70	128.77	127.52	4.658	4.625	4.576	4.494
45	135.0000	107.1027	137.70	131.77	130.51	4.658	4.625	4.575	4.493
46	138.0000	109.4828	140.70	134.77	133.51	4.657	4.624	4.575	4.492
47	141.0000	111.8628	143.70	137.77	136.51	4.657	4.624	4.574	4.492
48	144.0000	114.2429	146.70	140.77	139.51	4.657	4.624	4.574	4.491
49	147.0000	116.6230	149.70	143.76	142.51	4.657	4.623	4.573	4.490
50	150.0000	119.0030	152.70	146.76	145.51	4.657	4.623	4.573	4.489
51	153.0000	121.3831	155.70	149.76	148.51	4.656	4.623	4.572	4.489
52	156.0000	123.7631	158.70	152.76	151.51	4.656	4.623	4.572	4.488
53	159.0000	126.1432	161.70	155.76	154.51	4.656	4.622	4.572	4.487
54	162.0000	128.5233	164.70	158.76	157.51	4.656	4.622	4.571	4.486
55	165.0000	130.9033	167.70	161.76	160.50	4.656	4.622	4.571	4.486
56	168.0000	133.2834	170.70	164.76	163.50	4.656	4.621	4.570	4.485
57	171.0000	135.6634	173.70	167.76	166.50	4.655	4.621	4.570	4.484
58	174.0000	138.0435	176.70	170.75	169.50	4.655	4.621	4.569	4.483
59	177.0000	140.4236	179.70	173.75	172.50	4.655	4.621	4.569	4.483
60	180.0000	142.8036	182.70	176.75	175.50	4.655	4.620	4.568	4.482
61	183.0000	145.1837	185.70	179.75	178.50	4.655	4.620	4.568	4.481
62	186.0000	147.5637	188.70	182.75	181.50	4.654	4.620	4.568	4.481
63	189.0000	149.9438	191.70	185.75	184.50	4.654	4.619	4.567	4.480
64	192.0000	152.3239	194.70	188.75	187.50	4.654	4.619	4.567	4.479
65	195.0000	154.7039	197.70	191.75	190.50	4.654	4.619	4.566	4.479
66	198.0000	157.0840	200.70	194.75	193.49	4.654	4.619	4.566	4.478
67	201.0000	159.4640	203.70	197.75	196.49	4.654	4.618	4.566	4.477
68	204.0000	161.8441	206.70	200.75	199.49	4.653	4.618	4.565	4.477
69	207.0000	164.2242	209.70	203.75	202.49	4.653	4.618	4.565	4.476
70	210.0000	166.6042	212.70	206.74	205.49	4.653	4.618	4.564	4.476
71	213.0000	168.9843	215.70	209.74	208.49	4.653	4.617	4.564	4.475
72	216.0000	171.3643	218.70	212.74	211.49	4.653	4.617	4.564	4.474
73	219.0000	173.7444	221.70	215.74	214.49	4.653	4.617	4.563	4.474
74	222.0000	176.1245	224.70	218.74	217.49	4.653	4.617	4.563	4.473
75	225.0000	178.5045	227.70	221.74	220.49	4.652	4.616	4.562	4.472
76	228.0000	180.8846	230.70	224.74	223.49	4.652	4.616	4.562	4.472
77	231.0000	183.2646	233.70	227.74	226.49	4.652	4.616	4.562	4.471
78	234.0000	185.6447	236.70	230.74	229.48	4.652	4.616	4.561	4.471
79	237.0000	188.0248	239.70	233.74	232.48	4.652	4.615	4.561	4.470
80	240.0000	190.4048	242.70	236.74	235.48	4.652	4.615	4.561	4.469
81	243.0000	192.7849	245.70	239.74	238.48	4.652	4.615	4.560	4.469
82	246.0000	195.1649	248.70	242.74	241.48	4.651	4.615	4.560	4.468
83	249.0000	197.5450	251.70	245.74	244.48	4.651	4.615	4.559	4.468
84	252.0000	199.9251	254.70	248.74	247.48	4.651	4.614	4.559	4.467
85	255.0000	202.3051	257.70	251.74	250.48	4.651	4.614	4.559	4.467
86	258.0000	204.6852	260.70	254.74	253.48	4.651	4.614	4.558	4.466
87	261.0000	207.0652	263.70	257.74	256.48	4.651	4.614	4.558	4.465
88	264.0000	209.4453	266.70	260.74	259.48	4.651	4.613	4.558	4.465
89	267.0000	211.8254	269.70	263.74	262.48	4.650	4.613	4.557	4.464
90	270.0000	214.2054	272.70	266.73	265.48	4.650	4.613	4.557	4.464
91	273.0000	216.5855	275.70	269.73	268.48	4.650	4.613	4.557	4.463
92	276.0000	218.9655	278.70	272.73	271.47	4.650	4.613	4.556	4.463
93	279.0000	221.3456	281.70	275.73	274.47	4.650	4.612	4.556	4.462
94	282.0000	223.7257	284.70	278.73	277.47	4.650	4.612	4.556	4.462
95	285.0000	226.1057	287.70	281.73	280.47	4.650	4.612	4.555	4.461
96	288.0000	228.4858	290.70	284.73	283.47	4.649	4.612	4.555	4.461
97	291.0000	230.8658	293.70	287.73	286.47	4.649	4.611	4.555	4.460
98	294.0000	233.2459	296.70	290.73	289.47	4.649	4.611	4.554	4.459
99	297.0000	235.6260	299.70	293.73	292.47	4.649	4.611	4.554	4.459
100	300.0000	238.0060	302.70	296.73	295.47	4.649	4.611	4.554	4.458

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Table 83 — Internal spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 2.50

E_{vmin} = minimum effective space width, circular = 3.927

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	15.0000	11.9003	18.71	17.75	13.26	3.967	3.991	4.026	4.086
7	17.5000	13.8837	21.21	20.25	15.68	3.967	3.992	4.028	4.089
8	20.0000	15.8671	23.71	22.75	18.12	3.968	3.993	4.029	4.091
9	22.5000	17.8505	26.22	25.25	20.57	3.968	3.993	4.031	4.093
10	25.0000	19.8338	28.72	27.75	23.04	3.969	3.994	4.032	4.095
11	27.5000	21.8172	31.22	30.25	25.51	3.969	3.995	4.033	4.097
12	30.0000	23.8006	33.72	32.75	27.98	3.970	3.996	4.034	4.098
13	32.5000	25.7840	36.23	35.25	30.47	3.970	3.996	4.035	4.100
14	35.0000	27.7674	38.73	37.75	32.95	3.971	3.997	4.036	4.101
15	37.5000	29.7508	41.23	40.25	35.43	3.971	3.997	4.037	4.103
16	40.0000	31.7341	43.73	42.75	37.92	3.971	3.998	4.038	4.104
17	42.5000	33.7175	46.23	45.25	40.41	3.972	3.998	4.039	4.106
18	45.0000	35.7009	48.73	47.75	42.90	3.972	3.999	4.040	4.107
19	47.5000	37.6843	51.24	50.25	45.39	3.972	4.000	4.040	4.108
20	50.0000	39.6677	53.74	52.75	47.89	3.973	4.000	4.041	4.110
21	52.5000	41.6511	56.24	55.25	50.38	3.973	4.000	4.042	4.111
22	55.0000	43.6344	58.74	57.75	52.87	3.973	4.001	4.043	4.112
23	57.5000	45.6178	61.24	60.25	55.37	3.973	4.001	4.043	4.113
24	60.0000	47.6012	63.74	62.75	57.86	3.974	4.002	4.044	4.114
25	62.5000	49.5846	66.25	65.25	60.36	3.974	4.002	4.045	4.115
26	65.0000	51.5680	68.75	67.75	62.85	3.974	4.003	4.045	4.116
27	67.5000	53.5514	71.25	70.25	65.35	3.975	4.003	4.046	4.117
28	70.0000	55.5347	73.75	72.75	67.85	3.975	4.003	4.046	4.118
29	72.5000	57.5181	76.25	75.25	70.34	3.975	4.004	4.047	4.119
30	75.0000	59.5015	78.75	77.75	72.84	3.975	4.004	4.048	4.120
31	77.5000	61.4849	81.25	80.25	75.34	3.976	4.005	4.048	4.121
32	80.0000	63.4683	83.75	82.75	77.83	3.976	4.005	4.049	4.122
33	82.5000	65.4517	86.26	85.25	80.33	3.976	4.005	4.049	4.123
34	85.0000	67.4350	88.76	87.75	82.83	3.976	4.006	4.050	4.124
35	87.5000	69.4184	91.26	90.25	85.33	3.976	4.006	4.051	4.125
36	90.0000	71.4018	93.76	92.75	87.82	3.977	4.006	4.051	4.125
37	92.5000	73.3852	96.26	95.25	90.32	3.977	4.007	4.052	4.126
38	95.0000	75.3686	98.76	97.75	92.82	3.977	4.007	4.052	4.127
39	97.5000	77.3520	101.26	100.25	95.32	3.977	4.007	4.053	4.128
40	100.0000	79.3353	103.76	102.75	97.82	3.977	4.008	4.053	4.129
41	102.5000	81.3187	106.26	105.25	100.31	3.978	4.008	4.054	4.130
42	105.0000	83.3021	108.76	107.75	102.81	3.978	4.008	4.054	4.130
43	107.5000	85.2855	111.27	110.25	105.31	3.978	4.009	4.055	4.131
44	110.0000	87.2689	113.77	112.75	107.81	3.978	4.009	4.055	4.132
45	112.5000	89.2523	116.27	115.25	110.31	3.978	4.009	4.055	4.133
46	115.0000	91.2356	118.77	117.75	112.81	3.979	4.010	4.056	4.133
47	117.5000	93.2190	121.27	120.25	115.31	3.979	4.010	4.056	4.134
48	120.0000	95.2024	123.77	122.75	117.80	3.979	4.010	4.057	4.135
49	122.5000	97.1858	126.27	125.25	120.30	3.979	4.010	4.057	4.136
50	125.0000	99.1692	128.77	127.75	122.80	3.979	4.011	4.058	4.136
51	127.5000	101.1526	131.27	130.25	125.30	3.979	4.011	4.058	4.137
52	130.0000	103.1359	133.77	132.75	127.80	3.980	4.011	4.059	4.138
53	132.5000	105.1193	136.28	135.25	130.30	3.980	4.012	4.059	4.138
54	135.0000	107.1027	138.78	137.75	132.80	3.980	4.012	4.059	4.139
55	137.5000	109.0861	141.28	140.25	135.30	3.980	4.012	4.060	4.140
56	140.0000	111.0695	143.78	142.75	137.80	3.980	4.012	4.060	4.140
57	142.5000	113.0529	146.28	145.25	140.30	3.980	4.013	4.061	4.141
58	145.0000	115.0362	148.78	147.75	142.80	3.981	4.013	4.061	4.142
59	147.5000	117.0196	151.28	150.25	145.29	3.981	4.013	4.062	4.142
60	150.0000	119.0030	153.78	152.75	147.79	3.981	4.013	4.062	4.143
61	152.5000	120.9864	156.28	155.25	150.29	3.981	4.014	4.062	4.143
62	155.0000	122.9698	158.78	157.75	152.79	3.981	4.014	4.063	4.144
63	157.5000	124.9532	161.28	160.25	155.29	3.981	4.014	4.063	4.145
64	160.0000	126.9365	163.78	162.75	157.79	3.982	4.014	4.063	4.145
65	162.5000	128.9199	166.29	165.25	160.29	3.982	4.015	4.064	4.146
66	165.0000	130.9033	168.79	167.75	162.79	3.982	4.015	4.064	4.147
67	167.5000	132.8867	171.29	170.25	165.29	3.982	4.015	4.065	4.147
68	170.0000	134.8701	173.79	172.75	167.79	3.982	4.015	4.065	4.148
69	172.5000	136.8535	176.29	175.25	170.29	3.982	4.016	4.065	4.148
70	175.0000	138.8368	178.79	177.75	172.79	3.982	4.016	4.066	4.149
71	177.5000	140.8202	181.29	180.25	175.29	3.983	4.016	4.066	4.149
72	180.0000	142.8036	183.79	182.75	177.79	3.983	4.016	4.066	4.150
73	182.5000	144.7870	186.29	185.25	180.29	3.983	4.016	4.067	4.151
74	185.0000	146.7704	188.79	187.75	182.79	3.983	4.017	4.067	4.151
75	187.5000	148.7538	191.29	190.25	185.28	3.983	4.017	4.067	4.152
76	190.0000	150.7371	193.79	192.75	187.78	3.983	4.017	4.068	4.152
77	192.5000	152.7205	196.29	195.25	190.28	3.983	4.017	4.068	4.153
78	195.0000	154.7039	198.80	197.75	192.78	3.984	4.018	4.068	4.153
79	197.5000	156.6873	201.30	200.25	195.28	3.984	4.018	4.069	4.154
80	200.0000	158.6707	203.80	202.75	197.78	3.984	4.018	4.069	4.154
81	202.5000	160.6541	206.30	205.25	200.28	3.984	4.018	4.070	4.155
82	205.0000	162.6375	208.80	207.75	202.78	3.984	4.018	4.070	4.156
83	207.5000	164.6208	211.30	210.25	205.28	3.984	4.019	4.070	4.156
84	210.0000	166.6042	213.80	212.75	207.78	3.984	4.019	4.070	4.157
85	212.5000	168.5876	216.30	215.25	210.28	3.985	4.019	4.071	4.157
86	215.0000	170.5710	218.80	217.75	212.78	3.985	4.019	4.071	4.158
87	217.5000	172.5544	221.30	220.25	215.28	3.985	4.019	4.071	4.158
88	220.0000	174.5378	223.80	222.75	217.78	3.985	4.020	4.072	4.159
89	222.5000	176.5211	226.30	225.25	220.28	3.985	4.020	4.072	4.159
90	225.0000	178.5045	228.80	227.75	222.78	3.985	4.020	4.072	4.160
91	227.5000	180.4879	231.30	230.25	225.28	3.985	4.020	4.073	4.160
92	230.0000	182.4713	233.80	232.75	227.78	3.985	4.020	4.073	4.161
93	232.5000	184.4547	236.31	235.25	230.28	3.986	4.021	4.073	4.161
94	235.0000	186.4381	238.81	237.75	232.78	3.986	4.021	4.074	4.162
95	237.5000	188.4214	241.31	240.25	235.28	3.986	4.021	4.074	4.162
96	240.0000	190.4048	243.81	242.75	237.78	3.986	4.021	4.074	4.163
97	242.5000	192.3882	246.31	245.25	240.28	3.986	4.021	4.075	4.163
98	245.0000	194.3716	248.81	247.75	242.78	3.986	4.022	4.075	4.164
99	247.5000	196.3550	251.31	250.25	245.28	3.986	4.022	4.075	4.164
100	250.0000	198.3384	253.81	252.75	247.78	3.986	4.022	4.075	4.165

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Table 84 — External spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 2.50

S_{vmax} = maximum effective tooth thickness, circular = 3.927

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular 4 H	5 H	6 H	7 H
6	15.0000	11.9003	17.25	12.76	11.29	3.887	3.863	3.827	3.768
7	17.5000	13.8837	19.75	15.18	13.79	3.887	3.862	3.826	3.765
8	20.0000	15.8671	22.25	17.62	16.29	3.886	3.861	3.825	3.763
9	22.5000	17.8505	24.75	20.07	18.78	3.886	3.861	3.823	3.761
10	25.0000	19.8338	27.25	22.54	21.28	3.885	3.860	3.822	3.759
11	27.5000	21.8172	29.75	25.01	23.78	3.885	3.859	3.821	3.757
12	30.0000	23.8006	32.25	27.48	26.28	3.884	3.858	3.820	3.756
13	32.5000	25.7840	34.75	29.97	28.77	3.884	3.858	3.819	3.754
14	35.0000	27.7674	37.25	32.45	31.27	3.883	3.857	3.818	3.752
15	37.5000	29.7508	39.75	34.93	33.77	3.883	3.857	3.817	3.751
16	40.0000	31.7341	42.25	37.42	36.27	3.883	3.856	3.816	3.750
17	42.5000	33.7175	44.75	39.91	38.77	3.882	3.855	3.815	3.748
18	45.0000	35.7009	47.25	42.40	41.27	3.882	3.855	3.814	3.747
19	47.5000	37.6843	49.75	44.89	43.76	3.882	3.854	3.814	3.746
20	50.0000	39.6677	52.25	47.39	46.26	3.881	3.854	3.813	3.744
21	52.5000	41.6511	54.75	49.88	48.76	3.881	3.854	3.812	3.743
22	55.0000	43.6344	57.25	52.37	51.26	3.881	3.853	3.811	3.742
23	57.5000	45.6178	59.75	54.87	53.76	3.880	3.853	3.811	3.741
24	60.0000	47.6012	62.25	57.36	56.26	3.880	3.852	3.810	3.740
25	62.5000	49.5846	64.75	59.86	58.75	3.880	3.852	3.809	3.739
26	65.0000	51.5680	67.25	62.35	61.25	3.880	3.851	3.809	3.738
27	67.5000	53.5514	69.75	64.85	63.75	3.879	3.851	3.808	3.737
28	70.0000	55.5347	72.25	67.35	66.25	3.879	3.850	3.807	3.736
29	72.5000	57.5181	74.75	69.84	68.75	3.879	3.850	3.807	3.735
30	75.0000	59.5015	77.25	72.34	71.25	3.879	3.850	3.806	3.734
31	77.5000	61.4849	79.75	74.84	73.75	3.878	3.849	3.806	3.733
32	80.0000	63.4683	82.25	77.33	76.25	3.878	3.849	3.805	3.732
33	82.5000	65.4517	84.75	79.83	78.74	3.878	3.849	3.805	3.731
34	85.0000	67.4350	87.25	82.33	81.24	3.878	3.848	3.804	3.730
35	87.5000	69.4184	89.75	84.83	83.74	3.878	3.848	3.803	3.729
36	90.0000	71.4018	92.25	87.32	86.24	3.877	3.848	3.803	3.729
37	92.5000	73.3852	94.75	89.82	88.74	3.877	3.847	3.802	3.728
38	95.0000	75.3686	97.25	92.32	91.24	3.877	3.847	3.802	3.727
39	97.5000	77.3520	99.75	94.82	93.74	3.877	3.847	3.801	3.726
40	100.0000	79.3353	102.25	97.32	96.24	3.877	3.846	3.801	3.725
41	102.5000	81.3187	104.75	99.81	98.74	3.876	3.846	3.800	3.724
42	105.0000	83.3021	107.25	102.31	101.24	3.876	3.846	3.800	3.724
43	107.5000	85.2855	109.75	104.81	103.73	3.876	3.845	3.799	3.723
44	110.0000	87.2689	112.25	107.31	106.23	3.876	3.845	3.799	3.722
45	112.5000	89.2523	114.75	109.81	108.73	3.876	3.845	3.798	3.721
46	115.0000	91.2356	117.25	112.31	111.23	3.875	3.844	3.798	3.721
47	117.5000	93.2190	119.75	114.81	113.73	3.875	3.844	3.798	3.720
48	120.0000	95.2024	122.25	117.30	116.23	3.875	3.844	3.797	3.719
49	122.5000	97.1858	124.75	119.80	118.73	3.875	3.844	3.797	3.718
50	125.0000	99.1692	127.25	122.30	121.23	3.875	3.843	3.796	3.718
51	127.5000	101.1526	129.75	124.80	123.73	3.875	3.843	3.796	3.717
52	130.0000	103.1359	132.25	127.30	126.23	3.874	3.843	3.795	3.716
53	132.5000	105.1193	134.75	129.80	128.72	3.874	3.842	3.795	3.716
54	135.0000	107.1027	137.25	132.30	131.22	3.874	3.842	3.795	3.715
55	137.5000	109.0861	139.75	134.80	133.72	3.874	3.842	3.794	3.714
56	140.0000	111.0695	142.25	137.30	136.22	3.874	3.842	3.794	3.714
57	142.5000	113.0529	144.75	139.80	138.72	3.874	3.841	3.793	3.713
58	145.0000	115.0362	147.25	142.30	141.22	3.873	3.841	3.793	3.712
59	147.5000	117.0196	149.75	144.79	143.72	3.873	3.841	3.792	3.712
60	150.0000	119.0030	152.25	147.29	146.22	3.873	3.841	3.792	3.711
61	152.5000	120.9864	154.75	149.79	148.72	3.873	3.840	3.792	3.711
62	155.0000	122.9698	157.25	152.29	151.22	3.873	3.840	3.791	3.710
63	157.5000	124.9532	159.75	154.79	153.72	3.873	3.840	3.791	3.709
64	160.0000	126.9365	162.25	157.29	156.22	3.872	3.840	3.791	3.709
65	162.5000	128.9199	164.75	159.79	158.71	3.872	3.839	3.790	3.708
66	165.0000	130.9033	167.25	162.29	161.21	3.872	3.839	3.790	3.707
67	167.5000	132.8867	169.75	164.79	163.71	3.872	3.839	3.789	3.707
68	170.0000	134.8701	172.25	167.29	166.21	3.872	3.839	3.789	3.706
69	172.5000	136.8535	174.75	169.79	168.71	3.872	3.838	3.789	3.706
70	175.0000	138.8368	177.25	172.29	171.21	3.872	3.838	3.788	3.705
71	177.5000	140.8202	179.75	174.79	173.71	3.871	3.838	3.788	3.705
72	180.0000	142.8036	182.25	177.29	176.21	3.871	3.838	3.788	3.704
73	182.5000	144.7870	184.75	179.79	178.71	3.871	3.838	3.787	3.703
74	185.0000	146.7704	187.25	182.29	181.21	3.871	3.837	3.787	3.703
75	187.5000	148.7538	189.75	184.78	183.71	3.871	3.837	3.787	3.702
76	190.0000	150.7371	192.25	187.28	186.21	3.871	3.837	3.786	3.702
77	192.5000	152.7205	194.75	189.78	188.71	3.871	3.837	3.786	3.701
78	195.0000	154.7039	197.25	192.28	191.20	3.870	3.836	3.785	3.701
79	197.5000	156.6873	199.75	194.78	193.70	3.870	3.836	3.785	3.700
80	200.0000	158.6707	202.25	197.28	196.20	3.870	3.836	3.785	3.700
81	202.5000	160.6541	204.75	199.78	198.70	3.870	3.836	3.784	3.699
82	205.0000	162.6375	207.25	202.28	201.20	3.870	3.836	3.784	3.698
83	207.5000	164.6208	209.75	204.78	203.70	3.870	3.835	3.784	3.698
84	210.0000	166.6042	212.25	207.28	206.20	3.870	3.835	3.783	3.697
85	212.5000	168.5876	214.75	209.78	208.70	3.869	3.835	3.783	3.697
86	215.0000	170.5710	217.25	212.28	211.20	3.869	3.835	3.783	3.696
87	217.5000	172.5544	219.75	214.78	213.70	3.869	3.835	3.783	3.696
88	220.0000	174.5378	222.25	217.28	216.20	3.869	3.834	3.782	3.695
89	222.5000	176.5211	224.75	219.78	218.70	3.869	3.834	3.782	3.695
90	225.0000	178.5045	227.25	222.28	221.20	3.869	3.834	3.782	3.694
91	227.5000	180.4879	229.75	224.78	223.70	3.869	3.834	3.781	3.694
92	230.0000	182.4713	232.25	227.28	226.20	3.869	3.834	3.781	3.693
93	232.5000	184.4547	234.75	229.78	228.69	3.868	3.833	3.781	3.693
94	235.0000	186.4381	237.25	232.28	231.19	3.868	3.833	3.780	3.692
95	237.5000	188.4214	239.75	234.78	233.69	3.868	3.833	3.780	3.692
96	240.0000	190.4048	242.25	237.28	236.19	3.868	3.833	3.780	3.691
97	242.5000	192.3882	244.75	239.78	238.69	3.868	3.833	3.779	3.691
98	245.0000	194.3716	247.25	242.28	241.19	3.868	3.832	3.779	3.690
99	247.5000	196.3550	249.75	244.78	243.69	3.868	3.832	3.779	3.690
100	250.0000	198.3384	252.25	247.28	246.19	3.868	3.832	3.778	3.689

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Table 85 — Internal spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 2.00

E_{vmin} = minimum effective space width, circular = 3.142

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	12.0000	9.5202	14.99	14.20	10.61	3.179	3.201	3.234	3.289
7	14.0000	11.1069	17.00	16.20	12.54	3.179	3.202	3.235	3.291
8	16.0000	12.6937	19.00	18.20	14.49	3.180	3.202	3.237	3.294
9	18.0000	14.2804	21.00	20.20	16.46	3.180	3.203	3.238	3.295
10	20.0000	15.8671	23.00	22.20	18.43	3.180	3.204	3.239	3.297
11	22.0000	17.4538	25.00	24.20	20.41	3.181	3.205	3.240	3.299
12	24.0000	19.0405	27.01	26.20	22.39	3.181	3.205	3.241	3.300
13	26.0000	20.6272	29.01	28.20	24.37	3.182	3.206	3.242	3.302
14	28.0000	22.2139	31.01	30.20	26.36	3.182	3.206	3.243	3.303
15	30.0000	23.8006	33.01	32.20	28.35	3.182	3.207	3.244	3.305
16	32.0000	25.3873	35.01	34.20	30.34	3.183	3.207	3.244	3.306
17	34.0000	26.9740	37.02	36.20	32.33	3.183	3.208	3.245	3.307
18	36.0000	28.5607	39.02	38.20	34.32	3.183	3.208	3.246	3.308
19	38.0000	30.1474	41.02	40.20	36.31	3.184	3.209	3.247	3.310
20	40.0000	31.7341	43.02	42.20	38.31	3.184	3.209	3.247	3.311
21	42.0000	33.3208	45.02	44.20	40.30	3.184	3.210	3.248	3.312
22	44.0000	34.9076	47.02	46.20	42.30	3.184	3.210	3.249	3.313
23	46.0000	36.4943	49.02	48.20	44.29	3.185	3.211	3.249	3.314
24	48.0000	38.0810	51.03	50.20	46.29	3.185	3.211	3.250	3.315
25	50.0000	39.6677	53.03	52.20	48.29	3.185	3.211	3.251	3.316
26	52.0000	41.2544	55.03	54.20	50.28	3.185	3.212	3.251	3.317
27	54.0000	42.8411	57.03	56.20	52.28	3.186	3.212	3.252	3.318
28	56.0000	44.4278	59.03	58.20	54.28	3.186	3.212	3.252	3.319
29	58.0000	46.0145	61.03	60.20	56.27	3.186	3.213	3.253	3.320
30	60.0000	47.6012	63.03	62.20	58.27	3.186	3.213	3.253	3.320
31	62.0000	49.1879	65.03	64.20	60.27	3.187	3.213	3.254	3.321
32	64.0000	50.7746	67.04	66.20	62.27	3.187	3.214	3.254	3.322
33	66.0000	52.3613	69.04	68.20	64.26	3.187	3.214	3.255	3.323
34	68.0000	53.9480	71.04	70.20	66.26	3.187	3.214	3.255	3.324
35	70.0000	55.5347	73.04	72.20	68.26	3.187	3.215	3.256	3.325
36	72.0000	57.1214	75.04	74.20	70.26	3.188	3.215	3.256	3.325
37	74.0000	58.7082	77.04	76.20	72.26	3.188	3.215	3.257	3.326
38	76.0000	60.2949	79.04	78.20	74.26	3.188	3.216	3.257	3.327
39	78.0000	61.8816	81.04	80.20	76.25	3.188	3.216	3.258	3.328
40	80.0000	63.4683	83.04	82.20	78.25	3.188	3.216	3.258	3.328
41	82.0000	65.0550	85.04	84.20	80.25	3.188	3.217	3.259	3.329
42	84.0000	66.6417	87.05	86.20	82.25	3.189	3.217	3.259	3.330
43	86.0000	68.2284	89.05	88.20	84.25	3.189	3.217	3.260	3.330
44	88.0000	69.8151	91.05	90.20	86.25	3.189	3.217	3.260	3.331
45	90.0000	71.4018	93.05	92.20	88.25	3.189	3.218	3.260	3.332
46	92.0000	72.9885	95.05	94.20	90.25	3.189	3.218	3.261	3.332
47	94.0000	74.5752	97.05	96.20	92.24	3.189	3.218	3.261	3.333
48	96.0000	76.1619	99.05	98.20	94.24	3.190	3.218	3.262	3.334
49	98.0000	77.7486	101.05	100.20	96.24	3.190	3.219	3.262	3.334
50	100.0000	79.3353	103.05	102.20	98.24	3.190	3.219	3.263	3.335
51	102.0000	80.9220	105.05	104.20	100.24	3.190	3.219	3.263	3.336
52	104.0000	82.5088	107.05	106.20	102.24	3.190	3.219	3.263	3.336
53	106.0000	84.0955	109.05	108.20	104.24	3.190	3.220	3.264	3.337
54	108.0000	85.6822	111.06	110.20	106.24	3.191	3.220	3.264	3.338
55	110.0000	87.2689	113.06	112.20	108.24	3.191	3.220	3.264	3.338
56	112.0000	88.8556	115.06	114.20	110.24	3.191	3.220	3.265	3.339
57	114.0000	90.4423	117.06	116.20	112.24	3.191	3.221	3.265	3.339
58	116.0000	92.0290	119.06	118.20	114.24	3.191	3.221	3.266	3.340
59	118.0000	93.6157	121.06	120.20	116.24	3.191	3.221	3.266	3.341
60	120.0000	95.2024	123.06	122.20	118.23	3.191	3.221	3.266	3.341
61	122.0000	96.7891	125.06	124.20	120.23	3.192	3.222	3.267	3.342
62	124.0000	98.3758	127.06	126.20	122.23	3.192	3.222	3.267	3.342
63	126.0000	99.9625	129.06	128.20	124.23	3.192	3.222	3.267	3.343
64	128.0000	101.5492	131.06	130.20	126.23	3.192	3.222	3.268	3.343
65	130.0000	103.1359	133.06	132.20	128.23	3.192	3.223	3.268	3.344
66	132.0000	104.7227	135.06	134.20	130.23	3.192	3.223	3.268	3.344
67	134.0000	106.3094	137.07	136.20	132.23	3.192	3.223	3.269	3.345
68	136.0000	107.8961	139.07	138.20	134.23	3.193	3.223	3.269	3.346
69	138.0000	109.4828	141.07	140.20	136.23	3.193	3.223	3.269	3.346
70	140.0000	111.0695	143.07	142.20	138.23	3.193	3.224	3.270	3.347
71	142.0000	112.6562	145.07	144.20	140.23	3.193	3.224	3.270	3.347
72	144.0000	114.2429	147.07	146.20	142.23	3.193	3.224	3.270	3.348
73	146.0000	115.8296	149.07	148.20	144.23	3.193	3.224	3.271	3.348
74	148.0000	117.4163	151.07	150.20	146.23	3.193	3.224	3.271	3.349
75	150.0000	119.0030	153.07	152.20	148.23	3.193	3.225	3.271	3.349
76	152.0000	120.5897	155.07	154.20	150.23	3.194	3.225	3.272	3.350
77	154.0000	122.1764	157.07	156.20	152.23	3.194	3.225	3.272	3.350
78	156.0000	123.7631	159.07	158.20	154.23	3.194	3.225	3.272	3.351
79	158.0000	125.3498	161.07	160.20	156.23	3.194	3.225	3.273	3.351
80	160.0000	126.9365	163.07	162.20	158.23	3.194	3.226	3.273	3.352
81	162.0000	128.5233	165.07	164.20	160.23	3.194	3.226	3.273	3.352
82	164.0000	130.1100	167.08	166.20	162.23	3.194	3.226	3.273	3.353
83	166.0000	131.6967	169.08	168.20	164.23	3.194	3.226	3.274	3.353
84	168.0000	133.2834	171.08	170.20	166.22	3.195	3.226	3.274	3.354
85	170.0000	134.8701	173.08	172.20	168.22	3.195	3.227	3.274	3.354
86	172.0000	136.4568	175.08	174.20	170.22	3.195	3.227	3.275	3.355
87	174.0000	138.0435	177.08	176.20	172.22	3.195	3.227	3.275	3.355
88	176.0000	139.6302	179.08	178.20	174.22	3.195	3.227	3.275	3.355
89	178.0000	141.2169	181.08	180.20	176.22	3.195	3.227	3.276	3.356
90	180.0000	142.8036	183.08	182.20	178.22	3.195	3.228	3.276	3.356
91	182.0000	144.3903	185.08	184.20	180.22	3.195	3.228	3.276	3.357
92	184.0000	145.9770	187.08	186.20	182.22	3.196	3.228	3.276	3.357
93	186.0000	147.5637	189.08	188.20	184.22	3.196	3.228	3.277	3.358
94	188.0000	149.1504	191.08	190.20	186.22	3.196	3.228	3.277	3.358
95	190.0000	150.7371	193.08	192.20	188.22	3.196	3.228	3.277	3.359
96	192.0000	152.3239	195.08	194.20	190.22	3.196	3.229	3.278	3.359
97	194.0000	153.9106	197.08	196.20	192.22	3.196	3.229	3.278	3.360
98	196.0000	155.4973	199.08	198.20	194.22	3.196	3.229	3.278	3.360
99	198.0000	157.0840	201.09	200.20	196.22	3.196	3.229	3.278	3.360
100	200.0000	158.6707	203.09	202.20	198.22	3.196	3.229	3.279	3.361

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Table 86 — External spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 2.00

S_{vmax} = maximum effective tooth thickness, circular = 3.142

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	12.0000	9.5202	13.80	10.21	9.01	3.105	3.083	3.049	2.994
7	14.0000	11.1069	15.80	12.14	11.00	3.104	3.082	3.048	2.992
8	16.0000	12.6937	17.80	14.09	13.00	3.104	3.081	3.047	2.990
9	18.0000	14.2804	19.80	16.06	15.00	3.103	3.080	3.045	2.988
10	20.0000	15.8671	21.80	18.03	17.00	3.103	3.079	3.044	2.986
11	22.0000	17.4538	23.80	20.01	19.00	3.102	3.079	3.043	2.984
12	24.0000	19.0405	25.80	21.99	20.99	3.102	3.078	3.042	2.983
13	26.0000	20.6272	27.80	23.97	22.99	3.102	3.077	3.041	2.981
14	28.0000	22.2139	29.80	25.96	24.99	3.101	3.077	3.041	2.980
15	30.0000	23.8006	31.80	27.95	26.99	3.101	3.076	3.040	2.979
16	32.0000	25.3873	33.80	29.94	28.99	3.100	3.076	3.039	2.977
17	34.0000	26.9740	35.80	31.93	30.98	3.100	3.075	3.038	2.976
18	36.0000	28.5607	37.80	33.92	32.98	3.100	3.075	3.037	2.975
19	38.0000	30.1474	39.80	35.91	34.98	3.100	3.074	3.037	2.974
20	40.0000	31.7341	41.80	37.91	36.98	3.099	3.074	3.036	2.972
21	42.0000	33.3208	43.80	39.90	38.98	3.099	3.074	3.035	2.971
22	44.0000	34.9076	45.80	41.90	40.98	3.099	3.073	3.035	2.970
23	46.0000	36.4943	47.80	43.89	42.98	3.099	3.073	3.034	2.969
24	48.0000	38.0810	49.80	45.89	44.97	3.098	3.072	3.033	2.968
25	50.0000	39.6677	51.80	47.89	46.97	3.098	3.072	3.033	2.967
26	52.0000	41.2544	53.80	49.88	48.97	3.098	3.072	3.032	2.966
27	54.0000	42.8411	55.80	51.88	50.97	3.098	3.071	3.031	2.965
28	56.0000	44.4278	57.80	53.88	52.97	3.097	3.071	3.031	2.965
29	58.0000	46.0145	59.80	55.87	54.97	3.097	3.070	3.030	2.964
30	60.0000	47.6012	61.80	57.87	56.97	3.097	3.070	3.030	2.963
31	62.0000	49.1879	63.80	59.87	58.97	3.097	3.070	3.029	2.962
32	64.0000	50.7746	65.80	61.87	60.96	3.096	3.069	3.029	2.961
33	66.0000	52.3613	67.80	63.86	62.96	3.096	3.069	3.028	2.960
34	68.0000	53.9480	69.80	65.86	64.96	3.096	3.069	3.028	2.959
35	70.0000	55.5347	71.80	67.86	66.96	3.096	3.068	3.027	2.959
36	72.0000	57.1214	73.80	69.86	68.96	3.096	3.068	3.027	2.958
37	74.0000	58.7082	75.80	71.86	70.96	3.095	3.068	3.026	2.957
38	76.0000	60.2949	77.80	73.86	72.96	3.095	3.067	3.026	2.956
39	78.0000	61.8816	79.80	75.85	74.96	3.095	3.067	3.025	2.956
40	80.0000	63.4683	81.80	77.85	76.96	3.095	3.067	3.025	2.955
41	82.0000	65.0550	83.80	79.85	78.96	3.095	3.067	3.024	2.954
42	84.0000	66.6417	85.80	81.85	80.95	3.095	3.066	3.024	2.953
43	86.0000	68.2284	87.80	83.85	82.95	3.094	3.066	3.024	2.953
44	88.0000	69.8151	89.80	85.85	84.95	3.094	3.066	3.023	2.952
45	90.0000	71.4018	91.80	87.85	86.95	3.094	3.066	3.023	2.951
46	92.0000	72.9885	93.80	89.85	88.95	3.094	3.065	3.022	2.951
47	94.0000	74.5752	95.80	91.84	90.95	3.094	3.065	3.022	2.950
48	96.0000	76.1619	97.80	93.84	92.95	3.094	3.065	3.021	2.949
49	98.0000	77.7486	99.80	95.84	94.95	3.093	3.064	3.021	2.949
50	100.0000	79.3353	101.80	97.84	96.95	3.093	3.064	3.021	2.948
51	102.0000	80.9220	103.80	99.84	98.95	3.093	3.064	3.020	2.947
52	104.0000	82.5088	105.80	101.84	100.95	3.093	3.064	3.020	2.947
53	106.0000	84.0955	107.80	103.84	102.95	3.093	3.063	3.019	2.946
54	108.0000	85.6822	109.80	105.84	104.94	3.093	3.063	3.019	2.946
55	110.0000	87.2689	111.80	107.84	106.94	3.092	3.063	3.019	2.945
56	112.0000	88.8556	113.80	109.84	108.94	3.092	3.063	3.018	2.944
57	114.0000	90.4423	115.80	111.84	110.94	3.092	3.062	3.018	2.944
58	116.0000	92.0290	117.80	113.84	112.94	3.092	3.062	3.018	2.943
59	118.0000	93.6157	119.80	115.84	114.94	3.092	3.062	3.017	2.943
60	120.0000	95.2024	121.80	117.83	116.94	3.092	3.062	3.017	2.942
61	122.0000	96.7891	123.80	119.83	118.94	3.092	3.062	3.017	2.941
62	124.0000	98.3758	125.80	121.83	120.94	3.091	3.061	3.016	2.941
63	126.0000	99.9625	127.80	123.83	122.94	3.091	3.061	3.016	2.940
64	128.0000	101.5492	129.80	125.83	124.94	3.091	3.061	3.015	2.940
65	130.0000	103.1359	131.80	127.83	126.94	3.091	3.061	3.015	2.939
66	132.0000	104.7227	133.80	129.83	128.94	3.091	3.060	3.015	2.939
67	134.0000	106.3094	135.80	131.83	130.93	3.091	3.060	3.014	2.938
68	136.0000	107.8961	137.80	133.83	132.93	3.091	3.060	3.014	2.938
69	138.0000	109.4828	139.80	135.83	134.93	3.090	3.060	3.014	2.937
70	140.0000	111.0695	141.80	137.83	136.93	3.090	3.060	3.013	2.937
71	142.0000	112.6562	143.80	139.83	138.93	3.090	3.059	3.013	2.936
72	144.0000	114.2429	145.80	141.83	140.93	3.090	3.059	3.013	2.936
73	146.0000	115.8296	147.80	143.83	142.93	3.090	3.059	3.012	2.935
74	148.0000	117.4163	149.80	145.83	144.93	3.090	3.059	3.012	2.935
75	150.0000	119.0030	151.80	147.83	146.93	3.090	3.059	3.012	2.934
76	152.0000	120.5897	153.80	149.83	148.93	3.090	3.058	3.012	2.933
77	154.0000	122.1764	155.80	151.83	150.93	3.089	3.058	3.011	2.933
78	156.0000	123.7631	157.80	153.83	152.93	3.089	3.058	3.011	2.933
79	158.0000	125.3498	159.80	155.83	154.93	3.089	3.058	3.011	2.932
80	160.0000	126.9365	161.80	157.83	156.93	3.089	3.058	3.010	2.932
81	162.0000	128.5233	163.80	159.83	158.93	3.089	3.057	3.010	2.931
82	164.0000	130.1100	165.80	161.83	160.92	3.089	3.057	3.010	2.931
83	166.0000	131.6967	167.80	163.83	162.92	3.089	3.057	3.009	2.930
84	168.0000	133.2834	169.80	165.82	164.92	3.089	3.057	3.009	2.930
85	170.0000	134.8701	171.80	167.82	166.92	3.088	3.057	3.009	2.929
86	172.0000	136.4568	173.80	169.82	168.92	3.088	3.056	3.009	2.929
87	174.0000	138.0435	175.80	171.82	170.92	3.088	3.056	3.008	2.928
88	176.0000	139.6302	177.80	173.82	172.92	3.088	3.056	3.008	2.928
89	178.0000	141.2169	179.80	175.82	174.92	3.088	3.056	3.008	2.927
90	180.0000	142.8036	181.80	177.82	176.92	3.088	3.056	3.007	2.927
91	182.0000	144.3903	183.80	179.82	178.92	3.088	3.055	3.007	2.926
92	184.0000	145.9770	185.80	181.82	180.92	3.088	3.055	3.007	2.926
93	186.0000	147.5637	187.80	183.82	182.92	3.088	3.055	3.007	2.925
94	188.0000	149.1504	189.80	185.82	184.92	3.087	3.055	3.006	2.925
95	190.0000	150.7371	191.80	187.82	186.92	3.087	3.055	3.006	2.925
96	192.0000	152.3239	193.80	189.82	188.92	3.087	3.055	3.006	2.924
97	194.0000	153.9106	195.80	191.82	190.92	3.087	3.054	3.005	2.924
98	196.0000	155.4973	197.80	193.82	192.92	3.087	3.054	3.005	2.923
99	198.0000	157.0840	199.80	195.82	194.91	3.087	3.054	3.005	2.923
100	200.0000	158.6707	201.80	197.82	196.91	3.087	3.054	3.005	2.922

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Table 87 — Internal spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 1.75

E_{vmin} = minimum effective space width, circular = 2.749

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	10.5000	8.3302	13.13	12.42	9.28	2.784	2.805	2.837	2.890
7	12.2500	9.7186	14.89	14.17	10.98	2.785	2.806	2.838	2.892
8	14.0000	11.1069	16.64	15.92	12.68	2.785	2.807	2.840	2.894
9	15.7500	12.4953	18.39	17.67	14.40	2.786	2.808	2.841	2.896
10	17.5000	13.8837	20.14	19.42	16.13	2.786	2.808	2.842	2.898
11	19.2500	15.2721	21.90	21.17	17.86	2.786	2.809	2.843	2.899
12	21.0000	16.6604	23.65	22.92	19.59	2.787	2.810	2.844	2.901
13	22.7500	18.0488	25.40	24.67	21.33	2.787	2.810	2.845	2.902
14	24.5000	19.4372	27.15	26.42	23.06	2.788	2.811	2.845	2.903
15	26.2500	20.8255	28.90	28.17	24.80	2.788	2.811	2.846	2.905
16	28.0000	22.2139	30.65	29.92	26.55	2.788	2.812	2.847	2.906
17	29.7500	23.6023	32.41	31.67	28.29	2.788	2.812	2.848	2.907
18	31.5000	24.9906	34.16	33.42	30.03	2.789	2.813	2.849	2.908
19	33.2500	26.3790	35.91	35.17	31.78	2.789	2.813	2.849	2.909
20	35.0000	27.7674	37.66	36.92	33.52	2.789	2.814	2.850	2.910
21	36.7500	29.1557	39.41	38.67	35.27	2.790	2.814	2.851	2.912
22	38.5000	30.5441	41.16	40.42	37.01	2.790	2.814	2.851	2.913
23	40.2500	31.9325	42.91	42.17	38.76	2.790	2.815	2.852	2.913
24	42.0000	33.3208	44.67	43.92	40.50	2.790	2.815	2.852	2.914
25	43.7500	34.7092	46.42	45.67	42.25	2.791	2.815	2.853	2.915
26	45.5000	36.0976	48.17	47.42	44.00	2.791	2.816	2.854	2.916
27	47.2500	37.4859	49.92	49.17	45.74	2.791	2.816	2.854	2.917
28	49.0000	38.8743	51.67	50.92	47.49	2.791	2.817	2.855	2.918
29	50.7500	40.2627	53.42	52.67	49.24	2.791	2.817	2.855	2.919
30	52.5000	41.6511	55.17	54.42	50.99	2.792	2.817	2.856	2.920
31	54.2500	43.0394	56.92	56.17	52.74	2.792	2.818	2.856	2.921
32	56.0000	44.4278	58.67	57.92	54.48	2.792	2.818	2.857	2.921
33	57.7500	45.8162	60.43	59.67	56.23	2.792	2.818	2.857	2.922
34	59.5000	47.2045	62.18	61.42	57.98	2.792	2.818	2.858	2.923
35	61.2500	48.5929	63.93	63.17	59.73	2.793	2.819	2.858	2.924
36	63.0000	49.9813	65.68	64.92	61.48	2.793	2.819	2.859	2.924
37	64.7500	51.3696	67.43	66.67	63.23	2.793	2.819	2.859	2.925
38	66.5000	52.7580	69.18	68.42	64.97	2.793	2.820	2.859	2.926
39	68.2500	54.1464	70.93	70.17	66.72	2.793	2.820	2.860	2.926
40	70.0000	55.5347	72.68	71.92	68.47	2.793	2.820	2.860	2.927
41	71.7500	56.9231	74.43	73.67	70.22	2.794	2.820	2.861	2.928
42	73.5000	58.3115	76.18	75.42	71.97	2.794	2.821	2.861	2.929
43	75.2500	59.6998	77.93	77.17	73.72	2.794	2.821	2.862	2.929
44	77.0000	61.0882	79.69	78.92	75.47	2.794	2.821	2.862	2.930
45	78.7500	62.4766	81.44	80.67	77.22	2.794	2.822	2.862	2.930
46	80.5000	63.8650	83.19	82.42	78.97	2.794	2.822	2.863	2.931
47	82.2500	65.2533	84.94	84.17	80.71	2.795	2.822	2.863	2.932
48	84.0000	66.6417	86.69	85.92	82.46	2.795	2.822	2.864	2.932
49	85.7500	68.0301	88.44	87.67	84.21	2.795	2.823	2.864	2.933
50	87.5000	69.4184	90.19	89.42	85.96	2.795	2.823	2.864	2.934
51	89.2500	70.8068	91.94	91.17	87.71	2.795	2.823	2.865	2.934
52	91.0000	72.1952	93.69	92.92	89.46	2.795	2.823	2.865	2.935
53	92.7500	73.5835	95.44	94.67	91.21	2.796	2.823	2.865	2.935
54	94.5000	74.9719	97.19	96.42	92.96	2.796	2.824	2.866	2.936
55	96.2500	76.3603	98.94	98.17	94.71	2.796	2.824	2.866	2.937
56	98.0000	77.7486	100.70	99.92	96.46	2.796	2.824	2.867	2.937
57	99.7500	79.1370	102.45	101.67	98.21	2.796	2.824	2.867	2.938
58	101.5000	80.5254	104.20	103.42	99.96	2.796	2.825	2.867	2.938
59	103.2500	81.9137	105.95	105.17	101.71	2.796	2.825	2.868	2.939
60	105.0000	83.3021	107.70	106.92	103.46	2.796	2.825	2.868	2.939
61	106.7500	84.6905	109.45	108.67	105.21	2.797	2.825	2.868	2.940
62	108.5000	86.0788	111.20	110.42	106.95	2.797	2.825	2.869	2.940
63	110.2500	87.4672	112.95	112.17	108.70	2.797	2.826	2.869	2.941
64	112.0000	88.8556	114.70	113.92	110.45	2.797	2.826	2.869	2.941
65	113.7500	90.2440	116.45	115.67	112.20	2.797	2.826	2.870	2.942
66	115.5000	91.6323	118.20	117.42	113.95	2.797	2.826	2.870	2.942
67	117.2500	93.0207	119.95	119.17	115.70	2.797	2.827	2.870	2.943
68	119.0000	94.4091	121.70	120.92	117.45	2.798	2.827	2.871	2.943
69	120.7500	95.7974	123.45	122.67	119.20	2.798	2.827	2.871	2.944
70	122.5000	97.1858	125.20	124.42	120.95	2.798	2.827	2.871	2.944
71	124.2500	98.5742	126.96	126.17	122.70	2.798	2.827	2.871	2.945
72	126.0000	99.9625	128.71	127.92	124.45	2.798	2.828	2.872	2.945
73	127.7500	101.3509	130.46	129.67	126.20	2.798	2.828	2.872	2.946
74	129.5000	102.7393	132.21	131.42	127.95	2.798	2.828	2.872	2.946
75	131.2500	104.1276	133.96	133.17	129.70	2.798	2.828	2.873	2.947
76	133.0000	105.5160	135.71	134.92	131.45	2.799	2.828	2.873	2.947
77	134.7500	106.9044	137.46	136.67	133.20	2.799	2.828	2.873	2.948
78	136.5000	108.2927	139.21	138.42	134.95	2.799	2.829	2.874	2.948
79	138.2500	109.6811	140.96	140.17	136.70	2.799	2.829	2.874	2.949
80	140.0000	111.0695	142.71	141.92	138.45	2.799	2.829	2.874	2.949
81	141.7500	112.4578	144.46	143.67	140.20	2.799	2.829	2.874	2.950
82	143.5000	113.8462	146.21	145.42	141.95	2.799	2.829	2.875	2.950
83	145.2500	115.2346	147.96	147.17	143.70	2.799	2.830	2.875	2.951
84	147.0000	116.6229	149.71	148.92	145.45	2.799	2.830	2.875	2.951
85	148.7500	118.0113	151.46	150.67	147.20	2.800	2.830	2.876	2.952
86	150.5000	119.3997	153.21	152.42	148.95	2.800	2.830	2.876	2.952
87	152.2500	120.7881	154.97	154.17	150.70	2.800	2.830	2.876	2.952
88	154.0000	122.1764	156.72	155.92	152.45	2.800	2.830	2.876	2.953
89	155.7500	123.5648	158.47	157.67	154.20	2.800	2.831	2.877	2.953
90	157.5000	124.9532	160.22	159.42	155.95	2.800	2.831	2.877	2.954
91	159.2500	126.3415	161.97	161.17	157.70	2.800	2.831	2.877	2.954
92	161.0000	127.7299	163.72	162.92	159.44	2.800	2.831	2.877	2.955
93	162.7500	129.1183	165.47	164.67	161.19	2.800	2.831	2.878	2.955
94	164.5000	130.5066	167.22	166.42	162.94	2.801	2.831	2.878	2.955
95	166.2500	131.8950	168.97	168.17	164.69	2.801	2.832	2.878	2.956
96	168.0000	133.2834	170.72	169.92	166.44	2.801	2.832	2.878	2.956
97	169.7500	134.6717	172.47	171.67	168.19	2.801	2.832	2.879	2.957
98	171.5000	136.0601	174.22	173.42	169.94	2.801	2.832	2.879	2.957
99	173.2500	137.4485	175.97	175.17	171.69	2.801	2.832	2.879	2.957
100	175.0000	138.8368	177.72	176.92	173.44	2.801	2.832	2.880	2.958

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Table 88 — External spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 1.75

S_{vmax} = maximum effective tooth thickness, circular = 2.749

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ee} Major diameter max.	D_{Fe} Form diameter min.	D_{ie} Minor diameter min.	$S_{min} = S_{vmax} + (T + \lambda)$ = actual min. tooth thickness, circular			
						4 H	5 H	6 H	7 H
6	10.5000	8.3302	12.07	8.93	7.87	2.714	2.692	2.661	2.608
7	12.2500	9.7186	13.82	10.63	9.61	2.713	2.692	2.659	2.606
8	14.0000	11.1069	15.57	12.33	11.36	2.713	2.691	2.658	2.604
9	15.7500	12.4953	17.32	14.05	13.11	2.712	2.690	2.657	2.602
10	17.5000	13.8837	19.07	15.78	14.86	2.712	2.689	2.656	2.600
11	19.2500	15.2721	20.82	17.51	16.60	2.711	2.689	2.655	2.599
12	21.0000	16.6604	22.57	19.24	18.35	2.711	2.688	2.654	2.597
13	22.7500	18.0488	24.32	20.98	20.10	2.711	2.688	2.653	2.596
14	24.5000	19.4372	26.07	22.71	21.85	2.710	2.687	2.652	2.594
15	26.2500	20.8255	27.82	24.45	23.60	2.710	2.687	2.651	2.593
16	28.0000	22.2139	29.57	26.20	25.35	2.710	2.686	2.651	2.592
17	29.7500	23.6023	31.32	27.94	27.09	2.709	2.686	2.650	2.591
18	31.5000	24.9906	33.07	29.68	28.84	2.709	2.685	2.649	2.589
19	33.2500	26.3790	34.82	31.43	30.59	2.709	2.685	2.649	2.588
20	35.0000	27.7674	36.57	33.17	32.34	2.708	2.684	2.648	2.587
21	36.7500	29.1557	38.32	34.92	34.09	2.708	2.684	2.647	2.586
22	38.5000	30.5441	40.07	36.66	35.84	2.708	2.683	2.647	2.585
23	40.2500	31.9325	41.82	38.41	37.59	2.708	2.683	2.646	2.584
24	42.0000	33.3208	43.57	40.15	39.33	2.708	2.683	2.645	2.583
25	43.7500	34.7092	45.32	41.90	41.08	2.707	2.682	2.645	2.582
26	45.5000	36.0976	47.07	43.65	42.83	2.707	2.682	2.644	2.582
27	47.2500	37.4859	48.82	45.39	44.58	2.707	2.682	2.644	2.581
28	49.0000	38.8743	50.57	47.14	46.33	2.707	2.681	2.643	2.580
29	50.7500	40.2627	52.32	48.89	48.08	2.706	2.681	2.643	2.579
30	52.5000	41.6511	54.07	50.64	49.83	2.706	2.681	2.642	2.578
31	54.2500	43.0394	55.82	52.39	51.58	2.706	2.680	2.642	2.577
32	56.0000	44.4278	57.57	54.13	53.33	2.706	2.680	2.641	2.576
33	57.7500	45.8162	59.32	55.88	55.07	2.706	2.680	2.641	2.576
34	59.5000	47.2045	61.07	57.63	56.82	2.705	2.679	2.640	2.575
35	61.2500	48.5929	62.82	59.38	58.57	2.705	2.679	2.640	2.574
36	63.0000	49.9813	64.57	61.13	60.32	2.705	2.679	2.639	2.573
37	64.7500	51.3696	66.32	62.88	62.07	2.705	2.678	2.639	2.573
38	66.5000	52.7580	68.07	64.62	63.82	2.705	2.678	2.638	2.572
39	68.2500	54.1464	69.82	66.37	65.57	2.704	2.678	2.638	2.571
40	70.0000	55.5347	71.57	68.12	67.32	2.704	2.678	2.637	2.571
41	71.7500	56.9231	73.32	69.87	69.07	2.704	2.677	2.637	2.570
42	73.5000	58.3115	75.07	71.62	70.82	2.704	2.677	2.637	2.569
43	75.2500	59.6998	76.82	73.37	72.57	2.704	2.677	2.636	2.569
44	77.0000	61.0882	78.57	75.12	74.31	2.704	2.677	2.636	2.568
45	78.7500	62.4766	80.32	76.87	76.06	2.703	2.676	2.635	2.567
46	80.5000	63.8650	82.07	78.62	77.81	2.703	2.676	2.635	2.567
47	82.2500	65.2533	83.82	80.36	79.56	2.703	2.676	2.635	2.566
48	84.0000	66.6417	85.57	82.11	81.31	2.703	2.675	2.634	2.565
49	85.7500	68.0301	87.32	83.86	83.06	2.703	2.675	2.634	2.565
50	87.5000	69.4184	89.07	85.61	84.81	2.703	2.675	2.633	2.564
51	89.2500	70.8068	90.82	87.36	86.56	2.703	2.675	2.633	2.564
52	91.0000	72.1952	92.57	89.11	88.31	2.702	2.675	2.633	2.563
53	92.7500	73.5835	94.32	90.86	90.06	2.702	2.674	2.632	2.562
54	94.5000	74.9719	96.07	92.61	91.81	2.702	2.674	2.632	2.562
55	96.2500	76.3603	97.82	94.36	93.56	2.702	2.674	2.632	2.561
56	98.0000	77.7486	99.57	96.11	95.30	2.702	2.674	2.631	2.561
57	99.7500	79.1370	101.32	97.86	97.05	2.702	2.673	2.631	2.560
58	101.5000	80.5254	103.07	99.61	98.80	2.702	2.673	2.631	2.560
59	103.2500	81.9137	104.82	101.36	100.55	2.701	2.673	2.630	2.559
60	105.0000	83.3021	106.57	103.11	102.30	2.701	2.673	2.630	2.558
61	106.7500	84.6906	108.32	104.86	104.05	2.701	2.673	2.630	2.558
62	108.5000	86.0788	110.07	106.60	105.80	2.701	2.672	2.629	2.557
63	110.2500	87.4672	111.82	108.35	107.55	2.701	2.672	2.629	2.557
64	112.0000	88.8556	113.57	110.10	109.30	2.701	2.672	2.629	2.556
65	113.7500	90.2440	115.32	111.85	111.05	2.701	2.672	2.628	2.556
66	115.5000	91.6323	117.07	113.60	112.80	2.700	2.671	2.628	2.555
67	117.2500	93.0207	118.82	115.35	114.55	2.700	2.671	2.628	2.555
68	119.0000	94.4091	120.57	117.10	116.30	2.700	2.671	2.627	2.554
69	120.7500	95.7974	122.32	118.85	118.05	2.700	2.671	2.627	2.554
70	122.5000	97.1858	124.07	120.60	119.80	2.700	2.671	2.627	2.553
71	124.2500	98.5742	125.82	122.35	121.54	2.700	2.670	2.626	2.553
72	126.0000	99.9625	127.57	124.10	123.29	2.700	2.670	2.626	2.552
73	127.7500	101.3509	129.32	125.85	125.04	2.700	2.670	2.626	2.552
74	129.5000	102.7393	131.07	127.60	126.79	2.700	2.670	2.625	2.551
75	131.2500	104.1276	132.82	129.35	128.54	2.699	2.670	2.625	2.551
76	133.0000	105.5160	134.57	131.10	130.29	2.699	2.669	2.625	2.550
77	134.7500	106.9044	136.32	132.85	132.04	2.699	2.669	2.625	2.550
78	136.5000	108.2927	138.07	134.60	133.79	2.699	2.669	2.624	2.549
79	138.2500	109.6811	139.82	136.35	135.54	2.699	2.669	2.624	2.549
80	140.0000	111.0695	141.57	138.10	137.29	2.699	2.669	2.624	2.549
81	141.7500	112.4578	143.32	139.85	139.04	2.699	2.669	2.623	2.548
82	143.5000	113.8462	145.07	141.60	140.79	2.699	2.668	2.623	2.548
83	145.2500	115.2346	146.82	143.35	142.54	2.698	2.668	2.623	2.547
84	147.0000	116.6230	148.57	145.10	144.29	2.698	2.668	2.623	2.547
85	148.7500	118.0113	150.32	146.85	146.04	2.698	2.668	2.622	2.546
86	150.5000	119.3997	152.07	148.60	147.79	2.698	2.668	2.622	2.546
87	152.2500	120.7881	153.82	150.35	149.53	2.698	2.667	2.622	2.545
88	154.0000	122.1764	155.57	152.10	151.28	2.698	2.667	2.621	2.545
89	155.7500	123.5648	157.32	153.85	153.03	2.698	2.667	2.621	2.545
90	157.5000	124.9532	159.07	155.60	154.78	2.698	2.667	2.621	2.544
91	159.2500	126.3415	160.82	157.35	156.53	2.698	2.667	2.621	2.544
92	161.0000	127.7299	162.57	159.09	158.28	2.697	2.667	2.620	2.543
93	162.7500	129.1183	164.32	160.84	160.03	2.697	2.666	2.620	2.543
94	164.5000	130.5066	166.07	162.59	161.78	2.697	2.666	2.620	2.542
95	166.2500	131.8950	167.82	164.34	163.53	2.697	2.666	2.620	2.542
96	168.0000	133.2834	169.57	166.09	165.28	2.697	2.666	2.619	2.542
97	169.7500	134.6717	171.32	167.84	167.03	2.697	2.666	2.619	2.541
98	171.5000	136.0601	173.07	169.59	168.78	2.697	2.666	2.619	2.541
99	173.2500	137.4485	174.82	171.34	170.53	2.697	2.665	2.619	2.540
100	175.0000	138.8368	176.57	173.09	172.28	2.697	2.665	2.618	2.540

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Table 89 — Internal spline

37.5 degree pressure angle — Side fit — Fillet root — Module = 1.50

E_{vmin} = minimum effective space width, circular = 2.356

Z Number of teeth	D Pitch diameter	D_b Base diameter	D_{ei} Major diameter max.	D_{Fi} Form diameter min.	D_{ii} Minor diameter min.	$E_{max} = E_{vmin} + (T + \lambda)$ = actual max. space width, circular			
						4 H	5 H	6 H	7 H
6	9.0000	7.1402	11.27	10.65	7.96	2.390	2.410	2.440	2.490
7	10.5000	8.3302	12.78	12.15	9.41	2.390	2.411	2.441	2.492
8	12.0000	9.5202	14.28	13.65	10.87	2.391	2.411	2.442	2.494
9	13.5000	10.7103	15.78	15.15	12.34	2.391	2.412	2.443	2.496
10	15.0000	11.9003	17.28	16.65	13.82	2.391	2.413	2.444	2.497
11	16.5000	13.0903	18.79	18.15	15.30	2.392	2.413	2.445	2.499
12	18.0000	14.2804	20.29	19.65	16.79	2.392	2.414	2.446	2.500
13	19.5000	15.4704	21.79	21.15	18.28	2.393	2.414	2.447	2.502
14	21.0000	16.6604	23.29	22.65	19.77	2.393	2.415	2.448	2.503
15	22.5000	17.8505	24.79	24.15	21.26	2.393	2.415	2.449	2.504
16	24.0000	19.0405	26.29	25.65	22.75	2.393	2.416	2.449	2.505
17	25.5000	20.2305	27.80	27.15	24.25	2.394	2.416	2.450	2.506
18	27.0000	21.4205	29.30	28.65	25.74	2.394	2.417	2.451	2.507
19	28.5000	22.6106	30.80	30.15	27.24	2.394	2.417	2.451	2.509
20	30.0000	23.8006	32.30	31.65	28.73	2.395	2.418	2.452	2.510
21	31.5000	24.9906	33.80	33.15	30.23	2.395	2.418	2.453	2.510
22	33.0000	26.1807	35.30	34.65	31.72	2.395	2.418	2.453	2.511
23	34.5000	27.3707	36.80	36.15	33.22	2.395	2.419	2.454	2.512
24	36.0000	28.5607	38.30	37.65	34.72	2.395	2.419	2.454	2.513
25	37.5000	29.7508	39.81	39.15	36.21	2.396	2.419	2.455	2.514
26	39.0000	30.9408	41.31	40.65	37.71	2.396	2.420	2.455	2.515
27	40.5000	32.1308	42.81	42.15	39.21	2.396	2.420	2.456	2.516
28	42.0000	33.3208	44.31	43.65	40.71	2.396	2.420	2.456	2.517
29	43.5000	34.5109	45.81	45.15	42.21	2.397	2.421	2.457	2.517
30	45.0000	35.7009	47.31	46.65	43.70	2.397	2.421	2.457	2.518
31	46.5000	36.8909	48.81	48.15	45.20	2.397	2.421	2.458	2.519
32	48.0000	38.0810	50.31	49.65	46.70	2.397	2.422	2.458	2.520
33	49.5000	39.2710	51.81	51.15	48.20	2.397	2.422	2.459	2.520
34	51.0000	40.4610	53.32	52.65	49.70	2.397	2.422	2.459	2.521
35	52.5000	41.6511	54.82	54.15	51.20	2.398	2.422	2.460	2.522
36	54.0000	42.8411	56.32	55.65	52.69	2.398	2.423	2.460	2.523
37	55.5000	44.0311	57.82	57.15	54.19	2.398	2.423	2.461	2.523
38	57.0000	45.2211	59.32	58.65	55.69	2.398	2.423	2.461	2.524
39	58.5000	46.4112	60.82	60.15	57.19	2.398	2.424	2.461	2.525
40	60.0000	47.6012	62.32	61.65	58.69	2.398	2.424	2.462	2.525
41	61.5000	48.7912	63.82	63.15	60.19	2.399	2.424	2.462	2.526
42	63.0000	49.9813	65.32	64.65	61.69	2.399	2.424	2.463	2.527
43	64.5000	51.1713	66.82	66.15	63.19	2.399	2.425	2.463	2.527
44	66.0000	52.3613	68.32	67.65	64.69	2.399	2.425	2.463	2.528
45	67.5000	53.5514	69.82	69.15	66.19	2.399	2.425	2.464	2.528
46	69.0000	54.7414	71.33	70.65	67.68	2.399	2.425	2.464	2.529
47	70.5000	55.9314	72.83	72.15	69.18	2.400	2.426	2.465	2.530
48	72.0000	57.1214	74.33	73.65	70.68	2.400	2.426	2.465	2.530
49	73.5000	58.3115	75.83	75.15	72.18	2.400	2.426	2.465	2.531
50	75.0000	59.5015	77.33	76.65	73.68	2.400	2.426	2.466	2.531
51	76.5000	60.6915	78.83	78.15	75.18	2.400	2.426	2.466	2.532
52	78.0000	61.8816	80.33	79.65	76.68	2.400	2.427	2.466	2.532
53	79.5000	63.0716	81.83	81.15	78.18	2.400	2.427	2.467	2.533
54	81.0000	64.2616	83.33	82.65	79.68	2.401	2.427	2.467	2.534
55	82.5000	65.4517	84.83	84.15	81.18	2.401	2.427	2.467	2.534
56	84.0000	66.6417	86.33	85.65	82.68	2.401	2.428	2.468	2.535
57	85.5000	67.8317	87.83	87.15	84.18	2.401	2.428	2.468	2.535
58	87.0000	69.0217	89.33	88.65	85.68	2.401	2.428	2.468	2.536
59	88.5000	70.2118	90.83	90.15	87.18	2.401	2.428	2.469	2.536
60	90.0000	71.4018	92.34	91.65	88.68	2.401	2.428	2.469	2.537
61	91.5000	72.5918	93.84	93.15	90.18	2.401	2.429	2.469	2.537
62	93.0000	73.7819	95.34	94.65	91.68	2.402	2.429	2.470	2.538
63	94.5000	74.9719	96.84	96.15	93.17	2.402	2.429	2.470	2.538
64	96.0000	76.1619	98.34	97.65	94.67	2.402	2.429	2.470	2.539
65	97.5000	77.3520	99.84	99.15	96.17	2.402	2.429	2.471	2.539
66	99.0000	78.5420	101.34	100.65	97.67	2.402	2.430	2.471	2.540
67	100.5000	79.7320	102.84	102.15	99.17	2.402	2.430	2.471	2.540
68	102.0000	80.9220	104.34	103.65	100.67	2.402	2.430	2.471	2.541
69	103.5000	82.1121	105.84	105.15	102.17	2.402	2.430	2.472	2.541
70	105.0000	83.3021	107.34	106.65	103.67	2.403	2.430	2.472	2.541
71	106.5000	84.4921	108.84	108.15	105.17	2.403	2.431	2.472	2.542
72	108.0000	85.6822	110.34	109.65	106.67	2.403	2.431	2.473	2.542
73	109.5000	86.8722	111.84	111.15	108.17	2.403	2.431	2.473	2.543
74	111.0000	88.0622	113.34	112.65	109.67	2.403	2.431	2.473	2.543
75	112.5000	89.2523	114.84	114.15	111.17	2.403	2.431	2.473	2.544
76	114.0000	90.4423	116.35	115.65	112.67	2.403	2.431	2.474	2.544
77	115.5000	91.6323	117.85	117.15	114.17	2.403	2.432	2.474	2.545
78	117.0000	92.8224	119.35	118.65	115.67	2.403	2.432	2.474	2.545
79	118.5000	94.0124	120.85	120.15	117.17	2.404	2.432	2.475	2.546
80	120.0000	95.2024	122.35	121.65	118.67	2.404	2.432	2.475	2.546
81	121.5000	96.3924	123.85	123.15	120.17	2.404	2.432	2.475	2.546
82	123.0000	97.5825	125.35	124.65	121.67	2.404	2.432	2.475	2.547
83	124.5000	98.7725	126.85	126.15	123.17	2.404	2.433	2.476	2.547
84	126.0000	99.9625	128.35	127.65	124.67	2.404	2.433	2.476	2.548
85	127.5000	101.1526	129.85	129.15	126.17	2.404	2.433	2.476	2.548
86	129.0000	102.3426	131.35	130.65	127.67	2.404	2.433	2.476	2.548
87	130.5000	103.5326	132.85	132.15	129.17	2.404	2.433	2.477	2.549
88	132.0000	104.7227	134.35	133.65	130.67	2.404	2.433	2.477	2.549
89	133.5000	105.9127	135.85	135.15	132.17	2.405	2.434	2.477	2.550
90	135.0000	107.1027	137.35	136.65	133.67	2.405	2.434	2.477	2.550
91	136.5000	108.2927	138.85	138.15	135.17	2.405	2.434	2.478	2.551
92	138.0000	109.4828	140.35	139.65	136.67	2.405	2.434	2.478	2.551
93	139.5000	110.6728	141.85	141.15	138.17	2.405	2.434	2.478	2.551
94	141.0000	111.8628	143.35	142.65	139.67	2.405	2.434	2.478	2.552
95	142.5000	113.0529	144.86	144.15	141.17	2.405	2.435	2.479	2.552
96	144.0000	114.2429	146.36	145.65	142.67	2.405	2.435	2.479	2.552
97	145.5000	115.4329	147.86	147.15	144.17	2.405	2.435	2.479	2.553
98	147.0000	116.6230	149.36	148.65	145.67	2.405	2.435	2.479	2.553
99	148.5000	117.8130	150.86	150.15	147.17	2.406	2.435	2.480	2.554
100	150.0000	119.0030	152.36	151.65	148.67	2.406	2.435	2.480	2.554

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