INTERNATIONAL STANDARD

ISO 4156-2

Second edition
2021-02

Straight cylindrical involute splines — Metric module, side fit —

Part 2: Dimensions

Cannelures cylindriques droites à flancs en développante — Module métrique, à centrage sur flancs —

Partie 2: Dimensions

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 14 *Shafts of machinery and accessories*.

This second edition cancels and replaces the first edition (ISO 4156-2:2005), which has been technically revised.

The main changes compared to the previous edition are as follows:

— ISO 4156-1 has been changed from dated to undated reference;

— ISO 4156-3 has been dated to refer to the new edition and moved to Bibliography;

— correction of descriptions of $D_{\text{ie min}}$ and $D_{\text{ii min}}$;

— correction of the title for Table 32.

A list of all parts in the ISO 4156 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

ISO 4156 (all parts) provides the data and indications necessary for the design, manufacture and inspection of straight (non-helical) side-fitting cylindrical involute splines.

Straight cylindrical involute splines manufactured in accordance with ISO 4156 (all parts) are used for clearance, sliding and interference connections of shafts and hubs. They contain all the necessary characteristics for the assembly, transmission of torque, and economic production.

The nominal pressure angles are 30°, 37,5° and 45°. For electronic data processing purposes, the form of expression 37,5° has been adopted instead of 37°30'. ISO 4156 (all parts) establishes a specification based on the following modules:

— for pressure angles of 30° and 37,5° the module increments are:

0,5; 0,75; 1; 1,25; 1,5; 1,75; 2; 2,5; 3; 4; 5; 6; 8; 10;

— for pressure angle of 45° the module increments are:

0,25; 0,5; 0,75; 1; 1,25; 1,5; 1,75; 2; 2,5

Straight cylindrical involute splines — Metric module, side fit —

Part 2: Dimensions

1 Scope

This document specifies geometry and inspection dimensions for the design and manufacture of straight (non-helical) side-fitting cylindrical involute splines.

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

The specified diameters for external splines in the geometry tables and the values in the inspection dimension tables are only valid for fundamental deviation "h".

For fundamental deviations other than "h", diameters and tooth thicknesses are calculated for external splines according to the formulae in ISO 4156-1 and inspection dimensions according to the formulae in ISO 4156-3.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4156-1, *Straight cylindrical involute splines — Metric module, side fit — Part 1: Generalities*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4156-1 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Symbols and abbreviated terms

D	Pitch diameter	mm
$D_{\text{Fe max}}$	Maximum form diameter, external spline	mm
$D_{\text{Fi min}}$	Minimum form diameter, internal spline	mm
D_{Re}	Diameter of measuring ball or pin for external spline	mm
D_{Ri}	Diameter of measuring ball or pin for internal spline	mm
D_{b}	Base diameter	mm
$D_{\text{ee max}}$	Maximum major diameter, external spline	mm
$D_{\text{ei max}}$	Maximum major diameter, internal spline	mm
$D_{\text{ie min}}$	Minimum minor diameter, external spline	mm
$D_{\text{ii min}}$	Minimum minor diameter, internal spline	mm
E_{max}	Maximum actual space width	mm
E_{min}	Minimum actual space width	mm
$E_{\text{v min}}$	Minimum effective space width	mm
K_{e}	Approximation factor for external spline	—
K_{i}	Approximation factor for internal spline	—
k	Number of measured teeth	—
M_{Re}	Measurement over two balls or pins, external spline	mm
M_{Ri}	Measurement between two balls or pins, internal spline	mm
S_{max}	Maximum actual tooth thickness	mm
S_{min}	Minimum actual tooth thickness	mm
$S_{\text{v max}}$	Maximum effective tooth thickness	mm
W	Measurement over k teeth, external spline	mm
z	Number of teeth	—

5 Geometry and inspection dimension

5.1 General

Geometry and inspection dimensions are given in Tables 1 to 148. Inspection dimensions for span measurement regarding ISO 4156-3:2021, 9.2 are given in Annex A.

5.2 30 ° pressure angle, module 0,5

Table 1 — Geometry internal spline, $\alpha = 30°$, $m = 0{,}5$, flat and fillet root, $E_{v\,min} = 0{,}785$

z	D	D_b	$D_{ei\,max}$ Fillet root	$D_{ei\,max}$ Flat	$D_{Fi\,min}$	$D_{ii\,min}$	E_{max}			
							4H	5H	6H	7H
6	3,00	2,598 1	4,06	3,91	3,60	2,72	0,808	0,822	0,843	0,878
7	3,50	3,031 1	4,56	4,41	4,10	3,18	0,809	0,823	0,844	0,879
8	4,00	3,464 1	5,07	4,92	4,60	3,66	0,809	0,823	0,845	0,880
9	4,50	3,897 1	5,57	5,42	5,10	4,14	0,809	0,824	0,845	0,881
10	5,00	4,330 1	6,07	5,92	5,60	4,62	0,809	0,824	0,846	0,883
11	5,50	4,763 1	6,57	6,42	6,10	5,11	0,810	0,824	0,847	0,884
12	6,00	5,196 2	7,07	6,92	6,60	5,60	0,810	0,825	0,847	0,884
13	6,50	5,629 2	7,57	7,42	7,10	6,09	0,810	0,825	0,848	0,885
14	7,00	6,062 2	8,08	7,93	7,60	6,58	0,810	0,826	0,848	0,886
15	7,50	6,495 2	8,58	8,43	8,10	7,08	0,811	0,826	0,849	0,887
16	8,00	6,928 2	9,08	8,93	8,60	7,57	0,811	0,826	0,849	0,888
17	8,50	7,361 2	9,58	9,43	9,10	8,07	0,811	0,826	0,850	0,889
18	9,00	7,794 2	10,08	9,93	9,60	8,56	0,811	0,827	0,850	0,889
19	9,50	8,227 2	10,58	10,43	10,10	9,06	0,811	0,827	0,851	0,890
20	10,00	8,660 3	11,08	10,93	10,60	9,56	0,811	0,827	0,851	0,891
21	10,50	9,093 3	11,58	11,43	11,10	10,05	0,812	0,828	0,851	0,891
22	11,00	9,526 3	12,09	11,94	11,60	10,55	0,812	0,828	0,852	0,892
23	11,50	9,959 3	12,59	12,44	12,10	11,05	0,812	0,828	0,852	0,893
24	12,00	10,392 3	13,09	12,94	12,60	11,55	0,812	0,828	0,853	0,893
25	12,50	10,825 3	13,59	13,44	13,10	12,05	0,812	0,829	0,853	0,894
26	13,00	11,258 3	14,09	13,94	13,60	12,54	0,812	0,829	0,853	0,894
27	13,50	11,691 3	14,59	14,44	14,10	13,04	0,812	0,829	0,854	0,895
28	14,00	12,124 4	15,09	14,94	14,60	13,54	0,813	0,829	0,854	0,895
29	14,50	12,557 4	15,59	15,44	15,10	14,04	0,813	0,829	0,854	0,896
30	15,00	12,990 4	16,09	15,94	15,60	14,54	0,813	0,830	0,855	0,897
31	15,50	13,423 4	16,59	16,44	16,10	15,04	0,813	0,830	0,855	0,897
32	16,00	13,856 4	17,09	16,94	16,60	15,54	0,813	0,830	0,855	0,898
33	16,50	14,289 4	17,60	17,45	17,10	16,03	0,813	0,830	0,856	0,898
34	17,00	14,722 4	18,10	17,95	17,60	16,53	0,813	0,830	0,856	0,899
35	17,50	15,155 4	18,60	18,45	18,10	17,03	0,813	0,831	0,856	0,899
36	18,00	15,588 5	19,10	18,95	18,60	17,53	0,814	0,831	0,857	0,899
37	18,50	16,021 5	19,60	19,45	19,10	18,03	0,814	0,831	0,857	0,900
38	19,00	16,454 5	20,10	19,95	19,60	18,53	0,814	0,831	0,857	0,900
39	19,50	16,887 5	20,60	20,45	20,10	19,03	0,814	0,831	0,857	0,901
40	20,00	17,320 5	21,10	20,95	20,60	19,53	0,814	0,831	0,858	0,901
41	20,50	17,753 5	21,60	21,45	21,10	20,03	0,814	0,832	0,858	0,902
42	21,00	18,186 5	22,10	21,95	21,60	20,53	0,814	0,832	0,858	0,902
43	21,50	18,619 5	22,60	22,45	22,10	21,03	0,814	0,832	0,858	0,902
44	22,00	19,052 6	23,10	22,95	22,60	21,53	0,814	0,832	0,859	0,903
45	22,50	19,485 6	23,60	23,45	23,10	22,02	0,815	0,832	0,859	0,903
46	23,00	19,918 6	24,11	23,96	23,60	22,52	0,815	0,832	0,859	0,904
47	23,50	20,351 6	24,61	24,46	24,10	23,02	0,815	0,833	0,859	0,904
48	24,00	20,784 6	25,11	24,96	24,60	23,52	0,815	0,833	0,860	0,904
49	24,50	21,217 6	25,61	25,46	25,10	24,02	0,815	0,833	0,860	0,905
50	25,00	21,650 6	26,11	25,96	25,60	24,52	0,815	0,833	0,860	0,905

Table 1 *(continued)*

z	D	D_b	$D_{ei\ max}$ Fillet root	$D_{ei\ max}$ Flat	$D_{Fi\ min}$	$D_{ii\ min}$	E_{max}			
							4H	5H	6H	7H
51	25,50	22,083 6	26,61	26,46	26,10	25,02	0,815	0,833	0,860	0,906
52	26,00	22,516 7	27,11	26,96	26,60	25,52	0,815	0,833	0,861	0,906
53	26,50	22,949 7	27,61	27,46	27,10	26,02	0,815	0,834	0,861	0,906
54	27,00	23,382 7	28,11	27,96	27,60	26,52	0,815	0,834	0,861	0,907
55	27,50	23,815 7	28,61	28,46	28,10	27,02	0,815	0,834	0,861	0,907
56	28,00	24,248 7	29,11	28,96	28,60	27,52	0,816	0,834	0,861	0,907
57	28,50	24,681 7	29,61	29,46	29,10	28,02	0,816	0,834	0,862	0,908
58	29,00	25,114 7	30,11	29,96	29,60	28,52	0,816	0,834	0,862	0,908
59	29,50	25,547 7	30,61	30,46	30,10	29,02	0,816	0,834	0,862	0,908
60	30,00	25,980 8	31,11	30,96	30,60	29,52	0,816	0,834	0,862	0,909
61	30,50	26,413 8	31,61	31,46	31,10	30,02	0,816	0,835	0,863	0,909
62	31,00	26,846 8	32,12	31,97	31,60	30,52	0,816	0,835	0,863	0,909
63	31,50	27,279 8	32,62	32,47	32,10	31,02	0,816	0,835	0,863	0,910
64	32,00	27,712 8	33,12	32,97	32,60	31,52	0,816	0,835	0,863	0,910
65	32,50	28,145 8	33,62	33,47	33,10	32,02	0,816	0,835	0,863	0,910
66	33,00	28,578 8	34,12	33,97	33,60	32,52	0,816	0,835	0,863	0,911
67	33,50	29,011 9	34,62	34,47	34,10	33,02	0,816	0,835	0,864	0,911
68	34,00	29,444 9	35,12	34,97	34,60	33,52	0,817	0,835	0,864	0,911
69	34,50	29,877 9	35,62	35,47	35,10	34,02	0,817	0,836	0,864	0,912
70	35,00	30,310 9	36,12	35,97	35,60	34,52	0,817	0,836	0,864	0,912
71	35,50	30,743 9	36,62	36,47	36,10	35,02	0,817	0,836	0,864	0,912
72	36,00	31,176 9	37,12	36,97	36,60	35,52	0,817	0,836	0,865	0,912
73	36,50	31,609 9	37,62	37,47	37,10	36,02	0,817	0,836	0,865	0,913
74	37,00	32,042 9	38,12	37,97	37,60	36,51	0,817	0,836	0,865	0,913
75	37,50	32,476 0	38,62	38,47	38,10	37,01	0,817	0,836	0,865	0,913
76	38,00	32,909 0	39,12	38,97	38,60	37,51	0,817	0,836	0,865	0,914
77	38,50	33,342 0	39,62	39,47	39,10	38,01	0,817	0,837	0,866	0,914
78	39,00	33,775 0	40,12	39,97	39,60	38,51	0,817	0,837	0,866	0,914
79	39,50	34,208 0	40,62	40,47	40,10	39,01	0,817	0,837	0,866	0,914
80	40,00	34,641 0	41,12	40,97	40,60	39,51	0,817	0,837	0,866	0,915
81	40,50	35,074 0	41,63	41,48	41,10	40,01	0,817	0,837	0,866	0,915
82	41,00	35,507 0	42,13	41,98	41,60	40,51	0,818	0,837	0,866	0,915
83	41,50	35,940 1	42,63	42,48	42,10	41,01	0,818	0,837	0,867	0,916
84	42,00	36,373 1	43,13	42,98	42,60	41,51	0,818	0,837	0,867	0,916
85	42,50	36,806 1	43,63	43,48	43,10	42,01	0,818	0,837	0,867	0,916
86	43,00	37,239 1	44,13	43,98	43,60	42,51	0,818	0,838	0,867	0,916
87	43,50	37,672 1	44,63	44,48	44,10	43,01	0,818	0,838	0,867	0,917
88	44,00	38,105 1	45,13	44,98	44,60	43,51	0,818	0,838	0,867	0,917
89	44,50	38,538 1	45,63	45,48	45,10	44,01	0,818	0,838	0,868	0,917
90	45,00	38,971 1	46,13	45,98	45,60	44,51	0,818	0,838	0,868	0,917
91	45,50	39,404 2	46,63	46,48	46,10	45,01	0,818	0,838	0,868	0,918
92	46,00	39,837 2	47,13	46,98	46,60	45,51	0,818	0,838	0,868	0,918
93	46,50	40,270 2	47,63	47,48	47,10	46,01	0,818	0,838	0,868	0,918
94	47,00	40,703 2	48,13	47,98	47,60	46,51	0,818	0,838	0,868	0,918
95	47,50	41,136 2	48,63	48,48	48,10	47,01	0,818	0,838	0,869	0,919
96	48,00	41,569 2	49,13	48,98	48,60	47,51	0,818	0,839	0,869	0,919
97	48,50	42,002 2	49,63	49,48	49,10	48,01	0,819	0,839	0,869	0,919
98	49,00	42,435 2	50,13	49,98	49,60	48,51	0,819	0,839	0,869	0,919
99	49,50	42,868 3	50,63	50,48	50,10	49,01	0,819	0,839	0,869	0,920
100	50,00	43,301 3	51,13	50,98	50,60	49,51	0,819	0,839	0,869	0,920

Table 2 — Geometry external spline, $\alpha = 30°$, $m = 0{,}5$, flat and fillet root, $S_{v\,max} = 0{,}785$

z	D	D_b	$D_{ee\,max}$	$D_{Fe\,max}$	$D_{ie\,min}$ Fillet root	$D_{ie\,min}$ Flat	S_{min}			
							4h	5h	6h	7h
6	3,00	2,598 1	3,50	2,62	1,94	2,09	0,762	0,748	0,727	0,692
7	3,50	3,031 1	4,00	3,08	2,44	2,59	0,761	0,747	0,726	0,691
8	4,00	3,464 1	4,50	3,56	2,93	3,08	0,761	0,747	0,725	0,690
9	4,50	3,897 1	5,00	4,04	3,43	3,58	0,761	0,746	0,725	0,689
10	5,00	4,330 1	5,50	4,52	3,93	4,08	0,761	0,746	0,724	0,687
11	5,50	4,763 1	6,00	5,01	4,43	4,58	0,760	0,746	0,723	0,686
12	6,00	5,196 2	6,50	5,50	4,93	5,08	0,760	0,745	0,723	0,686
13	6,50	5,629 2	7,00	5,99	5,43	5,58	0,760	0,745	0,722	0,685
14	7,00	6,062 2	7,50	6,48	5,92	6,07	0,760	0,744	0,722	0,684
15	7,50	6,495 2	8,00	6,98	6,42	6,57	0,759	0,744	0,721	0,683
16	8,00	6,928 2	8,50	7,47	6,92	7,07	0,759	0,744	0,721	0,682
17	8,50	7,361 2	9,00	7,97	7,42	7,57	0,759	0,744	0,720	0,681
18	9,00	7,794 2	9,50	8,46	7,92	8,07	0,759	0,743	0,720	0,681
19	9,50	8,227 2	10,00	8,96	8,42	8,57	0,759	0,743	0,719	0,680
20	10,00	8,660 3	10,50	9,46	8,92	9,07	0,759	0,743	0,719	0,679
21	10,50	9,093 3	11,00	9,95	9,42	9,57	0,758	0,742	0,719	0,679
22	11,00	9,526 3	11,50	10,45	9,91	10,06	0,758	0,742	0,718	0,678
23	11,50	9,959 3	12,00	10,95	10,41	10,56	0,758	0,742	0,718	0,677
24	12,00	10,392 3	12,50	11,45	10,91	11,06	0,758	0,742	0,717	0,677
25	12,50	10,825 3	13,00	11,95	11,41	11,56	0,758	0,741	0,717	0,676
26	13,00	11,258 3	13,50	12,44	11,91	12,06	0,758	0,741	0,717	0,676
27	13,50	11,691 3	14,00	12,94	12,41	12,56	0,758	0,741	0,716	0,675
28	14,00	12,124 4	14,50	13,44	12,91	13,06	0,757	0,741	0,716	0,675
29	14,50	12,557 4	15,00	13,94	13,41	13,56	0,757	0,741	0,716	0,674
30	15,00	12,990 4	15,50	14,44	13,91	14,06	0,757	0,740	0,715	0,673
31	15,50	13,423 4	16,00	14,94	14,41	14,56	0,757	0,740	0,715	0,673
32	16,00	13,856 4	16,50	15,44	14,91	15,06	0,757	0,740	0,715	0,672
33	16,50	14,289 4	17,00	15,93	15,40	15,55	0,757	0,740	0,714	0,672
34	17,00	14,722 4	17,50	16,43	15,90	16,05	0,757	0,740	0,714	0,671
35	17,50	15,155 4	18,00	16,93	16,40	16,55	0,757	0,739	0,714	0,671
36	18,00	15,588 5	18,50	17,43	16,90	17,05	0,756	0,739	0,713	0,671
37	18,50	16,021 5	19,00	17,93	17,40	17,55	0,756	0,739	0,713	0,670
38	19,00	16,454 5	19,50	18,43	17,90	18,05	0,756	0,739	0,713	0,670
39	19,50	16,887 5	20,00	18,93	18,40	18,55	0,756	0,739	0,713	0,669
40	20,00	17,320 5	20,50	19,43	18,90	19,05	0,756	0,739	0,712	0,669
41	20,50	17,753 5	21,00	19,93	19,40	19,55	0,756	0,738	0,712	0,668
42	21,00	18,186 5	21,50	20,43	19,90	20,05	0,756	0,738	0,712	0,668
43	21,50	18,619 5	22,00	20,93	20,40	20,55	0,756	0,738	0,712	0,668
44	22,00	19,052 6	22,50	21,43	20,90	21,05	0,756	0,738	0,711	0,667
45	22,50	19,485 6	23,00	21,92	21,40	21,55	0,755	0,738	0,711	0,667
46	23,00	19,918 6	23,50	22,42	21,89	22,04	0,755	0,738	0,711	0,666
47	23,50	20,351 6	24,00	22,92	22,39	22,54	0,755	0,737	0,711	0,666
48	24,00	20,784 6	24,50	23,42	22,89	23,04	0,755	0,737	0,710	0,666
49	24,50	21,217 6	25,00	23,92	23,39	23,54	0,755	0,737	0,710	0,665
50	25,00	21,650 6	25,50	24,42	23,89	24,04	0,755	0,737	0,710	0,665
51	25,50	22,083 6	26,00	24,92	24,39	24,54	0,755	0,737	0,710	0,664
52	26,00	22,516 7	26,50	25,42	24,89	25,04	0,755	0,737	0,709	0,664
53	26,50	22,949 7	27,00	25,92	25,39	25,54	0,755	0,736	0,709	0,664
54	27,00	23,382 7	27,50	26,42	25,89	26,04	0,755	0,736	0,709	0,663
55	27,50	23,815 7	28,00	26,92	26,39	26,54	0,755	0,736	0,709	0,663
56	28,00	24,248 7	28,50	27,42	26,89	27,04	0,754	0,736	0,709	0,663
57	28,50	24,681 7	29,00	27,92	27,39	27,54	0,754	0,736	0,708	0,662
58	29,00	25,114 7	29,50	28,42	27,89	28,04	0,754	0,736	0,708	0,662
59	29,50	25,547 7	30,00	28,92	28,39	28,54	0,754	0,736	0,708	0,662
60	30,00	25,980 8	30,50	29,42	28,89	29,04	0,754	0,736	0,708	0,661
61	30,50	26,413 8	31,00	29,92	29,39	29,54	0,754	0,735	0,707	0,661
62	31,00	26,846 8	31,50	30,42	29,88	30,03	0,754	0,735	0,707	0,661
63	31,50	27,279 8	32,00	30,92	30,38	30,53	0,754	0,735	0,707	0,660

Table 2 *(continued)*

z	D	D_b	$D_{ee\ max}$	$D_{Fe\ max}$	$D_{ie\ min}$ Fillet root	$D_{ie\ min}$ Flat	S_{min}			
							4h	5h	6h	7h
64	32,00	27,712 8	32,50	31,42	30,88	31,03	0,754	0,735	0,707	0,660
65	32,50	28,145 8	33,00	31,92	31,38	31,53	0,754	0,735	0,707	0,660
66	33,00	28,578 8	33,50	32,42	31,88	32,03	0,754	0,735	0,707	0,659
67	33,50	29,011 9	34,00	32,92	32,38	32,53	0,754	0,735	0,706	0,659
68	34,00	29,444 9	34,50	33,42	32,88	33,03	0,753	0,735	0,706	0,659
69	34,50	29,877 9	35,00	33,92	33,38	33,53	0,753	0,734	0,706	0,658
70	35,00	30,310 9	35,50	34,42	33,88	34,03	0,753	0,734	0,706	0,658
71	35,50	30,743 9	36,00	34,92	34,38	34,53	0,753	0,734	0,706	0,658
72	36,00	31,176 9	36,50	35,42	34,88	35,03	0,753	0,734	0,705	0,658
73	36,50	31,609 9	37,00	35,92	35,38	35,53	0,753	0,734	0,705	0,657
74	37,00	32,042 9	37,50	36,41	35,88	36,03	0,753	0,734	0,705	0,657
75	37,50	32,476 0	38,00	36,91	36,38	36,53	0,753	0,734	0,705	0,657
76	38,00	32,909 0	38,50	37,41	36,88	37,03	0,753	0,734	0,705	0,656
77	38,50	33,342 0	39,00	37,91	37,38	37,53	0,753	0,733	0,704	0,656
78	39,00	33,775 0	39,50	38,41	37,88	38,03	0,753	0,733	0,704	0,656
79	39,50	34,208 0	40,00	38,91	38,38	38,53	0,753	0,733	0,704	0,656
80	40,00	34,641 0	40,50	39,41	38,88	39,03	0,753	0,733	0,704	0,655
81	40,50	35,074 0	41,00	39,91	39,37	39,52	0,753	0,733	0,704	0,655
82	41,00	35,507 0	41,50	40,41	39,87	40,02	0,752	0,733	0,704	0,655
83	41,50	35,940 1	42,00	40,91	40,37	40,52	0,752	0,733	0,703	0,654
84	42,00	36,373 1	42,50	41,41	40,87	41,02	0,752	0,733	0,703	0,654
85	42,50	36,806 1	43,00	41,91	41,37	41,52	0,752	0,733	0,703	0,654
86	43,00	37,239 1	43,50	42,41	41,87	42,02	0,752	0,732	0,703	0,654
87	43,50	37,672 1	44,00	42,91	42,37	42,52	0,752	0,732	0,703	0,653
88	44,00	38,105 1	44,50	43,41	42,87	43,02	0,752	0,732	0,703	0,653
89	44,50	38,538 1	45,00	43,91	43,37	43,52	0,752	0,732	0,702	0,653
90	45,00	38,971 1	45,50	44,41	43,87	44,02	0,752	0,732	0,702	0,653
91	45,50	39,404 2	46,00	44,91	44,37	44,52	0,752	0,732	0,702	0,652
92	46,00	39,837 2	46,50	45,41	44,87	45,02	0,752	0,732	0,702	0,652
93	46,50	40,270 2	47,00	45,91	45,37	45,52	0,752	0,732	0,702	0,652
94	47,00	40,703 2	47,50	46,41	45,87	46,02	0,752	0,732	0,702	0,652
95	47,50	41,136 2	48,00	46,91	46,37	46,52	0,752	0,732	0,701	0,651
96	48,00	41,569 2	48,50	47,41	46,87	47,02	0,752	0,731	0,701	0,651
97	48,50	42,002 2	49,00	47,91	47,37	47,52	0,751	0,731	0,701	0,651
98	49,00	42,435 2	49,50	48,41	47,87	48,02	0,751	0,731	0,701	0,651
99	49,50	42,868 3	50,00	48,91	48,37	48,52	0,751	0,731	0,701	0,650
100	50,00	43,301 3	50,50	49,41	48,87	49,02	0,751	0,731	0,701	0,650

Table 3 — Inspection dimensions internal spline, $\alpha = 30°$, $m = 0{,}5$, flat or fillet root, $E_{v\,min} = 0{,}785$

z	D_{Ri}	Measurement between balls or pins, M_{Ri} (checking of dimensions E_{min} and E_{max}) for tolerance classes								K_i
		4H		5H		6H		7H		
		min. (aux.)	max.	min. (aux.)	max.	min. (aux.)	max.	min. (aux.)	max.	
6	—	—	—	—	—	—	—	—	—	—
7	—	—	—	—	—	—	—	—	—	—
8	0,85	2,752	2,791	2,767	2,830	2,788	2,882	2,821	2,960	2,079
9	0,85	3,207	3,241	3,220	3,276	3,239	3,324	3,268	3,399	1,987
10	0,85	3,780	3,813	3,793	3,846	3,810	3,894	3,838	3,969	1,974
11	0,85	4,235	4,266	4,247	4,298	4,264	4,344	4,291	4,418	1,922
12	0,85	4,793	4,823	4,805	4,855	4,821	4,901	4,848	4,975	1,917
13	0,90	5,071	5,104	5,084	5,139	5,102	5,189	5,131	5,268	2,031
14	0,90	5,623	5,655	5,636	5,689	5,653	5,739	5,682	5,817	2,011
15	0,90	6,091	6,122	6,103	6,155	6,120	6,203	6,148	6,281	1,972
16	0,90	6,634	6,665	6,646	6,698	6,663	6,746	6,691	6,823	1,960
17	0,90	7,104	7,134	7,116	7,166	7,133	7,214	7,160	7,291	1,932
18	0,90	7,642	7,672	7,654	7,704	7,670	7,751	7,697	7,828	1,924
19	0,90	8,114	8,143	8,126	8,175	8,142	8,222	8,169	8,299	1,904
20	0,90	8,648	8,677	8,659	8,709	8,676	8,756	8,702	8,832	1,898
21	0,90	9,122	9,151	9,134	9,182	9,150	9,229	9,176	9,305	1,882
22	0,90	9,652	9,681	9,664	9,712	9,680	9,759	9,707	9,836	1,878
23	0,90	10,128	10,157	10,140	10,188	10,156	10,235	10,183	10,311	1,865
24	0,90	10,656	10,684	10,667	10,716	10,684	10,762	10,710	10,839	1,862
25	0,90	11,133	11,161	11,145	11,193	11,161	11,240	11,188	11,316	1,852
26	0,90	11,659	11,687	11,670	11,718	11,687	11,765	11,713	11,842	1,849
27	0,90	12,138	12,166	12,149	12,197	12,166	12,244	12,192	12,321	1,841
28	0,90	12,661	12,689	12,673	12,721	12,689	12,768	12,716	12,844	1,839
29	0,90	13,142	13,169	13,153	13,201	13,170	13,248	13,196	13,325	1,831
30	0,90	13,663	13,691	13,675	13,723	13,692	13,770	13,718	13,847	1,830
31	0,90	14,145	14,172	14,157	14,204	14,173	14,251	14,200	14,329	1,823
32	0,90	14,665	14,693	14,677	14,724	14,694	14,772	14,720	14,849	1,822
33	0,90	15,148	15,175	15,160	15,207	15,176	15,254	15,203	15,332	1,817
34	0,90	15,667	15,694	15,679	15,726	15,695	15,773	15,722	15,851	1,815
35	0,90	16,150	16,178	16,162	16,210	16,179	16,257	16,206	16,335	1,811
36	0,90	16,668	16,696	16,680	16,728	16,697	16,775	16,724	16,853	1,810
37	0,90	17,153	17,180	17,165	17,212	17,182	17,260	17,209	17,338	1,805
38	0,90	17,670	17,697	17,682	17,729	17,699	17,777	17,726	17,855	1,805
39	0,90	18,155	18,182	18,167	18,214	18,184	18,262	18,211	18,341	1,801
40	0,90	18,671	18,698	18,683	18,730	18,700	18,778	18,727	18,857	1,800
41	0,90	19,157	19,184	19,169	19,216	19,186	19,264	19,213	19,343	1,797
42	0,90	19,672	19,699	19,684	19,731	19,701	19,779	19,729	19,859	1,796
43	0,90	20,159	20,186	20,171	20,218	20,188	20,266	20,215	20,346	1,793
44	0,90	20,673	20,700	20,685	20,732	20,703	20,781	20,730	20,861	1,793
45	0,90	21,160	21,187	21,172	21,220	21,190	21,268	21,217	21,348	1,790
46	0,90	21,674	21,701	21,686	21,734	21,704	21,782	21,732	21,862	1,789
47	0,90	22,162	22,188	22,174	22,221	22,192	22,270	22,219	22,350	1,787
48	0,90	22,675	22,702	22,687	22,734	22,705	22,783	22,733	22,864	1,786
49	0,90	23,163	23,190	23,176	23,223	23,193	23,271	23,221	23,352	1,784
50	0,90	23,676	23,703	23,688	23,735	23,706	23,784	23,734	23,865	1,784
51	0,90	24,164	24,191	24,177	24,224	24,195	24,273	24,223	24,354	1,782
52	0,90	24,677	24,703	24,689	24,736	24,707	24,785	24,735	24,867	1,781
53	0,90	25,166	25,192	25,178	25,225	25,196	25,274	25,224	25,356	1,779
54	0,90	25,677	25,704	25,690	25,737	25,708	25,786	25,736	25,868	1,779
55	0,90	26,167	26,193	26,179	26,226	26,197	26,276	26,226	26,358	1,777
56	0,90	26,678	26,705	26,691	26,738	26,709	26,787	26,738	26,869	1,777
57	0,90	27,168	27,194	27,181	27,228	27,199	27,277	27,227	27,359	1,775
58	0,90	27,679	27,705	27,692	27,739	27,710	27,788	27,739	27,871	1,775
59	0,90	28,169	28,195	28,182	28,229	28,200	28,279	28,229	28,361	1,774
60	0,90	28,679	28,706	28,692	28,739	28,711	28,789	28,740	28,872	1,773

Table 3 *(continued)*

z	D_{Ri}	Measurement between balls or pins, M_{Ri} (checking of dimensions E_{min} and E_{max}) for tolerance classes								K_i
		4H		5H		6H		7H		
		min. (aux.)	max.	min. (aux.)	max.	min. (aux.)	max.	min. (aux.)	max.	
61	0,90	29,170	29,196	29,183	29,230	29,201	29,280	29,230	29,363	1,772
62	0,90	29,680	29,707	29,693	29,740	29,712	29,790	29,741	29,873	1,772
63	0,90	30,171	30,197	30,184	30,231	30,202	30,281	30,231	30,364	1,770
64	0,90	30,681	30,707	30,694	30,741	30,712	30,791	30,742	30,874	1,770
65	0,90	31,171	31,198	31,185	31,232	31,203	31,282	31,233	31,366	1,769
66	0,90	31,681	31,708	31,694	31,741	31,713	31,792	31,743	31,876	1,769
67	0,90	32,172	32,199	32,186	32,233	32,204	32,283	32,234	32,367	1,768
68	0,90	32,682	32,708	32,695	32,742	32,714	32,793	32,744	32,877	1,768
69	0,90	33,173	33,199	33,186	33,233	33,205	33,284	33,235	33,368	1,766
70	0,90	33,682	33,709	33,696	33,743	33,715	33,794	33,744	33,878	1,766
71	0,90	34,174	34,200	34,187	34,234	34,206	34,285	34,236	34,370	1,765
72	0,90	34,683	34,709	34,696	34,743	34,715	34,794	34,745	34,879	1,765
73	0,90	35,175	35,201	35,188	35,235	35,207	35,286	35,237	35,371	1,764
74	0,90	35,683	35,709	35,697	35,744	35,716	35,795	35,746	35,880	1,764
75	0,90	36,175	36,202	36,189	36,236	36,208	36,287	36,238	36,372	1,763
76	0,90	36,684	36,710	36,697	36,744	36,717	36,796	36,747	36,881	1,763
77	0,90	37,176	37,202	37,190	37,237	37,209	37,288	37,240	37,374	1,762
78	0,90	37,684	37,710	37,698	37,745	37,717	37,797	37,748	37,882	1,762
79	0,90	38,177	38,203	38,190	38,237	38,210	38,289	38,241	38,375	1,761
80	0,90	38,684	38,711	38,698	38,745	38,718	38,797	38,749	38,883	1,761
81	0,90	39,177	39,203	39,191	39,238	39,211	39,290	39,242	39,376	1,760
82	0,90	39,685	39,711	39,699	39,746	39,719	39,798	39,750	39,884	1,760
83	0,90	40,178	40,204	40,192	40,239	40,212	40,291	40,243	40,377	1,760
84	0,90	40,685	40,711	40,699	40,746	40,719	40,799	40,750	40,885	1,759
85	0,90	41,178	41,204	41,192	41,239	41,212	41,292	41,244	41,379	1,759
86	0,90	41,686	41,712	41,700	41,747	41,720	41,799	41,751	41,886	1,759
87	0,90	42,179	42,205	42,193	42,240	42,213	42,293	42,244	42,380	1,758
88	0,90	42,686	42,712	42,700	42,747	42,720	42,800	42,752	42,887	1,758
89	0,90	43,179	43,206	43,194	43,241	43,214	43,293	43,245	43,381	1,757
90	0,90	43,686	43,713	43,701	43,748	43,721	43,801	43,753	43,888	1,757
91	0,90	44,180	44,206	44,194	44,241	44,215	44,294	44,246	44,382	1,757
92	0,90	44,687	44,713	44,701	44,748	44,722	44,801	44,753	44,889	1,757
93	0,90	45,180	45,207	45,195	45,242	45,215	45,295	45,247	45,383	1,756
94	0,90	45,687	45,713	45,702	45,749	45,722	45,802	45,754	45,890	1,756
95	0,90	46,181	46,207	46,196	46,243	46,216	46,296	46,248	46,384	1,755
96	0,90	46,688	46,714	46,702	46,749	46,723	46,802	46,755	46,891	1,755
97	0,90	47,181	47,207	47,196	47,243	47,217	47,296	47,249	47,385	1,755
98	0,90	47,688	47,714	47,703	47,750	47,723	47,803	47,756	47,892	1,755
99	0,90	48,182	48,208	48,197	48,244	48,217	48,297	48,250	48,386	1,754
100	0,90	48,688	48,714	48,703	48,750	48,724	48,804	48,756	48,893	1,754