भारतीय मानक
Indian Standard

IS 3665 : 2024

इनवॉल्यूट साइडेड स्प्लाइन्स — आयाम

(पहला पुनरीक्षण)

Involute Sided Splines — Dimensions

(First Revision)

ICS 21.120.10

भारतीय मानक ब्यूरो
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Price Group 13

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FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Transmission Devices Sectional Committee had been approved by the Production and General Engineering Division Council.

This standard was first published in 1966. This revision has been brought out to keep pace with the latest technological developments and international practices.

Splined shafts generally have the following three types of applications:

a) Coupling shafts when relatively heavy torques are to be transmitted without slippage;
b) Transmitting power to floating or permanently fixed gears, pulleys and other rotating members; and
c) Coupling parts that may require frequent removal for indexing or change of angular position.

External and internal splines are extensively used in the automobile, machine tools and other industries. This standard has been formulated to rationalize the production and to facilitate interchangeability of external and internal splines.

This standard deals with involute sided splines of 30° pressure angle for general engineering purposes. Separate standards on straight sided splines have already been formulated (*see* IS 2327 : 1993 and IS 2610 : 1989).

The dimensions and fits given in the tables are based on the basic hole system. In this system the dimensions of the internal splines are the basis and variations in fit are obtained by varying the allowance on the external splines.

The tolerances for the spline tooth thickness and space width are given in Table 12. The instructions for the use of table is explained in Annex A. The tolerance on major and minor diameters shall be according to the system of limits and fits specified in IS 919 (Part 1) : 2014 and IS 919 (Part 2) : 2014.

Separate standards on gauging practice and the relevant manufacturing tools for splines are under preparation.

As far as possible, the major diameters of external splines are given, so as to end in numbers 0, 2, 5 and 8 which are standard diameters for ball bearings.

The composition of Committee responsible for formulation of this standard is given in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

INVOLUTE SIDED SPLINES — DIMENSIONS

(First Revision)

1 SCOPE

1.1 This standard specifies the dimensions, for straight involute spline of 30˚ pressure angle, with three different types of fits,namely,major diameter fit, minor diameter fit and side fit.

1.2 Involute splines of modules (l), 1.25, (l.5), 2, (2.5), 3, (4), 5, (6), 8 and (10) are covered in this standard. The values given within brackets are non – preferred.

2 REFERENCES

The following standards given below contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and encouraged to investigate the possibility of applying the most recent edition of these standards:

IS No.	*Title*
IS 919	Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes
(Part 1) : 2014	Basis of tolerance, deviation and fits (*third revision*)
(Part 2) : 2014	Tables of standard tolerance classes and limit deviation for holes and shafts (*second revision*)
IS 2327 : 1993	Straight — Sided splines for cylindrical shafts with internal centering — Dimensions, tolerances and verification (*first revision*)
IS 2610 : 1989	Power transmission — Straight sided splines for machine tools — Dimensions (*first revision*)

3 DEFINITIONS

For the purpose of this standard, following definitions shall apply:

3.1 Actual Space Width — The circular width on the pitch circle of any single space (*see* Fig. 1).

3.2 Actual Tooth Thickness — The circular thickness on the pitch circle of any single tooth (*see* Fig. 2).

3.3 Base Circle Diameter — The diameter of the circle from which involute spline tooth profiles are constructed.

3.4 Effective Clearance — The difference between the effective space width of the internal spline and the effective tooth thickness of the mating external spline (*see* Fig.3).

3.5 Effective Error — The accumulated effect of the spline errors on the fit with the mating parts.

3.6 Effective Space Width of an Internal Spline — The circular tooth thickness on the pitch circle of an imaginary perfect external spline which would fit the internal spline without looseness or interference (*see* Fig. 1).

3.7 Effective Tooth Thickness of an External Spline — The circular space width on the pitch circle of an imaginary perfect internal spline which would fit the external spline without looseness or interference (*see* Fig.2).

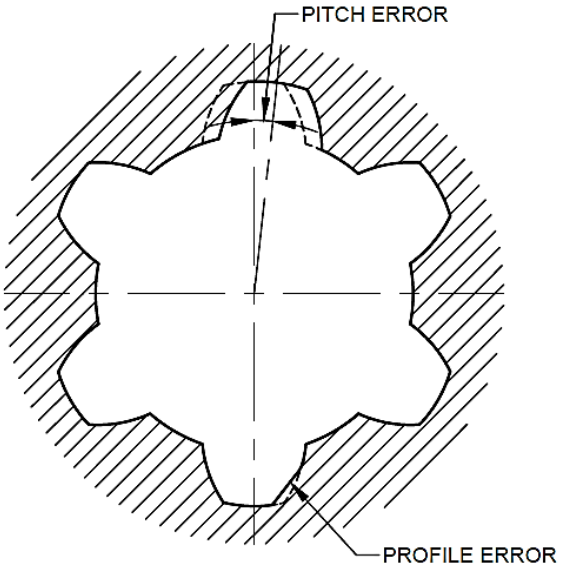
3.8 Error Allowance — The permissible effective error.

3.9 Involute Spline — The spline having teeth with involute profiles.

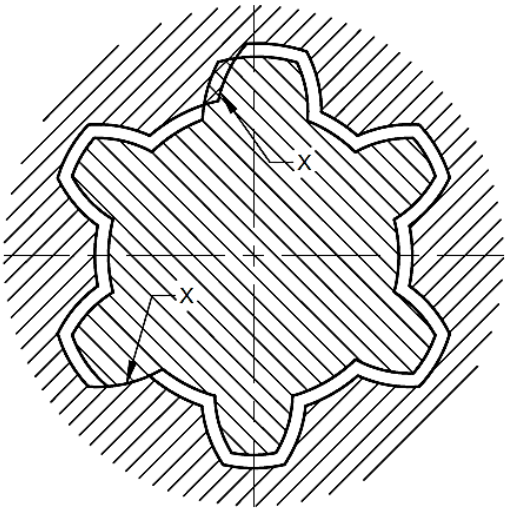
3.10 Machining Tolerance — The permissible variation in actual space width or actual tooth thickness (*see* Fig. 3).

3.11 Main Pressure Angle (a_0) — The pressure angle at the pitch point.

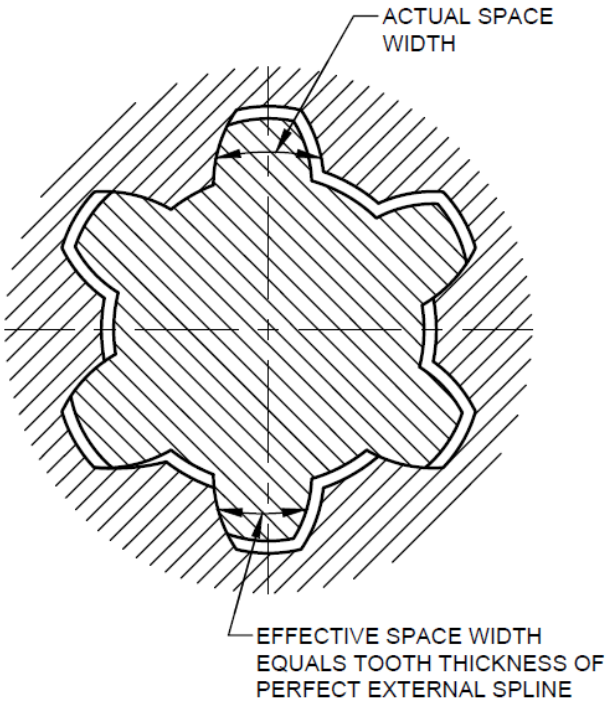
3.12 Major Diameter — The diameter of the outermost surface of the spline. It is the root diameter of the internal spline or the tip diameter of the external spline.



a) Each space is basic width



b) Perfect external spline with bas tooth thickness interferes at X



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

FIG. 1 EFFECT OF INTERNAL SPLINE ERRORS

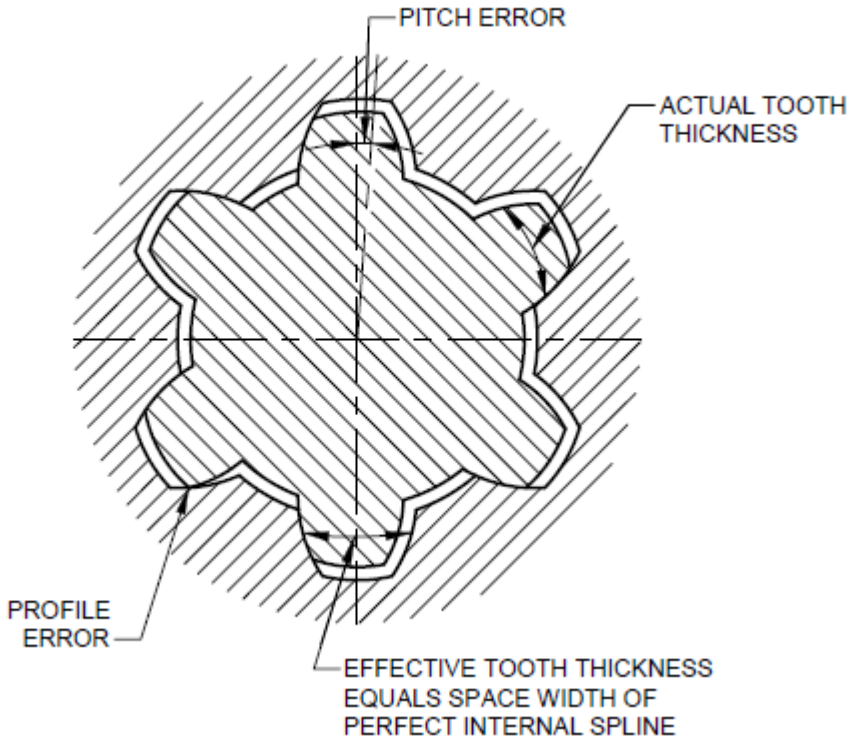


FIG. 2 EFFECT OF EXTERNAL SPLINE ERRORS

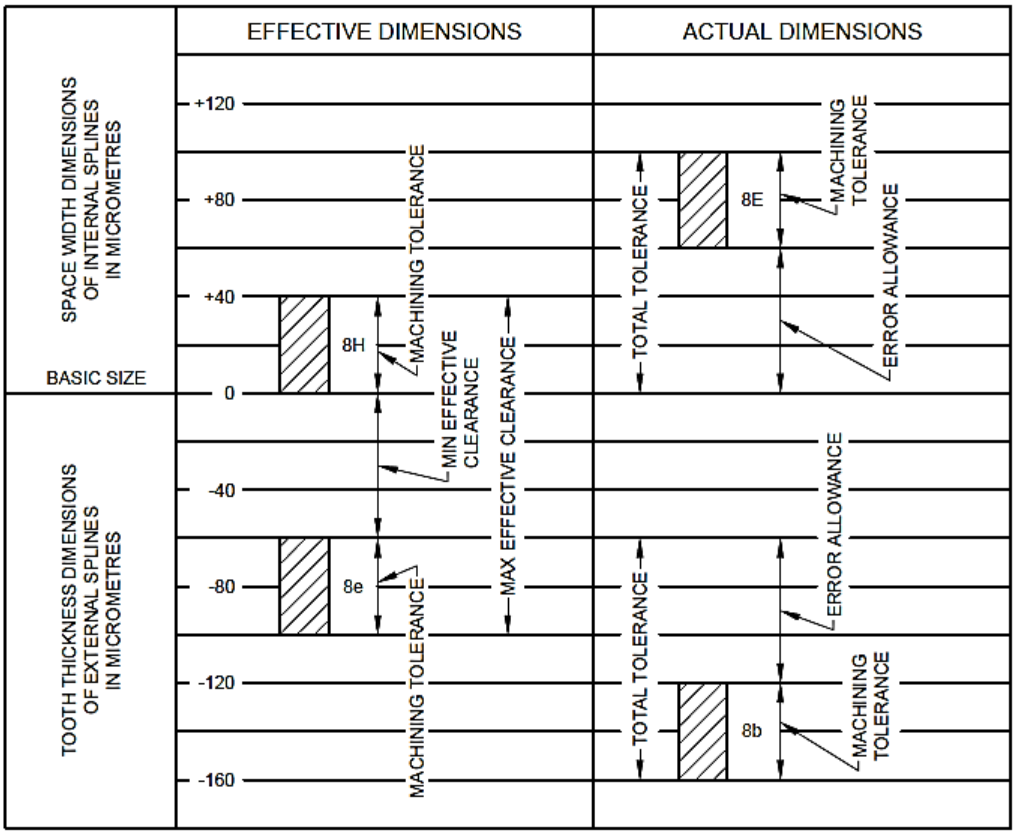


FIG. 3 FIT DIAGRAM OF SPLINE ASSEMBLY
120 × 114 × 38 × 8 HE/8 eb IS 3665

3.13 Minor Diameter — The diameter of the innermost surface of the spline. It is the tip diameter of the internal spline or the root diameter of the external spline.

3.14 Module (*m*) — The ratio of the pitch circle diameter to the number of spline teeth.

3.15 Nominal Clearance — The difference between the actual space width of an internal spline and the actual tooth thickness of the mating external spline. This does not define the fit between the mating members, because of the effect of errors.

3.16 Pitch Circle Diameter — The diameter of an imaginary reference circle (pitch circle) from which all transverse dimensions are derived.

3.17 Pitch Point — The point of intersection of the spline tooth profile with the pitch circle.

3.18 Pressure Angle — The acute angle between a line tangent to a profile of the spline and a radial line through the point of tangency. Unless otherwise specified the pressure angle shall mean the main pressure angle.

3.19 Profile Displacement (*xm*) — The displacement of the basic rack either away or towards the reference cylinder and is denoted by *xm.* The former is taken as positive and latter as negative profile displacement.

3.20 Spline — A machine element consisting of integral keys (spline teeth) or keyways (spaces) equally spaced around a circle or a portion thereof.

3.21 Total Tolerance — The sum of the machining tolerance and the error allowance (*see* Fig. 3).

4 TYPES

4.1 External Spline
An involute spline whose tip surface is external to the root surface.

4.2 Internal Spline

An involute spline whose tip surface is internal to the root surface.

5 EFFECTIVE AND ACTUAL DIMENSIONS

The effective dimensions and actual dimensions together determine the fit of a spline assembly.

6 DIMENSIONS, TOLERANCES AND FITS

6.1 Reference profile for the different pitches shall be as given in Fig. 4.

6.2 Major Diameter of Internal Spline (d_1) — This is the reference diameter of the profile, and the value shall be according to Table 1 to Table 11.

6.3 Profile Displacement (*xm*) — The value of the profile displacement shall be calculated from the following formula (*see* Table 1 to Table 11):

$$xm = \text{l}/2\ (d_1 - m.z - l.1\ m)$$

The value shall be from – 0.05 *m* to + 0.45 *m*

6.4 Number of Teeth (*z*) — The number of teeth shall be calculated from the following formula (*see* Table 1 to Table 11):

$$\text{z} = \frac{1}{m}(d_1 - 2\ xm - 1.1\ m)$$

where

d_1 = major diameter of the internal spline.

6.5 Minor Diameter of the Internal Spline (d_2) — The value of the minor diameter of the internal spline shall be calculated from the following formula (*see* Table 1 to Table 11):

$$D_2 = m.z + 2\ xm - 0.9\ m$$
$$= d_1 - 2\ \text{m}$$

6.6 Major Diameter of the External Spline (d_3) — The value of the major diameter of the external spline shall be calculated from the following formula (*see* Table 1 to Table 11):

$$\text{d}_3 = m.z + 2xm + 0.9\ m$$
$$= d_1 - 0.2\ m$$

6.7 Minor Diameter of the External Splines (d_4) — Minor diameter of the external splines shall be calculated from the following formula (*see* Table 1 to Table 11):

$$d_4 = m.z + 2\ xm - 1.1\ m$$
$$= d_1 - 2.2\ m$$

6.8 Space Width and Tooth Thickness (l_o and S_o) — The value of the tooth thickness and space width shall be calculated from the following formula (*see* Table 1 to Table 11):

$$l_0 \text{ and } s_0 = m\frac{\pi}{2} + 2.\ xm.\ \tan a_o$$

6.9 The measuring pin diameter, the measurement over pins for the external splines and the measurement between pins for the internal splines shall be as given in Table 1 to Table 11 (*see* Fig. 5).

6.9.1 *Tolerance on Measurement Over Pins* — The tolerance values on effective and actual measurement over pins shall be obtained by multiplying the tolerance values on the effective and actual tooth thickness by the deviation factor, *f* (Table 1 to Table 11).

6.9.2 *Tolerance on Measurement Between Pins* — The tolerance on effective and actual measurement between pins shall be obtained by multiplying the tolerance values on the effective and actual space width by the deviation factor (Table 1 to Table 11).

6.10 The thickness of external splines over a specified number of teeth shall be according to Table 1 to Table 11.

The tolerance on the effective and actual thickness of external splines over a specified number of teeth shall be the product of the tolerance on the effective and actual tooth thickness and the deviation factor 0.866.

6.11 Types of Fits

6.11.1 *Major Diameter Fit* — In this type of fit, the major diameter of the external and internal splines has the same nominal diameter d_1. There shall be circular clearance between the internal spline space width and external spline tooth thickness.

6.11.1.1 The recommended tolerance values for the internal spline minor diameters (d_2) shall be Hl1 and the tolerance values for the external spline minor diameters (d_4) shall be h14. An example of major diameter fit is given in Fig. 6.

6.11.2 *Minor Diameter Fit* — In this type of fit, the minor diameter of the internal and external splines shall have the same nominal diameter d_2. There shall be circular clearance between the internal spline space width and external spline tooth thickness.

6.11.2.1 The recommended tolerance values for the internal spline major diameters (d_1) shall be h14 and the tolerance values for the external spline major diameters (d_3) shall be h_{l1}. An example of minor diameter fit is given in Fig. 7.

6.11.3 *Side Fit* — In this type of fit, the mating members contact on the sides of the teeth only. There shall be clearance between the major diameters and minor diameters. The tolerance values for spindle tooth thickness and space width for the spline qualities 7, 8, 9 and 10 shall be as given in Table 12.

NOTE — Instructions for the use of Table 12 is given in Annex A.

6.11.3.1 The recommended tolerance values for the major diameters of internal spline (d_l) shall be h_{14}, the minor diameters of internal spline (d_2) shall be h_{11}, the major diameters of external spline (d_3) shall be h_{11} and the minor diameters of external spline (d_4) shall be h_{14}. An example of side fit is shown in Fig. 8.

6.11.4 A typical example of effective tooth thickness, effective space width, actual tooth thickness and the actual space width for three types of fits, namely, press fit, locating fit and sliding fit, is shown in Table 13.

7 DESIGNATION

7.1 Side Fit

7.1.1 An involute sided spline of a spline assembly of side fit shall be designated by the type of spline, nominal size ($d_1 \times d_2$), number of teeth of the spline, the tolerance on the effective and actual dimensions; of space width for internal splines, and of tooth thickness for external spline, followed by the number of this standard.

Example: An external involute spline of nominal size 120 × 114 mm with 38 spline teeth, and with the tolerance symbols 8e and 8b on the effective and actual tooth thickness shall be designated as:

External Involute Spline 120 × 114 × 38 × 8 eb
IS : 3665

7.1.2 A side fitted spline assembly shall be designated by the nominal size, number of teeth, d, the spline, the effective and actual fit of the spline teeth and the number of this standard.

Example:

A spline assembly of nominal size 120 × 114, with 38 spline teeth and the fit 8 HE/8eb on the effective and actual spline teeth shall be designated as:

Spline Assembly 120 × 114 × 38 × 8 HE/8 eb
IS : 3665

7.2 Diameter Fit

Spline assembly of major and minor diameter fit shall be designated as in **6.1.2** along with the value of fit on their respective diameters.

Examples:

a) A spline assembly of major diameter fit of H7/h6 of external involute spline, 120 × 114 × 38 × 8 eb and internal involute spline 120 × 114 × 38 × 8 HE shall be designated as:

Spline Assembly 120 H7/h6 × 114 × 38 × 8 HE/ 8 eb IS : 3665

b) A spline assembly of minor diameter fit of H7/h6 of external involute spline, 120 × 114 × 38 × 8eb and internal involute spline 120 × 114 × 38 × 8 HE shall be designated as:

Spline Assembly 120 × 114 H7/h6 × 38 × 8 HE/8 eb
IS : 3665

8 BIS CERTIFICATION MARKING

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the product(s) may be marked with the Standard Mark.

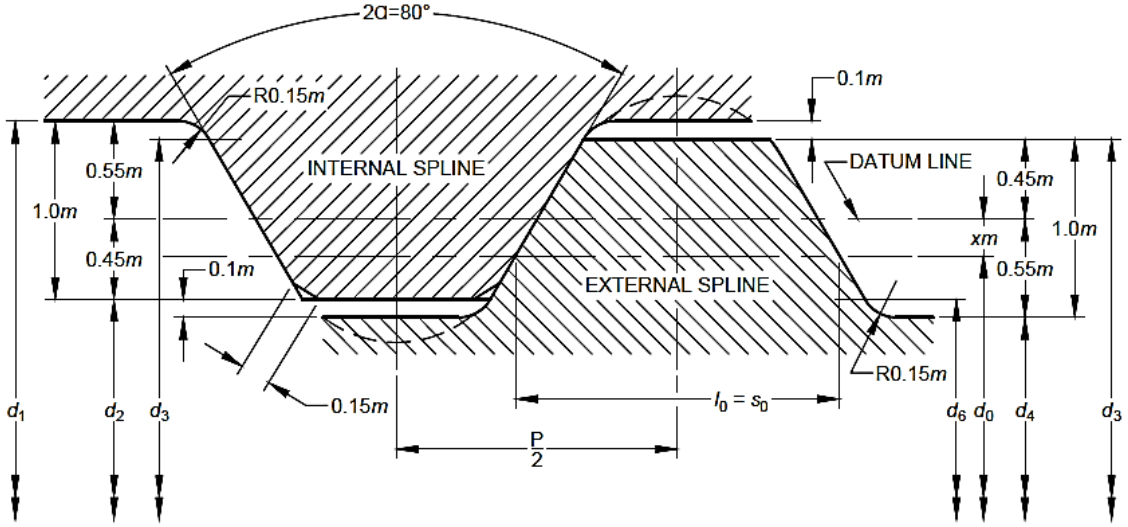
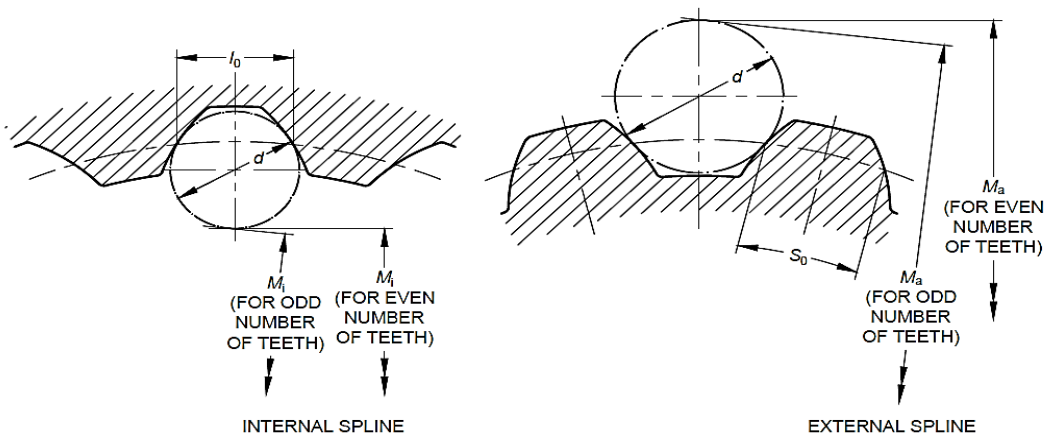


FIG. 4 REFERENCE PROFILE



Internal Spline **External Spline**

FIG. 5 MEASUREMENT BETWEEN PINS AND MEASUREMENT OVER PINS

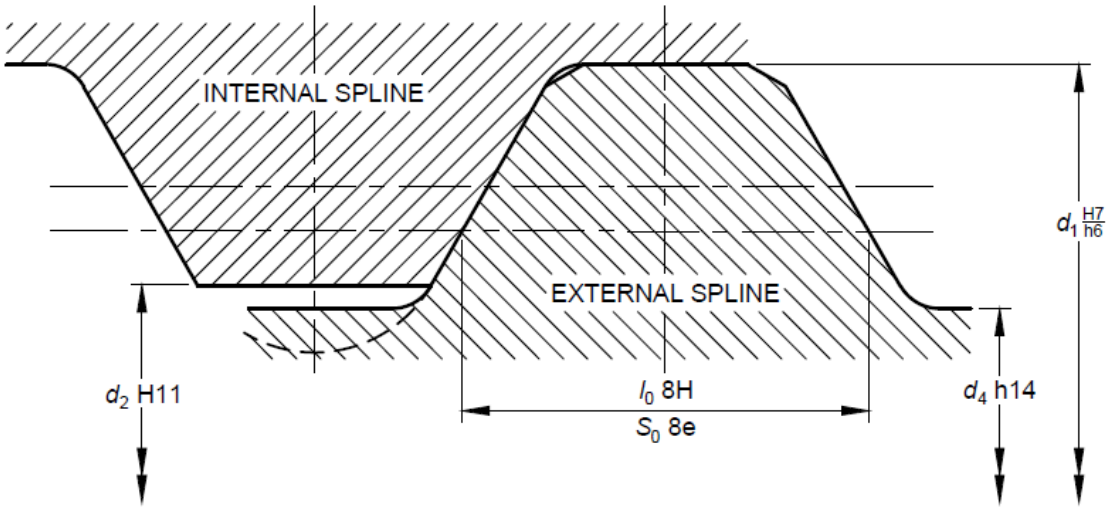


FIG.6 EXAMPLE OF MAJOR DIAMETER FIT

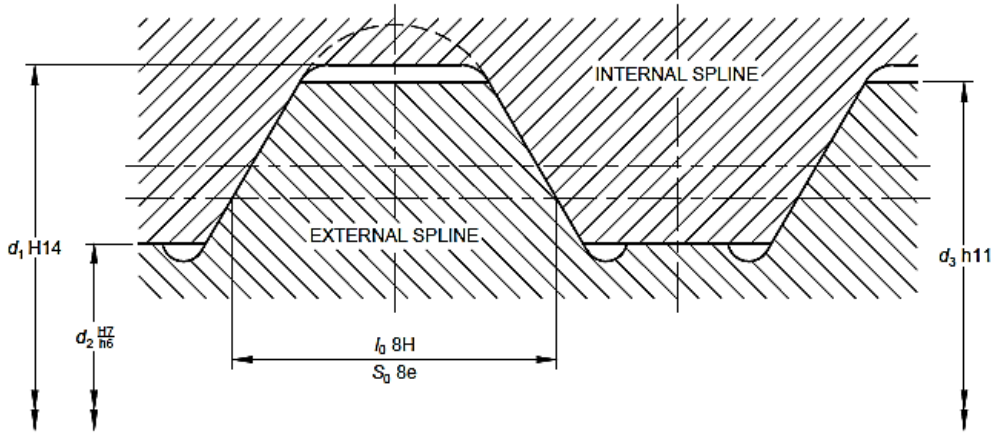


FIG. 7 EXAMPLE OF MINOR DIAMETER FIT

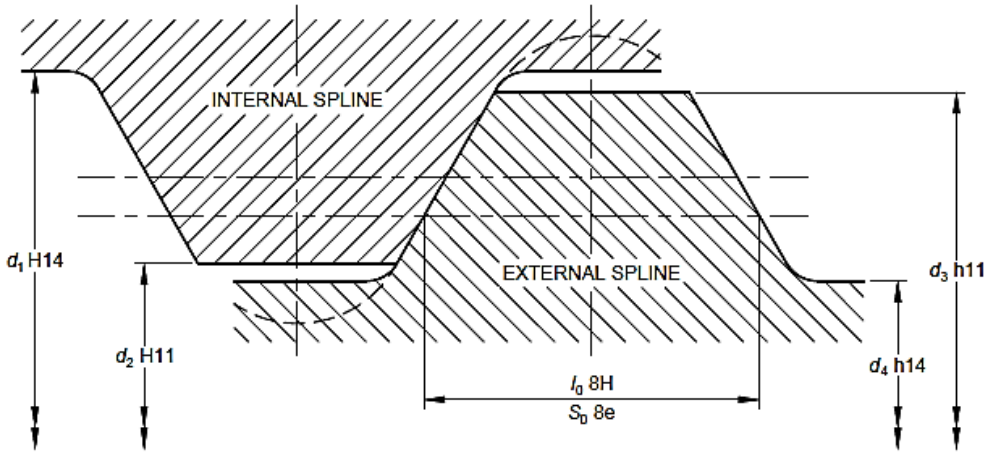


FIG. 8 EXAMPLE OF SIDE FIT

Table 1 Dimensions for Involute Splines of Module 1

(*Clauses* 6.2 to 6.10)

All dimensions in millimeters.

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measur–ement Between pine	Deviation Factor	Pin Dia	Measur–ement Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
i)	8 × 6	6	6	5.196	7.8	5.8	7.86	5.94	+ 0.45	2.090	1.75	4.367	1.64	4.00	14.173	1.01	2	4.810
	10 × 8	8	8	6.928	9.8	7.8	9.86	8.94	+ 0.45	2.090	1.75	6.368	1.66	3.00	14.103	1.11	2	4.903
ii)	12 × 10	10	10	8.660	11.8	9.8	11.86	`9.94	+ 0.45	2.090	1.75	8.369	1.67	2.75	15.615	1.17	—	—
	15 × 13	13	13	11.258	14.8	12.8	14.87	12.93	+ 0.45	2.090	1.75	11.273	1.67	2.50	17.992	1.24	3	7.857
iii)	17 × 15	15	15	12.990	16.8	14.8	16.87	14.93	+ 0.45	2.090	1.75	13.286	1.68	2.25	19.431	1.31	—	—
	18 × 16	16	16	13.856	17.8	15.8	17.87	15.93	+ 0.45	2.090	1.75	14.369	1.69	2.25	20.541	1.33	—	—
iv)	20 × 18	18	18	15.588	19.8	17.8	19.87	17.93	+ 0.45	2.090	1.75	16.370	1.70	2.25	22.568	1.35	4	10.810
	22 × 20	20	20	17.321	21.8	19.8	21.87	19.93	+ 0.45	2.090	1.75	18.370	1.70	2.25	24.592	1.37	4	10.903
v)	25 × 25	24	24	20.785	24.8	22.8	24.87	22.93	– 0.05	1.513	1.75	21.311	2.00	2.00	27.109	1.54	—	—
	28 × 26	26	26	22.517	27.8	25.8	27.88	25.92	+ 0.45	2.090	1.75	24.370	1.71	2.00	29.982	1.46	5	13.903
vi)	30 × 28	28	28	24.249	29.8	27.8	29.88	27.92	+ 0.45	2.090	1.75	26.370	1.71	2.00	31.992	1.47	—	—
	32 × 30	30	30	25.981	31.8	29.8	31.88	29.92	+ 0.45	2.090	1.75	28.370	1.71	2.00	34.002	1.48	6	16.810
vii)	35 × 33	34	34	29.445	34.8	32.8	34.88	32.92	– 0.05	1.513	1.75	31.331	1.90	2.00	37.127	1.59	6	16.497
	37 × 35	36	36	31.177	36.8	34.8	36.88	34.92	– 0.05	1.513	1.75	33.334	1.89	2.00	39.129	1.59	—	—
viii)	38 × 36	36	36	31.177	37.8	35.8	37.88	33.92	+0.45	2.090	1.75	34.370	1.72	2.00	40.025	1.51	7	19.810
	40 × 38	38	38	32.909	39.8	37.8	39.88	37.92	+0.45	2.090	1.75	36.370	1.72	2.00	42.032	1.52	7	19.903
ix)	42 × 40	40	40	34.641	41.8	39.8	41.88	39.92	+0.45	2.090	1.75	38.370	1.72	2.00	44.038	1.53	—	—

Table 2 Dimensions for Involute Splines of Module 1.25

(*Clauses* 6.2 to 6.10)

All dimensions in millimeters.

Sl No.	Nominal size										Internal Spline			External Spline				
											Pin Dia	Measurement Between Pine	Deviation Factor	Pin Dia	Measur-ement Over Pins	Devia-tion Factor	Tooth Thickness Over Z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	10 × 7.5	6	7.50	6.495	9.75	7.25	9.81	7.44	+ 0.5625	2.613	2.25	5.276	1.71	4.50	16.629	1.03	2	6.013
	12 × 9.5	8	10.00	8.660	11.75	9.25	11.81	9.44	+ 0.3125	2.324	2.25	7.230	2.13	3.00	15.554	1.20	2	5.879
i)	15 × 12.5	10	12.50	10.825	14.75	12.25	14.82	12.43	+ 0.5625	2.613	2.25	10.276	1.72	3.25	19.075	1.19	—	—
	17 × 14.5	12	15.00	12.990	16.75	14.25	16.82	14.43	+ 0.3125	2.325	2.25	12.249	1.95	2.75	20.059	1.31	3	9.513
ii)	18 × 15.5	13	16.25	14.073	17.75	15.25	17.82	15.43	+ 0.1875	2.180	2.25	13.099	2.08	2.50	20.360	1.38	3	9.446
	20 × 17.5	14	17.50	15.155	19.75	17.25	19.82	17.43	+ 0.5625	2.613	2.25	15.276	1.72	3.00	23.602	1.28	3	9.876
iii)	22 × 19.5	16	20.00	17.321	21.75	19.25	21.82	19.43	+ 0.3125	2.324	2.25	17.257	1.88	2.5.	24.477	1.41	—	—
	25 × 22.5	18	22.50	19.486	24.75	22.25	24.82	22.43	+ 0.5625	2.613	2.25	20.276	1.73	2.75	28.050	1.36	4	13.513
iv)	28 × 25.5	21	26.25	22.733	27.75	25.25	27.83	24.42	+ 0.1875	2.180	2.25	23.170	1.91	2.50	30.481	1.47	4	13.313
	30 × 27.5	22	27.50	23.816	29.75	27.25	29.83	27.42	+ 0.5625	2.613	2.25	25.276	1.73	2.75	33.103	1.40	—	—
v)	32 × 29.5	24	30.00	25.981	31.75	29.25	31.83	29.42	+ 0.3125	2.324	2.25	27.264	1.83	2.50	34.540	1.48	5	17.013
	35 × 32.5	26	32.50	28.146	34.75	32.25	34.83	32.42	+ 0.5625	2.613	2.25	30.276	1.73	2.50	37.477	1.46	5	17.379
vi)	37 × 34.5	28	35.00	30.311	36.75	34.25	36.83	34.42	+ 0.3125	2.324	2.25	32.266	1.81	2.50	39.561	1.51	—	—
	38 × 35.5	29	36.25	31.393	37.75	35.25	37.83	35.42	+ 0.1875	2.180	2.25	33.200	1.85	2.50	40.540	1.53	—	—
vii)	40 × 37.5	30	37.50	32.476	39.75	37.25	39.83	37.42	+ 0.5625	2.613	2.25	35.276	1.73	2.50	42.502	1.48	6	21.013

Table 2 (*Concluded*)

Sl No.	Nominal size										Internal Spline			External Spline				
											Pin Dia	Measure-ment Between Pine	Deviation Factor	Pin Dia	Measur-ement Over Pins	Devia-tion Factor	Tooth Thickness Over Z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	42 × 39.5	32	40.00	34.641	41.75	39.25	41.83	39.42	+ 0.3125	2.324	2.25	37.267	1.80	2.50	44.577	1053	6	20.879
viii)	45 × 42.5	34	42.50	36.806	44.75	42.25	44.83	42.42	+ 0.5625	2.613	2.25	40.276	1.73	2.50	47.523	1.50	7	24.647
	47 × 44.5	36	45.00	38.971	46.75	44.25	46.83	44.42	+ 0.3125	2.324	2.25	42.268	1.79	2.50	49.591	1.54	7	24.513
ix)	48 × 45.5	37	46.25	40.054	47.75	45.25	47.83	45.42	+ 0.1875	2.180	2.25	43.216	1.82	2.50	50.576	1.56	7	24.446
	50 × 47.5	38	47.50	41.136	49.75	47.25	49.83	47.42	+ 0.5625	2.613	2.25	45.276	1.73	2.50	52.540	1.52	7	24.876
x)	52 × 49.5	40	50.00	43.301	51.75	49.25	51.83	49.42	+ 0.3125	2.324	2.25	47.269	1.79	2.50	54.602	1.56	–	–

Table 3 Dimensions for Involute Splines of Module (1.5)

(*Clauses* 6.2 to 6.10)

All dimensions in millimetres.

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measure-ment Between Pine	Deviation Factor	Pin Dia	Measu-rement Over Pins	Deviation Factor	Tooth Thickness Over Z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
i)	12 × 9	6	9.0	7.794	11.7	8.7	11.76	8.94	+ 0.675	3.136	2.75	6.180	1.77	5.50	2.173	1.02	2	7.216
	15 × 12	8	12.0	10.392	14.7	11.7	14.76	11.94	+ 0.675	3.136	2.75	9.180	1.76	4.50	21.155	1.11	2	7.355
ii)	17 × 14	10	15.0	12.990	16.7	13.7	16.77	13.93	+ 0.175	2.558	2.75	10.985	2.67	3.25	2.0593	1.31	2	6.995
	18 × 15	10	15.0	12.990	17.7	14.7	17.77	14.93	+ 0.675	3.136	2.75	12.181	1.76	4.00	23.127	1.18	–	–
iii)	20 × 17	12	18.0	15.588	19.7	16.7	19.77	16.93	+ 0.175	2.558	2.75	14.038	2.33	3.00	22.995	1.38	3	11.216
	22 × 19	13	19.5	16.887	21.7	18.7	21.77	18.93	+ 0.425	2.847	2.75	16.014	1.91	3.25	25.382	1.32	3	11.535
iv)	25 × 22	15	22.5	19.486	24.7	21.7	24.77	21.93	+ 0.425	2.847	2.75	19.036	1.88	3.25	28.446	1.35	3	11.675
	28 × 25	17	25.5	22.084	27.7	24.7	27. 78	24.92	+ 0.425	2.847	2.75	22.053	1.86	3.25	31.498	1.37	4	15.896
v)	30 × 27	18	27.0	23.383	29.7	26.7	29.78	26.92	+ 0.675	3.136	2.75	24.181	1.75	3.25	33.532	1.36	4	16.216
	32 × 29	20	30.0	25.81	31.7	28.7	31.78	28.92	+ 0.175	2.558	2.75	26.111	1.99	3.00	35.078	1.48	4	15.855
vi)	35 × 32	22	33.0	28.579	34.7	31.7	34.78	31.92	+ 0.175	2.558	2.75	29.118	1.96	3.00	38.092	1.49	4	15.995
	37 × 34	23	34.5	29.878	36.7	33.7	36.78	33.92	+ 0.425	2.847	2.75	31.087	1.83	3.00	39.939	1.46	5	20.396
vii)	38 × 35	24	36.0	31.177	37.7	34.7	37.78	34.92	+ 0.175	2.558	2.75	32.125	1.93	3.00	41.103	1.51	5	20.216
	40 × 37	25	37.5	32.476	39.7	36.7	39.78	36.92	+ 0.425	2.847	2.75	34.094	1.82	3.00	42.961	1.48	5	20.535
viii)	42 × 39	26	39.0	33.775	41.7	38.7	41.78	38.92	+ 0.675	3.136	2.75	36.181	1.74	3.00	44.972	1.46	5	20.855
	45 × 42	28	42.0	36.373	44.7	41.7	44.78	41.92	+ 0.675	3.136	2.75	39.181	1.74	3.00	47.988	1.47	6	25.076
ix)	47 × 44	30	45.0	38.971	46.7	43.7	46.78	43.92	+ 0.175	20558	2.75	41.138	1.88	3.00	50.130	1.54	6	24.716
	48 × 45	30	45.0	38.971	47.7	44.7	47.78	44.92	+ 0.675	30136	2.75	42.181	1.74	3.00	51.003	1.48	6	25.216

Table 3 (*Concluded*)

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measure-ment Between Pine	Deviation Factor	Pin Dia	Measu-rement Over Pins	Deviation Factor	Tooth Thickness Over Z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
x)	50 × 47	32	48.0	41.569	49.7	46.7	49.78	46.92	+ 0.175	2.558	2.75	44.141	1.87	3.00	53.138	1.55	6	24.855
	(52 × 49)	33	49.5	42.868	51.7	48.7	51.78	48.92	+ 0.425	2.847	2.75	46.115	1.80	3.00	55.026	1.52	6	25.175
xi)	55 × 52	35	52.5	45.466	54.7	51.7	54.79	51.91	+ 0.425	2.847	2.75	49.119	1.79	3.00	58.038	1.53	7	29.396
	(58 × 55)	37	55.5	48.064	57.7	54.7	57.79	54.91	+ 0.425	2.847	2.75	52.122	1.79	3.00	61.049	1.54	7	29.535
xii)	60 × 57	38	57.0	49.363	59.7	56.7	59.79	56.91	+ 0.675	3.136	2.75	54.181	1.75	3.00	63.047	1052	7	29.855
	(62 × 59)	40	60.0	51.962	61.7	58.7	61.79	58.91	+ 0.175	2.558	2.75	56.150	1.84	3.00	65.160	1058	7	29.495

Table 4 Dimensions for Involute Splines of Module 2

(*Clauses* 6.2 to 6.10)

All dimensions in millimetres.

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measur-ement Between pine	Deviation Factor	Pin Dia	Measurement Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth thickness deviation factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
i)	15 × 11 17 × 13	6 7	12 14	10.392 12.124	14.6 16.6	10.6 12.6	14.68 16.68	10.92 12.92	+ 0.4 + 0.4	3.603 3.603	3.5 3.5	7.629 9.324	2.42 2.19	5.5 5.0	22.212 22.695	1.11 1.13	2 2	9.121 9.214
ii)	18 × 14 20 × 16	7 8	14 16	12.124 13.856	17.6 19.6	13.6 15.6	17.68 19.68	13.92 15.92	+ 0.9 + 0.9	4.181 4.181	3.5 3.5	10.379 12.736	1.61 1.66	6.0 6.0	25.588 28.206	1.06 1.11	2 2	9.714 9.807

Table 4 (*Continued*)

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measur-ement Between pine	Deviation Factor	Pin Dia	Measurement Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth thickness deviation factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
iii)	22 × 18 25 × 21	9 11	18 22	15.588 19.053	21.6 24.6	17.6 20.6	21.68 24.68	17.92 20.92	+ 0.9 + 0.4	4.181 3.603	3.5 3.5	14.460 17.478	1.64 1.96	5.5 4.5	28.790 29.898	1.13 1.28	– –	– –
iv)	28 × 24 30 × 26	12 14	24 28	20.785 24.249	27.6 29.6	23.6 25.6	27.68 29.69	23.92 25.91	+ 0.9 – 0.1	4.181 3.026	3.5 3.5	20.738 22.484	1.68 2.41	5.0 4.0	34.161 34.144	1.23 1.46	3 3	15.621 14.807
v)	32 × 28 35 × 31	14 16	28 32	24.249 27.713	31.6 34.6	27.6 30.6	31.69 34.69	27.91 30.91	+ 0.9 + 0.4	4.181 3.603	3.5 3.5	24.738 27.711	1.69 1.88	4.5 4.0	37.016 39.000	1.30 1.42	3 3	15.807 15.493
vi)	37 × 33 38 × 34	17 18	34 36	29.445 31.177	36.6 37.6	32.6 33.6	36.69 37.69	32.91 33.91	+ 0.4 – 0.1	3.603 3.026	3.5 3.5	29.571 30.566	1.86 2.15	4.0 4.0	40.857 42.181	1.42 1.50	4 3	21.028 15.179

Table 4 (*Continued*)

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measur-ement Between pine	Deviation Factor	Pin Dia	Measurement Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth thickness deviation factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
vii)	40 × 36 42 × 38	18 20	36 40	31.177 34.641	39.6 41.6	35.6 37.6	39.69 41.69	35.91 37.91	+ 0.9 – 0.1	4.181 3.026	3.5 3.5	32.739 34.589	1.70 2.08	4.5 4.0	45.137 46.195	1.35 1.52	4 4	21.621 20.807
viii)	45 × 41 47 × 43	21 22	42 44	36.373 38.105	44.6 46.6	40.6 42.6	44.69 46.69	40.91 42.91	+ 0.4 + 0.4	3.603 3.603	3.5 3.5	37.604 39.720	1.84 1.84	4.0 4.0	48.938 51.074	1.46 1.47	4 4	21.400 21.493
ix)	48 × 44 50 × 46	22 24	44 48	38.105 41.569	47.6 49.6	43.6 45.6	47.69 49.69	43.91 45.91	+ 0.9 – 0.1	4.181 3.026	3.5 3.5	40.740 42.621	1.70 2.00	4.0 4.0	51.912 54.218	1.43 1.54	5 4	27.435 21.179
x)	(52 × 48) 55 × 51	24 26	48 52	41.569 45.033	51.6 54.6	47.6 50.6	51.69 54.70	47.91 50.90	+ 0.9 + 0.4	4.181 3.603	3.5 3.5	44.740 47.724	1.71 1.82	4.0 4.0	55.939 59.109	1.44 1.50	5 5	27.621 27.307

Table 4 (*Continued*)

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measur-ement Between pine	Deviation Factor	Pin Dia	Measurement Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth thickness deviation factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
xi)	(58 × 54) 60 × 56	28 28	56 56	48.497 48.497	57.8 59.6	53.6 55.6	57.70 59.70	53.90 55.90	– 0.1 + 0.9	3.026 4.181	3.5 3.5	50.642 32.740	1.95 1.71	4.0 4.0	62.235 63.984	1.56 1.47	5 6	26.933 33.435
xii)	(62 × 58) 65 × 61	30 31	60 62	51.962 53.694	61.6 64.6	54.6 60.6	61.70 64.70	57.90 60.90	– 0.1 + 0.4	3.026 3.603	3.5 3.5	54.650 57.648	1.93 1.80	4.0 4.0	66.242 69.058	1.57 1.53	5 6	27.179 33.214
xiii)	(68 × 64) 70 × 66	32 34	64 68	55.426 58.890	67.6 69.6	63.6 65.6	67.70 69.70	63.90 65.90	+ 0.9 – 0.1	4.181 3.026	3.5 3.5	60.740 62.663	1.71 1.90	4.0 4.0	72.021 74.253	1.49 1.59	6 6	33.807 32.993
xiv)	(72 × 68) 75 × 71	34 36	68 72	58.890 62.354	71.6 74.6	67.6 70.6	71.70 74.70	67.90 70.90	+ 0.9 + 0.4	4.181 3.603	3.5 3.5	64.740 67.726	1.71 1.79	4.0 4.0	76035 79.166	1.50 1.55	7 7	39.435 39.121

Table 4 (*Concluded*)

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measur-ement Between pine	Deviation Factor	Pin Dia	Measurement Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth thickness deviation factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
xv)	(78 × 74) 80 × 76	38 38	76 76	65.818 65.818	77.6 79.6	73.6 75.6	77.70 79.70	73.90 75.90	– 0.1 + 0.9	3.026 4.181	3.5 3.5	70.672 72.740	1.88 1.72	4.0 4.0	82.263 84.063	1.60 1.52	7 7	38.807 39.807
xvi)	(82 × 78)	40	80	69.282	81.6	77.6	81.70	77.90	– 0.1	3.026	3.5	74.676	1.87	4.0	86.267	1.61	7	38.993

Table 5 Dimensions for Involute Splines of Module 2.5

(*Clauses* 6.2 to 6.10)

All dimensions in millimetres.

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measurement Between pine	Deviation Factor	Pin Dia	Measurement Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
i)	20 × 15	6	15.0	12.990	19.5	14.5	19.58	14.92	+ 1.125	5.226	4.5	10.552	1.71	9.0	33.258	1.03	2	12.026
	22 × 17	7	17.5	15.155	21.5	16.5	21.38	16.92	+ 0.875	4.937	4.5	12.105	1.85	7.0	30.558	1.08	2	11.892
ii)	25 × 20	8	20.0	17.321	24.5	19.5	24.58	19.92	+ 1.125	5.226	4.5	15.552	1.72	7.0	34.113	1.13	2	12.259
	28 × 23	10	25.0	21.651	27.5	22.5	27.58	22.92	+ 0.125	4.071	4.25	19.116	2.30	5.0	33.006	1.37	2	11.491
iii)	30 × 25	10	25.0	21.651	29.5	24.5	29.58	24.92	+ 1.125	5.226	4.5	20.552	1.72	6.5	38.151	1.19	3	19.293
	32 × 27	11	27.5	23.816	31.5	26.5	31.59	26.91	+ 0.875	4.937	4.5	22.265	1.81	6.0	38.835	1.23	3	19.160
iv)	35 × 30	12	30.0	25.981	34.5	29.5	34.59	29.91	+ 1.125	5.226	4.5	25.552	1.72	6.0	42.093	1.25	3	19.526
	37 × 32	13	32.5	28.146	36.5	31.5	36.59	31.91	+ 0.875	4.937	4.5	27.308	1.80	5.5	42.764	1.30	3	19.392
v)	38 × 33	14	35.0	30.311	37.5	32.5	37.59	32.91	+ 0.125	4.071	4.5	28.316	2.26	5.0	43.093	1.43	3	18.759
	40 × 35	14	35.0	30.311	39.5	34.5	39.53	34.91	+ 1.125	5.226	4.5	30.552	1.72	6.0	47.204	1.28	3	19.759
vi)	42 × 37	15	37.5	32.476	41.5	36.5	41.59	36.91	+ 0.875	4.937	4.5	32.340	1.79	5.5	47.881	1.33	3	19.625
	45 × 40	16	40.0	34.641	44.5	39.5	44.59	39.91	+ 1.125	5.226	4.5	35.552	1.73	5.5	51.035	1.33	4	26.793
vii)	47 × 42	17	42.5	36.806	46.5	41.5	46.59	41.91	+ 0.875	4.937	4.5	37.365	1.78	5.5	52.974	1.36	4	26.660
	48 × 43	18	45.0	38.971	47.5	42.5	47.59	42.91	+ 0.125	4.071	4.5	38.387	2.07	5.0	53.156	1.47	4	26.026
viii)	50 × 45	18	45.0	38.971	49.5	44.5	49.59	44.91	+ 1.125	5.226	4.5	40.552	1.73	5.5	56.100	1.36	4	27.026
	(52 × 47)	19	47.5	41.136	51.5	46.5	51.59	46.91	+ 0.875	4.937	4.5	42.384	1.78	5.5	58.052	1.38	4	26.892
ix)	55 × 50	20	50.0	43.301	54.5	49.5	54.59	49.91	+ 1.125	5.226	4.5	45.552	1.73	5.5	61.157	1.38	4	27.259
	(58 × 53)	22	55.0	74.631	57.5	52.5	57.60	52.90	+ 0.125	4.071	4.5	48.424	1.99	5.0	63.198	1.51	4	26.491
x)	60 × 65	22	55.0	47.631	59.5	54.5	59.60	54.90	+ 1.125	5.226	4.5	50.552	1.73	5.5	66.206	1.40	5	34.239
	(62 × 57)	23	57.0	49.796	61.5	56.5	61.60	56.90	+ 0.875	4.937	4.5	52.413	1.77	5.0	66.846	1.45	5	34.160

Table 5 (*Contcluded*)

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measurement Between pine	Deviation Factor	Pin Dia	Measurement Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
xi)	65×60	24	60.0	51.962	64.5	59.5	64.60	59.90	+ 1.125	5.226	4.5	55.552	1.73	5.0	69.924	1.44	5	34.526
	(68×63)	26	65.0	56.292	67.5	62.5	67.60	62.90	+ 0.125	4.071	4.5	58.448	1.94	5.0	73.229	1.53	5	33.759
xii)	70×65	26	65.0	56.292	69.5	64.5	69.60	64.90	+ 1.125	5.226	4.5	60.552	1.73	5.0	74.954	1.46	5	34.759
	(72×67)	27	67.5	58.457	71.5	66.5	71.60	66.90	+ 0.875	4.937	4.5	62.434	1.77	5.0	76.920	1.48	5	34.625
xiii)	75×70	28	70.0	60.622	74.5	69.5	74.60	69.90	+ 1.125	5.226	4.5	65.552	1.73	5.0	79.981	1.47	6	41.793
	(78×73)	30	75.0	64.952	77.5	72.5	77.60	72.90	+ 0.125	4.071	4.5	68.464	1.90	5.0	83.253	1.55	6	41.026
xiv)	80×75	30	75.0	64.952	79.5	74.5	79.60	74.90	+ 1.125	5.226	4.5	70.552	1.73	5.0	85.004	1.48	6	42.026
	(82×77)	31	77.5	67.117	81.5	76.5	81.60	76.90	+ 0.875	4.937	4.5	72.449	1.76	5.0	86.978	1.50	6	41.892
xv)	85×80	32	80.0	69.282	84.5	79.5	84.60	79.90	+ 1.125	5.226	4.5	75.552	1.73	5.0	90.026	1.49	6	42.259
	(88×83)	34	85.0	73.612	87.5	82.5	87.60	82.90	+ 0.125	4.071	4.5	78.476	1.88	5.0	93.273	1.57	6	41.491
xvi)	90×85	34	85.0	73.612	89.5	84.5	89.60	84.90	+ 1.125	5.226	4.5	80.552	1.73	5.0	95.045	1.50	7	49.293
	(92×87)	35	87.5	75.777	91.5	86.5	91.60	86.90	+ 0.875	4.937	4.5	82.461	1.76	5.0	97.024	1.52	7	49.160
xvii)	95×90	36	90.0	77.942	94.5	89.5	94.60	89.90	+ 1.125	5.226	4.5	85.552	1.73	5.0	100.063	1.51	7	49.526
	(98×93)	38	95.0	82.272	97.5	92.5	97.60	92.90	+ 0.125	4.071	4.5	88.485	1.86	5.0	103.288	1.58	7	48.759
xviii)	100×95	38	95.0	82.272	99.5	94.5	99.60	94.90	+ 1.125	5.226	4.5	90.552	1.73	5.0	105.079	1.52	7	49.759
	(105×100)	40	100.0	86.603	104.5	99.5	104.60	99.90	+ 1.125	5.226	4.5	95.552	1.73	5.0	110.094	1.53	8	56.793

Table 6 Dimensions for Involute Splines of Module 3

(*Clauses* 6.2 to 6.10)

All dimensions in millimetres.

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measure-ment Between pine	Devi-ation Factor	Pin Dia	Measurem-ent Over Pins	Devia-tion Factor	Tooth Thickness Over z' Teeth	
																		Tooth thickness deviation factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
i)	22 × 16	6	18	15.588	21.4	15.4	21.48	15.92	+ 0.35	5.117	5.00	11.694	2.42	7	30.099	1.17	2	13.431
	25 × 19	7	21	18.187	24.4	18.4	24.48	18.92	+ 0.35	5.177	5.00	14.235	2.18	7	32.544	1.17	2	13.571
ii)	28 × 22	8	24	20.785	27.4	21.4	27.48	21.92	+ 0.35	5.117	5.25	16.835	2.56	7	36.289	1.23	2	13.710
	30 × 24	8	24	20.785	29.4	23.4	29.48	23.92	+ 1.35	6.271	5.25	19.105	1.66	8	40.013	1.14	2	14.710
iii)	32 × 26	9	27	23.383	31.4	25.4	31.49	25.91	+ 0.85	5.694	5.25	20.686	1.85	7	39.577	1.21	2	14.350
	35 × 29	10	30	25.981	34.4	28.4	34.49	28.91	+ 0.85	5.694	5.25	24.089	1.86	7	43.158	1.25	2	14.490
iv)	39 × 31	11	33	28.579	36.4	30.4	36.49	30.91	+ 0.35	5.117	5.25	25.627	2.14	6	42.581	1.35	2	14.129
	38 × 32	11	33	28.579	37.4	31.4	37.49	31.91	+ 0.85	5.694	5.25	26.762	1.83	7	45.828	1.25	3	22.791
v)	40 × 34	12	36	31.177	39.4	33.4	39.49	33.91	+ 0.35	5.117	5.25	28.964	2.10	6	45.989	1.38	3	22.431

Table 6 (*Continued*)

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measure-ment Between pine	Devi-ation Factor	Pin Dia	Measurem-ent Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth thickness deviation factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	42 × 36	12	36	31.177	41.4	35.4	41.49	35.91	+ 1.35	6.271	5.25	31.107	1.68	7	50.023	1.26	3	23.431
vi)	45 × 39	14	42	36.373	44.4	38.4	44.49	38.91	– 0.15	4.539	5.25	33.726	2.41	6	51.216	1.46	3	22.210
	47 × 41	14	42	36.373	46.4	40.4	46.49	40.91	+ 0.85	5.694	5.25	36.096	1.82	6	52.848	1.37	3	23.210
vii)	48 × 42	14	42	36.373	47.4	41.4	47.49	41.91	+ 1.35	6.271	5.25	37.108	1.69	7	56.148	1.29	3	23.710
	50 × 44	15	45	38.971	49.4	43.4	49.49	43.91	+ 0.85	5.694	5.25	38.855	1.80	6	55.606	1.38	3	23.350
viii)	(52 × 46)	16	48	41.569	51.4	45.4	51.49	45.91	+ 0.35	5.117	5.25	41.010	1.97	6	58.088	1.44	3	22.990
	(55 × 49)	17	51	44.167	54.4	48.4	54.50	48.90	+ 0.35	5.117	5.25	43.807	1.95	6	60.873	1.44	3	23.129
ix)	(58 × 52)	18	54	46.765	57.4	51.4	57.50	51.90	+ 0.35	5.117	5.25	47.024	1.94	6	64.125	1.46	4	31.431
	60 × 54)	18	54	46.765	59.4	53.4	59.50	53.90	+ 1.35	6.271	5.25	49.109	1.70	7	68.343	1.34	4	32.431

Table 6 (*Continued*)

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measure-ment Between pine	Devi-ation Factor	Pin Dia	Measurem-ent Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth thickness deviation factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
x)	(62 × 56)	19	57	49.363	61.4	55.4	61.50	55.90	+ 0.85	5.694	5.25	50.908	1.79	6	67.767	1.43	4	32.071
	65× 59	20	60	51.962	64.4	58.4	64.50	58.90	+ 0.85	5.694	5.25	54.101	1.79	6	70.999	1.44	4	32.210
xi)	(68 × 62)	21	63	54.560	67.4	61.4	67.50	61.90	+ 0.85	5.694	5.25	56.928	1.78	6	73.827	1.45	4	32.350
	70 × 64)	22	66	57.158	69.4	63.4	69.50	63.90	+ 0.35	5.117	5.25	59.042	1.89	6	76.183	1.49	4	31.990
xii)	(72 × 66)	22	66	57.158	71.4	65.4	71.50	65.90	+ 1.35	6.271	5.25	61.109	1.70	6	77.868	1.43	5	41.152
	75 × 69)	24	72	62.354	74.4	68.4	74.50	68.90	– 0.15	4.539	5.25	63.932	2.00	6	81.326	1.54	4	31.769
xiii)	(78 × 72)	24	72	62.354	77.4	71.4	77.50	71.90	+ 1.35	6.271	5.25	67.110	1.71	6	83.909	1.44	5	41.431
	80 × 74)	25	75	64.952	79.4	73.4	79.50	73.90	+ 0.85	5.694	5.25	68.957	1.78	6	85.923	1.48	5	41.071

Table 6 (*Continued*)

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measure-ment Between pine	Devi-ation Factor	Pin Dia	Measurem-ent Over Pins	Devia-tion Factor	Tooth Thickness Over z' Teeth	
																		Tooth thickness deviation factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
xiv)	(82 × 76)	26	78	67.550	81.4	75.4	81.50	75.90	+ 0.35	5.117	5.25	71.054	1.86	6	88.227	1.52	5	40.710
	85 × 79)	27	81	70.148	84.4	78.4	84.50	78.90	+ 0.35	5.117	5.25	73.923	1.85	6	91.092	1.52	5	40.850
xv)	(88 × 82)	28	84	72.746	87.4	81.4	87.50	81.90	+ 0.35	5.117	5.25	77.059	1.85	6	94.254	1.53	5	40.990
	90 × 84)	28	84	72.746	89.4	83.4	89.50	83.90	+ 1.35	6.271	5.25	79.110	1.71	6	95.977	1.47	6	50.152
xvi)	(92 × 86)	29	87	75.344	91.4	85.4	91.50	85.90	+ 0.85	5.694	5.25	80.978	1.77	6	97.995	1.49	6	49.791
	95 × 89)	30	90	77.942	94.4	88.4	94.50	88.90	+ 0.85	5.694	5.25	84.105	1.77	6	101.141	1.51	6	49.931
xvii)	(98 × 92)	31	93	80.540	97.4	91.4	97.50	91.90	+ 0.85	5.694	5.25	86.987	1.77	6	104.025	1.51	6	50.071
	100 × 94)	32	96	83.138	99.4	93.4	99.50	93.90	+0 .35	5.117	5.25	89.066	1.83	6	106.275	1.55	6	49.710
xviii)	105 × 99 110 × 101	34	102	88.335	104.4	98.4	104.51	98.90	– 0.15	4.539	5.25	93.994	1.90	6	111.380	1.59	6	49.490

Table 6 (*Concluded*)

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measure-ment Between pine	Devi-ation Factor	Pin Dia	Measurem-ent Over Pins	Devia-tion Factor	Tooth Thickness Over z' Teeth	
																		Tooth thickness deviation factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
		35	105	90.933	109.4	103.4	109.51	103.89	+ 0.85	5.694	5.25	99.001	1.76	6	116.076	1.53	7	58.791
xix)	120 × 114	38	114	98.727	119.4	113.4	119.51	113.89	+ 1.35	6.271	5.25	109.111	1.72	6	129.095	1.52	7	59.710
	130 × 124	42	126	109.119	129.4	123.4	129.51	123.89	+ 0.35	5.117	5.25	119.078	1.81	6	136.329	1.58	8	67.431
xx)	140 × 134	45	135	116.913	139.4	133.4	139.51	133.89	+ 0.85	5.694	5.25	129.026	1.76	6	146.168	1.57	8	68.350
	150 × 144	48	144	124.708	149.4	143.4	149.51	143.89	+ 1.35	6.271	5.25	139.111	1.72	6	156.172	1.55	9	77.431

Table 7 Dimensions for Involute Splines of Module 4

(*Clauses* 6.2 to 6.10)

All dimensions in millimetres.

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measur–ement Between pine	Devia–tion Factor	Pin Dia	Measur–ement Over Pins	Devia–tion Factor	Tooth Thickness Over z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
i)	32 × 23	6	24	20.785	31.2	23.2	31.28	23.92	+ 1.8	8.362	7	17.470	1.64	15	54.521	1.02	2	19.241
	35 × 27	7	28	24.249	34.2	26.2	34.29	26.91	+ 1.3	7.784	7	19.778	1.80	11	48.316	1.09	2	18.928
ii)	37 × 29	8	32	27.713	36.2	28.2	36.29	28.91	+ 0.3	6.630	6.75	22.935	2.42	9	47.335	1.25	2	18.114
	38 × 30	8	32	27.713	37.2	29.2	37.29	29.91	+ 0.8	7.207	7	23.337	2.13	10	50.447	1.19	2	18.614
iii)	40 × 32	8	32	27.713	39.2	31.2	39.29	31.91	+ 1.8	8.362	7	25.473	1.66	12	56.413	1.11	2	19.614
	42 × 34	9	36	31.177	41.2	33.2	41.29	33.91	+ 0.8	7.207	7	26.837	2.03	9	51.497	1.23	2	18.800
iv)	45 × 37	10	40	34.641	44.2	36.2	44.29	36.91	+ 0.3	6.630	7	30.113	2.41	8	52.967	1.36	2	18.486
	47 × 39	10	40	34.641	46.2	38.2	46.29	38.91	+ 1.3	7.784	7	32.472	1.81	10	59.393	1.21	2	19.486
v)	48 × 40	10	40	34.641	47.2	39.2	47.29	39.91	+ 1.8	8.362	7	33.475	1.67	10	60.090	1.20	3	30.869
	50 × 42	11	44	38.105	49.2	41.2	49.29	41.91	+ 0.8	7.207	7	34.955	1.96	9	59.979	1.28	3	30.055
vi)	(52 × 44)	11	44	38.105	51.2	43.2	51.29	43.91	+ 1.8	8.362	7	37.023	1.66	10	63.660	1.21	3	31.055
	55 × 47	12	48	41.569	54.2	46.2	54.29	46.91	+ 1.3	7.784	7	40.474	1.79	9	65.139	1.29	3	30.741
vii)	(58 × 50)	13	52	45.033	57.2	49.2	57.30	49.90	+ 0.8	7.207	7	43.037	1.91	8	65.470	1.37	3	30.428
	60 × 52	14	56	48.497	59.2	51.2	59.30	51.90	– 0.2	6.052	7	44.967	2.41	8	68.288	1.46	3	29.614
viii)	(62 × 54)	14	56	48.497	61.2	53.2	61.30	53.90	+ 0.8	7.207	7	47.411	1.91	8	69.932	1.39	3	30.614
	65 × 67	15	60	51.962	64.2	56.2	64.30	56.90	+ 0.3	6.630	7	49.965	2.05	8	72.791	1.43	3	30.300
ix)	(68 × 60)	16	64	55.426	67.2	59.2	67.30	59.90	– 0.2	6.052	7	53.066	2.25	8	76.329	1.48	3	29.986
	70 × 62	16	64	55.426	69.2	61.2	69.30	61.90	+ 0.8	7.207	7	55.421	1.88	8	78.001	1.42	3	30.986

Table 7 (*Concluded*)

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measur–ement Between pine	Devia–tion Factor	Pin Dia	Measur–ement Over Pins	Devia–tion Factor	Tooth Thickness Over z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
x)	(72 × 64)	16	64	55.426	71.2	63.2	71.30	63.90	+ 1.8	8.362	7	57.478	1.69	9	82.163	1.33	4	42.896
	75 × 67	17	68	58.890	74.2	66.2	74.30	66.90	+ 1.3	7.784	7	60.189	1.77	9	85.115	1.35	4	42.555
xi)	(78 × 70)	18	72	62.354	77.2	69.2	77.30	69.90	+ 0.8	7.207	7	63.429	1.86	8	86.058	1.44	4	42.241
	80 × 72	18	72	62.354	79.2	71.2	79.30	71.90	+ 1.8	8.362	7	65.478	1.70	9	90.273	1.35	4	43.241
xii)	(82 × 74)	19	76	65.818	81.2	73.2	81.30	73.90	+ 0.8	7.207	7	67.178	1.85	8	89.803	1.44	4	42.428
	85 × 77	20	80	69.282	84.2	76.2	84.30	76.90	+ 0.3	6.630	7	70.341	1.95	8	93.257	1.49	4	42.114
xiii)	(88 × 80)	20	80	69.282	87.2	79.2	87.30	79.90	+ 1.8	8.362	7	73.479	1.70	9	98.368	1.37	4	43.614
	90 × 82	21	84	72.746	89.2	81.2	89.30	81.90	+ 0.8	7.207	7	75.207	1.84	8	97.877	1.46	4	42.800
xiv)	(92 × 84)	22	88	76.210	91.2	83.2	91.30	83.90	– 0.2	6.052	7	77.215	2.04	8	100.415	1.53	4	41.986
	95 × 87	22	88	76.210	94.2	86.2	94.30	86.90	+ 1.3	7.784	7	80.478	1.76	8	102.993	1.45	4	43.486
xv)	(98 × 90)	23	92	79.674	97.2	89.2	97.30	89.90	+ 0.8	7.207	7	83.231	1.83	8	105.939	1.48	5	54.055
	100 × 92	24	96	83.138	99.2	91.2	99.30	91.90	– 0.2	6.052	7	85.243	2.00	8	108.435	1.54	4	42.359
xvi)	105 × 97	25	100	86.603	104.2	96.2	104.30	96.90	+ 0.3	6.630	7	90.181	1.89	8	113.123	1.52	5	53.928
	110 × 102	26	104	90.067	109.2	101.2	109.31	101.90	+ 0.8	7.207	7	95.447	1.82	8	118.217	1.50	5	54.614
xvii)	120 × 112	28	112	96.995	119.2	111.2	119.31	111.90	+ 1.8	8.362	7	105.480	1.71	8	127.969	1.47	6	66.869
	130 × 122	31	124	107.387	129.2	121.2	129.31	121.90	+ 0.8	7.207	7	115.296	1.80	8	138.115	1.53	6	66.428
xviii)	140 × 132	34	136	117.779	139.2	131.2	139.31	131.90	– 0.2	6.052	7	125.325	1.90	8	148.507	1.59	6	65.986
	150 × 142	36	144	124.708	149.2	141.2	149.31	141.90	+ 0.8	7.207	7	135.458	1.79	8	158.332	1.55	7	78.241
xix)	160 × 152	38	152	131.636	159.2	151.2	159.31	151.90	+ 1.8	8.362	7	145.481	1.72	8	168.127	1.52	7	79.614
	170 × 162	41	164	142.028	169.2	161.2	169.31	161.90	+0.8	7.207	7	155.342	1.78	8	178.247	1.57	8	90.055

Table 8 Dimensions for Involute Splines Module 5

(*Clauses* 6.2 to 6.10)

All dimensions in millimetres.

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measur–ement Between pine	Devia–tion Factor	Pin Dia	Measur–ement Over Pins	Devia–tion Factor	Tooth Thickness Over z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
i)	40 × 30	6	30	25.981	39	29	39.10	29.90	+ 2.25	10.452	9.0	21.103	1.71	18	66.516	1.03	2	24.052
	42 × 32	7	35	30.318	41	31	41.10	31.90	+ 0.75	8.720	8.5	23.559	2.18	12	55.246	1.16	2	22.785
ii)	45 × 35	7	35	30.318	44	34	44.10	34.90	+ 2.25	10.452	9.0	25.223	1.67	16	66.185	1.04	2	24.285
	47 × 37	8	40	34.641	46	36	46.10	36.90	+ 0.75	8.720	9.0	27.554	2.71	12	61.519	1.21	2	23.017
iii)	48 × 38	8	40	34.641	47	37	47.10	37.90	+ 1.25	9.297	9.0	28.922	2.13	12	62.214	1.20	2	23.517
	50 × 40	8	40	34.641	49	39	49.10	39.90	+ 2.25	10.452	9.0	31.103	1.72	14	68.226	1.13	2	24.517
iv)	(52 × 42)	9	45	38.971	51	41	51.10	41.90	+ 0.75	8.720	9.0	32.028	2.41	11	63.404	1.25	2	23.250
	55 × 45	9	45	38.971	54	44	54.10	44.90	+ 2.25	10.452	9.0	35.418	1.69	14	72.552	1.13	2	24.750
v)	(58 × 48)	10	50	43.301	57	47	57.10	47.90	+ 1.25	9.297	9.0	38.968	2.01	12	72.502	1.24	2	23.983
	60 × 50	10	50	43.301	59	49	59.10	49.90	+ 2.25	10.452	9.0	41.103	1.72	14	78.660	1.17	3	38.586
vi)	(62 × 52)	11	55	47.631	61	51	61.11	51.89	+ 0.75	8.720	9.0	42.254	2.19	11	73.752	1.30	2	23.716
	65 × 55	11	55	47.631	64	54	64.11	54.89	+ 2.25	10.452	9.0	45.542	1.70	12	78.376	1.22	3	38.819
vii)	(68 × 58)	12	60	51.962	67	57	67.11	57.89	+ 1.25	9.297	9.0	48.996	1.95	11	80.236	1.31	3	38.052
	70 × 60	12	60	51.962	69	59	69.11	59.89	+ 2.25	10.452	9.0	51.103	1.72	12	84.186	1.25	3	39.052
viii)	(72 × 62)	13	65	56.292	71	61	71.11	61.89	+ 0.75	8.720	9.0	52.398	2.08	10	81.440	1.38	3	37.785
	75 × 65	14	70	60.622	74	64	74.11	64.89	– 0.25	7.565	9.0	55.235	2.62	10	85.360	1.46	3	37.017
ix)	(78 × 68)	14	70	60.622	77	67	77.11	67.89	+ 1.25	9.297	9.0	59.014	1.91	11	90.386	1.34	3	38.517
	80 × 70	14	70	60.622	79	69	79.11	69.89	+ 2.25	10.452	9.0	61.103	1.72	12	94.408	1.28	3	39.517
x)	(82 × 72)	15	75	64.952	81	71	81.11	71.89	+ 0.75	8.720	9.0	62.489	2.01	10	91.603	1.41	3	38.250
	85 × 75	16	80	69.282	84	74	84.11	74.89	– 0.25	7.565	9.0	65.416	2.37	10	95.411	1.48	3	37.483
xi)	(88 × 78)	16	80	69.282	87	77	87.11	77.89	+ 1.25	9.297	9.0	69.027	1.88	10	97.909	1.41	3	38.983
	90 × 80	16	80	69.282	89	79	89.11	79.89	+ 2.25	10.452	9.0	71.103	1.73	11	102.069	1.33	4	53.586
xii)	(92 × 82)	17	85	73.612	91	81	91.11	81.89	+ 0.75	8.720	9.0	72.574	1.96	10	101.731	1.43	3	38.716
	95 × 85	18	90	77.942	94	84	94.11	84.89	– 0.25	7.565	9.0	75.532	2.24	10	105.453	1.50	3	37.948
xiii)	(98 × 88)	18	90	77.942	97	87	97.11	87.89	+ 1.25	9.297	9.0	79.036	1.86	10	107.987	1.43	4	53.052
	100 × 90	18	90	77.942	99	89	99.11	89.89	+ 2.25	10.452	9.0	81.103	1.73	11	112.210	1.36	4	54.052

Table 8 (*Concluded*)

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measur–ement Between pine	Devia–tion Factor	Pin Dia	Measur–ement Over Pins	Devia–tion Factor	Tooth Thickness Over z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
xiv)	105 × 95	20	100	86.603	104	94	104.11	94.89	– 0.25	7.565	9.0	85.613	2.15	10	115.488	1.52	4	52.017
	110 × 100	21	105	90.933	109	99	109.12	99.89	– 0.25	7.565	9.0	90.366	2.11	10	120.195	1.52	4	52.250
xv)	120 × 110	22	110	95.263	119	109	119.12	109.88	+ 2.25	10.452	9.0	101.104	1.73	10	129.781	1.43	5	68.586
	130 × 120	24	120	103.923	129	119	129.12	119.88	+ 2.25	10.452	9.0	111.104	1.73	10	139.848	1.44	5	69.052
xvi)	140 × 130	26	130	112.583	139	129	139.12	129.88	+ 2.25	10.452	9.0	121.104	1.73	10	149.908	1.46	5	69.517
	150 × 140	28	140	121.244	149	139	149.12	139.88	+ 2.25	10.452	9.0	131.104	1.73	10	159.961	1.47	6	83.586
xvii)	160 × 150	30	150	129.904	159	149	159.12	149.88	+ 2 .25	10.452	9.0	141.104	1.73	10	170.009	1.48	6	84.052
	170 × 160	32	160	138.564	169	159	169.12	159.88	+ 2.25	10.452	9.0	151.104	1.73	10	180.052	1.49	6	84.517
xviii)	180 × 170	34	170	147.224	179	169	179.12	169.88	+ 2.25	10.452	9.0	161.104	1.73	10	190.091	1.50	7	98.586
	190 × 180	36	180	155.885	189	179	189.12	179.88	+ 2.25	10.452	9.0	171.104	1.73	10	200.126	1.51	7	99.052
xix)	200 × 190	38	190	164.545	199	189	199.12	189.88	+ 2.25	10.452	9.0	181.104	1.73	10	210.158	1.52	7	99.517
	210 × 200	40	200	173.205	209	199	209.12	199.88	+ 2.25	10.452	9.0	191.104	1.73	10	220.188	1.53	8	113.586
xx)	220 × 210	42	210	181.865	219	209	219.14	209.86	+ 2.25	10.452	9.0	201.104	1.73	10	230.216	1.54	8	114.052
	240 × 230	46	230	199.186	239	229	239.14	229.86	+ 2.25	10.452	9.0	221.104	1.73	10	250.264	1.55	9	128.586
xxi)	250 × 240	48	240	207.846	249	239	249.14	239.86	+ 2.25	10.452	9.0	231.104	1.73	10	260.286	1.55	9	129.052
	260 × 250	50	250	216.506	259	249	258.14	249.86	+ 2.25	10.452	9.0	241.104	1.73	10	270.307	1.56	9	129.517
xxii)	280 × 270	54	270	233.827	279	269	279.14	269.86	+ 2.25	10.452	9.0	261.104	1.73	10	290.344	1.57	10	144.052

Table 9 Dimensions for Involute Splines of Module 6

(*Clauses* 6.2 to 6.10)

All dimensions in millimetres.

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measurement Between pine	Deviation Factor	Pin Dia	Measurement Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
i)	48 × 36	6	36	31.177	46.8	34.8	46.90	35.90	+ 2.7	12.542	10.5	26.204	1.64	22	80.692	1.02	2	28.862
	50 × 38	7	42	36.373	48.8	36.8	48.90	37.90	+ 0.7	10.233	10.5	28.471	2.18	14	65.089	1.17	2	27.141
ii)	(52 × 40)	7	42	36.373	50.8	38.8	50.90	39.90	+ 1.7	11.388	10.5	29.136	1.89	16	71.023	1.10	2	28.414
	55 × 43	8	48	41.569	53.8	41.8	53.90	42.90	+ 0.2	9.653	10.5	34.169	2.56	12	66.901	1.33	2	26.921
iii)	(58 × 46)	8	48	41.569	56.8	44.8	56.90	45.90	+ 1.7	11.388	10.5	36.165	1.91	16	78.701	1.16	2	28.421
	60 × 48	8	48	41.569	58.8	46.8	58.90	47.90	+ 2.7	12.542	10.5	38.209	1.66	18	84.619	1.11	2	29.421
iv)	(62 × 50)	9	54	46.765	60.8	48.8	60.91	49.89	+ 0.7	10.233	10.5	39.007	2.32	14	77.745	1.23	2	27.700
	65 × 53	9	54	46.765	63.8	51.8	63.91	52.89	+ 2.2	11.967	10.5	42.406	1.73	16	84.551	1.15	2	29.200
v)	(68 × 56)	10	60	51.962	66.8	54.8	66.91	55.89	+ 0.7	10.233	10.5	45.840	2.24	14	84.862	1.27	2	27.979
	70 × 58	10	60	51.962	68.8	56.8	68.91	57.89	+ 1.7	11.388	10.5	48.179	1.86	14	86.315	1.25	2	28.979
vi)	(72 × 60)	10	60	51.962	70.8	58.8	70.91	59.89	+ 2.7	12.542	10.5	50.212	1.67	16	92.508	1.18	3	46.304
	75 × 63	11	66	57.158	73.8	61.8	73.91	62.89	+ 1.2	10.810	10.5	52.433	1.96	14	90.930	1.27	3	45.083
vii)	(78 × 66)	12	72	62.354	76.8	64.8	76.91	65.89	– 0.3	9.078	10.5	55.200	2.75	12	90.355	1.43	2	27.538
	80 × 68	12	72	62.354	78.8	66.8	78.91	67.89	+ 0.7	10.233	10.5	57.928	2.10	12	91.978	1.38	3	44.862
viii)	(82 × 70)	12	72	62.354	80.8	68.8	80.91	69.89	+ 1.7	11.388	10.5	60.187	1.84	14	98.580	1.28	3	45.862
	85 × 73	13	78	67.550	83.8	71.8	83.91	72.89	+ 0.2	9.653	10.5	62.185	2.23	12	96.601	1.41	3	44.641
ix)	(88 × 76)	13	78	67.550	86.8	74.8	86.91	75.89	+ 1.7	11.388	10.5	65.631	1.82	14	104.032	1.29	3	46.141
	90 × 78	14	84	72.746	88.8	76.8	88.91	77.89	– 0.3	9.078	10.5	67.451	2.41	12	102.432	1.46	3	44.421

Table 9 (*Concluded*)

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measurement Between pine	Deviation Factor	Pin Dia	Measurement Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
x)	(92 × 80)	14	84	72.746	90.8	78.8	90.91	79.89	+ 0.7	10.233	10.5	69.982	2.02	12	104.088	1.41	3	45.421
	95 × 83	14	84	72.746	93.8	81.8	93.91	82.89	+ 2.2	11.967	10.5	73.233	1.75	14	111.550	1.30	3	46.921
xi)	(98 × 86)	15	90	77.942	96.8	84.8	96.91	85.89	+ 0.7	10.233	10.5	75.529	1.99	12	109.597	1.42	3	45.700
	100 × 88	15	90	77.942	98.8	86.8	98.91	87.89	+ 1.7	11.388	10.5	77.709	1.80	12	111.211	1.38	3	46.700
xii)	105 × 93	16	96	83.138	103.8	91.8	103.91	92.89	+ 1.2	10.810	10.5	83.132	1.88	12	117.001	1.42	3	46.479
	110 × 98	17	102	88.335	108.8	96.8	108.92	97.88	+ 0.7	10.233	10.5	87.614	1.95	12	121.745	1.44	3	46.259
xiii)	120 × 108	18	108	93.531	118.8	106.8	118.92	107.88	+ 2.7	12.542	10.5	98.217	1.70	14	136.686	1.34	4	64.862
	130 × 118	20	120	103.923	128.8	116.8	128.92	117.88	+ 1.7	11.388	10.5	108.230	1.79	12	141.998	1.44	4	64.421
xiv)	140 × 128	22	132	114.315	138.8	126.8	138.92	127.88	+ 0.7	10.233	10.5	118.085	1.89	12	152.367	1.49	4	63.979
	150 × 138	24	144	124.708	148.8	136.8	148.92	137.88	– 0.3	9.078	10.5	127.864	2.00	12	162.653	1.54	4	63.538
xv)	160 × 148	25	150	129.904	158.8	146.8	158.92	147.88	+ 1 .7	11.388	10.5	137.914	1.78	12	171.846	1.48	5	82.141
	170 × 158	27	162	140.296	168.8	156.8	168.92	157.88	+ 0.7	10.233	10.5	147.845	1.85	12	182.184	1.52	5	81.700
xvi)	180 × 168	28	168	145.492	178.8	166.8	178.92	167.88	+ 2.7	12.542	10.5	158.220	1.71	12	191.953	1.47	6	100.304
	190 × 178	30	180	155.885	188.8	176.8	188.92	177.88	+ 1.7	11.388	10.5	168.210	1.77	12	202.282	1.51	6	99.862
xvii)	200 × 188	32	192	106.277	198.8	186.8	198.92	187.88	+ 0.7	10.233	10.5	178.133	1.83	12	212.550	1.55	6	99.421
	210 × 198	34	204	176.669	208.8	196.8	208.94	197.86	– 0.3	9.078	10.5	187.988	1.90	12	222.760	1.59	6	98.979
xviii)	220 × 208	35	210	181.865	218.8	206.8	218.94	207.86	+ 1.7	11.388	10.5	198.002	1.76	12	232.152	1.53	7	117.583
	240 ×228	38	228	197.454	238.8	226.8	238.94	227.86	+ 2.7	12.542	10.5	218.221	1.72	12	252.190	1.52	7	119.421
xix)	250 × 238	40	240	207.840	248.8	236.8	218.94	237.86	+ 1.7	11.388	10.5	228.214	1.76	12	262.447	1.55	7	118.979
	260 × 248	42	252	218.238	258.8	246.8	258.94	247.86	+ 0.7	10.233	10.5	238.156	1.81	12	272.658	1.58	8	134.862
xx)	280 × 268	45	270	233.827	278.8	266.8	278.94	267.86	+ 1.7	11.388	10.5	258.052	1.76	12	292.335	1.57	8	136.700

Table 10 Dimensions for Involute Splines of Module 8

(*Clauses* 6.2 to 6.10)

All dimensions in millimetres.

Sl NO.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measure–ment Between Pine	Deviation Factor	Pin Dia	Measurement Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
i)	60 × 44	6	48	41.569	58.4	42.4	58.50	43.90	+ 1.6	14.414	14	30.516	2.42	22	88.848	1.11	2	36.483
	65 × 49	7	56	48.497	63.4	47.4	63.51	48.89	+ 0.1	12.686	13	36.925	2.63	16	79.195	1.27	2	35.355
ii)	70 × 54	7	56	48.497	68.4	52.4	68.51	53.89	+ 2.6	15.569	14	39.557	1.80	22	996.632	1.09	2	37.855
	75 × 59	8	64	55.426	73.4	57.4	73.51	58.89	+ 1.1	13.841	14	45.371	2.42	18	95.390	1.24	2	36.728
iii)	80 × 64	8	64	55.426	78.4	62.4	78.51	63.89	+ 3.6	16.723	14	50.945	1.66	22	108.241	1.13	2	39.228
	85 × 69	9	72	62.354	83.4	67.4	83.51	68.89	+ 2.1	14.996	14	54.803	1.89	20	108.481	1.18	2	38.100
iv)	90 × 74	10	80	69.282	88.4	72.4	88.51	73.89	+ 0.6	13.259	14	60.226	2.41	16	105.933	1.36	2	36.927
	95 × 79	10	80	69.282	93.4	77.4	93.51	78.89	+ 3.1	16.151	14	65.966	1.73	20	119.486	1.21	3	61.238
v)	100 × 84	11	88	76.210	98.4	82.4	98.51	83.89	+ 1.6	14.414	14	69.911	1.96	18	119.594	1.28	2	38.345
	105 × 89	12	96	83.138	103.4	87.4	103.51	88.89	+ 0.1	12.686	14	75.080	2.41	16	121.294	1.41	2	37.217
vi)	110 × 94	12	96	83.138	108.4	92.4	108.51	93.89	+ 2.6	15.569	14	80.948	1.76	18	130.279	1.29	3	61.483
	120 × 104	14	112	96.995	118.4	102.4	118.51	103.89	– 0.4	12.104	14	89.935	2.41	16	136.575	1.46	3	59.228
vii)	130 × 114	15	120	103.923	128.4	112.4	128.51	113.89	+ 0.6	13.259	14	99.929	2.05	16	145.582	1.43	3	60.600
	140 × 124	16	128	110.851	138.4	122.4	138.52	123.89	+ 1.6	14.414	14	110.843	1.88	16	156.001	1.42	3	61.972
viii)	150 × 134	17	136	117.779	148.4	132.4	148.51	133.89	+ 2.6	15.569	14	120.378	1.77	16	170.231	1.35	4	85.110
	160 × 144	18	144	124.708	158.4	142.4	158.51	143.89	+ 3.6	16.723	14	130.956	1.70	16	180.546	1.35	4	86.483
ix)	170 × 154	20	160	138.564	168.4	152.4	168.51	153.89	+ 0.6	13.259	14	140.681	1.95	16	186.514	1.49	4	84.228
	180 × 164	21	168	145.492	178.4	162.4	178.51	163.89	+ 1.6	14.414	14	150.414	1.84	16	195.753	1.46	4	85.600

Table 10 (*Concluded*)

Sl NO.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measure–ment Between Pine	Deviation Factor	Pin Dia	Measurement Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth Thicknes Deviation Factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
x)	190 × 174	22	176	152.420	188.4	172.4	188.51	173.89	+ 2.6	15.569	14	160.957	1.76	16	205.987	1.45	4	86.972
	200 × 184	24	192	166.277	198.4	182.4	198.51	183.89	– 0.4	12.104	14	170.486	2.00	16	216.870	1.54	4	84.717
xi)	210 × 194	25	200	173.205	208.4	192.4	208.52	193.89	+ 0.6	13.259	14	180.363	1.89	16	226.246	1.52	5	107.855
	220 × 204	26	208	180.133	218.4	202.4	218.54	203.86	+ 1.6	14.414	14	190.894	1.82	16	236.435	1.50	5	109.228
xii)	240 × 224	28	224	193.990	238.4	222.4	238.54	223.86	+ 3.6	16.723	14	210.960	1.71	16	255.938	1.47	6	133.738
	250 × 234	30	240	207.846	248.4	232.4	248.54	233.86	+ 0.6	13.259	14	220.788	1.86	16	266.768	1.55	6	131.483
xiii)	260 × 244	31	248	214.774	258.4	242.4	258.54	243.86	+ 1.6	14.414	14	230.592	1.80	16	276.231	1.53	6	132.855
	280 × 264	34	272	235.559	278.4	262.4	278.54	263.86	– 0.4	12.104	14	250.651	1.90	16	297.014	1.59	6	131.973
xiv)	300 × 284	36	288	249.415	298.4	282.4	298.54	283.86	+ 1.6	14.414	14	270.915	1.79	16	316.665	1.55	7	156.483
	320 × 304	38	304	263.272	318.4	302.4	318.54	303.86	+ 3.6	16.723	14	290.961	1.72	16	336.253	1.52	7	159.228
xv)	340 × 324	41	328	284.056	338.4	322.4	338.54	323.86	+ 1.6	14.414	14	310.684	1.78	16	356.494	1.57	7	158.345
	360 × 344	44	352	304.841	358.4	342.4	358.54	343.86	– 0.4	12.104	14	330.731	1.85	16	377.099	1.62	8	179.228
xvi)	380 × 364	46	368	318.697	378.4	362.4	378.54	363.86	+ 1.6	14.414	14	350.972	1.78	16	396.809	1.58	8	181.973
	400 × 384	48	384	332.554	398.4	382.4	398.54	383.86	+ 3.6	16.723	14	370.963	1.72	16	416.458	1.55	9	206.483
xvii)	420 × 404	51	408	353.338	418.4	402.4	418.56	403.84	+ 1.6	14.414	14	390.739	1.77	16	436.662	1.59	9	205.600
	440 × 424	54	432	374.123	438.4	422.4	438.56	423.84	– 0.4	12.104	14	410.779	1.83	16	437.155	163	9	204.717
xviii)	450 × 434	55	440	381.051	448.4	432.4	448.56	433.84	+ 0.6	13.259	14	420.697	1.80	16	466.855	1.62	10	227.855
	460 × 444	56	448	387.979	458.4	442.4	458.56	443.84	+ 1.6	14.414	14	430.934	1.77	16	476.907	1.60	10	229.228
xix)	480 × 464	58	464	401.836	478.4	462.4	478.56	463.84	+ 3.6	16.723	14	450.963	1.72	16	496.602	1.58	11	253.738
	500 × 484	61	488	422.620	438.4	482.4	498.56	483.84	+ 1.6	14.414	14	470.776	1.77	16	516.779	1.61	11	252.855

Table 11 Dimensions for Involute Splines of Module 10
(*Clauses* 6.2 to 6.10)

All dimensions in millimetres.

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measure–ment Between pine	Deviation Factor	Pin Dia	Measurement Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18	(19)
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
i)	80 × 60	6	60	51.962	78	58	78.11	59.89	+ 4.5	20.904	18	42.206	1.71	35	130.845	1.03	2	48.104
	85 × 65	7	70	60.622	83	63	83.11	64.89	+ 2.0	18.017	18	44.776	2.50	25	113.476	1.13	2	46.069
ii)	90 × 70	7	70	60.622	88	68	88.11	69.89	+ 4.5	20.904	18	50.446	1.67	30	127.942	1.06	2	48.569
	95 × 75	8	80	69.282	93	73	93.11	74.89	+ 2.0	18.071	18	56.557	2.34	25	126.117	1.19	2	46.535
iii)	100 × 80	8	80	69.282	98	78	93.11	79.89	+ 4.5	20.904	18	62.206	1.72	28	136.452	1.13	2	49.035
	105 × 85	9	90	77.942	103	83	103.11	84.89	+ 2.0	18.017	18	65.378	218	25	134.743	1.19	2	47.000
iv)	110 × 90	9	90	77.942	108	88	108.11	89.89	+ 4.5	20.904	18	70.836	1.69	28	145.104	1.13	2	49.500
	120 × 100	10	100	86.603	118	98	118.11	99.89	+ 4.5	20.904	18	82.207	1.72	25	150.226	1.20	3	77.173
v)	130 × 110	12	120	103.923	128	108	128.12	109.88	– 0.5	15.131	16	97.638	2.14	20	150.592	1.43	2	45.897
	140 × 120	12	120	103.923	138	118	138.12	119.88	+ 4.5	20.904	18	102.207	1.72	25	170.806	1.23	3	78.104
vi)	150 × 130	14	140	121.244	148	128	148.12	129.88	– 0.5	15.131	18	110.471	2.62	20	170.719	1.46	3	74.035
	160 × 140	14	140	121.244	158	138	158.12	139.88	+ 4.5	20.904	18	122.207	1.72	25	191.284	1.27	3	79.035
vii)	170 × 150	16	160	138.564	168	148	168.12	149.88	– 0.5	15.131	18	130.832	2.37	20	190.821	1.48	3	74.966
	180 × 160	16	160	138.564	178	158	178.12	159.88	+ 4.5	20.904	18	142.207	1.73	22	204.139	1.33	4	107.173
viii)	190 × 170	18	180	155.885	188	168	188.12	169.88	– 0.5	15.313	18	151.063	2.24	20	210.906	1.50	3	75.897
	200 × 180	18	180	155.885	198	178	198.12	179.88	+ 4.5	20.904	18	162.207	1.73	22	224.401	1.36	4	108.104
ix)	210 × 190	20	200	173.205	208	188	208.12	189.88	– 0.5	15.131	18	171.225	2.15	20	230.976	1.52	4	104.035
	220 × 230	20	200	173.205	218	198	218.12	199.88	+ 4.5	20.904	18	182.207	1.73	22	244.627	1.38	4	109.035

Table 11 (*Concluded*)

Sl No.	Nominal Size										Internal Spline			External Spline				
											Pin Dia	Measure–ment Between pine	Deviation Factor	Pin Dia	Measurement Over Pins	Deviation Factor	Tooth Thickness Over z' Teeth	
																		Tooth Thickness Deviation Factor 0.866
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	$d_1 \times d_2$	z	d_0	d_b	d_3	d_4	d_5 *Min*	d_6 *Max*	xm	$l_o = s_o$	d	M_i	f_i	d	M_a	f_a	Z'	
x)	260 × 240	22	220	190.526	238	218	238.14	219.89	+ 4.5	20.904	18	202.207	1.73	22	264.823	1.40	5	137.173
	280 × 260	24	240	207.846	248	228	248.14	229.86	– 0.5	15.131	18	211.440	2.04	20	271.088	1.54	4	105.897
xi)	260 × 240	24	240	207.846	258	238	258.14	239.86	+ 4.5	20.904	18	222.207	1.73	20	279.696	1.44	5	138.104
	280 × 260	26	260	225.167	278	258	278.14	259.86	+ 4.5	20.904	18	242.207	1.73	20	299.816	1.46	5	139.035
xii)	300 × 280	28	280	242.487	298	278	298.14	279.86	+ 4.5	20.904	18	262.207	1.73	20	319.922	1.47	6	167.173
	320 × 300	30	300	259.808	318	298	318.14	299.86	+ 4.5	20.904	18	282.207	1.73	20	340.017	1.48	6	168.104
xiii)	340 × 320	32	320	277.128	338	318	338.14	319.86	+ 4.5	20.904	18	302.207	1.73	20	360.103	1.49	6	169.035
	360 × 340	34	340	294.449	358	338	358.14	339.86	+ 4.5	20.904	18	322.207	1.73	20	380.181	1.50	7	197.173
xiv)	380 × 360	36	360	311.769	378	358	378.14	356.86	+ 4.5	20.904	18	342.207	1.73	20	400.252	1.51	7	198.104
	400 × 380	38	380	329.090	398	378	398.14	379.86	+ 4.5	20.904	18	362.207	1.73	20	420.317	1.52	7	199.035
xv)	420 × 400	40	400	346.410	418	398	418.14	399.86	+ 4.5	20.904	18	382.207	1.73	20	440.376	1.53	8	227.173
	440 × 420	42	420	363.731	438	418	438.14	419.84	+ 4.5	20.904	18	402.207	1.73	20	460.431	1.54	8	228.104
xvi)	450 × 430	44	440	381.051	448	428	448.16	429.84	– 0.5	15.131	18	411.838	1.87	20	417.374	1.62	8	224.035
	460 × 440	44	440	381.051	458	438	458.1 6	439.84	+ 4.5	20.904	18	422.207	1.73	20	480.482	1.54	8	229.035
xvii)	480 × 460	46	460	398.372	478	458	478.16	459.84	+ 4.5	20.904	18	442.207	1.73	20	500.529	1.55	9	257.173
	500 × 480	48	480	415.692	498	478	498.16	479.84	+ 4.5	20.904	18	462.207	1.73	20	520.572	1.55	9	258.104

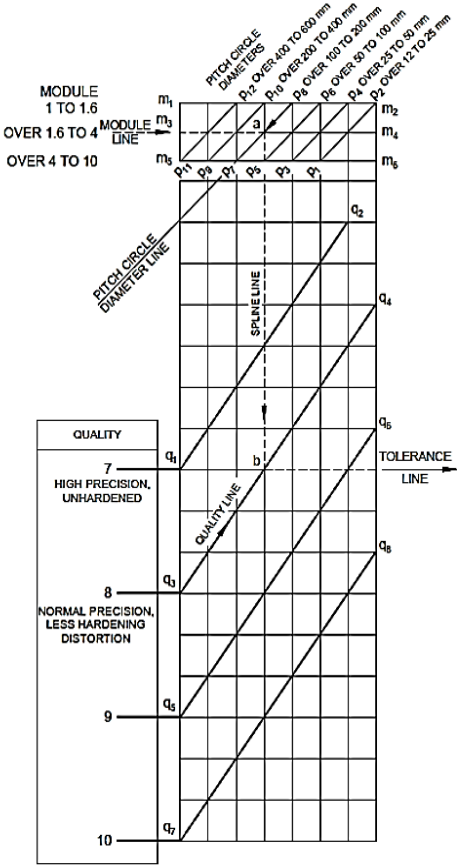


Table 12 Tolerance for Spline Tooth Thickness and Space Width

(Foreword *and* *Clauses* 6.11.3)

Values in Micrometres

Sl No.	Internal Spline Deviations of Space Width Upper ES Lower EI					External Spline Deviation of Tooth Thickness Upper ES Lower EI									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	E	F	G	H	m	k	j	h	g	f	e	d	c	b	A
i)	+ 45 + 27	+ 36 + 18	+ 27 + 9	+ 18 0	+ 27 + 9	+ 18 0	+ 9 – 9	0 – 18	– 9 – 27	– 18 – 36	– 27 – 45	– 36 – 54	– 45 – 63	– 54 – 72	– 63 – 81
ii)	+ 50 + 30	+ 40 + 40	+ 30 + 10	+ 20 0	+ 30 + 10	+ 20 0	+ 10 – 10	0 – 20	– 10 – 30	– 20 – 40	– 30 – 50	– 40 – 60	– 50 – 70	– 60 – 80	– 70 – 90
iii)	+ 55 + 33	+ 44 + 22	+ 33 + 11	+ 22 0	+ 33 + 11	+ 22 0	+ 11 – 11	0 – 22	– 11 – 33	– 22 – 44	– 33 – 55	– 44 – 66	– 55 – 77	– 66 – 88	– 77 – 99
iv)	+ 62 + 37	+ 50 + 25	+ 37 + 12	+ 25 0	+ 37 + 12	+ 25 0	+ 12 – 13	0 – 25	– 12 – 37	– 25 – 50	– 37 – 62	– 50 – 75	– 62 – 87	– 75 – 100	– 87 – 112
v)	+ 70 + 42	+ 56 + 28	+ 42 + 14	+ 28 0	+ 42 + 14	+ 28 0	+ 14 – 14	0 – 28	– 14 – 42	– 28 – 56	– 42 – 70	– 56 – 84	– 70 – 98	– 84 – 112	– 98 – 126
vi)	+ 80 + 48	+ 64 + 32	+ 48 + 16	+ 32 0	+ 48 + 16	+ 32 0	+ 16 – 16	0 – 32	– 16 – 48	– 32 – 64	– 48 – 80	– 64 – 96	– 80 – 112	– 96 – 128	– 112 – 144
vii)	+ 90 + 54	+ 72 + 36	+ 54 + 18	+ 36 0	+ 54 + 18	+ 36 0	+ 18 – 18	0 – 36	– 18 – 54	– 36 – 72	– 54 – 90	– 72 – 108	– 90 – 126	– 108 – 144	– 126 – 162
viii)	+ 100 + 60	+ 80 + 40	+ 60 + 20	+ 40 0	+ 60 + 20	+ 40 0	+ 20 – 20	0 – 40	– 20 – 60	– 40 – 80	– 60 – 100	– 80 – 120	– 100 – 140	– 120 – 160	– 140 – 180
ix)	+ 112 + 67	+ 90 + 45	+ 67 + 22	+ 45 0	+ 67 + 22	+ 45 0	+ 22 – 23	0 – 45	– 22 – 67	– 45 – 90	– 67 – 112	– 90 – 135	– 112 – 157	– 135 – 180	– 157 – 202
x)	+ 125 + 75	+ 100 + 50	+ 75 + 25	+ 50 0	+ 75 + 25	+ 50 0	+ 25 – 25	0 – 50	– 25 – 75	– 50 – 100	– 75 – 125	– 100 – 150	– 125 – 175	– 150 – 200	– 175 – 225
xi)	+140 + 84	+ 112 + 56	+84 + 28	+ 56 0	+ 84 + 28	+ 56 0	+ 28 – 28	0 – 56	– 28 – 84	– 56 – 112	– 84 – 140	– 112 – 168	– 140 – 196	– 168 – 224	– 196 – 252
xii)	+ 158 + 95	+ 126 + 63	+ 95 + 32	+ 63 0	+ 95 + 32	+ 63 0	+ 32 – 31	0 – 63	– 32 – 95	– 63 – 126	– 95 – 158	– 126 – 189	– 158 – 221	– 189 – 252	– 221 – 284

Table 12 Tolerance for Spline Tooth Thickness and Space Width

(Foreword *and Clauses* 6.11.3)

Values in Micrometres

Sl No.	Internal Spline Deviations of Space Width Upper ES Lower EI					External Spline Deviation of Tooth Thickness Upper ES Lower EI									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	E	F	G	H	m	k	j	h	g	f	e	d	c	b	A
i)	+ 45 + 27	+ 36 + 18	+ 27 + 9	+ 18 0	+ 27 + 9	+ 18 0	+ 9 – 9	0 – 18	– 9 – 27	– 18 – 36	– 27 – 45	– 36 – 54	– 45 – 63	– 54 – 72	– 63 – 81
ii)	+ 50 + 30	+ 40 + 40	+ 30 + 10	+ 20 0	+ 30 + 10	+ 20 0	+ 10 – 10	0 – 20	– 10 – 30	– 20 – 40	– 30 – 50	– 40 – 60	– 50 – 70	– 60 – 80	– 70 – 90
iii)	+ 55 + 33	+ 44 + 22	+ 33 + 11	+ 22 0	+ 33 + 11	+ 22 0	+ 11 – 11	0 – 22	– 11 – 33	– 22 – 44	– 33 – 55	– 44 – 66	– 55 – 77	– 66 – 88	– 77 – 99
iv)	+ 62 + 37	+ 50 + 25	+ 37 + 12	+ 25 0	+ 37 + 12	+ 25 0	+ 12 – 13	0 – 25	– 12 – 37	– 25 – 50	– 37 – 62	– 50 – 75	– 62 – 87	– 75 – 100	– 87 – 112
v)	+ 70 + 42	+ 56 + 28	+ 42 + 14	+ 28 0	+ 42 + 14	+ 28 0	+ 14 – 14	0 – 28	– 14 – 42	– 28 – 56	– 42 – 70	– 56 – 84	– 70 – 98	– 84 – 112	– 98 – 126
vi)	+ 80 + 48	+ 64 + 32	+ 48 + 16	+ 32 0	+ 48 + 16	+ 32 0	+ 16 – 16	0 – 32	– 16 – 48	– 32 – 64	– 48 – 80	– 64 – 96	– 80 – 112	– 96 – 128	– 112 – 144
vii)	+ 90 + 54	+ 72 + 36	+ 54 + 18	+ 36 0	+ 54 + 18	+ 36 0	+ 18 – 18	0 – 36	– 18 – 54	– 36 – 72	– 54 – 90	– 72 – 108	– 90 – 126	– 108 – 144	– 126 – 162
viii)	+ 100 + 60	+ 80 + 40	+ 60 + 20	+ 40 0	+ 60 + 20	+ 40 0	+ 20 – 20	0 – 40	– 20 – 60	– 40 – 80	– 60 – 100	– 80 – 120	– 100 – 140	– 120 – 160	– 140 – 180
ix)	+ 112 + 67	+ 90 + 45	+ 67 + 22	+ 45 0	+ 67 + 22	+ 45 0	+ 22 – 23	0 – 45	– 22 – 67	– 45 – 90	– 67 – 112	– 90 – 135	– 112 – 157	– 135 – 180	– 157 – 202
x)	+ 125 + 75	+ 100 + 50	+ 75 + 25	+ 50 0	+ 75 + 25	+ 50 0	+ 25 – 25	0 – 50	– 25 – 75	– 50 – 100	– 75 – 125	– 100 – 150	– 125 – 175	– 150 – 200	– 175 – 225
xi)	+140 + 84	+ 112 + 56	+84 + 28	+ 56 0	+ 84 + 28	+ 56 0	+ 28 – 28	0 – 56	– 28 – 84	– 56 – 112	– 84 – 140	– 112 – 168	– 140 – 196	– 168 – 224	– 196 – 252
xii)	+ 158 + 95	+ 126 + 63	+ 95 + 32	+ 63 0	+ 95 + 32	+ 63 0	+ 32 – 31	0 – 63	– 32 – 95	– 63 – 126	– 95 – 158	– 126 – 189	– 158 – 221	– 189 – 252	– 221 – 284

Table 12 (*Concluded*)

Sl No.	Internal Spline Deviations of Space Width Upper ES Lower EI					External Spline Deviation of Tooth Thickness Upper ES Lower EI									
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	E	F	G	H	m	k	j	h	g	f	e	d	c	b	A
xiii)	+ 178 + 107	+ 142 + 71	+ 07 + 36	+ 71 0	+ 107 – 36	+ 71 0	+ 36 – 35	0 – 71	– 36 – 107	– 71 – 142	– 107 – 178	– 142 – 213	– 178 – 249	– 213 – 284	– 249 – 320
xiv)	+ 200 + 120	+ 160 + 80	+ 20 + 40	+ 80 0	+ 120 + 40	+ 80 0	+ 40 – 40	0 – 80	– 40 – 120	– 80 – 160	– 120 – 200	– 160 – 240	– 200 – 280	– 240 – 320	– 280 – 360
xv)	+ 225 + 135	+ 180 + 90	+ 35 + 45	+ 90 0	+ 135 + 45	+ 90 0	+ 45 – 45	0 – 90	– 45 – 135	– 90 – 180	– 135 – 225	– 180 – 270	– 225 – 315	– 270 – 360	– 315 – 405
xvi)	+ 250 + 150	+ 200 + 100	+ 50 + 50	+ 100 0	+ 150 + 50	+ 100 0	+ 50 – 50	0 – 100	– 50 – 150	– 100 – 200	– 150 – 250	– 200 – 300	– 250 – 350	– 300 – 400	– 350 – 450
xvii)	+ 275 + 165	+ 200 + 110	+ 65 + 55	+ 110 0	+ 165 + 55	+ 110 0	+ 55 – 55	0 – 110	– 55 – 165	– 110 – 220	– 165 – 275	– 220 – 330	– 275 – 385	– 330 – 440	– 385 – 495

Table 13 Example of Effective and Actual Dimensions, Tolerances for Different Fits

(*Clause* 6.11.4)

Sl No.	Spline Type	Tolerances Zone		Fit
(1)	(2)	(3)	(4)	(5)
		Effective	Actual	
i)	Internal Spline	H	E	
		m	h	
		k	g	Press fits
		j	f	
ii)	External Spline	h	e	Locating fit
		g	d	
		f	c	Sliding fits
		e	b	

ANNEX A

(*Clause* 6.11.3)

INSTRUCTIONS FOR USING TABLE 12

A–l GENERAL

A–l.1 This annex covers the method for reading the tolerance values on space width and tooth thickness of four qualities of involute splines, represented by the quality lines q_l,q_2,q_3,q_4, etc. The modules up to 10 have been divided into three ranges, represented by module lines m_1m_2, m_3m_4 and m_5m_6. The pitch circle diameters up to 800 mm have been divided into 6 ranges, represented by the lines $p_{1,}$ p_2, $p_{3,}$ p_4, etc.

A–2 PROCEDURE FOR USING THE TABLE

A–2.1 The procedure has been explained with a particular example of external spline of module 2, pitch circle diameter 120 mm, quality 8 and tolerance m.

A–2.2 The module line for the spline of module 2 is m_3m_4. The pitch circle diameter line for 120 mm is p_7p_8. The pitch the module line m_3m_4 and pitch circle diameter line p_7 p_8 meet at a point '*a*', and from the point '*a*', a spline line leads down to the quality line q_3q_a, corresponding to quality 8, meeting at point '*b*'. The tolerance value is read under the tolerance symbol m against the point '*b*'. The tolerance value for the tooth thickness of the spline is + 60 mm and + 20 mm.

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Transmission Devices Sectional Committee, PGD 33

Organization	*Representative(s)*
Maruti Suzuki India Limited, Gurugram	SHRI VIKAS CHOPRA **(*Chairperson*)**
Elecon Engineering Company Limited, Anand	SHRI VRAJLAL SENJALIYA SHRI VILAS B. KALYAN (*Alternate* I) SHRI PRAYASVIN B. PATEL (*Alternate* II)
Forech India Limited, Sonipat	SHRI I. K. BAHL SHRI TIMIR BHATTACHARYYA (*Alternate*)
Honda Motorcycle and Scooter India Private Limited, Gurugram	SHRI ARPAN SHUKLA
Indian Institute of Technology, Indore	SHRI NEELESH KUMAR JAIN DR P. P. CHATTARAJ (*Alternate* I) PROF I. A. PALANI (*Alternate* II)
Kirloskar Pneumatic Company Limited, Pune	SHRI KANNAN LOGANATHAN
LG Balakrishnan and Bros Limited, Coimbatore	SHRI PRABAKARAN P. SHRI SUBBIAH P. (*Alternate* I) SHRI PANNERSELVAN M. (*Alternate* II)
Lohia Corp Limited, Kanpur	SHRI PRAKASH KUMAR SHRI MAHENDRAN M. (*Alternate* I) SHRI DEV KANTH (*Alternate* II) SHRI AMIT JAISWAL (*Alternate* III)
Mahindra and Mahindra Limited, Mumbai	SHRI JIBIN K. PAUL
Maruti Suzuki India Limited, Gurugram	SHRI AMIT TALWAR SHRI GURURAJ RAVI (*Alternate*)
Research Designs and Standards Organization (RDSO), Lucknow	SHRI VJAY KUMAR GOEL SHRI C. K. BHATT (*Alternate* I) SHRI S. PANWAR (*Alternate* II)
Shanthi Gears Limited, Coimbatore	SHRI MUTHUMADHAVAN V.
Suzlon Energy Limited, New Delhi	SHRI MOHAMED NASEERUDDIN
TIDC India Limited, Chennai	SHRI B. SRINIVAS DR K. KRISHNA KUMAR
VE Commercial Vehicles Limited, Dewas	SHRI ARVIND MANOHAR SHRI MAHENDRAN MOHAN (*Alternate* I) SHRI SAPTHARISHI IYER (*Alternate* II)

Organization	*Representative(s)*
In Personal Capacity (*20/2, At Rabindra Nagar Near Sikshan Bhaban, West Midnapore, West Benagal 721101*)	SHRI ASHISH KUMAR KHANRA
In Personal Capacity (*D*–1, *Kailashpuri Complex, Kusum Vihar. Phase–2, Koylanagar, Dhanbad)*	SHRI K. K. S. SINHA
BIS Directorate General	SHRI R. R. SINGH, SCIENTIST 'F'/SENIOR DIRECTOR AND HEAD (PRODUCTION AND GENERAL ENGINEERING) [REPRESENTING DIRECTOR GENERAL (*Ex–officio*)]

Member Secretary
SHRI VICHITRA VIR SINGH
SCIENTIST 'D'/JOINT DIRECTOR
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