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Series of Modules for Gears

Modules for Spur Gears

DIN 780 Part 1

Modulreihe für Zahnräder; Moduln für Stirnräder

For connection with the International Standard **ISO 54 – 1977** issued by the International Organization for Standardization (ISO), see Explanations.

This Standard is applicable to spur gears and helical gears of all kinds, e.g. to gears for precision engineering and general mechanical engineering, and also to motor vehicle gears and havy engineering gears.

The modules listed in the Table apply to the normal sections of spur gears according to DIN 3960 and of corresponding helical gears (see DIN 868).

Table 1.

Modules m in mm	
Series I	Series II
0,05	
	0,055
0,06	
	0,07
0,08	
	0,09
0,1	
	0,11
0,12	
	0,14
0,16	
	0,18
0,2	
	0,22
0,25	
	0,28
0,3	
	0,35
0,4	
	0,45

Modules m in mm	
Series I	Series II
0,5	
	0,55
0,6	
	0,65
0,7	
	0,75
0,8	
	0,85
0,9	
	0,95
1	
	1,125
1,25	
	1,375
1,5	
	1,75
2	
	2,25
2,5	
	2,75

Modules m in mm	
Series I	Series II
3	
	(3,25)
	3,5
	(3,75)
4	
	(4,25)
	4,5
	(4,75)
5	
	(5,25)
	5,5
	(5,75)
6	
	(6,5)
	7
8	
	9
10	
	11
12	

Modules m in mm	
Series I	Series II
	14
16	
	18
20	
	22
25	
	(27)
	28
	(30)
32	
	36
	(39)
40	
	(42)
	45
50	
	55
60	
	70

Note: The modules of series I should be given preference to the modules of series II. The modules featured in brackets in series II are intended for special purposes.

Further Standards

DIN 780 Part 2 Series of modules for gears; modules for cylindrical worm gears

DIN 3960 Definitions and specification factors for cylindrical gears and cylindrical gear pairs with involute teeth

DIN 58405 Part 1 Spur gear drives for precision engineering; scope, definitions, principle design data, classification

Explanations on page 2

Explanations

The modules of series I and II laid down in this Standard for spur gears according to DIN 3960 and for corresponding helical gears (see DIN 868) coincide in the m = 1 mm to m = 50 mm range with the metric modules of the International Standard ISO 54 – 1977 "Modules and Diametral Pitches for Spur Gears for General Engineering and Heavy Engineering", with the exception of the values 3.25; 3.75; 4.25; 4.75; 5.25; 5.75; 27; 30; 39 and 42. Modules above 50 mm and below 1 mm are not featured in the International Standard ISO 54 – 1977.

The modules are subdivided into the preferred series I and the secondary series II. This preferential arrangement is intended to achieve a limitation of the numbers of tools and inspection gauges required in the workshops for the manufacture of spur gears.

In the February 1967 issue of DIN 780, an additional series had been provided for an even more closely stepped graduation of module values in the module range above 3 mm, with a note to the effect that this additional series would be deleted from the Standard at a future date. In the present Standard, only the values featured in brackets have been retained from this additional series for certain applications, e.g. for motor vehicle construction, the values 3.25; 3.75; 4.25; 4.75; 5.25; 5.75; 6.5, and for heavy engineering the values 27; 30; 39 and 42. Apart from the 6,5 mm value, these modules in brackets are not featured in the International Standard ISO 54 – 1977.

In Anglo-Saxon countries, the Diametral Pitch is still in use today in lieu of the module. The International Standard ISO 54 – 1977 therefore features a Diametral Pitch Series side by side with the Module Series, with a note to the effect that the Diametral Pitches are only given on a provisional basis, and that they will be deleted after the period necessary to allow conversion to the metric system.

The relationship below exists between the module m in mm and the Diametral Pitch P in 1/inch

$$m = \frac{25.4}{P} \; ; \; P = \frac{25.4}{m}$$

The Diametral Pitch Values do not give round figures when converted into module values. In the Table below, the modules according to this Standard from 0.12 to 50 mm are listed face to face with the Diametral Pitch Values contained in the International Standard ISO 54 – 1977 or British Standard 978 respectively.

Comparison between the modules and the Diametral Pitch Values converted into mm

Module	Diametral Pitch	
m	P	$\frac{25,4}{P}$
mm	$\frac{1}{\text{inch}}$	mm
0,12		
	200	0,12700
0,14		
	180	0,14111
	160	0,15875
0,16		
0,18		
	140	0,18143
0,2		
	120	0,21167
0,22		
0,25		
	100	0,25400
0,28		
0,3		
	80	0,31750
0,35		
	64	0,39688
0,4		
0,45		
0,5		
	48	0,52917
0,55		
0,6		
	40	0,63500
0,65		
0,7		
	36	0,70556
0,75		
	32	0,79375
0,8		
0,85		
0,9		
	28	0,90714
0,95		
1		
	24	1,05833

Module	Diametral Pitch	
m	P	$\frac{25,4}{P}$
mm	$\frac{1}{\text{inch}}$	mm
1,125		
1,25		
	20	1,27000
1,375		
	18	1,41111
1,5		
	16	1,58750
1,75		
	14	1,81429
2		
	12	2,11667
2,25		
	11	2,30909
2,5		
	10	2,54000
2,75		
	9	2,82222
3		
	8	3,17500
(3,25)		
3,5		
	7	3,62857
(3,75)		
4		
	6	4,23333
(4,25)		
4,5		
	5,5	4,61818
(4,75)		
5		
	5	5,08000
(5,25)		
5,5		
	4,5	5,64444
(5,75)		
6		
	4	6,35000

Module	Diametral Pitch	
m	P	$\frac{25,4}{P}$
mm	$\frac{1}{\text{inch}}$	mm
(6,5)		
7		
	3,5	7,25714
8		
	3	8,46667
9		
	2,75	9,23636
10		
	2,5	10,16000
11		
	2,25	11,28889
12		
	2	12,70000
14		
	1,75	14,51429
16		
	1,5	16,93333
18		
20		
	1,25	20,32000
22		
25		
	1	25,40000
(27)		
28		
	0,875	29,02857
(30)		
32		
	0,75	33,86667
36		
(39)		
40		
	0,625	40,64000
(42)		
45		
50		
	0,5	50,80000