



# 中华人民共和国国家标准

GB/T 3478.2—2008  
代替 GB/T 3478.2—1995

## 圆柱直齿渐开线花键 (米制模数 齿侧配合) 第2部分:30°压力角尺寸表

**Straight cylindrical involute splines—Metric module, side fit—  
Part 2: 30° pressure angle dimensions tables**

(ISO 4156-2:2005, Straight cylindrical involute splines—  
Metric module, side fit—Part 2; Dimensions, MOD)

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## 前 言

GB/T 3478《圆柱直齿渐开线花键(米制模数 齿侧配合)》分为几个部分:

- 第1部分:总论;
- 第2部分:30°压力角尺寸表;
- 第3部分:37.5°压力角尺寸表;
- 第4部分:45°压力角尺寸表;
- 第5部分:检验;
- 第6部分:30°压力角  $M$  值和  $W$  值;
- 第7部分:37.5°压力角  $M$  值和  $W$  值;
- 第8部分:45°压力角  $M$  值和  $W$  值;
- 第9部分:量棒。

本部分为 GB/T 3478 的第2部分。

本部分修改采用 ISO 4156-2:2005《圆柱直齿渐开线花键(米制模数 齿侧配合) 第2部分:尺寸》,主要差异如下:

- 只采用 5.1~5.14 的内容作为本部分的主要内容。

本部分是对 GB/T 3478.2—1995《圆柱直齿渐开线花键 30°压力角 尺寸表》的修订,主要差异如下:

- 标准名称由《圆柱直齿渐开线花键 30°压力角 尺寸表》改为《圆柱直齿渐开线花键(米制模数 齿侧配合) 第2部分:30°压力角尺寸表》;
- 修改了原标准中的错误,并按 GB/T 1.1 做了编辑性的修改。

本部分由全国机器轴与附件标准化技术委员会提出并归口。

本部分起草单位:中机生产力促进中心、哈尔滨东安发动机制造公司、石家庄链轮总厂、中国第二重型机械集团公司、太原重工股份有限公司。

本部分主要起草人:明翠新、常宝印、许文江、谭仁万、王晓凌、邓高见。

本部分所代替标准的历次版本发布情况为:

- GB 3478.2—1983、GB/T 3478.2—1995。

# 圆柱直齿渐开线花键

## (米制模数 齿侧配合)

### 第2部分:30°压力角尺寸表

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#### 1 范围

GB/T 3478 的本部分规定了30°标准压力角平齿根和圆齿根(以下简称30°平齿根和30°圆齿根)的圆柱直齿渐开线花键所需的全部花键尺寸。

本部分适用于GB/T 3478.1—2008标准中规定的压力角为30°、模数为0.5 mm~10 mm、齿侧配合的渐开线花键。

本部分的尺寸表是按GB/T 3478.1—2008表3计算公式和齿侧配合为H/h,并采用基本检验方法编制的。

#### 2 规范性引用文件

下列文件中的条款通过GB/T 3478 的本部分的引用而成为本部分的条款。凡是注日期的引用文件,其随后所有的修改单(不包括勘误的内容)或修订版均不适用于本部分,然而,鼓励根据本部分达成协议的各方研究是否可使用这些文件的最新版本。凡是不注日期的引用文件,其最新版本适用于本部分。

GB/T 1800.1—2008 产品几何技术规范(GPS)极限与配合 第1部分:公差、偏差和配合的基础

GB/T 3478.1—2008 圆柱直齿渐开线花键(米制模数 齿侧配合) 第1部分:总论(ISO 4156-1:2005,MOD)

#### 3 尺寸表

3.1 30°平齿根和30°圆齿根,模数为0.5 mm~10 mm,公差等级为4、5、6和7级的花键尺寸表,见表1~表28。

3.2 内花键小径 $D_i$ 的极限偏差和外花键大径 $D_o$ 的公差见GB/T 3478.1—2008表25。

3.3 内花键大径 $D_i$ 和外花键小径 $D_o$ 的公差,从GB/T 1800.1的标准公差IT12、IT13或IT14中选取。

3.4 用展成法加工内、外花键时,齿根圆弧半径是变化的,本部分给出的是齿根圆弧最小曲率半径,见GB/T 3478.1—2008表26。

3.5 当选择的检验方法不为基本方法时,其作用齿槽宽最大值、实际齿槽宽最小值、作用齿厚最小值和实际齿厚最大值按下式计算:

$$\text{作用齿槽宽最大值 } E_{v \max} = E_{\max} - \lambda;$$

$$\text{实际齿槽宽最小值 } E_{\min} = E_{v \min} + \lambda;$$

$$\text{作用齿厚最小值 } S_{v \min} = S_{\min} + \lambda;$$

$$\text{实际齿厚最大值 } S_{\max} = S_{v \max} - \lambda;$$

3.6 当花键齿侧配合类别不为H/h时,尺寸表中外花键的尺寸应按下式计算:

$$\text{作用齿厚最大值 } S_{v \max} = S + es_y;$$

$$\text{实际齿厚最小值 } S_{\min} = S_{v \max} - (T + \lambda)。$$

式中:

$es_v$ ——作用齿厚的上偏差,见 GB/T 3478.1—2008 表 23;

$(T+\lambda)$ ——总公差,见 GB/T 3478.1—2008 表 8~表 21。

外花键大径和小径的上偏差见 GB/T 3478.1—2008 表 24。

3.7 尺寸表中外花键渐开线起始圆直径最大值  $D_{Fe\max}$  的数值是按齿条形刀具加工原理推导的公式计算的。

当花键齿侧配合类别不为 H/h 时,  $D_{Fe\max}$  可根据 GB/T 3478.1—2008 表 3 中的公式计算。

表 1 30°内花键  
模数  $m=0.5\text{ mm}$  作用齿槽宽最小值  $E_{v\min}=0.785\text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_a$ |       | 渐开线终<br>止圆直径<br>$D_{Fi\min}$ | 小径<br>$D_i$ | 实际齿槽宽最大值<br>$E_{\max}=E_{v\min}+(T+\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|-------|------------------------------|-------------|----------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根   |                              |             | 4H                                           | 5H    | 6H    | 7H    |           |
| 10        | 5.00             | 4.330 1           | 5.75     | 5.90  | 5.60                         | 4.62        | 0.810                                        | 0.824 | 0.846 | 0.883 | 10        |
| 11        | 5.50             | 4.763 1           | 6.25     | 6.40  | 6.10                         | 5.11        | 0.810                                        | 0.825 | 0.847 | 0.884 | 11        |
| 12        | 6.00             | 5.196 2           | 6.75     | 6.90  | 6.60                         | 5.60        | 0.810                                        | 0.825 | 0.848 | 0.885 | 12        |
| 13        | 6.50             | 5.629 2           | 7.25     | 7.40  | 7.10                         | 6.09        | 0.810                                        | 0.826 | 0.848 | 0.886 | 13        |
| 14        | 7.00             | 6.062 2           | 7.75     | 7.90  | 7.60                         | 6.58        | 0.811                                        | 0.826 | 0.849 | 0.887 | 14        |
| 15        | 7.50             | 6.495 2           | 8.25     | 8.40  | 8.10                         | 7.08        | 0.811                                        | 0.826 | 0.849 | 0.887 | 15        |
| 16        | 8.00             | 6.928 2           | 8.75     | 8.90  | 8.60                         | 7.57        | 0.811                                        | 0.827 | 0.850 | 0.888 | 16        |
| 17        | 8.50             | 7.361 2           | 9.25     | 9.40  | 9.10                         | 8.07        | 0.811                                        | 0.827 | 0.850 | 0.889 | 17        |
| 18        | 9.00             | 7.794 2           | 9.75     | 9.90  | 9.60                         | 8.56        | 0.811                                        | 0.827 | 0.851 | 0.890 | 18        |
| 19        | 9.50             | 8.227 2           | 10.25    | 10.40 | 10.10                        | 9.06        | 0.812                                        | 0.827 | 0.851 | 0.890 | 19        |
| 20        | 10.00            | 8.660 3           | 10.75    | 10.90 | 10.60                        | 9.56        | 0.812                                        | 0.828 | 0.851 | 0.891 | 20        |
| 21        | 10.50            | 9.093 3           | 11.25    | 11.40 | 11.10                        | 10.05       | 0.812                                        | 0.828 | 0.852 | 0.892 | 21        |
| 22        | 11.00            | 9.526 3           | 11.75    | 11.90 | 11.60                        | 10.55       | 0.812                                        | 0.828 | 0.852 | 0.892 | 22        |
| 23        | 11.50            | 9.959 3           | 12.25    | 12.40 | 12.10                        | 11.05       | 0.812                                        | 0.828 | 0.853 | 0.893 | 23        |
| 24        | 12.00            | 10.392 3          | 12.75    | 12.90 | 12.60                        | 11.55       | 0.812                                        | 0.829 | 0.853 | 0.894 | 24        |
| 25        | 12.50            | 10.825 3          | 13.25    | 13.40 | 13.10                        | 12.05       | 0.813                                        | 0.829 | 0.853 | 0.894 | 25        |
| 26        | 13.00            | 11.258 3          | 13.75    | 13.90 | 13.60                        | 12.54       | 0.813                                        | 0.829 | 0.854 | 0.895 | 26        |
| 27        | 13.50            | 11.691 3          | 14.25    | 14.40 | 14.10                        | 13.04       | 0.813                                        | 0.829 | 0.854 | 0.895 | 27        |
| 28        | 14.00            | 12.124 4          | 14.75    | 14.90 | 14.60                        | 13.54       | 0.813                                        | 0.830 | 0.854 | 0.896 | 28        |
| 29        | 14.50            | 12.557 4          | 15.25    | 15.40 | 15.10                        | 14.04       | 0.813                                        | 0.830 | 0.855 | 0.896 | 29        |
| 30        | 15.00            | 12.990 4          | 15.75    | 15.90 | 15.60                        | 14.54       | 0.813                                        | 0.830 | 0.855 | 0.897 | 30        |
| 31        | 15.50            | 13.423 4          | 16.25    | 16.40 | 16.10                        | 15.04       | 0.813                                        | 0.830 | 0.855 | 0.897 | 31        |
| 32        | 16.00            | 13.856 4          | 16.75    | 16.90 | 16.60                        | 15.54       | 0.814                                        | 0.830 | 0.856 | 0.898 | 32        |
| 33        | 16.50            | 14.289 4          | 17.25    | 17.40 | 17.10                        | 16.03       | 0.814                                        | 0.831 | 0.856 | 0.898 | 33        |
| 34        | 17.00            | 14.722 4          | 17.75    | 17.90 | 17.60                        | 16.53       | 0.814                                        | 0.831 | 0.856 | 0.899 | 34        |
| 35        | 17.50            | 15.155 4          | 18.25    | 18.40 | 18.10                        | 17.03       | 0.814                                        | 0.831 | 0.857 | 0.899 | 35        |
| 36        | 18.00            | 15.588 5          | 18.75    | 18.90 | 18.60                        | 17.53       | 0.814                                        | 0.831 | 0.857 | 0.900 | 36        |
| 37        | 18.50            | 16.021 5          | 19.25    | 19.40 | 19.10                        | 18.03       | 0.814                                        | 0.831 | 0.857 | 0.900 | 37        |
| 38        | 19.00            | 16.454 5          | 19.75    | 19.90 | 19.60                        | 18.53       | 0.814                                        | 0.832 | 0.857 | 0.901 | 38        |
| 39        | 19.50            | 16.887 5          | 20.25    | 20.40 | 20.10                        | 19.03       | 0.814                                        | 0.832 | 0.858 | 0.901 | 39        |
| 40        | 20.00            | 17.320 5          | 20.75    | 20.90 | 20.60                        | 19.53       | 0.814                                        | 0.832 | 0.858 | 0.902 | 40        |
| 41        | 20.50            | 17.753 5          | 21.25    | 21.40 | 21.10                        | 20.03       | 0.815                                        | 0.832 | 0.858 | 0.902 | 41        |
| 42        | 21.00            | 18.186 5          | 21.75    | 21.90 | 21.60                        | 20.53       | 0.815                                        | 0.832 | 0.859 | 0.902 | 42        |
| 43        | 21.50            | 18.619 5          | 22.25    | 22.40 | 22.10                        | 21.03       | 0.815                                        | 0.832 | 0.859 | 0.903 | 43        |
| 44        | 22.00            | 19.052 6          | 22.75    | 22.90 | 22.60                        | 21.53       | 0.815                                        | 0.833 | 0.859 | 0.903 | 44        |
| 45        | 22.50            | 19.485 6          | 23.25    | 23.40 | 23.10                        | 22.02       | 0.815                                        | 0.833 | 0.859 | 0.904 | 45        |
| 46        | 23.00            | 19.918 6          | 23.75    | 23.90 | 23.60                        | 22.52       | 0.815                                        | 0.833 | 0.860 | 0.904 | 46        |
| 47        | 23.50            | 20.351 6          | 24.25    | 24.40 | 24.10                        | 23.02       | 0.815                                        | 0.833 | 0.860 | 0.904 | 47        |
| 48        | 24.00            | 20.784 6          | 24.75    | 24.90 | 24.60                        | 23.52       | 0.815                                        | 0.833 | 0.860 | 0.905 | 48        |
| 49        | 24.50            | 21.217 6          | 25.25    | 25.40 | 25.10                        | 24.02       | 0.815                                        | 0.833 | 0.860 | 0.905 | 49        |
| 50        | 25.00            | 21.650 6          | 25.75    | 25.90 | 25.60                        | 24.52       | 0.815                                        | 0.833 | 0.860 | 0.906 | 50        |
| 51        | 25.50            | 22.083 6          | 26.25    | 26.40 | 26.10                        | 25.02       | 0.816                                        | 0.834 | 0.861 | 0.906 | 51        |
| 52        | 26.00            | 22.516 7          | 26.75    | 26.90 | 26.60                        | 25.52       | 0.816                                        | 0.834 | 0.861 | 0.906 | 52        |
| 53        | 26.50            | 22.949 7          | 27.25    | 27.40 | 27.10                        | 26.02       | 0.816                                        | 0.834 | 0.861 | 0.907 | 53        |
| 54        | 27.00            | 23.382 7          | 27.75    | 27.90 | 27.60                        | 26.52       | 0.816                                        | 0.834 | 0.861 | 0.907 | 54        |
| 55        | 27.50            | 23.815 7          | 28.25    | 28.40 | 28.10                        | 27.02       | 0.816                                        | 0.834 | 0.862 | 0.907 | 55        |

表 1 (续)

单位为毫米

| 齿数<br><i>z</i> | 分度圆<br>直径<br><i>D</i> | 基圆<br>直径<br><i>D<sub>b</sub></i> | 大径 <i>D<sub>ei</sub></i> |       | 渐开线终<br>止圆直径<br><i>D<sub>F, min</sub></i> | 小径<br><i>D<sub>ii</sub></i> | 实际齿槽宽最大值<br><i>E<sub>max</sub> = E<sub>min</sub> + (T + λ)</i> |       |       |       | 齿数<br><i>z</i> |
|----------------|-----------------------|----------------------------------|--------------------------|-------|-------------------------------------------|-----------------------------|----------------------------------------------------------------|-------|-------|-------|----------------|
|                |                       |                                  | 平齿根                      | 圆齿根   |                                           |                             | 4H                                                             | 5H    | 6H    | 7H    |                |
| 56             | 28.00                 | 24.248 7                         | 28.75                    | 28.90 | 28.60                                     | 27.52                       | 0.816                                                          | 0.834 | 0.862 | 0.908 | 56             |
| 57             | 28.50                 | 24.681 7                         | 29.25                    | 29.40 | 29.10                                     | 28.02                       | 0.816                                                          | 0.834 | 0.862 | 0.908 | 57             |
| 58             | 29.00                 | 25.114 7                         | 29.75                    | 29.90 | 29.60                                     | 28.52                       | 0.816                                                          | 0.835 | 0.862 | 0.908 | 58             |
| 59             | 29.50                 | 25.547 7                         | 30.25                    | 30.40 | 30.10                                     | 29.02                       | 0.816                                                          | 0.835 | 0.862 | 0.909 | 59             |
| 60             | 30.00                 | 25.980 8                         | 30.75                    | 30.90 | 30.60                                     | 29.52                       | 0.816                                                          | 0.835 | 0.863 | 0.909 | 60             |
| 61             | 30.50                 | 26.413 8                         | 31.25                    | 31.40 | 31.10                                     | 30.02                       | 0.816                                                          | 0.835 | 0.863 | 0.909 | 61             |
| 62             | 31.00                 | 26.846 8                         | 31.75                    | 31.90 | 31.60                                     | 30.52                       | 0.816                                                          | 0.835 | 0.863 | 0.910 | 62             |
| 63             | 31.50                 | 27.279 8                         | 32.25                    | 32.40 | 32.10                                     | 31.02                       | 0.817                                                          | 0.835 | 0.863 | 0.910 | 63             |
| 64             | 32.00                 | 27.712 8                         | 32.75                    | 32.90 | 32.60                                     | 31.52                       | 0.817                                                          | 0.835 | 0.863 | 0.910 | 64             |
| 65             | 32.50                 | 28.145 8                         | 33.25                    | 33.40 | 33.10                                     | 32.02                       | 0.817                                                          | 0.835 | 0.864 | 0.911 | 65             |
| 66             | 33.00                 | 28.578 8                         | 33.75                    | 33.90 | 33.60                                     | 32.52                       | 0.817                                                          | 0.836 | 0.864 | 0.911 | 66             |
| 67             | 33.50                 | 29.011 9                         | 34.25                    | 34.40 | 34.10                                     | 33.02                       | 0.817                                                          | 0.836 | 0.864 | 0.911 | 67             |
| 68             | 34.00                 | 29.444 9                         | 34.75                    | 34.90 | 34.60                                     | 33.52                       | 0.817                                                          | 0.836 | 0.864 | 0.912 | 68             |
| 69             | 34.50                 | 29.877 9                         | 35.25                    | 35.40 | 35.10                                     | 34.02                       | 0.817                                                          | 0.836 | 0.864 | 0.912 | 69             |
| 70             | 35.00                 | 30.310 9                         | 35.75                    | 35.90 | 35.60                                     | 34.52                       | 0.817                                                          | 0.836 | 0.865 | 0.912 | 70             |
| 71             | 35.50                 | 30.743 9                         | 36.25                    | 36.40 | 36.10                                     | 35.02                       | 0.817                                                          | 0.836 | 0.865 | 0.912 | 71             |
| 72             | 36.00                 | 31.176 9                         | 36.75                    | 36.90 | 36.60                                     | 35.52                       | 0.817                                                          | 0.836 | 0.865 | 0.913 | 72             |
| 73             | 36.50                 | 31.609 9                         | 37.25                    | 37.40 | 37.10                                     | 36.02                       | 0.817                                                          | 0.836 | 0.865 | 0.913 | 73             |
| 74             | 37.00                 | 32.042 9                         | 37.75                    | 37.90 | 37.60                                     | 36.51                       | 0.817                                                          | 0.837 | 0.865 | 0.913 | 74             |
| 75             | 37.50                 | 32.476 0                         | 38.25                    | 38.40 | 38.10                                     | 37.01                       | 0.817                                                          | 0.837 | 0.866 | 0.914 | 75             |
| 76             | 38.00                 | 32.909 0                         | 38.75                    | 38.90 | 38.60                                     | 37.51                       | 0.818                                                          | 0.837 | 0.866 | 0.914 | 76             |
| 77             | 38.50                 | 33.342 0                         | 39.25                    | 39.40 | 39.10                                     | 38.01                       | 0.818                                                          | 0.837 | 0.866 | 0.914 | 77             |
| 78             | 39.00                 | 33.775 0                         | 39.75                    | 39.90 | 39.60                                     | 38.51                       | 0.818                                                          | 0.837 | 0.866 | 0.914 | 78             |
| 79             | 39.50                 | 34.208 0                         | 40.25                    | 40.40 | 40.10                                     | 39.01                       | 0.818                                                          | 0.837 | 0.866 | 0.915 | 79             |
| 80             | 40.00                 | 34.641 0                         | 40.75                    | 40.90 | 40.60                                     | 39.51                       | 0.818                                                          | 0.837 | 0.866 | 0.915 | 80             |
| 81             | 40.50                 | 35.074 0                         | 41.25                    | 41.40 | 41.10                                     | 40.01                       | 0.818                                                          | 0.837 | 0.867 | 0.915 | 81             |
| 82             | 41.00                 | 35.507 0                         | 41.75                    | 41.90 | 41.60                                     | 40.51                       | 0.818                                                          | 0.837 | 0.867 | 0.916 | 82             |
| 83             | 41.50                 | 35.940 1                         | 42.25                    | 42.40 | 42.10                                     | 41.01                       | 0.818                                                          | 0.838 | 0.867 | 0.916 | 83             |
| 84             | 42.00                 | 36.373 1                         | 42.75                    | 42.90 | 42.60                                     | 41.51                       | 0.818                                                          | 0.838 | 0.867 | 0.916 | 84             |
| 85             | 42.50                 | 36.806 1                         | 43.25                    | 43.40 | 43.10                                     | 42.01                       | 0.818                                                          | 0.838 | 0.867 | 0.916 | 85             |
| 86             | 43.00                 | 37.239 1                         | 43.75                    | 43.90 | 43.60                                     | 42.51                       | 0.818                                                          | 0.838 | 0.867 | 0.917 | 86             |
| 87             | 43.50                 | 37.672 1                         | 44.25                    | 44.40 | 44.10                                     | 43.01                       | 0.818                                                          | 0.838 | 0.868 | 0.917 | 87             |
| 88             | 44.00                 | 38.105 1                         | 44.75                    | 44.90 | 44.60                                     | 43.51                       | 0.818                                                          | 0.838 | 0.868 | 0.917 | 88             |
| 89             | 44.50                 | 38.538 1                         | 45.25                    | 45.40 | 45.10                                     | 44.01                       | 0.818                                                          | 0.838 | 0.868 | 0.917 | 89             |
| 90             | 45.00                 | 38.971 1                         | 45.75                    | 45.90 | 45.60                                     | 44.51                       | 0.818                                                          | 0.838 | 0.868 | 0.918 | 90             |
| 91             | 45.50                 | 39.404 2                         | 46.25                    | 46.40 | 46.10                                     | 45.01                       | 0.819                                                          | 0.838 | 0.868 | 0.918 | 91             |
| 92             | 46.00                 | 39.837 2                         | 46.75                    | 46.90 | 46.60                                     | 45.51                       | 0.819                                                          | 0.839 | 0.868 | 0.918 | 92             |
| 93             | 46.50                 | 40.270 2                         | 47.25                    | 47.40 | 47.10                                     | 46.01                       | 0.819                                                          | 0.839 | 0.869 | 0.918 | 93             |
| 94             | 47.00                 | 40.703 2                         | 47.75                    | 47.90 | 47.60                                     | 46.51                       | 0.819                                                          | 0.839 | 0.869 | 0.919 | 94             |
| 95             | 47.50                 | 41.136 2                         | 48.25                    | 48.40 | 48.10                                     | 47.01                       | 0.819                                                          | 0.839 | 0.869 | 0.919 | 95             |
| 96             | 48.00                 | 41.569 2                         | 48.75                    | 48.90 | 48.60                                     | 47.51                       | 0.819                                                          | 0.839 | 0.869 | 0.919 | 96             |
| 97             | 48.50                 | 42.002 2                         | 49.25                    | 49.40 | 49.10                                     | 48.01                       | 0.819                                                          | 0.839 | 0.869 | 0.919 | 97             |
| 98             | 49.00                 | 42.435 2                         | 49.75                    | 49.90 | 49.60                                     | 48.51                       | 0.819                                                          | 0.839 | 0.869 | 0.920 | 98             |
| 99             | 49.50                 | 42.868 3                         | 50.25                    | 50.40 | 50.10                                     | 49.01                       | 0.819                                                          | 0.839 | 0.869 | 0.920 | 99             |
| 100            | 50.00                 | 43.301 3                         | 50.75                    | 50.90 | 50.60                                     | 49.51                       | 0.819                                                          | 0.839 | 0.870 | 0.920 | 100            |

表 2 30°内花键  
模数  $m=0.75\text{ mm}$  作用齿槽宽最小值  $E_{\text{min}}=1.178\text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_o$ |       | 渐开线终<br>止圆直径<br>$D_{F\text{min}}$ | 小径<br>$D_i$ | 实际齿槽宽最大值<br>$E_{\text{max}} = E_{\text{min}} + (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|-------|-----------------------------------|-------------|---------------------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根   |                                   |             | 4H                                                            | 5H    | 6H    | 7H    |           |
| 10        | 7.50             | 6.495 2           | 8.63     | 8.85  | 8.40                              | 6.93        | 1.206                                                         | 1.223 | 1.248 | 1.290 | 10        |
| 11        | 8.25             | 7.144 7           | 9.38     | 9.60  | 9.15                              | 7.66        | 1.206                                                         | 1.223 | 1.249 | 1.291 | 11        |
| 12        | 9.00             | 7.794 2           | 10.13    | 10.35 | 9.90                              | 8.40        | 1.207                                                         | 1.224 | 1.249 | 1.292 | 12        |
| 13        | 9.75             | 8.443 7           | 10.88    | 11.10 | 10.65                             | 9.14        | 1.207                                                         | 1.224 | 1.250 | 1.293 | 13        |
| 14        | 10.50            | 9.093 3           | 11.63    | 11.85 | 11.40                             | 9.88        | 1.207                                                         | 1.225 | 1.251 | 1.294 | 14        |
| 15        | 11.25            | 9.742 8           | 12.38    | 12.60 | 12.15                             | 10.62       | 1.207                                                         | 1.225 | 1.251 | 1.295 | 15        |
| 16        | 12.00            | 10.392 3          | 13.13    | 13.35 | 12.90                             | 11.36       | 1.208                                                         | 1.225 | 1.252 | 1.296 | 16        |
| 17        | 12.75            | 11.041 8          | 13.88    | 14.10 | 13.65                             | 12.10       | 1.208                                                         | 1.226 | 1.252 | 1.297 | 17        |
| 18        | 13.50            | 11.691 3          | 14.63    | 14.85 | 14.40                             | 12.85       | 1.208                                                         | 1.226 | 1.253 | 1.298 | 18        |
| 19        | 14.25            | 12.340 9          | 15.38    | 15.60 | 15.15                             | 13.59       | 1.208                                                         | 1.226 | 1.253 | 1.298 | 19        |
| 20        | 15.00            | 12.990 4          | 16.13    | 16.35 | 15.90                             | 14.34       | 1.208                                                         | 1.227 | 1.254 | 1.299 | 20        |
| 21        | 15.75            | 13.639 9          | 16.88    | 17.10 | 16.65                             | 15.08       | 1.209                                                         | 1.227 | 1.254 | 1.300 | 21        |
| 22        | 16.50            | 14.289 4          | 17.63    | 17.85 | 17.40                             | 15.83       | 1.209                                                         | 1.227 | 1.255 | 1.301 | 22        |
| 23        | 17.25            | 14.938 9          | 18.38    | 18.60 | 18.15                             | 16.57       | 1.209                                                         | 1.227 | 1.255 | 1.301 | 23        |
| 24        | 18.00            | 15.588 5          | 19.13    | 19.35 | 18.90                             | 17.32       | 1.209                                                         | 1.228 | 1.256 | 1.302 | 24        |
| 25        | 18.75            | 16.238 0          | 19.88    | 20.10 | 19.65                             | 18.07       | 1.209                                                         | 1.228 | 1.256 | 1.303 | 25        |
| 26        | 19.50            | 16.887 5          | 20.63    | 20.85 | 20.40                             | 18.82       | 1.209                                                         | 1.228 | 1.256 | 1.304 | 26        |
| 27        | 20.25            | 17.537 0          | 21.38    | 21.60 | 21.15                             | 19.56       | 1.210                                                         | 1.229 | 1.257 | 1.304 | 27        |
| 28        | 21.00            | 18.186 5          | 22.13    | 22.35 | 21.90                             | 20.31       | 1.210                                                         | 1.229 | 1.257 | 1.305 | 28        |
| 29        | 21.75            | 18.836 1          | 22.88    | 23.10 | 22.65                             | 21.06       | 1.210                                                         | 1.229 | 1.258 | 1.305 | 29        |
| 30        | 22.50            | 19.485 6          | 23.63    | 23.85 | 23.40                             | 21.81       | 1.210                                                         | 1.229 | 1.258 | 1.306 | 30        |
| 31        | 23.25            | 20.135 1          | 24.38    | 24.60 | 24.15                             | 22.55       | 1.210                                                         | 1.229 | 1.258 | 1.307 | 31        |
| 32        | 24.00            | 20.784 6          | 25.13    | 25.35 | 24.90                             | 23.30       | 1.210                                                         | 1.230 | 1.259 | 1.307 | 32        |
| 33        | 24.75            | 21.434 1          | 25.88    | 26.10 | 25.65                             | 24.05       | 1.211                                                         | 1.230 | 1.259 | 1.308 | 33        |
| 34        | 25.50            | 22.083 6          | 26.63    | 26.85 | 26.40                             | 24.80       | 1.211                                                         | 1.230 | 1.259 | 1.308 | 34        |
| 35        | 26.25            | 22.733 2          | 27.38    | 27.60 | 27.15                             | 25.55       | 1.211                                                         | 1.230 | 1.260 | 1.309 | 35        |
| 36        | 27.00            | 23.382 7          | 28.13    | 28.35 | 27.90                             | 26.30       | 1.211                                                         | 1.231 | 1.260 | 1.309 | 36        |
| 37        | 27.75            | 24.032 2          | 28.88    | 29.10 | 28.65                             | 27.05       | 1.211                                                         | 1.231 | 1.260 | 1.310 | 37        |
| 38        | 28.50            | 24.681 7          | 29.63    | 29.85 | 29.40                             | 27.79       | 1.211                                                         | 1.231 | 1.261 | 1.310 | 38        |
| 39        | 29.25            | 25.331 2          | 30.38    | 30.60 | 30.15                             | 28.54       | 1.211                                                         | 1.231 | 1.261 | 1.311 | 39        |
| 40        | 30.00            | 25.980 8          | 31.13    | 31.35 | 30.90                             | 29.29       | 1.211                                                         | 1.231 | 1.261 | 1.311 | 40        |
| 41        | 30.75            | 26.630 3          | 31.88    | 32.10 | 31.65                             | 30.04       | 1.212                                                         | 1.232 | 1.262 | 1.312 | 41        |
| 42        | 31.50            | 27.279 8          | 32.63    | 32.85 | 32.40                             | 30.79       | 1.212                                                         | 1.232 | 1.262 | 1.312 | 42        |
| 43        | 32.25            | 27.929 3          | 33.38    | 33.60 | 33.15                             | 31.54       | 1.212                                                         | 1.232 | 1.262 | 1.313 | 43        |
| 44        | 33.00            | 28.578 8          | 34.13    | 34.35 | 33.90                             | 32.29       | 1.212                                                         | 1.232 | 1.263 | 1.313 | 44        |
| 45        | 33.75            | 29.228 4          | 34.88    | 35.10 | 34.65                             | 33.04       | 1.212                                                         | 1.232 | 1.263 | 1.314 | 45        |
| 46        | 34.50            | 29.877 9          | 35.63    | 35.85 | 35.40                             | 33.79       | 1.212                                                         | 1.233 | 1.263 | 1.314 | 46        |
| 47        | 35.25            | 30.527 4          | 36.38    | 36.60 | 36.15                             | 34.54       | 1.212                                                         | 1.233 | 1.263 | 1.315 | 47        |
| 48        | 36.00            | 31.176 9          | 37.13    | 37.35 | 36.90                             | 35.28       | 1.212                                                         | 1.233 | 1.264 | 1.315 | 48        |
| 49        | 36.75            | 31.826 4          | 37.88    | 38.10 | 37.65                             | 36.03       | 1.212                                                         | 1.233 | 1.264 | 1.316 | 49        |
| 50        | 37.50            | 32.476 0          | 38.63    | 38.85 | 38.40                             | 36.78       | 1.213                                                         | 1.233 | 1.264 | 1.316 | 50        |
| 51        | 38.25            | 33.125 5          | 39.38    | 39.60 | 39.15                             | 37.53       | 1.213                                                         | 1.233 | 1.265 | 1.316 | 51        |
| 52        | 39.00            | 33.775 0          | 40.13    | 40.35 | 39.90                             | 38.28       | 1.213                                                         | 1.234 | 1.265 | 1.317 | 52        |
| 53        | 39.75            | 34.424 5          | 40.88    | 41.10 | 40.65                             | 39.03       | 1.213                                                         | 1.234 | 1.265 | 1.317 | 53        |
| 54        | 40.50            | 35.074 0          | 41.63    | 41.85 | 41.40                             | 39.78       | 1.213                                                         | 1.234 | 1.265 | 1.318 | 54        |
| 55        | 41.25            | 35.723 5          | 42.38    | 42.60 | 42.15                             | 40.53       | 1.213                                                         | 1.234 | 1.266 | 1.318 | 55        |

表 2 (续)

单位为毫米

| 齿数<br><i>z</i> | 分度圆<br>直径<br><i>D</i> | 基圆<br>直径<br><i>D<sub>b</sub></i> | 大径 <i>D<sub>a</sub></i> |       | 渐开线终<br>止圆直径<br><i>D<sub>Fa min</sub></i> | 小径<br><i>D<sub>i</sub></i> | 实际齿槽宽最大值<br><i>E<sub>max</sub> = E<sub>min</sub> + (J + λ)</i> |       |       |       | 齿数<br><i>z</i> |
|----------------|-----------------------|----------------------------------|-------------------------|-------|-------------------------------------------|----------------------------|----------------------------------------------------------------|-------|-------|-------|----------------|
|                |                       |                                  | 平齿根                     | 圆齿根   |                                           |                            | 4H                                                             | 5H    | 6H    | 7H    |                |
| 56             | 42.00                 | 36.373 1                         | 43.13                   | 43.35 | 42.90                                     | 41.28                      | 1.213                                                          | 1.234 | 1.266 | 1.318 | 56             |
| 57             | 42.75                 | 37.022 6                         | 43.88                   | 44.10 | 43.65                                     | 42.03                      | 1.213                                                          | 1.234 | 1.266 | 1.319 | 57             |
| 58             | 43.50                 | 37.672 1                         | 44.63                   | 44.85 | 44.40                                     | 42.78                      | 1.213                                                          | 1.235 | 1.266 | 1.319 | 58             |
| 59             | 44.25                 | 38.321 6                         | 45.38                   | 45.60 | 45.15                                     | 43.53                      | 1.213                                                          | 1.235 | 1.267 | 1.320 | 59             |
| 60             | 45.00                 | 38.971 1                         | 46.13                   | 46.35 | 45.90                                     | 44.28                      | 1.214                                                          | 1.235 | 1.267 | 1.320 | 60             |
| 61             | 45.75                 | 39.620 7                         | 46.88                   | 47.10 | 46.65                                     | 45.03                      | 1.214                                                          | 1.235 | 1.267 | 1.320 | 61             |
| 62             | 46.50                 | 40.270 2                         | 47.63                   | 47.85 | 47.40                                     | 45.78                      | 1.214                                                          | 1.235 | 1.267 | 1.321 | 62             |
| 63             | 47.25                 | 40.919 7                         | 48.38                   | 48.60 | 48.15                                     | 46.53                      | 1.214                                                          | 1.235 | 1.268 | 1.321 | 63             |
| 64             | 48.00                 | 41.569 2                         | 49.13                   | 49.35 | 48.90                                     | 47.28                      | 1.214                                                          | 1.235 | 1.268 | 1.322 | 64             |
| 65             | 48.75                 | 42.218 7                         | 49.88                   | 50.10 | 49.65                                     | 48.03                      | 1.214                                                          | 1.236 | 1.268 | 1.322 | 65             |
| 66             | 49.50                 | 42.868 3                         | 50.63                   | 50.85 | 50.40                                     | 48.77                      | 1.214                                                          | 1.236 | 1.268 | 1.322 | 66             |
| 67             | 50.25                 | 43.517 8                         | 51.38                   | 51.60 | 51.15                                     | 49.52                      | 1.214                                                          | 1.236 | 1.268 | 1.323 | 67             |
| 68             | 51.00                 | 44.167 3                         | 52.13                   | 52.35 | 51.90                                     | 50.27                      | 1.214                                                          | 1.236 | 1.269 | 1.323 | 68             |
| 69             | 51.75                 | 44.816 8                         | 52.88                   | 53.10 | 52.65                                     | 51.02                      | 1.214                                                          | 1.236 | 1.269 | 1.323 | 69             |
| 70             | 52.50                 | 45.466 3                         | 53.63                   | 53.85 | 53.40                                     | 51.77                      | 1.215                                                          | 1.236 | 1.269 | 1.324 | 70             |
| 71             | 53.25                 | 46.115 9                         | 54.38                   | 54.60 | 54.15                                     | 52.52                      | 1.215                                                          | 1.236 | 1.269 | 1.324 | 71             |
| 72             | 54.00                 | 46.765 4                         | 55.13                   | 55.35 | 54.90                                     | 53.27                      | 1.215                                                          | 1.237 | 1.270 | 1.324 | 72             |
| 73             | 54.75                 | 47.414 9                         | 55.88                   | 56.10 | 55.65                                     | 54.02                      | 1.215                                                          | 1.237 | 1.270 | 1.325 | 73             |
| 74             | 55.50                 | 48.064 4                         | 56.63                   | 56.85 | 56.40                                     | 54.77                      | 1.215                                                          | 1.237 | 1.270 | 1.325 | 74             |
| 75             | 56.25                 | 48.713 9                         | 57.38                   | 57.60 | 57.15                                     | 55.52                      | 1.215                                                          | 1.237 | 1.270 | 1.325 | 75             |
| 76             | 57.00                 | 49.363 4                         | 58.13                   | 58.35 | 57.90                                     | 56.27                      | 1.215                                                          | 1.237 | 1.270 | 1.326 | 76             |
| 77             | 57.75                 | 50.013 0                         | 58.88                   | 59.10 | 58.65                                     | 57.02                      | 1.215                                                          | 1.237 | 1.271 | 1.326 | 77             |
| 78             | 58.50                 | 50.662 5                         | 59.63                   | 59.85 | 59.40                                     | 57.77                      | 1.215                                                          | 1.237 | 1.271 | 1.326 | 78             |
| 79             | 59.25                 | 51.312 0                         | 60.38                   | 60.60 | 60.15                                     | 58.52                      | 1.215                                                          | 1.238 | 1.271 | 1.327 | 79             |
| 80             | 60.00                 | 51.961 5                         | 61.13                   | 61.35 | 60.90                                     | 59.27                      | 1.215                                                          | 1.238 | 1.271 | 1.327 | 80             |
| 81             | 60.75                 | 52.611 0                         | 61.88                   | 62.10 | 61.65                                     | 60.02                      | 1.215                                                          | 1.238 | 1.271 | 1.327 | 81             |
| 82             | 61.50                 | 53.260 6                         | 62.63                   | 62.85 | 62.40                                     | 60.77                      | 1.216                                                          | 1.238 | 1.272 | 1.328 | 82             |
| 83             | 62.25                 | 53.910 1                         | 63.38                   | 63.60 | 63.15                                     | 61.52                      | 1.216                                                          | 1.238 | 1.272 | 1.328 | 83             |
| 84             | 63.00                 | 54.559 6                         | 64.13                   | 64.35 | 63.90                                     | 62.27                      | 1.216                                                          | 1.238 | 1.272 | 1.328 | 84             |
| 85             | 63.75                 | 55.209 1                         | 64.88                   | 65.10 | 64.65                                     | 63.02                      | 1.216                                                          | 1.238 | 1.272 | 1.329 | 85             |
| 86             | 64.50                 | 55.858 6                         | 65.63                   | 65.85 | 65.40                                     | 63.77                      | 1.216                                                          | 1.238 | 1.272 | 1.329 | 86             |
| 87             | 65.25                 | 56.508 2                         | 66.38                   | 66.60 | 66.15                                     | 64.52                      | 1.216                                                          | 1.239 | 1.273 | 1.329 | 87             |
| 88             | 66.00                 | 57.157 7                         | 67.13                   | 67.35 | 66.90                                     | 65.27                      | 1.216                                                          | 1.239 | 1.273 | 1.330 | 88             |
| 89             | 66.75                 | 57.807 2                         | 67.88                   | 68.10 | 67.65                                     | 66.02                      | 1.216                                                          | 1.239 | 1.273 | 1.330 | 89             |
| 90             | 67.50                 | 58.456 7                         | 68.63                   | 68.85 | 68.40                                     | 66.77                      | 1.216                                                          | 1.239 | 1.273 | 1.330 | 90             |
| 91             | 68.25                 | 59.106 2                         | 69.38                   | 69.60 | 69.15                                     | 67.52                      | 1.216                                                          | 1.239 | 1.273 | 1.331 | 91             |
| 92             | 69.00                 | 59.755 8                         | 70.13                   | 70.35 | 69.90                                     | 68.27                      | 1.216                                                          | 1.239 | 1.274 | 1.331 | 92             |
| 93             | 69.75                 | 60.405 3                         | 70.88                   | 71.10 | 70.65                                     | 69.02                      | 1.216                                                          | 1.239 | 1.274 | 1.331 | 93             |
| 94             | 70.50                 | 61.054 8                         | 71.63                   | 71.85 | 71.40                                     | 69.77                      | 1.216                                                          | 1.239 | 1.274 | 1.331 | 94             |
| 95             | 71.25                 | 61.704 3                         | 72.38                   | 72.60 | 72.15                                     | 70.52                      | 1.216                                                          | 1.240 | 1.274 | 1.332 | 95             |
| 96             | 72.00                 | 62.353 8                         | 73.13                   | 73.35 | 72.90                                     | 71.27                      | 1.217                                                          | 1.240 | 1.274 | 1.332 | 96             |
| 97             | 72.75                 | 63.003 3                         | 73.88                   | 74.10 | 73.65                                     | 72.02                      | 1.217                                                          | 1.240 | 1.274 | 1.332 | 97             |
| 98             | 73.50                 | 63.652 9                         | 74.63                   | 74.85 | 74.40                                     | 72.77                      | 1.217                                                          | 1.240 | 1.275 | 1.333 | 98             |
| 99             | 74.25                 | 64.302 4                         | 75.38                   | 75.60 | 75.15                                     | 73.52                      | 1.217                                                          | 1.240 | 1.275 | 1.333 | 99             |
| 100            | 75.00                 | 64.951 9                         | 76.13                   | 76.35 | 75.90                                     | 74.27                      | 1.217                                                          | 1.240 | 1.275 | 1.333 | 100            |

表 3 30° 内花键  
模数  $m=1\text{ mm}$  作用齿槽宽最小值  $E_{v\min}=1.571\text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_a$ |       | 渐开线终<br>止圆直径<br>$D_{f\min}$ | 小径<br>$D_i$ | 实际齿槽宽最大值<br>$E_{\max}=E_{v\min}+(T+\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|-------|-----------------------------|-------------|----------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根   |                             |             | 4H                                           | 5H    | 6H    | 7H    |           |
| 10        | 10.00            | 8.660 3           | 11.50    | 11.80 | 11.20                       | 9.24        | 1.602                                        | 1.620 | 1.648 | 1.694 | 10        |
| 11        | 11.00            | 9.526 3           | 12.50    | 12.80 | 12.20                       | 10.22       | 1.602                                        | 1.621 | 1.649 | 1.695 | 11        |
| 12        | 12.00            | 10.392 3          | 13.50    | 13.80 | 13.20                       | 11.20       | 1.602                                        | 1.621 | 1.649 | 1.696 | 12        |
| 13        | 13.00            | 11.258 3          | 14.50    | 14.80 | 14.20                       | 12.18       | 1.602                                        | 1.621 | 1.650 | 1.698 | 13        |
| 14        | 14.00            | 12.124 4          | 15.50    | 15.80 | 15.20                       | 13.17       | 1.603                                        | 1.622 | 1.651 | 1.699 | 14        |
| 15        | 15.00            | 12.990 4          | 16.50    | 16.80 | 16.20                       | 14.16       | 1.603                                        | 1.622 | 1.651 | 1.700 | 15        |
| 16        | 16.00            | 13.856 4          | 17.50    | 17.80 | 17.20                       | 15.15       | 1.603                                        | 1.623 | 1.652 | 1.701 | 16        |
| 17        | 17.00            | 14.722 4          | 18.50    | 18.80 | 18.20                       | 16.14       | 1.604                                        | 1.623 | 1.653 | 1.702 | 17        |
| 18        | 18.00            | 15.588 5          | 19.50    | 19.80 | 19.20                       | 17.13       | 1.604                                        | 1.624 | 1.653 | 1.703 | 18        |
| 19        | 19.00            | 16.454 5          | 20.50    | 20.80 | 20.20                       | 18.12       | 1.604                                        | 1.624 | 1.654 | 1.703 | 19        |
| 20        | 20.00            | 17.320 5          | 21.50    | 21.80 | 21.20                       | 19.11       | 1.604                                        | 1.624 | 1.654 | 1.704 | 20        |
| 21        | 21.00            | 18.186 5          | 22.50    | 22.80 | 22.20                       | 20.11       | 1.604                                        | 1.625 | 1.655 | 1.705 | 21        |
| 22        | 22.00            | 19.052 6          | 23.50    | 23.80 | 23.20                       | 21.10       | 1.605                                        | 1.625 | 1.655 | 1.706 | 22        |
| 23        | 23.00            | 19.918 6          | 24.50    | 24.80 | 24.20                       | 22.10       | 1.605                                        | 1.625 | 1.656 | 1.707 | 23        |
| 24        | 24.00            | 20.784 6          | 25.50    | 25.80 | 25.20                       | 23.09       | 1.605                                        | 1.626 | 1.656 | 1.708 | 24        |
| 25        | 25.00            | 21.650 6          | 26.50    | 26.80 | 26.20                       | 24.09       | 1.605                                        | 1.626 | 1.657 | 1.708 | 25        |
| 26        | 26.00            | 22.516 7          | 27.50    | 27.80 | 27.20                       | 25.09       | 1.605                                        | 1.626 | 1.657 | 1.709 | 26        |
| 27        | 27.00            | 23.382 7          | 28.50    | 28.80 | 28.20                       | 26.08       | 1.606                                        | 1.626 | 1.658 | 1.710 | 27        |
| 28        | 28.00            | 24.248 7          | 29.50    | 29.80 | 29.20                       | 27.08       | 1.606                                        | 1.627 | 1.658 | 1.710 | 28        |
| 29        | 29.00            | 25.114 7          | 30.50    | 30.80 | 30.20                       | 28.08       | 1.606                                        | 1.627 | 1.659 | 1.711 | 29        |
| 30        | 30.00            | 25.980 8          | 31.50    | 31.80 | 31.20                       | 29.07       | 1.606                                        | 1.627 | 1.659 | 1.712 | 30        |
| 31        | 31.00            | 26.846 8          | 32.50    | 32.80 | 32.20                       | 30.07       | 1.606                                        | 1.627 | 1.659 | 1.712 | 31        |
| 32        | 32.00            | 27.712 8          | 33.50    | 33.80 | 33.20                       | 31.07       | 1.606                                        | 1.628 | 1.660 | 1.713 | 32        |
| 33        | 33.00            | 28.578 8          | 34.50    | 34.80 | 34.20                       | 32.07       | 1.607                                        | 1.628 | 1.660 | 1.714 | 33        |
| 34        | 34.00            | 29.444 9          | 35.50    | 35.80 | 35.20                       | 33.07       | 1.607                                        | 1.628 | 1.661 | 1.714 | 34        |
| 35        | 35.00            | 30.310 9          | 36.50    | 36.80 | 36.20                       | 34.06       | 1.607                                        | 1.628 | 1.661 | 1.715 | 35        |
| 36        | 36.00            | 31.176 9          | 37.50    | 37.80 | 37.20                       | 35.06       | 1.607                                        | 1.629 | 1.661 | 1.716 | 36        |
| 37        | 37.00            | 32.042 9          | 38.50    | 38.80 | 38.20                       | 36.06       | 1.607                                        | 1.629 | 1.662 | 1.716 | 37        |
| 38        | 38.00            | 32.909 0          | 39.50    | 39.80 | 39.20                       | 37.06       | 1.607                                        | 1.629 | 1.662 | 1.717 | 38        |
| 39        | 39.00            | 33.775 0          | 40.50    | 40.80 | 40.20                       | 38.06       | 1.607                                        | 1.629 | 1.662 | 1.717 | 39        |
| 40        | 40.00            | 34.641 0          | 41.50    | 41.80 | 41.20                       | 39.06       | 1.608                                        | 1.630 | 1.663 | 1.718 | 40        |
| 41        | 41.00            | 35.507 0          | 42.50    | 42.80 | 42.20                       | 40.05       | 1.608                                        | 1.630 | 1.663 | 1.718 | 41        |
| 42        | 42.00            | 36.373 1          | 43.50    | 43.80 | 43.20                       | 41.05       | 1.608                                        | 1.630 | 1.663 | 1.719 | 42        |
| 43        | 43.00            | 37.239 1          | 44.50    | 44.80 | 44.20                       | 42.05       | 1.608                                        | 1.630 | 1.664 | 1.719 | 43        |
| 44        | 44.00            | 38.105 1          | 45.50    | 45.80 | 45.20                       | 43.05       | 1.608                                        | 1.630 | 1.664 | 1.720 | 44        |
| 45        | 45.00            | 38.971 1          | 46.50    | 46.80 | 46.20                       | 44.05       | 1.608                                        | 1.631 | 1.664 | 1.720 | 45        |
| 46        | 46.00            | 39.837 2          | 47.50    | 47.80 | 47.20                       | 45.05       | 1.608                                        | 1.631 | 1.665 | 1.721 | 46        |
| 47        | 47.00            | 40.703 2          | 48.50    | 48.80 | 48.20                       | 46.05       | 1.608                                        | 1.631 | 1.665 | 1.721 | 47        |
| 48        | 48.00            | 41.569 2          | 49.50    | 49.80 | 49.20                       | 47.05       | 1.609                                        | 1.631 | 1.665 | 1.722 | 48        |
| 49        | 49.00            | 42.435 2          | 50.50    | 50.80 | 50.20                       | 48.05       | 1.609                                        | 1.631 | 1.666 | 1.722 | 49        |
| 50        | 50.00            | 43.301 3          | 51.50    | 51.80 | 51.20                       | 49.04       | 1.609                                        | 1.632 | 1.666 | 1.723 | 50        |
| 51        | 51.00            | 44.167 3          | 52.50    | 52.80 | 52.20                       | 50.04       | 1.609                                        | 1.632 | 1.666 | 1.723 | 51        |
| 52        | 52.00            | 45.033 3          | 53.50    | 53.80 | 53.20                       | 51.04       | 1.609                                        | 1.632 | 1.666 | 1.724 | 52        |
| 53        | 53.00            | 45.899 3          | 54.50    | 54.80 | 54.20                       | 52.04       | 1.609                                        | 1.632 | 1.667 | 1.724 | 53        |
| 54        | 54.00            | 46.765 4          | 55.50    | 55.80 | 55.20                       | 53.04       | 1.609                                        | 1.632 | 1.667 | 1.725 | 54        |
| 55        | 55.00            | 47.631 4          | 56.50    | 56.80 | 56.20                       | 54.04       | 1.609                                        | 1.633 | 1.667 | 1.725 | 55        |

表 3 (续) 单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_d$ |        | 渐开线终<br>止圆直径<br>$D_{F1min}$ | 小径<br>$D_{ii}$ | 实际齿槽宽最大值<br>$E_{max} = E_{min} + (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|--------|-----------------------------|----------------|-------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根    |                             |                | 4H                                              | 5H    | 6H    | 7H    |           |
| 56        | 56.00            | 48.497 4          | 57.50    | 57.80  | 57.20                       | 55.04          | 1.610                                           | 1.633 | 1.668 | 1.726 | 56        |
| 57        | 57.00            | 49.363 4          | 58.50    | 58.80  | 58.20                       | 56.04          | 1.610                                           | 1.633 | 1.668 | 1.726 | 57        |
| 58        | 58.00            | 50.229 5          | 59.50    | 59.80  | 59.20                       | 57.04          | 1.610                                           | 1.633 | 1.668 | 1.727 | 58        |
| 59        | 59.00            | 51.095 5          | 60.50    | 60.80  | 60.20                       | 58.04          | 1.610                                           | 1.633 | 1.668 | 1.727 | 59        |
| 60        | 60.00            | 51.961 5          | 61.50    | 61.80  | 61.20                       | 59.04          | 1.610                                           | 1.633 | 1.669 | 1.728 | 60        |
| 61        | 61.00            | 52.827 5          | 62.50    | 62.80  | 62.20                       | 60.04          | 1.610                                           | 1.634 | 1.669 | 1.728 | 61        |
| 62        | 62.00            | 53.693 6          | 63.50    | 63.80  | 63.20                       | 61.04          | 1.610                                           | 1.634 | 1.669 | 1.728 | 62        |
| 63        | 63.00            | 54.559 6          | 64.50    | 64.80  | 64.20                       | 62.03          | 1.610                                           | 1.634 | 1.670 | 1.729 | 63        |
| 64        | 64.00            | 55.425 6          | 65.50    | 65.80  | 65.20                       | 63.03          | 1.610                                           | 1.634 | 1.670 | 1.729 | 64        |
| 65        | 65.00            | 56.291 7          | 66.50    | 66.80  | 66.20                       | 64.03          | 1.610                                           | 1.634 | 1.670 | 1.730 | 65        |
| 66        | 66.00            | 57.157 7          | 67.50    | 67.80  | 67.20                       | 65.03          | 1.611                                           | 1.634 | 1.670 | 1.730 | 66        |
| 67        | 67.00            | 58.023 7          | 68.50    | 68.80  | 68.20                       | 66.03          | 1.611                                           | 1.635 | 1.671 | 1.730 | 67        |
| 68        | 68.00            | 58.889 7          | 69.50    | 69.80  | 69.20                       | 67.03          | 1.611                                           | 1.635 | 1.671 | 1.731 | 68        |
| 69        | 69.00            | 59.755 8          | 70.50    | 70.80  | 70.20                       | 68.03          | 1.611                                           | 1.635 | 1.671 | 1.731 | 69        |
| 70        | 70.00            | 60.621 8          | 71.50    | 71.80  | 71.20                       | 69.03          | 1.611                                           | 1.635 | 1.671 | 1.732 | 70        |
| 71        | 71.00            | 61.487 8          | 72.50    | 72.80  | 72.20                       | 70.03          | 1.611                                           | 1.635 | 1.672 | 1.732 | 71        |
| 72        | 72.00            | 62.353 8          | 73.50    | 73.80  | 73.20                       | 71.03          | 1.611                                           | 1.635 | 1.672 | 1.732 | 72        |
| 73        | 73.00            | 63.219 9          | 74.50    | 74.80  | 74.20                       | 72.03          | 1.611                                           | 1.636 | 1.672 | 1.733 | 73        |
| 74        | 74.00            | 64.085 9          | 75.50    | 75.80  | 75.20                       | 73.03          | 1.611                                           | 1.636 | 1.672 | 1.733 | 74        |
| 75        | 75.00            | 64.951 9          | 76.50    | 76.80  | 76.20                       | 74.03          | 1.611                                           | 1.636 | 1.673 | 1.734 | 75        |
| 76        | 76.00            | 65.817 9          | 77.50    | 77.80  | 77.20                       | 75.03          | 1.612                                           | 1.636 | 1.673 | 1.734 | 76        |
| 77        | 77.00            | 66.684 0          | 78.50    | 78.80  | 78.20                       | 76.03          | 1.612                                           | 1.636 | 1.673 | 1.734 | 77        |
| 78        | 78.00            | 67.550 0          | 79.50    | 79.80  | 79.20                       | 77.03          | 1.612                                           | 1.636 | 1.673 | 1.735 | 78        |
| 79        | 79.00            | 68.416 0          | 80.50    | 80.80  | 80.20                       | 78.03          | 1.612                                           | 1.636 | 1.673 | 1.735 | 79        |
| 80        | 80.00            | 69.282 0          | 81.50    | 81.80  | 81.20                       | 79.03          | 1.612                                           | 1.637 | 1.674 | 1.735 | 80        |
| 81        | 81.00            | 70.148 1          | 82.50    | 82.80  | 82.20                       | 80.03          | 1.612                                           | 1.637 | 1.674 | 1.736 | 81        |
| 82        | 82.00            | 71.014 1          | 83.50    | 83.80  | 83.20                       | 81.03          | 1.612                                           | 1.637 | 1.674 | 1.736 | 82        |
| 83        | 83.00            | 71.880 1          | 84.50    | 84.80  | 84.20                       | 82.03          | 1.612                                           | 1.637 | 1.674 | 1.736 | 83        |
| 84        | 84.00            | 72.746 1          | 85.50    | 85.80  | 85.20                       | 83.03          | 1.612                                           | 1.637 | 1.675 | 1.737 | 84        |
| 85        | 85.00            | 73.612 2          | 86.50    | 86.80  | 86.20                       | 84.03          | 1.612                                           | 1.637 | 1.675 | 1.737 | 85        |
| 86        | 86.00            | 74.478 2          | 87.50    | 87.80  | 87.20                       | 85.03          | 1.612                                           | 1.637 | 1.675 | 1.738 | 86        |
| 87        | 87.00            | 75.344 2          | 88.50    | 88.80  | 88.20                       | 86.03          | 1.613                                           | 1.638 | 1.675 | 1.738 | 87        |
| 88        | 88.00            | 76.210 2          | 89.50    | 89.80  | 89.20                       | 87.02          | 1.613                                           | 1.638 | 1.675 | 1.738 | 88        |
| 89        | 89.00            | 77.076 3          | 90.50    | 90.80  | 90.20                       | 88.02          | 1.613                                           | 1.638 | 1.676 | 1.739 | 89        |
| 90        | 90.00            | 77.942 3          | 91.50    | 91.80  | 91.20                       | 89.02          | 1.613                                           | 1.638 | 1.676 | 1.739 | 90        |
| 91        | 91.00            | 78.808 3          | 92.50    | 92.80  | 92.20                       | 90.02          | 1.613                                           | 1.638 | 1.676 | 1.739 | 91        |
| 92        | 92.00            | 79.674 3          | 93.50    | 93.80  | 93.20                       | 91.02          | 1.613                                           | 1.638 | 1.676 | 1.740 | 92        |
| 93        | 93.00            | 80.540 4          | 94.50    | 94.80  | 94.20                       | 92.02          | 1.613                                           | 1.638 | 1.676 | 1.740 | 93        |
| 94        | 94.00            | 81.406 4          | 95.50    | 95.80  | 95.20                       | 93.02          | 1.613                                           | 1.639 | 1.677 | 1.740 | 94        |
| 95        | 95.00            | 82.272 4          | 96.50    | 96.80  | 96.20                       | 94.02          | 1.613                                           | 1.639 | 1.677 | 1.741 | 95        |
| 96        | 96.00            | 83.138 4          | 97.50    | 97.80  | 97.20                       | 95.02          | 1.613                                           | 1.639 | 1.677 | 1.741 | 96        |
| 97        | 97.00            | 84.004 5          | 98.50    | 98.80  | 98.20                       | 96.02          | 1.613                                           | 1.639 | 1.677 | 1.741 | 97        |
| 98        | 98.00            | 84.870 5          | 99.50    | 99.80  | 99.20                       | 97.02          | 1.613                                           | 1.639 | 1.677 | 1.742 | 98        |
| 99        | 99.00            | 85.736 5          | 100.50   | 100.80 | 100.20                      | 98.02          | 1.614                                           | 1.639 | 1.678 | 1.742 | 99        |
| 100       | 100.00           | 86.602 5          | 101.50   | 101.80 | 101.20                      | 99.02          | 1.614                                           | 1.639 | 1.678 | 1.742 | 100       |

表 4 30°内花键  
模数  $m = 1.25\text{ mm}$  作用齿槽宽最小值  $E_{\min} = 1.963\text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_e$ |       | 渐开线终<br>止圆直径<br>$D_{f, \min}$ | 小径<br>$D_i$ | 实际内槽宽最大值<br>$E_{\max} = E_{\min} + (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|-------|-------------------------------|-------------|---------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根   |                               |             | 4H                                                | 5H    | 6H    | 7H    |           |
| 10        | 12.50            | 10.825 3          | 14.38    | 14.75 | 14.00                         | 11.55       | 1.997                                             | 2.017 | 2.046 | 2.096 | 10        |
| 11        | 13.75            | 11.907 8          | 15.63    | 16.00 | 15.25                         | 12.77       | 1.997                                             | 2.017 | 2.047 | 2.098 | 11        |
| 12        | 15.00            | 12.990 4          | 16.88    | 17.25 | 16.50                         | 14.00       | 1.997                                             | 2.018 | 2.048 | 2.099 | 12        |
| 13        | 16.25            | 14.072 9          | 18.13    | 18.50 | 17.75                         | 15.23       | 1.998                                             | 2.018 | 2.049 | 2.100 | 13        |
| 14        | 17.50            | 15.155 4          | 19.38    | 19.75 | 19.00                         | 16.46       | 1.998                                             | 2.019 | 2.050 | 2.101 | 14        |
| 15        | 18.75            | 16.238 0          | 20.63    | 21.00 | 20.25                         | 17.69       | 1.998                                             | 2.019 | 2.050 | 2.102 | 15        |
| 16        | 20.00            | 17.320 5          | 21.88    | 22.25 | 21.50                         | 18.93       | 1.999                                             | 2.020 | 2.051 | 2.104 | 16        |
| 17        | 21.25            | 18.403 0          | 23.13    | 23.50 | 22.75                         | 20.17       | 1.999                                             | 2.020 | 2.052 | 2.105 | 17        |
| 18        | 22.50            | 19.485 6          | 24.38    | 24.75 | 24.00                         | 21.41       | 1.999                                             | 2.020 | 2.052 | 2.106 | 18        |
| 19        | 23.75            | 20.568 1          | 25.63    | 26.00 | 25.25                         | 22.65       | 1.999                                             | 2.021 | 2.053 | 2.107 | 19        |
| 20        | 25.00            | 21.650 6          | 26.88    | 27.25 | 26.50                         | 23.89       | 2.000                                             | 2.021 | 2.054 | 2.108 | 20        |
| 21        | 26.25            | 22.733 2          | 28.13    | 28.50 | 27.75                         | 25.14       | 2.000                                             | 2.021 | 2.054 | 2.108 | 21        |
| 22        | 27.50            | 23.815 7          | 29.38    | 29.75 | 29.00                         | 26.38       | 2.000                                             | 2.022 | 2.055 | 2.109 | 22        |
| 23        | 28.75            | 24.898 2          | 30.63    | 31.00 | 30.25                         | 27.62       | 2.000                                             | 2.022 | 2.055 | 2.110 | 23        |
| 24        | 30.00            | 25.980 8          | 31.88    | 32.25 | 31.50                         | 28.87       | 2.000                                             | 2.023 | 2.056 | 2.111 | 24        |
| 25        | 31.25            | 27.063 3          | 33.13    | 33.50 | 32.75                         | 30.11       | 2.001                                             | 2.023 | 2.056 | 2.112 | 25        |
| 26        | 32.50            | 28.145 8          | 34.38    | 34.75 | 34.00                         | 31.36       | 2.001                                             | 2.023 | 2.057 | 2.113 | 26        |
| 27        | 33.75            | 29.228 4          | 35.63    | 36.00 | 35.25                         | 32.60       | 2.001                                             | 2.023 | 2.057 | 2.113 | 27        |
| 28        | 35.00            | 30.310 9          | 36.88    | 37.25 | 36.50                         | 33.85       | 2.001                                             | 2.024 | 2.058 | 2.114 | 28        |
| 29        | 36.25            | 31.393 4          | 38.13    | 38.50 | 37.75                         | 35.10       | 2.001                                             | 2.024 | 2.058 | 2.115 | 29        |
| 30        | 37.50            | 32.476 0          | 39.38    | 39.75 | 39.00                         | 36.34       | 2.002                                             | 2.024 | 2.059 | 2.116 | 30        |
| 31        | 38.75            | 33.558 5          | 40.63    | 41.00 | 40.25                         | 37.59       | 2.002                                             | 2.025 | 2.059 | 2.116 | 31        |
| 32        | 40.00            | 34.641 0          | 41.88    | 42.25 | 41.50                         | 38.84       | 2.002                                             | 2.025 | 2.059 | 2.117 | 32        |
| 33        | 41.25            | 35.723 5          | 43.13    | 43.50 | 42.75                         | 40.08       | 2.002                                             | 2.025 | 2.060 | 2.118 | 33        |
| 34        | 42.50            | 36.806 1          | 44.38    | 44.75 | 44.00                         | 41.33       | 2.002                                             | 2.025 | 2.060 | 2.118 | 34        |
| 35        | 43.75            | 37.888 6          | 45.63    | 46.00 | 45.25                         | 42.58       | 2.002                                             | 2.026 | 2.061 | 2.119 | 35        |
| 36        | 45.00            | 38.971 1          | 46.88    | 47.25 | 46.50                         | 43.83       | 2.003                                             | 2.026 | 2.061 | 2.120 | 36        |
| 37        | 46.25            | 40.053 7          | 48.13    | 48.50 | 47.75                         | 45.08       | 2.003                                             | 2.026 | 2.062 | 2.120 | 37        |
| 38        | 47.50            | 41.136 2          | 49.38    | 49.75 | 49.00                         | 46.32       | 2.003                                             | 2.026 | 2.062 | 2.121 | 38        |
| 39        | 48.75            | 42.218 7          | 50.63    | 51.00 | 50.25                         | 47.57       | 2.003                                             | 2.027 | 2.062 | 2.122 | 39        |
| 40        | 50.00            | 43.301 3          | 51.88    | 52.25 | 51.50                         | 48.82       | 2.003                                             | 2.027 | 2.063 | 2.122 | 40        |
| 41        | 51.25            | 44.383 8          | 53.13    | 53.50 | 52.75                         | 50.07       | 2.003                                             | 2.027 | 2.063 | 2.123 | 41        |
| 42        | 52.50            | 45.466 3          | 54.38    | 54.75 | 54.00                         | 51.32       | 2.003                                             | 2.027 | 2.063 | 2.123 | 42        |
| 43        | 53.75            | 46.548 9          | 55.63    | 56.00 | 55.25                         | 52.56       | 2.004                                             | 2.028 | 2.064 | 2.124 | 43        |
| 44        | 55.00            | 47.631 4          | 56.88    | 57.25 | 56.50                         | 53.81       | 2.004                                             | 2.028 | 2.064 | 2.125 | 44        |
| 45        | 56.25            | 48.713 9          | 58.13    | 58.50 | 57.75                         | 55.06       | 2.004                                             | 2.028 | 2.064 | 2.125 | 45        |
| 46        | 57.50            | 49.796 5          | 59.38    | 59.75 | 59.00                         | 56.31       | 2.004                                             | 2.028 | 2.065 | 2.126 | 46        |
| 47        | 58.75            | 50.879 0          | 60.63    | 61.00 | 60.25                         | 57.56       | 2.004                                             | 2.029 | 2.065 | 2.126 | 47        |
| 48        | 60.00            | 51.961 5          | 61.88    | 62.25 | 61.50                         | 58.81       | 2.004                                             | 2.029 | 2.066 | 2.127 | 48        |
| 49        | 61.25            | 53.044 1          | 63.13    | 63.50 | 62.75                         | 60.06       | 2.004                                             | 2.029 | 2.066 | 2.127 | 49        |
| 50        | 62.50            | 54.126 6          | 64.38    | 64.75 | 64.00                         | 61.31       | 2.005                                             | 2.029 | 2.066 | 2.128 | 50        |
| 51        | 63.75            | 55.209 1          | 65.63    | 66.00 | 65.25                         | 62.55       | 2.005                                             | 2.029 | 2.067 | 2.128 | 51        |
| 52        | 65.00            | 56.291 7          | 66.88    | 67.25 | 66.50                         | 63.80       | 2.005                                             | 2.030 | 2.067 | 2.129 | 52        |
| 53        | 66.25            | 57.374 2          | 68.13    | 68.50 | 67.75                         | 65.05       | 2.005                                             | 2.030 | 2.067 | 2.129 | 53        |
| 54        | 67.50            | 58.456 7          | 69.38    | 69.75 | 69.00                         | 66.30       | 2.005                                             | 2.030 | 2.067 | 2.130 | 54        |
| 55        | 68.75            | 59.539 2          | 70.63    | 71.00 | 70.25                         | 67.55       | 2.005                                             | 2.030 | 2.068 | 2.130 | 55        |

表 4 (续)

单位为毫米

| 齿数<br><i>z</i> | 分度圆<br>直径<br><i>D</i> | 基圆<br>直径<br><i>D<sub>b</sub></i> | 大径 <i>D<sub>a</sub></i> |        | 渐开线终<br>止圆直径<br><i>D<sub>Fi min</sub></i> | 小径<br><i>D<sub>n</sub></i> | 实际齿槽宽最大值<br><i>E<sub>max</sub> = E<sub>min</sub> + (T + λ)</i> |       |       |       | 齿数<br><i>z</i> |
|----------------|-----------------------|----------------------------------|-------------------------|--------|-------------------------------------------|----------------------------|----------------------------------------------------------------|-------|-------|-------|----------------|
|                |                       |                                  | 平齿根                     | 圆齿根    |                                           |                            | 4H                                                             | 5H    | 6H    | 7H    |                |
| 56             | 70.00                 | 60.621 8                         | 71.88                   | 72.25  | 71.50                                     | 68.80                      | 2.005                                                          | 2.030 | 2.068 | 2.131 | 56             |
| 57             | 71.25                 | 61.704 3                         | 73.13                   | 73.50  | 72.75                                     | 70.05                      | 2.005                                                          | 2.031 | 2.068 | 2.131 | 57             |
| 58             | 72.50                 | 62.786 8                         | 74.38                   | 74.75  | 74.00                                     | 71.30                      | 2.006                                                          | 2.031 | 2.069 | 2.132 | 58             |
| 59             | 73.75                 | 63.869 4                         | 75.63                   | 76.00  | 75.25                                     | 72.55                      | 2.006                                                          | 2.031 | 2.069 | 2.132 | 59             |
| 60             | 75.00                 | 64.951 9                         | 76.88                   | 77.25  | 76.50                                     | 73.80                      | 2.006                                                          | 2.031 | 2.069 | 2.133 | 60             |
| 61             | 76.25                 | 66.034 4                         | 78.13                   | 78.50  | 77.75                                     | 75.05                      | 2.006                                                          | 2.031 | 2.070 | 2.133 | 61             |
| 62             | 77.50                 | 67.117 0                         | 79.38                   | 79.75  | 79.00                                     | 76.29                      | 2.006                                                          | 2.032 | 2.070 | 2.134 | 62             |
| 63             | 78.75                 | 68.199 5                         | 80.63                   | 81.00  | 80.25                                     | 77.54                      | 2.006                                                          | 2.032 | 2.070 | 2.134 | 63             |
| 64             | 80.00                 | 69.282 0                         | 81.88                   | 82.25  | 81.50                                     | 78.79                      | 2.006                                                          | 2.032 | 2.070 | 2.135 | 64             |
| 65             | 81.25                 | 70.364 6                         | 83.13                   | 83.50  | 82.75                                     | 80.04                      | 2.006                                                          | 2.032 | 2.071 | 2.135 | 65             |
| 66             | 82.50                 | 71.447 1                         | 84.38                   | 84.75  | 84.00                                     | 81.29                      | 2.006                                                          | 2.032 | 2.071 | 2.135 | 66             |
| 67             | 83.75                 | 72.529 6                         | 85.63                   | 86.00  | 85.25                                     | 82.54                      | 2.007                                                          | 2.032 | 2.071 | 2.136 | 67             |
| 68             | 85.00                 | 73.612 2                         | 86.88                   | 87.25  | 86.50                                     | 83.79                      | 2.007                                                          | 2.033 | 2.072 | 2.136 | 68             |
| 69             | 86.25                 | 74.694 7                         | 88.13                   | 88.50  | 87.75                                     | 85.04                      | 2.007                                                          | 2.033 | 2.072 | 2.137 | 69             |
| 70             | 87.50                 | 75.777 2                         | 89.38                   | 89.75  | 89.00                                     | 86.29                      | 2.007                                                          | 2.033 | 2.072 | 2.137 | 70             |
| 71             | 88.75                 | 76.859 8                         | 90.63                   | 91.00  | 90.25                                     | 87.54                      | 2.007                                                          | 2.033 | 2.072 | 2.138 | 71             |
| 72             | 90.00                 | 77.942 3                         | 91.88                   | 92.25  | 91.50                                     | 88.79                      | 2.007                                                          | 2.033 | 2.073 | 2.138 | 72             |
| 73             | 91.25                 | 79.024 8                         | 93.13                   | 93.50  | 92.75                                     | 90.04                      | 2.007                                                          | 2.034 | 2.073 | 2.139 | 73             |
| 74             | 92.50                 | 80.107 3                         | 94.38                   | 94.75  | 94.00                                     | 91.29                      | 2.007                                                          | 2.034 | 2.073 | 2.139 | 74             |
| 75             | 93.75                 | 81.189 9                         | 95.63                   | 96.00  | 95.25                                     | 92.54                      | 2.007                                                          | 2.034 | 2.073 | 2.139 | 75             |
| 76             | 95.00                 | 82.272 4                         | 96.88                   | 97.25  | 96.50                                     | 93.79                      | 2.008                                                          | 2.034 | 2.074 | 2.140 | 76             |
| 77             | 96.25                 | 83.354 9                         | 98.13                   | 98.50  | 97.75                                     | 95.04                      | 2.008                                                          | 2.034 | 2.074 | 2.140 | 77             |
| 78             | 97.50                 | 84.437 5                         | 99.38                   | 99.75  | 99.00                                     | 96.29                      | 2.008                                                          | 2.034 | 2.074 | 2.141 | 78             |
| 79             | 98.75                 | 85.520 0                         | 100.63                  | 101.00 | 100.25                                    | 97.53                      | 2.008                                                          | 2.034 | 2.074 | 2.141 | 79             |
| 80             | 100.00                | 86.602 5                         | 101.88                  | 102.25 | 101.50                                    | 98.78                      | 2.008                                                          | 2.035 | 2.075 | 2.141 | 80             |
| 81             | 101.25                | 87.685 1                         | 103.13                  | 103.50 | 102.75                                    | 100.03                     | 2.008                                                          | 2.035 | 2.075 | 2.142 | 81             |
| 82             | 102.50                | 88.767 6                         | 104.38                  | 104.75 | 104.00                                    | 101.28                     | 2.008                                                          | 2.035 | 2.075 | 2.142 | 82             |
| 83             | 103.75                | 89.850 1                         | 105.63                  | 106.00 | 105.25                                    | 102.53                     | 2.008                                                          | 2.035 | 2.075 | 2.143 | 83             |
| 84             | 105.00                | 90.932 7                         | 106.88                  | 107.25 | 106.50                                    | 103.78                     | 2.008                                                          | 2.035 | 2.076 | 2.143 | 84             |
| 85             | 106.25                | 92.015 2                         | 108.13                  | 108.50 | 107.75                                    | 105.03                     | 2.008                                                          | 2.035 | 2.076 | 2.143 | 85             |
| 86             | 107.50                | 93.097 7                         | 109.38                  | 109.75 | 109.00                                    | 106.28                     | 2.009                                                          | 2.036 | 2.076 | 2.144 | 86             |
| 87             | 108.75                | 94.180 3                         | 110.63                  | 111.00 | 110.25                                    | 107.53                     | 2.009                                                          | 2.036 | 2.076 | 2.144 | 87             |
| 88             | 110.00                | 95.262 8                         | 111.88                  | 112.25 | 111.50                                    | 108.78                     | 2.009                                                          | 2.036 | 2.077 | 2.144 | 88             |
| 89             | 111.25                | 96.345 3                         | 113.13                  | 113.50 | 112.75                                    | 110.03                     | 2.009                                                          | 2.036 | 2.077 | 2.145 | 89             |
| 90             | 112.50                | 97.427 9                         | 114.38                  | 114.75 | 114.00                                    | 111.28                     | 2.009                                                          | 2.036 | 2.077 | 2.145 | 90             |
| 91             | 113.75                | 98.510 4                         | 115.63                  | 116.00 | 115.25                                    | 112.53                     | 2.009                                                          | 2.036 | 2.077 | 2.146 | 91             |
| 92             | 115.00                | 99.592 9                         | 116.88                  | 117.25 | 116.50                                    | 113.78                     | 2.009                                                          | 2.036 | 2.078 | 2.146 | 92             |
| 93             | 116.25                | 100.675 5                        | 118.13                  | 118.50 | 117.75                                    | 115.03                     | 2.009                                                          | 2.037 | 2.078 | 2.146 | 93             |
| 94             | 117.50                | 101.758 0                        | 119.38                  | 119.75 | 119.00                                    | 116.28                     | 2.009                                                          | 2.037 | 2.078 | 2.147 | 94             |
| 95             | 118.75                | 102.840 5                        | 120.63                  | 121.00 | 120.25                                    | 117.53                     | 2.009                                                          | 2.037 | 2.078 | 2.147 | 95             |
| 96             | 120.00                | 103.923 0                        | 121.88                  | 122.25 | 121.50                                    | 118.78                     | 2.009                                                          | 2.037 | 2.078 | 2.147 | 96             |
| 97             | 121.25                | 105.005 6                        | 123.13                  | 123.50 | 122.75                                    | 120.03                     | 2.010                                                          | 2.037 | 2.079 | 2.148 | 97             |
| 98             | 122.50                | 106.088 1                        | 124.38                  | 124.75 | 124.00                                    | 121.28                     | 2.010                                                          | 2.037 | 2.079 | 2.148 | 98             |
| 99             | 123.75                | 107.170 6                        | 125.63                  | 126.00 | 125.25                                    | 122.53                     | 2.010                                                          | 2.037 | 2.079 | 2.148 | 99             |
| 100            | 125.00                | 108.253 2                        | 126.88                  | 127.25 | 126.50                                    | 123.78                     | 2.010                                                          | 2.038 | 2.079 | 2.149 | 100            |

表 5 30°内花键

模数  $m = 1.5 \text{ mm}$  作用齿槽宽最小值  $E_{v \min} = 2.356 \text{ mm}$ 

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_e$ |       | 渐开线终<br>止圆直径<br>$D_{Fi \min}$ | 小径<br>$D_i$ | 实际齿槽宽最大值<br>$E_{\max} = E_{v \min} + (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|-------|-------------------------------|-------------|-----------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根   |                               |             | 4H                                                  | 5H    | 6H    | 7H    |           |
| 10        | 15.00            | 12.990 4          | 17.25    | 17.70 | 16.80                         | 13.86       | 2.391                                               | 2.413 | 2.444 | 2.497 | 10        |
| 11        | 16.50            | 14.289 4          | 18.75    | 19.20 | 18.30                         | 15.33       | 2.392                                               | 2.413 | 2.445 | 2.499 | 11        |
| 12        | 18.00            | 15.588 5          | 20.25    | 20.70 | 19.80                         | 16.80       | 2.392                                               | 2.414 | 2.446 | 2.500 | 12        |
| 13        | 19.50            | 16.887 5          | 21.75    | 22.20 | 21.30                         | 18.27       | 2.393                                               | 2.414 | 2.447 | 2.502 | 13        |
| 14        | 21.00            | 18.186 5          | 23.25    | 23.70 | 22.80                         | 19.75       | 2.393                                               | 2.415 | 2.448 | 2.503 | 14        |
| 15        | 22.50            | 19.485 6          | 24.75    | 25.20 | 24.30                         | 21.23       | 2.393                                               | 2.415 | 2.449 | 2.504 | 15        |
| 16        | 24.00            | 20.784 6          | 26.25    | 26.70 | 25.80                         | 22.72       | 2.393                                               | 2.416 | 2.449 | 2.505 | 16        |
| 17        | 25.50            | 22.083 6          | 27.75    | 28.20 | 27.30                         | 24.20       | 2.394                                               | 2.416 | 2.450 | 2.506 | 17        |
| 18        | 27.00            | 23.382 7          | 29.25    | 29.70 | 28.80                         | 25.69       | 2.394                                               | 2.417 | 2.451 | 2.507 | 18        |
| 19        | 28.50            | 24.681 7          | 30.75    | 31.20 | 30.30                         | 27.18       | 2.394                                               | 2.417 | 2.451 | 2.508 | 19        |
| 20        | 30.00            | 25.980 8          | 32.25    | 32.70 | 31.80                         | 28.67       | 2.395                                               | 2.417 | 2.452 | 2.509 | 20        |
| 21        | 31.50            | 27.279 8          | 33.75    | 34.20 | 33.30                         | 30.16       | 2.395                                               | 2.418 | 2.453 | 2.510 | 21        |
| 22        | 33.00            | 28.578 8          | 35.25    | 35.70 | 34.80                         | 31.66       | 2.395                                               | 2.418 | 2.453 | 2.511 | 22        |
| 23        | 34.50            | 29.877 9          | 36.75    | 37.20 | 36.30                         | 33.15       | 2.395                                               | 2.419 | 2.454 | 2.512 | 23        |
| 24        | 36.00            | 31.176 9          | 38.25    | 38.70 | 37.80                         | 34.64       | 2.395                                               | 2.419 | 2.454 | 2.513 | 24        |
| 25        | 37.50            | 32.476 0          | 39.75    | 40.20 | 39.30                         | 36.14       | 2.396                                               | 2.419 | 2.455 | 2.514 | 25        |
| 26        | 39.00            | 33.775 0          | 41.25    | 41.70 | 40.80                         | 37.63       | 2.396                                               | 2.420 | 2.455 | 2.515 | 26        |
| 27        | 40.50            | 35.074 0          | 42.75    | 43.20 | 42.30                         | 39.13       | 2.396                                               | 2.420 | 2.456 | 2.516 | 27        |
| 28        | 42.00            | 36.373 1          | 44.25    | 44.70 | 43.80                         | 40.62       | 2.396                                               | 2.420 | 2.456 | 2.517 | 28        |
| 29        | 43.50            | 37.672 1          | 45.75    | 46.20 | 45.30                         | 42.12       | 2.396                                               | 2.421 | 2.457 | 2.517 | 29        |
| 30        | 45.00            | 38.971 1          | 47.25    | 47.70 | 46.80                         | 43.61       | 2.397                                               | 2.421 | 2.457 | 2.518 | 30        |
| 31        | 46.50            | 40.270 2          | 48.75    | 49.20 | 48.30                         | 45.11       | 2.397                                               | 2.421 | 2.458 | 2.519 | 31        |
| 32        | 48.00            | 41.569 2          | 50.25    | 50.70 | 49.80                         | 46.61       | 2.397                                               | 2.422 | 2.458 | 2.520 | 32        |
| 33        | 49.50            | 42.868 3          | 51.75    | 52.20 | 51.30                         | 48.10       | 2.397                                               | 2.422 | 2.459 | 2.520 | 33        |
| 34        | 51.00            | 44.167 3          | 53.25    | 53.70 | 52.80                         | 49.60       | 2.397                                               | 2.422 | 2.459 | 2.521 | 34        |
| 35        | 52.50            | 45.466 3          | 54.75    | 55.20 | 54.30                         | 51.10       | 2.398                                               | 2.422 | 2.460 | 2.522 | 35        |
| 36        | 54.00            | 46.765 4          | 56.25    | 56.70 | 55.80                         | 52.59       | 2.398                                               | 2.423 | 2.460 | 2.522 | 36        |
| 37        | 55.50            | 48.064 4          | 57.75    | 58.20 | 57.30                         | 54.09       | 2.398                                               | 2.423 | 2.461 | 2.523 | 37        |
| 38        | 57.00            | 49.363 4          | 59.25    | 59.70 | 58.80                         | 55.59       | 2.398                                               | 2.423 | 2.461 | 2.524 | 38        |
| 39        | 58.50            | 50.662 5          | 60.75    | 61.20 | 60.30                         | 57.09       | 2.398                                               | 2.424 | 2.461 | 2.524 | 39        |
| 40        | 60.00            | 51.961 5          | 62.25    | 62.70 | 61.80                         | 58.58       | 2.398                                               | 2.424 | 2.462 | 2.525 | 40        |
| 41        | 61.50            | 53.260 6          | 63.75    | 64.20 | 63.30                         | 60.08       | 2.399                                               | 2.424 | 2.462 | 2.526 | 41        |
| 42        | 63.00            | 54.559 6          | 65.25    | 65.70 | 64.80                         | 61.58       | 2.399                                               | 2.424 | 2.463 | 2.526 | 42        |
| 43        | 64.50            | 55.858 6          | 66.75    | 67.20 | 66.30                         | 63.08       | 2.399                                               | 2.425 | 2.463 | 2.527 | 43        |
| 44        | 66.00            | 57.157 7          | 68.25    | 68.70 | 67.80                         | 64.58       | 2.399                                               | 2.425 | 2.463 | 2.528 | 44        |
| 45        | 67.50            | 58.456 7          | 69.75    | 70.20 | 69.30                         | 66.07       | 2.399                                               | 2.425 | 2.464 | 2.528 | 45        |
| 46        | 69.00            | 59.755 8          | 71.25    | 71.70 | 70.80                         | 67.57       | 2.399                                               | 2.425 | 2.464 | 2.529 | 46        |
| 47        | 70.50            | 61.054 8          | 72.75    | 73.20 | 72.30                         | 69.07       | 2.400                                               | 2.425 | 2.464 | 2.529 | 47        |
| 48        | 72.00            | 62.353 8          | 74.25    | 74.70 | 73.80                         | 70.57       | 2.400                                               | 2.426 | 2.465 | 2.530 | 48        |
| 49        | 73.50            | 63.652 9          | 75.75    | 76.20 | 75.30                         | 72.07       | 2.400                                               | 2.426 | 2.465 | 2.531 | 49        |
| 50        | 75.00            | 64.951 9          | 77.25    | 77.70 | 76.80                         | 73.57       | 2.400                                               | 2.426 | 2.466 | 2.531 | 50        |
| 51        | 76.50            | 66.250 9          | 78.75    | 79.20 | 78.30                         | 75.07       | 2.400                                               | 2.426 | 2.466 | 2.532 | 51        |
| 52        | 78.00            | 67.550 0          | 80.25    | 80.70 | 79.80                         | 76.56       | 2.400                                               | 2.427 | 2.466 | 2.532 | 52        |
| 53        | 79.50            | 68.849 0          | 81.75    | 82.20 | 81.30                         | 78.06       | 2.400                                               | 2.427 | 2.467 | 2.533 | 53        |
| 54        | 81.00            | 70.148 1          | 83.25    | 83.70 | 82.80                         | 79.56       | 2.400                                               | 2.427 | 2.467 | 2.533 | 54        |
| 55        | 82.50            | 71.447 1          | 84.75    | 85.20 | 84.30                         | 81.06       | 2.401                                               | 2.427 | 2.467 | 2.534 | 55        |

表 5 (续) 单位为毫米

| 齿数<br><i>z</i> | 分度圆<br>直径<br><i>D</i> | 基圆<br>直径<br><i>D<sub>b</sub></i> | 大径 <i>D<sub>a</sub></i> |        | 渐开线终<br>止圆直径<br><i>D<sub>Fi min</sub></i> | 小径<br><i>D<sub>i</sub></i> | 实际齿槽宽最大值<br><i>E<sub>max</sub> = E<sub>v min</sub> + (T + λ)</i> |       |       |       | 齿数<br><i>z</i> |
|----------------|-----------------------|----------------------------------|-------------------------|--------|-------------------------------------------|----------------------------|------------------------------------------------------------------|-------|-------|-------|----------------|
|                |                       |                                  | 平齿根                     | 圆齿根    |                                           |                            | 4H                                                               | 5H    | 6H    | 7H    |                |
| 56             | 84.00                 | 72.746 1                         | 86.25                   | 86.70  | 85.80                                     | 82.56                      | 2.401                                                            | 2.427 | 2.468 | 2.534 | 56             |
| 57             | 85.50                 | 74.045 2                         | 87.75                   | 88.20  | 87.30                                     | 84.06                      | 2.401                                                            | 2.428 | 2.468 | 2.535 | 57             |
| 58             | 87.00                 | 75.344 2                         | 89.25                   | 89.70  | 88.80                                     | 85.56                      | 2.401                                                            | 2.428 | 2.468 | 2.535 | 58             |
| 59             | 88.50                 | 76.643 2                         | 90.75                   | 91.20  | 90.30                                     | 87.06                      | 2.401                                                            | 2.428 | 2.469 | 2.536 | 59             |
| 60             | 90.00                 | 77.942 3                         | 92.25                   | 92.70  | 91.80                                     | 88.56                      | 2.401                                                            | 2.428 | 2.469 | 2.536 | 60             |
| 61             | 91.50                 | 79.241 3                         | 93.75                   | 94.20  | 93.30                                     | 90.05                      | 2.401                                                            | 2.429 | 2.469 | 2.537 | 61             |
| 62             | 93.00                 | 80.540 4                         | 95.25                   | 95.70  | 94.80                                     | 91.55                      | 2.402                                                            | 2.429 | 2.470 | 2.538 | 62             |
| 63             | 94.50                 | 81.839 4                         | 96.75                   | 97.20  | 96.30                                     | 93.05                      | 2.402                                                            | 2.429 | 2.470 | 2.538 | 63             |
| 64             | 96.00                 | 83.138 4                         | 98.25                   | 98.70  | 97.80                                     | 94.55                      | 2.402                                                            | 2.429 | 2.470 | 2.538 | 64             |
| 65             | 97.50                 | 84.437 5                         | 99.75                   | 100.20 | 99.30                                     | 96.05                      | 2.402                                                            | 2.429 | 2.470 | 2.539 | 65             |
| 66             | 99.00                 | 85.736 5                         | 101.25                  | 101.70 | 100.80                                    | 97.55                      | 2.402                                                            | 2.429 | 2.471 | 2.539 | 66             |
| 67             | 100.50                | 87.035 6                         | 102.75                  | 103.20 | 102.30                                    | 99.05                      | 2.402                                                            | 2.430 | 2.471 | 2.540 | 67             |
| 68             | 102.00                | 88.334 6                         | 104.25                  | 104.70 | 103.80                                    | 100.55                     | 2.402                                                            | 2.430 | 2.471 | 2.540 | 68             |
| 69             | 103.50                | 89.633 6                         | 105.75                  | 106.20 | 105.30                                    | 102.05                     | 2.402                                                            | 2.430 | 2.472 | 2.541 | 69             |
| 70             | 105.00                | 90.932 7                         | 107.25                  | 107.70 | 106.80                                    | 103.55                     | 2.402                                                            | 2.430 | 2.472 | 2.541 | 70             |
| 71             | 106.50                | 92.231 7                         | 108.75                  | 109.20 | 108.30                                    | 105.05                     | 2.403                                                            | 2.430 | 2.472 | 2.542 | 71             |
| 72             | 108.00                | 93.530 7                         | 110.25                  | 110.70 | 109.80                                    | 106.55                     | 2.403                                                            | 2.431 | 2.472 | 2.542 | 72             |
| 73             | 109.50                | 94.829 8                         | 111.75                  | 112.20 | 111.30                                    | 108.05                     | 2.403                                                            | 2.431 | 2.473 | 2.543 | 73             |
| 74             | 111.00                | 96.128 8                         | 113.25                  | 113.70 | 112.80                                    | 109.54                     | 2.403                                                            | 2.431 | 2.473 | 2.543 | 74             |
| 75             | 112.50                | 97.427 9                         | 114.75                  | 115.20 | 114.30                                    | 111.04                     | 2.403                                                            | 2.431 | 2.473 | 2.544 | 75             |
| 76             | 114.00                | 98.726 9                         | 116.25                  | 116.70 | 115.80                                    | 112.54                     | 2.403                                                            | 2.431 | 2.474 | 2.544 | 76             |
| 77             | 115.50                | 100.025 9                        | 117.75                  | 118.20 | 117.30                                    | 114.04                     | 2.403                                                            | 2.432 | 2.474 | 2.544 | 77             |
| 78             | 117.00                | 101.325 0                        | 119.25                  | 119.70 | 118.80                                    | 115.54                     | 2.403                                                            | 2.432 | 2.474 | 2.545 | 78             |
| 79             | 118.50                | 102.624 0                        | 120.75                  | 121.20 | 120.30                                    | 117.04                     | 2.403                                                            | 2.432 | 2.474 | 2.545 | 79             |
| 80             | 120.00                | 103.923 0                        | 122.25                  | 122.70 | 121.80                                    | 118.54                     | 2.404                                                            | 2.432 | 2.475 | 2.546 | 80             |
| 81             | 121.50                | 105.222 1                        | 123.75                  | 124.20 | 123.30                                    | 120.04                     | 2.404                                                            | 2.432 | 2.475 | 2.546 | 81             |
| 82             | 123.00                | 106.521 1                        | 125.25                  | 125.70 | 124.80                                    | 121.54                     | 2.404                                                            | 2.432 | 2.475 | 2.547 | 82             |
| 83             | 124.50                | 107.820 2                        | 126.75                  | 127.20 | 126.30                                    | 123.04                     | 2.404                                                            | 2.433 | 2.475 | 2.547 | 83             |
| 84             | 126.00                | 109.119 2                        | 128.25                  | 128.70 | 127.80                                    | 124.54                     | 2.404                                                            | 2.433 | 2.476 | 2.547 | 84             |
| 85             | 127.50                | 110.418 2                        | 129.75                  | 130.20 | 129.30                                    | 126.04                     | 2.404                                                            | 2.433 | 2.476 | 2.548 | 85             |
| 86             | 129.00                | 111.717 3                        | 131.25                  | 131.70 | 130.80                                    | 127.54                     | 2.404                                                            | 2.433 | 2.476 | 2.548 | 86             |
| 87             | 130.50                | 113.016 3                        | 132.75                  | 133.20 | 132.30                                    | 129.04                     | 2.404                                                            | 2.433 | 2.477 | 2.549 | 87             |
| 88             | 132.00                | 114.315 4                        | 134.25                  | 134.70 | 133.80                                    | 130.54                     | 2.404                                                            | 2.433 | 2.477 | 2.549 | 88             |
| 89             | 133.50                | 115.614 4                        | 135.75                  | 136.20 | 135.30                                    | 132.04                     | 2.405                                                            | 2.434 | 2.477 | 2.550 | 89             |
| 90             | 135.00                | 116.913 4                        | 137.25                  | 137.70 | 136.80                                    | 133.54                     | 2.405                                                            | 2.434 | 2.477 | 2.550 | 90             |
| 91             | 136.50                | 118.212 5                        | 138.75                  | 139.20 | 138.30                                    | 135.04                     | 2.405                                                            | 2.434 | 2.478 | 2.550 | 91             |
| 92             | 138.00                | 119.511 5                        | 140.25                  | 140.70 | 139.80                                    | 136.54                     | 2.405                                                            | 2.434 | 2.478 | 2.551 | 92             |
| 93             | 139.50                | 120.810 5                        | 141.75                  | 142.20 | 141.30                                    | 138.04                     | 2.405                                                            | 2.434 | 2.478 | 2.551 | 93             |
| 94             | 141.00                | 122.109 6                        | 143.25                  | 143.70 | 142.80                                    | 139.53                     | 2.405                                                            | 2.434 | 2.478 | 2.552 | 94             |
| 95             | 142.50                | 123.408 6                        | 144.75                  | 145.20 | 144.30                                    | 141.03                     | 2.405                                                            | 2.434 | 2.479 | 2.552 | 95             |
| 96             | 144.00                | 124.707 7                        | 146.25                  | 146.70 | 145.80                                    | 142.53                     | 2.405                                                            | 2.435 | 2.479 | 2.552 | 96             |
| 97             | 145.50                | 126.006 7                        | 147.75                  | 148.20 | 147.30                                    | 144.03                     | 2.405                                                            | 2.435 | 2.479 | 2.553 | 97             |
| 98             | 147.00                | 127.305 7                        | 149.25                  | 149.70 | 148.80                                    | 145.53                     | 2.405                                                            | 2.435 | 2.479 | 2.553 | 98             |
| 99             | 148.50                | 128.604 8                        | 150.75                  | 151.20 | 150.30                                    | 147.03                     | 2.406                                                            | 2.435 | 2.479 | 2.553 | 99             |
| 100            | 150.00                | 129.903 8                        | 152.25                  | 152.70 | 151.80                                    | 148.53                     | 2.406                                                            | 2.435 | 2.480 | 2.554 | 100            |

表 6 30°内花键  
模数  $m=1.75\text{ mm}$  作用齿槽宽最小值  $E_{\text{min}}=2.749\text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_e$ |       | 渐开线终<br>止圆直径<br>$D_{f, \text{min}}$ | 小径<br>$D_i$ | 实际齿槽宽最大值<br>$E_{\text{max}}=E_{\text{min}}+(T+\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|-------|-------------------------------------|-------------|---------------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根   |                                     |             | 4H                                                      | 5H    | 6H    | 7H    |           |
| 10        | 17.50            | 15.155 4          | 20.13    | 20.65 | 19.60                               | 16.17       | 2.786                                                   | 2.808 | 2.842 | 2.898 | 10        |
| 11        | 19.25            | 16.671 0          | 21.88    | 22.40 | 21.35                               | 17.88       | 2.786                                                   | 2.809 | 2.843 | 2.899 | 11        |
| 12        | 21.00            | 18.186 5          | 23.63    | 24.15 | 23.10                               | 19.60       | 2.787                                                   | 2.810 | 2.844 | 2.901 | 12        |
| 13        | 22.75            | 19.702 1          | 25.38    | 25.90 | 24.85                               | 21.32       | 2.787                                                   | 2.810 | 2.845 | 2.902 | 13        |
| 14        | 24.50            | 21.217 6          | 27.13    | 27.65 | 26.60                               | 23.04       | 2.788                                                   | 2.811 | 2.845 | 2.903 | 14        |
| 15        | 26.25            | 22.733 2          | 28.88    | 29.40 | 28.35                               | 24.77       | 2.788                                                   | 2.811 | 2.846 | 2.905 | 15        |
| 16        | 28.00            | 24.248 7          | 30.63    | 31.15 | 30.10                               | 26.50       | 2.788                                                   | 2.812 | 2.847 | 2.906 | 16        |
| 17        | 29.75            | 25.764 3          | 32.38    | 32.90 | 31.85                               | 28.24       | 2.788                                                   | 2.812 | 2.848 | 2.907 | 17        |
| 18        | 31.50            | 27.279 8          | 34.13    | 34.65 | 33.60                               | 29.97       | 2.789                                                   | 2.813 | 2.848 | 2.908 | 18        |
| 19        | 33.25            | 28.795 3          | 35.88    | 36.40 | 35.35                               | 31.71       | 2.789                                                   | 2.813 | 2.849 | 2.909 | 19        |
| 20        | 35.00            | 30.310 9          | 37.63    | 38.15 | 37.10                               | 33.45       | 2.789                                                   | 2.813 | 2.850 | 2.910 | 20        |
| 21        | 36.75            | 31.826 4          | 39.38    | 39.90 | 38.85                               | 35.19       | 2.790                                                   | 2.814 | 2.850 | 2.911 | 21        |
| 22        | 38.50            | 33.342 0          | 41.13    | 41.65 | 40.60                               | 36.93       | 2.790                                                   | 2.814 | 2.851 | 2.912 | 22        |
| 23        | 40.25            | 34.857 5          | 42.88    | 43.40 | 42.35                               | 38.67       | 2.790                                                   | 2.815 | 2.852 | 2.913 | 23        |
| 24        | 42.00            | 36.373 1          | 44.63    | 45.15 | 44.10                               | 40.42       | 2.790                                                   | 2.815 | 2.852 | 2.914 | 24        |
| 25        | 43.75            | 37.888 6          | 46.38    | 46.90 | 45.85                               | 42.16       | 2.790                                                   | 2.815 | 2.853 | 2.915 | 25        |
| 26        | 45.50            | 39.404 2          | 48.13    | 48.65 | 47.60                               | 43.90       | 2.791                                                   | 2.816 | 2.853 | 2.916 | 26        |
| 27        | 47.25            | 40.919 7          | 49.88    | 50.40 | 49.35                               | 45.65       | 2.791                                                   | 2.816 | 2.854 | 2.917 | 27        |
| 28        | 49.00            | 42.435 2          | 51.63    | 52.15 | 51.10                               | 47.39       | 2.791                                                   | 2.816 | 2.855 | 2.918 | 28        |
| 29        | 50.75            | 43.950 8          | 53.38    | 53.90 | 52.85                               | 49.14       | 2.791                                                   | 2.817 | 2.855 | 2.919 | 29        |
| 30        | 52.50            | 45.466 3          | 55.13    | 55.65 | 54.60                               | 50.88       | 2.792                                                   | 2.817 | 2.856 | 2.920 | 30        |
| 31        | 54.25            | 46.981 9          | 56.88    | 57.40 | 56.35                               | 52.63       | 2.792                                                   | 2.817 | 2.856 | 2.920 | 31        |
| 32        | 56.00            | 48.497 4          | 58.63    | 59.15 | 58.10                               | 54.37       | 2.792                                                   | 2.818 | 2.857 | 2.921 | 32        |
| 33        | 57.75            | 50.013 0          | 60.38    | 60.90 | 59.85                               | 56.12       | 2.792                                                   | 2.818 | 2.857 | 2.922 | 33        |
| 34        | 59.50            | 51.528 5          | 62.13    | 62.65 | 61.60                               | 57.87       | 2.792                                                   | 2.818 | 2.858 | 2.923 | 34        |
| 35        | 61.25            | 53.044 1          | 63.88    | 64.40 | 63.35                               | 59.61       | 2.793                                                   | 2.819 | 2.858 | 2.923 | 35        |
| 36        | 63.00            | 54.559 6          | 65.63    | 66.15 | 65.10                               | 61.36       | 2.793                                                   | 2.819 | 2.858 | 2.924 | 36        |
| 37        | 64.75            | 56.075 1          | 67.38    | 67.90 | 66.85                               | 63.11       | 2.793                                                   | 2.819 | 2.859 | 2.925 | 37        |
| 38        | 66.50            | 57.590 7          | 69.13    | 69.65 | 68.60                               | 64.85       | 2.793                                                   | 2.820 | 2.859 | 2.926 | 38        |
| 39        | 68.25            | 59.106 2          | 70.88    | 71.40 | 70.35                               | 66.60       | 2.793                                                   | 2.820 | 2.860 | 2.926 | 39        |
| 40        | 70.00            | 60.621 8          | 72.63    | 73.15 | 72.10                               | 68.35       | 2.793                                                   | 2.820 | 2.860 | 2.927 | 40        |
| 41        | 71.75            | 62.137 3          | 74.38    | 74.90 | 73.85                               | 70.09       | 2.794                                                   | 2.820 | 2.861 | 2.928 | 41        |
| 42        | 73.50            | 63.652 9          | 76.13    | 76.65 | 75.60                               | 71.84       | 2.794                                                   | 2.821 | 2.861 | 2.928 | 42        |
| 43        | 75.25            | 65.168 4          | 77.88    | 78.40 | 77.35                               | 73.59       | 2.794                                                   | 2.821 | 2.861 | 2.929 | 43        |
| 44        | 77.00            | 66.684 0          | 79.63    | 80.15 | 79.10                               | 75.34       | 2.794                                                   | 2.821 | 2.862 | 2.930 | 44        |
| 45        | 78.75            | 68.199 5          | 81.38    | 81.90 | 80.85                               | 77.09       | 2.794                                                   | 2.821 | 2.862 | 2.930 | 45        |
| 46        | 80.50            | 69.715 0          | 83.13    | 83.65 | 82.60                               | 78.83       | 2.794                                                   | 2.822 | 2.863 | 2.931 | 46        |
| 47        | 82.25            | 71.230 6          | 84.88    | 85.40 | 84.35                               | 80.58       | 2.795                                                   | 2.822 | 2.863 | 2.932 | 47        |
| 48        | 84.00            | 72.746 1          | 86.63    | 87.15 | 86.10                               | 82.33       | 2.795                                                   | 2.822 | 2.863 | 2.932 | 48        |
| 49        | 85.75            | 74.261 7          | 88.38    | 88.90 | 87.85                               | 84.08       | 2.795                                                   | 2.822 | 2.864 | 2.933 | 49        |
| 50        | 87.50            | 75.777 2          | 90.13    | 90.65 | 89.60                               | 85.83       | 2.795                                                   | 2.823 | 2.864 | 2.933 | 50        |
| 51        | 89.25            | 77.292 8          | 91.88    | 92.40 | 91.35                               | 87.58       | 2.795                                                   | 2.823 | 2.865 | 2.934 | 51        |
| 52        | 91.00            | 78.808 3          | 93.63    | 94.15 | 93.10                               | 89.32       | 2.795                                                   | 2.823 | 2.865 | 2.935 | 52        |
| 53        | 92.75            | 80.323 9          | 95.38    | 95.90 | 94.85                               | 91.07       | 2.795                                                   | 2.823 | 2.865 | 2.935 | 53        |
| 54        | 94.50            | 81.839 4          | 97.13    | 97.65 | 96.60                               | 92.82       | 2.796                                                   | 2.824 | 2.866 | 2.936 | 54        |
| 55        | 96.25            | 83.354 9          | 98.88    | 99.40 | 98.35                               | 94.57       | 2.796                                                   | 2.824 | 2.866 | 2.936 | 55        |

表 6 (续)

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_a$ |        | 渐开线终<br>止圆直径<br>$D_{Fi\ min}$ | 小径<br>$D_{ii}$ | 实际齿槽宽最大值<br>$E_{\max} = E_{\min} + (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|--------|-------------------------------|----------------|---------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根    |                               |                | 4H                                                | 5H    | 6H    | 7H    |           |
| 56        | 98.00            | 84.870 5          | 100.63   | 101.15 | 100.10                        | 96.32          | 2.796                                             | 2.824 | 2.866 | 2.937 | 56        |
| 57        | 99.75            | 86.386 0          | 102.38   | 102.90 | 101.85                        | 98.07          | 2.796                                             | 2.824 | 2.867 | 2.938 | 57        |
| 58        | 101.50           | 87.901 6          | 104.13   | 104.65 | 103.60                        | 99.82          | 2.796                                             | 2.825 | 2.867 | 2.938 | 58        |
| 59        | 103.25           | 89.417 1          | 105.88   | 106.40 | 105.35                        | 101.57         | 2.796                                             | 2.825 | 2.867 | 2.939 | 59        |
| 60        | 105.00           | 90.932 7          | 107.63   | 108.15 | 107.10                        | 103.31         | 2.796                                             | 2.825 | 2.868 | 2.939 | 60        |
| 61        | 106.75           | 92.448 2          | 109.38   | 109.90 | 108.85                        | 105.06         | 2.797                                             | 2.825 | 2.868 | 2.940 | 61        |
| 62        | 108.50           | 93.963 8          | 111.13   | 111.65 | 110.60                        | 106.81         | 2.797                                             | 2.825 | 2.868 | 2.940 | 62        |
| 63        | 110.25           | 95.479 3          | 112.88   | 113.40 | 112.35                        | 108.56         | 2.797                                             | 2.826 | 2.869 | 2.941 | 63        |
| 64        | 112.00           | 96.994 8          | 114.63   | 115.15 | 114.10                        | 110.31         | 2.797                                             | 2.826 | 2.869 | 2.941 | 64        |
| 65        | 113.75           | 98.510 4          | 116.38   | 116.90 | 115.85                        | 112.06         | 2.797                                             | 2.826 | 2.869 | 2.942 | 65        |
| 66        | 115.50           | 100.025 9         | 118.13   | 118.65 | 117.60                        | 113.81         | 2.797                                             | 2.826 | 2.870 | 2.942 | 66        |
| 67        | 117.25           | 101.541 5         | 119.88   | 120.40 | 119.35                        | 115.56         | 2.797                                             | 2.826 | 2.870 | 2.943 | 67        |
| 68        | 119.00           | 103.057 0         | 121.63   | 122.15 | 121.10                        | 117.31         | 2.797                                             | 2.827 | 2.870 | 2.943 | 68        |
| 69        | 120.75           | 104.572 6         | 123.38   | 123.90 | 122.85                        | 119.06         | 2.798                                             | 2.827 | 2.871 | 2.944 | 69        |
| 70        | 122.50           | 106.088 1         | 125.13   | 125.65 | 124.60                        | 120.80         | 2.798                                             | 2.827 | 2.871 | 2.944 | 70        |
| 71        | 124.25           | 107.603 7         | 126.88   | 127.40 | 126.35                        | 122.55         | 2.798                                             | 2.827 | 2.871 | 2.945 | 71        |
| 72        | 126.00           | 109.119 2         | 128.63   | 129.15 | 128.10                        | 124.30         | 2.798                                             | 2.827 | 2.872 | 2.945 | 72        |
| 73        | 127.75           | 110.634 7         | 130.38   | 130.90 | 129.85                        | 126.05         | 2.798                                             | 2.828 | 2.872 | 2.946 | 73        |
| 74        | 129.50           | 112.150 3         | 132.13   | 132.65 | 131.60                        | 127.80         | 2.798                                             | 2.828 | 2.872 | 2.946 | 74        |
| 75        | 131.25           | 113.665 8         | 133.88   | 134.40 | 133.35                        | 129.55         | 2.798                                             | 2.828 | 2.873 | 2.947 | 75        |
| 76        | 133.00           | 115.181 4         | 135.63   | 136.15 | 135.10                        | 131.30         | 2.798                                             | 2.828 | 2.873 | 2.947 | 76        |
| 77        | 134.75           | 116.696 9         | 137.38   | 137.90 | 136.85                        | 133.05         | 2.799                                             | 2.828 | 2.873 | 2.948 | 77        |
| 78        | 136.50           | 118.212 5         | 139.13   | 139.65 | 138.60                        | 134.80         | 2.799                                             | 2.829 | 2.873 | 2.948 | 78        |
| 79        | 138.25           | 119.728 0         | 140.88   | 141.40 | 140.35                        | 136.55         | 2.799                                             | 2.829 | 2.874 | 2.949 | 79        |
| 80        | 140.00           | 121.243 6         | 142.63   | 143.15 | 142.10                        | 138.30         | 2.799                                             | 2.829 | 2.874 | 2.949 | 80        |
| 81        | 141.75           | 122.759 1         | 144.38   | 144.90 | 143.85                        | 140.05         | 2.799                                             | 2.829 | 2.874 | 2.950 | 81        |
| 82        | 143.50           | 124.274 6         | 146.13   | 146.65 | 145.60                        | 141.80         | 2.799                                             | 2.829 | 2.875 | 2.950 | 82        |
| 83        | 145.25           | 125.790 2         | 147.88   | 148.40 | 147.35                        | 143.55         | 2.799                                             | 2.830 | 2.875 | 2.950 | 83        |
| 84        | 147.00           | 127.305 7         | 149.63   | 150.15 | 149.10                        | 145.30         | 2.799                                             | 2.830 | 2.875 | 2.951 | 84        |
| 85        | 148.75           | 128.821 3         | 151.38   | 151.90 | 150.85                        | 147.05         | 2.800                                             | 2.830 | 2.875 | 2.951 | 85        |
| 86        | 150.50           | 130.336 8         | 153.13   | 153.65 | 152.60                        | 148.79         | 2.800                                             | 2.830 | 2.876 | 2.952 | 86        |
| 87        | 152.25           | 131.852 4         | 154.88   | 155.40 | 154.35                        | 150.54         | 2.800                                             | 2.830 | 2.876 | 2.952 | 87        |
| 88        | 154.00           | 133.367 9         | 156.63   | 157.15 | 156.10                        | 152.29         | 2.800                                             | 2.830 | 2.876 | 2.953 | 88        |
| 89        | 155.75           | 134.883 5         | 158.38   | 158.90 | 157.85                        | 154.04         | 2.800                                             | 2.831 | 2.877 | 2.953 | 89        |
| 90        | 157.50           | 136.399 0         | 160.13   | 160.65 | 159.60                        | 155.79         | 2.800                                             | 2.831 | 2.877 | 2.954 | 90        |
| 91        | 159.25           | 137.914 5         | 161.88   | 162.40 | 161.35                        | 157.54         | 2.800                                             | 2.831 | 2.877 | 2.954 | 91        |
| 92        | 161.00           | 139.430 1         | 163.63   | 164.15 | 163.10                        | 159.29         | 2.800                                             | 2.831 | 2.877 | 2.954 | 92        |
| 93        | 162.75           | 140.945 6         | 165.38   | 165.90 | 164.85                        | 161.04         | 2.800                                             | 2.831 | 2.878 | 2.955 | 93        |
| 94        | 164.50           | 142.461 2         | 167.13   | 167.65 | 166.60                        | 162.79         | 2.800                                             | 2.831 | 2.878 | 2.955 | 94        |
| 95        | 166.25           | 143.976 7         | 168.88   | 169.40 | 168.35                        | 164.54         | 2.801                                             | 2.832 | 2.878 | 2.956 | 95        |
| 96        | 168.00           | 145.492 3         | 170.63   | 171.15 | 170.10                        | 166.29         | 2.801                                             | 2.832 | 2.878 | 2.956 | 96        |
| 97        | 169.75           | 147.007 8         | 172.38   | 172.90 | 171.85                        | 168.04         | 2.801                                             | 2.832 | 2.879 | 2.956 | 97        |
| 98        | 171.50           | 148.523 4         | 174.13   | 174.65 | 173.60                        | 169.79         | 2.801                                             | 2.832 | 2.879 | 2.957 | 98        |
| 99        | 173.25           | 150.038 9         | 175.88   | 176.40 | 175.35                        | 171.54         | 2.801                                             | 2.832 | 2.879 | 2.957 | 99        |
| 100       | 175.00           | 151.554 4         | 177.63   | 178.15 | 177.10                        | 173.29         | 2.801                                             | 2.832 | 2.879 | 2.958 | 100       |

表 7 30°内花键  
模数  $m=2\text{ mm}$  作用齿槽宽最小值  $E_{\min}=3.142\text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_e$ |        | 渐开线终<br>止圆直径<br>$D_{Fi\text{ mm}}$ | 小径<br>$D_{ii}$ | 实际齿槽宽最大值<br>$E_{\max}=E_{v\text{ min}}+(T+\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|--------|------------------------------------|----------------|-----------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根    |                                    |                | 4H                                                  | 5H    | 6H    | 7H    |           |
| 10        | 20.00            | 17.320 5          | 23.00    | 23.60  | 22.40                              | 18.48          | 3.180                                               | 3.204 | 3.239 | 3.297 | 10        |
| 11        | 22.00            | 19.052 6          | 25.00    | 25.60  | 24.40                              | 20.44          | 3.181                                               | 3.204 | 3.240 | 3.299 | 11        |
| 12        | 24.00            | 20.784 6          | 27.00    | 27.60  | 26.40                              | 22.40          | 3.181                                               | 3.205 | 3.241 | 3.300 | 12        |
| 13        | 26.00            | 22.516 7          | 29.00    | 29.60  | 28.40                              | 24.36          | 3.182                                               | 3.206 | 3.242 | 3.302 | 13        |
| 14        | 28.00            | 24.248 7          | 31.00    | 31.60  | 30.40                              | 26.34          | 3.182                                               | 3.206 | 3.243 | 3.303 | 14        |
| 15        | 30.00            | 25.980 8          | 33.00    | 33.60  | 32.40                              | 28.31          | 3.182                                               | 3.207 | 3.243 | 3.305 | 15        |
| 16        | 32.00            | 27.712 8          | 35.00    | 35.60  | 34.40                              | 30.29          | 3.183                                               | 3.207 | 3.244 | 3.306 | 16        |
| 17        | 34.00            | 29.444 9          | 37.00    | 37.60  | 36.40                              | 32.27          | 3.183                                               | 3.208 | 3.245 | 3.307 | 17        |
| 18        | 36.00            | 31.176 9          | 39.00    | 39.60  | 38.40                              | 34.26          | 3.183                                               | 3.208 | 3.246 | 3.308 | 18        |
| 19        | 38.00            | 32.909 0          | 41.00    | 41.60  | 40.40                              | 36.24          | 3.184                                               | 3.209 | 3.247 | 3.309 | 19        |
| 20        | 40.00            | 34.641 0          | 43.00    | 43.60  | 42.40                              | 38.23          | 3.184                                               | 3.209 | 3.247 | 3.311 | 20        |
| 21        | 42.00            | 36.373 1          | 45.00    | 45.60  | 44.40                              | 40.22          | 3.184                                               | 3.210 | 3.248 | 3.312 | 21        |
| 22        | 44.00            | 38.105 1          | 47.00    | 47.60  | 46.40                              | 42.21          | 3.184                                               | 3.210 | 3.249 | 3.313 | 22        |
| 23        | 46.00            | 39.837 2          | 49.00    | 49.60  | 48.40                              | 44.20          | 3.185                                               | 3.210 | 3.249 | 3.314 | 23        |
| 24        | 48.00            | 41.569 2          | 51.00    | 51.60  | 50.40                              | 46.19          | 3.185                                               | 3.211 | 3.250 | 3.315 | 24        |
| 25        | 50.00            | 43.301 3          | 53.00    | 53.60  | 52.40                              | 48.18          | 3.185                                               | 3.211 | 3.250 | 3.316 | 25        |
| 26        | 52.00            | 45.033 3          | 55.00    | 55.60  | 54.40                              | 50.17          | 3.185                                               | 3.212 | 3.251 | 3.317 | 26        |
| 27        | 54.00            | 46.765 4          | 57.00    | 57.60  | 56.40                              | 52.17          | 3.186                                               | 3.212 | 3.252 | 3.318 | 27        |
| 28        | 56.00            | 48.497 4          | 59.00    | 59.60  | 58.40                              | 54.16          | 3.186                                               | 3.212 | 3.252 | 3.319 | 28        |
| 29        | 58.00            | 50.229 5          | 61.00    | 61.60  | 60.40                              | 56.16          | 3.186                                               | 3.213 | 3.253 | 3.319 | 29        |
| 30        | 60.00            | 51.961 5          | 63.00    | 63.60  | 62.40                              | 58.15          | 3.186                                               | 3.213 | 3.253 | 3.320 | 30        |
| 31        | 62.00            | 53.693 6          | 65.00    | 65.60  | 64.40                              | 60.14          | 3.186                                               | 3.213 | 3.254 | 3.321 | 31        |
| 32        | 64.00            | 55.425 6          | 67.00    | 67.60  | 66.40                              | 62.14          | 3.187                                               | 3.214 | 3.254 | 3.322 | 32        |
| 33        | 66.00            | 57.157 7          | 69.00    | 69.60  | 68.40                              | 64.14          | 3.187                                               | 3.214 | 3.255 | 3.323 | 33        |
| 34        | 68.00            | 58.889 7          | 71.00    | 71.60  | 70.40                              | 66.13          | 3.187                                               | 3.214 | 3.255 | 3.324 | 34        |
| 35        | 70.00            | 60.621 8          | 73.00    | 73.60  | 72.40                              | 68.13          | 3.187                                               | 3.215 | 3.256 | 3.324 | 35        |
| 36        | 72.00            | 62.353 8          | 75.00    | 75.60  | 74.40                              | 70.12          | 3.187                                               | 3.215 | 3.256 | 3.325 | 36        |
| 37        | 74.00            | 64.085 9          | 77.00    | 77.60  | 76.40                              | 72.12          | 3.188                                               | 3.215 | 3.257 | 3.326 | 37        |
| 38        | 76.00            | 65.817 9          | 79.00    | 79.60  | 78.40                              | 74.12          | 3.188                                               | 3.216 | 3.257 | 3.327 | 38        |
| 39        | 78.00            | 67.550 0          | 81.00    | 81.60  | 80.40                              | 76.11          | 3.188                                               | 3.216 | 3.258 | 3.327 | 39        |
| 40        | 80.00            | 69.282 0          | 83.00    | 83.60  | 82.40                              | 78.11          | 3.188                                               | 3.216 | 3.258 | 3.328 | 40        |
| 41        | 82.00            | 71.014 1          | 85.00    | 85.60  | 84.40                              | 80.11          | 3.188                                               | 3.217 | 3.259 | 3.329 | 41        |
| 42        | 84.00            | 72.746 1          | 87.00    | 87.60  | 86.40                              | 82.11          | 3.189                                               | 3.217 | 3.259 | 3.330 | 42        |
| 43        | 86.00            | 74.478 2          | 89.00    | 89.60  | 88.40                              | 84.10          | 3.189                                               | 3.217 | 3.260 | 3.330 | 43        |
| 44        | 88.00            | 76.210 2          | 91.00    | 91.60  | 90.40                              | 86.10          | 3.189                                               | 3.217 | 3.260 | 3.331 | 44        |
| 45        | 90.00            | 77.942 3          | 93.00    | 93.60  | 92.40                              | 88.10          | 3.189                                               | 3.218 | 3.260 | 3.332 | 45        |
| 46        | 92.00            | 79.674 3          | 95.00    | 95.60  | 94.40                              | 90.10          | 3.189                                               | 3.218 | 3.261 | 3.332 | 46        |
| 47        | 94.00            | 81.406 4          | 97.00    | 97.60  | 96.40                              | 92.09          | 3.189                                               | 3.218 | 3.261 | 3.333 | 47        |
| 48        | 96.00            | 83.138 4          | 99.00    | 99.60  | 98.40                              | 94.09          | 3.190                                               | 3.218 | 3.262 | 3.334 | 48        |
| 49        | 98.00            | 84.870 5          | 101.00   | 101.60 | 100.40                             | 96.09          | 3.190                                               | 3.219 | 3.262 | 3.334 | 49        |
| 50        | 100.00           | 86.602 5          | 103.00   | 103.60 | 102.40                             | 98.09          | 3.190                                               | 3.219 | 3.262 | 3.335 | 50        |
| 51        | 102.00           | 88.334 6          | 105.00   | 105.60 | 104.40                             | 100.09         | 3.190                                               | 3.219 | 3.263 | 3.336 | 51        |
| 52        | 104.00           | 90.066 6          | 107.00   | 107.60 | 106.40                             | 102.09         | 3.190                                               | 3.219 | 3.263 | 3.336 | 52        |
| 53        | 106.00           | 91.798 7          | 109.00   | 109.60 | 108.40                             | 104.08         | 3.190                                               | 3.220 | 3.264 | 3.337 | 53        |
| 54        | 108.00           | 93.530 7          | 111.00   | 111.60 | 110.40                             | 106.08         | 3.191                                               | 3.220 | 3.264 | 3.337 | 54        |
| 55        | 110.00           | 95.262 8          | 113.00   | 113.60 | 112.40                             | 108.08         | 3.191                                               | 3.220 | 3.264 | 3.338 | 55        |

表 7 (续)

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_a$ |        | 渐开线终<br>止圆直径<br>$D_{Fi\ min}$ | 小径<br>$D_i$ | 实际齿槽宽最大值<br>$E_{\max} = E_{\min} + (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|--------|-------------------------------|-------------|---------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根    |                               |             | 4H                                                | 5H    | 6H    | 7H    |           |
| 56        | 112.00           | 96.994 8          | 115.00   | 115.60 | 114.40                        | 110.08      | 3.191                                             | 3.220 | 3.265 | 3.339 | 56        |
| 57        | 114.00           | 98.726 9          | 117.00   | 117.60 | 116.40                        | 112.08      | 3.191                                             | 3.221 | 3.265 | 3.339 | 57        |
| 58        | 116.00           | 100.458 9         | 119.00   | 119.60 | 118.40                        | 114.08      | 3.191                                             | 3.221 | 3.265 | 3.340 | 58        |
| 59        | 118.00           | 102.191 0         | 121.00   | 121.60 | 120.40                        | 116.07      | 3.191                                             | 3.221 | 3.266 | 3.340 | 59        |
| 60        | 120.00           | 103.923 0         | 123.00   | 123.60 | 122.40                        | 118.07      | 3.191                                             | 3.221 | 3.266 | 3.341 | 60        |
| 61        | 122.00           | 105.655 1         | 125.00   | 125.60 | 124.40                        | 120.07      | 3.192                                             | 3.222 | 3.267 | 3.342 | 61        |
| 62        | 124.00           | 107.387 1         | 127.00   | 127.60 | 126.40                        | 122.07      | 3.192                                             | 3.222 | 3.267 | 3.342 | 62        |
| 63        | 126.00           | 109.119 2         | 129.00   | 129.60 | 128.40                        | 124.07      | 3.192                                             | 3.222 | 3.267 | 3.343 | 63        |
| 64        | 128.00           | 110.851 3         | 131.00   | 131.60 | 130.40                        | 126.07      | 3.192                                             | 3.222 | 3.268 | 3.343 | 64        |
| 65        | 130.00           | 112.583 3         | 133.00   | 133.60 | 132.40                        | 128.07      | 3.192                                             | 3.222 | 3.268 | 3.344 | 65        |
| 66        | 132.00           | 114.315 4         | 135.00   | 135.60 | 134.40                        | 130.07      | 3.192                                             | 3.223 | 3.268 | 3.344 | 66        |
| 67        | 134.00           | 116.047 4         | 137.00   | 137.60 | 136.40                        | 132.07      | 3.192                                             | 3.223 | 3.269 | 3.345 | 67        |
| 68        | 136.00           | 117.779 5         | 139.00   | 139.60 | 138.40                        | 134.06      | 3.193                                             | 3.223 | 3.269 | 3.345 | 68        |
| 69        | 138.00           | 119.511 5         | 141.00   | 141.60 | 140.40                        | 136.06      | 3.193                                             | 3.223 | 3.269 | 3.346 | 69        |
| 70        | 140.00           | 121.243 6         | 143.00   | 143.60 | 142.40                        | 138.06      | 3.193                                             | 3.224 | 3.270 | 3.346 | 70        |
| 71        | 142.00           | 122.975 6         | 145.00   | 145.60 | 144.40                        | 140.06      | 3.193                                             | 3.224 | 3.270 | 3.347 | 71        |
| 72        | 144.00           | 124.707 7         | 147.00   | 147.60 | 146.40                        | 142.06      | 3.193                                             | 3.224 | 3.270 | 3.347 | 72        |
| 73        | 146.00           | 126.439 7         | 149.00   | 149.60 | 148.40                        | 144.06      | 3.193                                             | 3.224 | 3.271 | 3.348 | 73        |
| 74        | 148.00           | 128.171 8         | 151.00   | 151.60 | 150.40                        | 146.06      | 3.193                                             | 3.224 | 3.271 | 3.348 | 74        |
| 75        | 150.00           | 129.903 8         | 153.00   | 153.60 | 152.40                        | 148.06      | 3.193                                             | 3.225 | 3.271 | 3.349 | 75        |
| 76        | 152.00           | 131.635 9         | 155.00   | 155.60 | 154.40                        | 150.06      | 3.194                                             | 3.225 | 3.272 | 3.349 | 76        |
| 77        | 154.00           | 133.367 9         | 157.00   | 157.60 | 156.40                        | 152.06      | 3.194                                             | 3.225 | 3.272 | 3.350 | 77        |
| 78        | 156.00           | 135.100 0         | 159.00   | 159.60 | 158.40                        | 154.06      | 3.194                                             | 3.225 | 3.272 | 3.350 | 78        |
| 79        | 158.00           | 136.832 0         | 161.00   | 161.60 | 160.40                        | 156.06      | 3.194                                             | 3.225 | 3.272 | 3.351 | 79        |
| 80        | 160.00           | 138.564 1         | 163.00   | 163.60 | 162.40                        | 158.05      | 3.194                                             | 3.226 | 3.273 | 3.351 | 80        |
| 81        | 162.00           | 140.296 1         | 165.00   | 165.60 | 164.40                        | 160.05      | 3.194                                             | 3.226 | 3.273 | 3.352 | 81        |
| 82        | 164.00           | 142.028 2         | 167.00   | 167.60 | 166.40                        | 162.05      | 3.194                                             | 3.226 | 3.273 | 3.352 | 82        |
| 83        | 166.00           | 143.760 2         | 169.00   | 169.60 | 168.40                        | 164.05      | 3.194                                             | 3.226 | 3.274 | 3.353 | 83        |
| 84        | 168.00           | 145.492 3         | 171.00   | 171.60 | 170.40                        | 166.05      | 3.195                                             | 3.226 | 3.274 | 3.353 | 84        |
| 85        | 170.00           | 147.224 3         | 173.00   | 173.60 | 172.40                        | 168.05      | 3.195                                             | 3.226 | 3.274 | 3.354 | 85        |
| 86        | 172.00           | 148.956 4         | 175.00   | 175.60 | 174.40                        | 170.05      | 3.195                                             | 3.227 | 3.275 | 3.354 | 86        |
| 87        | 174.00           | 150.688 4         | 177.00   | 177.60 | 176.40                        | 172.05      | 3.195                                             | 3.227 | 3.275 | 3.355 | 87        |
| 88        | 176.00           | 152.420 5         | 179.00   | 179.60 | 178.40                        | 174.05      | 3.195                                             | 3.227 | 3.275 | 3.355 | 88        |
| 89        | 178.00           | 154.152 5         | 181.00   | 181.60 | 180.40                        | 176.05      | 3.195                                             | 3.227 | 3.275 | 3.356 | 89        |
| 90        | 180.00           | 155.884 6         | 183.00   | 183.60 | 182.40                        | 178.05      | 3.195                                             | 3.227 | 3.276 | 3.356 | 90        |
| 91        | 182.00           | 157.616 6         | 185.00   | 185.60 | 184.40                        | 180.05      | 3.195                                             | 3.228 | 3.276 | 3.357 | 91        |
| 92        | 184.00           | 159.348 7         | 187.00   | 187.60 | 186.40                        | 182.05      | 3.195                                             | 3.228 | 3.276 | 3.357 | 92        |
| 93        | 186.00           | 161.080 7         | 189.00   | 189.60 | 188.40                        | 184.05      | 3.196                                             | 3.228 | 3.277 | 3.358 | 93        |
| 94        | 188.00           | 162.812 8         | 191.00   | 191.60 | 190.40                        | 186.05      | 3.196                                             | 3.228 | 3.277 | 3.358 | 94        |
| 95        | 190.00           | 164.544 8         | 193.00   | 193.60 | 192.40                        | 188.05      | 3.196                                             | 3.228 | 3.277 | 3.358 | 95        |
| 96        | 192.00           | 166.276 9         | 195.00   | 195.60 | 194.40                        | 190.05      | 3.196                                             | 3.228 | 3.277 | 3.359 | 96        |
| 97        | 194.00           | 168.008 9         | 197.00   | 197.60 | 196.40                        | 192.05      | 3.196                                             | 3.229 | 3.278 | 3.359 | 97        |
| 98        | 196.00           | 169.741 0         | 199.00   | 199.60 | 198.40                        | 194.04      | 3.196                                             | 3.229 | 3.278 | 3.360 | 98        |
| 99        | 198.00           | 171.473 0         | 201.00   | 201.60 | 200.40                        | 196.04      | 3.196                                             | 3.229 | 3.278 | 3.360 | 99        |
| 100       | 200.00           | 173.205 1         | 203.00   | 203.60 | 202.40                        | 198.04      | 3.196                                             | 3.229 | 3.278 | 3.361 | 100       |

表 8 30°内花键  
模数  $m=2.5\text{ mm}$  作用齿槽宽最小值  $E_{\min}=3.927\text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_e$ |        | 渐开线终<br>止圆直径<br>$D_{f,\min}$ | 小径<br>$D_i$ | 实际齿槽宽最大值<br>$E_{\max}=E_{\min}+(T+\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|--------|------------------------------|-------------|---------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根    |                              |             | 4H                                          | 5H    | 6H    | 7H    |           |
| 10        | 25.00            | 21.650 6          | 28.75    | 29.50  | 28.00                        | 28.11       | 3.969                                       | 3.994 | 4.032 | 4.095 | 10        |
| 11        | 27.50            | 23.815 7          | 31.25    | 32.00  | 30.50                        | 25.54       | 3.969                                       | 3.995 | 4.033 | 4.097 | 11        |
| 12        | 30.00            | 25.980 8          | 33.75    | 34.50  | 33.00                        | 28.00       | 3.970                                       | 3.995 | 4.034 | 4.098 | 12        |
| 13        | 32.50            | 28.145 8          | 36.25    | 37.00  | 35.50                        | 30.15       | 3.970                                       | 3.996 | 4.035 | 4.100 | 13        |
| 14        | 35.00            | 30.310 9          | 38.75    | 39.50  | 38.00                        | 32.92       | 3.971                                       | 3.997 | 4.036 | 4.101 | 14        |
| 15        | 37.50            | 32.476 0          | 41.25    | 42.00  | 40.50                        | 35.39       | 3.971                                       | 3.997 | 4.037 | 4.103 | 15        |
| 16        | 40.00            | 34.641 0          | 43.75    | 44.50  | 43.00                        | 37.86       | 3.971                                       | 3.998 | 4.038 | 4.104 | 16        |
| 17        | 42.50            | 36.806 1          | 46.25    | 47.00  | 45.50                        | 40.34       | 3.972                                       | 3.998 | 4.039 | 4.106 | 17        |
| 18        | 45.00            | 38.971 1          | 48.75    | 49.50  | 48.00                        | 42.82       | 3.972                                       | 3.999 | 4.039 | 4.107 | 18        |
| 19        | 47.50            | 41.136 2          | 51.25    | 52.00  | 50.50                        | 45.30       | 3.972                                       | 3.999 | 4.040 | 4.108 | 19        |
| 20        | 50.00            | 43.301 3          | 53.75    | 54.50  | 53.00                        | 47.79       | 3.973                                       | 4.000 | 4.041 | 4.109 | 20        |
| 21        | 52.50            | 45.466 3          | 56.25    | 57.00  | 55.50                        | 50.27       | 3.973                                       | 4.000 | 4.042 | 4.111 | 21        |
| 22        | 55.00            | 47.631 4          | 58.75    | 59.50  | 58.00                        | 52.76       | 3.973                                       | 4.001 | 4.042 | 4.112 | 22        |
| 23        | 57.50            | 49.796 5          | 61.25    | 62.00  | 60.50                        | 55.25       | 3.973                                       | 4.001 | 4.043 | 4.113 | 23        |
| 24        | 60.00            | 51.961 5          | 63.75    | 64.50  | 63.00                        | 57.74       | 3.974                                       | 4.002 | 4.044 | 4.114 | 24        |
| 25        | 62.50            | 54.126 6          | 66.25    | 67.00  | 65.50                        | 60.23       | 3.974                                       | 4.002 | 4.044 | 4.115 | 25        |
| 26        | 65.00            | 56.291 7          | 68.75    | 69.50  | 68.00                        | 62.72       | 3.974                                       | 4.003 | 4.045 | 4.116 | 26        |
| 27        | 67.50            | 58.456 7          | 71.25    | 72.00  | 70.50                        | 65.21       | 3.975                                       | 4.003 | 4.046 | 4.117 | 27        |
| 28        | 70.00            | 60.621 8          | 73.75    | 74.50  | 73.00                        | 67.70       | 3.975                                       | 4.003 | 4.046 | 4.118 | 28        |
| 29        | 72.50            | 62.786 8          | 76.25    | 77.00  | 75.50                        | 70.19       | 3.975                                       | 4.004 | 4.047 | 4.119 | 29        |
| 30        | 75.00            | 64.951 9          | 78.75    | 79.50  | 78.00                        | 72.69       | 3.975                                       | 4.004 | 4.048 | 4.120 | 30        |
| 31        | 77.50            | 67.117 0          | 81.25    | 82.00  | 80.50                        | 75.18       | 3.975                                       | 4.005 | 4.048 | 4.121 | 31        |
| 32        | 80.00            | 69.282 0          | 83.75    | 84.50  | 83.00                        | 77.68       | 3.976                                       | 4.005 | 4.049 | 4.122 | 32        |
| 33        | 82.50            | 71.447 1          | 86.25    | 87.00  | 85.50                        | 80.17       | 3.976                                       | 4.005 | 4.049 | 4.123 | 33        |
| 34        | 85.00            | 73.612 2          | 88.75    | 89.50  | 88.00                        | 82.66       | 3.976                                       | 4.006 | 4.050 | 4.124 | 34        |
| 35        | 87.50            | 75.777 2          | 91.25    | 92.00  | 90.50                        | 85.16       | 3.976                                       | 4.006 | 4.050 | 4.124 | 35        |
| 36        | 90.00            | 77.942 3          | 93.75    | 94.50  | 93.00                        | 87.66       | 3.977                                       | 4.006 | 4.051 | 4.125 | 36        |
| 37        | 92.50            | 80.107 3          | 96.25    | 97.00  | 95.50                        | 90.15       | 3.977                                       | 4.007 | 4.051 | 4.126 | 37        |
| 38        | 95.00            | 82.272 4          | 98.75    | 99.50  | 98.00                        | 92.65       | 3.977                                       | 4.007 | 4.052 | 4.127 | 38        |
| 39        | 97.50            | 84.437 5          | 101.25   | 102.00 | 100.50                       | 95.14       | 3.977                                       | 4.007 | 4.052 | 4.128 | 39        |
| 40        | 100.00           | 86.602 5          | 103.75   | 104.50 | 103.00                       | 97.64       | 3.977                                       | 4.008 | 4.053 | 4.129 | 40        |
| 41        | 102.50           | 88.767 6          | 106.25   | 107.00 | 105.50                       | 100.14      | 3.978                                       | 4.008 | 4.053 | 4.129 | 41        |
| 42        | 105.00           | 90.932 7          | 108.75   | 109.50 | 108.00                       | 102.63      | 3.978                                       | 4.008 | 4.054 | 4.130 | 42        |
| 43        | 107.50           | 93.097 7          | 111.25   | 112.00 | 110.50                       | 105.13      | 3.978                                       | 4.009 | 4.054 | 4.131 | 43        |
| 44        | 110.00           | 95.262 8          | 113.75   | 114.50 | 113.00                       | 107.63      | 3.978                                       | 4.009 | 4.055 | 4.132 | 44        |
| 45        | 112.50           | 97.427 9          | 116.25   | 117.00 | 115.50                       | 110.12      | 3.978                                       | 4.009 | 4.055 | 4.132 | 45        |
| 46        | 115.00           | 99.592 9          | 118.75   | 119.50 | 118.00                       | 112.62      | 3.979                                       | 4.009 | 4.056 | 4.133 | 46        |
| 47        | 117.50           | 101.758 0         | 121.25   | 122.00 | 120.50                       | 115.12      | 3.979                                       | 4.010 | 4.056 | 4.134 | 47        |
| 48        | 120.00           | 103.923 0         | 123.75   | 124.50 | 123.00                       | 117.62      | 3.979                                       | 4.010 | 4.057 | 4.135 | 48        |
| 49        | 122.50           | 106.088 1         | 126.25   | 127.00 | 125.50                       | 120.11      | 3.979                                       | 4.010 | 4.057 | 4.135 | 49        |
| 50        | 125.00           | 108.253 2         | 128.75   | 129.50 | 128.00                       | 122.61      | 3.979                                       | 4.011 | 4.058 | 4.136 | 50        |
| 51        | 127.50           | 110.418 2         | 131.25   | 132.00 | 130.50                       | 125.11      | 3.979                                       | 4.011 | 4.058 | 4.137 | 51        |
| 52        | 130.00           | 112.583 3         | 133.75   | 134.50 | 133.00                       | 127.61      | 3.980                                       | 4.011 | 4.058 | 4.137 | 52        |
| 53        | 132.50           | 114.748 4         | 136.25   | 137.00 | 135.50                       | 130.10      | 3.980                                       | 4.011 | 4.059 | 4.138 | 53        |
| 54        | 135.00           | 116.913 4         | 138.75   | 139.50 | 138.00                       | 132.60      | 3.980                                       | 4.012 | 4.059 | 4.139 | 54        |
| 55        | 137.50           | 119.078 5         | 141.25   | 142.00 | 140.50                       | 135.10      | 3.980                                       | 4.012 | 4.060 | 4.139 | 55        |

表 8 (续)

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_{e1}$ |        | 渐开线终<br>止圆直径<br>$D_{Fi\ min}$ | 小径<br>$D_{ii}$ | 实际齿槽宽最大值<br>$E_{\max} = E_{v\ min} + (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|-------------|--------|-------------------------------|----------------|-----------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根         | 圆齿根    |                               |                | 4H                                                  | 5H    | 6H    | 7H    |           |
| 56        | 140.00           | 121.243 6         | 143.75      | 144.50 | 143.00                        | 137.60         | 3.980                                               | 4.012 | 4.060 | 4.140 | 56        |
| 57        | 142.50           | 123.408 6         | 146.25      | 147.00 | 145.50                        | 140.10         | 3.980                                               | 4.012 | 4.061 | 4.141 | 57        |
| 58        | 145.00           | 125.573 7         | 148.75      | 149.50 | 148.00                        | 142.60         | 3.981                                               | 4.013 | 4.061 | 4.141 | 58        |
| 59        | 147.50           | 127.738 7         | 151.25      | 152.00 | 150.50                        | 145.09         | 3.981                                               | 4.013 | 4.061 | 4.142 | 59        |
| 60        | 150.00           | 129.903 8         | 153.75      | 154.50 | 153.00                        | 147.59         | 3.981                                               | 4.013 | 4.062 | 4.143 | 60        |
| 61        | 152.50           | 132.068 9         | 156.25      | 157.00 | 155.50                        | 150.09         | 3.981                                               | 4.014 | 4.062 | 4.143 | 61        |
| 62        | 155.00           | 134.233 9         | 158.75      | 159.50 | 158.00                        | 152.59         | 3.981                                               | 4.014 | 4.063 | 4.144 | 62        |
| 63        | 157.50           | 136.399 0         | 161.25      | 162.00 | 160.50                        | 155.09         | 3.981                                               | 4.014 | 4.063 | 4.145 | 63        |
| 64        | 160.00           | 138.564 1         | 163.75      | 164.50 | 163.00                        | 157.59         | 3.982                                               | 4.014 | 4.063 | 4.145 | 64        |
| 65        | 162.50           | 140.729 1         | 166.25      | 167.00 | 165.50                        | 160.08         | 3.982                                               | 4.014 | 4.064 | 4.146 | 65        |
| 66        | 165.00           | 142.894 2         | 168.75      | 169.50 | 168.00                        | 162.58         | 3.982                                               | 4.015 | 4.064 | 4.146 | 66        |
| 67        | 167.50           | 145.059 3         | 171.25      | 172.00 | 170.50                        | 165.08         | 3.982                                               | 4.015 | 4.064 | 4.147 | 67        |
| 68        | 170.00           | 147.224 3         | 173.75      | 174.50 | 173.00                        | 167.58         | 3.982                                               | 4.015 | 4.065 | 4.148 | 68        |
| 69        | 172.50           | 149.389 4         | 176.25      | 177.00 | 175.50                        | 170.08         | 3.982                                               | 4.015 | 4.065 | 4.148 | 69        |
| 70        | 175.00           | 151.554 4         | 178.75      | 179.50 | 178.00                        | 172.58         | 3.982                                               | 4.016 | 4.066 | 4.149 | 70        |
| 71        | 177.50           | 153.719 5         | 181.25      | 182.00 | 180.50                        | 175.08         | 3.983                                               | 4.016 | 4.066 | 4.149 | 71        |
| 72        | 180.00           | 155.884 6         | 183.75      | 184.50 | 183.00                        | 177.58         | 3.983                                               | 4.016 | 4.066 | 4.150 | 72        |
| 73        | 182.50           | 158.049 6         | 186.25      | 187.00 | 185.50                        | 180.08         | 3.983                                               | 4.016 | 4.067 | 4.150 | 73        |
| 74        | 185.00           | 160.214 7         | 188.75      | 189.50 | 188.00                        | 182.57         | 3.983                                               | 4.017 | 4.067 | 4.151 | 74        |
| 75        | 187.50           | 162.379 8         | 191.25      | 192.00 | 190.50                        | 185.07         | 3.983                                               | 4.017 | 4.067 | 4.152 | 75        |
| 76        | 190.00           | 164.544 8         | 193.75      | 194.50 | 193.00                        | 187.57         | 3.983                                               | 4.017 | 4.068 | 4.152 | 76        |
| 77        | 192.50           | 166.709 9         | 196.25      | 197.00 | 195.50                        | 190.07         | 3.983                                               | 4.017 | 4.068 | 4.153 | 77        |
| 78        | 195.00           | 168.875 0         | 198.75      | 199.50 | 198.00                        | 192.57         | 3.984                                               | 4.017 | 4.068 | 4.153 | 78        |
| 79        | 197.50           | 171.040 0         | 201.25      | 202.00 | 200.50                        | 195.07         | 3.984                                               | 4.018 | 4.069 | 4.154 | 79        |
| 80        | 200.00           | 173.205 1         | 203.75      | 204.50 | 203.00                        | 197.57         | 3.984                                               | 4.018 | 4.069 | 4.154 | 80        |
| 81        | 202.50           | 175.370 1         | 206.25      | 207.00 | 205.50                        | 200.07         | 3.984                                               | 4.018 | 4.069 | 4.155 | 81        |
| 82        | 205.00           | 177.535 2         | 208.75      | 209.50 | 208.00                        | 202.57         | 3.984                                               | 4.018 | 4.070 | 4.155 | 82        |
| 83        | 207.50           | 179.700 3         | 211.25      | 212.00 | 210.50                        | 205.07         | 3.984                                               | 4.019 | 4.070 | 4.156 | 83        |
| 84        | 210.00           | 181.865 3         | 213.75      | 214.50 | 213.00                        | 207.57         | 3.984                                               | 4.019 | 4.070 | 4.156 | 84        |
| 85        | 212.50           | 184.030 4         | 216.25      | 217.00 | 215.50                        | 210.06         | 3.984                                               | 4.019 | 4.071 | 4.157 | 85        |
| 86        | 215.00           | 186.195 5         | 218.75      | 219.50 | 218.00                        | 212.56         | 3.985                                               | 4.019 | 4.071 | 4.157 | 86        |
| 87        | 217.50           | 188.360 5         | 221.25      | 222.00 | 220.50                        | 215.06         | 3.985                                               | 4.019 | 4.071 | 4.158 | 87        |
| 88        | 220.00           | 190.525 6         | 223.75      | 224.50 | 223.00                        | 217.56         | 3.985                                               | 4.020 | 4.072 | 4.158 | 88        |
| 89        | 222.50           | 192.690 6         | 226.25      | 227.00 | 225.50                        | 220.06         | 3.985                                               | 4.020 | 4.072 | 4.159 | 89        |
| 90        | 225.00           | 194.855 7         | 228.75      | 229.50 | 228.00                        | 222.56         | 3.985                                               | 4.020 | 4.072 | 4.159 | 90        |
| 91        | 227.50           | 197.020 8         | 231.25      | 232.00 | 230.50                        | 225.06         | 3.985                                               | 4.020 | 4.073 | 4.160 | 91        |
| 92        | 230.00           | 199.185 8         | 233.75      | 234.50 | 233.00                        | 227.56         | 3.985                                               | 4.020 | 4.073 | 4.160 | 92        |
| 93        | 232.50           | 201.350 9         | 236.25      | 237.00 | 235.50                        | 230.06         | 3.985                                               | 4.021 | 4.073 | 4.161 | 93        |
| 94        | 235.00           | 203.516 0         | 238.75      | 239.50 | 238.00                        | 232.56         | 3.985                                               | 4.021 | 4.074 | 4.161 | 94        |
| 95        | 237.50           | 205.681 0         | 241.25      | 242.00 | 240.50                        | 235.06         | 3.986                                               | 4.021 | 4.074 | 4.162 | 95        |
| 96        | 240.00           | 207.846 1         | 243.75      | 244.50 | 243.00                        | 237.56         | 3.986                                               | 4.021 | 4.074 | 4.162 | 96        |
| 97        | 242.50           | 210.011 2         | 246.25      | 247.00 | 245.50                        | 240.06         | 3.986                                               | 4.021 | 4.074 | 4.163 | 97        |
| 98        | 245.00           | 212.176 2         | 248.75      | 249.50 | 248.00                        | 242.56         | 3.986                                               | 4.022 | 4.075 | 4.163 | 98        |
| 99        | 247.50           | 214.341 3         | 251.25      | 252.00 | 250.50                        | 245.06         | 3.986                                               | 4.022 | 4.075 | 4.164 | 99        |
| 100       | 250.00           | 216.506 3         | 253.75      | 254.50 | 253.00                        | 247.55         | 3.986                                               | 4.022 | 4.075 | 4.164 | 100       |

表 9 30°内花键

模数  $m=3\text{ mm}$  作用齿槽宽最小值  $E_{\min}=4.712\text{ mm}$ 

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_a$ |        | 渐开线终<br>止圆直径<br>$D_{Fi\min}$ | 小径<br>$D_i$ | 实际齿槽宽最大值<br>$E_{\max}=E_{\min}+(T+\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|--------|------------------------------|-------------|---------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根    |                              |             | 4H                                          | 5H    | 6H    | 7H    |           |
| 10        | 30.00            | 25.980 8          | 34.50    | 35.40  | 33.60                        | 27.73       | 4.757                                       | 4.784 | 4.824 | 4.891 | 10        |
| 11        | 33.00            | 28.578 8          | 37.50    | 38.40  | 36.60                        | 30.65       | 4.757                                       | 4.785 | 4.825 | 4.893 | 11        |
| 12        | 36.00            | 31.176 9          | 40.50    | 41.40  | 39.60                        | 33.59       | 4.758                                       | 4.785 | 4.826 | 4.895 | 12        |
| 13        | 39.00            | 33.775 0          | 43.50    | 44.40  | 42.60                        | 36.54       | 4.758                                       | 4.786 | 4.827 | 4.896 | 13        |
| 14        | 42.00            | 36.373 1          | 46.50    | 47.40  | 45.60                        | 39.50       | 4.759                                       | 4.787 | 4.828 | 4.898 | 14        |
| 15        | 45.00            | 38.971 1          | 49.50    | 50.40  | 48.60                        | 42.47       | 4.759                                       | 4.787 | 4.829 | 4.900 | 15        |
| 16        | 48.00            | 41.569 2          | 52.50    | 53.40  | 51.60                        | 45.44       | 4.760                                       | 4.788 | 4.830 | 4.901 | 16        |
| 17        | 51.00            | 44.167 3          | 55.50    | 56.40  | 54.60                        | 48.41       | 4.760                                       | 4.788 | 4.831 | 4.902 | 17        |
| 18        | 54.00            | 46.765 4          | 58.50    | 59.40  | 57.60                        | 51.38       | 4.760                                       | 4.789 | 4.832 | 4.904 | 18        |
| 19        | 57.00            | 49.363 4          | 61.50    | 62.40  | 60.60                        | 54.36       | 4.761                                       | 4.790 | 4.833 | 4.905 | 19        |
| 20        | 60.00            | 51.961 5          | 64.50    | 65.40  | 63.60                        | 57.34       | 4.761                                       | 4.790 | 4.834 | 4.907 | 20        |
| 21        | 63.00            | 54.559 6          | 67.50    | 68.40  | 66.60                        | 60.33       | 4.761                                       | 4.791 | 4.835 | 4.908 | 21        |
| 22        | 66.00            | 57.157 7          | 70.50    | 71.40  | 69.60                        | 63.31       | 4.762                                       | 4.791 | 4.835 | 4.909 | 22        |
| 23        | 69.00            | 59.755 8          | 73.50    | 74.40  | 72.60                        | 66.30       | 4.762                                       | 4.792 | 4.836 | 4.910 | 23        |
| 24        | 72.00            | 62.353 8          | 76.50    | 77.40  | 75.60                        | 69.28       | 4.762                                       | 4.792 | 4.837 | 4.911 | 24        |
| 25        | 75.00            | 64.951 9          | 79.50    | 80.40  | 78.60                        | 72.27       | 4.762                                       | 4.792 | 4.838 | 4.913 | 25        |
| 26        | 78.00            | 67.550 0          | 82.50    | 83.40  | 81.60                        | 75.26       | 4.763                                       | 4.793 | 4.838 | 4.914 | 26        |
| 27        | 81.00            | 70.148 1          | 85.50    | 86.40  | 84.60                        | 78.25       | 4.763                                       | 4.793 | 4.839 | 4.915 | 27        |
| 28        | 84.00            | 72.746 1          | 88.50    | 89.40  | 87.60                        | 81.24       | 4.763                                       | 4.794 | 4.840 | 4.916 | 28        |
| 29        | 87.00            | 75.344 2          | 91.50    | 92.40  | 90.60                        | 84.23       | 4.764                                       | 4.794 | 4.840 | 4.917 | 29        |
| 30        | 90.00            | 77.942 3          | 94.50    | 95.40  | 93.60                        | 87.22       | 4.764                                       | 4.795 | 4.841 | 4.918 | 30        |
| 31        | 93.00            | 80.540 4          | 97.50    | 98.40  | 96.60                        | 90.22       | 4.764                                       | 4.795 | 4.841 | 4.919 | 31        |
| 32        | 96.00            | 83.138 4          | 100.50   | 101.40 | 99.60                        | 93.21       | 4.764                                       | 4.795 | 4.842 | 4.920 | 32        |
| 33        | 99.00            | 85.736 5          | 103.50   | 104.40 | 102.60                       | 96.20       | 4.765                                       | 4.796 | 4.843 | 4.921 | 33        |
| 34        | 102.00           | 88.334 6          | 106.50   | 107.40 | 105.60                       | 99.20       | 4.765                                       | 4.796 | 4.843 | 4.922 | 34        |
| 35        | 105.00           | 90.932 7          | 109.50   | 110.40 | 108.60                       | 102.19      | 4.765                                       | 4.797 | 4.844 | 4.923 | 35        |
| 36        | 108.00           | 93.530 7          | 112.50   | 113.40 | 111.60                       | 105.19      | 4.765                                       | 4.797 | 4.844 | 4.924 | 36        |
| 37        | 111.00           | 96.128 8          | 115.50   | 116.40 | 114.60                       | 108.18      | 4.765                                       | 4.797 | 4.845 | 4.925 | 37        |
| 38        | 114.00           | 98.726 9          | 118.50   | 119.40 | 117.60                       | 111.18      | 4.766                                       | 4.798 | 4.846 | 4.925 | 38        |
| 39        | 117.00           | 101.325 0         | 121.50   | 122.40 | 120.60                       | 114.17      | 4.766                                       | 4.798 | 4.846 | 4.926 | 39        |
| 40        | 120.00           | 103.923 0         | 124.50   | 125.40 | 123.60                       | 117.17      | 4.766                                       | 4.798 | 4.847 | 4.927 | 40        |
| 41        | 123.00           | 106.521 1         | 127.50   | 128.40 | 126.60                       | 120.16      | 4.766                                       | 4.799 | 4.847 | 4.928 | 41        |
| 42        | 126.00           | 109.119 2         | 130.50   | 131.40 | 129.60                       | 123.16      | 4.767                                       | 4.799 | 4.848 | 4.929 | 42        |
| 43        | 129.00           | 111.717 3         | 133.50   | 134.40 | 132.60                       | 126.15      | 4.767                                       | 4.799 | 4.848 | 4.930 | 43        |
| 44        | 132.00           | 114.315 4         | 136.50   | 137.40 | 135.60                       | 129.15      | 4.767                                       | 4.800 | 4.849 | 4.931 | 44        |
| 45        | 135.00           | 116.913 4         | 139.50   | 140.40 | 138.60                       | 132.15      | 4.767                                       | 4.800 | 4.849 | 4.931 | 45        |
| 46        | 138.00           | 119.511 5         | 142.50   | 143.40 | 141.60                       | 135.14      | 4.767                                       | 4.800 | 4.850 | 4.932 | 46        |
| 47        | 141.00           | 122.109 6         | 145.50   | 146.40 | 144.60                       | 138.14      | 4.768                                       | 4.801 | 4.850 | 4.933 | 47        |
| 48        | 144.00           | 124.707 7         | 148.50   | 149.40 | 147.60                       | 141.14      | 4.768                                       | 4.801 | 4.851 | 4.934 | 48        |
| 49        | 147.00           | 127.305 7         | 151.50   | 152.40 | 150.60                       | 144.14      | 4.768                                       | 4.801 | 4.851 | 4.935 | 49        |
| 50        | 150.00           | 129.903 8         | 154.50   | 155.40 | 153.60                       | 147.13      | 4.768                                       | 4.802 | 4.852 | 4.935 | 50        |
| 51        | 153.00           | 132.501 9         | 157.50   | 158.40 | 156.60                       | 150.13      | 4.768                                       | 4.802 | 4.852 | 4.936 | 51        |
| 52        | 156.00           | 135.100 0         | 160.50   | 161.40 | 159.60                       | 153.13      | 4.768                                       | 4.802 | 4.853 | 4.937 | 52        |
| 53        | 159.00           | 137.698 0         | 163.50   | 164.40 | 162.60                       | 156.13      | 4.769                                       | 4.802 | 4.853 | 4.938 | 53        |
| 54        | 162.00           | 140.296 1         | 166.50   | 167.40 | 165.60                       | 159.12      | 4.769                                       | 4.803 | 4.854 | 4.938 | 54        |
| 55        | 165.00           | 142.894 2         | 169.50   | 170.40 | 168.60                       | 162.12      | 4.769                                       | 4.803 | 4.854 | 4.939 | 55        |

表 9 (续)

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_{a1}$ |        | 渐开线终<br>止圆直径<br>$D_{Fi\ min}$ | 小径<br>$D_{ii}$ | 实际齿槽宽最大值<br>$E_{\max} = E_{\min} + (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|-------------|--------|-------------------------------|----------------|---------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根         | 圆齿根    |                               |                | 4H                                                | 5H    | 6H    | 7H    |           |
| 56        | 168.00           | 145.492 3         | 172.50      | 173.40 | 171.60                        | 165.12         | 4.769                                             | 4.803 | 4.854 | 4.940 | 56        |
| 57        | 171.00           | 148.090 3         | 175.50      | 176.40 | 174.60                        | 168.12         | 4.769                                             | 4.804 | 4.855 | 4.940 | 57        |
| 58        | 174.00           | 150.688 4         | 178.50      | 179.40 | 177.60                        | 171.11         | 4.770                                             | 4.804 | 4.855 | 4.941 | 58        |
| 59        | 177.00           | 153.286 5         | 181.50      | 182.40 | 180.60                        | 174.11         | 4.770                                             | 4.804 | 4.856 | 4.942 | 59        |
| 60        | 180.00           | 155.884 6         | 184.50      | 185.40 | 183.60                        | 177.11         | 4.770                                             | 4.804 | 4.856 | 4.942 | 60        |
| 61        | 183.00           | 158.482 6         | 187.50      | 188.40 | 186.60                        | 180.11         | 4.770                                             | 4.805 | 4.857 | 4.943 | 61        |
| 62        | 186.00           | 161.080 7         | 190.50      | 191.40 | 189.60                        | 183.11         | 4.770                                             | 4.805 | 4.857 | 4.944 | 62        |
| 63        | 189.00           | 163.678 8         | 193.50      | 194.40 | 192.60                        | 186.10         | 4.770                                             | 4.805 | 4.857 | 4.944 | 63        |
| 64        | 192.00           | 166.276 9         | 196.50      | 197.40 | 195.60                        | 189.10         | 4.771                                             | 4.805 | 4.858 | 4.945 | 64        |
| 65        | 195.00           | 168.875 0         | 199.50      | 200.40 | 198.60                        | 192.10         | 4.771                                             | 4.806 | 4.858 | 4.946 | 65        |
| 66        | 198.00           | 171.473 0         | 202.50      | 203.40 | 201.60                        | 195.10         | 4.771                                             | 4.806 | 4.859 | 4.946 | 66        |
| 67        | 201.00           | 174.071 1         | 205.50      | 206.40 | 204.60                        | 198.10         | 4.771                                             | 4.806 | 4.859 | 4.947 | 67        |
| 68        | 204.00           | 176.669 2         | 208.50      | 209.40 | 207.60                        | 201.10         | 4.771                                             | 4.807 | 4.859 | 4.948 | 68        |
| 69        | 207.00           | 179.267 3         | 211.50      | 212.40 | 210.60                        | 204.10         | 4.771                                             | 4.807 | 4.860 | 4.948 | 69        |
| 70        | 210.00           | 181.865 3         | 214.50      | 215.40 | 213.60                        | 207.09         | 4.772                                             | 4.807 | 4.860 | 4.949 | 70        |
| 71        | 213.00           | 184.463 4         | 217.50      | 218.40 | 216.60                        | 210.09         | 4.772                                             | 4.807 | 4.861 | 4.950 | 71        |
| 72        | 216.00           | 187.061 5         | 220.50      | 221.40 | 219.60                        | 213.09         | 4.772                                             | 4.808 | 4.861 | 4.950 | 72        |
| 73        | 219.00           | 189.659 6         | 223.50      | 224.40 | 222.60                        | 216.09         | 4.772                                             | 4.808 | 4.861 | 4.951 | 73        |
| 74        | 222.00           | 192.257 6         | 226.50      | 227.40 | 225.60                        | 219.09         | 4.772                                             | 4.808 | 4.862 | 4.951 | 74        |
| 75        | 225.00           | 194.855 7         | 229.50      | 230.40 | 228.60                        | 222.09         | 4.772                                             | 4.808 | 4.862 | 4.952 | 75        |
| 76        | 228.00           | 197.453 8         | 232.50      | 233.40 | 231.60                        | 225.09         | 4.772                                             | 4.809 | 4.863 | 4.953 | 76        |
| 77        | 231.00           | 200.051 9         | 235.50      | 236.40 | 234.60                        | 228.09         | 4.773                                             | 4.809 | 4.863 | 4.953 | 77        |
| 78        | 234.00           | 202.649 9         | 238.50      | 239.40 | 237.60                        | 231.08         | 4.773                                             | 4.809 | 4.863 | 4.954 | 78        |
| 79        | 237.00           | 205.248 0         | 241.50      | 242.40 | 240.60                        | 234.08         | 4.773                                             | 4.809 | 4.864 | 4.954 | 79        |
| 80        | 240.00           | 207.846 1         | 244.50      | 245.40 | 243.60                        | 237.08         | 4.773                                             | 4.809 | 4.864 | 4.955 | 80        |
| 81        | 243.00           | 210.444 2         | 247.50      | 248.40 | 246.60                        | 240.08         | 4.773                                             | 4.810 | 4.864 | 4.956 | 81        |
| 82        | 246.00           | 213.042 2         | 250.50      | 251.40 | 249.60                        | 243.08         | 4.773                                             | 4.810 | 4.865 | 4.956 | 82        |
| 83        | 249.00           | 215.640 3         | 253.50      | 254.40 | 252.60                        | 246.08         | 4.773                                             | 4.810 | 4.865 | 4.957 | 83        |
| 84        | 252.00           | 218.238 4         | 256.50      | 257.40 | 255.60                        | 249.08         | 4.774                                             | 4.810 | 4.865 | 4.957 | 84        |
| 85        | 255.00           | 220.836 5         | 259.50      | 260.40 | 258.60                        | 252.08         | 4.774                                             | 4.811 | 4.866 | 4.958 | 85        |
| 86        | 258.00           | 223.434 6         | 262.50      | 263.40 | 261.60                        | 255.08         | 4.774                                             | 4.811 | 4.866 | 4.958 | 86        |
| 87        | 261.00           | 226.032 6         | 265.50      | 266.40 | 264.60                        | 258.08         | 4.774                                             | 4.811 | 4.867 | 4.959 | 87        |
| 88        | 264.00           | 228.630 7         | 268.50      | 269.40 | 267.60                        | 261.07         | 4.774                                             | 4.811 | 4.867 | 4.960 | 88        |
| 89        | 267.00           | 231.228 8         | 271.50      | 272.40 | 270.60                        | 264.07         | 4.774                                             | 4.811 | 4.867 | 4.960 | 89        |
| 90        | 270.00           | 233.826 9         | 274.50      | 275.40 | 273.60                        | 267.07         | 4.774                                             | 4.812 | 4.868 | 4.961 | 90        |
| 91        | 273.00           | 236.424 9         | 277.50      | 278.40 | 276.60                        | 270.07         | 4.775                                             | 4.812 | 4.868 | 4.961 | 91        |
| 92        | 276.00           | 239.023 0         | 280.50      | 281.40 | 279.60                        | 273.07         | 4.775                                             | 4.812 | 4.868 | 4.962 | 92        |
| 93        | 279.00           | 241.621 1         | 283.50      | 284.40 | 282.60                        | 276.07         | 4.775                                             | 4.812 | 4.869 | 4.962 | 93        |
| 94        | 282.00           | 244.219 2         | 286.50      | 287.40 | 285.60                        | 279.07         | 4.775                                             | 4.813 | 4.869 | 4.963 | 94        |
| 95        | 285.00           | 246.817 2         | 289.50      | 290.40 | 288.60                        | 282.07         | 4.775                                             | 4.813 | 4.869 | 4.963 | 95        |
| 96        | 288.00           | 249.415 3         | 292.50      | 293.40 | 291.60                        | 285.07         | 4.775                                             | 4.813 | 4.870 | 4.964 | 96        |
| 97        | 291.00           | 252.013 4         | 295.50      | 296.40 | 294.60                        | 288.07         | 4.775                                             | 4.813 | 4.870 | 4.964 | 97        |
| 98        | 294.00           | 254.611 5         | 298.50      | 299.40 | 297.60                        | 291.07         | 4.776                                             | 4.813 | 4.870 | 4.965 | 98        |
| 99        | 297.00           | 257.209 5         | 301.50      | 302.40 | 300.60                        | 294.07         | 4.776                                             | 4.814 | 4.871 | 4.966 | 99        |
| 100       | 300.00           | 259.807 6         | 304.50      | 305.40 | 303.60                        | 297.07         | 4.776                                             | 4.814 | 4.871 | 4.966 | 100       |

表 10 30°内花键  
模数  $m=4\text{ mm}$  作用齿槽宽最小值  $E_{v,\min}=6.283\text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_a$ |        | 渐开线终<br>止圆直径<br>$D_{f,\min}$ | 小径<br>$D_i$ | 实际齿槽宽最大值<br>$E_{\max}=E_{\min}+(T-\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|--------|------------------------------|-------------|---------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根    |                              |             | 4H                                          | 5H    | 6H    | 7H    |           |
| 10        | 40.00            | 34.641 0          | 46.00    | 47.20  | 44.80                        | 36.97       | 6.332                                       | 6.362 | 6.406 | 6.480 | 10        |
| 11        | 44.00            | 38.105 1          | 50.00    | 51.20  | 48.80                        | 40.87       | 6.333                                       | 6.363 | 6.408 | 6.482 | 11        |
| 12        | 48.00            | 41.569 2          | 54.00    | 55.20  | 52.80                        | 44.79       | 6.333                                       | 6.364 | 6.409 | 6.484 | 12        |
| 13        | 52.00            | 45.033 3          | 58.00    | 59.20  | 56.80                        | 48.73       | 6.334                                       | 6.364 | 6.410 | 6.486 | 13        |
| 14        | 56.00            | 48.497 4          | 62.00    | 63.20  | 60.80                        | 52.67       | 6.334                                       | 6.365 | 6.411 | 6.488 | 14        |
| 15        | 60.00            | 51.961 5          | 66.00    | 67.20  | 64.80                        | 56.62       | 6.335                                       | 6.366 | 6.412 | 6.490 | 15        |
| 16        | 64.00            | 55.425 6          | 70.00    | 71.20  | 68.80                        | 60.58       | 6.335                                       | 6.366 | 6.413 | 6.491 | 16        |
| 17        | 68.00            | 58.889 7          | 74.00    | 75.20  | 72.80                        | 64.54       | 6.336                                       | 6.367 | 6.414 | 6.493 | 17        |
| 18        | 72.00            | 62.353 8          | 78.00    | 79.20  | 76.80                        | 68.51       | 6.336                                       | 6.368 | 6.415 | 6.495 | 18        |
| 19        | 76.00            | 65.817 9          | 82.00    | 83.20  | 80.80                        | 72.48       | 6.336                                       | 6.368 | 6.416 | 6.496 | 19        |
| 20        | 80.00            | 69.282 0          | 86.00    | 87.20  | 84.80                        | 76.46       | 6.337                                       | 6.369 | 6.417 | 6.498 | 20        |
| 21        | 84.00            | 72.746 1          | 90.00    | 91.20  | 88.80                        | 80.44       | 6.337                                       | 6.370 | 6.418 | 6.499 | 21        |
| 22        | 88.00            | 76.210 2          | 94.00    | 95.20  | 92.80                        | 84.41       | 6.337                                       | 6.370 | 6.419 | 6.500 | 22        |
| 23        | 92.00            | 79.674 3          | 98.00    | 99.20  | 96.80                        | 88.40       | 6.338                                       | 6.371 | 6.420 | 6.502 | 23        |
| 24        | 96.00            | 83.138 4          | 102.00   | 103.20 | 100.80                       | 92.38       | 6.338                                       | 6.371 | 6.421 | 6.503 | 24        |
| 25        | 100.00           | 86.602 5          | 106.00   | 107.20 | 104.80                       | 96.36       | 6.338                                       | 6.372 | 6.421 | 6.504 | 25        |
| 26        | 104.00           | 90.066 6          | 110.00   | 111.20 | 108.80                       | 100.35      | 6.339                                       | 6.372 | 6.422 | 6.506 | 26        |
| 27        | 108.00           | 93.530 7          | 114.00   | 115.20 | 112.80                       | 104.33      | 6.339                                       | 6.373 | 6.423 | 6.507 | 27        |
| 28        | 112.00           | 96.994 8          | 118.00   | 119.20 | 116.80                       | 108.32      | 6.339                                       | 6.373 | 6.424 | 6.508 | 28        |
| 29        | 116.00           | 100.458 9         | 122.00   | 123.20 | 120.80                       | 112.31      | 6.340                                       | 6.374 | 6.424 | 6.509 | 29        |
| 30        | 120.00           | 103.923 0         | 126.00   | 127.20 | 124.80                       | 116.30      | 6.340                                       | 6.374 | 6.425 | 6.510 | 30        |
| 31        | 124.00           | 107.387 1         | 130.00   | 131.20 | 128.80                       | 120.29      | 6.340                                       | 6.375 | 6.426 | 6.512 | 31        |
| 32        | 128.00           | 110.851 3         | 134.00   | 135.20 | 132.80                       | 124.28      | 6.341                                       | 6.375 | 6.427 | 6.513 | 32        |
| 33        | 132.00           | 114.315 4         | 138.00   | 139.20 | 136.80                       | 128.27      | 6.341                                       | 6.375 | 6.427 | 6.514 | 33        |
| 34        | 136.00           | 117.779 5         | 142.00   | 143.20 | 140.80                       | 132.26      | 6.341                                       | 6.376 | 6.428 | 6.515 | 34        |
| 35        | 140.00           | 121.243 6         | 146.00   | 147.20 | 144.80                       | 136.26      | 6.341                                       | 6.376 | 6.429 | 6.516 | 35        |
| 36        | 144.00           | 124.707 7         | 150.00   | 151.20 | 148.80                       | 140.25      | 6.342                                       | 6.377 | 6.429 | 6.517 | 36        |
| 37        | 148.00           | 128.171 8         | 154.00   | 155.20 | 152.80                       | 144.24      | 6.342                                       | 6.377 | 6.430 | 6.518 | 37        |
| 38        | 152.00           | 131.635 9         | 158.00   | 159.20 | 156.80                       | 148.23      | 6.342                                       | 6.377 | 6.431 | 6.519 | 38        |
| 39        | 156.00           | 135.100 0         | 162.00   | 163.20 | 160.80                       | 152.23      | 6.342                                       | 6.378 | 6.431 | 6.520 | 39        |
| 40        | 160.00           | 138.564 1         | 166.00   | 167.20 | 164.80                       | 156.22      | 6.343                                       | 6.378 | 6.432 | 6.521 | 40        |
| 41        | 164.00           | 142.028 2         | 170.00   | 171.20 | 168.80                       | 160.22      | 6.343                                       | 6.379 | 6.432 | 6.522 | 41        |
| 42        | 168.00           | 145.492 3         | 174.00   | 175.20 | 172.80                       | 164.21      | 6.343                                       | 6.379 | 6.433 | 6.523 | 42        |
| 43        | 172.00           | 148.956 4         | 178.00   | 179.20 | 176.80                       | 168.21      | 6.343                                       | 6.379 | 6.434 | 6.524 | 43        |
| 44        | 176.00           | 152.420 5         | 182.00   | 183.20 | 180.80                       | 172.20      | 6.344                                       | 6.380 | 6.434 | 6.525 | 44        |
| 45        | 180.00           | 155.884 6         | 186.00   | 187.20 | 184.80                       | 176.20      | 6.344                                       | 6.380 | 6.435 | 6.526 | 45        |
| 46        | 184.00           | 159.348 7         | 190.00   | 191.20 | 188.80                       | 180.19      | 6.344                                       | 6.381 | 6.435 | 6.527 | 46        |
| 47        | 188.00           | 162.812 8         | 194.00   | 195.20 | 192.80                       | 184.19      | 6.344                                       | 6.381 | 6.436 | 6.527 | 47        |
| 48        | 192.00           | 166.276 9         | 198.00   | 199.20 | 196.80                       | 188.18      | 6.344                                       | 6.381 | 6.436 | 6.528 | 48        |
| 49        | 196.00           | 169.741 0         | 202.00   | 203.20 | 200.80                       | 192.18      | 6.345                                       | 6.382 | 6.437 | 6.529 | 49        |
| 50        | 200.00           | 173.205 1         | 206.00   | 207.20 | 204.80                       | 196.18      | 6.345                                       | 6.382 | 6.437 | 6.530 | 50        |
| 51        | 204.00           | 176.669 2         | 210.00   | 211.20 | 208.80                       | 200.17      | 6.345                                       | 6.382 | 6.438 | 6.531 | 51        |
| 52        | 208.00           | 180.133 3         | 214.00   | 215.20 | 212.80                       | 204.17      | 6.345                                       | 6.383 | 6.439 | 6.532 | 52        |
| 53        | 212.00           | 183.597 4         | 218.00   | 219.20 | 216.80                       | 208.17      | 6.346                                       | 6.383 | 6.439 | 6.533 | 53        |
| 54        | 216.00           | 187.061 5         | 222.00   | 223.20 | 220.80                       | 212.16      | 6.346                                       | 6.383 | 6.440 | 6.533 | 54        |
| 55        | 220.00           | 190.525 6         | 226.00   | 227.20 | 224.80                       | 216.16      | 6.346                                       | 6.384 | 6.440 | 6.534 | 55        |

表 10 (续)

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_a$ |        | 渐开线终<br>止圆直径<br>$D_{Fi\ min}$ | 小径<br>$D_i$ | 实际齿槽宽最大值<br>$E_{\max} = E_{v\ min} + (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|--------|-------------------------------|-------------|-----------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根    |                               |             | 4H                                                  | 5H    | 6H    | 7H    |           |
| 56        | 224.00           | 193.989 7         | 230.00   | 231.20 | 228.80                        | 220.16      | 6.346                                               | 6.384 | 6.441 | 6.535 | 56        |
| 57        | 228.00           | 197.453 8         | 234.00   | 235.20 | 232.80                        | 224.15      | 6.346                                               | 6.384 | 6.441 | 6.536 | 57        |
| 58        | 232.00           | 200.917 9         | 238.00   | 239.20 | 236.80                        | 228.15      | 6.347                                               | 6.385 | 6.442 | 6.537 | 58        |
| 59        | 236.00           | 204.382 0         | 242.00   | 243.20 | 240.80                        | 232.15      | 6.347                                               | 6.385 | 6.442 | 6.537 | 59        |
| 60        | 240.00           | 207.846 1         | 246.00   | 247.20 | 244.80                        | 236.15      | 6.347                                               | 6.385 | 6.443 | 6.538 | 60        |
| 61        | 244.00           | 211.310 2         | 250.00   | 251.20 | 248.80                        | 240.14      | 6.347                                               | 6.386 | 6.443 | 6.539 | 61        |
| 62        | 248.00           | 214.774 3         | 254.00   | 255.20 | 252.80                        | 244.14      | 6.347                                               | 6.386 | 6.444 | 6.540 | 62        |
| 63        | 252.00           | 218.238 4         | 258.00   | 259.20 | 256.80                        | 248.14      | 6.348                                               | 6.386 | 6.444 | 6.541 | 63        |
| 64        | 256.00           | 221.702 5         | 262.00   | 263.20 | 260.80                        | 252.14      | 6.348                                               | 6.386 | 6.445 | 6.541 | 64        |
| 65        | 260.00           | 225.166 6         | 266.00   | 267.20 | 264.80                        | 256.14      | 6.348                                               | 6.387 | 6.445 | 6.542 | 65        |
| 66        | 264.00           | 228.630 7         | 270.00   | 271.20 | 268.80                        | 260.13      | 6.348                                               | 6.387 | 6.445 | 6.543 | 66        |
| 67        | 268.00           | 232.094 8         | 274.00   | 275.20 | 272.80                        | 264.13      | 6.348                                               | 6.387 | 6.446 | 6.544 | 67        |
| 68        | 272.00           | 235.558 9         | 278.00   | 279.20 | 276.80                        | 268.13      | 6.348                                               | 6.388 | 6.446 | 6.544 | 68        |
| 69        | 276.00           | 239.023 0         | 282.00   | 283.20 | 280.80                        | 272.13      | 6.349                                               | 6.388 | 6.447 | 6.545 | 69        |
| 70        | 280.00           | 242.487 1         | 286.00   | 287.20 | 284.80                        | 276.13      | 6.349                                               | 6.388 | 6.447 | 6.546 | 70        |
| 71        | 284.00           | 245.951 2         | 290.00   | 291.20 | 288.80                        | 280.12      | 6.349                                               | 6.388 | 6.448 | 6.546 | 71        |
| 72        | 288.00           | 249.415 3         | 294.00   | 295.20 | 292.80                        | 284.12      | 6.349                                               | 6.389 | 6.448 | 6.547 | 72        |
| 73        | 292.00           | 252.879 4         | 298.00   | 299.20 | 296.80                        | 288.12      | 6.349                                               | 6.389 | 6.449 | 6.548 | 73        |
| 74        | 296.00           | 256.343 5         | 302.00   | 303.20 | 300.80                        | 292.12      | 6.350                                               | 6.389 | 6.449 | 6.549 | 74        |
| 75        | 300.00           | 259.807 6         | 306.00   | 307.20 | 304.80                        | 296.12      | 6.350                                               | 6.390 | 6.449 | 6.549 | 75        |
| 76        | 304.00           | 263.271 7         | 310.00   | 311.20 | 308.80                        | 300.12      | 6.350                                               | 6.390 | 6.450 | 6.550 | 76        |
| 77        | 308.00           | 266.735 8         | 314.00   | 315.20 | 312.80                        | 304.11      | 6.350                                               | 6.390 | 6.450 | 6.551 | 77        |
| 78        | 312.00           | 270.199 9         | 318.00   | 319.20 | 316.80                        | 308.11      | 6.350                                               | 6.390 | 6.451 | 6.551 | 78        |
| 79        | 316.00           | 273.664 0         | 322.00   | 323.20 | 320.80                        | 312.11      | 6.350                                               | 6.391 | 6.451 | 6.552 | 79        |
| 80        | 320.00           | 277.128 1         | 326.00   | 327.20 | 324.80                        | 316.11      | 6.351                                               | 6.391 | 6.452 | 6.553 | 80        |
| 81        | 324.00           | 280.592 2         | 330.00   | 331.20 | 328.80                        | 320.11      | 6.351                                               | 6.391 | 6.452 | 6.553 | 81        |
| 82        | 328.00           | 284.056 3         | 334.00   | 335.20 | 332.80                        | 324.11      | 6.351                                               | 6.392 | 6.452 | 6.554 | 82        |
| 83        | 332.00           | 287.520 4         | 338.00   | 339.20 | 336.80                        | 328.11      | 6.351                                               | 6.392 | 6.453 | 6.555 | 83        |
| 84        | 336.00           | 290.984 5         | 342.00   | 343.20 | 340.80                        | 332.10      | 6.351                                               | 6.392 | 6.453 | 6.555 | 84        |
| 85        | 340.00           | 294.448 6         | 346.00   | 347.20 | 344.80                        | 336.10      | 6.351                                               | 6.392 | 6.454 | 6.556 | 85        |
| 86        | 344.00           | 297.912 7         | 350.00   | 351.20 | 348.80                        | 340.10      | 6.352                                               | 6.393 | 6.454 | 6.557 | 86        |
| 87        | 348.00           | 301.376 8         | 354.00   | 355.20 | 352.80                        | 344.10      | 6.352                                               | 6.393 | 6.454 | 6.557 | 87        |
| 88        | 352.00           | 304.840 9         | 358.00   | 359.20 | 356.80                        | 348.10      | 6.352                                               | 6.393 | 6.455 | 6.558 | 88        |
| 89        | 356.00           | 308.305 0         | 362.00   | 363.20 | 360.80                        | 352.10      | 6.352                                               | 6.393 | 6.455 | 6.559 | 89        |
| 90        | 360.00           | 311.769 1         | 366.00   | 367.20 | 364.80                        | 356.10      | 6.352                                               | 6.394 | 6.456 | 6.559 | 90        |
| 91        | 364.00           | 315.233 2         | 370.00   | 371.20 | 368.80                        | 360.10      | 6.352                                               | 6.394 | 6.456 | 6.560 | 91        |
| 92        | 368.00           | 318.697 3         | 374.00   | 375.20 | 372.80                        | 364.10      | 6.352                                               | 6.394 | 6.456 | 6.560 | 92        |
| 93        | 372.00           | 322.161 4         | 378.00   | 379.20 | 376.80                        | 368.09      | 6.353                                               | 6.394 | 6.457 | 6.561 | 93        |
| 94        | 376.00           | 325.625 5         | 382.00   | 383.20 | 380.80                        | 372.09      | 6.353                                               | 6.395 | 6.457 | 6.562 | 94        |
| 95        | 380.00           | 329.089 6         | 386.00   | 387.20 | 384.80                        | 376.09      | 6.353                                               | 6.395 | 6.458 | 6.562 | 95        |
| 96        | 384.00           | 332.553 8         | 390.00   | 391.20 | 388.80                        | 380.09      | 6.353                                               | 6.395 | 6.458 | 6.563 | 96        |
| 97        | 388.00           | 336.017 9         | 394.00   | 395.20 | 392.80                        | 384.09      | 6.353                                               | 6.395 | 6.458 | 6.564 | 97        |
| 98        | 392.00           | 339.482 0         | 398.00   | 399.20 | 396.80                        | 388.09      | 6.353                                               | 6.396 | 6.459 | 6.564 | 98        |
| 99        | 396.00           | 342.946 1         | 402.00   | 403.20 | 400.80                        | 392.09      | 6.354                                               | 6.396 | 6.459 | 6.565 | 99        |
| 100       | 400.00           | 346.410 2         | 406.00   | 407.20 | 404.80                        | 396.09      | 6.354                                               | 6.396 | 6.460 | 6.565 | 100       |

表 11 30°内花键

模数  $m=5\text{ mm}$  作用齿槽宽最小值  $E_{\min}=7.854\text{ mm}$ 

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_a$ |        | 渐开线终<br>止圆直径<br>$D_{f1\min}$ | 小径<br>$D_i$ | 实际齿槽宽最大值<br>$E_{\max}=E_{\min}+(T+\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|--------|------------------------------|-------------|---------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根    |                              |             | 4H                                          | 5H    | 6H    | 7H    |           |
| 10        | 50.00            | 43.301 3          | 57.50    | 59.00  | 56.00                        | 46.21       | 7.907                                       | 7.939 | 7.987 | 8.066 | 10        |
| 11        | 55.00            | 47.631 4          | 62.50    | 64.00  | 61.00                        | 51.09       | 7.908                                       | 7.940 | 7.988 | 8.069 | 11        |
| 12        | 60.00            | 51.961 5          | 67.50    | 69.00  | 66.00                        | 55.99       | 7.908                                       | 7.941 | 7.990 | 8.071 | 12        |
| 13        | 65.00            | 56.291 7          | 72.50    | 74.00  | 71.00                        | 60.91       | 7.909                                       | 7.942 | 7.991 | 8.073 | 13        |
| 14        | 70.00            | 60.621 8          | 77.50    | 79.00  | 76.00                        | 65.84       | 7.909                                       | 7.942 | 7.992 | 8.075 | 14        |
| 15        | 75.00            | 64.951 9          | 82.50    | 84.00  | 81.00                        | 70.78       | 7.910                                       | 7.943 | 7.993 | 8.077 | 15        |
| 16        | 80.00            | 69.282 0          | 87.50    | 89.00  | 86.00                        | 75.73       | 7.910                                       | 7.944 | 7.995 | 8.079 | 16        |
| 17        | 85.00            | 73.612 2          | 92.50    | 94.00  | 91.00                        | 80.68       | 7.911                                       | 7.945 | 7.996 | 8.081 | 17        |
| 18        | 90.00            | 77.942 3          | 97.50    | 99.00  | 96.00                        | 85.64       | 7.911                                       | 7.945 | 7.997 | 8.082 | 18        |
| 19        | 95.00            | 82.272 4          | 102.50   | 104.00 | 101.00                       | 90.60       | 7.912                                       | 7.946 | 7.998 | 8.084 | 19        |
| 20        | 100.00           | 86.602 5          | 107.50   | 109.00 | 106.00                       | 95.57       | 7.912                                       | 7.947 | 7.999 | 8.086 | 20        |
| 21        | 105.00           | 90.932 7          | 112.50   | 114.00 | 111.00                       | 100.54      | 7.912                                       | 7.947 | 8.000 | 8.087 | 21        |
| 22        | 110.00           | 95.262 8          | 117.50   | 119.00 | 116.00                       | 105.52      | 7.913                                       | 7.948 | 8.001 | 8.089 | 22        |
| 23        | 115.00           | 99.592 9          | 122.50   | 124.00 | 121.00                       | 110.49      | 7.913                                       | 7.948 | 8.002 | 8.090 | 23        |
| 24        | 120.00           | 103.923 0         | 127.50   | 129.00 | 126.00                       | 115.47      | 7.913                                       | 7.949 | 8.003 | 8.092 | 24        |
| 25        | 125.00           | 108.253 2         | 132.50   | 134.00 | 131.00                       | 120.45      | 7.914                                       | 7.950 | 8.003 | 8.093 | 25        |
| 26        | 130.00           | 112.583 3         | 137.50   | 139.00 | 136.00                       | 125.43      | 7.914                                       | 7.950 | 8.004 | 8.094 | 26        |
| 27        | 135.00           | 116.913 4         | 142.50   | 144.00 | 141.00                       | 130.42      | 7.914                                       | 7.951 | 8.005 | 8.096 | 27        |
| 28        | 140.00           | 121.243 6         | 147.50   | 149.00 | 146.00                       | 135.40      | 7.915                                       | 7.951 | 8.006 | 8.097 | 28        |
| 29        | 145.00           | 125.573 7         | 152.50   | 154.00 | 151.00                       | 140.39      | 7.915                                       | 7.952 | 8.007 | 8.098 | 29        |
| 30        | 150.00           | 129.903 8         | 157.50   | 159.00 | 156.00                       | 145.37      | 7.915                                       | 7.952 | 8.008 | 8.100 | 30        |
| 31        | 155.00           | 134.233 9         | 162.50   | 164.00 | 161.00                       | 150.36      | 7.916                                       | 7.953 | 8.008 | 8.101 | 31        |
| 32        | 160.00           | 138.564 1         | 167.50   | 169.00 | 166.00                       | 155.35      | 7.916                                       | 7.953 | 8.009 | 8.102 | 32        |
| 33        | 165.00           | 142.894 2         | 172.50   | 174.00 | 171.00                       | 160.34      | 7.916                                       | 7.954 | 8.010 | 8.103 | 33        |
| 34        | 170.00           | 147.224 3         | 177.50   | 179.00 | 176.00                       | 165.33      | 7.917                                       | 7.954 | 8.011 | 8.105 | 34        |
| 35        | 175.00           | 151.554 4         | 182.50   | 184.00 | 181.00                       | 170.32      | 7.917                                       | 7.955 | 8.011 | 8.106 | 35        |
| 36        | 180.00           | 155.884 6         | 187.50   | 189.00 | 186.00                       | 175.31      | 7.917                                       | 7.955 | 8.012 | 8.107 | 36        |
| 37        | 185.00           | 160.214 7         | 192.50   | 194.00 | 191.00                       | 180.30      | 7.917                                       | 7.956 | 8.013 | 8.108 | 37        |
| 38        | 190.00           | 164.544 8         | 197.50   | 199.00 | 196.00                       | 185.29      | 7.918                                       | 7.956 | 8.013 | 8.109 | 38        |
| 39        | 195.00           | 168.875 0         | 202.50   | 204.00 | 201.00                       | 190.29      | 7.918                                       | 7.956 | 8.014 | 8.110 | 39        |
| 40        | 200.00           | 173.205 1         | 207.50   | 209.00 | 206.00                       | 195.28      | 7.918                                       | 7.957 | 8.015 | 8.111 | 40        |
| 41        | 205.00           | 177.535 2         | 212.50   | 214.00 | 211.00                       | 200.27      | 7.919                                       | 7.957 | 8.015 | 8.112 | 41        |
| 42        | 210.00           | 181.865 3         | 217.50   | 219.00 | 216.00                       | 205.26      | 7.919                                       | 7.958 | 8.016 | 8.113 | 42        |
| 43        | 215.00           | 186.195 5         | 222.50   | 224.00 | 221.00                       | 210.26      | 7.919                                       | 7.958 | 8.017 | 8.114 | 43        |
| 44        | 220.00           | 190.525 6         | 227.50   | 229.00 | 226.00                       | 215.25      | 7.919                                       | 7.959 | 8.017 | 8.115 | 44        |
| 45        | 225.00           | 194.855 7         | 232.50   | 234.00 | 231.00                       | 220.25      | 7.920                                       | 7.959 | 8.018 | 8.117 | 45        |
| 46        | 230.00           | 199.185 8         | 237.50   | 239.00 | 236.00                       | 225.24      | 7.920                                       | 7.959 | 8.019 | 8.118 | 46        |
| 47        | 235.00           | 203.516 0         | 242.50   | 244.00 | 241.00                       | 230.24      | 7.920                                       | 7.960 | 8.019 | 8.119 | 47        |
| 48        | 240.00           | 207.846 1         | 247.50   | 249.00 | 246.00                       | 235.23      | 7.920                                       | 7.960 | 8.020 | 8.120 | 48        |
| 49        | 245.00           | 212.176 2         | 252.50   | 254.00 | 251.00                       | 240.23      | 7.921                                       | 7.961 | 8.021 | 8.120 | 49        |
| 50        | 250.00           | 216.506 3         | 257.50   | 259.00 | 256.00                       | 245.22      | 7.921                                       | 7.961 | 8.021 | 8.121 | 50        |
| 51        | 255.00           | 220.836 5         | 262.50   | 264.00 | 261.00                       | 250.22      | 7.921                                       | 7.961 | 8.022 | 8.122 | 51        |
| 52        | 260.00           | 225.166 6         | 267.50   | 269.00 | 266.00                       | 255.21      | 7.921                                       | 7.962 | 8.022 | 8.123 | 52        |
| 53        | 265.00           | 229.496 7         | 272.50   | 274.00 | 271.00                       | 260.21      | 7.922                                       | 7.962 | 8.023 | 8.124 | 53        |
| 54        | 270.00           | 233.826 9         | 277.50   | 279.00 | 276.00                       | 265.20      | 7.922                                       | 7.962 | 8.023 | 8.125 | 54        |
| 55        | 275.00           | 238.157 0         | 282.50   | 284.00 | 281.00                       | 270.20      | 7.922                                       | 7.963 | 8.024 | 8.126 | 55        |

表 11 (续)

单位为毫米

| 齿数<br><i>z</i> | 分度圆<br>直径<br><i>D</i> | 基圆<br>直径<br><i>D<sub>b</sub></i> | 大径 <i>D<sub>a</sub></i> |        | 渐开线终<br>止圆直径<br><i>D<sub>Fi min</sub></i> | 小径<br><i>D<sub>i</sub></i> | 实际齿槽宽最大值<br><i>E<sub>max</sub> = E<sub>min</sub> + (T + λ)</i> |       |       |       | 齿数<br><i>z</i> |
|----------------|-----------------------|----------------------------------|-------------------------|--------|-------------------------------------------|----------------------------|----------------------------------------------------------------|-------|-------|-------|----------------|
|                |                       |                                  | 平齿根                     | 圆齿根    |                                           |                            | 4H                                                             | 5H    | 6H    | 7H    |                |
| 56             | 280.00                | 242.487 1                        | 287.50                  | 289.00 | 286.00                                    | 275.20                     | 7.922                                                          | 7.963 | 8.025 | 8.127 | 56             |
| 57             | 285.00                | 246.817 2                        | 292.50                  | 294.00 | 291.00                                    | 280.19                     | 7.922                                                          | 7.964 | 8.025 | 8.128 | 57             |
| 58             | 290.00                | 251.147 4                        | 297.50                  | 299.00 | 296.00                                    | 285.19                     | 7.923                                                          | 7.964 | 8.026 | 8.129 | 58             |
| 59             | 295.00                | 255.477 5                        | 302.50                  | 304.00 | 301.00                                    | 290.19                     | 7.923                                                          | 7.964 | 8.026 | 8.130 | 59             |
| 60             | 300.00                | 259.807 6                        | 307.50                  | 309.00 | 306.00                                    | 295.18                     | 7.923                                                          | 7.965 | 8.027 | 8.131 | 60             |
| 61             | 305.00                | 264.137 7                        | 312.50                  | 314.00 | 311.00                                    | 300.18                     | 7.923                                                          | 7.965 | 8.027 | 8.131 | 61             |
| 62             | 310.00                | 268.467 9                        | 317.50                  | 319.00 | 316.00                                    | 305.18                     | 7.924                                                          | 7.965 | 8.028 | 8.132 | 62             |
| 63             | 315.00                | 272.798 0                        | 322.50                  | 324.00 | 321.00                                    | 310.17                     | 7.924                                                          | 7.966 | 8.028 | 8.133 | 63             |
| 64             | 320.00                | 277.128 1                        | 327.50                  | 329.00 | 326.00                                    | 315.17                     | 7.924                                                          | 7.966 | 8.029 | 8.134 | 64             |
| 65             | 325.00                | 281.458 3                        | 332.50                  | 334.00 | 331.00                                    | 320.17                     | 7.924                                                          | 7.966 | 8.029 | 8.135 | 65             |
| 66             | 330.00                | 285.788 4                        | 337.50                  | 339.00 | 336.00                                    | 325.17                     | 7.924                                                          | 7.967 | 8.030 | 8.136 | 66             |
| 67             | 335.00                | 290.118 5                        | 342.50                  | 344.00 | 341.00                                    | 330.16                     | 7.925                                                          | 7.967 | 8.031 | 8.136 | 67             |
| 68             | 340.00                | 294.448 6                        | 347.50                  | 349.00 | 346.00                                    | 335.16                     | 7.925                                                          | 7.967 | 8.031 | 8.137 | 68             |
| 69             | 345.00                | 298.778 8                        | 352.50                  | 354.00 | 351.00                                    | 340.16                     | 7.925                                                          | 7.968 | 8.032 | 8.138 | 69             |
| 70             | 350.00                | 303.108 9                        | 357.50                  | 359.00 | 356.00                                    | 345.16                     | 7.925                                                          | 7.968 | 8.032 | 8.139 | 70             |
| 71             | 355.00                | 307.439 0                        | 362.50                  | 364.00 | 361.00                                    | 350.15                     | 7.925                                                          | 7.968 | 8.033 | 8.140 | 71             |
| 72             | 360.00                | 311.769 1                        | 367.50                  | 369.00 | 366.00                                    | 355.15                     | 7.926                                                          | 7.969 | 8.033 | 8.140 | 72             |
| 73             | 365.00                | 316.099 3                        | 372.50                  | 374.00 | 371.00                                    | 360.15                     | 7.926                                                          | 7.969 | 8.034 | 8.141 | 73             |
| 74             | 370.00                | 320.429 4                        | 377.50                  | 379.00 | 376.00                                    | 365.15                     | 7.926                                                          | 7.969 | 8.034 | 8.142 | 74             |
| 75             | 375.00                | 324.759 5                        | 382.50                  | 384.00 | 381.00                                    | 370.15                     | 7.926                                                          | 7.970 | 8.034 | 8.143 | 75             |
| 76             | 380.00                | 329.089 6                        | 387.50                  | 389.00 | 386.00                                    | 375.14                     | 7.926                                                          | 7.970 | 8.035 | 8.144 | 76             |
| 77             | 385.00                | 333.419 8                        | 392.50                  | 394.00 | 391.00                                    | 380.14                     | 7.927                                                          | 7.970 | 8.035 | 8.144 | 77             |
| 78             | 390.00                | 337.749 9                        | 397.50                  | 399.00 | 396.00                                    | 385.14                     | 7.927                                                          | 7.970 | 8.036 | 8.145 | 78             |
| 79             | 395.00                | 342.080 0                        | 402.50                  | 404.00 | 401.00                                    | 390.14                     | 7.927                                                          | 7.971 | 8.036 | 8.146 | 79             |
| 80             | 400.00                | 346.410 2                        | 407.50                  | 409.00 | 406.00                                    | 395.14                     | 7.927                                                          | 7.971 | 8.037 | 8.147 | 80             |
| 81             | 405.00                | 350.740 3                        | 412.50                  | 414.00 | 411.00                                    | 400.14                     | 7.927                                                          | 7.971 | 8.037 | 8.147 | 81             |
| 82             | 410.00                | 355.070 4                        | 417.50                  | 419.00 | 416.00                                    | 405.13                     | 7.928                                                          | 7.972 | 8.038 | 8.148 | 82             |
| 83             | 415.00                | 359.400 5                        | 422.50                  | 424.00 | 421.00                                    | 410.13                     | 7.928                                                          | 7.972 | 8.038 | 8.149 | 83             |
| 84             | 420.00                | 363.730 7                        | 427.50                  | 429.00 | 426.00                                    | 415.13                     | 7.928                                                          | 7.972 | 8.039 | 8.150 | 84             |
| 85             | 425.00                | 368.060 8                        | 432.50                  | 434.00 | 431.00                                    | 420.13                     | 7.928                                                          | 7.973 | 8.039 | 8.150 | 85             |
| 86             | 430.00                | 372.390 9                        | 437.50                  | 439.00 | 436.00                                    | 425.13                     | 7.928                                                          | 7.973 | 8.040 | 8.151 | 86             |
| 87             | 435.00                | 376.721 0                        | 442.50                  | 444.00 | 441.00                                    | 430.13                     | 7.928                                                          | 7.973 | 8.040 | 8.152 | 87             |
| 88             | 440.00                | 381.051 2                        | 447.50                  | 449.00 | 446.00                                    | 435.12                     | 7.929                                                          | 7.973 | 8.041 | 8.152 | 88             |
| 89             | 445.00                | 385.381 3                        | 452.50                  | 454.00 | 451.00                                    | 440.12                     | 7.929                                                          | 7.974 | 8.041 | 8.153 | 89             |
| 90             | 450.00                | 389.711 4                        | 457.50                  | 459.00 | 456.00                                    | 445.12                     | 7.929                                                          | 7.974 | 8.041 | 8.154 | 90             |
| 91             | 455.00                | 394.041 6                        | 462.50                  | 464.00 | 461.00                                    | 450.12                     | 7.929                                                          | 7.974 | 8.042 | 8.155 | 91             |
| 92             | 460.00                | 398.371 7                        | 467.50                  | 469.00 | 466.00                                    | 455.12                     | 7.929                                                          | 7.975 | 8.042 | 8.155 | 92             |
| 93             | 465.00                | 402.701 8                        | 472.50                  | 474.00 | 471.00                                    | 460.12                     | 7.929                                                          | 7.975 | 8.043 | 8.156 | 93             |
| 94             | 470.00                | 407.031 9                        | 477.50                  | 479.00 | 476.00                                    | 465.12                     | 7.930                                                          | 7.975 | 8.043 | 8.157 | 94             |
| 95             | 475.00                | 411.362 1                        | 482.50                  | 484.00 | 481.00                                    | 470.12                     | 7.930                                                          | 7.975 | 8.044 | 8.157 | 95             |
| 96             | 480.00                | 415.692 2                        | 487.50                  | 489.00 | 486.00                                    | 475.11                     | 7.930                                                          | 7.976 | 8.044 | 8.158 | 96             |
| 97             | 485.00                | 420.022 3                        | 492.50                  | 494.00 | 491.00                                    | 480.11                     | 7.930                                                          | 7.976 | 8.044 | 8.159 | 97             |
| 98             | 490.00                | 424.352 4                        | 497.50                  | 499.00 | 496.00                                    | 485.11                     | 7.930                                                          | 7.976 | 8.045 | 8.159 | 98             |
| 99             | 495.00                | 428.682 6                        | 502.50                  | 504.00 | 501.00                                    | 490.11                     | 7.931                                                          | 7.976 | 8.045 | 8.160 | 99             |
| 100            | 500.00                | 433.012 7                        | 507.50                  | 509.00 | 506.00                                    | 495.11                     | 7.931                                                          | 7.977 | 8.046 | 8.161 | 100            |

表 12 30°内花键  
模数  $m=6\text{ mm}$  作用齿槽宽最小值  $E_{\min}=9.425\text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_e$ |        | 渐开线终<br>止圆直径<br>$D_{f,\min}$ | 小径<br>$D_i$ | 实际齿槽宽最大值<br>$E_{\max}=E_{\min}+(T+\Delta)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|--------|------------------------------|-------------|--------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根    |                              |             | 1H                                         | 5H    | 6H    | 7H    |           |
| 10        | 60.00            | 54.961 5          | 69.00    | 70.80  | 67.20                        | 55.45       | 9.481                                      | 9.515 | 9.566 | 9.566 | 10        |
| 11        | 66.00            | 57.157 7          | 75.00    | 76.80  | 73.20                        | 61.31       | 9.482                                      | 9.516 | 9.568 | 9.568 | 11        |
| 12        | 72.00            | 62.353 8          | 81.00    | 82.80  | 79.20                        | 67.19       | 9.483                                      | 9.517 | 9.569 | 9.569 | 12        |
| 13        | 78.00            | 67.550 0          | 87.00    | 88.80  | 85.20                        | 73.09       | 9.483                                      | 9.518 | 9.571 | 9.571 | 13        |
| 14        | 84.00            | 72.746 1          | 93.00    | 94.80  | 91.20                        | 79.01       | 9.484                                      | 9.519 | 9.572 | 9.572 | 14        |
| 15        | 90.00            | 77.942 3          | 99.00    | 100.80 | 97.20                        | 84.93       | 9.484                                      | 9.520 | 9.573 | 9.573 | 15        |
| 16        | 96.00            | 83.138 4          | 105.00   | 106.80 | 103.20                       | 90.87       | 9.485                                      | 9.521 | 9.575 | 9.575 | 16        |
| 17        | 102.00           | 88.334 5          | 111.00   | 112.80 | 109.20                       | 96.82       | 9.485                                      | 9.521 | 9.576 | 9.576 | 17        |
| 18        | 108.00           | 93.530 7          | 117.00   | 118.80 | 115.20                       | 102.77      | 9.486                                      | 9.522 | 9.577 | 9.577 | 18        |
| 19        | 114.00           | 98.726 9          | 123.00   | 124.80 | 121.20                       | 108.73      | 9.486                                      | 9.523 | 9.578 | 9.578 | 19        |
| 20        | 120.00           | 103.923 0         | 129.00   | 130.80 | 127.20                       | 114.69      | 9.487                                      | 9.524 | 9.579 | 9.579 | 20        |
| 21        | 126.00           | 109.119 2         | 135.00   | 136.80 | 133.20                       | 120.65      | 9.487                                      | 9.524 | 9.580 | 9.580 | 21        |
| 22        | 132.00           | 114.315 4         | 141.00   | 142.80 | 139.20                       | 126.62      | 9.487                                      | 9.525 | 9.581 | 9.581 | 22        |
| 23        | 138.00           | 119.511 5         | 147.00   | 148.80 | 145.20                       | 132.59      | 9.488                                      | 9.526 | 9.582 | 9.582 | 23        |
| 24        | 144.00           | 124.707 7         | 153.00   | 154.80 | 151.20                       | 138.57      | 9.488                                      | 9.526 | 9.583 | 9.583 | 24        |
| 25        | 150.00           | 129.903 8         | 159.00   | 160.80 | 157.20                       | 144.54      | 9.489                                      | 9.527 | 9.584 | 9.584 | 25        |
| 26        | 156.00           | 135.100 0         | 165.00   | 166.80 | 163.20                       | 150.52      | 9.489                                      | 9.527 | 9.585 | 9.585 | 26        |
| 27        | 162.00           | 140.296 1         | 171.00   | 172.80 | 169.20                       | 156.50      | 9.489                                      | 9.528 | 9.586 | 9.586 | 27        |
| 28        | 168.00           | 145.492 3         | 177.00   | 178.80 | 175.20                       | 162.48      | 9.490                                      | 9.529 | 9.587 | 9.587 | 28        |
| 29        | 174.00           | 150.688 4         | 183.00   | 184.80 | 181.20                       | 168.47      | 9.490                                      | 9.529 | 9.588 | 9.588 | 29        |
| 30        | 180.00           | 155.884 6         | 189.00   | 190.80 | 187.20                       | 174.45      | 9.490                                      | 9.530 | 9.589 | 9.589 | 30        |
| 31        | 186.00           | 161.080 7         | 195.00   | 196.80 | 193.20                       | 180.43      | 9.491                                      | 9.530 | 9.589 | 9.589 | 31        |
| 32        | 192.00           | 166.276 9         | 201.00   | 202.80 | 199.20                       | 186.42      | 9.491                                      | 9.531 | 9.590 | 9.590 | 32        |
| 33        | 198.00           | 171.473 0         | 207.00   | 208.80 | 205.20                       | 192.41      | 9.491                                      | 9.531 | 9.591 | 9.591 | 33        |
| 34        | 204.00           | 176.669 2         | 213.00   | 214.80 | 211.20                       | 198.39      | 9.492                                      | 9.532 | 9.592 | 9.592 | 34        |
| 35        | 210.00           | 181.865 3         | 219.00   | 220.80 | 217.20                       | 204.38      | 9.492                                      | 9.532 | 9.593 | 9.593 | 35        |
| 36        | 216.00           | 187.061 5         | 225.00   | 226.80 | 223.20                       | 210.37      | 9.492                                      | 9.533 | 9.593 | 9.593 | 36        |
| 37        | 222.00           | 192.257 6         | 231.00   | 232.80 | 229.20                       | 216.36      | 9.493                                      | 9.533 | 9.594 | 9.594 | 37        |
| 38        | 228.00           | 197.453 8         | 237.00   | 238.80 | 235.20                       | 222.35      | 9.493                                      | 9.534 | 9.595 | 9.595 | 38        |
| 39        | 234.00           | 202.649 9         | 243.00   | 244.80 | 241.20                       | 228.34      | 9.493                                      | 9.534 | 9.596 | 9.596 | 39        |
| 40        | 240.00           | 207.846 1         | 249.00   | 250.80 | 247.20                       | 234.33      | 9.493                                      | 9.535 | 9.596 | 9.596 | 40        |
| 41        | 246.00           | 213.042 2         | 255.00   | 256.80 | 253.20                       | 240.33      | 9.494                                      | 9.535 | 9.597 | 9.597 | 41        |
| 42        | 252.00           | 218.238 4         | 261.00   | 262.80 | 259.20                       | 246.32      | 9.494                                      | 9.536 | 9.598 | 9.598 | 42        |
| 43        | 258.00           | 223.434 6         | 267.00   | 268.80 | 265.20                       | 252.31      | 9.494                                      | 9.536 | 9.599 | 9.599 | 43        |
| 44        | 264.00           | 228.630 7         | 273.00   | 274.80 | 271.20                       | 258.30      | 9.495                                      | 9.536 | 9.600 | 9.600 | 44        |
| 45        | 270.00           | 233.826 9         | 279.00   | 280.80 | 277.20                       | 264.30      | 9.495                                      | 9.537 | 9.600 | 9.600 | 45        |
| 46        | 276.00           | 239.023 0         | 285.00   | 286.80 | 283.20                       | 270.29      | 9.495                                      | 9.537 | 9.601 | 9.601 | 46        |
| 47        | 282.00           | 244.219 2         | 291.00   | 292.80 | 289.20                       | 276.28      | 9.495                                      | 9.538 | 9.601 | 9.601 | 47        |
| 48        | 288.00           | 249.415 3         | 297.00   | 298.80 | 295.20                       | 282.28      | 9.496                                      | 9.538 | 9.602 | 9.602 | 48        |
| 49        | 294.00           | 254.611 5         | 303.00   | 304.80 | 301.20                       | 288.27      | 9.496                                      | 9.539 | 9.603 | 9.603 | 49        |
| 50        | 300.00           | 259.807 6         | 309.00   | 310.80 | 307.20                       | 294.27      | 9.496                                      | 9.539 | 9.603 | 9.603 | 50        |
| 51        | 306.00           | 265.003 8         | 315.00   | 316.80 | 313.20                       | 300.26      | 9.496                                      | 9.539 | 9.604 | 9.604 | 51        |
| 52        | 312.00           | 270.199 9         | 321.00   | 322.80 | 319.20                       | 306.26      | 9.497                                      | 9.540 | 9.605 | 9.605 | 52        |
| 53        | 318.00           | 275.396 1         | 327.00   | 328.80 | 325.20                       | 312.25      | 9.497                                      | 9.540 | 9.605 | 9.605 | 53        |
| 54        | 324.00           | 280.592 2         | 333.00   | 334.80 | 331.20                       | 318.25      | 9.497                                      | 9.541 | 9.606 | 9.606 | 54        |
| 55        | 330.00           | 285.788 4         | 339.00   | 340.80 | 337.20                       | 324.24      | 9.497                                      | 9.541 | 9.607 | 9.607 | 55        |

表 12 (续)

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_a$ |        | 渐开线终<br>止圆直径<br>$D_{F, \min}$ | 小径<br>$D_i$ | 实际齿槽宽最大值<br>$E_{\max} = E_{\min} + (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|--------|-------------------------------|-------------|---------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   | 平齿根      | 圆齿根    |                               |             | 4H                                                | 5H    | 6H    | 7H    |           |
| 56        | 336.00           | 290.984 5         | 345.00   | 346.80 | 343.20                        | 330.24      | 9.498                                             | 9.542 | 9.607 | 9.717 | 56        |
| 57        | 342.00           | 296.180 7         | 351.00   | 352.80 | 349.20                        | 336.23      | 9.498                                             | 9.542 | 9.608 | 9.718 | 57        |
| 58        | 348.00           | 301.376 8         | 357.00   | 358.80 | 355.20                        | 342.23      | 9.498                                             | 9.542 | 9.608 | 9.719 | 58        |
| 59        | 354.00           | 306.573 0         | 363.00   | 364.80 | 361.20                        | 348.22      | 9.498                                             | 9.543 | 9.609 | 9.720 | 59        |
| 60        | 360.00           | 311.769 1         | 369.00   | 370.80 | 367.20                        | 354.22      | 9.499                                             | 9.543 | 9.610 | 9.720 | 60        |
| 61        | 366.00           | 316.965 3         | 375.00   | 376.80 | 373.20                        | 360.22      | 9.499                                             | 9.543 | 9.610 | 9.721 | 61        |
| 62        | 372.00           | 322.161 4         | 381.00   | 382.80 | 379.20                        | 366.21      | 9.499                                             | 9.544 | 9.611 | 9.722 | 62        |
| 63        | 378.00           | 327.357 6         | 387.00   | 388.80 | 385.20                        | 372.21      | 9.499                                             | 9.544 | 9.611 | 9.723 | 63        |
| 64        | 384.00           | 332.553 8         | 393.00   | 394.80 | 391.20                        | 378.21      | 9.500                                             | 9.545 | 9.612 | 9.724 | 64        |
| 65        | 390.00           | 337.749 9         | 399.00   | 400.80 | 397.20                        | 384.20      | 9.500                                             | 9.545 | 9.612 | 9.725 | 65        |
| 66        | 396.00           | 342.946 1         | 405.00   | 406.80 | 403.20                        | 390.20      | 9.500                                             | 9.545 | 9.613 | 9.726 | 66        |
| 67        | 402.00           | 348.142 2         | 411.00   | 412.80 | 409.20                        | 396.20      | 9.500                                             | 9.546 | 9.614 | 9.727 | 67        |
| 68        | 408.00           | 353.338 4         | 417.00   | 418.80 | 415.20                        | 402.19      | 9.501                                             | 9.546 | 9.614 | 9.728 | 68        |
| 69        | 414.00           | 358.534 5         | 423.00   | 424.80 | 421.20                        | 408.19      | 9.501                                             | 9.546 | 9.615 | 9.729 | 69        |
| 70        | 420.00           | 363.730 7         | 429.00   | 430.80 | 427.20                        | 414.19      | 9.501                                             | 9.547 | 9.615 | 9.730 | 70        |
| 71        | 426.00           | 368.926 8         | 435.00   | 436.80 | 433.20                        | 420.19      | 9.501                                             | 9.547 | 9.616 | 9.730 | 71        |
| 72        | 432.00           | 374.123 0         | 441.00   | 442.80 | 439.20                        | 426.18      | 9.501                                             | 9.547 | 9.616 | 9.731 | 72        |
| 73        | 438.00           | 379.319 1         | 447.00   | 448.80 | 445.20                        | 432.18      | 9.502                                             | 9.548 | 9.617 | 9.732 | 73        |
| 74        | 444.00           | 384.515 3         | 453.00   | 454.80 | 451.20                        | 438.18      | 9.502                                             | 9.548 | 9.617 | 9.733 | 74        |
| 75        | 450.00           | 389.711 4         | 459.00   | 460.80 | 457.20                        | 444.18      | 9.502                                             | 9.548 | 9.618 | 9.734 | 75        |
| 76        | 456.00           | 394.907 6         | 465.00   | 466.80 | 463.20                        | 450.17      | 9.502                                             | 9.549 | 9.619 | 9.735 | 76        |
| 77        | 462.00           | 400.103 7         | 471.00   | 472.80 | 469.20                        | 456.17      | 9.502                                             | 9.549 | 9.619 | 9.736 | 77        |
| 78        | 468.00           | 405.299 9         | 477.00   | 478.80 | 475.20                        | 462.17      | 9.503                                             | 9.549 | 9.620 | 9.736 | 78        |
| 79        | 474.00           | 410.496 0         | 483.00   | 484.80 | 481.20                        | 468.17      | 9.503                                             | 9.550 | 9.620 | 9.737 | 79        |
| 80        | 480.00           | 415.692 2         | 489.00   | 490.80 | 487.20                        | 474.16      | 9.503                                             | 9.550 | 9.621 | 9.738 | 80        |
| 81        | 486.00           | 420.888 3         | 495.00   | 496.80 | 493.20                        | 480.16      | 9.503                                             | 9.550 | 9.621 | 9.739 | 81        |
| 82        | 492.00           | 426.084 5         | 501.00   | 502.80 | 499.20                        | 486.16      | 9.504                                             | 9.551 | 9.622 | 9.740 | 82        |
| 83        | 498.00           | 431.280 6         | 507.00   | 508.80 | 505.20                        | 492.16      | 9.504                                             | 9.551 | 9.622 | 9.741 | 83        |
| 84        | 504.00           | 436.476 8         | 513.00   | 514.80 | 511.20                        | 498.16      | 9.504                                             | 9.552 | 9.624 | 9.743 | 84        |
| 85        | 510.00           | 441.672 9         | 519.00   | 520.80 | 517.20                        | 504.15      | 9.505                                             | 9.552 | 9.624 | 9.744 | 85        |
| 86        | 516.00           | 446.869 1         | 525.00   | 526.80 | 523.20                        | 510.15      | 9.505                                             | 9.553 | 9.625 | 9.745 | 86        |
| 87        | 522.00           | 452.065 3         | 531.00   | 532.80 | 529.20                        | 516.15      | 9.505                                             | 9.553 | 9.625 | 9.746 | 87        |
| 88        | 528.00           | 457.261 4         | 537.00   | 538.80 | 535.20                        | 522.15      | 9.505                                             | 9.554 | 9.626 | 9.747 | 88        |
| 89        | 534.00           | 462.457 6         | 543.00   | 544.80 | 541.20                        | 528.15      | 9.506                                             | 9.554 | 9.627 | 9.748 | 89        |
| 90        | 540.00           | 467.653 7         | 549.00   | 550.80 | 547.20                        | 534.15      | 9.506                                             | 9.554 | 9.627 | 9.749 | 90        |
| 91        | 546.00           | 472.849 9         | 555.00   | 556.80 | 553.20                        | 540.14      | 9.506                                             | 9.555 | 9.628 | 9.750 | 91        |
| 92        | 552.00           | 478.046 0         | 561.00   | 562.80 | 559.20                        | 546.14      | 9.506                                             | 9.555 | 9.628 | 9.751 | 92        |
| 93        | 558.00           | 483.242 2         | 567.00   | 568.80 | 565.20                        | 552.14      | 9.506                                             | 9.555 | 9.629 | 9.752 | 93        |
| 94        | 564.00           | 488.438 3         | 573.00   | 574.80 | 571.20                        | 558.14      | 9.507                                             | 9.556 | 9.630 | 9.752 | 94        |
| 95        | 570.00           | 493.634 5         | 579.00   | 580.80 | 577.20                        | 564.14      | 9.507                                             | 9.556 | 9.630 | 9.753 | 95        |
| 96        | 576.00           | 498.830 6         | 585.00   | 586.80 | 583.20                        | 570.14      | 9.507                                             | 9.557 | 9.631 | 9.754 | 96        |
| 97        | 582.00           | 504.026 8         | 591.00   | 592.80 | 589.20                        | 576.14      | 9.507                                             | 9.557 | 9.631 | 9.755 | 97        |
| 98        | 588.00           | 509.222 9         | 597.00   | 598.80 | 595.20                        | 582.13      | 9.508                                             | 9.557 | 9.632 | 9.756 | 98        |
| 99        | 594.00           | 514.419 1         | 603.00   | 604.80 | 601.20                        | 588.13      | 9.508                                             | 9.558 | 9.633 | 9.757 | 99        |
| 100       | 600.00           | 519.615 2         | 609.00   | 610.80 | 607.20                        | 594.13      | 9.508                                             | 9.558 | 9.633 | 9.758 | 100       |

表 13 30°内花键

模数  $m=8\text{ mm}$  作用齿槽宽最小值  $E_{v\min}=12.566\text{ mm}$ 

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_a$ |        | 渐开线终<br>止圆直径<br>$D_{Fi\min}$ | 小径<br>$D_i$ | 实际齿槽宽最大值<br>$E_{\max}=E_{v\min}+(T+\lambda)$ |        |        |        | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|--------|------------------------------|-------------|----------------------------------------------|--------|--------|--------|-----------|
|           |                  |                   | 平齿根      | 圆齿根    |                              |             | 4H                                           | 5H     | 6H     | 7H     |           |
| 10        | 80.00            | 69.282 0          | 92.00    | 94.40  | 89.60                        | 73.94       | 12.629                                       | 12.666 | 12.723 | 12.816 | 10        |
| 11        | 88.00            | 76.210 2          | 100.00   | 102.40 | 97.60                        | 81.74       | 12.630                                       | 12.667 | 12.724 | 12.819 | 11        |
| 12        | 96.00            | 83.138 4          | 108.00   | 110.40 | 105.60                       | 89.59       | 12.630                                       | 12.669 | 12.726 | 12.822 | 12        |
| 13        | 104.00           | 90.066 6          | 116.00   | 118.40 | 113.60                       | 97.45       | 12.631                                       | 12.670 | 12.728 | 12.824 | 13        |
| 14        | 112.00           | 96.994 8          | 124.00   | 126.40 | 121.60                       | 105.34      | 12.631                                       | 12.671 | 12.729 | 12.827 | 14        |
| 15        | 120.00           | 103.923 0         | 132.00   | 134.40 | 129.60                       | 113.25      | 12.632                                       | 12.671 | 12.731 | 12.829 | 15        |
| 16        | 128.00           | 110.851 3         | 140.00   | 142.40 | 137.60                       | 121.16      | 12.633                                       | 12.672 | 12.732 | 12.831 | 16        |
| 17        | 136.00           | 117.779 5         | 148.00   | 150.40 | 145.60                       | 129.09      | 12.633                                       | 12.673 | 12.733 | 12.833 | 17        |
| 18        | 144.00           | 124.707 7         | 156.00   | 158.40 | 153.60                       | 137.02      | 12.634                                       | 12.674 | 12.735 | 12.836 | 18        |
| 19        | 152.00           | 131.635 9         | 164.00   | 166.40 | 161.60                       | 144.97      | 12.634                                       | 12.675 | 12.736 | 12.838 | 19        |
| 20        | 160.00           | 138.564 1         | 172.00   | 174.40 | 169.60                       | 152.92      | 12.635                                       | 12.676 | 12.737 | 12.840 | 20        |
| 21        | 168.00           | 145.492 3         | 180.00   | 182.40 | 177.60                       | 160.87      | 12.635                                       | 12.676 | 12.738 | 12.842 | 21        |
| 22        | 176.00           | 152.420 5         | 188.00   | 190.40 | 185.60                       | 168.83      | 12.636                                       | 12.677 | 12.739 | 12.843 | 22        |
| 23        | 184.00           | 159.348 7         | 196.00   | 198.40 | 193.60                       | 176.79      | 12.636                                       | 12.678 | 12.741 | 12.845 | 23        |
| 24        | 192.00           | 166.276 9         | 204.00   | 206.40 | 201.60                       | 184.76      | 12.637                                       | 12.679 | 12.742 | 12.847 | 24        |
| 25        | 200.00           | 173.205 1         | 212.00   | 214.40 | 209.60                       | 192.72      | 12.637                                       | 12.679 | 12.743 | 12.849 | 25        |
| 26        | 208.00           | 180.133 3         | 220.00   | 222.40 | 217.60                       | 200.70      | 12.637                                       | 12.680 | 12.744 | 12.850 | 26        |
| 27        | 216.00           | 187.061 5         | 228.00   | 230.40 | 225.60                       | 208.67      | 12.638                                       | 12.681 | 12.745 | 12.852 | 27        |
| 28        | 224.00           | 193.989 7         | 236.00   | 238.40 | 233.60                       | 216.64      | 12.638                                       | 12.681 | 12.746 | 12.854 | 28        |
| 29        | 232.00           | 200.917 9         | 244.00   | 246.40 | 241.60                       | 224.62      | 12.639                                       | 12.682 | 12.747 | 12.855 | 29        |
| 30        | 240.00           | 207.846 1         | 252.00   | 254.40 | 249.60                       | 232.60      | 12.639                                       | 12.683 | 12.748 | 12.857 | 30        |
| 31        | 248.00           | 214.774 3         | 260.00   | 262.40 | 257.60                       | 240.58      | 12.639                                       | 12.683 | 12.749 | 12.858 | 31        |
| 32        | 256.00           | 221.702 5         | 268.00   | 270.40 | 265.60                       | 248.56      | 12.640                                       | 12.684 | 12.750 | 12.860 | 32        |
| 33        | 264.00           | 228.630 7         | 276.00   | 278.40 | 273.60                       | 256.54      | 12.640                                       | 12.684 | 12.751 | 12.861 | 33        |
| 34        | 272.00           | 235.558 9         | 284.00   | 286.40 | 281.60                       | 264.53      | 12.641                                       | 12.685 | 12.752 | 12.863 | 34        |
| 35        | 280.00           | 242.487 1         | 292.00   | 294.40 | 289.60                       | 272.51      | 12.641                                       | 12.686 | 12.753 | 12.864 | 35        |
| 36        | 288.00           | 249.415 3         | 300.00   | 302.40 | 297.60                       | 280.50      | 12.641                                       | 12.686 | 12.754 | 12.866 | 36        |
| 37        | 296.00           | 256.343 5         | 308.00   | 310.40 | 305.60                       | 288.48      | 12.642                                       | 12.687 | 12.754 | 12.867 | 37        |
| 38        | 304.00           | 263.271 7         | 316.00   | 318.40 | 313.60                       | 296.47      | 12.642                                       | 12.687 | 12.755 | 12.869 | 38        |
| 39        | 312.00           | 270.199 9         | 324.00   | 326.40 | 321.60                       | 304.46      | 12.642                                       | 12.688 | 12.756 | 12.870 | 39        |
| 40        | 320.00           | 277.128 1         | 332.00   | 334.40 | 329.60                       | 312.45      | 12.643                                       | 12.688 | 12.757 | 12.871 | 40        |
| 41        | 328.00           | 284.056 3         | 340.00   | 342.40 | 337.60                       | 320.43      | 12.643                                       | 12.689 | 12.758 | 12.873 | 41        |
| 42        | 336.00           | 290.984 5         | 348.00   | 350.40 | 345.60                       | 328.42      | 12.643                                       | 12.689 | 12.759 | 12.874 | 42        |
| 43        | 344.00           | 297.912 7         | 356.00   | 358.40 | 353.60                       | 336.41      | 12.644                                       | 12.690 | 12.759 | 12.875 | 43        |
| 44        | 352.00           | 304.840 9         | 364.00   | 366.40 | 361.60                       | 344.40      | 12.644                                       | 12.690 | 12.760 | 12.877 | 44        |
| 45        | 360.00           | 311.769 1         | 372.00   | 374.40 | 369.60                       | 352.39      | 12.644                                       | 12.691 | 12.761 | 12.878 | 45        |
| 46        | 368.00           | 318.697 3         | 380.00   | 382.40 | 377.60                       | 360.39      | 12.645                                       | 12.691 | 12.762 | 12.879 | 46        |
| 47        | 376.00           | 325.625 5         | 388.00   | 390.40 | 385.60                       | 368.38      | 12.645                                       | 12.692 | 12.763 | 12.880 | 47        |
| 48        | 384.00           | 332.553 8         | 396.00   | 398.40 | 393.60                       | 376.37      | 12.645                                       | 12.692 | 12.763 | 12.882 | 48        |
| 49        | 392.00           | 339.482 0         | 404.00   | 406.40 | 401.60                       | 384.36      | 12.645                                       | 12.693 | 12.764 | 12.883 | 49        |
| 50        | 400.00           | 346.410 2         | 412.00   | 414.40 | 409.60                       | 392.35      | 12.646                                       | 12.693 | 12.765 | 12.884 | 50        |
| 51        | 408.00           | 353.338 4         | 420.00   | 422.40 | 417.60                       | 400.35      | 12.646                                       | 12.694 | 12.766 | 12.885 | 51        |
| 52        | 416.00           | 360.266 6         | 428.00   | 430.40 | 425.60                       | 408.34      | 12.646                                       | 12.694 | 12.766 | 12.886 | 52        |
| 53        | 424.00           | 367.194 8         | 436.00   | 438.40 | 433.60                       | 416.33      | 12.647                                       | 12.695 | 12.767 | 12.888 | 53        |
| 54        | 432.00           | 374.123 0         | 444.00   | 446.40 | 441.60                       | 424.33      | 12.647                                       | 12.695 | 12.768 | 12.889 | 54        |
| 55        | 440.00           | 381.051 2         | 452.00   | 454.40 | 449.60                       | 432.32      | 12.647                                       | 12.696 | 12.769 | 12.890 | 55        |

表 13 (续)

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_e$ |        | 渐开线终<br>止圆直径<br>$D_{Fi \text{ min}}$ | 小径<br>$D_{ii}$ | 实际齿槽宽最大值<br>$E_{\text{min}} = E_{v \text{ min}} + (T + \lambda)$ |        |        |        | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|--------|--------------------------------------|----------------|------------------------------------------------------------------|--------|--------|--------|-----------|
|           |                  |                   | 平齿根      | 圆齿根    |                                      |                | 4H                                                               | 5H     | 6H     | 7H     |           |
| 56        | 448.00           | 387.979 4         | 460.00   | 462.40 | 457.60                               | 440.32         | 12.648                                                           | 12.696 | 12.769 | 12.891 | 56        |
| 57        | 456.00           | 394.907 6         | 468.00   | 470.40 | 465.60                               | 448.31         | 12.648                                                           | 12.697 | 12.770 | 12.892 | 57        |
| 58        | 464.00           | 401.835 8         | 476.00   | 478.40 | 473.60                               | 456.30         | 12.648                                                           | 12.697 | 12.771 | 12.893 | 58        |
| 59        | 472.00           | 408.764 0         | 484.00   | 486.40 | 481.60                               | 464.30         | 12.648                                                           | 12.698 | 12.771 | 12.894 | 59        |
| 60        | 480.00           | 415.692 2         | 492.00   | 494.40 | 489.60                               | 472.29         | 12.649                                                           | 12.698 | 12.772 | 12.895 | 60        |
| 61        | 488.00           | 422.620 4         | 500.00   | 502.40 | 497.60                               | 480.29         | 12.649                                                           | 12.698 | 12.773 | 12.897 | 61        |
| 62        | 496.00           | 429.548 6         | 508.00   | 510.40 | 505.60                               | 488.28         | 12.649                                                           | 12.699 | 12.773 | 12.898 | 62        |
| 63        | 504.00           | 436.476 8         | 516.00   | 518.40 | 513.60                               | 496.28         | 12.650                                                           | 12.700 | 12.775 | 12.900 | 63        |
| 64        | 512.00           | 443.405 0         | 524.00   | 526.40 | 521.60                               | 504.28         | 12.650                                                           | 12.700 | 12.776 | 12.902 | 64        |
| 65        | 520.00           | 450.333 2         | 532.00   | 534.40 | 529.60                               | 512.27         | 12.650                                                           | 12.701 | 12.777 | 12.903 | 65        |
| 66        | 528.00           | 457.261 4         | 540.00   | 542.40 | 537.60                               | 520.27         | 12.651                                                           | 12.701 | 12.777 | 12.904 | 66        |
| 67        | 536.00           | 464.189 6         | 548.00   | 550.40 | 545.60                               | 528.26         | 12.651                                                           | 12.702 | 12.778 | 12.905 | 67        |
| 68        | 544.00           | 471.117 8         | 556.00   | 558.40 | 553.60                               | 536.26         | 12.651                                                           | 12.702 | 12.779 | 12.907 | 68        |
| 69        | 552.00           | 478.046 0         | 564.00   | 566.40 | 561.60                               | 544.25         | 12.652                                                           | 12.703 | 12.780 | 12.908 | 69        |
| 70        | 560.00           | 484.974 2         | 572.00   | 574.40 | 569.60                               | 552.25         | 12.652                                                           | 12.704 | 12.781 | 12.909 | 70        |
| 71        | 568.00           | 491.902 4         | 580.00   | 582.40 | 577.60                               | 560.25         | 12.652                                                           | 12.704 | 12.781 | 12.911 | 71        |
| 72        | 576.00           | 498.830 6         | 588.00   | 590.40 | 585.60                               | 568.24         | 12.653                                                           | 12.705 | 12.782 | 12.912 | 72        |
| 73        | 584.00           | 505.758 8         | 596.00   | 598.40 | 593.60                               | 576.24         | 12.653                                                           | 12.705 | 12.783 | 12.913 | 73        |
| 74        | 592.00           | 512.687 0         | 604.00   | 606.40 | 601.60                               | 584.24         | 12.653                                                           | 12.706 | 12.784 | 12.914 | 74        |
| 75        | 600.00           | 519.615 2         | 612.00   | 614.40 | 609.60                               | 592.23         | 12.654                                                           | 12.706 | 12.785 | 12.916 | 75        |
| 76        | 608.00           | 526.543 4         | 620.00   | 622.40 | 617.60                               | 600.23         | 12.654                                                           | 12.707 | 12.785 | 12.917 | 76        |
| 77        | 616.00           | 533.471 6         | 628.00   | 630.40 | 625.60                               | 608.23         | 12.654                                                           | 12.707 | 12.786 | 12.918 | 77        |
| 78        | 624.00           | 540.399 8         | 636.00   | 638.40 | 633.60                               | 616.22         | 12.655                                                           | 12.708 | 12.787 | 12.919 | 78        |
| 79        | 632.00           | 547.328 0         | 644.00   | 646.40 | 641.60                               | 624.22         | 12.655                                                           | 12.708 | 12.788 | 12.921 | 79        |
| 80        | 640.00           | 554.256 3         | 652.00   | 654.40 | 649.60                               | 632.22         | 12.655                                                           | 12.709 | 12.789 | 12.922 | 80        |
| 81        | 648.00           | 561.184 5         | 660.00   | 662.40 | 657.60                               | 640.22         | 12.656                                                           | 12.709 | 12.789 | 12.923 | 81        |
| 82        | 656.00           | 568.112 7         | 668.00   | 670.40 | 665.60                               | 648.21         | 12.656                                                           | 12.710 | 12.790 | 12.925 | 82        |
| 83        | 664.00           | 575.040 9         | 676.00   | 678.40 | 673.60                               | 656.21         | 12.656                                                           | 12.710 | 12.791 | 12.926 | 83        |
| 84        | 672.00           | 581.969 1         | 684.00   | 686.40 | 681.60                               | 664.21         | 12.657                                                           | 12.711 | 12.792 | 12.927 | 84        |
| 85        | 680.00           | 588.897 3         | 692.00   | 694.40 | 689.60                               | 672.21         | 12.657                                                           | 12.711 | 12.793 | 12.928 | 85        |
| 86        | 688.00           | 595.825 5         | 700.00   | 702.40 | 697.60                               | 680.20         | 12.657                                                           | 12.712 | 12.793 | 12.930 | 86        |
| 87        | 696.00           | 602.753 7         | 708.00   | 710.40 | 705.60                               | 688.20         | 12.658                                                           | 12.712 | 12.794 | 12.931 | 87        |
| 88        | 704.00           | 609.681 9         | 716.00   | 718.40 | 713.60                               | 696.20         | 12.658                                                           | 12.713 | 12.795 | 12.932 | 88        |
| 89        | 712.00           | 616.610 1         | 724.00   | 726.40 | 721.60                               | 704.20         | 12.658                                                           | 12.713 | 12.796 | 12.934 | 89        |
| 90        | 720.00           | 623.538 3         | 732.00   | 734.40 | 729.60                               | 712.19         | 12.658                                                           | 12.714 | 12.797 | 12.935 | 90        |
| 91        | 728.00           | 630.466 5         | 740.00   | 742.40 | 737.60                               | 720.19         | 12.659                                                           | 12.714 | 12.797 | 12.936 | 91        |
| 92        | 736.00           | 637.394 7         | 748.00   | 750.40 | 745.60                               | 728.19         | 12.659                                                           | 12.715 | 12.798 | 12.937 | 92        |
| 93        | 744.00           | 644.322 9         | 756.00   | 758.40 | 753.60                               | 736.19         | 12.659                                                           | 12.715 | 12.799 | 12.939 | 93        |
| 94        | 752.00           | 651.251 1         | 764.00   | 766.40 | 761.60                               | 744.19         | 12.660                                                           | 12.716 | 12.800 | 12.940 | 94        |
| 95        | 760.00           | 658.179 3         | 772.00   | 774.40 | 769.60                               | 752.18         | 12.660                                                           | 12.716 | 12.801 | 12.941 | 95        |
| 96        | 768.00           | 665.107 5         | 780.00   | 782.40 | 777.60                               | 760.18         | 12.660                                                           | 12.717 | 12.801 | 12.943 | 96        |
| 97        | 776.00           | 672.035 7         | 788.00   | 790.40 | 785.60                               | 768.18         | 12.661                                                           | 12.717 | 12.802 | 12.944 | 97        |
| 98        | 784.00           | 678.963 9         | 796.00   | 798.40 | 793.60                               | 776.18         | 12.661                                                           | 12.718 | 12.803 | 12.945 | 98        |
| 99        | 792.00           | 685.892 1         | 804.00   | 806.40 | 801.60                               | 784.18         | 12.661                                                           | 12.718 | 12.804 | 12.946 | 99        |
| 100       | 800.00           | 692.820 3         | 812.00   | 814.40 | 809.60                               | 792.17         | 12.662                                                           | 12.719 | 12.805 | 12.948 | 100       |

表 14 30°内花键  
模数  $m=10\text{ mm}$  作用齿槽宽最小值  $E_{\text{min}}=15.708\text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径 $D_e$ |        | 渐开线终<br>止圆直径<br>$D_{e,\text{min}}$ | 小径<br>$D_i$ | 实际齿槽宽最大值<br>$E_{\text{max}}=E_{\text{min}}+(T-\lambda)$ |        |        |        | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------|--------|------------------------------------|-------------|---------------------------------------------------------|--------|--------|--------|-----------|
|           |                  |                   | 平齿根      | 圆齿根    |                                    |             | 4H                                                      | 5H     | 6H     | 7H     |           |
| 10        | 100.00           | 86.602 5          | 115.00   | 118.00 | 112.00                             | 92.42       | 15.775                                                  | 15.816 | 15.877 | 15.978 | 10        |
| 11        | 110.00           | 95.262 8          | 125.00   | 128.00 | 122.00                             | 102.18      | 15.776                                                  | 15.817 | 15.879 | 15.981 | 11        |
| 12        | 120.00           | 103.923 0         | 135.00   | 138.00 | 132.00                             | 111.98      | 15.777                                                  | 15.818 | 15.881 | 15.984 | 12        |
| 13        | 130.00           | 112.583 3         | 145.00   | 148.00 | 142.00                             | 121.82      | 15.778                                                  | 15.820 | 15.882 | 15.987 | 13        |
| 14        | 140.00           | 121.243 6         | 155.00   | 158.00 | 152.00                             | 131.68      | 15.778                                                  | 15.821 | 15.884 | 15.990 | 14        |
| 15        | 150.00           | 129.903 8         | 165.00   | 168.00 | 162.00                             | 141.56      | 15.779                                                  | 15.822 | 15.886 | 15.992 | 15        |
| 16        | 160.00           | 138.564 1         | 175.00   | 178.00 | 172.00                             | 151.45      | 15.780                                                  | 15.823 | 15.887 | 15.995 | 16        |
| 17        | 170.00           | 147.224 3         | 185.00   | 188.00 | 182.00                             | 161.36      | 15.780                                                  | 15.824 | 15.889 | 15.997 | 17        |
| 18        | 180.00           | 155.884 6         | 195.00   | 198.00 | 192.00                             | 171.28      | 15.781                                                  | 15.824 | 15.890 | 15.999 | 18        |
| 19        | 190.00           | 164.544 8         | 205.00   | 208.00 | 202.00                             | 181.21      | 15.781                                                  | 15.825 | 15.891 | 16.002 | 19        |
| 20        | 200.00           | 173.205 1         | 215.00   | 218.00 | 212.00                             | 191.15      | 15.782                                                  | 15.826 | 15.893 | 16.004 | 20        |
| 21        | 210.00           | 181.865 3         | 225.00   | 228.00 | 222.00                             | 201.09      | 15.782                                                  | 15.827 | 15.894 | 16.006 | 21        |
| 22        | 220.00           | 190.525 6         | 235.00   | 238.00 | 232.00                             | 211.04      | 15.783                                                  | 15.828 | 15.895 | 16.008 | 22        |
| 23        | 230.00           | 199.185 8         | 245.00   | 248.00 | 242.00                             | 220.99      | 15.783                                                  | 15.829 | 15.897 | 16.010 | 23        |
| 24        | 240.00           | 207.846 1         | 255.00   | 258.00 | 252.00                             | 230.95      | 15.784                                                  | 15.830 | 15.898 | 16.012 | 24        |
| 25        | 250.00           | 216.506 3         | 265.00   | 268.00 | 262.00                             | 240.91      | 15.784                                                  | 15.830 | 15.899 | 16.014 | 25        |
| 26        | 260.00           | 225.166 6         | 275.00   | 278.00 | 272.00                             | 250.87      | 15.785                                                  | 15.831 | 15.900 | 16.016 | 26        |
| 27        | 270.00           | 233.826 9         | 285.00   | 288.00 | 282.00                             | 260.84      | 15.785                                                  | 15.832 | 15.901 | 16.018 | 27        |
| 28        | 280.00           | 242.487 1         | 295.00   | 298.00 | 292.00                             | 270.80      | 15.786                                                  | 15.833 | 15.903 | 16.019 | 28        |
| 29        | 290.00           | 251.147 4         | 305.00   | 308.00 | 302.00                             | 280.78      | 15.786                                                  | 15.833 | 15.904 | 16.021 | 29        |
| 30        | 300.00           | 259.807 6         | 315.00   | 318.00 | 312.00                             | 290.75      | 15.787                                                  | 15.834 | 15.905 | 16.023 | 30        |
| 31        | 310.00           | 268.467 9         | 325.00   | 328.00 | 322.00                             | 300.72      | 15.787                                                  | 15.835 | 15.906 | 16.025 | 31        |
| 32        | 320.00           | 277.128 1         | 335.00   | 338.00 | 332.00                             | 310.70      | 15.788                                                  | 15.835 | 15.907 | 16.026 | 32        |
| 33        | 330.00           | 285.788 4         | 345.00   | 348.00 | 342.00                             | 320.68      | 15.788                                                  | 15.836 | 15.908 | 16.028 | 33        |
| 34        | 340.00           | 294.448 6         | 355.00   | 358.00 | 352.00                             | 330.66      | 15.788                                                  | 15.837 | 15.909 | 16.030 | 34        |
| 35        | 350.00           | 303.108 9         | 365.00   | 368.00 | 362.00                             | 340.64      | 15.789                                                  | 15.837 | 15.910 | 16.031 | 35        |
| 36        | 360.00           | 311.769 1         | 375.00   | 378.00 | 372.00                             | 350.62      | 15.789                                                  | 15.838 | 15.911 | 16.033 | 36        |
| 37        | 370.00           | 320.429 4         | 385.00   | 388.00 | 382.00                             | 360.60      | 15.790                                                  | 15.839 | 15.912 | 16.034 | 37        |
| 38        | 380.00           | 329.089 6         | 395.00   | 398.00 | 392.00                             | 370.59      | 15.790                                                  | 15.839 | 15.913 | 16.036 | 38        |
| 39        | 390.00           | 337.749 9         | 405.00   | 408.00 | 402.00                             | 380.57      | 15.790                                                  | 15.840 | 15.914 | 16.037 | 39        |
| 40        | 400.00           | 346.410 2         | 415.00   | 418.00 | 412.00                             | 390.56      | 15.791                                                  | 15.840 | 15.915 | 16.039 | 40        |
| 41        | 410.00           | 355.070 4         | 425.00   | 428.00 | 422.00                             | 400.54      | 15.791                                                  | 15.841 | 15.916 | 16.040 | 41        |
| 42        | 420.00           | 363.730 7         | 435.00   | 438.00 | 432.00                             | 410.53      | 15.791                                                  | 15.842 | 15.917 | 16.042 | 42        |
| 43        | 430.00           | 372.390 9         | 445.00   | 448.00 | 442.00                             | 420.52      | 15.792                                                  | 15.842 | 15.918 | 16.043 | 43        |
| 44        | 440.00           | 381.051 2         | 455.00   | 458.00 | 452.00                             | 430.50      | 15.792                                                  | 15.843 | 15.919 | 16.045 | 44        |
| 45        | 450.00           | 389.711 4         | 465.00   | 468.00 | 462.00                             | 440.49      | 15.793                                                  | 15.843 | 15.919 | 16.046 | 45        |
| 46        | 460.00           | 398.371 7         | 475.00   | 478.00 | 472.00                             | 450.48      | 15.793                                                  | 15.844 | 15.920 | 16.048 | 46        |
| 47        | 470.00           | 407.031 9         | 485.00   | 488.00 | 482.00                             | 460.47      | 15.793                                                  | 15.844 | 15.921 | 16.049 | 47        |
| 48        | 480.00           | 415.692 2         | 495.00   | 498.00 | 492.00                             | 470.46      | 15.794                                                  | 15.845 | 15.922 | 16.050 | 48        |
| 49        | 490.00           | 424.352 4         | 505.00   | 508.00 | 502.00                             | 480.45      | 15.794                                                  | 15.846 | 15.923 | 16.052 | 49        |
| 50        | 500.00           | 433.012 7         | 515.00   | 518.00 | 512.00                             | 490.44      | 15.794                                                  | 15.846 | 15.924 | 16.053 | 50        |
| 51        | 510.00           | 441.672 9         | 525.00   | 528.00 | 522.00                             | 500.43      | 15.795                                                  | 15.847 | 15.926 | 16.056 | 51        |
| 52        | 520.00           | 450.333 2         | 535.00   | 538.00 | 532.00                             | 510.43      | 15.795                                                  | 15.848 | 15.927 | 16.058 | 52        |
| 53        | 530.00           | 458.993 5         | 545.00   | 548.00 | 542.00                             | 520.42      | 15.796                                                  | 15.849 | 15.928 | 16.059 | 53        |
| 54        | 540.00           | 467.653 7         | 555.00   | 558.00 | 552.00                             | 530.41      | 15.796                                                  | 15.849 | 15.929 | 16.061 | 54        |
| 55        | 550.00           | 476.314 0         | 565.00   | 568.00 | 562.00                             | 540.40      | 15.797                                                  | 15.850 | 15.930 | 16.063 | 55        |

表 14 (续)

单位为毫米

| 齿数<br><i>z</i> | 分度圆<br>直径<br><i>D</i> | 基圆<br>直径<br><i>D<sub>b</sub></i> | 大径 <i>D<sub>a</sub></i> |          | 渐开线终<br>止圆直径<br><i>D<sub>F1 min</sub></i> | 小径<br><i>D<sub>f1</sub></i> | 实际齿槽宽最大值<br><i>E<sub>max</sub> = E<sub>min</sub> + (T + λ)</i> |        |        |        | 齿数<br><i>z</i> |
|----------------|-----------------------|----------------------------------|-------------------------|----------|-------------------------------------------|-----------------------------|----------------------------------------------------------------|--------|--------|--------|----------------|
|                |                       |                                  | 平齿根                     | 圆齿根      |                                           |                             | 4H                                                             | 5H     | 6H     | 7H     |                |
| 56             | 560.00                | 484.974 2                        | 575.00                  | 578.00   | 572.00                                    | 560.39                      | 15.797                                                         | 15.850 | 15.931 | 16.064 | 56             |
| 57             | 570.00                | 493.634 5                        | 585.00                  | 588.00   | 582.00                                    | 560.39                      | 15.797                                                         | 15.851 | 15.932 | 16.066 | 57             |
| 58             | 580.00                | 502.294 7                        | 595.00                  | 598.00   | 592.00                                    | 570.38                      | 15.798                                                         | 15.852 | 15.933 | 16.067 | 58             |
| 59             | 590.00                | 510.955 0                        | 605.00                  | 608.00   | 602.00                                    | 580.37                      | 15.798                                                         | 15.852 | 15.934 | 16.069 | 59             |
| 60             | 600.00                | 519.615 2                        | 615.00                  | 618.00   | 612.00                                    | 590.37                      | 15.799                                                         | 15.853 | 15.935 | 16.071 | 60             |
| 61             | 610.00                | 528.275 5                        | 625.00                  | 628.00   | 622.00                                    | 600.36                      | 15.799                                                         | 15.854 | 15.936 | 16.072 | 61             |
| 62             | 620.00                | 536.935 7                        | 635.00                  | 638.00   | 632.00                                    | 610.36                      | 15.799                                                         | 15.854 | 15.937 | 16.074 | 62             |
| 63             | 630.00                | 545.596 0                        | 645.00                  | 648.00   | 642.00                                    | 620.35                      | 15.800                                                         | 15.855 | 15.938 | 16.075 | 63             |
| 64             | 640.00                | 554.256 3                        | 655.00                  | 658.00   | 652.00                                    | 630.34                      | 15.800                                                         | 15.856 | 15.939 | 16.077 | 64             |
| 65             | 650.00                | 562.916 5                        | 665.00                  | 668.00   | 662.00                                    | 640.34                      | 15.801                                                         | 15.856 | 15.940 | 16.079 | 65             |
| 66             | 660.00                | 571.576 8                        | 675.00                  | 678.00   | 672.00                                    | 650.33                      | 15.801                                                         | 15.857 | 15.941 | 16.080 | 66             |
| 67             | 670.00                | 580.237 0                        | 685.00                  | 688.00   | 682.00                                    | 660.33                      | 15.801                                                         | 15.858 | 15.942 | 16.082 | 67             |
| 68             | 680.00                | 588.897 3                        | 695.00                  | 698.00   | 692.00                                    | 670.32                      | 15.802                                                         | 15.858 | 15.943 | 16.083 | 68             |
| 69             | 690.00                | 597.557 5                        | 705.00                  | 708.00   | 702.00                                    | 680.32                      | 15.802                                                         | 15.859 | 15.944 | 16.085 | 69             |
| 70             | 700.00                | 606.217 8                        | 715.00                  | 718.00   | 712.00                                    | 690.31                      | 15.803                                                         | 15.859 | 15.945 | 16.087 | 70             |
| 71             | 710.00                | 614.878 0                        | 725.00                  | 728.00   | 722.00                                    | 700.31                      | 15.803                                                         | 15.860 | 15.946 | 16.088 | 71             |
| 72             | 720.00                | 623.538 3                        | 735.00                  | 738.00   | 732.00                                    | 710.31                      | 15.803                                                         | 15.861 | 15.947 | 16.090 | 72             |
| 73             | 730.00                | 632.198 5                        | 745.00                  | 748.00   | 742.00                                    | 720.30                      | 15.804                                                         | 15.861 | 15.948 | 16.091 | 73             |
| 74             | 740.00                | 640.858 8                        | 755.00                  | 758.00   | 752.00                                    | 730.30                      | 15.804                                                         | 15.862 | 15.949 | 16.093 | 74             |
| 75             | 750.00                | 649.519 0                        | 765.00                  | 768.00   | 762.00                                    | 740.29                      | 15.805                                                         | 15.863 | 15.950 | 16.095 | 75             |
| 76             | 760.00                | 658.179 3                        | 775.00                  | 778.00   | 772.00                                    | 750.29                      | 15.805                                                         | 15.863 | 15.951 | 16.096 | 76             |
| 77             | 770.00                | 666.839 6                        | 785.00                  | 788.00   | 782.00                                    | 760.28                      | 15.805                                                         | 15.864 | 15.952 | 16.098 | 77             |
| 78             | 780.00                | 675.499 8                        | 795.00                  | 798.00   | 792.00                                    | 770.28                      | 15.806                                                         | 15.865 | 15.953 | 16.099 | 78             |
| 79             | 790.00                | 684.160 1                        | 805.00                  | 808.00   | 802.00                                    | 780.28                      | 15.806                                                         | 15.865 | 15.954 | 16.101 | 79             |
| 80             | 800.00                | 692.820 3                        | 815.00                  | 818.00   | 812.00                                    | 790.27                      | 15.807                                                         | 15.866 | 15.955 | 16.103 | 80             |
| 81             | 810.00                | 701.480 6                        | 825.00                  | 828.00   | 822.00                                    | 800.27                      | 15.807                                                         | 15.866 | 15.956 | 16.104 | 81             |
| 82             | 820.00                | 710.140 8                        | 835.00                  | 838.00   | 832.00                                    | 810.27                      | 15.807                                                         | 15.867 | 15.957 | 16.106 | 82             |
| 83             | 830.00                | 718.801 1                        | 845.00                  | 848.00   | 842.00                                    | 820.26                      | 15.808                                                         | 15.868 | 15.958 | 16.107 | 83             |
| 84             | 840.00                | 727.461 3                        | 855.00                  | 858.00   | 852.00                                    | 830.26                      | 15.808                                                         | 15.868 | 15.959 | 16.109 | 84             |
| 85             | 850.00                | 736.121 6                        | 865.00                  | 868.00   | 862.00                                    | 840.26                      | 15.809                                                         | 15.869 | 15.960 | 16.111 | 85             |
| 86             | 860.00                | 744.781 8                        | 875.00                  | 878.00   | 872.00                                    | 850.25                      | 15.809                                                         | 15.870 | 15.961 | 16.112 | 86             |
| 87             | 870.00                | 753.442 1                        | 885.00                  | 888.00   | 882.00                                    | 860.25                      | 15.809                                                         | 15.870 | 15.962 | 16.114 | 87             |
| 88             | 880.00                | 762.102 3                        | 895.00                  | 898.00   | 892.00                                    | 870.25                      | 15.810                                                         | 15.871 | 15.963 | 16.115 | 88             |
| 89             | 890.00                | 770.762 6                        | 905.00                  | 908.00   | 902.00                                    | 880.25                      | 15.810                                                         | 15.872 | 15.964 | 16.117 | 89             |
| 90             | 900.00                | 779.422 9                        | 915.00                  | 918.00   | 912.00                                    | 890.24                      | 15.811                                                         | 15.872 | 15.965 | 16.119 | 90             |
| 91             | 910.00                | 788.083 1                        | 925.00                  | 928.00   | 922.00                                    | 900.24                      | 15.811                                                         | 15.873 | 15.966 | 16.120 | 91             |
| 92             | 920.00                | 796.743 4                        | 935.00                  | 938.00   | 932.00                                    | 910.24                      | 15.811                                                         | 15.874 | 15.967 | 16.122 | 92             |
| 93             | 930.00                | 805.403 6                        | 945.00                  | 948.00   | 942.00                                    | 920.24                      | 15.812                                                         | 15.874 | 15.968 | 16.123 | 93             |
| 94             | 940.00                | 814.063 9                        | 955.00                  | 958.00   | 952.00                                    | 930.23                      | 15.812                                                         | 15.875 | 15.969 | 16.125 | 94             |
| 95             | 950.00                | 822.724 1                        | 965.00                  | 968.00   | 962.00                                    | 940.23                      | 15.813                                                         | 15.875 | 15.970 | 16.127 | 95             |
| 96             | 960.00                | 831.384 4                        | 975.00                  | 978.00   | 972.00                                    | 950.23                      | 15.813                                                         | 15.876 | 15.971 | 16.128 | 96             |
| 97             | 970.00                | 840.044 6                        | 985.00                  | 988.00   | 982.00                                    | 960.23                      | 15.813                                                         | 15.877 | 15.972 | 16.130 | 97             |
| 98             | 980.00                | 848.704 9                        | 995.00                  | 998.00   | 992.00                                    | 970.22                      | 15.814                                                         | 15.877 | 15.973 | 16.131 | 98             |
| 99             | 990.00                | 857.365 1                        | 1 005.00                | 1 008.00 | 1 002.00                                  | 980.22                      | 15.814                                                         | 15.878 | 15.974 | 16.133 | 99             |
| 100            | 1 000.00              | 866.025 4                        | 1 015.00                | 1 018.00 | 1 012.00                                  | 990.22                      | 15.815                                                         | 15.879 | 15.975 | 16.135 | 100            |

表 15 30°外花键

模数  $m=0.5\text{ mm}$  作用齿厚最大值  $S_{v\max}=0.785\text{ mm}$ 

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_{\text{外}}$ | 渐开线起<br>始圆直径<br>$D_{Fe\max}$ | 小径 $D_i$ |       | 实际齿厚最小值<br>$S_{\min}=S_{v\max}-(T+\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------------------|------------------------------|----------|-------|---------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   |                      |                              | 平齿根      | 圆齿根   | 4h                                          | 5h    | 6h    | 7h    |           |
| 10        | 5.00             | 4.330 1           | 5.50                 | 4.52                         | 4.25     | 4.10  | 0.761                                       | 0.746 | 0.724 | 0.688 | 10        |
| 11        | 5.50             | 4.763 1           | 6.00                 | 5.01                         | 4.75     | 4.60  | 0.761                                       | 0.746 | 0.724 | 0.687 | 11        |
| 12        | 6.00             | 5.196 2           | 6.50                 | 5.50                         | 5.25     | 5.10  | 0.761                                       | 0.746 | 0.723 | 0.686 | 12        |
| 13        | 6.50             | 5.629 2           | 7.00                 | 5.99                         | 5.75     | 5.60  | 0.760                                       | 0.745 | 0.723 | 0.685 | 13        |
| 14        | 7.00             | 6.062 2           | 7.50                 | 6.48                         | 6.25     | 6.10  | 0.760                                       | 0.745 | 0.722 | 0.684 | 14        |
| 15        | 7.50             | 6.495 2           | 8.00                 | 6.98                         | 6.75     | 6.60  | 0.760                                       | 0.745 | 0.722 | 0.683 | 15        |
| 16        | 8.00             | 6.928 2           | 8.50                 | 7.47                         | 7.25     | 7.10  | 0.760                                       | 0.744 | 0.721 | 0.683 | 16        |
| 17        | 8.50             | 7.361 2           | 9.00                 | 7.97                         | 7.75     | 7.60  | 0.759                                       | 0.744 | 0.721 | 0.682 | 17        |
| 18        | 9.00             | 7.794 2           | 9.50                 | 8.46                         | 8.25     | 8.10  | 0.759                                       | 0.744 | 0.720 | 0.681 | 18        |
| 19        | 9.50             | 8.227 2           | 10.00                | 8.96                         | 8.75     | 8.60  | 0.759                                       | 0.743 | 0.720 | 0.680 | 19        |
| 20        | 10.00            | 8.660 3           | 10.50                | 9.46                         | 9.25     | 9.10  | 0.759                                       | 0.743 | 0.719 | 0.680 | 20        |
| 21        | 10.50            | 9.093 3           | 11.00                | 9.95                         | 9.75     | 9.60  | 0.759                                       | 0.743 | 0.719 | 0.679 | 21        |
| 22        | 11.00            | 9.526 3           | 11.50                | 10.45                        | 10.25    | 10.10 | 0.759                                       | 0.743 | 0.719 | 0.678 | 22        |
| 23        | 11.50            | 9.959 3           | 12.00                | 10.95                        | 10.75    | 10.60 | 0.758                                       | 0.742 | 0.718 | 0.678 | 23        |
| 24        | 12.00            | 10.392 3          | 12.50                | 11.45                        | 11.25    | 11.10 | 0.758                                       | 0.742 | 0.718 | 0.677 | 24        |
| 25        | 12.50            | 10.825 3          | 13.00                | 11.95                        | 11.75    | 11.60 | 0.758                                       | 0.742 | 0.717 | 0.677 | 25        |
| 26        | 13.00            | 11.258 3          | 13.50                | 12.44                        | 12.25    | 12.10 | 0.758                                       | 0.742 | 0.717 | 0.676 | 26        |
| 27        | 13.50            | 11.691 3          | 14.00                | 12.94                        | 12.75    | 12.60 | 0.758                                       | 0.741 | 0.717 | 0.675 | 27        |
| 28        | 14.00            | 12.124 4          | 14.50                | 13.44                        | 13.25    | 13.10 | 0.758                                       | 0.741 | 0.716 | 0.675 | 28        |
| 29        | 14.50            | 12.557 4          | 15.00                | 13.94                        | 13.75    | 13.60 | 0.758                                       | 0.741 | 0.716 | 0.674 | 29        |
| 30        | 15.00            | 12.990 4          | 15.50                | 14.44                        | 14.25    | 14.10 | 0.758                                       | 0.741 | 0.716 | 0.674 | 30        |
| 31        | 15.50            | 13.423 4          | 16.00                | 14.94                        | 14.75    | 14.60 | 0.757                                       | 0.741 | 0.715 | 0.673 | 31        |
| 32        | 16.00            | 13.856 4          | 16.50                | 15.44                        | 15.25    | 15.10 | 0.757                                       | 0.740 | 0.715 | 0.673 | 32        |
| 33        | 16.50            | 14.289 4          | 17.00                | 15.93                        | 15.75    | 15.60 | 0.757                                       | 0.740 | 0.715 | 0.672 | 33        |
| 34        | 17.00            | 14.722 4          | 17.50                | 16.43                        | 16.25    | 16.10 | 0.757                                       | 0.740 | 0.714 | 0.672 | 34        |
| 35        | 17.50            | 15.155 4          | 18.00                | 16.93                        | 16.75    | 16.60 | 0.757                                       | 0.740 | 0.714 | 0.671 | 35        |
| 36        | 18.00            | 15.588 5          | 18.50                | 17.43                        | 17.25    | 17.10 | 0.757                                       | 0.740 | 0.714 | 0.671 | 36        |
| 37        | 18.50            | 16.021 5          | 19.00                | 17.93                        | 17.75    | 17.60 | 0.757                                       | 0.739 | 0.714 | 0.671 | 37        |
| 38        | 19.00            | 16.454 5          | 19.50                | 18.43                        | 18.25    | 18.10 | 0.757                                       | 0.739 | 0.713 | 0.670 | 38        |
| 39        | 19.50            | 16.887 5          | 20.00                | 18.93                        | 18.75    | 18.60 | 0.756                                       | 0.739 | 0.713 | 0.670 | 39        |
| 40        | 20.00            | 17.320 5          | 20.50                | 19.43                        | 19.25    | 19.10 | 0.756                                       | 0.739 | 0.713 | 0.669 | 40        |
| 41        | 20.50            | 17.753 5          | 21.00                | 19.93                        | 19.75    | 19.60 | 0.756                                       | 0.739 | 0.713 | 0.669 | 41        |
| 42        | 21.00            | 18.186 5          | 21.50                | 20.43                        | 20.25    | 20.10 | 0.756                                       | 0.739 | 0.712 | 0.668 | 42        |
| 43        | 21.50            | 18.619 5          | 22.00                | 20.93                        | 20.75    | 20.60 | 0.756                                       | 0.738 | 0.712 | 0.668 | 43        |
| 44        | 22.00            | 19.052 6          | 22.50                | 21.43                        | 21.25    | 21.10 | 0.756                                       | 0.738 | 0.712 | 0.668 | 44        |
| 45        | 22.50            | 19.485 6          | 23.00                | 21.92                        | 21.75    | 21.60 | 0.756                                       | 0.738 | 0.712 | 0.667 | 45        |
| 46        | 23.00            | 19.918 6          | 23.50                | 22.42                        | 22.25    | 22.10 | 0.756                                       | 0.738 | 0.711 | 0.667 | 46        |
| 47        | 23.50            | 20.351 6          | 24.00                | 22.92                        | 22.75    | 22.60 | 0.756                                       | 0.738 | 0.711 | 0.666 | 47        |
| 48        | 24.00            | 20.784 6          | 24.50                | 23.42                        | 23.25    | 23.10 | 0.756                                       | 0.738 | 0.711 | 0.666 | 48        |
| 49        | 24.50            | 21.217 6          | 25.00                | 23.92                        | 23.75    | 23.60 | 0.755                                       | 0.737 | 0.711 | 0.666 | 49        |
| 50        | 25.00            | 21.650 6          | 25.50                | 24.42                        | 24.25    | 24.10 | 0.755                                       | 0.737 | 0.710 | 0.665 | 50        |
| 51        | 25.50            | 22.083 6          | 26.00                | 24.92                        | 24.75    | 24.60 | 0.755                                       | 0.737 | 0.710 | 0.665 | 51        |
| 52        | 26.00            | 22.516 7          | 26.50                | 25.42                        | 25.25    | 25.10 | 0.755                                       | 0.737 | 0.710 | 0.665 | 52        |
| 53        | 26.50            | 22.949 7          | 27.00                | 25.92                        | 25.75    | 25.60 | 0.755                                       | 0.737 | 0.710 | 0.664 | 53        |
| 54        | 27.00            | 23.382 7          | 27.50                | 26.42                        | 26.25    | 26.10 | 0.755                                       | 0.737 | 0.709 | 0.664 | 54        |
| 55        | 27.50            | 23.815 7          | 28.00                | 26.92                        | 26.75    | 26.60 | 0.755                                       | 0.737 | 0.709 | 0.663 | 55        |

表 15 (续)

单位为毫米

| 齿数<br><i>z</i> | 分度圆<br>直径<br><i>D</i> | 基圆<br>直径<br><i>D<sub>b</sub></i> | 大径<br><i>D<sub>ae</sub></i> | 渐开线起<br>始圆直径<br><i>D<sub>Fmax</sub></i> | 小径 <i>D<sub>i</sub></i> |       | 实际齿厚最小值<br><i>S<sub>min</sub> = S<sub>max</sub> - (T + λ)</i> |            |            |            | 齿数<br><i>z</i> |
|----------------|-----------------------|----------------------------------|-----------------------------|-----------------------------------------|-------------------------|-------|---------------------------------------------------------------|------------|------------|------------|----------------|
|                |                       |                                  |                             |                                         | 平齿根                     | 圆齿根   | 4 <i>h</i>                                                    | 5 <i>h</i> | 6 <i>h</i> | 7 <i>h</i> |                |
| 56             | 28.00                 | 24.248 7                         | 28.50                       | 27.42                                   | 27.25                   | 27.10 | 0.755                                                         | 0.736      | 0.709      | 0.663      | 56             |
| 57             | 28.50                 | 24.681 7                         | 29.00                       | 27.92                                   | 27.75                   | 27.60 | 0.755                                                         | 0.736      | 0.709      | 0.663      | 57             |
| 58             | 29.00                 | 25.114 7                         | 29.50                       | 28.42                                   | 28.25                   | 28.10 | 0.755                                                         | 0.736      | 0.709      | 0.662      | 58             |
| 59             | 29.50                 | 25.547 7                         | 30.00                       | 28.92                                   | 28.75                   | 28.60 | 0.755                                                         | 0.736      | 0.708      | 0.662      | 59             |
| 60             | 30.00                 | 25.980 8                         | 30.50                       | 29.42                                   | 29.25                   | 29.10 | 0.754                                                         | 0.736      | 0.708      | 0.662      | 60             |
| 61             | 30.50                 | 26.413 8                         | 31.00                       | 29.92                                   | 29.75                   | 29.60 | 0.754                                                         | 0.736      | 0.708      | 0.661      | 61             |
| 62             | 31.00                 | 26.846 8                         | 31.50                       | 30.42                                   | 30.25                   | 30.10 | 0.754                                                         | 0.736      | 0.708      | 0.661      | 62             |
| 63             | 31.50                 | 27.279 8                         | 32.00                       | 30.92                                   | 30.75                   | 30.60 | 0.754                                                         | 0.736      | 0.708      | 0.661      | 63             |
| 64             | 32.00                 | 27.712 8                         | 32.50                       | 31.42                                   | 31.25                   | 31.10 | 0.754                                                         | 0.735      | 0.707      | 0.660      | 64             |
| 65             | 32.50                 | 28.145 8                         | 33.00                       | 31.92                                   | 31.75                   | 31.60 | 0.754                                                         | 0.735      | 0.707      | 0.660      | 65             |
| 66             | 33.00                 | 28.578 8                         | 33.50                       | 32.42                                   | 32.25                   | 32.10 | 0.754                                                         | 0.735      | 0.707      | 0.660      | 66             |
| 67             | 33.50                 | 29.011 9                         | 34.00                       | 32.92                                   | 32.75                   | 32.60 | 0.754                                                         | 0.735      | 0.707      | 0.660      | 67             |
| 68             | 34.00                 | 29.444 9                         | 34.50                       | 33.42                                   | 33.25                   | 33.10 | 0.754                                                         | 0.735      | 0.707      | 0.659      | 68             |
| 69             | 34.50                 | 29.877 9                         | 35.00                       | 33.92                                   | 33.75                   | 33.60 | 0.754                                                         | 0.735      | 0.706      | 0.659      | 69             |
| 70             | 35.00                 | 30.310 9                         | 35.50                       | 34.42                                   | 34.25                   | 34.10 | 0.754                                                         | 0.735      | 0.706      | 0.659      | 70             |
| 71             | 35.50                 | 30.743 9                         | 36.00                       | 34.92                                   | 34.75                   | 34.60 | 0.754                                                         | 0.735      | 0.706      | 0.658      | 71             |
| 72             | 36.00                 | 31.176 9                         | 36.50                       | 35.42                                   | 35.25                   | 35.10 | 0.754                                                         | 0.734      | 0.706      | 0.658      | 72             |
| 73             | 36.50                 | 31.609 9                         | 37.00                       | 35.92                                   | 35.75                   | 35.60 | 0.753                                                         | 0.734      | 0.706      | 0.658      | 73             |
| 74             | 37.00                 | 32.042 9                         | 37.50                       | 36.41                                   | 36.25                   | 36.10 | 0.753                                                         | 0.734      | 0.705      | 0.657      | 74             |
| 75             | 37.50                 | 32.476 0                         | 38.00                       | 36.91                                   | 36.75                   | 36.60 | 0.753                                                         | 0.734      | 0.705      | 0.657      | 75             |
| 76             | 38.00                 | 32.909 0                         | 38.50                       | 37.41                                   | 37.25                   | 37.10 | 0.753                                                         | 0.734      | 0.705      | 0.657      | 76             |
| 77             | 38.50                 | 33.342 0                         | 39.00                       | 37.91                                   | 37.75                   | 37.60 | 0.753                                                         | 0.734      | 0.705      | 0.657      | 77             |
| 78             | 39.00                 | 33.775 0                         | 39.50                       | 38.41                                   | 38.25                   | 38.10 | 0.753                                                         | 0.734      | 0.705      | 0.656      | 78             |
| 79             | 39.50                 | 34.208 0                         | 40.00                       | 38.91                                   | 38.75                   | 38.60 | 0.753                                                         | 0.734      | 0.705      | 0.656      | 79             |
| 80             | 40.00                 | 34.641 0                         | 40.50                       | 39.41                                   | 39.25                   | 39.10 | 0.753                                                         | 0.734      | 0.704      | 0.656      | 80             |
| 81             | 40.50                 | 35.074 0                         | 41.00                       | 39.91                                   | 39.75                   | 39.60 | 0.753                                                         | 0.733      | 0.704      | 0.655      | 81             |
| 82             | 41.00                 | 35.507 0                         | 41.50                       | 40.41                                   | 40.25                   | 40.10 | 0.753                                                         | 0.733      | 0.704      | 0.655      | 82             |
| 83             | 41.50                 | 35.940 1                         | 42.00                       | 40.91                                   | 40.75                   | 40.60 | 0.753                                                         | 0.733      | 0.704      | 0.655      | 83             |
| 84             | 42.00                 | 36.373 1                         | 42.50                       | 41.41                                   | 41.25                   | 41.10 | 0.753                                                         | 0.733      | 0.704      | 0.655      | 84             |
| 85             | 42.50                 | 36.806 1                         | 43.00                       | 41.91                                   | 41.75                   | 41.60 | 0.753                                                         | 0.733      | 0.704      | 0.654      | 85             |
| 86             | 43.00                 | 37.239 1                         | 43.50                       | 42.41                                   | 42.25                   | 42.10 | 0.753                                                         | 0.733      | 0.703      | 0.654      | 86             |
| 87             | 43.50                 | 37.672 1                         | 44.00                       | 42.91                                   | 42.75                   | 42.60 | 0.753                                                         | 0.733      | 0.703      | 0.654      | 87             |
| 88             | 44.00                 | 38.105 1                         | 44.50                       | 43.41                                   | 43.25                   | 43.10 | 0.752                                                         | 0.733      | 0.703      | 0.654      | 88             |
| 89             | 44.50                 | 38.538 1                         | 45.00                       | 43.91                                   | 43.75                   | 43.60 | 0.752                                                         | 0.733      | 0.703      | 0.653      | 89             |
| 90             | 45.00                 | 38.971 1                         | 45.50                       | 44.41                                   | 44.25                   | 44.10 | 0.752                                                         | 0.732      | 0.703      | 0.653      | 90             |
| 91             | 45.50                 | 39.404 2                         | 46.00                       | 44.91                                   | 44.75                   | 44.60 | 0.752                                                         | 0.732      | 0.703      | 0.653      | 91             |
| 92             | 46.00                 | 39.837 2                         | 46.50                       | 45.41                                   | 45.25                   | 45.10 | 0.752                                                         | 0.732      | 0.702      | 0.653      | 92             |
| 93             | 46.50                 | 40.270 2                         | 47.00                       | 45.91                                   | 45.75                   | 45.60 | 0.752                                                         | 0.732      | 0.702      | 0.652      | 93             |
| 94             | 47.00                 | 40.703 2                         | 47.50                       | 46.41                                   | 46.25                   | 46.10 | 0.752                                                         | 0.732      | 0.702      | 0.652      | 94             |
| 95             | 47.50                 | 41.136 2                         | 48.00                       | 46.91                                   | 46.75                   | 46.60 | 0.752                                                         | 0.732      | 0.702      | 0.652      | 95             |
| 96             | 48.00                 | 41.569 2                         | 48.50                       | 47.41                                   | 47.25                   | 47.10 | 0.752                                                         | 0.732      | 0.702      | 0.652      | 96             |
| 97             | 48.50                 | 42.002 2                         | 49.00                       | 47.91                                   | 47.75                   | 47.60 | 0.752                                                         | 0.732      | 0.702      | 0.651      | 97             |
| 98             | 49.00                 | 42.435 2                         | 49.50                       | 48.41                                   | 48.25                   | 48.10 | 0.752                                                         | 0.732      | 0.701      | 0.651      | 98             |
| 99             | 49.50                 | 42.868 3                         | 50.00                       | 48.91                                   | 48.75                   | 48.60 | 0.752                                                         | 0.732      | 0.701      | 0.651      | 99             |
| 100            | 50.00                 | 43.301 3                         | 50.50                       | 49.41                                   | 49.25                   | 49.10 | 0.752                                                         | 0.731      | 0.701      | 0.651      | 100            |

表 16 30°外花键  
模数  $m=0.75\text{ mm}$  作用齿厚最大值  $S_{\max}=1.178\text{ mm}$

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_e$ | 渐开线起<br>始圆直径<br>$D_{F\min}$ | 小径 $D_i$ |       | 实际齿厚最小值<br>$S_{\min}=S_{\max}-(F+\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|-------------|-----------------------------|----------|-------|--------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   |             |                             | 平齿根      | 圆齿根   | 4h                                         | 5h    | 6h    | 7h    |           |
| 10        | 7.50             | 6.495 2           | 8.25        | 6.78                        | 6.38     | 6.15  | 1.150                                      | 1.133 | 1.108 | 1.066 | 10        |
| 11        | 8.25             | 7.144 7           | 9.00        | 7.51                        | 7.13     | 6.90  | 1.150                                      | 1.133 | 1.108 | 1.065 | 11        |
| 12        | 9.00             | 7.794 2           | 9.75        | 8.25                        | 7.88     | 7.65  | 1.150                                      | 1.132 | 1.107 | 1.064 | 12        |
| 13        | 9.75             | 8.443 7           | 10.50       | 8.99                        | 8.63     | 8.40  | 1.149                                      | 1.132 | 1.106 | 1.063 | 13        |
| 14        | 10.50            | 9.093 3           | 11.25       | 9.73                        | 9.38     | 9.15  | 1.149                                      | 1.132 | 1.106 | 1.062 | 14        |
| 15        | 11.25            | 9.742 8           | 12.00       | 10.47                       | 10.13    | 9.90  | 1.149                                      | 1.131 | 1.105 | 1.061 | 15        |
| 16        | 12.00            | 10.392 3          | 12.75       | 11.21                       | 10.88    | 10.65 | 1.149                                      | 1.131 | 1.104 | 1.060 | 16        |
| 17        | 12.75            | 11.041 8          | 13.50       | 11.95                       | 11.63    | 11.40 | 1.148                                      | 1.131 | 1.101 | 1.059 | 17        |
| 18        | 13.50            | 11.691 3          | 14.25       | 12.70                       | 12.38    | 12.15 | 1.148                                      | 1.130 | 1.103 | 1.059 | 18        |
| 19        | 14.25            | 12.340 9          | 15.00       | 13.44                       | 13.13    | 12.90 | 1.148                                      | 1.130 | 1.103 | 1.058 | 19        |
| 20        | 15.00            | 12.990 4          | 15.75       | 14.19                       | 13.88    | 13.65 | 1.148                                      | 1.130 | 1.102 | 1.057 | 20        |
| 21        | 15.75            | 13.639 9          | 16.50       | 14.93                       | 14.63    | 14.40 | 1.148                                      | 1.129 | 1.102 | 1.056 | 21        |
| 22        | 16.50            | 14.289 4          | 17.25       | 15.68                       | 15.38    | 15.15 | 1.147                                      | 1.129 | 1.101 | 1.055 | 22        |
| 23        | 17.25            | 14.938 9          | 18.00       | 16.42                       | 16.13    | 15.90 | 1.147                                      | 1.129 | 1.101 | 1.055 | 23        |
| 24        | 18.00            | 15.588 5          | 18.75       | 17.17                       | 16.88    | 16.65 | 1.147                                      | 1.128 | 1.101 | 1.054 | 24        |
| 25        | 18.75            | 16.238 0          | 19.50       | 17.92                       | 17.63    | 17.40 | 1.147                                      | 1.128 | 1.100 | 1.053 | 25        |
| 26        | 19.50            | 16.887 5          | 20.25       | 18.67                       | 18.38    | 18.15 | 1.147                                      | 1.128 | 1.100 | 1.053 | 26        |
| 27        | 20.25            | 17.537 0          | 21.00       | 19.41                       | 19.13    | 18.90 | 1.147                                      | 1.128 | 1.099 | 1.052 | 27        |
| 28        | 21.00            | 18.186 5          | 21.75       | 20.16                       | 19.88    | 19.65 | 1.146                                      | 1.127 | 1.099 | 1.051 | 28        |
| 29        | 21.75            | 18.836 1          | 22.50       | 20.91                       | 20.63    | 20.40 | 1.146                                      | 1.127 | 1.099 | 1.051 | 29        |
| 30        | 22.50            | 19.485 6          | 23.25       | 21.66                       | 21.38    | 21.15 | 1.146                                      | 1.127 | 1.098 | 1.050 | 30        |
| 31        | 23.25            | 20.135 1          | 24.00       | 22.40                       | 22.13    | 21.90 | 1.146                                      | 1.127 | 1.098 | 1.050 | 31        |
| 32        | 24.00            | 20.784 6          | 24.75       | 23.15                       | 22.88    | 22.65 | 1.146                                      | 1.126 | 1.097 | 1.049 | 32        |
| 33        | 24.75            | 21.434 1          | 25.50       | 23.90                       | 23.63    | 23.40 | 1.146                                      | 1.126 | 1.097 | 1.048 | 33        |
| 34        | 25.50            | 22.083 6          | 26.25       | 24.65                       | 24.38    | 24.15 | 1.146                                      | 1.126 | 1.097 | 1.048 | 34        |
| 35        | 26.25            | 22.733 2          | 27.00       | 25.40                       | 25.13    | 24.90 | 1.145                                      | 1.126 | 1.096 | 1.047 | 35        |
| 36        | 27.00            | 23.382 7          | 27.75       | 26.15                       | 25.88    | 25.65 | 1.145                                      | 1.126 | 1.096 | 1.047 | 36        |
| 37        | 27.75            | 24.032 2          | 28.50       | 26.90                       | 26.63    | 26.40 | 1.145                                      | 1.125 | 1.096 | 1.046 | 37        |
| 38        | 28.50            | 24.681 7          | 29.25       | 27.64                       | 27.38    | 27.15 | 1.145                                      | 1.125 | 1.095 | 1.046 | 38        |
| 39        | 29.25            | 25.331 2          | 30.00       | 28.39                       | 28.13    | 27.90 | 1.145                                      | 1.125 | 1.095 | 1.045 | 39        |
| 40        | 30.00            | 25.980 8          | 30.75       | 29.14                       | 28.88    | 28.65 | 1.145                                      | 1.125 | 1.095 | 1.045 | 40        |
| 41        | 30.75            | 26.630 3          | 31.50       | 29.89                       | 29.63    | 29.40 | 1.145                                      | 1.125 | 1.094 | 1.044 | 41        |
| 42        | 31.50            | 27.279 8          | 32.25       | 30.64                       | 30.38    | 30.15 | 1.145                                      | 1.124 | 1.094 | 1.044 | 42        |
| 43        | 32.25            | 27.929 3          | 33.00       | 31.39                       | 31.13    | 30.90 | 1.144                                      | 1.124 | 1.094 | 1.043 | 43        |
| 44        | 33.00            | 28.578 8          | 33.75       | 32.14                       | 31.88    | 31.65 | 1.144                                      | 1.124 | 1.094 | 1.043 | 44        |
| 45        | 33.75            | 29.228 4          | 34.50       | 32.89                       | 32.63    | 32.40 | 1.144                                      | 1.124 | 1.093 | 1.042 | 45        |
| 46        | 34.50            | 29.877 9          | 35.25       | 33.64                       | 33.38    | 33.15 | 1.144                                      | 1.124 | 1.093 | 1.042 | 46        |
| 47        | 35.25            | 30.527 4          | 36.00       | 34.39                       | 34.13    | 33.90 | 1.144                                      | 1.123 | 1.093 | 1.042 | 47        |
| 48        | 36.00            | 31.176 9          | 36.75       | 35.13                       | 34.88    | 34.65 | 1.144                                      | 1.123 | 1.092 | 1.041 | 48        |
| 49        | 36.75            | 31.826 4          | 37.50       | 35.88                       | 35.63    | 35.40 | 1.144                                      | 1.123 | 1.092 | 1.041 | 49        |
| 50        | 37.50            | 32.476 0          | 38.25       | 36.63                       | 36.38    | 36.15 | 1.144                                      | 1.123 | 1.092 | 1.040 | 50        |
| 51        | 38.25            | 33.125 5          | 39.00       | 37.38                       | 37.13    | 36.90 | 1.144                                      | 1.123 | 1.092 | 1.040 | 51        |
| 52        | 39.00            | 33.775 0          | 39.75       | 38.13                       | 37.88    | 37.65 | 1.143                                      | 1.123 | 1.091 | 1.039 | 52        |
| 53        | 39.75            | 34.424 5          | 40.50       | 38.88                       | 38.63    | 38.40 | 1.143                                      | 1.122 | 1.091 | 1.039 | 53        |
| 54        | 40.50            | 35.074 0          | 41.25       | 39.63                       | 39.38    | 39.15 | 1.143                                      | 1.122 | 1.091 | 1.039 | 54        |
| 55        | 41.25            | 35.723 5          | 42.00       | 40.38                       | 40.13    | 39.90 | 1.143                                      | 1.122 | 1.091 | 1.038 | 55        |

表 16 (续)

单位为毫米

| 齿数<br><i>z</i> | 分度圆<br>直径<br><i>D</i> | 基圆<br>直径<br><i>D<sub>b</sub></i> | 大径<br><i>D<sub>ae</sub></i> | 渐开线起<br>始圆直径<br><i>D<sub>fa min</sub></i> | 小径 <i>D<sub>e</sub></i> |       | 实际齿厚最小值<br><i>S<sub>min</sub> = S<sub>max</sub> - (T + λ)</i> |            |            |            | 齿数<br><i>z</i> |
|----------------|-----------------------|----------------------------------|-----------------------------|-------------------------------------------|-------------------------|-------|---------------------------------------------------------------|------------|------------|------------|----------------|
|                |                       |                                  |                             |                                           | 平齿根                     | 圆齿根   | 4 <i>h</i>                                                    | 5 <i>h</i> | 6 <i>h</i> | 7 <i>h</i> |                |
| 56             | 42.00                 | 36.373 1                         | 42.75                       | 41.13                                     | 40.88                   | 40.65 | 1.143                                                         | 1.122      | 1.090      | 1.038      | 56             |
| 57             | 42.75                 | 37.022 6                         | 43.50                       | 41.88                                     | 41.63                   | 41.40 | 1.143                                                         | 1.122      | 1.090      | 1.037      | 57             |
| 58             | 43.50                 | 37.672 1                         | 44.25                       | 42.63                                     | 42.38                   | 42.15 | 1.143                                                         | 1.122      | 1.090      | 1.037      | 58             |
| 59             | 44.25                 | 38.321 6                         | 45.00                       | 43.38                                     | 43.13                   | 42.90 | 1.143                                                         | 1.121      | 1.090      | 1.037      | 59             |
| 60             | 45.00                 | 38.971 1                         | 45.75                       | 44.13                                     | 43.88                   | 43.65 | 1.143                                                         | 1.121      | 1.089      | 1.036      | 60             |
| 61             | 45.75                 | 39.620 7                         | 46.50                       | 44.88                                     | 44.63                   | 44.40 | 1.143                                                         | 1.121      | 1.089      | 1.036      | 61             |
| 62             | 46.50                 | 40.270 2                         | 47.25                       | 45.63                                     | 45.38                   | 45.15 | 1.142                                                         | 1.121      | 1.089      | 1.035      | 62             |
| 63             | 47.25                 | 40.919 7                         | 48.00                       | 46.38                                     | 46.13                   | 45.90 | 1.142                                                         | 1.121      | 1.089      | 1.035      | 63             |
| 64             | 48.00                 | 41.569 2                         | 48.75                       | 47.13                                     | 46.88                   | 46.65 | 1.142                                                         | 1.121      | 1.088      | 1.035      | 64             |
| 65             | 48.75                 | 42.218 7                         | 49.50                       | 47.88                                     | 47.63                   | 47.40 | 1.142                                                         | 1.121      | 1.088      | 1.034      | 65             |
| 66             | 49.50                 | 42.868 3                         | 50.25                       | 48.62                                     | 48.38                   | 48.15 | 1.142                                                         | 1.120      | 1.088      | 1.034      | 66             |
| 67             | 50.25                 | 43.517 8                         | 51.00                       | 49.37                                     | 49.13                   | 48.90 | 1.142                                                         | 1.120      | 1.088      | 1.034      | 67             |
| 68             | 51.00                 | 44.167 3                         | 51.75                       | 50.12                                     | 49.88                   | 49.65 | 1.142                                                         | 1.120      | 1.088      | 1.033      | 68             |
| 69             | 51.75                 | 44.816 8                         | 52.50                       | 50.87                                     | 50.63                   | 50.40 | 1.142                                                         | 1.120      | 1.087      | 1.033      | 69             |
| 70             | 52.50                 | 45.466 3                         | 53.25                       | 51.62                                     | 51.38                   | 51.15 | 1.142                                                         | 1.120      | 1.087      | 1.032      | 70             |
| 71             | 53.25                 | 46.115 9                         | 54.00                       | 52.37                                     | 52.13                   | 51.90 | 1.142                                                         | 1.120      | 1.087      | 1.032      | 71             |
| 72             | 54.00                 | 46.765 4                         | 54.75                       | 53.12                                     | 52.88                   | 52.65 | 1.142                                                         | 1.120      | 1.087      | 1.032      | 72             |
| 73             | 54.75                 | 47.414 9                         | 55.50                       | 53.87                                     | 53.63                   | 53.40 | 1.141                                                         | 1.119      | 1.086      | 1.031      | 73             |
| 74             | 55.50                 | 48.064 4                         | 56.25                       | 54.62                                     | 54.38                   | 54.15 | 1.141                                                         | 1.119      | 1.086      | 1.031      | 74             |
| 75             | 56.25                 | 48.713 9                         | 57.00                       | 55.37                                     | 55.13                   | 54.90 | 1.141                                                         | 1.119      | 1.086      | 1.031      | 75             |
| 76             | 57.00                 | 49.363 4                         | 57.75                       | 56.12                                     | 55.88                   | 55.65 | 1.141                                                         | 1.119      | 1.086      | 1.030      | 76             |
| 77             | 57.75                 | 50.013 0                         | 58.50                       | 56.87                                     | 56.63                   | 56.40 | 1.141                                                         | 1.119      | 1.086      | 1.030      | 77             |
| 78             | 58.50                 | 50.662 5                         | 59.25                       | 57.62                                     | 57.38                   | 57.15 | 1.141                                                         | 1.119      | 1.085      | 1.030      | 78             |
| 79             | 59.25                 | 51.312 0                         | 60.00                       | 58.37                                     | 58.13                   | 57.90 | 1.141                                                         | 1.119      | 1.085      | 1.029      | 79             |
| 80             | 60.00                 | 51.961 5                         | 60.75                       | 59.12                                     | 58.88                   | 58.65 | 1.141                                                         | 1.118      | 1.085      | 1.029      | 80             |
| 81             | 60.75                 | 52.611 0                         | 61.50                       | 59.87                                     | 59.63                   | 59.40 | 1.141                                                         | 1.118      | 1.085      | 1.029      | 81             |
| 82             | 61.50                 | 53.260 6                         | 62.25                       | 60.62                                     | 60.38                   | 60.15 | 1.141                                                         | 1.118      | 1.085      | 1.028      | 82             |
| 83             | 62.25                 | 53.910 1                         | 63.00                       | 61.37                                     | 61.13                   | 60.90 | 1.141                                                         | 1.118      | 1.084      | 1.028      | 83             |
| 84             | 63.00                 | 54.559 6                         | 63.75                       | 62.12                                     | 61.88                   | 61.65 | 1.141                                                         | 1.118      | 1.084      | 1.028      | 84             |
| 85             | 63.75                 | 55.209 1                         | 64.50                       | 62.87                                     | 62.63                   | 62.40 | 1.140                                                         | 1.118      | 1.084      | 1.028      | 85             |
| 86             | 64.50                 | 55.858 6                         | 65.25                       | 63.62                                     | 63.38                   | 63.15 | 1.140                                                         | 1.118      | 1.084      | 1.027      | 86             |
| 87             | 65.25                 | 56.508 2                         | 66.00                       | 64.37                                     | 64.13                   | 63.90 | 1.140                                                         | 1.118      | 1.084      | 1.027      | 87             |
| 88             | 66.00                 | 57.157 7                         | 66.75                       | 65.12                                     | 64.88                   | 64.65 | 1.140                                                         | 1.117      | 1.083      | 1.027      | 88             |
| 89             | 66.75                 | 57.807 2                         | 67.50                       | 65.87                                     | 65.63                   | 65.40 | 1.140                                                         | 1.117      | 1.083      | 1.026      | 89             |
| 90             | 67.50                 | 58.456 7                         | 68.25                       | 66.62                                     | 66.38                   | 66.15 | 1.140                                                         | 1.117      | 1.083      | 1.026      | 90             |
| 91             | 68.25                 | 59.106 2                         | 69.00                       | 67.37                                     | 67.13                   | 66.90 | 1.140                                                         | 1.117      | 1.083      | 1.026      | 91             |
| 92             | 69.00                 | 59.755 8                         | 69.75                       | 68.12                                     | 67.88                   | 67.65 | 1.140                                                         | 1.117      | 1.083      | 1.025      | 92             |
| 93             | 69.75                 | 60.405 3                         | 70.50                       | 68.87                                     | 68.63                   | 68.40 | 1.140                                                         | 1.117      | 1.082      | 1.025      | 93             |
| 94             | 70.50                 | 61.054 8                         | 71.25                       | 69.62                                     | 69.38                   | 69.15 | 1.140                                                         | 1.117      | 1.082      | 1.025      | 94             |
| 95             | 71.25                 | 61.704 3                         | 72.00                       | 70.37                                     | 70.13                   | 69.90 | 1.140                                                         | 1.117      | 1.082      | 1.025      | 95             |
| 96             | 72.00                 | 62.353 8                         | 72.75                       | 71.12                                     | 70.88                   | 70.65 | 1.140                                                         | 1.117      | 1.082      | 1.024      | 96             |
| 97             | 72.75                 | 63.003 3                         | 73.50                       | 71.87                                     | 71.63                   | 71.40 | 1.140                                                         | 1.116      | 1.082      | 1.024      | 97             |
| 98             | 73.50                 | 63.652 9                         | 74.25                       | 72.62                                     | 72.38                   | 72.15 | 1.139                                                         | 1.116      | 1.082      | 1.024      | 98             |
| 99             | 74.25                 | 64.302 4                         | 75.00                       | 73.37                                     | 73.13                   | 72.90 | 1.139                                                         | 1.116      | 1.081      | 1.023      | 99             |
| 100            | 75.00                 | 64.951 9                         | 75.75                       | 74.12                                     | 73.88                   | 73.65 | 1.139                                                         | 1.116      | 1.081      | 1.023      | 100            |

表 17 30°外花键  
模数  $m=1\text{ mm}$  作用齿厚最大值  $S_{v\max}=1.571\text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_{\text{外}}$ | 渐开线起<br>始圆直径<br>$D_{Fe\max}$ | 小径 $D_{\text{内}}$ |       | 实际齿厚最小值<br>$S_{\min}=S_{v\max}-(T+\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------------------|------------------------------|-------------------|-------|---------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   |                      |                              | 平齿根               | 圆齿根   | 4h                                          | 5h    | 6h    | 7h    |           |
| 10        | 10.00            | 8.660 3           | 11.00                | 9.04                         | 8.50              | 8.20  | 1.540                                       | 1.522 | 1.494 | 1.448 | 10        |
| 11        | 11.00            | 9.526 3           | 12.00                | 10.02                        | 9.50              | 9.20  | 1.540                                       | 1.521 | 1.493 | 1.446 | 11        |
| 12        | 12.00            | 10.392 3          | 13.00                | 11.00                        | 10.50             | 10.20 | 1.539                                       | 1.521 | 1.492 | 1.445 | 12        |
| 13        | 13.00            | 11.258 3          | 14.00                | 11.98                        | 11.50             | 11.20 | 1.539                                       | 1.520 | 1.492 | 1.444 | 13        |
| 14        | 14.00            | 12.124 4          | 15.00                | 12.97                        | 12.50             | 12.20 | 1.539                                       | 1.520 | 1.491 | 1.443 | 14        |
| 15        | 15.00            | 12.990 4          | 16.00                | 13.96                        | 13.50             | 13.20 | 1.539                                       | 1.519 | 1.490 | 1.442 | 15        |
| 16        | 16.00            | 13.856 4          | 17.00                | 14.95                        | 14.50             | 14.20 | 1.538                                       | 1.519 | 1.490 | 1.441 | 16        |
| 17        | 17.00            | 14.722 4          | 18.00                | 15.94                        | 15.50             | 15.20 | 1.538                                       | 1.518 | 1.489 | 1.440 | 17        |
| 18        | 18.00            | 15.588 5          | 19.00                | 16.93                        | 16.50             | 16.20 | 1.538                                       | 1.518 | 1.488 | 1.439 | 18        |
| 19        | 19.00            | 16.454 5          | 20.00                | 17.92                        | 17.50             | 17.20 | 1.538                                       | 1.518 | 1.488 | 1.438 | 19        |
| 20        | 20.00            | 17.320 5          | 21.00                | 18.91                        | 18.50             | 18.20 | 1.537                                       | 1.517 | 1.487 | 1.437 | 20        |
| 21        | 21.00            | 18.186 5          | 22.00                | 19.91                        | 19.50             | 19.20 | 1.537                                       | 1.517 | 1.487 | 1.436 | 21        |
| 22        | 22.00            | 19.052 6          | 23.00                | 20.90                        | 20.50             | 20.20 | 1.537                                       | 1.517 | 1.486 | 1.436 | 22        |
| 23        | 23.00            | 19.918 6          | 24.00                | 21.90                        | 21.50             | 21.20 | 1.537                                       | 1.516 | 1.486 | 1.435 | 23        |
| 24        | 24.00            | 20.784 6          | 25.00                | 22.89                        | 22.50             | 22.20 | 1.537                                       | 1.516 | 1.485 | 1.434 | 24        |
| 25        | 25.00            | 21.650 6          | 26.00                | 23.89                        | 23.50             | 23.20 | 1.536                                       | 1.516 | 1.485 | 1.433 | 25        |
| 26        | 26.00            | 22.516 7          | 27.00                | 24.89                        | 24.50             | 24.20 | 1.536                                       | 1.516 | 1.484 | 1.433 | 26        |
| 27        | 27.00            | 23.382 7          | 28.00                | 25.88                        | 25.50             | 25.20 | 1.536                                       | 1.515 | 1.484 | 1.432 | 27        |
| 28        | 28.00            | 24.248 7          | 29.00                | 26.88                        | 26.50             | 26.20 | 1.536                                       | 1.515 | 1.484 | 1.431 | 28        |
| 29        | 29.00            | 25.114 7          | 30.00                | 27.88                        | 27.50             | 27.20 | 1.536                                       | 1.515 | 1.483 | 1.430 | 29        |
| 30        | 30.00            | 25.980 8          | 31.00                | 28.87                        | 28.50             | 28.20 | 1.536                                       | 1.514 | 1.483 | 1.430 | 30        |
| 31        | 31.00            | 26.846 8          | 32.00                | 29.87                        | 29.50             | 29.20 | 1.535                                       | 1.514 | 1.482 | 1.429 | 31        |
| 32        | 32.00            | 27.712 8          | 33.00                | 30.87                        | 30.50             | 30.20 | 1.535                                       | 1.514 | 1.482 | 1.429 | 32        |
| 33        | 33.00            | 28.578 8          | 34.00                | 31.87                        | 31.50             | 31.20 | 1.535                                       | 1.514 | 1.481 | 1.428 | 33        |
| 34        | 34.00            | 29.444 9          | 35.00                | 32.87                        | 32.50             | 32.20 | 1.535                                       | 1.513 | 1.481 | 1.427 | 34        |
| 35        | 35.00            | 30.310 9          | 36.00                | 33.86                        | 33.50             | 33.20 | 1.535                                       | 1.513 | 1.481 | 1.427 | 35        |
| 36        | 36.00            | 31.176 9          | 37.00                | 34.86                        | 34.50             | 34.20 | 1.535                                       | 1.513 | 1.480 | 1.426 | 36        |
| 37        | 37.00            | 32.042 9          | 38.00                | 35.86                        | 35.50             | 35.20 | 1.534                                       | 1.513 | 1.480 | 1.425 | 37        |
| 38        | 38.00            | 32.909 0          | 39.00                | 36.86                        | 36.50             | 36.20 | 1.534                                       | 1.512 | 1.480 | 1.425 | 38        |
| 39        | 39.00            | 33.775 0          | 40.00                | 37.86                        | 37.50             | 37.20 | 1.534                                       | 1.512 | 1.479 | 1.424 | 39        |
| 40        | 40.00            | 34.641 0          | 41.00                | 38.86                        | 38.50             | 38.20 | 1.534                                       | 1.512 | 1.479 | 1.424 | 40        |
| 41        | 41.00            | 35.507 0          | 42.00                | 39.85                        | 39.50             | 39.20 | 1.534                                       | 1.512 | 1.479 | 1.423 | 41        |
| 42        | 42.00            | 36.373 1          | 43.00                | 40.85                        | 40.50             | 40.20 | 1.534                                       | 1.512 | 1.478 | 1.423 | 42        |
| 43        | 43.00            | 37.239 1          | 44.00                | 41.85                        | 41.50             | 41.20 | 1.534                                       | 1.511 | 1.478 | 1.422 | 43        |
| 44        | 44.00            | 38.105 1          | 45.00                | 42.85                        | 42.50             | 42.20 | 1.534                                       | 1.511 | 1.478 | 1.422 | 44        |
| 45        | 45.00            | 38.971 1          | 46.00                | 43.85                        | 43.50             | 43.20 | 1.533                                       | 1.511 | 1.477 | 1.421 | 45        |
| 46        | 46.00            | 39.837 2          | 47.00                | 44.85                        | 44.50             | 44.20 | 1.533                                       | 1.511 | 1.477 | 1.421 | 46        |
| 47        | 47.00            | 40.703 2          | 48.00                | 45.85                        | 45.50             | 45.20 | 1.533                                       | 1.511 | 1.477 | 1.420 | 47        |
| 48        | 48.00            | 41.569 2          | 49.00                | 46.85                        | 46.50             | 46.20 | 1.533                                       | 1.510 | 1.476 | 1.420 | 48        |
| 49        | 49.00            | 42.435 2          | 50.00                | 47.85                        | 47.50             | 47.20 | 1.533                                       | 1.510 | 1.476 | 1.419 | 49        |
| 50        | 50.00            | 43.301 3          | 51.00                | 48.84                        | 48.50             | 48.20 | 1.533                                       | 1.510 | 1.476 | 1.419 | 50        |
| 51        | 51.00            | 44.167 3          | 52.00                | 49.84                        | 49.50             | 49.20 | 1.533                                       | 1.510 | 1.475 | 1.418 | 51        |
| 52        | 52.00            | 45.033 3          | 53.00                | 50.84                        | 50.50             | 50.20 | 1.533                                       | 1.510 | 1.475 | 1.418 | 52        |
| 53        | 53.00            | 45.899 3          | 54.00                | 51.84                        | 51.50             | 51.20 | 1.532                                       | 1.509 | 1.475 | 1.417 | 53        |
| 54        | 54.00            | 46.765 4          | 55.00                | 52.84                        | 52.50             | 52.20 | 1.532                                       | 1.509 | 1.475 | 1.417 | 54        |
| 55        | 55.00            | 47.631 4          | 56.00                | 53.84                        | 53.50             | 53.20 | 1.532                                       | 1.509 | 1.474 | 1.416 | 55        |

表 17 (续)

单位为毫米

| 齿数<br><i>z</i> | 分度圆<br>直径<br><i>D</i> | 基圆<br>直径<br><i>D<sub>b</sub></i> | 大径<br><i>D<sub>e</sub></i> | 渐开线起<br>始圆直径<br><i>D<sub>Fe max</sub></i> | 小径 <i>D<sub>s</sub></i> |       | 实际齿厚最小值<br><i>S<sub>min</sub> = S<sub>v max</sub> - (T + λ)</i> |       |       |       | 齿数<br><i>z</i> |
|----------------|-----------------------|----------------------------------|----------------------------|-------------------------------------------|-------------------------|-------|-----------------------------------------------------------------|-------|-------|-------|----------------|
|                |                       |                                  |                            |                                           | 平齿根                     | 圆齿根   | 4h                                                              | 5h    | 6h    | 7h    |                |
| 56             | 56.00                 | 48.497 4                         | 57.00                      | 54.84                                     | 54.50                   | 54.20 | 1.532                                                           | 1.509 | 1.474 | 1.416 | 56             |
| 57             | 57.00                 | 49.363 4                         | 58.00                      | 55.84                                     | 55.50                   | 55.20 | 1.532                                                           | 1.509 | 1.474 | 1.415 | 57             |
| 58             | 58.00                 | 50.229 5                         | 59.00                      | 56.84                                     | 56.50                   | 56.20 | 1.532                                                           | 1.508 | 1.473 | 1.415 | 58             |
| 59             | 59.00                 | 51.095 5                         | 60.00                      | 57.84                                     | 57.50                   | 57.20 | 1.532                                                           | 1.508 | 1.473 | 1.415 | 59             |
| 60             | 60.00                 | 51.961 5                         | 61.00                      | 58.84                                     | 58.50                   | 58.20 | 1.532                                                           | 1.508 | 1.473 | 1.414 | 60             |
| 61             | 61.00                 | 52.827 5                         | 62.00                      | 59.84                                     | 59.50                   | 59.20 | 1.532                                                           | 1.508 | 1.473 | 1.414 | 61             |
| 62             | 62.00                 | 53.693 6                         | 63.00                      | 60.84                                     | 60.50                   | 60.20 | 1.531                                                           | 1.508 | 1.472 | 1.413 | 62             |
| 63             | 63.00                 | 54.559 6                         | 64.00                      | 61.83                                     | 61.50                   | 61.20 | 1.531                                                           | 1.508 | 1.472 | 1.413 | 63             |
| 64             | 64.00                 | 55.425 6                         | 65.00                      | 62.83                                     | 62.50                   | 62.20 | 1.531                                                           | 1.507 | 1.472 | 1.412 | 64             |
| 65             | 65.00                 | 56.291 7                         | 66.00                      | 63.83                                     | 63.50                   | 63.20 | 1.531                                                           | 1.507 | 1.472 | 1.412 | 65             |
| 66             | 66.00                 | 57.157 7                         | 67.00                      | 64.83                                     | 64.50                   | 64.20 | 1.531                                                           | 1.507 | 1.471 | 1.412 | 66             |
| 67             | 67.00                 | 58.023 7                         | 68.00                      | 65.83                                     | 65.50                   | 65.20 | 1.531                                                           | 1.507 | 1.471 | 1.411 | 67             |
| 68             | 68.00                 | 58.889 7                         | 69.00                      | 66.83                                     | 66.50                   | 66.20 | 1.531                                                           | 1.507 | 1.471 | 1.411 | 68             |
| 69             | 69.00                 | 59.755 8                         | 70.00                      | 67.83                                     | 67.50                   | 67.20 | 1.531                                                           | 1.507 | 1.471 | 1.410 | 69             |
| 70             | 70.00                 | 60.621 8                         | 71.00                      | 68.83                                     | 68.50                   | 68.20 | 1.531                                                           | 1.506 | 1.470 | 1.410 | 70             |
| 71             | 71.00                 | 61.487 8                         | 72.00                      | 69.83                                     | 69.50                   | 69.20 | 1.530                                                           | 1.506 | 1.470 | 1.410 | 71             |
| 72             | 72.00                 | 62.353 8                         | 73.00                      | 70.83                                     | 70.50                   | 70.20 | 1.530                                                           | 1.506 | 1.470 | 1.409 | 72             |
| 73             | 73.00                 | 63.219 9                         | 74.00                      | 71.83                                     | 71.50                   | 71.20 | 1.530                                                           | 1.506 | 1.470 | 1.409 | 73             |
| 74             | 74.00                 | 64.085 9                         | 75.00                      | 72.83                                     | 72.50                   | 72.20 | 1.530                                                           | 1.506 | 1.469 | 1.408 | 74             |
| 75             | 75.00                 | 64.951 9                         | 76.00                      | 73.83                                     | 73.50                   | 73.20 | 1.530                                                           | 1.506 | 1.469 | 1.408 | 75             |
| 76             | 76.00                 | 65.817 9                         | 77.00                      | 74.83                                     | 74.50                   | 74.20 | 1.530                                                           | 1.506 | 1.469 | 1.408 | 76             |
| 77             | 77.00                 | 66.684 0                         | 78.00                      | 75.83                                     | 75.50                   | 75.20 | 1.530                                                           | 1.505 | 1.469 | 1.407 | 77             |
| 78             | 78.00                 | 67.550 0                         | 79.00                      | 76.83                                     | 76.50                   | 76.20 | 1.530                                                           | 1.505 | 1.468 | 1.407 | 78             |
| 79             | 79.00                 | 68.416 0                         | 80.00                      | 77.83                                     | 77.50                   | 77.20 | 1.530                                                           | 1.505 | 1.468 | 1.407 | 79             |
| 80             | 80.00                 | 69.282 0                         | 81.00                      | 78.83                                     | 78.50                   | 78.20 | 1.530                                                           | 1.505 | 1.468 | 1.406 | 80             |
| 81             | 81.00                 | 70.148 1                         | 82.00                      | 79.83                                     | 79.50                   | 79.20 | 1.530                                                           | 1.505 | 1.468 | 1.406 | 81             |
| 82             | 82.00                 | 71.014 1                         | 83.00                      | 80.83                                     | 80.50                   | 80.20 | 1.529                                                           | 1.505 | 1.467 | 1.405 | 82             |
| 83             | 83.00                 | 71.880 1                         | 84.00                      | 81.83                                     | 81.50                   | 81.20 | 1.529                                                           | 1.505 | 1.467 | 1.405 | 83             |
| 84             | 84.00                 | 72.746 1                         | 85.00                      | 82.83                                     | 82.50                   | 82.20 | 1.529                                                           | 1.504 | 1.467 | 1.405 | 84             |
| 85             | 85.00                 | 73.612 2                         | 86.00                      | 83.83                                     | 83.50                   | 83.20 | 1.529                                                           | 1.504 | 1.467 | 1.404 | 85             |
| 86             | 86.00                 | 74.478 2                         | 87.00                      | 84.83                                     | 84.50                   | 84.20 | 1.529                                                           | 1.504 | 1.467 | 1.404 | 86             |
| 87             | 87.00                 | 75.344 2                         | 88.00                      | 85.83                                     | 85.50                   | 85.20 | 1.529                                                           | 1.504 | 1.466 | 1.404 | 87             |
| 88             | 88.00                 | 76.210 2                         | 89.00                      | 86.82                                     | 86.50                   | 86.20 | 1.529                                                           | 1.504 | 1.466 | 1.403 | 88             |
| 89             | 89.00                 | 77.076 3                         | 90.00                      | 87.82                                     | 87.50                   | 87.20 | 1.529                                                           | 1.504 | 1.466 | 1.403 | 89             |
| 90             | 90.00                 | 77.942 3                         | 91.00                      | 88.82                                     | 88.50                   | 88.20 | 1.529                                                           | 1.504 | 1.466 | 1.403 | 90             |
| 91             | 91.00                 | 78.808 3                         | 92.00                      | 89.82                                     | 89.50                   | 89.20 | 1.529                                                           | 1.503 | 1.466 | 1.402 | 91             |
| 92             | 92.00                 | 79.674 3                         | 93.00                      | 90.82                                     | 90.50                   | 90.20 | 1.529                                                           | 1.503 | 1.466 | 1.402 | 92             |
| 93             | 93.00                 | 80.540 4                         | 94.00                      | 91.82                                     | 91.50                   | 91.20 | 1.528                                                           | 1.503 | 1.465 | 1.402 | 93             |
| 94             | 94.00                 | 81.406 4                         | 95.00                      | 92.82                                     | 92.50                   | 92.20 | 1.528                                                           | 1.503 | 1.465 | 1.401 | 94             |
| 95             | 95.00                 | 82.272 4                         | 96.00                      | 93.82                                     | 93.50                   | 93.20 | 1.528                                                           | 1.503 | 1.465 | 1.401 | 95             |
| 96             | 96.00                 | 83.138 4                         | 97.00                      | 94.82                                     | 94.50                   | 94.20 | 1.528                                                           | 1.503 | 1.465 | 1.401 | 96             |
| 97             | 97.00                 | 84.004 5                         | 98.00                      | 95.82                                     | 95.50                   | 95.20 | 1.528                                                           | 1.503 | 1.464 | 1.400 | 97             |
| 98             | 98.00                 | 84.870 5                         | 99.00                      | 96.82                                     | 96.50                   | 96.20 | 1.528                                                           | 1.503 | 1.464 | 1.400 | 98             |
| 99             | 99.00                 | 85.736 5                         | 100.00                     | 97.82                                     | 97.50                   | 97.20 | 1.528                                                           | 1.502 | 1.464 | 1.400 | 99             |
| 100            | 100.00                | 86.602 5                         | 101.00                     | 98.82                                     | 98.50                   | 98.20 | 1.528                                                           | 1.502 | 1.464 | 1.399 | 100            |

表 18 30°外花键  
模数  $m=1.25\text{ mm}$  作用齿厚最大值  $S_{\max}=1.963\text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_e$ | 渐开线起<br>始圆直径<br>$D_{b, \min}$ | 小径 $D_i$ |       | 实际齿厚最小值<br>$S_{\min}=S_{\max}-(T+\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|-------------|-------------------------------|----------|-------|--------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   |             |                               | 平齿根      | 圆齿根   | 1h                                         | 5h    | 6h    | 7h    |           |
| 10        | 12.50            | 10.825 3          | 13.75       | 11.30                         | 10.63    | 10.25 | 1.930                                      | 1.910 | 1.881 | 1.831 | 10        |
| 11        | 13.75            | 11.907 8          | 15.00       | 12.52                         | 11.88    | 11.50 | 1.930                                      | 1.910 | 1.880 | 1.829 | 11        |
| 12        | 15.00            | 12.990 4          | 16.25       | 13.75                         | 13.13    | 12.75 | 1.930                                      | 1.909 | 1.879 | 1.828 | 12        |
| 13        | 16.25            | 14.072 9          | 17.50       | 14.98                         | 14.38    | 14.00 | 1.929                                      | 1.909 | 1.878 | 1.827 | 13        |
| 14        | 17.50            | 15.155 4          | 18.75       | 16.21                         | 15.63    | 15.25 | 1.929                                      | 1.908 | 1.877 | 1.826 | 14        |
| 15        | 18.75            | 16.238 0          | 20.00       | 17.44                         | 16.88    | 16.50 | 1.929                                      | 1.908 | 1.877 | 1.825 | 15        |
| 16        | 20.00            | 17.320 5          | 21.25       | 18.68                         | 18.13    | 17.75 | 1.928                                      | 1.907 | 1.876 | 1.823 | 16        |
| 17        | 21.25            | 18.403 0          | 22.50       | 19.92                         | 19.38    | 19.00 | 1.928                                      | 1.907 | 1.875 | 1.822 | 17        |
| 18        | 22.50            | 19.485 6          | 23.75       | 21.16                         | 20.63    | 20.25 | 1.928                                      | 1.907 | 1.875 | 1.821 | 18        |
| 19        | 23.75            | 20.568 1          | 25.00       | 22.40                         | 21.88    | 21.50 | 1.928                                      | 1.906 | 1.874 | 1.820 | 19        |
| 20        | 25.00            | 21.650 6          | 26.25       | 23.64                         | 23.13    | 22.75 | 1.927                                      | 1.906 | 1.873 | 1.819 | 20        |
| 21        | 26.25            | 22.733 2          | 27.50       | 24.89                         | 24.38    | 24.00 | 1.927                                      | 1.906 | 1.873 | 1.819 | 21        |
| 22        | 27.50            | 23.815 7          | 28.75       | 26.13                         | 25.63    | 25.25 | 1.927                                      | 1.905 | 1.872 | 1.818 | 22        |
| 23        | 28.75            | 24.898 2          | 30.00       | 27.37                         | 26.88    | 26.50 | 1.927                                      | 1.905 | 1.872 | 1.817 | 23        |
| 24        | 30.00            | 25.980 8          | 31.25       | 28.62                         | 28.13    | 27.75 | 1.927                                      | 1.904 | 1.871 | 1.816 | 24        |
| 25        | 31.25            | 27.063 3          | 32.50       | 29.86                         | 29.38    | 29.00 | 1.926                                      | 1.904 | 1.871 | 1.815 | 25        |
| 26        | 32.50            | 28.145 8          | 33.75       | 31.11                         | 30.63    | 30.25 | 1.926                                      | 1.904 | 1.870 | 1.814 | 26        |
| 27        | 33.75            | 29.228 4          | 35.00       | 32.35                         | 31.88    | 31.50 | 1.926                                      | 1.904 | 1.870 | 1.814 | 27        |
| 28        | 35.00            | 30.310 9          | 36.25       | 33.60                         | 33.13    | 32.75 | 1.926                                      | 1.903 | 1.869 | 1.813 | 28        |
| 29        | 36.25            | 31.393 4          | 37.50       | 34.85                         | 34.38    | 34.00 | 1.926                                      | 1.903 | 1.869 | 1.812 | 29        |
| 30        | 37.50            | 32.476 0          | 38.75       | 36.09                         | 35.63    | 35.25 | 1.925                                      | 1.903 | 1.868 | 1.811 | 30        |
| 31        | 38.75            | 33.558 5          | 40.00       | 37.34                         | 36.88    | 36.50 | 1.925                                      | 1.902 | 1.868 | 1.811 | 31        |
| 32        | 40.00            | 34.641 0          | 41.25       | 38.59                         | 38.13    | 37.75 | 1.925                                      | 1.902 | 1.868 | 1.810 | 32        |
| 33        | 41.25            | 35.723 5          | 42.50       | 39.83                         | 39.38    | 39.00 | 1.925                                      | 1.902 | 1.867 | 1.809 | 33        |
| 34        | 42.50            | 36.806 1          | 43.75       | 41.08                         | 40.63    | 40.25 | 1.925                                      | 1.902 | 1.867 | 1.809 | 34        |
| 35        | 43.75            | 37.888 6          | 45.00       | 42.33                         | 41.88    | 41.50 | 1.925                                      | 1.901 | 1.866 | 1.808 | 35        |
| 36        | 45.00            | 38.971 1          | 46.25       | 43.58                         | 43.13    | 42.75 | 1.924                                      | 1.901 | 1.866 | 1.807 | 36        |
| 37        | 46.25            | 40.053 7          | 47.50       | 44.83                         | 44.38    | 44.00 | 1.924                                      | 1.901 | 1.865 | 1.807 | 37        |
| 38        | 47.50            | 41.136 2          | 48.75       | 46.07                         | 45.63    | 45.25 | 1.924                                      | 1.901 | 1.865 | 1.806 | 38        |
| 39        | 48.75            | 42.218 7          | 50.00       | 47.32                         | 46.88    | 46.50 | 1.924                                      | 1.900 | 1.865 | 1.805 | 39        |
| 40        | 50.00            | 43.301 3          | 51.25       | 48.57                         | 48.13    | 47.75 | 1.924                                      | 1.900 | 1.864 | 1.805 | 40        |
| 41        | 51.25            | 44.383 8          | 52.50       | 49.82                         | 49.38    | 49.00 | 1.924                                      | 1.900 | 1.864 | 1.804 | 41        |
| 42        | 52.50            | 45.466 3          | 53.75       | 51.07                         | 50.63    | 50.25 | 1.924                                      | 1.900 | 1.864 | 1.804 | 42        |
| 43        | 53.75            | 46.548 9          | 55.00       | 52.31                         | 51.88    | 51.50 | 1.923                                      | 1.899 | 1.863 | 1.803 | 43        |
| 44        | 55.00            | 47.631 4          | 56.25       | 53.56                         | 53.13    | 52.75 | 1.923                                      | 1.899 | 1.863 | 1.802 | 44        |
| 45        | 56.25            | 48.713 9          | 57.50       | 54.81                         | 54.38    | 54.00 | 1.923                                      | 1.899 | 1.863 | 1.802 | 45        |
| 46        | 57.50            | 49.796 5          | 58.75       | 56.06                         | 55.63    | 55.25 | 1.923                                      | 1.899 | 1.862 | 1.801 | 46        |
| 47        | 58.75            | 50.879 0          | 60.00       | 57.31                         | 56.88    | 56.50 | 1.923                                      | 1.898 | 1.862 | 1.801 | 47        |
| 48        | 60.00            | 51.961 5          | 61.25       | 58.56                         | 58.13    | 57.75 | 1.923                                      | 1.898 | 1.861 | 1.800 | 48        |
| 49        | 61.25            | 53.044 1          | 62.50       | 59.81                         | 59.38    | 59.00 | 1.923                                      | 1.898 | 1.861 | 1.800 | 49        |
| 50        | 62.50            | 54.126 6          | 63.75       | 61.06                         | 60.63    | 60.25 | 1.922                                      | 1.898 | 1.861 | 1.799 | 50        |
| 51        | 63.75            | 55.209 1          | 65.00       | 62.30                         | 61.88    | 61.50 | 1.922                                      | 1.898 | 1.860 | 1.799 | 51        |
| 52        | 65.00            | 56.291 7          | 66.25       | 63.55                         | 63.13    | 62.75 | 1.922                                      | 1.897 | 1.860 | 1.798 | 52        |
| 53        | 66.25            | 57.374 2          | 67.50       | 64.80                         | 64.38    | 64.00 | 1.922                                      | 1.897 | 1.860 | 1.798 | 53        |
| 54        | 67.50            | 58.456 7          | 68.75       | 66.05                         | 65.63    | 65.25 | 1.922                                      | 1.897 | 1.860 | 1.797 | 54        |
| 55        | 68.75            | 59.539 2          | 70.00       | 67.30                         | 66.88    | 66.50 | 1.922                                      | 1.897 | 1.859 | 1.797 | 55        |

表 18 (续)

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_e$ | 渐开线起<br>始圆直径<br>$D_{Fe\max}$ | 小径 $D_f$ |        | 实际齿厚最小值<br>$S_{\min} = S_{v\max} - (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|-------------|------------------------------|----------|--------|---------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   |             |                              | 平齿根      | 圆齿根    | 4h                                                | 5h    | 6h    | 7h    |           |
| 56        | 70.00            | 60.621 8          | 71.25       | 68.55                        | 68.13    | 67.75  | 1.922                                             | 1.897 | 1.859 | 1.796 | 56        |
| 57        | 71.25            | 61.704 3          | 72.50       | 69.80                        | 69.38    | 69.00  | 1.922                                             | 1.896 | 1.859 | 1.796 | 57        |
| 58        | 72.50            | 62.786 8          | 73.75       | 71.05                        | 70.63    | 70.25  | 1.921                                             | 1.896 | 1.858 | 1.795 | 58        |
| 59        | 73.75            | 63.869 4          | 75.00       | 72.30                        | 71.88    | 71.50  | 1.921                                             | 1.896 | 1.858 | 1.795 | 59        |
| 60        | 75.00            | 64.951 9          | 76.25       | 73.55                        | 73.13    | 72.75  | 1.921                                             | 1.896 | 1.858 | 1.794 | 60        |
| 61        | 76.25            | 66.034 4          | 77.50       | 74.80                        | 74.38    | 74.00  | 1.921                                             | 1.896 | 1.857 | 1.794 | 61        |
| 62        | 77.50            | 67.117 0          | 78.75       | 76.04                        | 75.63    | 75.25  | 1.921                                             | 1.895 | 1.857 | 1.793 | 62        |
| 63        | 78.75            | 68.199 5          | 80.00       | 77.29                        | 76.88    | 76.50  | 1.921                                             | 1.895 | 1.857 | 1.793 | 63        |
| 64        | 80.00            | 69.282 0          | 81.25       | 78.54                        | 78.13    | 77.75  | 1.921                                             | 1.895 | 1.857 | 1.792 | 64        |
| 65        | 81.25            | 70.364 6          | 82.50       | 79.79                        | 79.38    | 79.00  | 1.921                                             | 1.895 | 1.856 | 1.792 | 65        |
| 66        | 82.50            | 71.447 1          | 83.75       | 81.04                        | 80.63    | 80.25  | 1.920                                             | 1.895 | 1.856 | 1.791 | 66        |
| 67        | 83.75            | 72.529 6          | 85.00       | 82.29                        | 81.88    | 81.50  | 1.920                                             | 1.895 | 1.856 | 1.791 | 67        |
| 68        | 85.00            | 73.612 2          | 86.25       | 83.54                        | 83.13    | 82.75  | 1.920                                             | 1.894 | 1.855 | 1.791 | 68        |
| 69        | 86.25            | 74.694 7          | 87.50       | 84.79                        | 84.38    | 84.00  | 1.920                                             | 1.894 | 1.855 | 1.790 | 69        |
| 70        | 87.50            | 75.777 2          | 88.75       | 86.04                        | 85.63    | 85.25  | 1.920                                             | 1.894 | 1.855 | 1.790 | 70        |
| 71        | 88.75            | 76.859 8          | 90.00       | 87.29                        | 86.88    | 86.50  | 1.920                                             | 1.894 | 1.855 | 1.789 | 71        |
| 72        | 90.00            | 77.942 3          | 91.25       | 88.54                        | 88.13    | 87.75  | 1.920                                             | 1.894 | 1.854 | 1.789 | 72        |
| 73        | 91.25            | 79.024 8          | 92.50       | 89.79                        | 89.38    | 89.00  | 1.920                                             | 1.893 | 1.854 | 1.788 | 73        |
| 74        | 92.50            | 80.107 3          | 93.75       | 91.04                        | 90.63    | 90.25  | 1.920                                             | 1.893 | 1.854 | 1.788 | 74        |
| 75        | 93.75            | 81.189 9          | 95.00       | 92.29                        | 91.88    | 91.50  | 1.920                                             | 1.893 | 1.854 | 1.788 | 75        |
| 76        | 95.00            | 82.272 4          | 96.25       | 93.54                        | 93.13    | 92.75  | 1.919                                             | 1.893 | 1.853 | 1.787 | 76        |
| 77        | 96.25            | 83.354 9          | 97.50       | 94.79                        | 94.38    | 94.00  | 1.919                                             | 1.893 | 1.853 | 1.787 | 77        |
| 78        | 97.50            | 84.437 5          | 98.75       | 96.04                        | 95.63    | 95.25  | 1.919                                             | 1.893 | 1.853 | 1.786 | 78        |
| 79        | 98.75            | 85.520 0          | 100.00      | 97.28                        | 96.88    | 96.50  | 1.919                                             | 1.893 | 1.853 | 1.786 | 79        |
| 80        | 100.00           | 86.602 5          | 101.25      | 98.53                        | 98.13    | 97.75  | 1.919                                             | 1.892 | 1.852 | 1.786 | 80        |
| 81        | 101.25           | 87.685 1          | 102.50      | 99.78                        | 99.38    | 99.00  | 1.919                                             | 1.892 | 1.852 | 1.785 | 81        |
| 82        | 102.50           | 88.767 6          | 103.75      | 101.03                       | 100.63   | 100.25 | 1.919                                             | 1.892 | 1.852 | 1.785 | 82        |
| 83        | 103.75           | 89.850 1          | 105.00      | 102.28                       | 101.88   | 101.50 | 1.919                                             | 1.892 | 1.852 | 1.784 | 83        |
| 84        | 105.00           | 90.932 7          | 106.25      | 103.53                       | 103.13   | 102.75 | 1.919                                             | 1.892 | 1.851 | 1.784 | 84        |
| 85        | 106.25           | 92.015 2          | 107.50      | 104.78                       | 104.38   | 104.00 | 1.919                                             | 1.892 | 1.851 | 1.784 | 85        |
| 86        | 107.50           | 93.097 7          | 108.75      | 106.03                       | 105.63   | 105.25 | 1.918                                             | 1.891 | 1.851 | 1.783 | 86        |
| 87        | 108.75           | 94.180 3          | 110.00      | 107.28                       | 106.88   | 106.50 | 1.918                                             | 1.891 | 1.851 | 1.783 | 87        |
| 88        | 110.00           | 95.262 8          | 111.25      | 108.53                       | 108.13   | 107.75 | 1.918                                             | 1.891 | 1.850 | 1.783 | 88        |
| 89        | 111.25           | 96.345 3          | 112.50      | 109.78                       | 109.38   | 109.00 | 1.918                                             | 1.891 | 1.850 | 1.782 | 89        |
| 90        | 112.50           | 97.427 9          | 113.75      | 111.03                       | 110.63   | 110.25 | 1.918                                             | 1.891 | 1.850 | 1.782 | 90        |
| 91        | 113.75           | 98.510 4          | 115.00      | 112.28                       | 111.88   | 111.50 | 1.918                                             | 1.891 | 1.850 | 1.781 | 91        |
| 92        | 115.00           | 99.592 9          | 116.25      | 113.53                       | 113.13   | 112.75 | 1.918                                             | 1.891 | 1.849 | 1.781 | 92        |
| 93        | 116.25           | 100.675 5         | 117.50      | 114.78                       | 114.38   | 114.00 | 1.918                                             | 1.890 | 1.849 | 1.781 | 93        |
| 94        | 117.50           | 101.758 0         | 118.75      | 116.03                       | 115.63   | 115.25 | 1.918                                             | 1.890 | 1.849 | 1.780 | 94        |
| 95        | 118.75           | 102.840 5         | 120.00      | 117.28                       | 116.88   | 116.50 | 1.918                                             | 1.890 | 1.849 | 1.780 | 95        |
| 96        | 120.00           | 103.923 0         | 121.25      | 118.53                       | 118.13   | 117.75 | 1.918                                             | 1.890 | 1.849 | 1.780 | 96        |
| 97        | 121.25           | 105.005 6         | 122.50      | 119.78                       | 119.38   | 119.00 | 1.917                                             | 1.890 | 1.848 | 1.779 | 97        |
| 98        | 122.50           | 106.088 1         | 123.75      | 121.03                       | 120.63   | 120.25 | 1.917                                             | 1.890 | 1.848 | 1.779 | 98        |
| 99        | 123.75           | 107.170 6         | 125.00      | 122.28                       | 121.88   | 121.50 | 1.917                                             | 1.890 | 1.848 | 1.779 | 99        |
| 100       | 125.00           | 108.253 2         | 126.25      | 123.53                       | 123.13   | 122.75 | 1.917                                             | 1.889 | 1.848 | 1.778 | 100       |

表 19 30°外花键

模数  $m=1.5\text{ mm}$  作用齿厚最大值  $S_{v\max}=2.356\text{ mm}$ 

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_{\text{外}}$ | 渐开线起<br>始圆直径<br>$D_{v\max}$ | 小径 $D_{\text{内}}$ |       | 实际齿厚最小值<br>$S_{\text{min}} = S_{v\max} - (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------------------|-----------------------------|-------------------|-------|---------------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   |                      |                             | 平齿根               | 圆齿根   | 4h                                                      | 5h    | 6h    | 7h    |           |
| 10        | 15.00            | 12.990 4          | 16.50                | 13.56                       | 12.75             | 12.30 | 2.321                                                   | 2.300 | 2.268 | 2.215 | 10        |
| 11        | 16.50            | 14.289 4          | 18.00                | 15.03                       | 14.25             | 13.80 | 2.321                                                   | 2.299 | 2.267 | 2.214 | 11        |
| 12        | 18.00            | 15.588 5          | 19.50                | 16.50                       | 15.75             | 15.30 | 2.320                                                   | 2.299 | 2.266 | 2.212 | 12        |
| 13        | 19.50            | 16.887 5          | 21.00                | 17.97                       | 17.25             | 16.80 | 2.320                                                   | 2.298 | 2.265 | 2.211 | 13        |
| 14        | 21.00            | 18.186 5          | 22.50                | 19.45                       | 18.75             | 18.30 | 2.320                                                   | 2.298 | 2.265 | 2.210 | 14        |
| 15        | 22.50            | 19.485 6          | 24.00                | 20.93                       | 20.25             | 19.80 | 2.319                                                   | 2.297 | 2.264 | 2.208 | 15        |
| 16        | 24.00            | 20.784 6          | 25.50                | 22.42                       | 21.75             | 21.30 | 2.319                                                   | 2.297 | 2.263 | 2.207 | 16        |
| 17        | 25.50            | 22.083 6          | 27.00                | 23.90                       | 23.25             | 22.80 | 2.319                                                   | 2.296 | 2.262 | 2.206 | 17        |
| 18        | 27.00            | 23.382 7          | 28.50                | 25.39                       | 24.75             | 24.30 | 2.318                                                   | 2.296 | 2.262 | 2.205 | 18        |
| 19        | 28.50            | 24.681 7          | 30.00                | 26.88                       | 26.25             | 25.80 | 2.318                                                   | 2.295 | 2.261 | 2.204 | 19        |
| 20        | 30.00            | 25.980 8          | 31.50                | 28.37                       | 27.75             | 27.30 | 2.318                                                   | 2.295 | 2.260 | 2.203 | 20        |
| 21        | 31.50            | 27.279 8          | 33.00                | 29.86                       | 29.25             | 28.80 | 2.318                                                   | 2.295 | 2.260 | 2.202 | 21        |
| 22        | 33.00            | 28.578 8          | 34.50                | 31.36                       | 30.75             | 30.30 | 2.317                                                   | 2.294 | 2.259 | 2.201 | 22        |
| 23        | 34.50            | 29.877 9          | 36.00                | 32.85                       | 32.25             | 31.80 | 2.317                                                   | 2.294 | 2.259 | 2.200 | 23        |
| 24        | 36.00            | 31.176 9          | 37.50                | 34.34                       | 33.75             | 33.30 | 2.317                                                   | 2.293 | 2.258 | 2.199 | 24        |
| 25        | 37.50            | 32.476 0          | 39.00                | 35.84                       | 35.25             | 34.80 | 2.317                                                   | 2.293 | 2.258 | 2.198 | 25        |
| 26        | 39.00            | 33.775 0          | 40.50                | 37.33                       | 36.75             | 36.30 | 2.317                                                   | 2.293 | 2.257 | 2.198 | 26        |
| 27        | 40.50            | 35.074 0          | 42.00                | 38.83                       | 38.25             | 37.80 | 2.316                                                   | 2.292 | 2.256 | 2.197 | 27        |
| 28        | 42.00            | 36.373 1          | 43.50                | 40.32                       | 39.75             | 39.30 | 2.316                                                   | 2.292 | 2.256 | 2.196 | 28        |
| 29        | 43.50            | 37.672 1          | 45.00                | 41.82                       | 41.25             | 40.80 | 2.316                                                   | 2.292 | 2.255 | 2.195 | 29        |
| 30        | 45.00            | 38.971 1          | 46.50                | 43.31                       | 42.75             | 42.30 | 2.316                                                   | 2.291 | 2.255 | 2.194 | 30        |
| 31        | 46.50            | 40.270 2          | 48.00                | 44.81                       | 44.25             | 43.80 | 2.316                                                   | 2.291 | 2.255 | 2.194 | 31        |
| 32        | 48.00            | 41.569 2          | 49.50                | 46.31                       | 45.75             | 45.30 | 2.315                                                   | 2.291 | 2.254 | 2.193 | 32        |
| 33        | 49.50            | 42.868 3          | 51.00                | 47.80                       | 47.25             | 46.80 | 2.315                                                   | 2.291 | 2.254 | 2.192 | 33        |
| 34        | 51.00            | 44.167 3          | 52.50                | 49.30                       | 48.75             | 48.30 | 2.315                                                   | 2.290 | 2.253 | 2.191 | 34        |
| 35        | 52.50            | 45.466 3          | 54.00                | 50.80                       | 50.25             | 49.80 | 2.315                                                   | 2.290 | 2.253 | 2.191 | 35        |
| 36        | 54.00            | 46.765 4          | 55.50                | 52.29                       | 51.75             | 51.30 | 2.315                                                   | 2.290 | 2.252 | 2.190 | 36        |
| 37        | 55.50            | 48.064 4          | 57.00                | 53.79                       | 53.25             | 52.80 | 2.314                                                   | 2.289 | 2.252 | 2.189 | 37        |
| 38        | 57.00            | 49.363 4          | 58.50                | 55.29                       | 54.75             | 54.30 | 2.314                                                   | 2.289 | 2.251 | 2.189 | 38        |
| 39        | 58.50            | 50.662 5          | 60.00                | 56.79                       | 56.25             | 55.80 | 2.314                                                   | 2.289 | 2.251 | 2.188 | 39        |
| 40        | 60.00            | 51.961 5          | 61.50                | 58.28                       | 57.75             | 57.30 | 2.314                                                   | 2.289 | 2.251 | 2.187 | 40        |
| 41        | 61.50            | 53.260 6          | 63.00                | 59.78                       | 59.25             | 58.80 | 2.314                                                   | 2.288 | 2.250 | 2.187 | 41        |
| 42        | 63.00            | 54.559 6          | 64.50                | 61.28                       | 60.75             | 60.30 | 2.314                                                   | 2.288 | 2.250 | 2.186 | 42        |
| 43        | 64.50            | 55.858 6          | 66.00                | 62.78                       | 62.25             | 61.80 | 2.313                                                   | 2.288 | 2.249 | 2.185 | 43        |
| 44        | 66.00            | 57.157 7          | 67.50                | 64.28                       | 63.75             | 63.30 | 2.313                                                   | 2.288 | 2.249 | 2.185 | 44        |
| 45        | 67.50            | 58.456 7          | 69.00                | 65.77                       | 65.25             | 64.80 | 2.313                                                   | 2.287 | 2.249 | 2.184 | 45        |
| 46        | 69.00            | 59.755 8          | 70.50                | 67.27                       | 66.75             | 66.30 | 2.313                                                   | 2.287 | 2.248 | 2.184 | 46        |
| 47        | 70.50            | 61.054 8          | 72.00                | 68.77                       | 68.25             | 67.80 | 2.313                                                   | 2.287 | 2.248 | 2.183 | 47        |
| 48        | 72.00            | 62.353 8          | 73.50                | 70.27                       | 69.75             | 69.30 | 2.313                                                   | 2.287 | 2.248 | 2.182 | 48        |
| 49        | 73.50            | 63.652 9          | 75.00                | 71.77                       | 71.25             | 70.80 | 2.313                                                   | 2.286 | 2.247 | 2.182 | 49        |
| 50        | 75.00            | 64.951 9          | 76.50                | 73.27                       | 72.75             | 72.30 | 2.312                                                   | 2.286 | 2.247 | 2.181 | 50        |
| 51        | 76.50            | 66.250 9          | 78.00                | 74.77                       | 74.25             | 73.80 | 2.312                                                   | 2.286 | 2.246 | 2.181 | 51        |
| 52        | 78.00            | 67.550 0          | 79.50                | 76.26                       | 75.75             | 75.30 | 2.312                                                   | 2.286 | 2.246 | 2.180 | 52        |
| 53        | 79.50            | 68.849 0          | 81.00                | 77.76                       | 77.25             | 76.80 | 2.312                                                   | 2.286 | 2.246 | 2.180 | 53        |
| 54        | 81.00            | 70.148 1          | 82.50                | 79.26                       | 78.75             | 78.30 | 2.312                                                   | 2.285 | 2.245 | 2.179 | 54        |
| 55        | 82.50            | 71.447 1          | 84.00                | 80.76                       | 80.25             | 79.80 | 2.312                                                   | 2.285 | 2.245 | 2.178 | 55        |

表 19 (续)

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_a$ | 渐开线起<br>始圆直径<br>$D_{f, \max}$ | 小径 $D_{fe}$ |        | 实际齿厚最小值<br>$S_{\min} = S_{v, \max} - (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|-------------|-------------------------------|-------------|--------|-----------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   |             |                               | 平齿根         | 圆齿根    | 4h                                                  | 5h    | 6h    | 7h    |           |
| 56        | 84.00            | 72.746 1          | 85.50       | 82.26                         | 81.75       | 81.30  | 2.312                                               | 2.285 | 2.245 | 2.178 | 56        |
| 57        | 85.50            | 74.045 2          | 87.00       | 83.76                         | 83.25       | 82.80  | 2.312                                               | 2.285 | 2.244 | 2.177 | 57        |
| 58        | 87.00            | 75.344 2          | 88.50       | 85.26                         | 84.75       | 84.30  | 2.311                                               | 2.284 | 2.244 | 2.177 | 58        |
| 59        | 88.50            | 76.643 2          | 90.00       | 86.76                         | 86.25       | 85.80  | 2.311                                               | 2.284 | 2.244 | 2.176 | 59        |
| 60        | 90.00            | 77.942 3          | 91.50       | 88.26                         | 87.75       | 87.30  | 2.311                                               | 2.284 | 2.244 | 2.176 | 60        |
| 61        | 91.50            | 79.241 3          | 93.00       | 89.75                         | 89.25       | 88.80  | 2.311                                               | 2.284 | 2.243 | 2.175 | 61        |
| 62        | 93.00            | 80.540 4          | 94.50       | 91.25                         | 90.75       | 90.30  | 2.311                                               | 2.284 | 2.243 | 2.175 | 62        |
| 63        | 94.50            | 81.839 4          | 96.00       | 92.75                         | 92.25       | 91.80  | 2.311                                               | 2.283 | 2.243 | 2.174 | 63        |
| 64        | 96.00            | 83.138 4          | 97.50       | 94.25                         | 93.75       | 93.30  | 2.311                                               | 2.283 | 2.242 | 2.174 | 64        |
| 65        | 97.50            | 84.437 5          | 99.00       | 95.75                         | 95.25       | 94.80  | 2.311                                               | 2.283 | 2.242 | 2.173 | 65        |
| 66        | 99.00            | 85.736 5          | 100.50      | 97.25                         | 96.75       | 96.30  | 2.310                                               | 2.283 | 2.242 | 2.173 | 66        |
| 67        | 100.50           | 87.035 6          | 102.00      | 98.75                         | 98.25       | 97.80  | 2.310                                               | 2.283 | 2.241 | 2.172 | 67        |
| 68        | 102.00           | 88.334 6          | 103.50      | 100.25                        | 99.75       | 99.30  | 2.310                                               | 2.283 | 2.241 | 2.172 | 68        |
| 69        | 103.50           | 89.633 6          | 105.00      | 101.75                        | 101.25      | 100.80 | 2.310                                               | 2.282 | 2.241 | 2.172 | 69        |
| 70        | 105.00           | 90.932 7          | 106.50      | 103.25                        | 102.75      | 102.30 | 2.310                                               | 2.282 | 2.240 | 2.171 | 70        |
| 71        | 106.50           | 92.231 7          | 108.00      | 104.75                        | 104.25      | 103.80 | 2.310                                               | 2.282 | 2.240 | 2.171 | 71        |
| 72        | 108.00           | 93.530 7          | 109.50      | 106.25                        | 105.75      | 105.30 | 2.310                                               | 2.282 | 2.240 | 2.170 | 72        |
| 73        | 109.50           | 94.829 8          | 111.00      | 107.75                        | 107.25      | 106.80 | 2.310                                               | 2.282 | 2.240 | 2.170 | 73        |
| 74        | 111.00           | 96.128 8          | 112.50      | 109.24                        | 108.75      | 108.30 | 2.309                                               | 2.281 | 2.239 | 2.169 | 74        |
| 75        | 112.50           | 97.427 9          | 114.00      | 110.74                        | 110.25      | 109.80 | 2.309                                               | 2.281 | 2.239 | 2.169 | 75        |
| 76        | 114.00           | 98.726 9          | 115.50      | 112.24                        | 111.75      | 111.30 | 2.309                                               | 2.281 | 2.239 | 2.168 | 76        |
| 77        | 115.50           | 100.025 9         | 117.00      | 113.74                        | 113.25      | 112.80 | 2.309                                               | 2.281 | 2.239 | 2.168 | 77        |
| 78        | 117.00           | 101.325 0         | 118.50      | 115.24                        | 114.75      | 114.30 | 2.309                                               | 2.281 | 2.238 | 2.167 | 78        |
| 79        | 118.50           | 102.624 0         | 120.00      | 116.74                        | 116.25      | 115.80 | 2.309                                               | 2.281 | 2.238 | 2.167 | 79        |
| 80        | 120.00           | 103.923 0         | 121.50      | 118.24                        | 117.75      | 117.30 | 2.309                                               | 2.280 | 2.238 | 2.167 | 80        |
| 81        | 121.50           | 105.222 1         | 123.00      | 119.74                        | 119.25      | 118.80 | 2.309                                               | 2.280 | 2.237 | 2.166 | 81        |
| 82        | 123.00           | 106.521 1         | 124.50      | 121.24                        | 120.75      | 120.30 | 2.309                                               | 2.280 | 2.237 | 2.166 | 82        |
| 83        | 124.50           | 107.820 2         | 126.00      | 122.74                        | 122.25      | 121.80 | 2.308                                               | 2.280 | 2.237 | 2.165 | 83        |
| 84        | 126.00           | 109.119 2         | 127.50      | 124.24                        | 123.75      | 123.30 | 2.308                                               | 2.280 | 2.237 | 2.165 | 84        |
| 85        | 127.50           | 110.418 2         | 129.00      | 125.74                        | 125.25      | 124.80 | 2.308                                               | 2.280 | 2.236 | 2.164 | 85        |
| 86        | 129.00           | 111.717 3         | 130.50      | 127.24                        | 126.75      | 126.30 | 2.308                                               | 2.279 | 2.236 | 2.164 | 86        |
| 87        | 130.50           | 113.016 3         | 132.00      | 128.74                        | 128.25      | 127.80 | 2.308                                               | 2.279 | 2.236 | 2.164 | 87        |
| 88        | 132.00           | 114.315 4         | 133.50      | 130.24                        | 129.75      | 129.30 | 2.308                                               | 2.279 | 2.236 | 2.163 | 88        |
| 89        | 133.50           | 115.614 4         | 135.00      | 131.74                        | 131.25      | 130.80 | 2.308                                               | 2.279 | 2.235 | 2.163 | 89        |
| 90        | 135.00           | 116.913 4         | 136.50      | 133.24                        | 132.75      | 132.30 | 2.308                                               | 2.279 | 2.235 | 2.162 | 90        |
| 91        | 136.50           | 118.212 5         | 138.00      | 134.74                        | 134.25      | 133.80 | 2.308                                               | 2.279 | 2.235 | 2.162 | 91        |
| 92        | 138.00           | 119.511 5         | 139.50      | 136.24                        | 135.75      | 135.30 | 2.308                                               | 2.278 | 2.235 | 2.162 | 92        |
| 93        | 139.50           | 120.810 5         | 141.00      | 137.74                        | 137.25      | 136.80 | 2.307                                               | 2.278 | 2.234 | 2.161 | 93        |
| 94        | 141.00           | 122.109 6         | 142.50      | 139.23                        | 138.75      | 138.30 | 2.307                                               | 2.278 | 2.234 | 2.161 | 94        |
| 95        | 142.50           | 123.408 6         | 144.00      | 140.73                        | 140.25      | 139.80 | 2.307                                               | 2.278 | 2.234 | 2.160 | 95        |
| 96        | 144.00           | 124.707 7         | 145.50      | 142.23                        | 141.75      | 141.30 | 2.307                                               | 2.278 | 2.234 | 2.160 | 96        |
| 97        | 145.50           | 126.006 7         | 147.00      | 143.73                        | 143.25      | 142.80 | 2.307                                               | 2.278 | 2.233 | 2.160 | 97        |
| 98        | 147.00           | 127.305 7         | 148.50      | 145.23                        | 144.75      | 144.30 | 2.307                                               | 2.277 | 2.233 | 2.159 | 98        |
| 99        | 148.50           | 128.604 8         | 150.00      | 146.73                        | 146.25      | 145.80 | 2.307                                               | 2.277 | 2.233 | 2.159 | 99        |
| 100       | 150.00           | 129.903 8         | 151.50      | 148.23                        | 147.75      | 147.30 | 2.307                                               | 2.277 | 2.233 | 2.159 | 100       |

表 20 30°外花键  
模数  $m = 1.75 \text{ mm}$  作用齿厚最大值  $S_{\text{max}} = 2.749 \text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_e$ | 渐开线起<br>始圆直径<br>$D_{f, \text{max}}$ | 小径 $D_i$ |       | 实际齿厚最小值<br>$S_{\text{min}} = S_{\text{min}} (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|-------------|-------------------------------------|----------|-------|------------------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   |             |                                     | 平齿根      | 圆齿根   | 4h                                                         | 5h    | 6h    | 7h    |           |
| 10        | 17.50            | 15.155 4          | 19.25       | 15.82                               | 14.88    | 14.35 | 2.712                                                      | 2.689 | 2.656 | 2.600 | 10        |
| 11        | 19.25            | 16.671 0          | 21.00       | 17.58                               | 16.63    | 16.10 | 2.711                                                      | 2.689 | 2.655 | 2.599 | 11        |
| 12        | 21.00            | 18.186 5          | 22.75       | 19.25                               | 18.38    | 17.85 | 2.711                                                      | 2.688 | 2.654 | 2.597 | 12        |
| 13        | 22.75            | 19.702 1          | 24.50       | 20.97                               | 20.13    | 19.60 | 2.711                                                      | 2.688 | 2.653 | 2.596 | 13        |
| 14        | 24.50            | 21.217 6          | 26.25       | 22.69                               | 21.88    | 21.35 | 2.710                                                      | 2.687 | 2.652 | 2.594 | 14        |
| 15        | 26.25            | 22.733 2          | 28.00       | 24.42                               | 23.63    | 23.10 | 2.710                                                      | 2.687 | 2.652 | 2.593 | 15        |
| 16        | 28.00            | 24.248 7          | 29.75       | 26.15                               | 25.38    | 24.85 | 2.710                                                      | 2.686 | 2.651 | 2.592 | 16        |
| 17        | 29.75            | 25.764 3          | 31.50       | 27.89                               | 27.13    | 26.60 | 2.709                                                      | 2.686 | 2.650 | 2.591 | 17        |
| 18        | 31.50            | 27.279 8          | 33.25       | 29.62                               | 28.88    | 28.35 | 2.709                                                      | 2.685 | 2.649 | 2.590 | 18        |
| 19        | 33.25            | 28.795 3          | 35.00       | 31.36                               | 30.63    | 30.10 | 2.709                                                      | 2.685 | 2.649 | 2.588 | 19        |
| 20        | 35.00            | 30.310 9          | 36.75       | 33.10                               | 32.38    | 31.85 | 2.709                                                      | 2.684 | 2.648 | 2.587 | 20        |
| 21        | 36.75            | 31.826 4          | 38.50       | 34.84                               | 34.13    | 33.60 | 2.708                                                      | 2.684 | 2.647 | 2.586 | 21        |
| 22        | 38.50            | 33.342 0          | 40.25       | 36.58                               | 35.88    | 35.35 | 2.708                                                      | 2.683 | 2.647 | 2.585 | 22        |
| 23        | 40.25            | 34.857 5          | 42.00       | 38.32                               | 37.63    | 37.10 | 2.708                                                      | 2.683 | 2.646 | 2.584 | 23        |
| 24        | 42.00            | 36.373 1          | 43.75       | 40.07                               | 39.38    | 38.85 | 2.708                                                      | 2.683 | 2.645 | 2.583 | 24        |
| 25        | 43.75            | 37.888 6          | 45.50       | 41.81                               | 41.13    | 40.60 | 2.707                                                      | 2.682 | 2.645 | 2.583 | 25        |
| 26        | 45.50            | 39.404 2          | 47.25       | 43.55                               | 42.88    | 42.35 | 2.707                                                      | 2.682 | 2.644 | 2.582 | 26        |
| 27        | 47.25            | 40.919 7          | 49.00       | 45.30                               | 44.63    | 44.10 | 2.707                                                      | 2.682 | 2.644 | 2.581 | 27        |
| 28        | 49.00            | 42.435 2          | 50.75       | 47.04                               | 46.38    | 45.85 | 2.707                                                      | 2.681 | 2.643 | 2.580 | 28        |
| 29        | 50.75            | 43.950 8          | 52.50       | 48.79                               | 48.13    | 47.60 | 2.706                                                      | 2.681 | 2.643 | 2.579 | 29        |
| 30        | 52.50            | 45.466 3          | 54.25       | 50.53                               | 49.88    | 49.35 | 2.706                                                      | 2.681 | 2.642 | 2.578 | 30        |
| 31        | 54.25            | 46.981 9          | 56.00       | 52.28                               | 51.63    | 51.10 | 2.706                                                      | 2.680 | 2.642 | 2.577 | 31        |
| 32        | 56.00            | 48.497 4          | 57.75       | 54.02                               | 53.38    | 52.85 | 2.706                                                      | 2.680 | 2.641 | 2.577 | 32        |
| 33        | 57.75            | 50.013 0          | 59.50       | 55.77                               | 55.13    | 54.60 | 2.706                                                      | 2.680 | 2.641 | 2.576 | 33        |
| 34        | 59.50            | 51.528 5          | 61.25       | 57.52                               | 56.88    | 56.35 | 2.705                                                      | 2.679 | 2.640 | 2.575 | 34        |
| 35        | 61.25            | 53.044 1          | 63.00       | 59.26                               | 58.63    | 58.10 | 2.705                                                      | 2.679 | 2.640 | 2.574 | 35        |
| 36        | 63.00            | 54.559 6          | 64.75       | 61.01                               | 60.38    | 59.85 | 2.705                                                      | 2.679 | 2.639 | 2.574 | 36        |
| 37        | 64.75            | 56.075 1          | 66.50       | 62.76                               | 62.13    | 61.60 | 2.705                                                      | 2.678 | 2.639 | 2.573 | 37        |
| 38        | 66.50            | 57.590 7          | 68.25       | 64.50                               | 63.88    | 63.35 | 2.705                                                      | 2.678 | 2.638 | 2.572 | 38        |
| 39        | 68.25            | 59.106 2          | 70.00       | 66.25                               | 65.63    | 65.10 | 2.705                                                      | 2.678 | 2.638 | 2.571 | 39        |
| 40        | 70.00            | 60.621 8          | 71.75       | 68.00                               | 67.38    | 66.85 | 2.704                                                      | 2.678 | 2.638 | 2.571 | 40        |
| 41        | 71.75            | 62.137 3          | 73.50       | 69.74                               | 69.13    | 68.60 | 2.704                                                      | 2.677 | 2.637 | 2.570 | 41        |
| 42        | 73.50            | 63.652 9          | 75.25       | 71.49                               | 70.88    | 70.35 | 2.704                                                      | 2.677 | 2.637 | 2.569 | 42        |
| 43        | 75.25            | 65.168 4          | 77.00       | 73.24                               | 72.63    | 72.10 | 2.704                                                      | 2.677 | 2.636 | 2.569 | 43        |
| 44        | 77.00            | 66.684 0          | 78.75       | 74.99                               | 74.38    | 73.85 | 2.704                                                      | 2.677 | 2.636 | 2.568 | 44        |
| 45        | 78.75            | 68.199 5          | 80.50       | 76.74                               | 76.13    | 75.60 | 2.704                                                      | 2.676 | 2.635 | 2.567 | 45        |
| 46        | 80.50            | 69.715 0          | 82.25       | 78.48                               | 77.88    | 77.35 | 2.703                                                      | 2.676 | 2.635 | 2.567 | 46        |
| 47        | 82.25            | 71.230 6          | 84.00       | 80.23                               | 79.63    | 79.10 | 2.703                                                      | 2.676 | 2.635 | 2.566 | 47        |
| 48        | 84.00            | 72.746 1          | 85.75       | 81.98                               | 81.38    | 80.85 | 2.703                                                      | 2.676 | 2.634 | 2.566 | 48        |
| 49        | 85.75            | 74.261 7          | 87.50       | 83.73                               | 83.13    | 82.60 | 2.703                                                      | 2.675 | 2.634 | 2.565 | 49        |
| 50        | 87.50            | 75.777 2          | 89.25       | 85.48                               | 84.88    | 84.35 | 2.703                                                      | 2.675 | 2.634 | 2.564 | 50        |
| 51        | 89.25            | 77.292 8          | 91.00       | 87.23                               | 86.63    | 86.10 | 2.703                                                      | 2.675 | 2.633 | 2.564 | 51        |
| 52        | 91.00            | 78.808 3          | 92.75       | 88.97                               | 88.38    | 87.85 | 2.702                                                      | 2.675 | 2.633 | 2.563 | 52        |
| 53        | 92.75            | 80.323 9          | 94.50       | 90.72                               | 90.13    | 89.60 | 2.702                                                      | 2.674 | 2.632 | 2.563 | 53        |
| 54        | 94.50            | 81.839 4          | 96.25       | 92.47                               | 91.88    | 91.35 | 2.702                                                      | 2.674 | 2.632 | 2.562 | 54        |
| 55        | 96.25            | 83.354 9          | 98.00       | 94.22                               | 93.63    | 93.10 | 2.702                                                      | 2.674 | 2.632 | 2.561 | 55        |

表 20 (续)

单位为毫米

| 齿数<br><i>z</i> | 分度圆<br>直径<br><i>D</i> | 基圆<br>直径<br><i>D<sub>b</sub></i> | 大径<br><i>D<sub>e</sub></i> | 渐开线起<br>始圆直径<br><i>D<sub>Fe max</sub></i> | 小径 <i>D<sub>s</sub></i> |        | 实际齿厚最小值<br><i>S<sub>min</sub> = S<sub>max</sub> - (T + λ)</i> |            |            |            | 齿数<br><i>z</i> |
|----------------|-----------------------|----------------------------------|----------------------------|-------------------------------------------|-------------------------|--------|---------------------------------------------------------------|------------|------------|------------|----------------|
|                |                       |                                  |                            |                                           | 平齿根                     | 圆齿根    | 4 <i>h</i>                                                    | 5 <i>h</i> | 6 <i>h</i> | 7 <i>h</i> |                |
| 56             | 98.00                 | 84.870 5                         | 99.75                      | 95.97                                     | 95.38                   | 94.85  | 2.702                                                         | 2.674      | 2.631      | 2.561      | 56             |
| 57             | 99.75                 | 86.386 0                         | 101.50                     | 97.72                                     | 97.13                   | 96.60  | 2.702                                                         | 2.673      | 2.631      | 2.560      | 57             |
| 58             | 101.50                | 87.901 6                         | 103.25                     | 99.47                                     | 98.88                   | 98.35  | 2.702                                                         | 2.673      | 2.631      | 2.560      | 58             |
| 59             | 103.25                | 89.417 1                         | 105.00                     | 101.22                                    | 100.63                  | 100.10 | 2.701                                                         | 2.673      | 2.630      | 2.559      | 59             |
| 60             | 105.00                | 90.932 7                         | 106.75                     | 102.96                                    | 102.38                  | 101.85 | 2.701                                                         | 2.673      | 2.630      | 2.559      | 60             |
| 61             | 106.75                | 92.448 2                         | 108.50                     | 104.71                                    | 104.13                  | 103.60 | 2.701                                                         | 2.673      | 2.630      | 2.558      | 61             |
| 62             | 108.50                | 93.963 8                         | 110.25                     | 106.46                                    | 105.88                  | 105.35 | 2.701                                                         | 2.672      | 2.629      | 2.558      | 62             |
| 63             | 110.25                | 95.479 3                         | 112.00                     | 108.21                                    | 107.63                  | 107.10 | 2.701                                                         | 2.672      | 2.629      | 2.557      | 63             |
| 64             | 112.00                | 96.994 8                         | 113.75                     | 109.96                                    | 109.38                  | 108.85 | 2.701                                                         | 2.672      | 2.629      | 2.557      | 64             |
| 65             | 113.75                | 98.510 4                         | 115.50                     | 111.71                                    | 111.13                  | 110.60 | 2.701                                                         | 2.672      | 2.628      | 2.556      | 65             |
| 66             | 115.50                | 100.025 9                        | 117.25                     | 113.46                                    | 112.88                  | 112.35 | 2.701                                                         | 2.672      | 2.628      | 2.555      | 66             |
| 67             | 117.25                | 101.541 5                        | 119.00                     | 115.21                                    | 114.63                  | 114.10 | 2.700                                                         | 2.671      | 2.628      | 2.555      | 67             |
| 68             | 119.00                | 103.057 0                        | 120.75                     | 116.96                                    | 116.38                  | 115.85 | 2.700                                                         | 2.671      | 2.627      | 2.554      | 68             |
| 69             | 120.75                | 104.572 6                        | 122.50                     | 118.71                                    | 118.13                  | 117.60 | 2.700                                                         | 2.671      | 2.627      | 2.554      | 69             |
| 70             | 122.50                | 106.088 1                        | 124.25                     | 120.45                                    | 119.88                  | 119.35 | 2.700                                                         | 2.671      | 2.627      | 2.553      | 70             |
| 71             | 124.25                | 107.603 7                        | 126.00                     | 122.20                                    | 121.63                  | 121.10 | 2.700                                                         | 2.671      | 2.626      | 2.553      | 71             |
| 72             | 126.00                | 109.119 2                        | 127.75                     | 123.95                                    | 123.38                  | 122.85 | 2.700                                                         | 2.670      | 2.626      | 2.552      | 72             |
| 73             | 127.75                | 110.634 7                        | 129.50                     | 125.70                                    | 125.13                  | 124.60 | 2.700                                                         | 2.670      | 2.626      | 2.552      | 73             |
| 74             | 129.50                | 112.150 3                        | 131.25                     | 127.45                                    | 126.88                  | 126.35 | 2.700                                                         | 2.670      | 2.626      | 2.552      | 74             |
| 75             | 131.25                | 113.665 8                        | 133.00                     | 129.20                                    | 128.63                  | 128.10 | 2.699                                                         | 2.670      | 2.625      | 2.551      | 75             |
| 76             | 133.00                | 115.181 4                        | 134.75                     | 130.95                                    | 130.38                  | 129.85 | 2.699                                                         | 2.670      | 2.625      | 2.551      | 76             |
| 77             | 134.75                | 116.696 9                        | 136.50                     | 132.70                                    | 132.13                  | 131.60 | 2.699                                                         | 2.669      | 2.625      | 2.550      | 77             |
| 78             | 136.50                | 118.212 5                        | 138.25                     | 134.45                                    | 133.88                  | 133.35 | 2.699                                                         | 2.669      | 2.624      | 2.550      | 78             |
| 79             | 138.25                | 119.728 0                        | 140.00                     | 136.20                                    | 135.63                  | 135.10 | 2.699                                                         | 2.669      | 2.624      | 2.549      | 79             |
| 80             | 140.00                | 121.243 6                        | 141.75                     | 137.95                                    | 137.38                  | 136.85 | 2.699                                                         | 2.669      | 2.624      | 2.549      | 80             |
| 81             | 141.75                | 122.759 1                        | 143.50                     | 139.70                                    | 139.13                  | 138.60 | 2.699                                                         | 2.669      | 2.623      | 2.548      | 81             |
| 82             | 143.50                | 124.274 6                        | 145.25                     | 141.45                                    | 140.88                  | 140.35 | 2.699                                                         | 2.668      | 2.623      | 2.548      | 82             |
| 83             | 145.25                | 125.790 2                        | 147.00                     | 143.20                                    | 142.63                  | 142.10 | 2.699                                                         | 2.668      | 2.623      | 2.547      | 83             |
| 84             | 147.00                | 127.305 7                        | 148.75                     | 144.95                                    | 144.38                  | 143.85 | 2.698                                                         | 2.668      | 2.623      | 2.547      | 84             |
| 85             | 148.75                | 128.821 3                        | 150.50                     | 146.70                                    | 146.13                  | 145.60 | 2.698                                                         | 2.668      | 2.622      | 2.546      | 85             |
| 86             | 150.50                | 130.336 8                        | 152.25                     | 148.44                                    | 147.88                  | 147.35 | 2.698                                                         | 2.668      | 2.622      | 2.546      | 86             |
| 87             | 152.25                | 131.852 4                        | 154.00                     | 150.19                                    | 149.63                  | 149.10 | 2.698                                                         | 2.668      | 2.622      | 2.546      | 87             |
| 88             | 154.00                | 133.367 9                        | 155.75                     | 151.94                                    | 151.38                  | 150.85 | 2.698                                                         | 2.667      | 2.622      | 2.545      | 88             |
| 89             | 155.75                | 134.883 5                        | 157.50                     | 153.69                                    | 153.13                  | 152.60 | 2.698                                                         | 2.667      | 2.621      | 2.545      | 89             |
| 90             | 157.50                | 136.399 0                        | 159.25                     | 155.44                                    | 154.88                  | 154.35 | 2.698                                                         | 2.667      | 2.621      | 2.544      | 90             |
| 91             | 159.25                | 137.914 5                        | 161.00                     | 157.19                                    | 156.63                  | 156.10 | 2.698                                                         | 2.667      | 2.621      | 2.544      | 91             |
| 92             | 161.00                | 139.430 1                        | 162.75                     | 158.94                                    | 158.38                  | 157.85 | 2.698                                                         | 2.667      | 2.620      | 2.543      | 92             |
| 93             | 162.75                | 140.945 6                        | 164.50                     | 160.69                                    | 160.13                  | 159.60 | 2.697                                                         | 2.667      | 2.620      | 2.543      | 93             |
| 94             | 164.50                | 142.461 2                        | 166.25                     | 162.44                                    | 161.88                  | 161.35 | 2.697                                                         | 2.666      | 2.620      | 2.543      | 94             |
| 95             | 166.25                | 143.976 7                        | 168.00                     | 164.19                                    | 163.63                  | 163.10 | 2.697                                                         | 2.666      | 2.620      | 2.542      | 95             |
| 96             | 168.00                | 145.492 3                        | 169.75                     | 165.94                                    | 165.38                  | 164.85 | 2.697                                                         | 2.666      | 2.619      | 2.542      | 96             |
| 97             | 169.75                | 147.007 8                        | 171.50                     | 167.69                                    | 167.13                  | 166.60 | 2.697                                                         | 2.666      | 2.619      | 2.541      | 97             |
| 98             | 171.50                | 148.523 4                        | 173.25                     | 169.44                                    | 168.88                  | 168.35 | 2.697                                                         | 2.666      | 2.619      | 2.541      | 98             |
| 99             | 173.25                | 150.038 9                        | 175.00                     | 171.19                                    | 170.63                  | 170.10 | 2.697                                                         | 2.666      | 2.619      | 2.541      | 99             |
| 100            | 175.00                | 151.554 4                        | 176.75                     | 172.94                                    | 172.38                  | 171.85 | 2.697                                                         | 2.665      | 2.618      | 2.540      | 100            |

表 21 30°外花键  
模数  $m=2\text{ mm}$  作用齿厚最大值  $S_{\max}=3.142\text{ mm}$

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_e$ | 渐开线起<br>始圆直径<br>$D_{Fe\max}$ | 小径 $D_w$ |        | 实际齿厚最小值<br>$S_{\min}=S_{\max}-(T+\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|-------------|------------------------------|----------|--------|--------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   |             |                              | 平齿根      | 圆齿根    | 4h                                         | 5h    | 6h    | 7h    |           |
| 10        | 20.00            | 17.320 5          | 22.00       | 18.08                        | 17.00    | 16.40  | 3.103                                      | 3.079 | 3.044 | 2.986 | 10        |
| 11        | 22.00            | 19.052 6          | 24.00       | 20.04                        | 19.00    | 18.40  | 3.102                                      | 3.079 | 3.043 | 2.984 | 11        |
| 12        | 24.00            | 20.784 6          | 26.00       | 22.00                        | 21.00    | 20.40  | 3.102                                      | 3.078 | 3.042 | 2.983 | 12        |
| 13        | 26.00            | 22.516 7          | 28.00       | 23.96                        | 23.00    | 22.40  | 3.102                                      | 3.078 | 3.041 | 2.981 | 13        |
| 14        | 28.00            | 24.248 7          | 30.00       | 25.94                        | 25.00    | 24.40  | 3.101                                      | 3.077 | 3.041 | 2.980 | 14        |
| 15        | 30.00            | 25.980 8          | 32.00       | 27.91                        | 27.00    | 26.40  | 3.101                                      | 3.076 | 3.040 | 2.979 | 15        |
| 16        | 32.00            | 27.712 8          | 34.00       | 29.89                        | 29.00    | 28.40  | 3.101                                      | 3.076 | 3.039 | 2.977 | 16        |
| 17        | 34.00            | 29.444 9          | 36.00       | 31.87                        | 31.00    | 30.40  | 3.100                                      | 3.075 | 3.038 | 2.976 | 17        |
| 18        | 36.00            | 31.176 9          | 38.00       | 33.86                        | 33.00    | 32.40  | 3.100                                      | 3.075 | 3.037 | 2.975 | 18        |
| 19        | 38.00            | 32.909 0          | 40.00       | 35.84                        | 35.00    | 34.40  | 3.100                                      | 3.074 | 3.037 | 2.974 | 19        |
| 20        | 40.00            | 34.641 0          | 42.00       | 37.83                        | 37.00    | 36.40  | 3.099                                      | 3.074 | 3.036 | 2.973 | 20        |
| 21        | 42.00            | 36.373 1          | 44.00       | 39.82                        | 39.00    | 38.40  | 3.099                                      | 3.074 | 3.035 | 2.972 | 21        |
| 22        | 44.00            | 38.105 1          | 46.00       | 41.81                        | 41.00    | 40.40  | 3.099                                      | 3.073 | 3.035 | 2.970 | 22        |
| 23        | 46.00            | 39.837 2          | 48.00       | 43.80                        | 43.00    | 42.40  | 3.099                                      | 3.073 | 3.034 | 2.969 | 23        |
| 24        | 48.00            | 41.569 2          | 50.00       | 45.79                        | 45.00    | 44.40  | 3.098                                      | 3.072 | 3.033 | 2.968 | 24        |
| 25        | 50.00            | 43.301 3          | 52.00       | 47.78                        | 47.00    | 46.40  | 3.098                                      | 3.072 | 3.033 | 2.967 | 25        |
| 26        | 52.00            | 45.033 3          | 54.00       | 49.77                        | 49.00    | 48.40  | 3.098                                      | 3.072 | 3.032 | 2.967 | 26        |
| 27        | 54.00            | 46.765 4          | 56.00       | 51.77                        | 51.00    | 50.40  | 3.098                                      | 3.071 | 3.032 | 2.966 | 27        |
| 28        | 56.00            | 48.497 4          | 58.00       | 53.76                        | 53.00    | 52.40  | 3.097                                      | 3.071 | 3.031 | 2.965 | 28        |
| 29        | 58.00            | 50.229 5          | 60.00       | 55.76                        | 55.00    | 54.40  | 3.097                                      | 3.070 | 3.030 | 2.964 | 29        |
| 30        | 60.00            | 51.961 5          | 62.00       | 57.75                        | 57.00    | 56.40  | 3.097                                      | 3.070 | 3.030 | 2.963 | 30        |
| 31        | 62.00            | 53.693 6          | 64.00       | 59.74                        | 59.00    | 58.40  | 3.097                                      | 3.070 | 3.029 | 2.962 | 31        |
| 32        | 64.00            | 55.425 6          | 66.00       | 61.74                        | 61.00    | 60.40  | 3.096                                      | 3.069 | 3.029 | 2.961 | 32        |
| 33        | 66.00            | 57.157 7          | 68.00       | 63.74                        | 63.00    | 62.40  | 3.096                                      | 3.069 | 3.028 | 2.960 | 33        |
| 34        | 68.00            | 58.889 7          | 70.00       | 65.73                        | 65.00    | 64.40  | 3.096                                      | 3.069 | 3.028 | 2.960 | 34        |
| 35        | 70.00            | 60.621 8          | 72.00       | 67.73                        | 67.00    | 66.40  | 3.096                                      | 3.068 | 3.027 | 2.959 | 35        |
| 36        | 72.00            | 62.353 8          | 74.00       | 69.72                        | 69.00    | 68.40  | 3.096                                      | 3.068 | 3.027 | 2.958 | 36        |
| 37        | 74.00            | 64.085 9          | 76.00       | 71.72                        | 71.00    | 70.40  | 3.096                                      | 3.068 | 3.026 | 2.957 | 37        |
| 38        | 76.00            | 65.817 9          | 78.00       | 73.72                        | 73.00    | 72.40  | 3.095                                      | 3.068 | 3.026 | 2.957 | 38        |
| 39        | 78.00            | 67.550 0          | 80.00       | 75.71                        | 75.00    | 74.40  | 3.095                                      | 3.067 | 3.025 | 2.956 | 39        |
| 40        | 80.00            | 69.282 0          | 82.00       | 77.71                        | 77.00    | 76.40  | 3.095                                      | 3.067 | 3.025 | 2.955 | 40        |
| 41        | 82.00            | 71.014 1          | 84.00       | 79.71                        | 79.00    | 78.40  | 3.095                                      | 3.067 | 3.025 | 2.954 | 41        |
| 42        | 84.00            | 72.746 1          | 86.00       | 81.71                        | 81.00    | 80.40  | 3.095                                      | 3.066 | 3.024 | 2.954 | 42        |
| 43        | 86.00            | 74.478 2          | 88.00       | 83.70                        | 83.00    | 82.40  | 3.094                                      | 3.066 | 3.024 | 2.953 | 43        |
| 44        | 88.00            | 76.210 2          | 90.00       | 85.70                        | 85.00    | 84.40  | 3.094                                      | 3.066 | 3.023 | 2.952 | 44        |
| 45        | 90.00            | 77.942 3          | 92.00       | 87.70                        | 87.00    | 86.40  | 3.094                                      | 3.066 | 3.023 | 2.952 | 45        |
| 46        | 92.00            | 79.674 3          | 94.00       | 89.70                        | 89.00    | 88.40  | 3.094                                      | 3.065 | 3.022 | 2.951 | 46        |
| 47        | 94.00            | 81.406 4          | 96.00       | 91.69                        | 91.00    | 90.40  | 3.094                                      | 3.065 | 3.022 | 2.950 | 47        |
| 48        | 96.00            | 83.138 4          | 98.00       | 93.69                        | 93.00    | 92.40  | 3.094                                      | 3.065 | 3.022 | 2.950 | 48        |
| 49        | 98.00            | 84.870 5          | 100.00      | 95.69                        | 95.00    | 94.40  | 3.093                                      | 3.065 | 3.021 | 2.949 | 49        |
| 50        | 100.00           | 86.602 5          | 102.00      | 97.69                        | 97.00    | 96.40  | 3.093                                      | 3.064 | 3.021 | 2.948 | 50        |
| 51        | 102.00           | 88.334 6          | 104.00      | 99.69                        | 99.00    | 98.40  | 3.093                                      | 3.064 | 3.020 | 2.948 | 51        |
| 52        | 104.00           | 90.066 6          | 106.00      | 101.69                       | 101.00   | 100.40 | 3.093                                      | 3.064 | 3.020 | 2.947 | 52        |
| 53        | 106.00           | 91.798 7          | 108.00      | 103.68                       | 103.00   | 102.40 | 3.093                                      | 3.064 | 3.020 | 2.946 | 53        |
| 54        | 108.00           | 93.530 7          | 110.00      | 105.68                       | 105.00   | 104.40 | 3.093                                      | 3.063 | 3.019 | 2.946 | 54        |
| 55        | 110.00           | 95.262 8          | 112.00      | 107.68                       | 107.00   | 106.40 | 3.092                                      | 3.063 | 3.019 | 2.945 | 55        |

表 21 (续)

单位为毫米

| 齿数<br><i>z</i> | 分度圆<br>直径<br><i>D</i> | 基圆<br>直径<br><i>D<sub>b</sub></i> | 大径<br><i>D<sub>ec</sub></i> | 渐开线起<br>始圆直径<br><i>D<sub>Fc max</sub></i> | 小径 <i>D<sub>f</sub></i> |        | 实际齿厚最小值<br>$S_{min} = S_{max} - (T + \lambda)$ |       |       |       | 齿数<br><i>z</i> |
|----------------|-----------------------|----------------------------------|-----------------------------|-------------------------------------------|-------------------------|--------|------------------------------------------------|-------|-------|-------|----------------|
|                |                       |                                  |                             |                                           | 平齿根                     | 圆齿根    | 4h                                             | 5h    | 6h    | 7h    |                |
| 56             | 112.00                | 96.994 8                         | 114.00                      | 109.68                                    | 109.00                  | 108.40 | 3.092                                          | 3.063 | 3.018 | 2.945 | 56             |
| 57             | 114.00                | 98.726 9                         | 116.00                      | 111.68                                    | 111.00                  | 110.40 | 3.092                                          | 3.063 | 3.018 | 2.944 | 57             |
| 58             | 116.00                | 100.458 9                        | 118.00                      | 113.68                                    | 113.00                  | 112.40 | 3.092                                          | 3.062 | 3.018 | 2.943 | 58             |
| 59             | 118.00                | 102.191 0                        | 120.00                      | 115.67                                    | 115.00                  | 114.40 | 3.092                                          | 3.062 | 3.017 | 2.943 | 59             |
| 60             | 120.00                | 103.923 0                        | 122.00                      | 117.67                                    | 117.00                  | 116.40 | 3.092                                          | 3.062 | 3.017 | 2.942 | 60             |
| 61             | 122.00                | 105.655 1                        | 124.00                      | 119.67                                    | 119.00                  | 118.40 | 3.092                                          | 3.062 | 3.017 | 2.942 | 61             |
| 62             | 124.00                | 107.387 1                        | 126.00                      | 121.67                                    | 121.00                  | 120.40 | 3.091                                          | 3.061 | 3.016 | 2.941 | 62             |
| 63             | 126.00                | 109.119 2                        | 128.00                      | 123.67                                    | 123.00                  | 122.40 | 3.091                                          | 3.061 | 3.016 | 2.941 | 63             |
| 64             | 128.00                | 110.851 3                        | 130.00                      | 125.67                                    | 125.00                  | 124.40 | 3.091                                          | 3.061 | 3.016 | 2.940 | 64             |
| 65             | 130.00                | 112.583 3                        | 132.00                      | 127.67                                    | 127.00                  | 126.40 | 3.091                                          | 3.061 | 3.015 | 2.939 | 65             |
| 66             | 132.00                | 114.315 4                        | 134.00                      | 129.67                                    | 129.00                  | 128.40 | 3.091                                          | 3.061 | 3.015 | 2.939 | 66             |
| 67             | 134.00                | 116.047 4                        | 136.00                      | 131.67                                    | 131.00                  | 130.40 | 3.091                                          | 3.060 | 3.015 | 2.938 | 67             |
| 68             | 136.00                | 117.779 5                        | 138.00                      | 133.66                                    | 133.00                  | 132.40 | 3.091                                          | 3.060 | 3.014 | 2.938 | 68             |
| 69             | 138.00                | 119.511 5                        | 140.00                      | 135.66                                    | 135.00                  | 134.40 | 3.091                                          | 3.060 | 3.014 | 2.937 | 69             |
| 70             | 140.00                | 121.243 6                        | 142.00                      | 137.66                                    | 137.00                  | 136.40 | 3.090                                          | 3.060 | 3.014 | 2.937 | 70             |
| 71             | 142.00                | 122.975 6                        | 144.00                      | 139.66                                    | 139.00                  | 138.40 | 3.090                                          | 3.059 | 3.013 | 2.936 | 71             |
| 72             | 144.00                | 124.707 7                        | 146.00                      | 141.66                                    | 141.00                  | 140.40 | 3.090                                          | 3.059 | 3.013 | 2.936 | 72             |
| 73             | 146.00                | 126.439 7                        | 148.00                      | 143.66                                    | 143.00                  | 142.40 | 3.090                                          | 3.059 | 3.013 | 2.935 | 73             |
| 74             | 148.00                | 128.171 8                        | 150.00                      | 145.66                                    | 145.00                  | 144.40 | 3.090                                          | 3.059 | 3.012 | 2.935 | 74             |
| 75             | 150.00                | 129.903 8                        | 152.00                      | 147.66                                    | 147.00                  | 146.40 | 3.090                                          | 3.059 | 3.012 | 2.934 | 75             |
| 76             | 152.00                | 131.635 9                        | 154.00                      | 149.66                                    | 149.00                  | 148.40 | 3.090                                          | 3.058 | 3.012 | 2.934 | 76             |
| 77             | 154.00                | 133.367 9                        | 156.00                      | 151.66                                    | 151.00                  | 150.40 | 3.089                                          | 3.058 | 3.011 | 2.933 | 77             |
| 78             | 156.00                | 135.100 0                        | 158.00                      | 153.66                                    | 153.00                  | 152.40 | 3.089                                          | 3.058 | 3.011 | 2.933 | 78             |
| 79             | 158.00                | 136.832 0                        | 160.00                      | 155.66                                    | 155.00                  | 154.40 | 3.089                                          | 3.058 | 3.011 | 2.932 | 79             |
| 80             | 160.00                | 138.564 1                        | 162.00                      | 157.65                                    | 157.00                  | 156.40 | 3.089                                          | 3.058 | 3.010 | 2.932 | 80             |
| 81             | 162.00                | 140.296 1                        | 164.00                      | 159.65                                    | 159.00                  | 158.40 | 3.089                                          | 3.057 | 3.010 | 2.931 | 81             |
| 82             | 164.00                | 142.028 2                        | 166.00                      | 161.65                                    | 161.00                  | 160.40 | 3.089                                          | 3.057 | 3.010 | 2.931 | 82             |
| 83             | 166.00                | 143.760 2                        | 168.00                      | 163.65                                    | 163.00                  | 162.40 | 3.089                                          | 3.057 | 3.010 | 2.930 | 83             |
| 84             | 168.00                | 145.492 3                        | 170.00                      | 165.65                                    | 165.00                  | 164.40 | 3.089                                          | 3.057 | 3.009 | 2.930 | 84             |
| 85             | 170.00                | 147.224 3                        | 172.00                      | 167.65                                    | 167.00                  | 166.40 | 3.089                                          | 3.057 | 3.009 | 2.929 | 85             |
| 86             | 172.00                | 148.956 4                        | 174.00                      | 169.65                                    | 169.00                  | 168.40 | 3.088                                          | 3.057 | 3.009 | 2.929 | 86             |
| 87             | 174.00                | 150.688 4                        | 176.00                      | 171.65                                    | 171.00                  | 170.40 | 3.088                                          | 3.056 | 3.008 | 2.928 | 87             |
| 88             | 176.00                | 152.420 5                        | 178.00                      | 173.65                                    | 173.00                  | 172.40 | 3.088                                          | 3.056 | 3.008 | 2.928 | 88             |
| 89             | 178.00                | 154.152 5                        | 180.00                      | 175.65                                    | 175.00                  | 174.40 | 3.088                                          | 3.056 | 3.008 | 2.927 | 89             |
| 90             | 180.00                | 155.884 6                        | 182.00                      | 177.65                                    | 177.00                  | 176.40 | 3.088                                          | 3.056 | 3.007 | 2.927 | 90             |
| 91             | 182.00                | 157.616 6                        | 184.00                      | 179.65                                    | 179.00                  | 178.40 | 3.088                                          | 3.056 | 3.007 | 2.927 | 91             |
| 92             | 184.00                | 159.348 7                        | 186.00                      | 181.65                                    | 181.00                  | 180.40 | 3.088                                          | 3.055 | 3.007 | 2.926 | 92             |
| 93             | 186.00                | 161.080 7                        | 188.00                      | 183.65                                    | 183.00                  | 182.40 | 3.088                                          | 3.055 | 3.007 | 2.926 | 93             |
| 94             | 188.00                | 162.812 8                        | 190.00                      | 185.65                                    | 185.00                  | 184.40 | 3.088                                          | 3.055 | 3.006 | 2.925 | 94             |
| 95             | 190.00                | 164.544 8                        | 192.00                      | 187.65                                    | 187.00                  | 186.40 | 3.087                                          | 3.055 | 3.006 | 2.925 | 95             |
| 96             | 192.00                | 166.276 9                        | 194.00                      | 189.65                                    | 189.00                  | 188.40 | 3.087                                          | 3.055 | 3.005 | 2.924 | 96             |
| 97             | 194.00                | 168.008 9                        | 196.00                      | 191.65                                    | 191.00                  | 190.40 | 3.087                                          | 3.055 | 3.005 | 2.924 | 97             |
| 98             | 196.00                | 169.741 0                        | 198.00                      | 193.64                                    | 193.00                  | 192.40 | 3.087                                          | 3.054 | 3.005 | 2.923 | 98             |
| 99             | 198.00                | 171.473 0                        | 200.00                      | 195.64                                    | 195.00                  | 194.40 | 3.087                                          | 3.054 | 3.005 | 2.923 | 99             |
| 100            | 200.00                | 173.205 1                        | 202.00                      | 197.64                                    | 197.00                  | 196.40 | 3.087                                          | 3.054 | 3.005 | 2.923 | 100            |

表 22 30°外花键

模数  $m=2.5\text{ mm}$  作用齿厚最大值  $S_{v\max}=3.927\text{ mm}$ 

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_{ex}$ | 渐开线起<br>始圆直径<br>$D_{f\max}$ | 小径 $D_i$ |        | 实际齿厚最小值<br>$S_{\min}=S_{v\max}-(T+\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------------|-----------------------------|----------|--------|---------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   |                |                             | 平齿根      | 圆齿根    | 4h                                          | 5h    | 6h    | 7h    |           |
| 10        | 25.00            | 21.650 6          | 27.50          | 22.61                       | 21.25    | 20.50  | 3.885                                       | 3.860 | 3.822 | 3.759 | 10        |
| 11        | 27.50            | 23.815 7          | 30.00          | 25.04                       | 23.75    | 23.00  | 3.885                                       | 3.859 | 3.821 | 3.757 | 11        |
| 12        | 30.00            | 25.980 8          | 32.50          | 27.60                       | 26.25    | 25.50  | 3.884                                       | 3.858 | 3.820 | 3.756 | 12        |
| 13        | 32.50            | 28.145 8          | 35.00          | 29.95                       | 28.75    | 28.00  | 3.884                                       | 3.858 | 3.819 | 3.754 | 13        |
| 14        | 35.00            | 30.310 9          | 37.50          | 32.42                       | 31.25    | 30.50  | 3.883                                       | 3.857 | 3.818 | 3.753 | 14        |
| 15        | 37.50            | 32.476 0          | 40.00          | 34.89                       | 33.75    | 33.00  | 3.883                                       | 3.857 | 3.817 | 3.751 | 15        |
| 16        | 40.00            | 34.641 0          | 42.50          | 37.36                       | 36.25    | 35.50  | 3.883                                       | 3.856 | 3.816 | 3.750 | 16        |
| 17        | 42.50            | 36.806 1          | 45.00          | 39.84                       | 38.75    | 38.00  | 3.882                                       | 3.856 | 3.815 | 3.748 | 17        |
| 18        | 45.00            | 38.971 1          | 47.50          | 42.32                       | 41.25    | 40.50  | 3.882                                       | 3.855 | 3.815 | 3.747 | 18        |
| 19        | 47.50            | 41.136 2          | 50.00          | 44.80                       | 43.75    | 43.00  | 3.882                                       | 3.855 | 3.814 | 3.746 | 19        |
| 20        | 50.00            | 43.301 3          | 52.50          | 47.29                       | 46.25    | 45.50  | 3.881                                       | 3.854 | 3.813 | 3.745 | 20        |
| 21        | 52.50            | 45.466 3          | 55.00          | 49.77                       | 48.75    | 48.00  | 3.881                                       | 3.854 | 3.812 | 3.743 | 21        |
| 22        | 55.00            | 47.631 4          | 57.50          | 52.26                       | 51.25    | 50.50  | 3.881                                       | 3.853 | 3.812 | 3.742 | 22        |
| 23        | 57.50            | 49.796 5          | 60.00          | 54.75                       | 53.75    | 53.00  | 3.881                                       | 3.853 | 3.811 | 3.741 | 23        |
| 24        | 60.00            | 51.961 5          | 62.50          | 57.24                       | 56.25    | 55.50  | 3.880                                       | 3.852 | 3.810 | 3.740 | 24        |
| 25        | 62.50            | 54.126 6          | 65.00          | 59.73                       | 58.75    | 58.00  | 3.880                                       | 3.852 | 3.809 | 3.739 | 25        |
| 26        | 65.00            | 56.291 7          | 67.50          | 62.22                       | 61.25    | 60.50  | 3.880                                       | 3.851 | 3.809 | 3.738 | 26        |
| 27        | 67.50            | 58.456 7          | 70.00          | 64.71                       | 63.75    | 63.00  | 3.879                                       | 3.851 | 3.808 | 3.737 | 27        |
| 28        | 70.00            | 60.621 8          | 72.50          | 67.20                       | 66.25    | 65.50  | 3.879                                       | 3.851 | 3.808 | 3.736 | 28        |
| 29        | 72.50            | 62.786 8          | 75.00          | 69.69                       | 68.75    | 68.00  | 3.879                                       | 3.850 | 3.807 | 3.735 | 29        |
| 30        | 75.00            | 64.951 9          | 77.50          | 72.19                       | 71.25    | 70.50  | 3.879                                       | 3.850 | 3.806 | 3.734 | 30        |
| 31        | 77.50            | 67.117 0          | 80.00          | 74.68                       | 73.75    | 73.00  | 3.879                                       | 3.849 | 3.806 | 3.733 | 31        |
| 32        | 80.00            | 69.282 0          | 82.50          | 77.18                       | 76.25    | 75.50  | 3.878                                       | 3.849 | 3.805 | 3.732 | 32        |
| 33        | 82.50            | 71.447 1          | 85.00          | 79.67                       | 78.75    | 78.00  | 3.878                                       | 3.849 | 3.805 | 3.731 | 33        |
| 34        | 85.00            | 73.612 2          | 87.50          | 82.16                       | 81.25    | 80.50  | 3.878                                       | 3.848 | 3.804 | 3.730 | 34        |
| 35        | 87.50            | 75.777 2          | 90.00          | 84.66                       | 83.75    | 83.00  | 3.878                                       | 3.848 | 3.804 | 3.730 | 35        |
| 36        | 90.00            | 77.942 3          | 92.50          | 87.16                       | 86.25    | 85.50  | 3.877                                       | 3.848 | 3.803 | 3.729 | 36        |
| 37        | 92.50            | 80.107 3          | 95.00          | 89.65                       | 88.75    | 88.00  | 3.877                                       | 3.847 | 3.803 | 3.728 | 37        |
| 38        | 95.00            | 82.272 4          | 97.50          | 92.15                       | 91.25    | 90.50  | 3.877                                       | 3.847 | 3.802 | 3.727 | 38        |
| 39        | 97.50            | 84.437 5          | 100.00         | 94.64                       | 93.75    | 93.00  | 3.877                                       | 3.847 | 3.801 | 3.726 | 39        |
| 40        | 100.00           | 86.602 5          | 102.50         | 97.14                       | 96.25    | 95.50  | 3.877                                       | 3.846 | 3.801 | 3.725 | 40        |
| 41        | 102.50           | 88.767 6          | 105.00         | 99.64                       | 98.75    | 98.00  | 3.876                                       | 3.846 | 3.801 | 3.725 | 41        |
| 42        | 105.00           | 90.932 7          | 107.50         | 102.13                      | 101.25   | 100.50 | 3.876                                       | 3.846 | 3.800 | 3.724 | 42        |
| 43        | 107.50           | 93.097 7          | 110.00         | 104.63                      | 103.75   | 103.00 | 3.876                                       | 3.845 | 3.800 | 3.723 | 43        |
| 44        | 110.00           | 95.262 8          | 112.50         | 107.13                      | 106.25   | 105.50 | 3.876                                       | 3.845 | 3.799 | 3.722 | 44        |
| 45        | 112.50           | 97.427 9          | 115.00         | 109.62                      | 108.75   | 108.00 | 3.876                                       | 3.845 | 3.799 | 3.722 | 45        |
| 46        | 115.00           | 99.592 9          | 117.50         | 112.12                      | 111.25   | 110.50 | 3.875                                       | 3.845 | 3.798 | 3.721 | 46        |
| 47        | 117.50           | 101.758 0         | 120.00         | 114.62                      | 113.75   | 113.00 | 3.875                                       | 3.844 | 3.798 | 3.720 | 47        |
| 48        | 120.00           | 103.923 0         | 122.50         | 117.12                      | 116.25   | 115.50 | 3.875                                       | 3.844 | 3.797 | 3.719 | 48        |
| 49        | 122.50           | 106.088 1         | 125.00         | 119.61                      | 118.75   | 118.00 | 3.875                                       | 3.844 | 3.797 | 3.719 | 49        |
| 50        | 125.00           | 108.253 2         | 127.50         | 122.11                      | 121.25   | 120.50 | 3.875                                       | 3.843 | 3.796 | 3.718 | 50        |
| 51        | 127.50           | 110.418 2         | 130.00         | 124.61                      | 123.75   | 123.00 | 3.875                                       | 3.843 | 3.796 | 3.717 | 51        |
| 52        | 130.00           | 112.583 3         | 132.50         | 127.11                      | 126.25   | 125.50 | 3.874                                       | 3.843 | 3.795 | 3.717 | 52        |
| 53        | 132.50           | 114.748 4         | 135.00         | 129.60                      | 128.75   | 128.00 | 3.874                                       | 3.843 | 3.795 | 3.716 | 53        |
| 54        | 135.00           | 116.913 4         | 137.50         | 132.10                      | 131.25   | 130.50 | 3.874                                       | 3.842 | 3.795 | 3.715 | 54        |
| 55        | 137.50           | 119.078 5         | 140.00         | 134.60                      | 133.75   | 133.00 | 3.874                                       | 3.842 | 3.794 | 3.715 | 55        |

表 22 (续) 单位为毫米

| 齿数<br><i>z</i> | 分度圆<br>直径<br><i>D</i> | 基圆<br>直径<br><i>D<sub>b</sub></i> | 大径<br><i>D<sub>a</sub></i> | 渐开线起<br>始圆直径<br><i>D<sub>Fe min</sub></i> | 小径 <i>D<sub>f</sub></i> |        | 实际齿厚最小值<br><i>S<sub>min</sub> = S<sub>n min</sub> - (T + λ)</i> |       |       |       | 齿数<br><i>z</i> |
|----------------|-----------------------|----------------------------------|----------------------------|-------------------------------------------|-------------------------|--------|-----------------------------------------------------------------|-------|-------|-------|----------------|
|                |                       |                                  |                            |                                           | 平齿根                     | 圆齿根    | 4h                                                              | 5h    | 6h    | 7h    |                |
| 56             | 140.00                | 121.243 6                        | 142.50                     | 137.10                                    | 136.25                  | 135.50 | 3.874                                                           | 3.842 | 3.794 | 3.714 | 56             |
| 57             | 142.50                | 123.408 6                        | 145.00                     | 139.60                                    | 138.75                  | 138.00 | 3.874                                                           | 3.841 | 3.793 | 3.713 | 57             |
| 58             | 145.00                | 125.573 7                        | 147.50                     | 142.10                                    | 141.25                  | 140.50 | 3.873                                                           | 3.841 | 3.793 | 3.713 | 58             |
| 59             | 147.50                | 127.738 7                        | 150.00                     | 144.59                                    | 143.75                  | 143.00 | 3.873                                                           | 3.841 | 3.793 | 3.712 | 59             |
| 60             | 150.00                | 129.903 8                        | 152.50                     | 147.09                                    | 146.25                  | 145.50 | 3.873                                                           | 3.841 | 3.792 | 3.711 | 60             |
| 61             | 152.50                | 132.068 9                        | 155.00                     | 149.59                                    | 148.75                  | 148.00 | 3.873                                                           | 3.840 | 3.792 | 3.711 | 61             |
| 62             | 155.00                | 134.233 9                        | 157.50                     | 152.09                                    | 151.25                  | 150.50 | 3.873                                                           | 3.840 | 3.791 | 3.710 | 62             |
| 63             | 157.50                | 136.399 0                        | 160.00                     | 154.59                                    | 153.75                  | 153.00 | 3.873                                                           | 3.840 | 3.791 | 3.709 | 63             |
| 64             | 160.00                | 138.564 1                        | 162.50                     | 157.09                                    | 156.25                  | 155.50 | 3.872                                                           | 3.840 | 3.791 | 3.709 | 64             |
| 65             | 162.50                | 140.729 1                        | 165.00                     | 159.58                                    | 158.75                  | 158.00 | 3.872                                                           | 3.839 | 3.790 | 3.708 | 65             |
| 66             | 165.00                | 142.894 2                        | 167.50                     | 162.08                                    | 161.25                  | 160.50 | 3.872                                                           | 3.839 | 3.790 | 3.708 | 66             |
| 67             | 167.50                | 145.059 3                        | 170.00                     | 164.58                                    | 163.75                  | 163.00 | 3.872                                                           | 3.839 | 3.790 | 3.707 | 67             |
| 68             | 170.00                | 147.224 3                        | 172.50                     | 167.08                                    | 166.25                  | 165.50 | 3.872                                                           | 3.839 | 3.789 | 3.706 | 68             |
| 69             | 172.50                | 149.389 4                        | 175.00                     | 169.58                                    | 168.75                  | 168.00 | 3.872                                                           | 3.839 | 3.789 | 3.706 | 69             |
| 70             | 175.00                | 151.554 4                        | 177.50                     | 172.08                                    | 171.25                  | 170.50 | 3.872                                                           | 3.838 | 3.788 | 3.705 | 70             |
| 71             | 177.50                | 153.719 5                        | 180.00                     | 174.58                                    | 173.75                  | 173.00 | 3.871                                                           | 3.838 | 3.788 | 3.705 | 71             |
| 72             | 180.00                | 155.884 6                        | 182.50                     | 177.08                                    | 176.25                  | 175.50 | 3.871                                                           | 3.838 | 3.788 | 3.704 | 72             |
| 73             | 182.50                | 158.049 6                        | 185.00                     | 179.58                                    | 178.75                  | 178.00 | 3.871                                                           | 3.838 | 3.787 | 3.704 | 73             |
| 74             | 185.00                | 160.214 7                        | 187.50                     | 182.07                                    | 181.25                  | 180.50 | 3.871                                                           | 3.837 | 3.787 | 3.703 | 74             |
| 75             | 187.50                | 162.379 8                        | 190.00                     | 184.57                                    | 183.75                  | 183.00 | 3.871                                                           | 3.837 | 3.787 | 3.702 | 75             |
| 76             | 190.00                | 164.544 8                        | 192.50                     | 187.07                                    | 186.25                  | 185.50 | 3.871                                                           | 3.837 | 3.786 | 3.702 | 76             |
| 77             | 192.50                | 166.709 9                        | 195.00                     | 189.57                                    | 188.75                  | 188.00 | 3.871                                                           | 3.837 | 3.786 | 3.701 | 77             |
| 78             | 195.00                | 168.875 0                        | 197.50                     | 192.07                                    | 191.25                  | 190.50 | 3.870                                                           | 3.837 | 3.786 | 3.701 | 78             |
| 79             | 197.50                | 171.040 0                        | 200.00                     | 194.57                                    | 193.75                  | 193.00 | 3.870                                                           | 3.836 | 3.785 | 3.700 | 79             |
| 80             | 200.00                | 173.205 1                        | 202.50                     | 197.07                                    | 196.25                  | 195.50 | 3.870                                                           | 3.836 | 3.785 | 3.700 | 80             |
| 81             | 202.50                | 175.370 1                        | 205.00                     | 199.57                                    | 198.75                  | 198.00 | 3.870                                                           | 3.836 | 3.785 | 3.699 | 81             |
| 82             | 205.00                | 177.535 2                        | 207.50                     | 202.07                                    | 201.25                  | 200.50 | 3.870                                                           | 3.836 | 3.784 | 3.699 | 82             |
| 83             | 207.50                | 179.700 3                        | 210.00                     | 204.57                                    | 203.75                  | 203.00 | 3.870                                                           | 3.835 | 3.784 | 3.698 | 83             |
| 84             | 210.00                | 181.865 3                        | 212.50                     | 207.07                                    | 206.25                  | 205.50 | 3.870                                                           | 3.835 | 3.784 | 3.698 | 84             |
| 85             | 212.50                | 184.030 4                        | 215.00                     | 209.56                                    | 208.75                  | 208.00 | 3.870                                                           | 3.835 | 3.783 | 3.697 | 85             |
| 86             | 215.00                | 186.195 5                        | 217.50                     | 212.06                                    | 211.25                  | 210.50 | 3.869                                                           | 3.835 | 3.783 | 3.697 | 86             |
| 87             | 217.50                | 188.360 5                        | 220.00                     | 214.56                                    | 213.75                  | 213.00 | 3.869                                                           | 3.835 | 3.783 | 3.696 | 87             |
| 88             | 220.00                | 190.525 6                        | 222.50                     | 217.06                                    | 216.25                  | 215.50 | 3.869                                                           | 3.834 | 3.782 | 3.696 | 88             |
| 89             | 222.50                | 192.690 6                        | 225.00                     | 219.56                                    | 218.75                  | 218.00 | 3.869                                                           | 3.834 | 3.782 | 3.695 | 89             |
| 90             | 225.00                | 194.855 7                        | 227.50                     | 222.06                                    | 221.25                  | 220.50 | 3.869                                                           | 3.834 | 3.782 | 3.695 | 90             |
| 91             | 227.50                | 197.020 8                        | 230.00                     | 224.56                                    | 223.75                  | 223.00 | 3.869                                                           | 3.834 | 3.781 | 3.694 | 91             |
| 92             | 230.00                | 199.185 8                        | 232.50                     | 227.06                                    | 226.25                  | 225.50 | 3.869                                                           | 3.834 | 3.781 | 3.694 | 92             |
| 93             | 232.50                | 201.350 9                        | 235.00                     | 229.56                                    | 228.75                  | 228.00 | 3.869                                                           | 3.833 | 3.781 | 3.693 | 93             |
| 94             | 235.00                | 203.516 0                        | 237.50                     | 232.06                                    | 231.25                  | 230.50 | 3.868                                                           | 3.833 | 3.780 | 3.693 | 94             |
| 95             | 237.50                | 205.681 0                        | 240.00                     | 234.56                                    | 233.75                  | 233.00 | 3.868                                                           | 3.833 | 3.780 | 3.692 | 95             |
| 96             | 240.00                | 207.846 1                        | 242.50                     | 237.06                                    | 236.25                  | 235.50 | 3.868                                                           | 3.833 | 3.780 | 3.692 | 96             |
| 97             | 242.50                | 210.011 2                        | 245.00                     | 239.56                                    | 238.75                  | 238.00 | 3.868                                                           | 3.833 | 3.780 | 3.691 | 97             |
| 98             | 245.00                | 212.176 2                        | 247.50                     | 242.06                                    | 241.25                  | 240.50 | 3.868                                                           | 3.832 | 3.779 | 3.691 | 98             |
| 99             | 247.50                | 214.341 3                        | 250.00                     | 244.56                                    | 243.75                  | 243.00 | 3.868                                                           | 3.832 | 3.779 | 3.690 | 99             |
| 100            | 250.00                | 216.506 3                        | 252.50                     | 247.05                                    | 246.25                  | 245.50 | 3.868                                                           | 3.832 | 3.779 | 3.690 | 100            |

表 23 30°外花键

模数  $m = 3 \text{ mm}$  作用齿厚最大值  $S_{\max} = 4.712 \text{ mm}$ 

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_e$ | 渐开线起<br>始圆直径<br>$D_{Fa \max}$ | 小径 $D_{fe}$ |        | 实际齿厚最小值<br>$S_{\min} = S_{\max} - (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|-------------|-------------------------------|-------------|--------|--------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   |             |                               | 平齿根         | 圆齿根    | 4h                                               | 5h    | 6h    | 7h    |           |
| 10        | 30.00            | 25.980 8          | 33.00       | 27.13                         | 25.50       | 24.60  | 4.668                                            | 4.641 | 4.601 | 4.534 | 10        |
| 11        | 33.00            | 28.578 8          | 36.00       | 30.05                         | 28.50       | 27.60  | 4.667                                            | 4.640 | 4.600 | 4.532 | 11        |
| 12        | 36.00            | 31.176 9          | 39.00       | 32.99                         | 31.50       | 30.60  | 4.667                                            | 4.640 | 4.599 | 4.530 | 12        |
| 13        | 39.00            | 33.775 0          | 42.00       | 35.94                         | 34.50       | 33.60  | 4.666                                            | 4.639 | 4.597 | 4.528 | 13        |
| 14        | 42.00            | 36.373 1          | 45.00       | 38.90                         | 37.50       | 36.60  | 4.666                                            | 4.638 | 4.596 | 4.527 | 14        |
| 15        | 45.00            | 38.971 1          | 48.00       | 41.87                         | 40.50       | 39.60  | 4.666                                            | 4.638 | 4.595 | 4.525 | 15        |
| 16        | 48.00            | 41.569 2          | 51.00       | 44.84                         | 43.50       | 42.60  | 4.665                                            | 4.637 | 4.594 | 4.524 | 16        |
| 17        | 51.00            | 44.167 3          | 54.00       | 47.81                         | 46.50       | 45.60  | 4.665                                            | 4.636 | 4.594 | 4.522 | 17        |
| 18        | 54.00            | 46.765 4          | 57.00       | 50.78                         | 49.50       | 48.60  | 4.665                                            | 4.636 | 4.593 | 4.521 | 18        |
| 19        | 57.00            | 49.363 4          | 60.00       | 53.76                         | 52.50       | 51.60  | 4.664                                            | 4.635 | 4.592 | 4.520 | 19        |
| 20        | 60.00            | 51.961 5          | 63.00       | 56.74                         | 55.50       | 54.60  | 4.664                                            | 4.635 | 4.591 | 4.518 | 20        |
| 21        | 63.00            | 54.559 6          | 66.00       | 59.73                         | 58.50       | 57.60  | 4.664                                            | 4.634 | 4.590 | 4.517 | 21        |
| 22        | 66.00            | 57.157 7          | 69.00       | 62.71                         | 61.50       | 60.60  | 4.663                                            | 4.634 | 4.589 | 4.516 | 22        |
| 23        | 69.00            | 59.755 8          | 72.00       | 65.70                         | 64.50       | 63.60  | 4.663                                            | 4.633 | 4.589 | 4.515 | 23        |
| 24        | 72.00            | 62.353 8          | 75.00       | 68.68                         | 67.50       | 66.60  | 4.663                                            | 4.633 | 4.588 | 4.513 | 24        |
| 25        | 75.00            | 64.951 9          | 78.00       | 71.67                         | 70.50       | 69.60  | 4.662                                            | 4.632 | 4.587 | 4.512 | 25        |
| 26        | 78.00            | 67.550 0          | 81.00       | 74.66                         | 73.50       | 72.60  | 4.662                                            | 4.632 | 4.587 | 4.511 | 26        |
| 27        | 81.00            | 70.148 1          | 84.00       | 77.65                         | 76.50       | 75.60  | 4.662                                            | 4.631 | 4.586 | 4.510 | 27        |
| 28        | 84.00            | 72.746 1          | 87.00       | 80.64                         | 79.50       | 78.60  | 4.662                                            | 4.631 | 4.585 | 4.509 | 28        |
| 29        | 87.00            | 75.344 2          | 90.00       | 83.63                         | 82.50       | 81.60  | 4.661                                            | 4.631 | 4.585 | 4.508 | 29        |
| 30        | 90.00            | 77.942 3          | 93.00       | 86.62                         | 85.50       | 84.60  | 4.661                                            | 4.630 | 4.584 | 4.507 | 30        |
| 31        | 93.00            | 80.540 4          | 96.00       | 89.62                         | 88.50       | 87.60  | 4.661                                            | 4.630 | 4.583 | 4.506 | 31        |
| 32        | 96.00            | 83.138 4          | 99.00       | 92.61                         | 91.50       | 90.60  | 4.661                                            | 4.629 | 4.583 | 4.505 | 32        |
| 33        | 99.00            | 85.736 5          | 102.00      | 95.60                         | 94.50       | 93.60  | 4.660                                            | 4.629 | 4.582 | 4.504 | 33        |
| 34        | 102.00           | 88.334 6          | 105.00      | 98.60                         | 97.50       | 96.60  | 4.660                                            | 4.629 | 4.581 | 4.503 | 34        |
| 35        | 105.00           | 90.932 7          | 108.00      | 101.59                        | 100.50      | 99.60  | 4.660                                            | 4.628 | 4.581 | 4.502 | 35        |
| 36        | 108.00           | 93.530 7          | 111.00      | 104.59                        | 103.50      | 102.60 | 4.660                                            | 4.628 | 4.580 | 4.501 | 36        |
| 37        | 111.00           | 96.128 8          | 114.00      | 107.58                        | 106.50      | 105.60 | 4.659                                            | 4.628 | 4.580 | 4.500 | 37        |
| 38        | 114.00           | 98.726 9          | 117.00      | 110.58                        | 109.50      | 108.60 | 4.659                                            | 4.627 | 4.579 | 4.499 | 38        |
| 39        | 117.00           | 101.325 0         | 120.00      | 113.57                        | 112.50      | 111.60 | 4.659                                            | 4.627 | 4.579 | 4.498 | 39        |
| 40        | 120.00           | 103.923 0         | 123.00      | 116.57                        | 115.50      | 114.60 | 4.659                                            | 4.626 | 4.578 | 4.498 | 40        |
| 41        | 123.00           | 106.521 1         | 126.00      | 119.56                        | 118.50      | 117.60 | 4.658                                            | 4.626 | 4.578 | 4.497 | 41        |
| 42        | 126.00           | 109.119 2         | 129.00      | 122.56                        | 121.50      | 120.60 | 4.658                                            | 4.626 | 4.577 | 4.496 | 42        |
| 43        | 129.00           | 111.717 3         | 132.00      | 125.55                        | 124.50      | 123.60 | 4.658                                            | 4.625 | 4.577 | 4.495 | 43        |
| 44        | 132.00           | 114.315 4         | 135.00      | 128.55                        | 127.50      | 126.60 | 4.658                                            | 4.625 | 4.576 | 4.494 | 44        |
| 45        | 135.00           | 116.913 4         | 138.00      | 131.55                        | 130.50      | 129.60 | 4.658                                            | 4.625 | 4.576 | 4.493 | 45        |
| 46        | 138.00           | 119.511 5         | 141.00      | 134.54                        | 133.50      | 132.60 | 4.657                                            | 4.624 | 4.575 | 4.493 | 46        |
| 47        | 141.00           | 122.109 6         | 144.00      | 137.54                        | 136.50      | 135.60 | 4.657                                            | 4.624 | 4.575 | 4.492 | 47        |
| 48        | 144.00           | 124.707 7         | 147.00      | 140.54                        | 139.50      | 138.60 | 4.657                                            | 4.624 | 4.574 | 4.491 | 48        |
| 49        | 147.00           | 127.305 7         | 150.00      | 143.54                        | 142.50      | 141.60 | 4.657                                            | 4.624 | 4.574 | 4.490 | 49        |
| 50        | 150.00           | 129.903 8         | 153.00      | 146.53                        | 145.50      | 144.60 | 4.657                                            | 4.623 | 4.573 | 4.490 | 50        |
| 51        | 153.00           | 132.501 9         | 156.00      | 149.53                        | 148.50      | 147.60 | 4.656                                            | 4.623 | 4.573 | 4.489 | 51        |
| 52        | 156.00           | 135.100 0         | 159.00      | 152.53                        | 151.50      | 150.60 | 4.656                                            | 4.623 | 4.572 | 4.488 | 52        |
| 53        | 159.00           | 137.698 0         | 162.00      | 155.53                        | 154.50      | 153.60 | 4.656                                            | 4.622 | 4.572 | 4.487 | 53        |
| 54        | 162.00           | 140.296 1         | 165.00      | 158.52                        | 157.50      | 156.60 | 4.656                                            | 4.622 | 4.571 | 4.487 | 54        |
| 55        | 165.00           | 142.894 2         | 168.00      | 161.52                        | 160.50      | 159.60 | 4.656                                            | 4.622 | 4.571 | 4.486 | 55        |

表 23 (续)

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_{ec}$ | 渐开线起<br>始圆直径<br>$D_{Fe\max}$ | 小径 $D_{ic}$ |        | 实际齿厚最小值<br>$S_{\min} = S_{v\max} - (T + \lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------------|------------------------------|-------------|--------|---------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   |                |                              | 平齿根         | 圆齿根    | 4h                                                | 5h    | 6h    | 7h    |           |
| 56        | 168.00           | 145.492 3         | 171.00         | 164.52                       | 163.50      | 162.60 | 4.656                                             | 4.621 | 4.570 | 4.485 | 56        |
| 57        | 171.00           | 148.090 3         | 174.00         | 167.52                       | 166.50      | 165.60 | 4.655                                             | 4.621 | 4.570 | 4.484 | 57        |
| 58        | 174.00           | 150.688 4         | 177.00         | 170.51                       | 169.50      | 168.60 | 4.655                                             | 4.621 | 4.569 | 4.484 | 58        |
| 59        | 177.00           | 153.286 5         | 180.00         | 173.51                       | 172.50      | 171.60 | 4.655                                             | 4.621 | 4.569 | 4.483 | 59        |
| 60        | 180.00           | 155.884 6         | 183.00         | 176.51                       | 175.50      | 174.60 | 4.655                                             | 4.620 | 4.569 | 4.482 | 60        |
| 61        | 183.00           | 158.482 6         | 186.00         | 179.51                       | 178.50      | 177.60 | 4.655                                             | 4.620 | 4.568 | 4.482 | 61        |
| 62        | 186.00           | 161.080 7         | 189.00         | 182.51                       | 181.50      | 180.60 | 4.655                                             | 4.620 | 4.568 | 4.481 | 62        |
| 63        | 189.00           | 163.678 8         | 192.00         | 185.50                       | 184.50      | 183.60 | 4.654                                             | 4.620 | 4.567 | 4.480 | 63        |
| 64        | 192.00           | 166.276 9         | 195.00         | 188.50                       | 187.50      | 186.60 | 4.654                                             | 4.619 | 4.567 | 4.480 | 64        |
| 65        | 195.00           | 168.875 0         | 198.00         | 191.50                       | 190.50      | 189.60 | 4.654                                             | 4.619 | 4.567 | 4.479 | 65        |
| 66        | 198.00           | 171.473 0         | 201.00         | 194.50                       | 193.50      | 192.60 | 4.654                                             | 4.619 | 4.566 | 4.478 | 66        |
| 67        | 201.00           | 174.071 1         | 204.00         | 197.50                       | 196.50      | 195.60 | 4.654                                             | 4.619 | 4.566 | 4.478 | 67        |
| 68        | 204.00           | 176.669 2         | 207.00         | 200.50                       | 199.50      | 198.60 | 4.654                                             | 4.618 | 4.565 | 4.477 | 68        |
| 69        | 207.00           | 179.267 3         | 210.00         | 203.50                       | 202.50      | 201.60 | 4.653                                             | 4.618 | 4.565 | 4.476 | 69        |
| 70        | 210.00           | 181.865 3         | 213.00         | 206.49                       | 205.50      | 204.60 | 4.653                                             | 4.618 | 4.565 | 4.476 | 70        |
| 71        | 213.00           | 184.463 4         | 216.00         | 209.49                       | 208.50      | 207.60 | 4.653                                             | 4.617 | 4.564 | 4.475 | 71        |
| 72        | 216.00           | 187.061 5         | 219.00         | 212.49                       | 211.50      | 210.60 | 4.653                                             | 4.617 | 4.564 | 4.475 | 72        |
| 73        | 219.00           | 189.659 6         | 222.00         | 215.49                       | 214.50      | 213.60 | 4.653                                             | 4.617 | 4.563 | 4.474 | 73        |
| 74        | 222.00           | 192.257 6         | 225.00         | 218.49                       | 217.50      | 216.60 | 4.653                                             | 4.617 | 4.563 | 4.473 | 74        |
| 75        | 225.00           | 194.855 7         | 228.00         | 221.49                       | 220.50      | 219.60 | 4.652                                             | 4.617 | 4.563 | 4.473 | 75        |
| 76        | 228.00           | 197.453 8         | 231.00         | 224.49                       | 223.50      | 222.60 | 4.652                                             | 4.616 | 4.562 | 4.472 | 76        |
| 77        | 231.00           | 200.051 9         | 234.00         | 227.49                       | 226.50      | 225.60 | 4.652                                             | 4.616 | 4.562 | 4.472 | 77        |
| 78        | 234.00           | 202.649 9         | 237.00         | 230.48                       | 229.50      | 228.60 | 4.652                                             | 4.616 | 4.561 | 4.471 | 78        |
| 79        | 237.00           | 205.248 0         | 240.00         | 233.48                       | 232.50      | 231.60 | 4.652                                             | 4.616 | 4.561 | 4.470 | 79        |
| 80        | 240.00           | 207.846 1         | 243.00         | 236.48                       | 235.50      | 234.60 | 4.652                                             | 4.615 | 4.561 | 4.470 | 80        |
| 81        | 243.00           | 210.444 2         | 246.00         | 239.48                       | 238.50      | 237.60 | 4.652                                             | 4.615 | 4.560 | 4.469 | 81        |
| 82        | 246.00           | 213.042 2         | 249.00         | 242.48                       | 241.50      | 240.60 | 4.651                                             | 4.615 | 4.560 | 4.469 | 82        |
| 83        | 249.00           | 215.640 3         | 252.00         | 245.48                       | 244.50      | 243.60 | 4.651                                             | 4.615 | 4.560 | 4.468 | 83        |
| 84        | 252.00           | 218.238 4         | 255.00         | 248.48                       | 247.50      | 246.60 | 4.651                                             | 4.614 | 4.559 | 4.467 | 84        |
| 85        | 255.00           | 220.836 5         | 258.00         | 251.48                       | 250.50      | 249.60 | 4.651                                             | 4.614 | 4.559 | 4.467 | 85        |
| 86        | 258.00           | 223.434 6         | 261.00         | 254.48                       | 253.50      | 252.60 | 4.651                                             | 4.614 | 4.559 | 4.466 | 86        |
| 87        | 261.00           | 226.032 6         | 264.00         | 257.48                       | 256.50      | 255.60 | 4.651                                             | 4.614 | 4.558 | 4.466 | 87        |
| 88        | 264.00           | 228.630 7         | 267.00         | 260.47                       | 259.50      | 258.60 | 4.651                                             | 4.614 | 4.558 | 4.465 | 88        |
| 89        | 267.00           | 231.228 8         | 270.00         | 263.47                       | 262.50      | 261.60 | 4.650                                             | 4.613 | 4.558 | 4.465 | 89        |
| 90        | 270.00           | 233.826 9         | 273.00         | 266.47                       | 265.50      | 264.60 | 4.650                                             | 4.613 | 4.557 | 4.464 | 90        |
| 91        | 273.00           | 236.424 9         | 276.00         | 269.47                       | 268.50      | 267.60 | 4.650                                             | 4.613 | 4.557 | 4.464 | 91        |
| 92        | 276.00           | 239.023 0         | 279.00         | 272.47                       | 271.50      | 270.60 | 4.650                                             | 4.613 | 4.557 | 4.463 | 92        |
| 93        | 279.00           | 241.621 1         | 282.00         | 275.47                       | 274.50      | 273.60 | 4.650                                             | 4.612 | 4.556 | 4.462 | 93        |
| 94        | 282.00           | 244.219 2         | 285.00         | 278.47                       | 277.50      | 276.60 | 4.650                                             | 4.612 | 4.556 | 4.462 | 94        |
| 95        | 285.00           | 246.817 2         | 288.00         | 281.47                       | 280.50      | 279.60 | 4.650                                             | 4.612 | 4.555 | 4.461 | 95        |
| 96        | 288.00           | 249.415 3         | 291.00         | 284.47                       | 283.50      | 282.60 | 4.649                                             | 4.612 | 4.555 | 4.461 | 96        |
| 97        | 291.00           | 252.013 4         | 294.00         | 287.47                       | 286.50      | 285.60 | 4.649                                             | 4.612 | 4.555 | 4.460 | 97        |
| 98        | 294.00           | 254.611 5         | 297.00         | 290.47                       | 289.50      | 288.60 | 4.649                                             | 4.611 | 4.554 | 4.460 | 98        |
| 99        | 297.00           | 257.209 5         | 300.00         | 293.47                       | 292.50      | 291.60 | 4.649                                             | 4.611 | 4.554 | 4.459 | 99        |
| 100       | 300.00           | 259.807 6         | 303.00         | 296.47                       | 295.50      | 294.60 | 4.649                                             | 4.611 | 4.554 | 4.459 | 100       |

表 24 30°外花键  
模数  $m=4\text{ mm}$  作用齿厚最大值  $S_{\text{max}}=6.283\text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_e$ | 渐开线起<br>始圆直径<br>$D_{F\text{max}}$ | 小径 $D_i$ |        | 实际齿厚最小值<br>$S_{\text{min}}=S_{\text{max}}-(T+\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|-------------|-----------------------------------|----------|--------|--------------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   |             |                                   | 平齿根      | 圆齿根    | 4h                                                     | 5h    | 6h    | 7h    |           |
| 10        | 40.00            | 34.841 0          | 44.00       | 36.17                             | 34.00    | 32.80  | 6.234                                                  | 6.204 | 6.160 | 6.086 | 10        |
| 11        | 44.00            | 38.105 1          | 48.00       | 40.07                             | 38.00    | 36.80  | 6.233                                                  | 6.204 | 6.159 | 6.084 | 11        |
| 12        | 48.00            | 41.569 2          | 52.00       | 43.99                             | 42.00    | 40.80  | 6.233                                                  | 6.203 | 6.158 | 6.082 | 12        |
| 13        | 52.00            | 45.033 3          | 56.00       | 47.93                             | 46.00    | 44.80  | 6.232                                                  | 6.202 | 6.156 | 6.080 | 13        |
| 14        | 56.00            | 48.497 4          | 60.00       | 51.87                             | 50.00    | 48.80  | 6.232                                                  | 6.201 | 6.155 | 6.078 | 14        |
| 15        | 60.00            | 51.961 5          | 64.00       | 55.82                             | 54.00    | 52.80  | 6.232                                                  | 6.201 | 6.154 | 6.077 | 15        |
| 16        | 64.00            | 55.425 6          | 68.00       | 59.78                             | 58.00    | 56.80  | 6.231                                                  | 6.200 | 6.153 | 6.075 | 16        |
| 17        | 68.00            | 58.889 7          | 72.00       | 63.74                             | 62.00    | 60.80  | 6.231                                                  | 6.199 | 6.152 | 6.073 | 17        |
| 18        | 72.00            | 62.353 8          | 76.00       | 67.71                             | 66.00    | 64.80  | 6.230                                                  | 6.199 | 6.151 | 6.072 | 18        |
| 19        | 76.00            | 65.817 9          | 80.00       | 71.68                             | 70.00    | 68.80  | 6.230                                                  | 6.198 | 6.150 | 6.070 | 19        |
| 20        | 80.00            | 69.282 0          | 84.00       | 75.66                             | 74.00    | 72.80  | 6.230                                                  | 6.197 | 6.149 | 6.069 | 20        |
| 21        | 84.00            | 72.746 1          | 88.00       | 79.64                             | 78.00    | 76.80  | 6.229                                                  | 6.197 | 6.148 | 6.067 | 21        |
| 22        | 88.00            | 76.210 2          | 92.00       | 83.61                             | 82.00    | 80.80  | 6.229                                                  | 6.196 | 6.147 | 6.066 | 22        |
| 23        | 92.00            | 79.674 3          | 96.00       | 87.60                             | 86.00    | 84.80  | 6.229                                                  | 6.196 | 6.147 | 6.065 | 23        |
| 24        | 96.00            | 83.138 4          | 100.00      | 91.58                             | 90.00    | 88.80  | 6.228                                                  | 6.195 | 6.146 | 6.063 | 24        |
| 25        | 100.00           | 86.602 5          | 104.00      | 95.56                             | 94.00    | 92.80  | 6.228                                                  | 6.195 | 6.145 | 6.062 | 25        |
| 26        | 104.00           | 90.066 6          | 108.00      | 99.55                             | 98.00    | 96.80  | 6.228                                                  | 6.194 | 6.144 | 6.061 | 26        |
| 27        | 108.00           | 93.530 7          | 112.00      | 103.53                            | 102.00   | 100.80 | 6.227                                                  | 6.194 | 6.143 | 6.059 | 27        |
| 28        | 112.00           | 96.994 8          | 116.00      | 107.52                            | 106.00   | 104.80 | 6.227                                                  | 6.193 | 6.143 | 6.058 | 28        |
| 29        | 116.00           | 100.458 9         | 120.00      | 111.51                            | 110.00   | 108.80 | 6.227                                                  | 6.193 | 6.142 | 6.057 | 29        |
| 30        | 120.00           | 103.923 0         | 124.00      | 115.50                            | 114.00   | 112.80 | 6.226                                                  | 6.192 | 6.141 | 6.056 | 30        |
| 31        | 124.00           | 107.387 1         | 128.00      | 119.49                            | 118.00   | 116.80 | 6.226                                                  | 6.192 | 6.140 | 6.055 | 31        |
| 32        | 128.00           | 110.851 3         | 132.00      | 123.48                            | 122.00   | 120.80 | 6.226                                                  | 6.191 | 6.140 | 6.054 | 32        |
| 33        | 132.00           | 114.315 4         | 136.00      | 127.47                            | 126.00   | 124.80 | 6.226                                                  | 6.191 | 6.139 | 6.053 | 33        |
| 34        | 136.00           | 117.779 5         | 140.00      | 131.46                            | 130.00   | 128.80 | 6.225                                                  | 6.191 | 6.138 | 6.052 | 34        |
| 35        | 140.00           | 121.243 6         | 144.00      | 135.46                            | 134.00   | 132.80 | 6.225                                                  | 6.190 | 6.138 | 6.050 | 35        |
| 36        | 144.00           | 124.707 7         | 148.00      | 139.45                            | 138.00   | 136.80 | 6.225                                                  | 6.190 | 6.137 | 6.049 | 36        |
| 37        | 148.00           | 128.171 8         | 152.00      | 143.44                            | 142.00   | 140.80 | 6.224                                                  | 6.189 | 6.136 | 6.048 | 37        |
| 38        | 152.00           | 131.635 9         | 156.00      | 147.43                            | 146.00   | 144.80 | 6.224                                                  | 6.189 | 6.136 | 6.047 | 38        |
| 39        | 156.00           | 135.100 0         | 160.00      | 151.43                            | 150.00   | 148.80 | 6.224                                                  | 6.188 | 6.135 | 6.046 | 39        |
| 40        | 160.00           | 138.564 1         | 164.00      | 155.42                            | 154.00   | 152.80 | 6.224                                                  | 6.188 | 6.135 | 6.045 | 40        |
| 41        | 164.00           | 142.028 2         | 168.00      | 159.42                            | 158.00   | 156.80 | 6.224                                                  | 6.188 | 6.134 | 6.044 | 41        |
| 42        | 168.00           | 145.492 3         | 172.00      | 163.41                            | 162.00   | 160.80 | 6.223                                                  | 6.187 | 6.133 | 6.044 | 42        |
| 43        | 172.00           | 148.956 4         | 176.00      | 167.41                            | 166.00   | 164.80 | 6.223                                                  | 6.187 | 6.133 | 6.043 | 43        |
| 44        | 176.00           | 152.420 5         | 180.00      | 171.40                            | 170.00   | 168.80 | 6.223                                                  | 6.187 | 6.132 | 6.042 | 44        |
| 45        | 180.00           | 155.884 6         | 184.00      | 175.40                            | 174.00   | 172.80 | 6.223                                                  | 6.186 | 6.132 | 6.041 | 45        |
| 46        | 184.00           | 159.348 7         | 188.00      | 179.39                            | 178.00   | 176.80 | 6.222                                                  | 6.186 | 6.131 | 6.040 | 46        |
| 47        | 188.00           | 162.812 8         | 192.00      | 183.39                            | 182.00   | 180.80 | 6.222                                                  | 6.185 | 6.131 | 6.039 | 47        |
| 48        | 192.00           | 166.276 9         | 196.00      | 187.38                            | 186.00   | 184.80 | 6.222                                                  | 6.185 | 6.130 | 6.038 | 48        |
| 49        | 196.00           | 169.741 0         | 200.00      | 191.38                            | 190.00   | 188.80 | 6.222                                                  | 6.185 | 6.129 | 6.037 | 49        |
| 50        | 200.00           | 173.205 1         | 204.00      | 195.38                            | 194.00   | 192.80 | 6.221                                                  | 6.184 | 6.129 | 6.036 | 50        |
| 51        | 204.00           | 176.669 2         | 208.00      | 199.37                            | 198.00   | 196.80 | 6.221                                                  | 6.184 | 6.128 | 6.035 | 51        |
| 52        | 208.00           | 180.133 3         | 212.00      | 203.37                            | 202.00   | 200.80 | 6.221                                                  | 6.184 | 6.128 | 6.035 | 52        |
| 53        | 212.00           | 183.597 4         | 216.00      | 207.37                            | 206.00   | 204.80 | 6.221                                                  | 6.183 | 6.127 | 6.034 | 53        |
| 54        | 216.00           | 187.061 5         | 220.00      | 211.36                            | 210.00   | 208.80 | 6.221                                                  | 6.183 | 6.127 | 6.033 | 54        |
| 55        | 220.00           | 190.525 6         | 224.00      | 215.36                            | 214.00   | 212.80 | 6.220                                                  | 6.183 | 6.126 | 6.032 | 55        |

表 24 (续)

单位为毫米

| 齿数<br><i>z</i> | 分度圆<br>直径<br><i>D</i> | 基圆<br>直径<br><i>D<sub>b</sub></i> | 大径<br><i>D<sub>e</sub></i> | 渐开线起<br>始圆直径<br><i>D<sub>Fe min</sub></i> | 小径 <i>D<sub>e</sub></i> |        | 实际齿厚最小值<br><i>S<sub>min</sub> = S<sub>r max</sub> - (T + λ)</i> |       |       |       | 齿数<br><i>z</i> |
|----------------|-----------------------|----------------------------------|----------------------------|-------------------------------------------|-------------------------|--------|-----------------------------------------------------------------|-------|-------|-------|----------------|
|                |                       |                                  |                            |                                           | 平齿根                     | 圆齿根    | 4h                                                              | 5h    | 6h    | 7h    |                |
| 56             | 224.00                | 193.989 7                        | 228.00                     | 219.36                                    | 218.00                  | 216.80 | 6.220                                                           | 6.182 | 6.126 | 6.031 | 56             |
| 57             | 228.00                | 197.453 8                        | 232.00                     | 223.35                                    | 222.00                  | 220.80 | 6.220                                                           | 6.182 | 6.125 | 6.031 | 57             |
| 58             | 232.00                | 200.917 9                        | 236.00                     | 227.35                                    | 226.00                  | 224.80 | 6.220                                                           | 6.182 | 6.125 | 6.030 | 58             |
| 59             | 236.00                | 204.382 0                        | 240.00                     | 231.35                                    | 230.00                  | 228.80 | 6.220                                                           | 6.181 | 6.124 | 6.029 | 59             |
| 60             | 240.00                | 207.846 1                        | 244.00                     | 235.35                                    | 234.00                  | 232.80 | 6.219                                                           | 6.181 | 6.124 | 6.028 | 60             |
| 61             | 244.00                | 211.310 2                        | 248.00                     | 239.34                                    | 238.00                  | 236.80 | 6.219                                                           | 6.181 | 6.123 | 6.027 | 61             |
| 62             | 248.00                | 214.774 3                        | 252.00                     | 243.34                                    | 242.00                  | 240.80 | 6.219                                                           | 6.181 | 6.123 | 6.027 | 62             |
| 63             | 252.00                | 218.238 4                        | 256.00                     | 247.34                                    | 246.00                  | 244.80 | 6.219                                                           | 6.180 | 6.122 | 6.026 | 63             |
| 64             | 256.00                | 221.702 5                        | 260.00                     | 251.34                                    | 250.00                  | 248.80 | 6.219                                                           | 6.180 | 6.122 | 6.025 | 64             |
| 65             | 260.00                | 225.166 6                        | 264.00                     | 255.34                                    | 254.00                  | 252.80 | 6.218                                                           | 6.180 | 6.121 | 6.024 | 65             |
| 66             | 264.00                | 228.630 7                        | 268.00                     | 259.33                                    | 258.00                  | 256.80 | 6.218                                                           | 6.179 | 6.121 | 6.024 | 66             |
| 67             | 268.00                | 232.094 8                        | 272.00                     | 263.33                                    | 262.00                  | 260.80 | 6.218                                                           | 6.179 | 6.120 | 6.023 | 67             |
| 68             | 272.00                | 235.558 9                        | 276.00                     | 267.33                                    | 266.00                  | 264.80 | 6.218                                                           | 6.179 | 6.120 | 6.022 | 68             |
| 69             | 276.00                | 239.023 0                        | 280.00                     | 271.33                                    | 270.00                  | 268.80 | 6.218                                                           | 6.178 | 6.120 | 6.021 | 69             |
| 70             | 280.00                | 242.487 1                        | 284.00                     | 275.33                                    | 274.00                  | 272.80 | 6.218                                                           | 6.178 | 6.119 | 6.021 | 70             |
| 71             | 284.00                | 245.951 2                        | 288.00                     | 279.32                                    | 278.00                  | 276.80 | 6.217                                                           | 6.178 | 6.119 | 6.020 | 71             |
| 72             | 288.00                | 249.415 3                        | 292.00                     | 283.32                                    | 282.00                  | 280.80 | 6.217                                                           | 6.178 | 6.118 | 6.019 | 72             |
| 73             | 292.00                | 252.879 4                        | 296.00                     | 287.32                                    | 286.00                  | 284.80 | 6.217                                                           | 6.177 | 6.118 | 6.019 | 73             |
| 74             | 296.00                | 256.343 5                        | 300.00                     | 291.32                                    | 290.00                  | 288.80 | 6.217                                                           | 6.177 | 6.117 | 6.018 | 74             |
| 75             | 300.00                | 259.807 6                        | 304.00                     | 295.32                                    | 294.00                  | 292.80 | 6.217                                                           | 6.177 | 6.117 | 6.017 | 75             |
| 76             | 304.00                | 263.271 7                        | 308.00                     | 299.32                                    | 298.00                  | 296.80 | 6.216                                                           | 6.176 | 6.116 | 6.016 | 76             |
| 77             | 308.00                | 266.735 8                        | 312.00                     | 303.31                                    | 302.00                  | 300.80 | 6.216                                                           | 6.176 | 6.116 | 6.016 | 77             |
| 78             | 312.00                | 270.199 9                        | 316.00                     | 307.31                                    | 306.00                  | 304.80 | 6.216                                                           | 6.176 | 6.116 | 6.015 | 78             |
| 79             | 316.00                | 273.664 0                        | 320.00                     | 311.31                                    | 310.00                  | 308.80 | 6.216                                                           | 6.176 | 6.115 | 6.014 | 79             |
| 80             | 320.00                | 277.128 1                        | 324.00                     | 315.31                                    | 314.00                  | 312.80 | 6.216                                                           | 6.175 | 6.115 | 6.014 | 80             |
| 81             | 324.00                | 280.592 2                        | 328.00                     | 319.31                                    | 318.00                  | 316.80 | 6.216                                                           | 6.175 | 6.114 | 6.013 | 81             |
| 82             | 328.00                | 284.056 3                        | 332.00                     | 323.31                                    | 322.00                  | 320.80 | 6.215                                                           | 6.175 | 6.114 | 6.012 | 82             |
| 83             | 332.00                | 287.520 4                        | 336.00                     | 327.31                                    | 326.00                  | 324.80 | 6.215                                                           | 6.175 | 6.114 | 6.012 | 83             |
| 84             | 336.00                | 290.984 5                        | 340.00                     | 331.30                                    | 330.00                  | 328.80 | 6.215                                                           | 6.174 | 6.113 | 6.011 | 84             |
| 85             | 340.00                | 294.448 6                        | 344.00                     | 335.30                                    | 334.00                  | 332.80 | 6.215                                                           | 6.174 | 6.113 | 6.010 | 85             |
| 86             | 344.00                | 297.912 7                        | 348.00                     | 339.30                                    | 338.00                  | 336.80 | 6.215                                                           | 6.174 | 6.112 | 6.010 | 86             |
| 87             | 348.00                | 301.376 8                        | 352.00                     | 343.30                                    | 342.00                  | 340.80 | 6.215                                                           | 6.174 | 6.112 | 6.009 | 87             |
| 88             | 352.00                | 304.840 9                        | 356.00                     | 347.30                                    | 346.00                  | 344.80 | 6.215                                                           | 6.173 | 6.111 | 6.008 | 88             |
| 89             | 356.00                | 308.305 0                        | 360.00                     | 351.30                                    | 350.00                  | 348.80 | 6.214                                                           | 6.173 | 6.111 | 6.008 | 89             |
| 90             | 360.00                | 311.769 1                        | 364.00                     | 355.30                                    | 354.00                  | 352.80 | 6.214                                                           | 6.173 | 6.111 | 6.007 | 90             |
| 91             | 364.00                | 315.233 2                        | 368.00                     | 359.30                                    | 358.00                  | 356.80 | 6.214                                                           | 6.173 | 6.110 | 6.007 | 91             |
| 92             | 368.00                | 318.697 3                        | 372.00                     | 363.30                                    | 362.00                  | 360.80 | 6.214                                                           | 6.172 | 6.110 | 6.006 | 92             |
| 93             | 372.00                | 322.161 4                        | 376.00                     | 367.29                                    | 366.00                  | 364.80 | 6.214                                                           | 6.172 | 6.110 | 6.005 | 93             |
| 94             | 376.00                | 325.625 5                        | 380.00                     | 371.29                                    | 370.00                  | 368.80 | 6.214                                                           | 6.172 | 6.109 | 6.005 | 94             |
| 95             | 380.00                | 329.089 6                        | 384.00                     | 375.29                                    | 374.00                  | 372.80 | 6.213                                                           | 6.172 | 6.109 | 6.004 | 95             |
| 96             | 384.00                | 332.553 8                        | 388.00                     | 379.29                                    | 378.00                  | 376.80 | 6.213                                                           | 6.171 | 6.108 | 6.003 | 96             |
| 97             | 388.00                | 336.017 9                        | 392.00                     | 383.29                                    | 382.00                  | 380.80 | 6.213                                                           | 6.171 | 6.108 | 6.003 | 97             |
| 98             | 392.00                | 339.482 0                        | 396.00                     | 387.29                                    | 386.00                  | 384.80 | 6.213                                                           | 6.171 | 6.108 | 6.002 | 98             |
| 99             | 396.00                | 342.946 1                        | 400.00                     | 391.29                                    | 390.00                  | 388.80 | 6.213                                                           | 6.171 | 6.107 | 6.002 | 99             |
| 100            | 400.00                | 346.410 2                        | 404.00                     | 395.29                                    | 394.00                  | 392.80 | 6.213                                                           | 6.170 | 6.107 | 6.001 | 100            |

表 25 30°外花键

模数  $m=5\text{ mm}$  作用齿厚最大值  $S_{\max}=7.854\text{ mm}$ 

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_{\text{ex}}$ | 渐开线起<br>始圆直径<br>$D_{\text{Fe max}}$ | 小径 $D_{\text{e}}$ |        | 实际齿厚最小值<br>$S_{\min}=S_{\text{v max}}-(T+\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|-----------------------|-------------------------------------|-------------------|--------|----------------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   |                       |                                     | 平齿根               | 圆齿根    | 4h                                                 | 5h    | 6h    | 7h    |           |
| 10        | 50.00            | 43.301 3          | 55.00                 | 45.21                               | 42.50             | 41.00  | 7.801                                              | 7.769 | 7.721 | 7.641 | 10        |
| 11        | 55.00            | 47.631 4          | 60.00                 | 50.09                               | 47.50             | 46.00  | 7.800                                              | 7.768 | 7.720 | 7.639 | 11        |
| 12        | 60.00            | 51.961 5          | 65.00                 | 54.99                               | 52.50             | 51.00  | 7.800                                              | 7.767 | 7.718 | 7.637 | 12        |
| 13        | 65.00            | 56.291 7          | 70.00                 | 59.91                               | 57.50             | 56.00  | 7.799                                              | 7.766 | 7.717 | 7.635 | 13        |
| 14        | 70.00            | 60.621 8          | 75.00                 | 64.84                               | 62.50             | 61.00  | 7.799                                              | 7.766 | 7.716 | 7.633 | 14        |
| 15        | 75.00            | 64.951 9          | 80.00                 | 69.78                               | 67.50             | 66.00  | 7.798                                              | 7.765 | 7.715 | 7.631 | 15        |
| 16        | 80.00            | 69.282 0          | 85.00                 | 74.73                               | 72.50             | 71.00  | 7.798                                              | 7.764 | 7.713 | 7.629 | 16        |
| 17        | 85.00            | 73.612 2          | 90.00                 | 79.68                               | 77.50             | 76.00  | 7.797                                              | 7.763 | 7.712 | 7.627 | 17        |
| 18        | 90.00            | 77.942 3          | 95.00                 | 84.64                               | 82.50             | 81.00  | 7.797                                              | 7.763 | 7.711 | 7.626 | 18        |
| 19        | 95.00            | 82.272 4          | 100.00                | 89.60                               | 87.50             | 86.00  | 7.796                                              | 7.762 | 7.710 | 7.624 | 19        |
| 20        | 100.00           | 86.602 5          | 105.00                | 94.57                               | 92.50             | 91.00  | 7.796                                              | 7.761 | 7.709 | 7.622 | 20        |
| 21        | 105.00           | 90.932 7          | 110.00                | 99.54                               | 97.50             | 96.00  | 7.796                                              | 7.761 | 7.708 | 7.621 | 21        |
| 22        | 110.00           | 95.262 8          | 115.00                | 104.52                              | 102.50            | 101.00 | 7.795                                              | 7.760 | 7.707 | 7.619 | 22        |
| 23        | 115.00           | 99.592 9          | 120.00                | 109.49                              | 107.50            | 106.00 | 7.795                                              | 7.759 | 7.706 | 7.618 | 23        |
| 24        | 120.00           | 103.923 0         | 125.00                | 114.47                              | 112.50            | 111.00 | 7.795                                              | 7.759 | 7.705 | 7.616 | 24        |
| 25        | 125.00           | 108.253 2         | 130.00                | 119.45                              | 117.50            | 116.00 | 7.794                                              | 7.758 | 7.705 | 7.615 | 25        |
| 26        | 130.00           | 112.583 3         | 135.00                | 124.43                              | 122.50            | 121.00 | 7.794                                              | 7.758 | 7.704 | 7.613 | 26        |
| 27        | 135.00           | 116.913 4         | 140.00                | 129.42                              | 127.50            | 126.00 | 7.794                                              | 7.757 | 7.703 | 7.612 | 27        |
| 28        | 140.00           | 121.243 6         | 145.00                | 134.40                              | 132.50            | 131.00 | 7.793                                              | 7.757 | 7.702 | 7.611 | 28        |
| 29        | 145.00           | 125.573 7         | 150.00                | 139.39                              | 137.50            | 136.00 | 7.793                                              | 7.756 | 7.701 | 7.609 | 29        |
| 30        | 150.00           | 129.903 8         | 155.00                | 144.37                              | 142.50            | 141.00 | 7.793                                              | 7.756 | 7.700 | 7.608 | 30        |
| 31        | 155.00           | 134.233 9         | 160.00                | 149.36                              | 147.50            | 146.00 | 7.792                                              | 7.755 | 7.700 | 7.607 | 31        |
| 32        | 160.00           | 138.564 1         | 165.00                | 154.35                              | 152.50            | 151.00 | 7.792                                              | 7.755 | 7.699 | 7.606 | 32        |
| 33        | 165.00           | 142.894 2         | 170.00                | 159.34                              | 157.50            | 156.00 | 7.792                                              | 7.754 | 7.698 | 7.605 | 33        |
| 34        | 170.00           | 147.224 3         | 175.00                | 164.33                              | 162.50            | 161.00 | 7.791                                              | 7.754 | 7.697 | 7.603 | 34        |
| 35        | 175.00           | 151.554 4         | 180.00                | 169.32                              | 167.50            | 166.00 | 7.791                                              | 7.753 | 7.697 | 7.602 | 35        |
| 36        | 180.00           | 155.884 6         | 185.00                | 174.31                              | 172.50            | 171.00 | 7.791                                              | 7.753 | 7.696 | 7.601 | 36        |
| 37        | 185.00           | 160.214 7         | 190.00                | 179.30                              | 177.50            | 176.00 | 7.790                                              | 7.752 | 7.695 | 7.600 | 37        |
| 38        | 190.00           | 164.544 8         | 195.00                | 184.29                              | 182.50            | 181.00 | 7.790                                              | 7.752 | 7.694 | 7.599 | 38        |
| 39        | 195.00           | 168.875 0         | 200.00                | 189.29                              | 187.50            | 186.00 | 7.790                                              | 7.751 | 7.694 | 7.598 | 39        |
| 40        | 200.00           | 173.205 1         | 205.00                | 194.28                              | 192.50            | 191.00 | 7.790                                              | 7.751 | 7.693 | 7.597 | 40        |
| 41        | 205.00           | 177.535 2         | 210.00                | 199.27                              | 197.50            | 196.00 | 7.789                                              | 7.751 | 7.692 | 7.596 | 41        |
| 42        | 210.00           | 181.865 3         | 215.00                | 204.26                              | 202.50            | 201.00 | 7.789                                              | 7.750 | 7.692 | 7.595 | 42        |
| 43        | 215.00           | 186.195 5         | 220.00                | 209.26                              | 207.50            | 206.00 | 7.789                                              | 7.750 | 7.691 | 7.593 | 43        |
| 44        | 220.00           | 190.525 6         | 225.00                | 214.25                              | 212.50            | 211.00 | 7.789                                              | 7.749 | 7.691 | 7.592 | 44        |
| 45        | 225.00           | 194.855 7         | 230.00                | 219.25                              | 217.50            | 216.00 | 7.788                                              | 7.749 | 7.690 | 7.591 | 45        |
| 46        | 230.00           | 199.185 8         | 235.00                | 224.24                              | 222.50            | 221.00 | 7.788                                              | 7.749 | 7.689 | 7.590 | 46        |
| 47        | 235.00           | 203.516 0         | 240.00                | 229.24                              | 227.50            | 226.00 | 7.788                                              | 7.748 | 7.689 | 7.589 | 47        |
| 48        | 240.00           | 207.846 1         | 245.00                | 234.23                              | 232.50            | 231.00 | 7.788                                              | 7.748 | 7.688 | 7.588 | 48        |
| 49        | 245.00           | 212.176 2         | 250.00                | 239.23                              | 237.50            | 236.00 | 7.787                                              | 7.747 | 7.687 | 7.587 | 49        |
| 50        | 250.00           | 216.506 3         | 255.00                | 244.22                              | 242.50            | 241.00 | 7.787                                              | 7.747 | 7.687 | 7.587 | 50        |
| 51        | 255.00           | 220.836 5         | 260.00                | 249.22                              | 247.50            | 246.00 | 7.787                                              | 7.747 | 7.686 | 7.586 | 51        |
| 52        | 260.00           | 225.166 6         | 265.00                | 254.21                              | 252.50            | 251.00 | 7.787                                              | 7.746 | 7.686 | 7.585 | 52        |
| 53        | 265.00           | 229.496 7         | 270.00                | 259.21                              | 257.50            | 256.00 | 7.786                                              | 7.746 | 7.685 | 7.584 | 53        |
| 54        | 270.00           | 233.826 9         | 275.00                | 264.20                              | 262.50            | 261.00 | 7.786                                              | 7.746 | 7.684 | 7.583 | 54        |
| 55        | 275.00           | 238.157 0         | 280.00                | 269.20                              | 267.50            | 266.00 | 7.786                                              | 7.745 | 7.684 | 7.582 | 55        |

表 25 (续) 单位为毫米

| 齿数<br><i>z</i> | 分度圆<br>直径<br><i>D</i> | 基圆<br>直径<br><i>D<sub>b</sub></i> | 大径<br><i>D<sub>a</sub></i> | 渐开线起<br>始圆直径<br><i>D<sub>Fe min</sub></i> | 小径 <i>D<sub>e</sub></i> |        | 实际齿厚最小值<br><i>S<sub>min</sub> = S<sub>max</sub> - (T + λ)</i> |            |            |            | 齿数<br><i>z</i> |
|----------------|-----------------------|----------------------------------|----------------------------|-------------------------------------------|-------------------------|--------|---------------------------------------------------------------|------------|------------|------------|----------------|
|                |                       |                                  |                            |                                           | 平齿根                     | 圆齿根    | 4 <i>h</i>                                                    | 5 <i>h</i> | 6 <i>h</i> | 7 <i>h</i> |                |
| 56             | 280.00                | 242.487 1                        | 285.00                     | 274.20                                    | 272.50                  | 271.00 | 7.786                                                         | 7.745      | 7.683      | 7.581      | 56             |
| 57             | 285.00                | 246.817 2                        | 290.00                     | 279.19                                    | 277.50                  | 276.00 | 7.786                                                         | 7.744      | 7.683      | 7.580      | 57             |
| 58             | 290.00                | 251.147 4                        | 295.00                     | 284.19                                    | 282.50                  | 281.00 | 7.785                                                         | 7.744      | 7.682      | 7.579      | 58             |
| 59             | 295.00                | 255.477 5                        | 300.00                     | 289.19                                    | 287.50                  | 286.00 | 7.785                                                         | 7.744      | 7.682      | 7.578      | 59             |
| 60             | 300.00                | 259.807 6                        | 305.00                     | 294.18                                    | 292.50                  | 291.00 | 7.785                                                         | 7.743      | 7.681      | 7.577      | 60             |
| 61             | 305.00                | 264.137 7                        | 310.00                     | 299.18                                    | 297.50                  | 296.00 | 7.785                                                         | 7.743      | 7.681      | 7.577      | 61             |
| 62             | 310.00                | 268.467 9                        | 315.00                     | 304.18                                    | 302.50                  | 301.00 | 7.784                                                         | 7.743      | 7.680      | 7.576      | 62             |
| 63             | 315.00                | 272.798 0                        | 320.00                     | 309.17                                    | 307.50                  | 306.00 | 7.784                                                         | 7.742      | 7.680      | 7.575      | 63             |
| 64             | 320.00                | 277.128 1                        | 325.00                     | 314.17                                    | 312.50                  | 311.00 | 7.784                                                         | 7.742      | 7.679      | 7.574      | 64             |
| 65             | 325.00                | 281.458 3                        | 330.00                     | 319.17                                    | 317.50                  | 316.00 | 7.784                                                         | 7.742      | 7.678      | 7.573      | 65             |
| 66             | 330.00                | 285.788 4                        | 335.00                     | 324.17                                    | 322.50                  | 321.00 | 7.784                                                         | 7.741      | 7.678      | 7.572      | 66             |
| 67             | 335.00                | 290.118 5                        | 340.00                     | 329.16                                    | 327.50                  | 326.00 | 7.783                                                         | 7.741      | 7.677      | 7.572      | 67             |
| 68             | 340.00                | 294.448 6                        | 345.00                     | 334.16                                    | 332.50                  | 331.00 | 7.783                                                         | 7.741      | 7.677      | 7.571      | 68             |
| 69             | 345.00                | 298.778 8                        | 350.00                     | 339.16                                    | 337.50                  | 336.00 | 7.783                                                         | 7.740      | 7.676      | 7.570      | 69             |
| 70             | 350.00                | 303.108 9                        | 355.00                     | 344.16                                    | 342.50                  | 341.00 | 7.783                                                         | 7.740      | 7.676      | 7.569      | 70             |
| 71             | 355.00                | 307.439 0                        | 360.00                     | 349.15                                    | 347.50                  | 346.00 | 7.783                                                         | 7.740      | 7.675      | 7.568      | 71             |
| 72             | 360.00                | 311.769 1                        | 365.00                     | 354.15                                    | 352.50                  | 351.00 | 7.782                                                         | 7.739      | 7.675      | 7.568      | 72             |
| 73             | 365.00                | 316.099 3                        | 370.00                     | 359.15                                    | 357.50                  | 356.00 | 7.782                                                         | 7.739      | 7.674      | 7.567      | 73             |
| 74             | 370.00                | 320.429 4                        | 375.00                     | 364.15                                    | 362.50                  | 361.00 | 7.782                                                         | 7.739      | 7.674      | 7.566      | 74             |
| 75             | 375.00                | 324.759 5                        | 380.00                     | 369.15                                    | 367.50                  | 366.00 | 7.782                                                         | 7.738      | 7.673      | 7.565      | 75             |
| 76             | 380.00                | 329.089 6                        | 385.00                     | 374.14                                    | 372.50                  | 371.00 | 7.782                                                         | 7.738      | 7.673      | 7.564      | 76             |
| 77             | 385.00                | 333.419 8                        | 390.00                     | 379.14                                    | 377.50                  | 376.00 | 7.781                                                         | 7.738      | 7.673      | 7.564      | 77             |
| 78             | 390.00                | 337.749 9                        | 395.00                     | 384.14                                    | 382.50                  | 381.00 | 7.781                                                         | 7.738      | 7.672      | 7.563      | 78             |
| 79             | 395.00                | 342.080 0                        | 400.00                     | 389.14                                    | 387.50                  | 386.00 | 7.781                                                         | 7.737      | 7.672      | 7.562      | 79             |
| 80             | 400.00                | 346.410 2                        | 405.00                     | 394.14                                    | 392.50                  | 391.00 | 7.781                                                         | 7.737      | 7.671      | 7.561      | 80             |
| 81             | 405.00                | 350.740 3                        | 410.00                     | 399.14                                    | 397.50                  | 396.00 | 7.781                                                         | 7.737      | 7.671      | 7.561      | 81             |
| 82             | 410.00                | 355.070 4                        | 415.00                     | 404.13                                    | 402.50                  | 401.00 | 7.780                                                         | 7.736      | 7.670      | 7.560      | 82             |
| 83             | 415.00                | 359.400 5                        | 420.00                     | 409.13                                    | 407.50                  | 406.00 | 7.780                                                         | 7.736      | 7.670      | 7.559      | 83             |
| 84             | 420.00                | 363.730 7                        | 425.00                     | 414.13                                    | 412.50                  | 411.00 | 7.780                                                         | 7.736      | 7.669      | 7.558      | 84             |
| 85             | 425.00                | 368.060 8                        | 430.00                     | 419.13                                    | 417.50                  | 416.00 | 7.780                                                         | 7.735      | 7.669      | 7.558      | 85             |
| 86             | 430.00                | 372.390 9                        | 435.00                     | 424.13                                    | 422.50                  | 421.00 | 7.780                                                         | 7.735      | 7.668      | 7.557      | 86             |
| 87             | 435.00                | 376.721 0                        | 440.00                     | 429.13                                    | 427.50                  | 426.00 | 7.780                                                         | 7.735      | 7.668      | 7.556      | 87             |
| 88             | 440.00                | 381.051 2                        | 445.00                     | 434.12                                    | 432.50                  | 431.00 | 7.779                                                         | 7.735      | 7.667      | 7.555      | 88             |
| 89             | 445.00                | 385.381 3                        | 450.00                     | 439.12                                    | 437.50                  | 436.00 | 7.779                                                         | 7.734      | 7.667      | 7.555      | 89             |
| 90             | 450.00                | 389.711 4                        | 455.00                     | 444.12                                    | 442.50                  | 441.00 | 7.779                                                         | 7.734      | 7.667      | 7.554      | 90             |
| 91             | 455.00                | 394.041 6                        | 460.00                     | 449.12                                    | 447.50                  | 446.00 | 7.779                                                         | 7.734      | 7.666      | 7.553      | 91             |
| 92             | 460.00                | 398.371 7                        | 465.00                     | 454.12                                    | 452.50                  | 451.00 | 7.779                                                         | 7.733      | 7.666      | 7.553      | 92             |
| 93             | 465.00                | 402.701 8                        | 470.00                     | 459.12                                    | 457.50                  | 456.00 | 7.778                                                         | 7.733      | 7.665      | 7.552      | 93             |
| 94             | 470.00                | 407.031 9                        | 475.00                     | 464.12                                    | 462.50                  | 461.00 | 7.778                                                         | 7.733      | 7.665      | 7.551      | 94             |
| 95             | 475.00                | 411.362 1                        | 480.00                     | 469.12                                    | 467.50                  | 466.00 | 7.778                                                         | 7.733      | 7.664      | 7.551      | 95             |
| 96             | 480.00                | 415.692 2                        | 485.00                     | 474.11                                    | 472.50                  | 471.00 | 7.778                                                         | 7.732      | 7.664      | 7.550      | 96             |
| 97             | 485.00                | 420.022 3                        | 490.00                     | 479.11                                    | 477.50                  | 476.00 | 7.778                                                         | 7.732      | 7.663      | 7.549      | 97             |
| 98             | 490.00                | 424.352 4                        | 495.00                     | 484.11                                    | 482.50                  | 481.00 | 7.778                                                         | 7.732      | 7.663      | 7.548      | 98             |
| 99             | 495.00                | 428.682 6                        | 500.00                     | 489.11                                    | 487.50                  | 486.00 | 7.777                                                         | 7.732      | 7.663      | 7.548      | 99             |
| 100            | 500.00                | 433.012 7                        | 505.00                     | 494.11                                    | 492.50                  | 491.00 | 7.777                                                         | 7.731      | 7.662      | 7.547      | 100            |

表 26 30°外花键  
模数  $m=6\text{ mm}$  作用齿厚最大值  $S_{\max}=9.425\text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_a$ | 渐开线起<br>始圆直径<br>$D_{f\max}$ | 小径 $D_i$ |        | 实际齿厚最小值<br>$S_{\min}=S_{\max}-(T-\lambda)$ |       |       |       | 齿数<br>$z$ |
|-----------|------------------|-------------------|-------------|-----------------------------|----------|--------|--------------------------------------------|-------|-------|-------|-----------|
|           |                  |                   |             |                             | 平齿根      | 圆齿根    | 4h                                         | 5h    | 6h    | 7h    |           |
| 10        | 60.00            | 51.961 5          | 66.00       | 54.25                       | 51.00    | 49.20  | 9.368                                      | 9.334 | 9.283 | 9.199 | 10        |
| 11        | 66.00            | 57.157 7          | 72.00       | 60.11                       | 57.00    | 55.20  | 9.368                                      | 9.333 | 9.282 | 9.198 | 11        |
| 12        | 72.00            | 62.353 8          | 78.00       | 65.99                       | 63.00    | 61.20  | 9.367                                      | 9.332 | 9.280 | 9.194 | 12        |
| 13        | 78.00            | 67.550 0          | 84.00       | 71.89                       | 69.00    | 67.20  | 9.366                                      | 9.331 | 9.279 | 9.191 | 13        |
| 14        | 84.00            | 72.746 1          | 90.00       | 77.81                       | 75.00    | 73.20  | 9.366                                      | 9.331 | 9.278 | 9.189 | 14        |
| 15        | 90.00            | 77.942 3          | 96.00       | 83.73                       | 81.00    | 79.20  | 9.365                                      | 9.330 | 9.276 | 9.187 | 15        |
| 16        | 96.00            | 83.138 4          | 102.00      | 89.67                       | 87.00    | 85.20  | 9.365                                      | 9.329 | 9.275 | 9.185 | 16        |
| 17        | 102.00           | 88.334 6          | 108.00      | 95.62                       | 93.00    | 91.20  | 9.364                                      | 9.328 | 9.274 | 9.183 | 17        |
| 18        | 108.00           | 93.530 7          | 114.00      | 101.57                      | 99.00    | 97.20  | 9.364                                      | 9.327 | 9.273 | 9.181 | 18        |
| 19        | 114.00           | 98.726 9          | 120.00      | 107.53                      | 105.00   | 103.20 | 9.363                                      | 9.327 | 9.272 | 9.180 | 19        |
| 20        | 120.00           | 103.923 0         | 126.00      | 113.49                      | 111.00   | 109.20 | 9.363                                      | 9.326 | 9.270 | 9.178 | 20        |
| 21        | 126.00           | 109.119 2         | 132.00      | 119.45                      | 117.00   | 115.20 | 9.363                                      | 9.325 | 9.269 | 9.176 | 21        |
| 22        | 132.00           | 114.315 4         | 138.00      | 125.42                      | 123.00   | 121.20 | 9.362                                      | 9.325 | 9.268 | 9.175 | 22        |
| 23        | 138.00           | 119.511 5         | 144.00      | 131.39                      | 129.00   | 127.20 | 9.362                                      | 9.324 | 9.267 | 9.173 | 23        |
| 24        | 144.00           | 124.707 7         | 150.00      | 137.37                      | 135.00   | 133.20 | 9.361                                      | 9.323 | 9.266 | 9.171 | 24        |
| 25        | 150.00           | 129.903 8         | 156.00      | 143.34                      | 141.00   | 139.20 | 9.361                                      | 9.323 | 9.265 | 9.170 | 25        |
| 26        | 156.00           | 135.100 0         | 162.00      | 149.32                      | 147.00   | 145.20 | 9.361                                      | 9.322 | 9.264 | 9.168 | 26        |
| 27        | 162.00           | 140.296 1         | 168.00      | 155.30                      | 153.00   | 151.20 | 9.360                                      | 9.322 | 9.264 | 9.167 | 27        |
| 28        | 168.00           | 145.492 3         | 174.00      | 161.28                      | 159.00   | 157.20 | 9.360                                      | 9.321 | 9.263 | 9.165 | 28        |
| 29        | 174.00           | 150.688 4         | 180.00      | 167.27                      | 165.00   | 163.20 | 9.360                                      | 9.320 | 9.262 | 9.164 | 29        |
| 30        | 180.00           | 155.884 6         | 186.00      | 173.25                      | 171.00   | 169.20 | 9.359                                      | 9.320 | 9.261 | 9.163 | 30        |
| 31        | 186.00           | 161.080 7         | 192.00      | 179.23                      | 177.00   | 175.20 | 9.359                                      | 9.319 | 9.260 | 9.161 | 31        |
| 32        | 192.00           | 166.276 9         | 198.00      | 185.22                      | 183.00   | 181.20 | 9.359                                      | 9.319 | 9.259 | 9.160 | 32        |
| 33        | 198.00           | 171.473 0         | 204.00      | 191.21                      | 189.00   | 187.20 | 9.358                                      | 9.318 | 9.258 | 9.159 | 33        |
| 34        | 204.00           | 176.669 2         | 210.00      | 197.19                      | 195.00   | 193.20 | 9.358                                      | 9.318 | 9.258 | 9.157 | 34        |
| 35        | 210.00           | 181.865 3         | 216.00      | 203.18                      | 201.00   | 199.20 | 9.358                                      | 9.317 | 9.257 | 9.156 | 35        |
| 36        | 216.00           | 187.061 5         | 222.00      | 209.17                      | 207.00   | 205.20 | 9.357                                      | 9.317 | 9.256 | 9.155 | 36        |
| 37        | 222.00           | 192.257 6         | 228.00      | 215.16                      | 213.00   | 211.20 | 9.357                                      | 9.316 | 9.255 | 9.154 | 37        |
| 38        | 228.00           | 197.453 8         | 234.00      | 221.15                      | 219.00   | 217.20 | 9.357                                      | 9.316 | 9.255 | 9.152 | 38        |
| 39        | 234.00           | 202.649 9         | 240.00      | 227.14                      | 225.00   | 223.20 | 9.356                                      | 9.315 | 9.254 | 9.151 | 39        |
| 40        | 240.00           | 207.846 1         | 246.00      | 233.13                      | 231.00   | 229.20 | 9.356                                      | 9.315 | 9.253 | 9.150 | 40        |
| 41        | 246.00           | 213.042 2         | 252.00      | 239.13                      | 237.00   | 235.20 | 9.356                                      | 9.314 | 9.252 | 9.149 | 41        |
| 42        | 252.00           | 218.238 4         | 258.00      | 245.12                      | 243.00   | 241.20 | 9.356                                      | 9.314 | 9.252 | 9.148 | 42        |
| 43        | 258.00           | 223.434 6         | 264.00      | 251.11                      | 249.00   | 247.20 | 9.355                                      | 9.314 | 9.251 | 9.147 | 43        |
| 44        | 264.00           | 228.630 7         | 270.00      | 257.10                      | 255.00   | 253.20 | 9.355                                      | 9.313 | 9.250 | 9.145 | 44        |
| 45        | 270.00           | 233.826 9         | 276.00      | 263.10                      | 261.00   | 259.20 | 9.355                                      | 9.313 | 9.250 | 9.144 | 45        |
| 46        | 276.00           | 239.023 0         | 282.00      | 269.09                      | 267.00   | 265.20 | 9.354                                      | 9.312 | 9.249 | 9.143 | 46        |
| 47        | 282.00           | 244.219 2         | 288.00      | 275.08                      | 273.00   | 271.20 | 9.354                                      | 9.312 | 9.248 | 9.142 | 47        |
| 48        | 288.00           | 249.415 3         | 294.00      | 281.08                      | 279.00   | 277.20 | 9.354                                      | 9.311 | 9.247 | 9.141 | 48        |
| 49        | 294.00           | 254.611 5         | 300.00      | 287.07                      | 285.00   | 283.20 | 9.354                                      | 9.311 | 9.247 | 9.140 | 49        |
| 50        | 300.00           | 259.807 6         | 306.00      | 293.07                      | 291.00   | 289.20 | 9.353                                      | 9.310 | 9.246 | 9.139 | 50        |
| 51        | 306.00           | 265.003 8         | 312.00      | 299.06                      | 297.00   | 295.20 | 9.353                                      | 9.310 | 9.246 | 9.138 | 51        |
| 52        | 312.00           | 270.199 9         | 318.00      | 305.06                      | 303.00   | 301.20 | 9.353                                      | 9.310 | 9.245 | 9.137 | 52        |
| 53        | 318.00           | 275.396 1         | 324.00      | 311.05                      | 309.00   | 307.20 | 9.353                                      | 9.309 | 9.244 | 9.136 | 53        |
| 54        | 324.00           | 280.592 2         | 330.00      | 317.05                      | 315.00   | 313.20 | 9.352                                      | 9.309 | 9.244 | 9.135 | 54        |
| 55        | 330.00           | 285.788 4         | 336.00      | 323.04                      | 321.00   | 319.20 | 9.352                                      | 9.308 | 9.243 | 9.134 | 55        |

表 26 (续) 单位为毫米

| 齿数<br><i>z</i> | 分度圆<br>直径<br><i>D</i> | 基圆<br>直径<br><i>D<sub>b</sub></i> | 大径<br><i>D<sub>e</sub></i> | 渐开线起<br>始圆直径<br><i>D<sub>Fe max</sub></i> | 小径 <i>D<sub>w</sub></i> |        | 实际齿厚最小值<br><i>S<sub>min</sub> = S<sub>v max</sub> - (T + λ)</i> |       |       |       | 齿数<br><i>z</i> |
|----------------|-----------------------|----------------------------------|----------------------------|-------------------------------------------|-------------------------|--------|-----------------------------------------------------------------|-------|-------|-------|----------------|
|                |                       |                                  |                            |                                           | 平齿根                     | 圆齿根    | 4h                                                              | 5h    | 6h    | 7h    |                |
| 56             | 336.00                | 290.984 5                        | 342.00                     | 329.04                                    | 327.00                  | 325.20 | 9.352                                                           | 9.308 | 9.242 | 9.133 | 56             |
| 57             | 342.00                | 296.180 7                        | 348.00                     | 335.03                                    | 333.00                  | 331.20 | 9.352                                                           | 9.308 | 9.242 | 9.132 | 57             |
| 58             | 348.00                | 301.376 8                        | 354.00                     | 341.03                                    | 339.00                  | 337.20 | 9.351                                                           | 9.307 | 9.241 | 9.131 | 58             |
| 59             | 354.00                | 306.573 0                        | 360.00                     | 347.02                                    | 345.00                  | 343.20 | 9.351                                                           | 9.307 | 9.241 | 9.130 | 59             |
| 60             | 360.00                | 311.769 1                        | 366.00                     | 353.02                                    | 351.00                  | 349.20 | 9.351                                                           | 9.307 | 9.240 | 9.129 | 60             |
| 61             | 366.00                | 316.965 3                        | 372.00                     | 359.02                                    | 357.00                  | 355.20 | 9.351                                                           | 9.306 | 9.239 | 9.128 | 61             |
| 62             | 372.00                | 322.161 4                        | 378.00                     | 365.01                                    | 363.00                  | 361.20 | 9.350                                                           | 9.306 | 9.239 | 9.127 | 62             |
| 63             | 378.00                | 327.357 6                        | 384.00                     | 371.01                                    | 369.00                  | 367.20 | 9.350                                                           | 9.305 | 9.238 | 9.126 | 63             |
| 64             | 384.00                | 332.553 8                        | 390.00                     | 377.01                                    | 375.00                  | 373.20 | 9.350                                                           | 9.305 | 9.238 | 9.125 | 64             |
| 65             | 390.00                | 337.749 9                        | 396.00                     | 383.00                                    | 381.00                  | 379.20 | 9.350                                                           | 9.305 | 9.237 | 9.124 | 65             |
| 66             | 396.00                | 342.946 1                        | 402.00                     | 389.00                                    | 387.00                  | 385.20 | 9.349                                                           | 9.304 | 9.237 | 9.124 | 66             |
| 67             | 402.00                | 348.142 2                        | 408.00                     | 395.00                                    | 393.00                  | 391.20 | 9.349                                                           | 9.304 | 9.236 | 9.123 | 67             |
| 68             | 408.00                | 353.338 4                        | 414.00                     | 400.99                                    | 399.00                  | 397.20 | 9.349                                                           | 9.304 | 9.235 | 9.122 | 68             |
| 69             | 414.00                | 358.534 5                        | 420.00                     | 406.99                                    | 405.00                  | 403.20 | 9.349                                                           | 9.303 | 9.235 | 9.121 | 69             |
| 70             | 420.00                | 363.730 7                        | 426.00                     | 412.99                                    | 411.00                  | 409.20 | 9.349                                                           | 9.303 | 9.234 | 9.120 | 70             |
| 71             | 426.00                | 368.926 8                        | 432.00                     | 418.99                                    | 417.00                  | 415.20 | 9.348                                                           | 9.303 | 9.234 | 9.119 | 71             |
| 72             | 432.00                | 374.123 0                        | 438.00                     | 424.98                                    | 423.00                  | 421.20 | 9.348                                                           | 9.302 | 9.233 | 9.118 | 72             |
| 73             | 438.00                | 379.319 1                        | 444.00                     | 430.98                                    | 429.00                  | 427.20 | 9.348                                                           | 9.302 | 9.233 | 9.117 | 73             |
| 74             | 444.00                | 384.515 3                        | 450.00                     | 436.98                                    | 435.00                  | 433.20 | 9.348                                                           | 9.301 | 9.232 | 9.116 | 74             |
| 75             | 450.00                | 389.711 4                        | 456.00                     | 442.98                                    | 441.00                  | 439.20 | 9.347                                                           | 9.301 | 9.232 | 9.115 | 75             |
| 76             | 456.00                | 394.907 6                        | 462.00                     | 448.97                                    | 447.00                  | 445.20 | 9.347                                                           | 9.301 | 9.231 | 9.115 | 76             |
| 77             | 462.00                | 400.103 7                        | 468.00                     | 454.97                                    | 453.00                  | 451.20 | 9.347                                                           | 9.300 | 9.231 | 9.114 | 77             |
| 78             | 468.00                | 405.299 9                        | 474.00                     | 460.97                                    | 459.00                  | 457.20 | 9.347                                                           | 9.300 | 9.230 | 9.113 | 78             |
| 79             | 474.00                | 410.496 0                        | 480.00                     | 466.97                                    | 465.00                  | 463.20 | 9.347                                                           | 9.300 | 9.229 | 9.112 | 79             |
| 80             | 480.00                | 415.692 2                        | 486.00                     | 472.96                                    | 471.00                  | 469.20 | 9.346                                                           | 9.299 | 9.229 | 9.111 | 80             |
| 81             | 486.00                | 420.888 3                        | 492.00                     | 478.96                                    | 477.00                  | 475.20 | 9.346                                                           | 9.299 | 9.228 | 9.111 | 81             |
| 82             | 492.00                | 426.084 5                        | 498.00                     | 484.96                                    | 483.00                  | 481.20 | 9.346                                                           | 9.299 | 9.228 | 9.110 | 82             |
| 83             | 498.00                | 431.280 6                        | 504.00                     | 490.96                                    | 489.00                  | 487.20 | 9.346                                                           | 9.298 | 9.227 | 9.109 | 83             |
| 84             | 504.00                | 436.476 8                        | 510.00                     | 496.96                                    | 495.00                  | 493.20 | 9.345                                                           | 9.298 | 9.226 | 9.107 | 84             |
| 85             | 510.00                | 441.672 9                        | 516.00                     | 502.95                                    | 501.00                  | 499.20 | 9.345                                                           | 9.297 | 9.225 | 9.106 | 85             |
| 86             | 516.00                | 446.869 1                        | 522.00                     | 508.95                                    | 507.00                  | 505.20 | 9.345                                                           | 9.297 | 9.225 | 9.105 | 86             |
| 87             | 522.00                | 452.065 3                        | 528.00                     | 514.95                                    | 513.00                  | 511.20 | 9.345                                                           | 9.296 | 9.224 | 9.104 | 87             |
| 88             | 528.00                | 457.261 4                        | 534.00                     | 520.95                                    | 519.00                  | 517.20 | 9.344                                                           | 9.296 | 9.224 | 9.103 | 88             |
| 89             | 534.00                | 462.457 6                        | 540.00                     | 526.95                                    | 525.00                  | 523.20 | 9.344                                                           | 9.296 | 9.223 | 9.102 | 89             |
| 90             | 540.00                | 467.653 7                        | 546.00                     | 532.95                                    | 531.00                  | 529.20 | 9.344                                                           | 9.295 | 9.222 | 9.101 | 90             |
| 91             | 546.00                | 472.849 9                        | 552.00                     | 538.94                                    | 537.00                  | 535.20 | 9.344                                                           | 9.295 | 9.222 | 9.100 | 91             |
| 92             | 552.00                | 478.046 0                        | 558.00                     | 544.94                                    | 543.00                  | 541.20 | 9.343                                                           | 9.294 | 9.221 | 9.099 | 92             |
| 93             | 558.00                | 483.242 2                        | 564.00                     | 550.94                                    | 549.00                  | 547.20 | 9.343                                                           | 9.294 | 9.221 | 9.098 | 93             |
| 94             | 564.00                | 488.438 3                        | 570.00                     | 556.94                                    | 555.00                  | 553.20 | 9.343                                                           | 9.294 | 9.220 | 9.097 | 94             |
| 95             | 570.00                | 493.634 5                        | 576.00                     | 562.94                                    | 561.00                  | 559.20 | 9.343                                                           | 9.293 | 9.219 | 9.096 | 95             |
| 96             | 576.00                | 498.830 6                        | 582.00                     | 568.94                                    | 567.00                  | 565.20 | 9.342                                                           | 9.293 | 9.219 | 9.095 | 96             |
| 97             | 582.00                | 504.026 8                        | 588.00                     | 574.94                                    | 573.00                  | 571.20 | 9.342                                                           | 9.293 | 9.218 | 9.094 | 97             |
| 98             | 588.00                | 509.222 9                        | 594.00                     | 580.93                                    | 579.00                  | 577.20 | 9.342                                                           | 9.292 | 9.218 | 9.093 | 98             |
| 99             | 594.00                | 514.419 1                        | 600.00                     | 586.93                                    | 585.00                  | 583.20 | 9.342                                                           | 9.292 | 9.217 | 9.092 | 99             |
| 100            | 600.00                | 519.615 2                        | 606.00                     | 592.93                                    | 591.00                  | 589.20 | 9.341                                                           | 9.291 | 9.216 | 9.091 | 100            |

表 27 30°外花键

模数  $m = 8 \text{ mm}$  作用齿厚最大值  $S_{\max} = 12.566 \text{ mm}$ 

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_{\text{外}}$ | 渐开线起<br>始圆直径<br>$D_{F_{\text{外}} \max}$ | 小径 $D_{\text{内}}$ |        | 实际齿厚最小值<br>$S_{\min} = S_{\text{外} \max} - (T + \lambda)$ |        |        |        | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------------------|-----------------------------------------|-------------------|--------|-----------------------------------------------------------|--------|--------|--------|-----------|
|           |                  |                   |                      |                                         | 平齿根               | 圆齿根    | 4h                                                        | 5h     | 6h     | 7h     |           |
| 10        | 80.00            | 69.282 0          | 88.00                | 72.34                                   | 68.00             | 65.60  | 12.504                                                    | 12.466 | 12.410 | 12.316 | 10        |
| 11        | 88.00            | 76.210 2          | 96.00                | 80.14                                   | 76.00             | 73.60  | 12.503                                                    | 12.465 | 12.408 | 12.314 | 11        |
| 12        | 96.00            | 83.138 4          | 104.00               | 87.99                                   | 84.00             | 81.60  | 12.503                                                    | 12.464 | 12.407 | 12.311 | 12        |
| 13        | 104.00           | 90.066 6          | 112.00               | 95.85                                   | 92.00             | 89.60  | 12.502                                                    | 12.463 | 12.405 | 12.308 | 13        |
| 14        | 112.00           | 96.994 8          | 120.00               | 103.74                                  | 100.00            | 97.60  | 12.501                                                    | 12.462 | 12.404 | 12.306 | 14        |
| 15        | 120.00           | 103.923 0         | 128.00               | 111.65                                  | 108.00            | 105.60 | 12.501                                                    | 12.461 | 12.402 | 12.304 | 15        |
| 16        | 128.00           | 110.851 3         | 136.00               | 119.56                                  | 116.00            | 113.60 | 12.500                                                    | 12.460 | 12.401 | 12.301 | 16        |
| 17        | 136.00           | 117.779 5         | 144.00               | 127.49                                  | 124.00            | 121.60 | 12.500                                                    | 12.460 | 12.399 | 12.299 | 17        |
| 18        | 144.00           | 124.707 7         | 152.00               | 135.42                                  | 132.00            | 129.60 | 12.499                                                    | 12.459 | 12.398 | 12.297 | 18        |
| 19        | 152.00           | 131.635 9         | 160.00               | 143.37                                  | 140.00            | 137.60 | 12.499                                                    | 12.458 | 12.397 | 12.295 | 19        |
| 20        | 160.00           | 138.564 1         | 168.00               | 151.32                                  | 148.00            | 145.60 | 12.498                                                    | 12.457 | 12.396 | 12.293 | 20        |
| 21        | 168.00           | 145.492 3         | 176.00               | 159.27                                  | 156.00            | 153.60 | 12.498                                                    | 12.456 | 12.394 | 12.291 | 21        |
| 22        | 176.00           | 152.420 5         | 184.00               | 167.23                                  | 164.00            | 161.60 | 12.497                                                    | 12.456 | 12.393 | 12.289 | 22        |
| 23        | 184.00           | 159.348 7         | 192.00               | 175.19                                  | 172.00            | 169.60 | 12.497                                                    | 12.455 | 12.392 | 12.288 | 23        |
| 24        | 192.00           | 166.276 9         | 200.00               | 183.16                                  | 180.00            | 177.60 | 12.496                                                    | 12.454 | 12.391 | 12.286 | 24        |
| 25        | 200.00           | 173.205 1         | 208.00               | 191.12                                  | 188.00            | 185.60 | 12.496                                                    | 12.453 | 12.390 | 12.284 | 25        |
| 26        | 208.00           | 180.133 3         | 216.00               | 199.10                                  | 196.00            | 193.60 | 12.495                                                    | 12.453 | 12.389 | 12.282 | 26        |
| 27        | 216.00           | 187.061 5         | 224.00               | 207.07                                  | 204.00            | 201.60 | 12.495                                                    | 12.452 | 12.388 | 12.281 | 27        |
| 28        | 224.00           | 193.989 7         | 232.00               | 215.04                                  | 212.00            | 209.60 | 12.495                                                    | 12.451 | 12.387 | 12.279 | 28        |
| 29        | 232.00           | 200.917 9         | 240.00               | 223.02                                  | 220.00            | 217.60 | 12.494                                                    | 12.451 | 12.386 | 12.277 | 29        |
| 30        | 240.00           | 207.846 1         | 248.00               | 231.00                                  | 228.00            | 225.60 | 12.494                                                    | 12.450 | 12.385 | 12.276 | 30        |
| 31        | 248.00           | 214.774 3         | 256.00               | 238.98                                  | 236.00            | 233.60 | 12.493                                                    | 12.450 | 12.384 | 12.274 | 31        |
| 32        | 256.00           | 221.702 5         | 264.00               | 246.96                                  | 244.00            | 241.60 | 12.493                                                    | 12.449 | 12.383 | 12.273 | 32        |
| 33        | 264.00           | 228.630 7         | 272.00               | 254.94                                  | 252.00            | 249.60 | 12.493                                                    | 12.448 | 12.382 | 12.271 | 33        |
| 34        | 272.00           | 235.558 9         | 280.00               | 262.93                                  | 260.00            | 257.60 | 12.492                                                    | 12.448 | 12.381 | 12.270 | 34        |
| 35        | 280.00           | 242.487 1         | 288.00               | 270.91                                  | 268.00            | 265.60 | 12.492                                                    | 12.447 | 12.380 | 12.268 | 35        |
| 36        | 288.00           | 249.415 3         | 296.00               | 278.90                                  | 276.00            | 273.60 | 12.492                                                    | 12.447 | 12.379 | 12.267 | 36        |
| 37        | 296.00           | 256.343 5         | 304.00               | 286.88                                  | 284.00            | 281.60 | 12.491                                                    | 12.446 | 12.378 | 12.266 | 37        |
| 38        | 304.00           | 263.271 7         | 312.00               | 294.87                                  | 292.00            | 289.60 | 12.491                                                    | 12.445 | 12.377 | 12.264 | 38        |
| 39        | 312.00           | 270.199 9         | 320.00               | 302.86                                  | 300.00            | 297.60 | 12.490                                                    | 12.445 | 12.377 | 12.263 | 39        |
| 40        | 320.00           | 277.128 1         | 328.00               | 310.85                                  | 308.00            | 305.60 | 12.490                                                    | 12.444 | 12.376 | 12.261 | 40        |
| 41        | 328.00           | 284.056 3         | 336.00               | 318.83                                  | 316.00            | 313.60 | 12.490                                                    | 12.444 | 12.375 | 12.260 | 41        |
| 42        | 336.00           | 290.984 5         | 344.00               | 326.82                                  | 324.00            | 321.60 | 12.489                                                    | 12.443 | 12.374 | 12.259 | 42        |
| 43        | 344.00           | 297.912 7         | 352.00               | 334.81                                  | 332.00            | 329.60 | 12.489                                                    | 12.443 | 12.373 | 12.257 | 43        |
| 44        | 352.00           | 304.840 9         | 360.00               | 342.80                                  | 340.00            | 337.60 | 12.489                                                    | 12.442 | 12.373 | 12.256 | 44        |
| 45        | 360.00           | 311.769 1         | 368.00               | 350.79                                  | 348.00            | 345.60 | 12.489                                                    | 12.442 | 12.372 | 12.255 | 45        |
| 46        | 368.00           | 318.697 3         | 376.00               | 358.79                                  | 356.00            | 353.60 | 12.488                                                    | 12.441 | 12.371 | 12.254 | 46        |
| 47        | 376.00           | 325.625 5         | 384.00               | 366.78                                  | 364.00            | 361.60 | 12.488                                                    | 12.441 | 12.370 | 12.252 | 47        |
| 48        | 384.00           | 332.553 8         | 392.00               | 374.77                                  | 372.00            | 369.60 | 12.488                                                    | 12.440 | 12.369 | 12.251 | 48        |
| 49        | 392.00           | 339.482 0         | 400.00               | 382.76                                  | 380.00            | 377.60 | 12.487                                                    | 12.440 | 12.368 | 12.250 | 49        |
| 50        | 400.00           | 346.410 2         | 408.00               | 390.75                                  | 388.00            | 385.60 | 12.487                                                    | 12.439 | 12.368 | 12.249 | 50        |
| 51        | 408.00           | 353.338 4         | 416.00               | 398.75                                  | 396.00            | 393.60 | 12.487                                                    | 12.439 | 12.367 | 12.248 | 51        |
| 52        | 416.00           | 360.266 6         | 424.00               | 406.74                                  | 404.00            | 401.60 | 12.486                                                    | 12.438 | 12.366 | 12.246 | 52        |
| 53        | 424.00           | 367.194 8         | 432.00               | 414.73                                  | 412.00            | 409.60 | 12.486                                                    | 12.438 | 12.366 | 12.245 | 53        |
| 54        | 432.00           | 374.123 0         | 440.00               | 422.73                                  | 420.00            | 417.60 | 12.486                                                    | 12.437 | 12.365 | 12.244 | 54        |
| 55        | 440.00           | 381.051 2         | 448.00               | 430.72                                  | 428.00            | 425.60 | 12.485                                                    | 12.437 | 12.364 | 12.243 | 55        |

表 27(续)

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_e$ | 渐开线起<br>始圆直径<br>$D_{Fe\max}$ | 小径 $D_{fi}$ |        | 实际齿厚最小值<br>$S_{\min} = S_{v\max} - (T + \lambda)$ |        |        |        | 齿数<br>$z$ |
|-----------|------------------|-------------------|-------------|------------------------------|-------------|--------|---------------------------------------------------|--------|--------|--------|-----------|
|           |                  |                   |             |                              | 平齿根         | 圆齿根    | 4h                                                | 5h     | 6h     | 7h     |           |
| 56        | 448.00           | 387.979 4         | 456.00      | 438.72                       | 436.00      | 433.60 | 12.485                                            | 12.437 | 12.363 | 12.242 | 56        |
| 57        | 456.00           | 394.907 6         | 464.00      | 446.71                       | 444.00      | 441.60 | 12.485                                            | 12.436 | 12.363 | 12.241 | 57        |
| 58        | 464.00           | 401.835 8         | 472.00      | 454.70                       | 452.00      | 449.60 | 12.485                                            | 12.436 | 12.362 | 12.239 | 58        |
| 59        | 472.00           | 408.764 0         | 480.00      | 462.70                       | 460.00      | 457.60 | 12.484                                            | 12.435 | 12.361 | 12.238 | 59        |
| 60        | 480.00           | 415.692 2         | 488.00      | 470.69                       | 468.00      | 465.60 | 12.484                                            | 12.435 | 12.361 | 12.237 | 60        |
| 61        | 488.00           | 422.620 4         | 496.00      | 478.69                       | 476.00      | 473.60 | 12.484                                            | 12.434 | 12.360 | 12.236 | 61        |
| 62        | 496.00           | 429.548 6         | 504.00      | 486.68                       | 484.00      | 481.60 | 12.484                                            | 12.434 | 12.359 | 12.235 | 62        |
| 63        | 504.00           | 436.476 8         | 512.00      | 494.68                       | 492.00      | 489.60 | 12.483                                            | 12.433 | 12.358 | 12.232 | 63        |
| 64        | 512.00           | 443.405 0         | 520.00      | 502.68                       | 500.00      | 497.60 | 12.483                                            | 12.432 | 12.357 | 12.231 | 64        |
| 65        | 520.00           | 450.333 2         | 528.00      | 510.67                       | 508.00      | 505.60 | 12.482                                            | 12.432 | 12.356 | 12.230 | 65        |
| 66        | 528.00           | 457.261 4         | 536.00      | 518.67                       | 516.00      | 513.60 | 12.482                                            | 12.431 | 12.355 | 12.229 | 66        |
| 67        | 536.00           | 464.189 6         | 544.00      | 526.66                       | 524.00      | 521.60 | 12.482                                            | 12.431 | 12.354 | 12.227 | 67        |
| 68        | 544.00           | 471.117 8         | 552.00      | 534.66                       | 532.00      | 529.60 | 12.481                                            | 12.430 | 12.354 | 12.226 | 68        |
| 69        | 552.00           | 478.046 0         | 560.00      | 542.65                       | 540.00      | 537.60 | 12.481                                            | 12.430 | 12.353 | 12.225 | 69        |
| 70        | 560.00           | 484.974 2         | 568.00      | 550.65                       | 548.00      | 545.60 | 12.481                                            | 12.429 | 12.352 | 12.224 | 70        |
| 71        | 568.00           | 491.902 4         | 576.00      | 558.65                       | 556.00      | 553.60 | 12.480                                            | 12.429 | 12.351 | 12.222 | 71        |
| 72        | 576.00           | 498.830 6         | 584.00      | 566.64                       | 564.00      | 561.60 | 12.480                                            | 12.428 | 12.350 | 12.221 | 72        |
| 73        | 584.00           | 505.758 8         | 592.00      | 574.64                       | 572.00      | 569.60 | 12.480                                            | 12.428 | 12.350 | 12.220 | 73        |
| 74        | 592.00           | 512.687 0         | 600.00      | 582.64                       | 580.00      | 577.60 | 12.479                                            | 12.427 | 12.349 | 12.218 | 74        |
| 75        | 600.00           | 519.615 2         | 608.00      | 590.63                       | 588.00      | 585.60 | 12.479                                            | 12.427 | 12.348 | 12.217 | 75        |
| 76        | 608.00           | 526.543 4         | 616.00      | 598.63                       | 596.00      | 593.60 | 12.479                                            | 12.426 | 12.347 | 12.216 | 76        |
| 77        | 616.00           | 533.471 6         | 624.00      | 606.63                       | 604.00      | 601.60 | 12.478                                            | 12.426 | 12.346 | 12.215 | 77        |
| 78        | 624.00           | 540.399 8         | 632.00      | 614.62                       | 612.00      | 609.60 | 12.478                                            | 12.425 | 12.346 | 12.213 | 78        |
| 79        | 632.00           | 547.328 0         | 640.00      | 622.62                       | 620.00      | 617.60 | 12.478                                            | 12.425 | 12.345 | 12.212 | 79        |
| 80        | 640.00           | 554.256 3         | 648.00      | 630.62                       | 628.00      | 625.60 | 12.477                                            | 12.424 | 12.344 | 12.211 | 80        |
| 81        | 648.00           | 561.184 5         | 656.00      | 638.62                       | 636.00      | 633.60 | 12.477                                            | 12.424 | 12.343 | 12.209 | 81        |
| 82        | 656.00           | 568.112 7         | 664.00      | 646.61                       | 644.00      | 641.60 | 12.477                                            | 12.423 | 12.342 | 12.208 | 82        |
| 83        | 664.00           | 575.040 9         | 672.00      | 654.61                       | 652.00      | 649.60 | 12.476                                            | 12.423 | 12.342 | 12.207 | 83        |
| 84        | 672.00           | 581.969 1         | 680.00      | 662.61                       | 660.00      | 657.60 | 12.476                                            | 12.422 | 12.341 | 12.206 | 84        |
| 85        | 680.00           | 588.897 3         | 688.00      | 670.61                       | 668.00      | 665.60 | 12.476                                            | 12.422 | 12.340 | 12.204 | 85        |
| 86        | 688.00           | 595.825 5         | 696.00      | 678.60                       | 676.00      | 673.60 | 12.476                                            | 12.421 | 12.339 | 12.203 | 86        |
| 87        | 696.00           | 602.753 7         | 704.00      | 686.60                       | 684.00      | 681.60 | 12.475                                            | 12.421 | 12.338 | 12.202 | 87        |
| 88        | 704.00           | 609.681 9         | 712.00      | 694.60                       | 692.00      | 689.60 | 12.475                                            | 12.420 | 12.338 | 12.200 | 88        |
| 89        | 712.00           | 616.610 1         | 720.00      | 702.60                       | 700.00      | 697.60 | 12.475                                            | 12.419 | 12.337 | 12.199 | 89        |
| 90        | 720.00           | 623.538 3         | 728.00      | 710.59                       | 708.00      | 705.60 | 12.474                                            | 12.419 | 12.336 | 12.198 | 90        |
| 91        | 728.00           | 630.466 5         | 736.00      | 718.59                       | 716.00      | 713.60 | 12.474                                            | 12.418 | 12.335 | 12.197 | 91        |
| 92        | 736.00           | 637.394 7         | 744.00      | 726.59                       | 724.00      | 721.60 | 12.474                                            | 12.418 | 12.334 | 12.196 | 92        |
| 93        | 744.00           | 644.322 9         | 752.00      | 734.59                       | 732.00      | 729.60 | 12.473                                            | 12.417 | 12.334 | 12.194 | 93        |
| 94        | 752.00           | 651.251 1         | 760.00      | 742.59                       | 740.00      | 737.60 | 12.473                                            | 12.417 | 12.333 | 12.193 | 94        |
| 95        | 760.00           | 658.179 3         | 768.00      | 750.58                       | 748.00      | 745.60 | 12.473                                            | 12.416 | 12.332 | 12.192 | 95        |
| 96        | 768.00           | 665.107 5         | 776.00      | 758.58                       | 756.00      | 753.60 | 12.472                                            | 12.416 | 12.331 | 12.190 | 96        |
| 97        | 776.00           | 672.035 7         | 784.00      | 766.58                       | 764.00      | 761.60 | 12.472                                            | 12.415 | 12.330 | 12.189 | 97        |
| 98        | 784.00           | 678.963 9         | 792.00      | 774.58                       | 772.00      | 769.60 | 12.472                                            | 12.415 | 12.330 | 12.188 | 98        |
| 99        | 792.00           | 685.892 1         | 800.00      | 782.58                       | 780.00      | 777.60 | 12.471                                            | 12.414 | 12.329 | 12.186 | 99        |
| 100       | 800.00           | 692.820 3         | 808.00      | 790.57                       | 788.00      | 785.60 | 12.471                                            | 12.414 | 12.328 | 12.185 | 100       |

表 28 30°外花键  
模数  $m=10\text{ mm}$  作用齿厚最大值  $S_{\max}=15.708\text{ mm}$  单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_{\text{外}}$ | 渐开线起<br>始圆直径<br>$D_{\text{外 min}}$ | 小径 $D_i$ |        | 实际齿厚最小值<br>$S_{\text{min}}=S_{\text{max}}-(T+\lambda)$ |        |        |        | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------------------|------------------------------------|----------|--------|--------------------------------------------------------|--------|--------|--------|-----------|
|           |                  |                   |                      |                                    | 平齿根      | 圆齿根    | 4h                                                     | 5h     | 6h     | 7h     |           |
| 10        | 100.00           | 86.602 5          | 110.00               | 90.42                              | 85.00    | 82.00  | 15.640                                                 | 15.600 | 15.539 | 15.438 | 10        |
| 11        | 110.00           | 95.262 8          | 120.00               | 100.48                             | 95.00    | 92.00  | 15.640                                                 | 15.599 | 15.537 | 15.435 | 11        |
| 12        | 120.00           | 103.923 0         | 130.00               | 109.98                             | 105.00   | 102.00 | 15.639                                                 | 15.598 | 15.535 | 15.432 | 12        |
| 13        | 130.00           | 112.583 3         | 140.00               | 119.82                             | 115.00   | 112.00 | 15.638                                                 | 15.596 | 15.534 | 15.429 | 13        |
| 14        | 140.00           | 121.243 6         | 150.00               | 129.68                             | 125.00   | 122.00 | 15.638                                                 | 15.595 | 15.532 | 15.426 | 14        |
| 15        | 150.00           | 129.903 8         | 160.00               | 139.56                             | 135.00   | 132.00 | 15.637                                                 | 15.594 | 15.530 | 15.424 | 15        |
| 16        | 160.00           | 138.564 1         | 170.00               | 149.45                             | 145.00   | 142.00 | 15.636                                                 | 15.593 | 15.529 | 15.421 | 16        |
| 17        | 170.00           | 147.224 3         | 180.00               | 159.36                             | 155.00   | 152.00 | 15.636                                                 | 15.592 | 15.527 | 15.419 | 17        |
| 18        | 180.00           | 155.884 6         | 190.00               | 169.28                             | 165.00   | 162.00 | 15.635                                                 | 15.591 | 15.526 | 15.417 | 18        |
| 19        | 190.00           | 164.544 8         | 200.00               | 179.21                             | 175.00   | 172.00 | 15.635                                                 | 15.591 | 15.524 | 15.414 | 19        |
| 20        | 200.00           | 173.205 1         | 210.00               | 189.15                             | 185.00   | 182.00 | 15.634                                                 | 15.590 | 15.523 | 15.412 | 20        |
| 21        | 210.00           | 181.865 3         | 220.00               | 199.09                             | 195.00   | 192.00 | 15.633                                                 | 15.589 | 15.522 | 15.410 | 21        |
| 22        | 220.00           | 190.525 6         | 230.00               | 209.04                             | 205.00   | 202.00 | 15.633                                                 | 15.588 | 15.521 | 15.408 | 22        |
| 23        | 230.00           | 199.185 8         | 240.00               | 218.99                             | 215.00   | 212.00 | 15.632                                                 | 15.587 | 15.519 | 15.406 | 23        |
| 24        | 240.00           | 207.846 1         | 250.00               | 228.95                             | 225.00   | 222.00 | 15.632                                                 | 15.586 | 15.518 | 15.404 | 24        |
| 25        | 250.00           | 216.506 3         | 260.00               | 238.91                             | 235.00   | 232.00 | 15.632                                                 | 15.586 | 15.517 | 15.402 | 25        |
| 26        | 260.00           | 225.166 6         | 270.00               | 248.87                             | 245.00   | 242.00 | 15.631                                                 | 15.585 | 15.516 | 15.400 | 26        |
| 27        | 270.00           | 233.826 9         | 280.00               | 258.84                             | 255.00   | 252.00 | 15.631                                                 | 15.584 | 15.514 | 15.398 | 27        |
| 28        | 280.00           | 242.487 1         | 290.00               | 268.80                             | 265.00   | 262.00 | 15.630                                                 | 15.583 | 15.513 | 15.397 | 28        |
| 29        | 290.00           | 251.147 4         | 300.00               | 278.78                             | 275.00   | 272.00 | 15.630                                                 | 15.583 | 15.512 | 15.395 | 29        |
| 30        | 300.00           | 259.807 6         | 310.00               | 288.75                             | 285.00   | 282.00 | 15.629                                                 | 15.582 | 15.511 | 15.393 | 30        |
| 31        | 310.00           | 268.467 9         | 320.00               | 298.72                             | 295.00   | 292.00 | 15.629                                                 | 15.581 | 15.510 | 15.391 | 31        |
| 32        | 320.00           | 277.128 1         | 330.00               | 308.70                             | 305.00   | 302.00 | 15.628                                                 | 15.581 | 15.509 | 15.390 | 32        |
| 33        | 330.00           | 285.788 4         | 340.00               | 318.68                             | 315.00   | 312.00 | 15.628                                                 | 15.580 | 15.508 | 15.388 | 33        |
| 34        | 340.00           | 294.448 6         | 350.00               | 328.66                             | 325.00   | 322.00 | 15.628                                                 | 15.579 | 15.507 | 15.386 | 34        |
| 35        | 350.00           | 303.108 9         | 360.00               | 338.64                             | 335.00   | 332.00 | 15.627                                                 | 15.579 | 15.506 | 15.385 | 35        |
| 36        | 360.00           | 311.769 1         | 370.00               | 348.62                             | 345.00   | 342.00 | 15.627                                                 | 15.578 | 15.505 | 15.383 | 36        |
| 37        | 370.00           | 320.429 4         | 380.00               | 358.60                             | 355.00   | 352.00 | 15.626                                                 | 15.577 | 15.504 | 15.382 | 37        |
| 38        | 380.00           | 329.089 6         | 390.00               | 368.59                             | 365.00   | 362.00 | 15.626                                                 | 15.577 | 15.503 | 15.380 | 38        |
| 39        | 390.00           | 337.749 9         | 400.00               | 378.57                             | 375.00   | 372.00 | 15.626                                                 | 15.576 | 15.502 | 15.378 | 39        |
| 40        | 400.00           | 346.410 2         | 410.00               | 388.56                             | 385.00   | 382.00 | 15.625                                                 | 15.576 | 15.501 | 15.377 | 40        |
| 41        | 410.00           | 355.070 4         | 420.00               | 398.54                             | 395.00   | 392.00 | 15.625                                                 | 15.575 | 15.500 | 15.375 | 41        |
| 42        | 420.00           | 363.730 7         | 430.00               | 408.53                             | 405.00   | 402.00 | 15.624                                                 | 15.574 | 15.499 | 15.374 | 42        |
| 43        | 430.00           | 372.390 9         | 440.00               | 418.52                             | 415.00   | 412.00 | 15.624                                                 | 15.574 | 15.498 | 15.373 | 43        |
| 44        | 440.00           | 381.051 2         | 450.00               | 428.50                             | 425.00   | 422.00 | 15.624                                                 | 15.573 | 15.497 | 15.371 | 44        |
| 45        | 450.00           | 389.711 4         | 460.00               | 438.49                             | 435.00   | 432.00 | 15.623                                                 | 15.573 | 15.497 | 15.370 | 45        |
| 46        | 460.00           | 398.371 7         | 470.00               | 448.48                             | 445.00   | 442.00 | 15.623                                                 | 15.572 | 15.496 | 15.368 | 46        |
| 47        | 470.00           | 407.031 9         | 480.00               | 458.47                             | 455.00   | 452.00 | 15.623                                                 | 15.572 | 15.495 | 15.367 | 47        |
| 48        | 480.00           | 415.692 2         | 490.00               | 468.46                             | 465.00   | 462.00 | 15.622                                                 | 15.571 | 15.494 | 15.365 | 48        |
| 49        | 490.00           | 424.352 4         | 500.00               | 478.45                             | 475.00   | 472.00 | 15.622                                                 | 15.570 | 15.493 | 15.364 | 49        |
| 50        | 500.00           | 433.012 7         | 510.00               | 488.44                             | 485.00   | 482.00 | 15.622                                                 | 15.570 | 15.492 | 15.363 | 50        |
| 51        | 510.00           | 441.672 9         | 520.00               | 498.43                             | 495.00   | 492.00 | 15.621                                                 | 15.569 | 15.490 | 15.360 | 51        |
| 52        | 520.00           | 450.333 2         | 530.00               | 508.43                             | 505.00   | 502.00 | 15.620                                                 | 15.568 | 15.489 | 15.358 | 52        |
| 53        | 530.00           | 458.993 5         | 540.00               | 518.42                             | 515.00   | 512.00 | 15.620                                                 | 15.567 | 15.488 | 15.356 | 53        |
| 54        | 540.00           | 467.653 7         | 550.00               | 528.41                             | 525.00   | 522.00 | 15.620                                                 | 15.567 | 15.487 | 15.355 | 54        |
| 55        | 550.00           | 476.314 0         | 560.00               | 538.40                             | 535.00   | 532.00 | 15.619                                                 | 15.566 | 15.486 | 15.353 | 55        |

表 28 (续)

单位为毫米

| 齿数<br>$z$ | 分度圆<br>直径<br>$D$ | 基圆<br>直径<br>$D_b$ | 大径<br>$D_{ee}$ | 渐开线起<br>始圆直径<br>$D_{Fe\ max}$ | 小径 $D_{ie}$ |        | 实际齿厚最小值<br>$S_{min} = S_{max} - (T + \lambda)$ |        |        |        | 齿数<br>$z$ |
|-----------|------------------|-------------------|----------------|-------------------------------|-------------|--------|------------------------------------------------|--------|--------|--------|-----------|
|           |                  |                   |                |                               | 平齿根         | 圆齿根    | 4h                                             | 5h     | 6h     | 7h     |           |
| 56        | 560.00           | 484.974 2         | 570.00         | 548.39                        | 545.00      | 542.00 | 15.619                                         | 15.565 | 15.485 | 15.352 | 56        |
| 57        | 570.00           | 493.634 5         | 580.00         | 558.39                        | 555.00      | 552.00 | 15.618                                         | 15.565 | 15.484 | 15.350 | 57        |
| 58        | 580.00           | 502.294 7         | 590.00         | 568.38                        | 565.00      | 562.00 | 15.618                                         | 15.564 | 15.483 | 15.348 | 58        |
| 59        | 590.00           | 510.955 0         | 600.00         | 578.37                        | 575.00      | 572.00 | 15.618                                         | 15.564 | 15.482 | 15.347 | 59        |
| 60        | 600.00           | 519.615 2         | 610.00         | 588.37                        | 585.00      | 582.00 | 15.617                                         | 15.563 | 15.481 | 15.345 | 60        |
| 61        | 610.00           | 528.275 5         | 620.00         | 598.36                        | 595.00      | 592.00 | 15.617                                         | 15.562 | 15.480 | 15.344 | 61        |
| 62        | 620.00           | 536.935 7         | 630.00         | 608.36                        | 605.00      | 602.00 | 15.616                                         | 15.562 | 15.479 | 15.342 | 62        |
| 63        | 630.00           | 545.596 0         | 640.00         | 618.35                        | 615.00      | 612.00 | 15.616                                         | 15.561 | 15.478 | 15.340 | 63        |
| 64        | 640.00           | 554.256 3         | 650.00         | 628.34                        | 625.00      | 622.00 | 15.616                                         | 15.560 | 15.477 | 15.339 | 64        |
| 65        | 650.00           | 562.916 5         | 660.00         | 638.34                        | 635.00      | 632.00 | 15.615                                         | 15.560 | 15.476 | 15.337 | 65        |
| 66        | 660.00           | 571.576 8         | 670.00         | 648.33                        | 645.00      | 642.00 | 15.615                                         | 15.559 | 15.475 | 15.336 | 66        |
| 67        | 670.00           | 580.237 0         | 680.00         | 658.33                        | 655.00      | 652.00 | 15.614                                         | 15.558 | 15.474 | 15.334 | 67        |
| 68        | 680.00           | 588.897 3         | 690.00         | 668.32                        | 665.00      | 662.00 | 15.614                                         | 15.558 | 15.473 | 15.332 | 68        |
| 69        | 690.00           | 597.557 5         | 700.00         | 678.32                        | 675.00      | 672.00 | 15.614                                         | 15.557 | 15.472 | 15.331 | 69        |
| 70        | 700.00           | 606.217 8         | 710.00         | 688.31                        | 685.00      | 682.00 | 15.613                                         | 15.556 | 15.471 | 15.329 | 70        |
| 71        | 710.00           | 614.878 0         | 720.00         | 698.31                        | 695.00      | 692.00 | 15.613                                         | 15.556 | 15.470 | 15.328 | 71        |
| 72        | 720.00           | 623.538 3         | 730.00         | 708.31                        | 705.00      | 702.00 | 15.612                                         | 15.555 | 15.469 | 15.326 | 72        |
| 73        | 730.00           | 632.198 5         | 740.00         | 718.30                        | 715.00      | 712.00 | 15.612                                         | 15.555 | 15.468 | 15.324 | 73        |
| 74        | 740.00           | 640.858 8         | 750.00         | 728.30                        | 725.00      | 722.00 | 15.612                                         | 15.554 | 15.467 | 15.323 | 74        |
| 75        | 750.00           | 649.519 0         | 760.00         | 738.29                        | 735.00      | 732.00 | 15.611                                         | 15.553 | 15.466 | 15.321 | 75        |
| 76        | 760.00           | 658.179 3         | 770.00         | 748.29                        | 745.00      | 742.00 | 15.611                                         | 15.553 | 15.465 | 15.320 | 76        |
| 77        | 770.00           | 666.839 6         | 780.00         | 758.28                        | 755.00      | 752.00 | 15.610                                         | 15.552 | 15.464 | 15.318 | 77        |
| 78        | 780.00           | 675.499 8         | 790.00         | 768.28                        | 765.00      | 762.00 | 15.610                                         | 15.551 | 15.463 | 15.316 | 78        |
| 79        | 790.00           | 684.160 1         | 800.00         | 778.28                        | 775.00      | 772.00 | 15.610                                         | 15.551 | 15.462 | 15.315 | 79        |
| 80        | 800.00           | 692.820 3         | 810.00         | 788.27                        | 785.00      | 782.00 | 15.609                                         | 15.550 | 15.461 | 15.313 | 80        |
| 81        | 810.00           | 701.480 6         | 820.00         | 798.27                        | 795.00      | 792.00 | 15.609                                         | 15.549 | 15.460 | 15.312 | 81        |
| 82        | 820.00           | 710.140 8         | 830.00         | 808.27                        | 805.00      | 802.00 | 15.608                                         | 15.549 | 15.459 | 15.310 | 82        |
| 83        | 830.00           | 718.801 1         | 840.00         | 818.26                        | 815.00      | 812.00 | 15.608                                         | 15.548 | 15.458 | 15.308 | 83        |
| 84        | 840.00           | 727.461 3         | 850.00         | 828.26                        | 825.00      | 822.00 | 15.608                                         | 15.548 | 15.457 | 15.307 | 84        |
| 85        | 850.00           | 736.121 6         | 860.00         | 838.25                        | 835.00      | 832.00 | 15.607                                         | 15.547 | 15.456 | 15.305 | 85        |
| 86        | 860.00           | 744.781 8         | 870.00         | 848.25                        | 845.00      | 842.00 | 15.607                                         | 15.546 | 15.455 | 15.304 | 86        |
| 87        | 870.00           | 753.442 1         | 880.00         | 858.25                        | 855.00      | 852.00 | 15.606                                         | 15.546 | 15.454 | 15.302 | 87        |
| 88        | 880.00           | 762.102 3         | 890.00         | 868.25                        | 865.00      | 862.00 | 15.606                                         | 15.545 | 15.453 | 15.300 | 88        |
| 89        | 890.00           | 770.762 6         | 900.00         | 878.25                        | 875.00      | 872.00 | 15.606                                         | 15.544 | 15.452 | 15.299 | 89        |
| 90        | 900.00           | 779.422 9         | 910.00         | 888.24                        | 885.00      | 882.00 | 15.605                                         | 15.544 | 15.451 | 15.297 | 90        |
| 91        | 910.00           | 788.083 1         | 920.00         | 898.24                        | 895.00      | 892.00 | 15.605                                         | 15.543 | 15.450 | 15.296 | 91        |
| 92        | 920.00           | 796.743 4         | 930.00         | 908.24                        | 905.00      | 902.00 | 15.604                                         | 15.542 | 15.449 | 15.294 | 92        |
| 93        | 930.00           | 805.403 6         | 940.00         | 918.24                        | 915.00      | 912.00 | 15.604                                         | 15.542 | 15.448 | 15.292 | 93        |
| 94        | 940.00           | 814.063 9         | 950.00         | 928.23                        | 925.00      | 922.00 | 15.604                                         | 15.541 | 15.447 | 15.291 | 94        |
| 95        | 950.00           | 822.724 1         | 960.00         | 938.23                        | 935.00      | 932.00 | 15.603                                         | 15.540 | 15.446 | 15.289 | 95        |
| 96        | 960.00           | 831.384 4         | 970.00         | 948.23                        | 945.00      | 942.00 | 15.603                                         | 15.540 | 15.445 | 15.288 | 96        |
| 97        | 970.00           | 840.044 6         | 980.00         | 958.23                        | 955.00      | 952.00 | 15.602                                         | 15.539 | 15.444 | 15.286 | 97        |
| 98        | 980.00           | 848.704 9         | 990.00         | 968.22                        | 965.00      | 962.00 | 15.602                                         | 15.539 | 15.443 | 15.284 | 98        |
| 99        | 990.00           | 857.365 1         | 1 000.00       | 978.22                        | 975.00      | 972.00 | 15.602                                         | 15.538 | 15.442 | 15.283 | 99        |
| 100       | 1 000.00         | 866.025 4         | 1 010.00       | 988.22                        | 985.00      | 982.00 | 15.601                                         | 15.537 | 15.441 | 15.281 | 100       |