

# Spur Gears

Pressure Angle 20°, Module 0.5

Feature: Spur gears with hardened teeth which provides excellent strength, abrasion resistance and high precision. For Rack Gears – Ground P.1505.

| Spur Gears – Pressure Angle 20°, Module 0.5 |       | Type                | Material                        | Surface Treatment          | Accessories                              |                                 |
|---|-------|---------------------|---------------------------------|----------------------------|--|---------------------------------|
| GEAHBN                                      | GEABN | Straight Bore + Tap | 1045 Carbon Steel or Equivalent | Black Oxide                | Set Screw (4137 Alloy Steel Black Oxide) |                                 |
| GEAHBB                                      | GEABB |                     |                                 |                            |  |                                 |
| GEAHBG                                      | GEABG | Straight Bore       | Free-Cutting Brass Bar          | Electroless Nickel Plating |  |                                 |
| GEAHB                                       | GEAB  |                     |                                 |                            |  |                                 |
| GEAHBS                                      | GEABS |                     |                                 |                            |  | Set Screw (304 Stainless Steel) |

  

**K Shape**

**A Shape**

**B Shape**

⊗ Set Screw is not included in Non-tapped Type products.  
Accuracy: Previous JIS B 1702 Class 4 (New JIS B 1702-1 Class 8 Equivalent)

| Part Number   |        | Number of Teeth | B    | Gears Shape | Shaft Bore Dia. P <sub>H7</sub> 1 mm Inc. | d Reference Dia. | D Tip Dia. | G Root Dia. | H | L  | ℓ <sub>1</sub> | ℓ <sub>2</sub> | M (Coarse) | *Allowable Transmission Force (N-m) Bending Strength |                     |                        |
|---|--------|-----------------|------|-------------|---|------------------|------------|-------------|---|----|----------------|----------------|------------|--|---------------------|------------------------|
| Type  | Module |                 |      |             |   |                  |            |             |   |    |                |                |            | 1045 Carbon Steel or Equivalent                      | 304 Stainless Steel | Free-Cutting Brass Bar |
| (Selectable Gear Shapes)<br>Straight Bore (Shape A / Shape B / Shape K)<br>GEAHBN<br>GEAHBB<br>GEAHBG<br>GEAHB<br>GEAHBS<br><br>Straight Bore + Tap (Shape B / Shape K)<br>GEABN<br>GEABB<br>GEABG<br>GEAB<br>GEABS | 0.5    | 15              | 8    | K           | 3-5                                       | 7.5              | 8.5        | 6.25        | 9 | 18 | 10             | 3              | M3         | 0.72   | 0.41                | 0.16                   |
|   |        | 16              |      |             |   | 8                | 9          | 6.75        |   |    |                |                |            | 0.79   | 0.45                | 0.17                   |
|   |        | 17              |      |             |   | 8.5              | 9.5        | 7.25        |   |    |                |                |            | 0.87   | 0.50                | —                      |
|   |        | 18              |      |             |   | 9                | 10         | 7.75        |   |    |                |                |            | 0.95   | 0.54                | 0.21                   |
|   |        | 19              |      |             |   | 9.5              | 10.5       | 8.25        |   |    |                |                |            | 1.03   | 0.59                | —                      |
|   |        | 20              |      |             |   | 10               | 11         | 8.75        |   |    |                |                |            | 1.11   | 0.64                | 0.24                   |
|   |        | 21              |      |             |   | 10               | 11         | 8.75        |   |    |                |                |            | 0.42   | 0.24                | 0.09                   |
|   |        | 22              |      |             |   | 10.5             | 11.5       | 9.25        |   |    |                |                |            | 0.45   | 0.26                | —                      |
|   |        | 23              |      |             |   | 11               | 12         | 9.75        |   |    |                |                |            | 0.48   | 0.27                | —                      |
|   |        | 24              |      |             |   | 11.5             | 12.5       | 10.25       |   |    |                |                |            | 0.51   | 0.29                | —                      |
|   |        | 25              | 12   | 13          | 10.75                                     | 0.54             | 0.31       | 0.12        |   |    |                |                |            |  |                     |                        |
|   |        | 26              | 12.5 | 13.5        | 11.25                                     | 0.57             | 0.33       | 0.13        |   |    |                |                |            |  |                     |                        |
|   |        | 27              | 13   | 14          | 11.75                                     | 0.61             | 0.35       | 0.13        |   |    |                |                |            |  |                     |                        |
|   |        | 28              | 13.5 | 14.5        | 12.25                                     | 0.64             | 0.36       | —           |   |    |                |                |            |  |                     |                        |
|   |        | 29              | 14   | 15          | 12.75                                     | 0.67             | 0.38       | 0.15        |   |    |                |                |            |  |                     |                        |
|   |        | 30              | 14.5 | 15.5        | 13.25                                     | 0.70             | 0.40       | —           |   |    |                |                |            |  |                     |                        |
|   |        | 31              | 15   | 16          | 13.75                                     | 0.74             | 0.42       | 0.16        |   |    |                |                |            |  |                     |                        |
|   |        | 32              | 15.5 | 16.5        | 14.25                                     | 0.77             | 0.44       | 0.17        |   |    |                |                |            |  |                     |                        |
|   |        | 33              | 16   | 17          | 14.75                                     | 0.80             | 0.46       | 0.17        |   |    |                |                |            |  |                     |                        |
|   |        | 34              | 16.5 | 17.5        | 15.25                                     | 0.84             | 0.48       | —           |   |    |                |                |            |  |                     |                        |
|   |        | 35              | 17   | 18          | 15.75                                     | 0.87             | 0.50       | —           |   |    |                |                |            |  |                     |                        |
|   |        | 36              | 17.5 | 18.5        | 16.25                                     | 0.90             | 0.51       | 0.20        |   |    |                |                |            |  |                     |                        |
|   |        | 37              | 18   | 19          | 16.75                                     | 0.94             | 0.53       | 0.20        |   |    |                |                |            |  |                     |                        |
|   |        | 38              | 18.5 | 19.5        | 17.25                                     | 0.67             | 0.38       | —           |   |    |                |                |            |  |                     |                        |
|   |        | 39              | 19   | 20          | 17.75                                     | 0.69             | 0.39       | —           |   |    |                |                |            |  |                     |                        |
|   |        | 40              | 19.5 | 20.5        | 18.25                                     | 0.71             | 0.41       | 0.16        |   |    |                |                |            |  |                     |                        |
|   |        | 41              | 20   | 21          | 18.75                                     | 0.76             | 0.43       | 0.17        |   |    |                |                |            |  |                     |                        |
|   |        | 42              | 20.5 | 21.5        | 19.25                                     | 0.80             | 0.46       | —           |   |    |                |                |            |  |                     |                        |
|   |        | 43              | 21   | 22          | 19.75                                     | 0.83             | 0.47       | 0.18        |   |    |                |                |            |  |                     |                        |
|   |        | 44              | 21.5 | 22.5        | 20.25                                     | 0.85             | 0.49       | —           |   |    |                |                |            |  |                     |                        |
|   |        | 45              | 22   | 23          | 20.75                                     | 0.88             | 0.51       | 0.19        |   |    |                |                |            |  |                     |                        |
|   |        | 46              | 22.5 | 23.5        | 21.25                                     | 0.90             | 0.52       | 0.20        |   |    |                |                |            |  |                     |                        |
|   |        | 47              | 23   | 24          | 21.75                                     | 0.92             | 0.52       | —           |   |    |                |                |            |  |                     |                        |
|   |        | 48              | 23.5 | 24.5        | 22.25                                     | 0.94             | 0.54       | 0.21        |   |    |                |                |            |  |                     |                        |
|   |        | 49              | 24   | 25          | 22.75                                     | 0.96             | 0.55       | —           |   |    |                |                |            |  |                     |                        |
|   |        | 50              | 24.5 | 25.5        | 23.25                                     | 0.99             | 0.56       | 0.22        |   |    |                |                |            |  |                     |                        |
|   |        | 51              | 25   | 26          | 23.75                                     | 1.03             | 0.59       | —           |   |    |                |                |            |  |                     |                        |
|   |        | 52              | 25.5 | 26.5        | 24.25                                     | 1.06             | 0.60       | —           |   |    |                |                |            |  |                     |                        |
|   |        | 53              | 26   | 27          | 24.75                                     | 1.08             | 0.62       | —           |   |    |                |                |            |  |                     |                        |
|   |        | 54              | 26.5 | 27.5        | 25.25                                     | 1.10             | 0.63       | —           |   |    |                |                |            |  |                     |                        |
|   |        | 55              | 27   | 28          | 25.75                                     | 1.13             | 0.64       | —           |   |    |                |                |            |  |                     |                        |
|   |        | 56              | 27.5 | 28.5        | 26.25                                     | —                | —          | —           |   |    |                |                |            |  |                     |                        |
|   |        | 57              | 28   | 29          | 26.75                                     | —                | —          | —           |   |    |                |                |            |  |                     |                        |
|   |        | 58              | 28.5 | 29.5        | 27.25                                     | —                | —          | —           |   |    |                |                |            |  |                     |                        |
|   |        |                 |      | 29          | 30  | 27.75            | —          | —           | — |    |                |                |            |  |                     |                        |

⊗ marked number of teeth is not available for GEABS. ⊕ Shaft Bore Diameter 6.35 is available.  
\* Allowable Transmission Forces in the table are reference values calculated based on conditions shown on P.1469.

# Spur Gears

Pressure Angle 20°, Module 0.5, *continued*

| Part Number  |        | Number of Teeth | B     | Gears Shape | Shaft Bore Dia. P <sub>H7</sub> 1 mm Inc. | d Reference Dia. | D Tip Dia. | G Root Dia. | H  | L | ℓ <sub>1</sub> | ℓ <sub>2</sub> | M (Coarse) | *Allowable Transmission Force (N-m) Bending Strength |                     |                        |
|--|--------|-----------------|-------|-------------|---|------------------|------------|-------------|----|---|----------------|----------------|------------|--|---------------------|------------------------|
| Type   | Module |                 |       |             |   |                  |            |             |    |   |                |                |            | 1045 Carbon Steel or Equivalent                      | 304 Stainless Steel | Free-Cutting Brass Bar |
| (Selectable Gear Shapes)<br>Straight Bore (Shape A / Shape B / Shape K)<br>GEAHBN<br>GEAHBB<br>GEAHBG<br>GEAHB<br>GEAHBS | 0.5    | 60              | 2     | A<br>B      | 5-16                                      | 30               | 31         | 28.75       | 20 | 7 | 5              | 2.5            | M3         | 1.17   | 0.67                | 0.26                   |
|  |        | 62              |       |             |   | 31               | 32         | 29.75       |    |   |                |                |            | 1.22   | 0.70                | —                      |
|  |        | 63              |       |             |   | 31.5             | 32.5       | 30.25       |    |   |                |                |            | 1.24   | 0.71                | —                      |
|  |        | 64              |       |             |   | 32               | 33         | 30.75       |    |   |                |                |            | 1.27   | 0.72                | —                      |
|  |        | 65              |       |             |   | 32.5             | 33.5       | 31.25       |    |   |                |                |            | 1.29   | 0.74                | —                      |
|  |        | 66              |       |             |   | 33               | 34         | 31.75       |    |   |                |                |            | 1.31   | 0.75                | —                      |
|  |        | 68              |       |             |   | 34               | 35         | 32.75       |    |   |                |                |            | 1.36   | 0.78                | —                      |
|  |        | 69              |       |             |   | 34.5             | 35.5       | 33.25       |    |   |                |                |            | 1.38   | 0.79                | —                      |
|  |        | 70              |       |             |   | 35               | 36         | 33.75       |    |   |                |                |            | 1.41   | 0.80                | 0.31                   |
|  |        | 72              |       |             |   | 36               | 37         | 34.75       |    |   |                |                |            | 1.45   | 0.83                | —                      |
|  |        | 75              |       |             |   | 37.5             | 38.5       | 36.25       |    |   |                |                |            | 1.52   | 0.87                | —                      |
|  |        | 76              |       |             |   | 38               | 39         | 36.75       |    |   |                |                |            | 1.55   | 0.88                | —                      |
|  |        | 77              |       |             |   | 38.5             | 39.5       | 37.25       |    |   |                |                |            | 1.57   | 0.90                | —                      |
|  |        | 78              |       |             |   | 39               | 40         | 37.75       |    |   |                |                |            | 1.59   | 0.91                | —                      |
|  |        | 80              |       |             |   | 40               | 41         | 38.75       |    |   |                |                |            | 1.64   | 0.94                | 0.36                   |
|  |        | 81              |       |             |   | 40.5             | 41.5       | 39.25       |    |   |                |                |            | 1.66   | 0.95                | —                      |
|  |        | 84              |       |             |   | 42               | 43         | 40.75       |    |   |                |                |            | 1.73   | 0.99                | —                      |
|  |        | 85              |       |             |   | 42.5             | 43.5       | 41.25       |    |   |                |                |            | 1.76   | 1.00                | —                      |
|  |        | 88              |       |             |   | 44               | 45         | 42.75       |    |   |                |                |            | 1.83   | 1.04                | —                      |
|  |        | 90              |       |             |   | 45               | 46         | 43.75       |    |   |                |                |            | 1.88   | 1.07                | —                      |
| 91   | 45.5   | 46.5            | 44.25 | 1.90        | 1.08                                      | —                |            |             |    |   |                |                |            |  |                     |                        |
| 92   | 46     | 47              | 44.75 | 1.92        | 1.10                                      | —                |            |             |    |   |                |                |            |  |                     |                        |
| 95   | 47.5   | 48.5            | 46.25 | 2.00        | 1.14                                      | —                |            |             |    |   |                |                |            |  |                     |                        |
| 96   | 48     | 49              | 46.75 | 2.02        | 1.15                                      | —                |            |             |    |   |                |                |            |  |                     |                        |
| 98   | 49     | 50              | 47.75 | 2.07        | 1.18                                      | —                |            |             |    |   |                |                |            |  |                     |                        |
| 99   | 49.5   | 50.5            | 48.25 | 2.09        | 1.19                                      | —                |            |             |    |   |                |                |            |  |                     |                        |
| 100  | 50     | 51              | 48.75 | 2.11        | 1.21                                      | 0.46             |            |             |    |   |                |                |            |  |                     |                        |
| 120  | 60     | 61              | 58.75 | 2.59        | 1.48                                      | 0.56             |            |             |    |   |                |                |            |  |                     |                        |

⊗ marked number of teeth is not available for GEABS. ⊕ Shaft Bore Diameter 6.35 is available.  
\* Allowable Transmission Forces in the table are reference values calculated based on conditions shown on P.1469.  
For alterations on tooth width and hub dimensions P.1469.

**Part Number Example**

|             |   |              |   |   |   |             |   |   |
|-------------|---|--------------|---|---|---|-------------|---|---|
| Part Number | - | No. of Teeth | - | B | - | Tooth Shape | - | P |
| GEAB0.5     | - | 20           | - | 3 | - | B           | - | 3 |
| GEAHB0.5    | - | 30           | - | 3 | - | A           | - | 6 |
| GEABS0.5    | - | 16           | - | 8 | - | K           | - | 5 |

⊗ When gear shape is not specified, number of teeth 15-20 (B=8) will be Shape K, and number of teeth 20-120 (B=3, 2) will be Shape B.

**Part Number Alterations**

|             |   |              |   |   |   |             |   |   |   |                    |
|-------------|---|--------------|---|---|---|-------------|---|---|---|--------------------|
| Part Number | - | No. of Teeth | - | B | - | Gears Shape | - | P | - | (KC90, KTC...etc.) |
| GEAB0.5     | - | 20           | - | 3 | - | B           | - | 3 | - | KC120              |
| GEAHB0.5    | - | 50           | - | 2 | - | A           | - | 5 | - | KFC15-K3.0         |

| Alterations | Set Screw  | Tapped Hole Dimensions  | Hub Cut   | Side Through Hole  |   |
|-------------|--|---|---|--|---|
| Code        | KC90   | KC120   | TPC   | BS   |   |
| Spec.       | Adds another set screw at 90° position.<br>⊗ Not applicable to Shape A.<br>⊗ Not applicable to Straight Bore Type. | Adds another set screw at 120° position.<br>⊗ Not applicable to Shape A.<br>⊗ Not applicable to Straight Bore Type. | Changes the tapped hole dimension to M4.<br><b>Ordering Code:</b> TPC4<br>⊗ Not applicable to Shape A.<br>⊗ Not applicable to Straight Bore Type. | Specify the length of the hub.<br>-0.5mm increments<br>-Ordering Code: BS3.5<br>-Applicable to K-shape<br>-Conditions<br>-Round Hole: 0≤BS≤ℓ <sub>1</sub><br>-Round Hole + tap: BS=0 | Machines through holes on the side surface. (KFC/KTC 1 mm increment / K:0.5mm Increment)<br>-M Selection: K3.0-K6.0<br><b>A Shape</b><br>⊕ P+K+4≤KFC(KTC)≤G-K-4<br><b>Ordering Code:</b> KFC20-K3.5 |
|             |  |   |   |  |   |
|             |  |   |   | <b>B Shape</b><br>⊕ P+K+4≤KFC(KTC)≤H-K-4<br>⊕ H+K+4≤KFC(KTC)≤G-K-4<br><b>Ordering Code:</b> KFC20-K3.5   |   |
|             |  |   |   |  |   |