

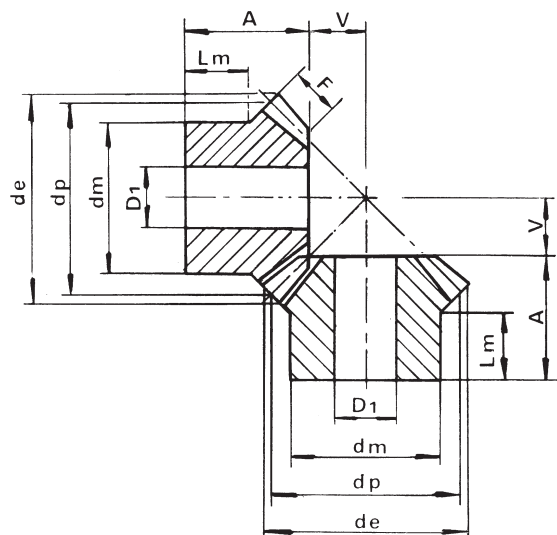
# STRAIGHT TEETH BEVEL GEARS SPECIAL EXECUTION

## Normal axis Bevel Gears

Pressure angle: 20°

Gleason System

Ratio - 1:1



MATERIAL: C 43 - UNI 7847

| M   | Z  | $d_p$ | $d_e$ | F    | A     | $d_m$ | $D_1$ | V     | $L_m$ |
|-----|----|-------|-------|------|-------|-------|-------|-------|-------|
| 1   | 16 | 16.0  | 17.4  | 4    | 11.2  | 13.3  | 4     | 4.80  | 6.5   |
|     | 19 | 19.0  | 20.4  | 4    | 11.8  | 15.3  | 4     | 6.20  | 6.5   |
|     | 22 | 22.0  | 23.4  | 4.7  | 12.8  | 16.3  | 5     | 7.20  | 6.5   |
|     | 26 | 26.0  | 27.4  | 5.5  | 13.3  | 20.3  | 5     | 8.70  | 7     |
|     | 30 | 30.0  | 31.4  | 6.4  | 16    | 20.3  | 5     | 10.00 | 8     |
| 1.5 | 16 | 24.0  | 26.1  | 6    | 18.9  | 20.3  | 8     | 7.10  | 12    |
|     | 19 | 28.5  | 30.6  | 7    | 21.3  | 20.3  | 8     | 8.70  | 12    |
|     | 22 | 33.0  | 35.1  | 7.5  | 22.5  | 25.3  | 8     | 10.50 | 12    |
|     | 26 | 39.0  | 41.1  | 8.5  | 23.2  | 28.3  | 8     | 12.80 | 12    |
|     | 30 | 45.0  | 47.1  | 10   | 27.2  | 30.3  | 12    | 14.80 | 12    |
| 2   | 16 | 32.0  | 34.8  | 8    | 23.5  | 25.3  | 8     | 9.50  | 14    |
|     | 19 | 38.0  | 40.8  | 9    | 24.2  | 25.3  | 8     | 11.80 | 12    |
|     | 22 | 44.0  | 46.8  | 10   | 27.9  | 30.3  | 12    | 14.10 | 14    |
|     | 26 | 52.0  | 54.8  | 12   | 31.4  | 35.3  | 12    | 16.60 | 14    |
|     | 30 | 60.0  | 62.8  | 13   | 34.1  | 40.3  | 14    | 19.90 | 17    |
| 2.5 | 16 | 40.0  | 43.5  | 10   | 28.1  | 30.3  | 12    | 11.90 | 15    |
|     | 19 | 47.5  | 51.0  | 11   | 27.1  | 35.3  | 12    | 14.90 | 13    |
|     | 22 | 55.0  | 58.5  | 12   | 30.1  | 45.3  | 16    | 17.90 | 16    |
|     | 26 | 65.0  | 68.5  | 15   | 33.2  | 45.3  | 16    | 20.80 | 16    |
|     | 30 | 75.0  | 78.5  | 16   | 39    | 50.3  | 16    | 25.00 | 20    |
| 3   | 16 | 48.0  | 52.5  | 12   | 31.7  | 40.3  | 12    | 14.30 | 18    |
|     | 19 | 57.0  | 61.2  | 13   | 36    | 40.3  | 14    | 18.00 | 17    |
|     | 22 | 66.0  | 70.2  | 15   | 36.9  | 50.3  | 16    | 21.10 | 17    |
|     | 26 | 78.0  | 82.2  | 17   | 38.4  | 50.3  | 16    | 25.60 | 18    |
|     | 30 | 90.0  | 94.2  | 19   | 43.8  | 60.3  | 20    | 30.20 | 22    |
| 3.5 | 16 | 56.0  | 60.9  | 14   | 36.4  | 45.3  | 16    | 16.60 | 20    |
|     | 19 | 66.5  | 71.5  | 15   | 37.8  | 50.3  | 18    | 21.00 | 19    |
|     | 22 | 77.0  | 81.9  | 17   | 39.1  | 55.3  | 20    | 24.90 | 18    |
|     | 26 | 91.0  | 96.0  | 20   | 43.35 | 62.3  | 20    | 29.70 | 20    |
|     | 30 | 105.0 | 110.0 | 23   | 47.1  | 70.3  | 20    | 34.90 | 22    |
| 4   | 16 | 64.0  | 69.7  | 15   | 44.3  | 50.3  | 16    | 19.70 | 25    |
|     | 19 | 76.0  | 81.7  | 18   | 44.4  | 55.3  | 20    | 23.60 | 22    |
|     | 22 | 88.0  | 93.7  | 20   | 45.9  | 60.3  | 20    | 28.10 | 22    |
|     | 26 | 104.0 | 109.7 | 25   | 48    | 70.3  | 20    | 34.00 | 22    |
|     | 30 | 120.0 | 125.7 | 26   | 54.2  | 80.3  | 20    | 39.80 | 25    |
| 4.5 | 16 | 72.0  | 78.4  | 17.5 | 46.3  | 55.3  | 20    | 21.70 | 25    |
|     | 19 | 85.5  | 91.8  | 20   | 49    | 62.3  | 20    | 26.57 | 25    |
|     | 22 | 99.0  | 105.3 | 22   | 50.1  | 70.3  | 20    | 31.90 | 25    |
|     | 26 | 117.0 | 123.0 | 25   | 54.7  | 75.3  | 20    | 38.60 | 26    |
|     | 30 | 135.0 | 141.4 | 29   | 60    | 80.3  | 20    | 45.00 | 28    |
| 5   | 16 | 80.0  | 87.1  | 18   | 48.9  | 60.3  | 20    | 25.10 | 25    |
|     | 19 | 95.0  | 102.1 | 22   | 52.2  | 60.3  | 20    | 29.80 | 25    |
|     | 22 | 110.0 | 117.1 | 24   | 58.2  | 80.3  | 20    | 35.80 | 30    |
|     | 26 | 130.0 | 137.1 | 29   | 62.7  | 80.3  | 20    | 42.30 | 30    |
|     | 30 | 150.0 | 157.1 | 32   | 68.9  | 80.3  | 20    | 50.10 | 35    |

# STRAIGHT TEETH BEVEL GEARS

MATERIAL: C 43 – UNI 7847

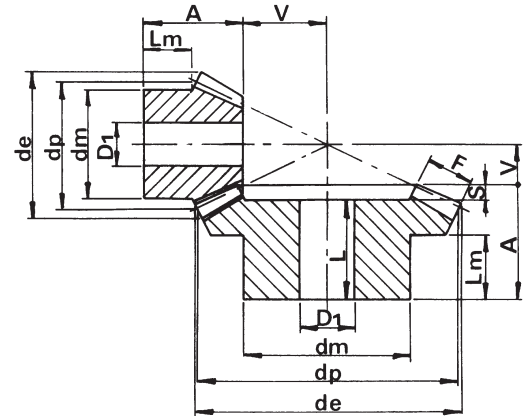
| M   | Z  | d <sub>p</sub> | d <sub>e</sub> | F    | A    | d <sub>m</sub> | D <sub>1</sub> | L    | V    | S   | L <sub>m</sub> |
|-----|----|----------------|----------------|------|------|----------------|----------------|------|------|-----|----------------|
| 1   | 16 | 16             | 18.1           | 4.3  | 12   | 13.3           | 4              |      | 8    |     | 7              |
|     | 24 | 24             | 24.8           | 4.3  | 14.8 | 20.3           | 5              | 13.3 | 5.2  | 1.5 | 9.3            |
| 1.5 | 16 | 24             | 27.1           | 8    | 20.3 | 20.3           | 8              |      | 10.7 |     | 11.8           |
|     | 24 | 36             | 37.2           | 8    | 24.9 | 28.3           | 8              | 22.7 | 7.1  | 2.2 | 16             |
| 2   | 16 | 32             | 36.2           | 10   | 25.2 | 25.3           | 8              |      | 14.8 |     | 13.8           |
|     | 24 | 48             | 49.7           | 10   | 27.2 | 32.3           | 8              | 24.7 | 9.8  | 2.5 | 16             |
| 2.5 | 16 | 40             | 45.2           | 13   | 30.8 | 32.3           | 12             |      | 18.2 |     | 16.4           |
|     | 24 | 60             | 62.1           | 13   | 34   | 45.3           | 14             | 30.8 | 12   | 3.2 | 20             |
| 3   | 16 | 48             | 54.3           | 14.5 | 32.4 | 40.3           | 12             |      | 22.6 |     | 16.4           |
|     | 24 | 72             | 74.5           | 14.5 | 36.2 | 55.3           | 16             | 32   | 14.8 | 4.2 | 20             |
| 3.5 | 16 | 56             | 63.3           | 18   | 40.4 | 45.3           | 16             |      | 25.6 |     | 20.4           |
|     | 24 | 84             | 86.9           | 18   | 44.2 | 55.3           | 20             | 40   | 16.8 | 4.2 | 25             |
| 4   | 16 | 64             | 72.4           | 18   | 46.8 | 50.3           | 16             |      | 31.2 |     | 25.4           |
|     | 24 | 96             | 99.3           | 18   | 45.5 | 60.3           | 20             | 40   | 20.5 | 5.5 | 25             |
| 4.5 | 16 | 72             | 81.4           | 20   | 47.6 | 60.3           | 20             |      | 35.4 |     | 25.1           |
|     | 24 | 108            | 111.7          | 20   | 57.8 | 80.3           | 20             | 51.3 | 23.2 | 6.5 | 35             |
| 5   | 16 | 80             | 90.5           | 24   | 54.1 | 60.3           | 20             |      | 37.9 |     | 25.4           |
|     | 24 | 120            | 124.1          | 24   | 61.1 | 80.3           | 20             | 54.5 | 24.9 | 6.6 | 35             |

## Normal axis Bevel Gears

Pressure angle: 20°

Gleason System

Ratio – 1:1.5



MATERIAL: C 43 – UNI 7847

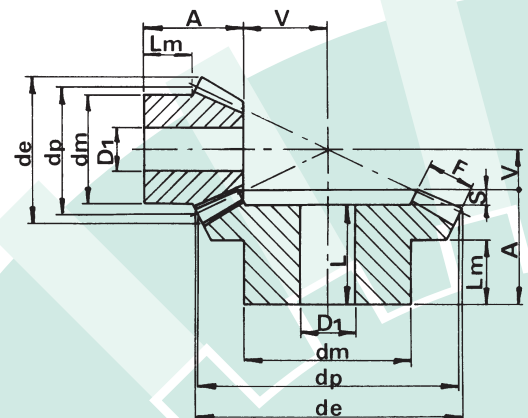
| M   | Z  | d <sub>p</sub> | d <sub>e</sub> | F    | A    | d <sub>m</sub> | D <sub>1</sub> | L    | V    | S   | L <sub>m</sub> |
|-----|----|----------------|----------------|------|------|----------------|----------------|------|------|-----|----------------|
| 1   | 15 | 15.0           | 17.4           | 5    | 11.9 | 13.3           | 4              |      | 10.1 |     | 6.5            |
|     | 30 | 30.0           | 30.6           | 5    | 15.1 | 20.3           | 5              | 13.7 | 4.9  | 1.4 | 9              |
| 1.5 | 15 | 22.5           | 26.1           | 9    | 21.1 | 19.3           | 8              |      | 13.9 |     | 11.9           |
|     | 30 | 45.0           | 45.9           | 9    | 25.2 | 32.3           | 8              | 23   | 6.8  | 2.2 | 16             |
| 2   | 15 | 30.0           | 34.8           | 11.5 | 26   | 25.3           | 8              |      | 19.0 |     | 14.1           |
|     | 30 | 60.0           | 61.2           | 11.5 | 29.8 | 40.3           | 14             | 26.8 | 9.2  | 3   | 18             |
| 2.5 | 15 | 37.5           | 43.5           | 15   | 31.8 | 32.3           | 12             |      | 23.2 |     | 16.2           |
|     | 30 | 75.0           | 76.5           | 15   | 33.7 | 45.3           | 16             | 30   | 11.3 | 3.7 | 20             |
| 3   | 15 | 45.0           | 52.2           | 17   | 37.3 | 40.3           | 12             |      | 28.7 |     | 19.9           |
|     | 30 | 90.0           | 91.8           | 17   | 42.1 | 55.3           | 16             | 38   | 13.9 | 4.1 | 25             |
| 3.5 | 15 | 52.5           | 60.9           | 20.5 | 46.1 | 45.3           | 16             |      | 32.9 |     | 24.7           |
|     | 30 | 105.0          | 107.1          | 20.5 | 45   | 60.3           | 20             | 40   | 16.0 | 5   | 25             |
| 4   | 15 | 60.0           | 69.6           | 22.5 | 48.6 | 50.3           | 20             |      | 38.4 |     | 24.6           |
|     | 30 | 120.0          | 122.3          | 22.5 | 57.3 | 80.3           | 20             | 51.9 | 18.7 | 5.4 | 35             |
| 4.5 | 15 | 67.5           | 78.3           | 26   | 51.4 | 60.3           | 20             |      | 42.6 |     | 24.7           |
|     | 30 | 135.0          | 137.6          | 26   | 60.3 | 80.3           | 20             | 54.3 | 20.7 | 6   | 35             |
| 5   | 15 | 75.0           | 87             | 30   | 57.6 | 60.3           | 20             |      | 46.4 |     | 25.3           |
|     | 30 | 150.0          | 152.9          | 30   | 62.5 | 80.3           | 20             | 56   | 22.5 | 6.5 | 35             |

## Normal axis Bevel Gears

Pressure angle: 20°

Gleason System

Ratio – 1:2



# STRAIGHT TEETH BEVEL GEARS

MATERIAL: C 43 – UNI 7847

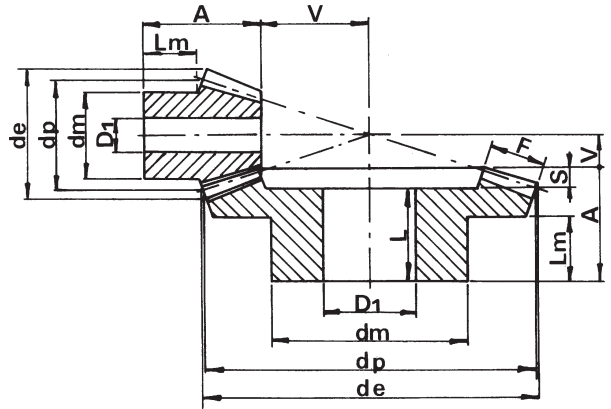
| M   | Z  | d <sub>p</sub> | d <sub>e</sub> | F    | A    | d <sub>m</sub> | D <sub>1</sub> | L    | V    | S   | L <sub>m</sub> |
|-----|----|----------------|----------------|------|------|----------------|----------------|------|------|-----|----------------|
| 1   | 16 | 16             | 18.6           | 6.5  | 14.4 | 13.3           | 4              |      | 13.6 |     | 7.4            |
|     | 40 | 40             | 40.4           | 6.5  | 14.8 | 25.3           | 8              | 13   | 5.2  | 1.8 | 9              |
| 1.5 | 16 | 24             | 27.9           | 11.5 | 24.2 | 20.3           | 8              |      | 18.8 |     | 12.3           |
|     | 40 | 60             | 60.7           | 11.5 | 27.8 | 40.3           | 14             | 25.5 | 7.2  | 2.3 | 18             |
| 2   | 16 | 32             | 37.2           | 15   | 29.6 | 25.3           | 8              |      | 25.4 |     | 13.7           |
|     | 40 | 80             | 80.9           | 15   | 32.4 | 45.3           | 16             | 29   | 9.6  | 3.4 | 20             |
| 2.5 | 16 | 40             | 46.4           | 19   | 38.4 | 32.3           | 12             |      | 31.6 |     | 18.5           |
|     | 40 | 100            | 101.1          | 19   | 39.8 | 55.3           | 16             | 35.9 | 12.2 | 3.9 | 25             |
| 3   | 16 | 48             | 55.7           | 21.5 | 41.9 | 40.3           | 16             |      | 39.1 |     | 19.6           |
|     | 40 | 120            | 121.4          | 21.5 | 47.9 | 60.3           | 20             | 44   | 15.1 | 3.9 | 30             |
| 3.5 | 16 | 56             | 65.0           | 22.6 | 49.1 | 45.3           | 20             |      | 47.9 |     | 25             |
|     | 40 | 140            | 141.6          | 22.6 | 54.6 | 80.3           | 20             | 50   | 18.4 | 4.6 | 35             |
| 4   | 16 | 64             | 74.3           | 26   | 52.5 | 55.3           | 20             |      | 54.5 |     | 25.3           |
|     | 40 | 170            | 161.8          | 26   | 57.0 | 80.3           | 20             | 50.5 | 21.0 | 6.5 | 35             |
| 4.5 | 16 | 72             | 83.6           | 30   | 56.3 | 60.3           | 20             |      | 60.7 |     | 24.6           |
|     | 40 | 180            | 182.1          | 30   | 59.7 | 80.3           | 20             | 53   | 23.3 | 6.7 | 35             |
| 5   | 16 | 80             | 92.9           | 32   | 65.4 | 60.3           | 20             |      | 68.6 |     | 30.1           |
|     | 40 | 200            | 202.3          | 32   | 65.7 | 90.3           | 20             | 58.3 | 26.3 | 7.4 | 40             |

## Normal axis Bevel Gears

Pressure angle: 20°

Gleason System

Ratio – 1:2.5



Bevel gears available till sold out

MATERIAL: C 43 – UNI 7847

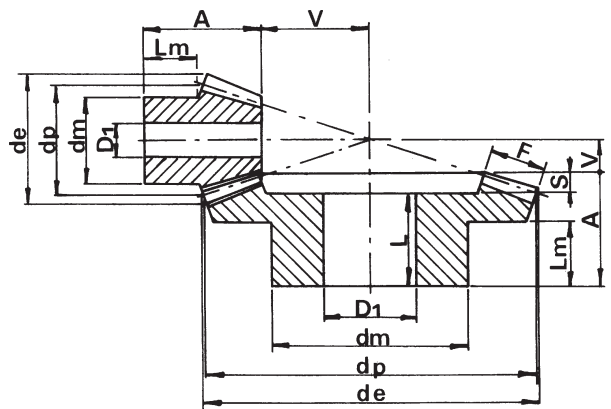
| M   | Z  | d <sub>p</sub> | d <sub>e</sub> | F    | A    | d <sub>m</sub> | D <sub>1</sub> | L    | V    | S   | L <sub>m</sub> |
|-----|----|----------------|----------------|------|------|----------------|----------------|------|------|-----|----------------|
| 1   | 15 | 15             | 17.7           | 7.1  | 16.6 | 13.3           | 4              |      | 15.4 |     | 9.2            |
|     | 45 | 45             | 45.3           | 7.1  | 17.1 | 25.3           | 8              | 15.2 | 4.9  | 1.9 | 10             |
| 1.5 | 15 | 22.5           | 26.5           | 10.5 | 22.6 | 19.3           | 8              |      | 23.4 |     | 11.7           |
|     | 45 | 67.5           | 68.1           | 10.5 | 29.6 | 45.3           | 14             | 27.2 | 7.4  | 2.4 | 20             |
| 2   | 15 | 30             | 35.4           | 14   | 28.9 | 25.3           | 8              |      | 31.1 |     | 14.2           |
|     | 45 | 90             | 90.8           | 14   | 32.1 | 45.3           | 16             | 28.4 | 9.9  | 3.7 | 20             |
| 2.5 | 15 | 37.5           | 44.2           | 18   | 34.6 | 32.3           | 12             |      | 38.4 |     | 15.9           |
|     | 45 | 112.5          | 113.4          | 18   | 39.7 | 60.3           | 20             | 35.3 | 12.3 | 4.4 | 25             |
| 3   | 15 | 45             | 53.0           | 21   | 41.3 | 40.3           | 16             |      | 46.7 |     | 19.7           |
|     | 45 | 135            | 136.1          | 21   | 47.2 | 60.3           | 20             | 42   | 14.8 | 5.2 | 30             |
| 3.5 | 15 | 52.5           | 61.9           | 23.5 | 49.6 | 45.3           | 20             |      | 55.4 |     | 25             |
|     | 45 | 157.5          | 158.8          | 23.5 | 54.4 | 80.3           | 20             | 48.6 | 17.6 | 5.8 | 35             |
| 4   | 15 | 60             | 70.7           | 27.5 | 54.3 | 50.3           | 20             |      | 62.7 |     | 25.4           |
|     | 45 | 180            | 181.5          | 27.5 | 57   | 80.3           | 20             | 50.5 | 20   | 6.5 | 35             |
| 4.5 | 15 | 67.5           | 79.5           | 28.5 | 55.2 | 55.3           | 20             |      | 72.8 |     | 24.8           |
|     | 45 | 202.5          | 204.2          | 28.5 | 63.9 | 90.3           | 20             | 57   | 23.1 | 6.9 | 40             |
| 5   | 15 | 75             | 88.4           | 33   | 65.3 | 60.3           | 20             |      | 79.7 |     | 30             |
|     | 45 | 225            | 226.9          | 33   | 66.7 | 90.3           | 20             | 59.2 | 25.3 | 7.5 | 40             |

## Normal axis Bevel Gears

Pressure angle: 20°

Gleason System

Ratio – 1:3



# STRAIGHT TEETH BEVEL GEARS

MATERIAL: C 43 – UNI 7847

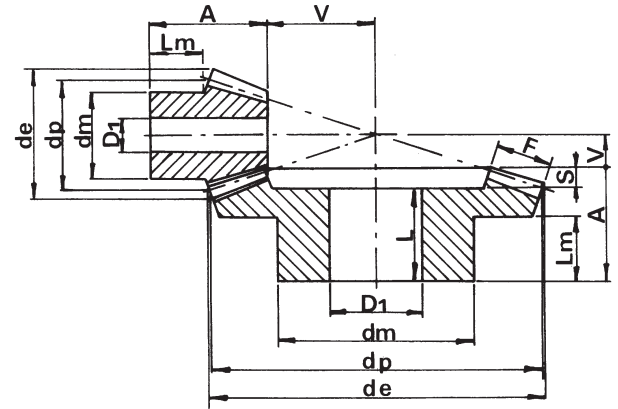
| M   | Z  | d <sub>p</sub> | d <sub>e</sub> | F   | A    | d <sub>m</sub> | D <sub>1</sub> | L    | V    | S   | L <sub>m</sub> |
|-----|----|----------------|----------------|-----|------|----------------|----------------|------|------|-----|----------------|
| 1   | 16 | 16             | 18.7           | 8.7 | 16.6 | 13.3           | 4              |      | 19.4 |     | 7.6            |
|     | 56 | 56             | 56.3           | 8.7 | 16.7 | 30.3           | 8              | 14.2 | 5.3  | 2.5 | 10             |
| 1.5 | 16 | 24             | 28.1           | 12  | 24   | 20.3           | 8              |      | 30   |     | 11.5           |
|     | 56 | 84             | 84.5           | 12  | 34.8 | 45.3           | 14             | 32   | 8.2  | 2.8 | 25             |
| 2   | 16 | 32             | 37.5           | 16  | 30.9 | 25.3           | 8              |      | 40.1 |     | 14.1           |
|     | 56 | 112            | 112.6          | 16  | 37.1 | 55.3           | 16             | 33.3 | 10.9 | 3.8 | 25             |
| 2.5 | 16 | 40             | 46.8           | 20  | 38.9 | 32.3           | 14             |      | 50.1 |     | 17.9           |
|     | 56 | 140            | 140.8          | 20  | 44.4 | 60.3           | 20             | 40   | 13.6 | 4.4 | 30             |
| 3   | 16 | 48             | 56.2           | 24  | 49.9 | 40.3           | 16             |      | 60.1 |     | 24.9           |
|     | 56 | 168            | 169            | 24  | 52.7 | 80.3           | 20             | 47.5 | 16.3 | 5.2 | 35             |
| 3.5 | 16 | 56             | 65.6           | 25  | 52   | 25.5           | 20             |      | 73   |     | 25.5           |
|     | 56 | 196            | 197.1          | 25  | 55.1 | 80.3           | 20             | 49.1 | 19.9 | 6   | 35             |

## Normal axis Bevel Gears

Pressure angle: 20°

Gleason System

Ratio – 1:3.5



Bevel gears available till sold out

MATERIAL: C 43 – UNI 7847

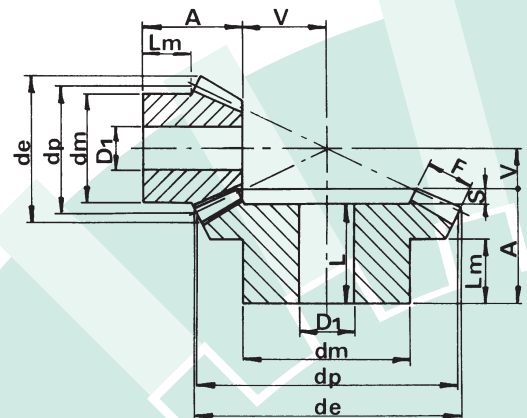
| M   | Z  | d <sub>p</sub> | d <sub>e</sub> | F   | A    | d <sub>m</sub> | D <sub>1</sub> | L    | V     | S   | L <sub>m</sub> |
|-----|----|----------------|----------------|-----|------|----------------|----------------|------|-------|-----|----------------|
| 1   | 15 | 15.0           | 17.80          | 9.3 | 17.2 | 13.3           | 4              |      | 20.8  |     | 7.7            |
|     | 60 | 60             | 60.30          | 9.3 | 17.1 | 30.3           | 8              | 15.2 | 4.9   | 1.9 | 10             |
| 1.5 | 15 | 22.5           | 26.70          | 11  | 23   | 20.3           | 8              |      | 34.0  |     | 11.7           |
|     | 60 | 90             | 90.40          | 11  | 34   | 50.3           | 16             | 31.2 | 8.0   | 2.8 | 25             |
| 2   | 15 | 30             | 35.60          | 16  | 31   | 25.3           | 8              |      | 44.0  |     | 14.4           |
|     | 60 | 120            | 120.60         | 16  | 37.6 | 60.3           | 16             | 34.2 | 10.4  | 3.4 | 25             |
| 2.5 | 15 | 37.5           | 44.50          | 19  | 38.1 | 32.3           | 14             |      | 55.9  |     | 18.4           |
|     | 60 | 150            | 150.70         | 19  | 44.8 | 60.3           | 20             | 40   | 13.2  | 4.8 | 30             |
| 3   | 15 | 45             | 53.30          | 23  | 48.1 | 40.3           | 16             |      | 66.9  |     | 24.5           |
|     | 60 | 180.0          | 180.80         | 23  | 53.2 | 80.3           | 20             | 48.2 | 15.8  | 5   | 35             |
| 3.5 | 15 | 52.5           | 62.20          | 26  | 52.1 | 45.3           | 20             |      | 78.9  |     | 25.1           |
|     | 60 | 210            | 211.00         | 26  | 60.4 | 90.3           | 20             | 54.4 | 18.6  | 6   | 40             |
| 4   | 15 | 60             | 71.10          | 30  | 55.1 | 50.3           | 20             |      | 89.9  |     | 23             |
|     | 60 | 240            | 241.10         | 30  | 60.8 | 90.3           | 20             | 53   | 21.2  | 7.8 | 40             |
| 4.5 | 15 | 67.5           | 79.97          | 32  | 57   | 52.3           | 20             |      | 102.9 |     | 23             |
|     | 60 | 270            | 271.24         | 32  | 62   | 90.3           | 20             | 53.5 | 24.3  | 8.5 | 40             |
| 5   | 15 | 75             | 88.80          | 34  | 62   | 55.3           | 20             |      | 115.7 |     | 25             |
|     | 60 | 300.0          | 301.30         | 34  | 65   | 90.3           | 20             | 55   | 27.0  | 10  | 40             |

## Normal axis Bevel Gears

Pressure angle: 20°

Gleason System

Ratio – 1:4



# BEVEL GEARS FOR TRANSMISSIONS BETWEEN ORTHOGONAL AXES

## DECLARATION OF INTENT

The **change project** of this range of bevel gears has been developed with the intention of standardising the execution of this product and reducing the number of articles carried in the catalogue.

**The key aspects of the project** to which we intend to draw the attention of users can be specified as follows:

- Deletion of the "special" execution bevel gears and adoption of a single execution with harmonised sizing criteria.
- Adoption of the DIN 3971 Standards to size the tooth profile and the external body of the gears.
- Systematic correction of teeth by profile displacement to eliminate the undercut effect on the pinions, to improve the slip and the specific pressure and to obtain a tooth that is better able to withstand bending stresses.
- Selection of a standardised external configuration in terms of the front embedding on the bevel gears which will be implemented only from a given module.
- Generalised increase of the surface width to achieve higher load-bearing capacities.
- Selection of the ratios and the number of teeth based solely on the normal number of the R20 range in compliance with the UNI 2016 and the DIN 323 Standards, as well as the ISO R3 and ISO R17 recommendations, with the following progressions:

|              |   |
|--------------|---|
| <b>Ratio</b> | <b>1:1 = 16 - 18 - 20 - 22 - 25 - 28 - 32</b> |
|              | <b>1:2 = 16/32</b>                            |
|              | <b>1:3 = 16/48</b>                            |
|              | <b>1:4 = 16/64</b>                            |

This initiative comes within the framework of a broader critical review of the Company's products, and CHIARAVALLI Trasmissioni spa intends to implement a form of technical collaboration with customers and will take due consideration of technical advice, suggestions and assessments for which CHIARAVALLI Trasmissioni spa thanks you in advance.

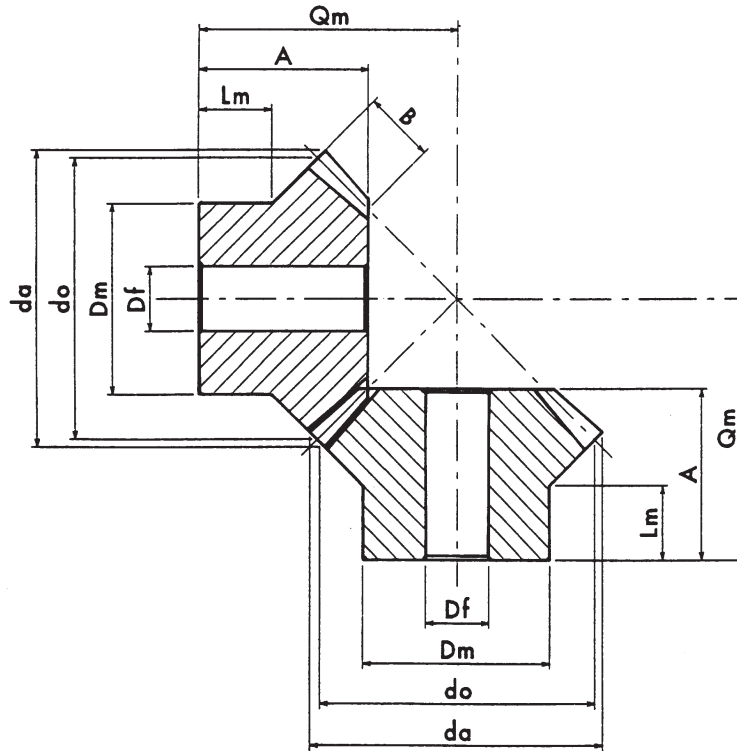
# BEVEL GEARS FOR TRANSMISSIONS BETWEEN ORTHOGONAL AXES

## Straight teeth Bevel Gears sized in compliance with DIN 3971

Corrected toothing by profile displacement and length-wise crowning of the tooth

Pressure angle: 20°

Gear ratio = 1:1



MATERIAL: C 43 STEEL – UNI 7847

| M   | z  | d <sub>o</sub> | d <sub>a</sub> | D <sub>m</sub> | D <sub>f</sub> | B   | L <sub>m</sub> | A     | Q <sub>m</sub> | Tolerance Q <sub>m</sub> |       |
|-----|----|----------------|----------------|----------------|----------------|-----|----------------|-------|----------------|--------------------------|-------|
|     |    |                |                |                |                |     |                |       |                | min.                     | max   |
| 1   | 16 | 16             | 17             | 12             | 4              | 4   | 7              | 12.28 | 17             | -0.020                   | 0.020 |
|     | 18 | 18             | 19             | 14             | 4              | 4   | 7              | 12.31 | 18             | -0.020                   | 0.020 |
|     | 20 | 20             | 21             | 16             | 4              | 4.5 | 8              | 13.66 | 20             | -0.020                   | 0.020 |
|     | 22 | 22             | 23             | 18             | 5              | 5   | 8              | 14.01 | 21             | -0.020                   | 0.020 |
|     | 25 | 25             | 26             | 20             | 5              | 5.5 | 8              | 14.87 | 23             | -0.020                   | 0.020 |
|     | 28 | 28             | 29             | 20             | 5              | 6   | 9              | 17.74 | 27             | -0.020                   | 0.020 |
|     | 32 | 32             | 33             | 22             | 5              | 7   | 12             | 20.44 | 31             | -0.020                   | 0.020 |
| 1.5 | 16 | 24             | 25.5           | 18             | 6              | 5.5 | 10             | 17.60 | 25             | -0.020                   | 0.020 |
|     | 18 | 27             | 28.5           | 20             | 8              | 6   | 12             | 20.47 | 29             | -0.020                   | 0.020 |
|     | 20 | 30             | 31.5           | 22             | 8              | 6.5 | 12             | 21.33 | 31             | -0.020                   | 0.020 |
|     | 22 | 33             | 34.5           | 24             | 8              | 7   | 12             | 22.19 | 33             | -0.020                   | 0.020 |
|     | 25 | 37.5           | 39             | 28             | 8              | 8   | 13.5           | 24.64 | 37             | -0.030                   | 0.030 |
|     | 28 | 42             | 43.5           | 30             | 12             | 9   | 14             | 27.10 | 41             | -0.030                   | 0.030 |
| 2   | 32 | 48             | 49.5           | 36             | 12             | 10  | 16             | 29.82 | 46             | -0.030                   | 0.030 |
|     | 16 | 32             | 34             | 24             | 8              | 7   | 14             | 23.92 | 34             | -0.020                   | 0.020 |
|     | 18 | 36             | 38             | 28             | 8              | 7.5 | 15             | 25.30 | 37             | -0.030                   | 0.030 |
|     | 20 | 40             | 42             | 28             | 8              | 8   | 15             | 24.67 | 38             | -0.030                   | 0.030 |
|     | 22 | 44             | 46             | 30             | 12             | 9   | 16             | 28.37 | 43             | -0.030                   | 0.030 |
|     | 25 | 50             | 52             | 32             | 12             | 11  | 16             | 29.75 | 46             | -0.030                   | 0.030 |
|     | 28 | 56             | 58             | 36             | 12             | 12  | 18             | 34.47 | 53             | -0.030                   | 0.030 |
| 2.5 | 32 | 64             | 66             | 40             | 14             | 13  | 20             | 38.20 | 60             | -0.030                   | 0.030 |
|     | 16 | 40             | 43             | 30             | 12             | 8   | 14             | 25.92 | 39             | -0.030                   | 0.030 |
|     | 18 | 45             | 48             | 34             | 12             | 9   | 15             | 28.13 | 43             | -0.030                   | 0.030 |
|     | 20 | 50             | 53             | 35             | 12             | 10  | 18             | 32.34 | 49             | -0.030                   | 0.030 |
|     | 22 | 55             | 58             | 42             | 14             | 11  | 18             | 33.55 | 52             | -0.030                   | 0.030 |
|     | 25 | 62.5           | 65.5           | 46             | 14             | 12  | 20             | 34.50 | 56             | -0.030                   | 0.030 |
|     | 28 | 70             | 73             | 48             | 14             | 14  | 22             | 40.17 | 64             | -0.030                   | 0.030 |
| 32  | 80 | 83             | 52             | 16             | 16             | 22  | 43.58          | 71    | -0.030         | 0.030                    |       |

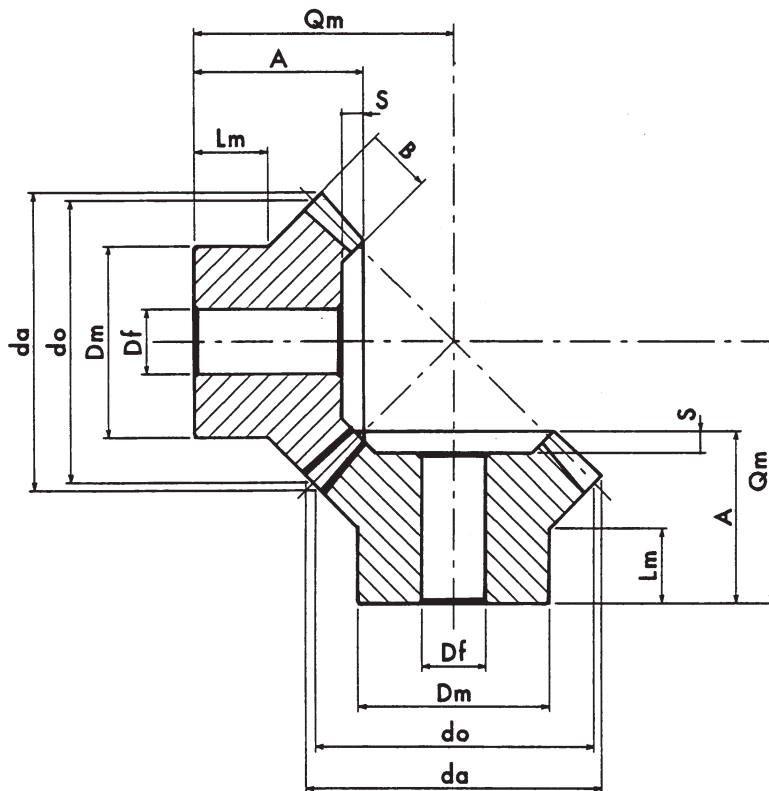
# BEVEL GEARS FOR TRANSMISSIONS BETWEEN ORTHOGONAL AXES

## Straight teeth Bevel Gears sized in compliance with DIN 3971

Corrected toothing by profile displacement and length-wise crowning of the tooth

Pressure angle: 20°

Gear ratio = 1:1



MATERIAL: C 43 STEEL – UNI 7847

| M   | z  | d <sub>o</sub> | d <sub>a</sub> | D <sub>m</sub> | D <sub>f</sub> | B  | L <sub>m</sub> | A     | S | Q <sub>m</sub> | Tolerance Q <sub>m</sub> |       |
|-----|----|----------------|----------------|----------------|----------------|----|----------------|-------|---|----------------|--------------------------|-------|
|     |    |                |                |                |                |    |                |       |   |                | min.                     | max   |
| 3   | 16 | 48             | 51.5           | 36             | 12             | 12 | 16             | 31.85 | 4 | 46             | -0.030                   | 0.030 |
|     | 18 | 54             | 57.5           | 40             | 14             | 14 | 18             | 36.24 | 4 | 52             | -0.030                   | 0.030 |
|     | 20 | 60             | 63.5           | 45             | 14             | 16 | 20             | 37.63 | 4 | 55             | -0.030                   | 0.030 |
|     | 22 | 66             | 69.5           | 50             | 16             | 16 | 20             | 37.70 | 4 | 58             | -0.030                   | 0.030 |
|     | 25 | 75             | 78.5           | 50             | 16             | 16 | 24             | 45.29 | 4 | 70             | -0.030                   | 0.030 |
|     | 28 | 84             | 87.5           | 55             | 16             | 18 | 25             | 48.21 | 4 | 76             | -0.030                   | 0.030 |
|     | 32 | 96             | 99.5           | 66             | 16             | 20 | 25             | 49.63 | 4 | 82             | -0.040                   | 0.040 |
| 3.5 | 16 | 56             | 60             | 40             | 14             | 14 | 18             | 35.50 | 5 | 52             | -0.030                   | 0.030 |
|     | 18 | 63             | 67             | 45             | 14             | 16 | 18             | 38.40 | 5 | 57             | -0.030                   | 0.030 |
|     | 20 | 70             | 74             | 50             | 16             | 18 | 22             | 44.30 | 5 | 65             | -0.030                   | 0.030 |
|     | 22 | 77             | 81             | 55             | 16             | 20 | 22             | 46.21 | 5 | 69             | -0.030                   | 0.030 |
|     | 25 | 87.5           | 91.5           | 60             | 16             | 20 | 25             | 48.07 | 5 | 76             | -0.040                   | 0.040 |
|     | 28 | 98             | 102            | 65             | 16             | 22 | 25             | 50.25 | 5 | 82             | -0.040                   | 0.040 |
|     | 32 | 112            | 116            | 75             | 20             | 25 | 25             | 55.37 | 5 | 92             | -0.040                   | 0.040 |
| 4   | 16 | 64             | 69             | 48             | 16             | 15 | 25             | 45.50 | 6 | 65             | -0.030                   | 0.030 |
|     | 18 | 72             | 77             | 55             | 16             | 18 | 25.5           | 49.55 | 6 | 71             | -0.030                   | 0.030 |
|     | 20 | 80             | 85             | 60             | 16             | 20 | 27             | 49.97 | 6 | 74             | -0.030                   | 0.030 |
|     | 22 | 88             | 93             | 62             | 16             | 22 | 27             | 55.38 | 6 | 82             | -0.040                   | 0.040 |
|     | 25 | 100            | 105            | 70             | 20             | 24 | 25             | 54.84 | 6 | 86             | -0.040                   | 0.040 |
|     | 28 | 112            | 117            | 80             | 20             | 26 | 25             | 55.28 | 6 | 91             | -0.040                   | 0.040 |
|     | 32 | 128            | 133            | 90             | 20             | 28 | 30             | 59.75 | 6 | 102            | -0.040                   | 0.040 |
| 5   | 16 | 80             | 86             | 60             | 16             | 18 | 25             | 50.14 | 7 | 75             | -0.030                   | 0.030 |
|     | 18 | 90             | 96             | 63             | 16             | 20 | 30             | 54.56 | 7 | 83             | -0.040                   | 0.040 |
|     | 20 | 100            | 106            | 70             | 20             | 22 | 30             | 59.99 | 7 | 92             | -0.040                   | 0.040 |
|     | 22 | 110            | 116            | 80             | 20             | 24 | 30             | 60.41 | 7 | 96             | -0.040                   | 0.040 |
|     | 25 | 125            | 131            | 85             | 20             | 28 | 35             | 69.71 | 7 | 110            | -0.040                   | 0.040 |
|     | 28 | 140            | 146            | 90             | 20             | 30 | 38             | 74.67 | 7 | 121            | -0.040                   | 0.040 |
|     | 32 | 160            | 166            | 100            | 20             | 32 | 45             | 85.16 | 7 | 140            | -0.040                   | 0.040 |

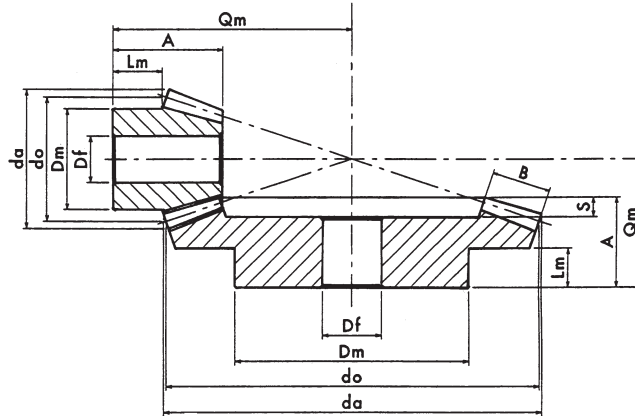
# BEVEL GEARS FOR TRANSMISSIONS BETWEEN ORTHOGONAL AXES

## Straight teeth Bevel Gears sized in compliance with DIN 3971

Corrected toothing by profile displacement and length-wise crowning of the tooth

Pressure angle: 20°

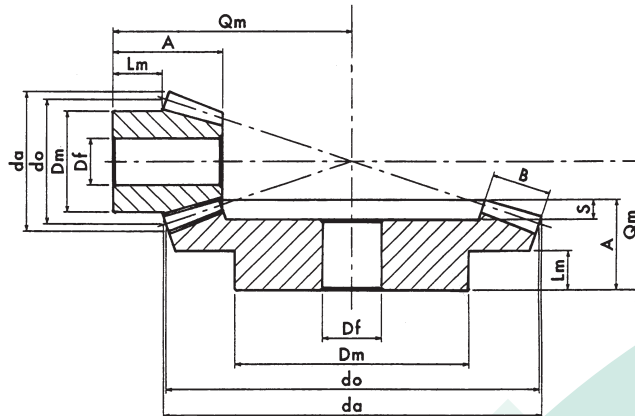
Gear ratio = 1:2



MATERIAL: C 43 STEEL – UNI 7847

| M   | z  | do | da   | Dm | Df | B  | Lm   | A     | S | Qm | Tolerance Qm |       |
|-----|----|----|------|----|----|----|------|-------|---|----|--------------|-------|
|     |    |    |      |    |    |    |      |       |   |    | min.         | max   |
| 1   | 16 | 16 | 18   | 12 | 4  | 6  | 5    | 11.78 | 2 | 22 | -0.020       | 0.020 |
|     | 32 | 32 | 32   | 18 | 5  | 6  | 10   | 18.04 |   | 23 | -0.020       | 0.020 |
| 1.5 | 16 | 24 | 27   | 18 | 8  | 10 | 10.5 | 21.53 | 3 | 36 | -0.030       | 0.030 |
|     | 32 | 48 | 48   | 30 | 8  | 10 | 14   | 24.97 |   | 32 | -0.030       | 0.030 |
| 2   | 16 | 32 | 36   | 24 | 8  | 12 | 11   | 24.56 | 4 | 45 | -0.030       | 0.030 |
|     | 32 | 64 | 64.5 | 36 | 12 | 12 | 13   | 28.08 |   | 38 | -0.030       | 0.030 |
| 2.5 | 16 | 40 | 45.5 | 32 | 12 | 15 | 15   | 32.45 | 5 | 58 | -0.030       | 0.030 |
|     | 32 | 80 | 80.5 | 48 | 16 | 15 | 18   | 37.60 |   | 50 | -0.030       | 0.030 |

Gear ratio = 1:2



MATERIAL: C 43 STEEL – UNI 7847

| M   | z  | do  | da  | Dm  | Df | B  | Lm | A     | S | Qm  | Tolerance Qm |       |
|-----|----|-----|-----|-----|----|----|----|-------|---|-----|--------------|-------|
|     |    |     |     |     |    |    |    |       |   |     | min.         | max   |
| 3   | 16 | 48  | 55  | 36  | 14 | 18 | 14 | 34.34 | 3 | 65  | -0.040       | 0.040 |
|     | 32 | 96  | 97  | 60  | 14 | 18 | 20 | 40.12 |   | 55  | -0.040       | 0.040 |
| 3.5 | 16 | 56  | 64  | 42  | 14 | 22 | 18 | 42.10 | 3 | 77  | -0.040       | 0.040 |
|     | 32 | 112 | 113 | 70  | 16 | 22 | 22 | 45.06 |   | 62  | -0.040       | 0.040 |
| 4   | 16 | 64  | 73  | 48  | 14 | 24 | 20 | 45.13 | 4 | 86  | -0.040       | 0.040 |
|     | 32 | 128 | 129 | 80  | 20 | 24 | 25 | 50.16 |   | 70  | -0.040       | 0.040 |
| 5   | 16 | 80  | 91  | 56  | 16 | 30 | 25 | 59.91 | 5 | 111 | -0.040       | 0.040 |
|     | 32 | 160 | 161 | 100 | 20 | 30 | 30 | 60.20 |   | 85  | -0.040       | 0.040 |



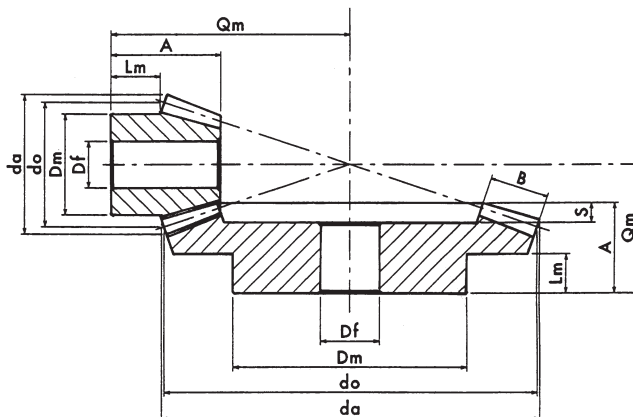
# BEVEL GEARS FOR TRANSMISSIONS BETWEEN ORTHOGONAL AXES

## Straight teeth Bevel Gears sized in compliance with DIN 3971

Corrected toothing by profile displacement and length-wise crowning of the tooth

Pressure angle: 20°

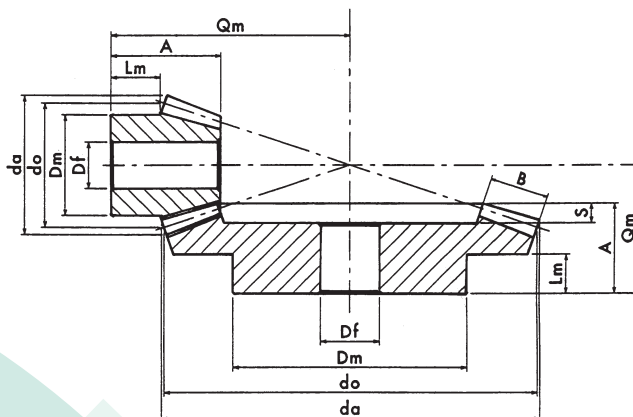
Gear ratio = 1:3



MATERIAL: C 43 STEEL – UNI 7847

| M   | z  | do  | da    | Dm | Df | B  | Lm   | A     | S   | Qm | Tolerance Qm |       |
|-----|----|-----|-------|----|----|----|------|-------|-----|----|--------------|-------|
|     |    |     |       |    |    |    |      |       |     |    | min.         | max   |
| 1   | 16 | 16  | 18    | 12 | 4  | 8  | 7.3  | 15.91 | 2.5 | 32 | -0.030       | 0.030 |
|     | 48 | 48  | 47.5  | 26 | 8  | 8  | 12   | 21.85 |     | 27 | -0.030       | 0.030 |
| 1.5 | 16 | 24  | 27.5  | 18 | 8  | 10 | 9    | 20.01 | 3   | 46 | -0.040       | 0.040 |
|     | 48 | 72  | 71.5  | 46 | 12 | 10 | 14   | 25.68 |     | 34 | -0.040       | 0.040 |
| 2   | 16 | 32  | 37    | 25 | 10 | 14 | 12.8 | 27.96 | 4   | 62 | -0.040       | 0.040 |
|     | 48 | 96  | 95.5  | 55 | 16 | 14 | 17   | 32.11 |     | 43 | -0.040       | 0.040 |
| 2.5 | 16 | 40  | 46.3  | 32 | 12 | 18 | 15.6 | 34.92 | 5   | 77 | -0.050       | 0.050 |
|     | 48 | 120 | 119.5 | 70 | 20 | 18 | 20   | 40.54 |     | 54 | -0.050       | 0.050 |

Gear ratio = 1:3



MATERIAL: C 43 STEEL – UNI 7847

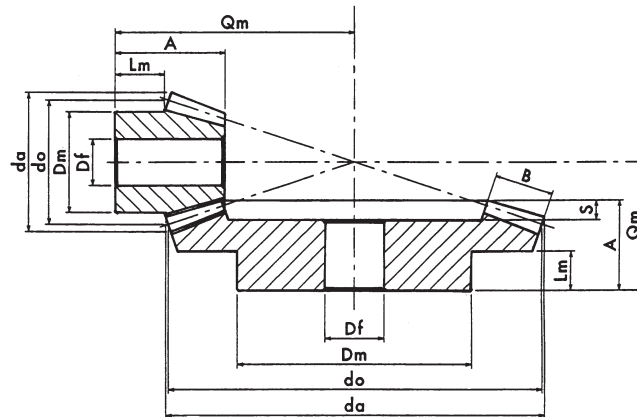
| M   | z  | do  | da    | Dm  | Df | B  | Lm   | A     | S | Qm  | Tolerance Qm |       |
|-----|----|-----|-------|-----|----|----|------|-------|---|-----|--------------|-------|
|     |    |     |       |     |    |    |      |       |   |     | min.         | max   |
| 3   | 16 | 48  | 55.5  | 38  | 14 | 22 | 16.3 | 39.88 | 3 | 90  | -0.050       | 0.050 |
|     | 48 | 144 | 144   | 80  | 20 | 22 | 20   | 44.96 |   | 61  | -0.050       | 0.050 |
| 3.5 | 16 | 56  | 65    | 48  | 16 | 25 | 18.6 | 44.91 | 7 | 104 | -0.050       | 0.050 |
|     | 48 | 168 | 168   | 90  | 20 | 25 | 25   | 50.09 |   | 69  | -0.050       | 0.050 |
| 4   | 16 | 64  | 74.5  | 52  | 16 | 28 | 18   | 47.93 | 7 | 116 | -0.060       | 0.060 |
|     | 48 | 192 | 192   | 100 | 20 | 28 | 25   | 55.22 |   | 77  | -0.060       | 0.060 |
| 5   | 16 | 80  | 93    | 63  | 16 | 35 | 27   | 64.92 | 9 | 150 | -0.060       | 0.060 |
|     | 48 | 240 | 240.5 | 140 | 20 | 35 | 30   | 64.78 |   | 92  | -0.060       | 0.060 |

# BEVEL GEARS FOR TRANSMISSIONS BETWEEN ORTHOGONAL AXES

## Straight teeth Bevel Gears sized in compliance with DIN 3971

Corrected toothing by profile displacement and length-wise crowning of the tooth  
Pressure angle: 20°

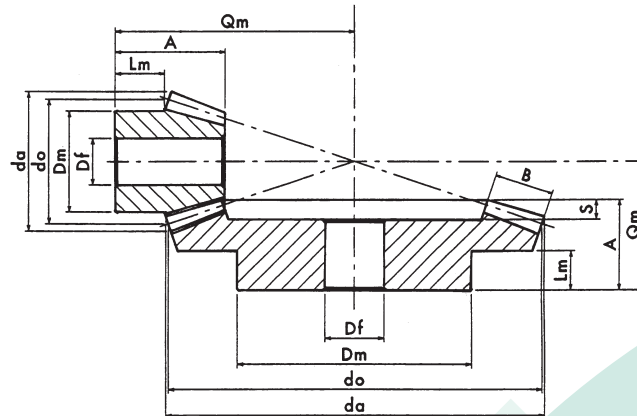
Gear ratio = 1:4



MATERIAL: C 43 STEEL – UNI 7847

| M   | z  | do  | da    | Dm | Df | B  | Lm    | A     | S   | Qm | Tolerance Qm |       |
|-----|----|-----|-------|----|----|----|-------|-------|-----|----|--------------|-------|
|     |    |     |       |    |    |    |       |       |     |    | min.         | max   |
| 1   | 16 | 16  | 18    | 14 | 4  | 10 | 7.75  | 17.94 | 2.5 | 40 | -0.040       | 0.040 |
|     | 64 | 64  | 63.5  | 38 | 8  | 10 | 12    | 21.69 |     | 27 | -0.040       | 0.040 |
| 1.5 | 16 | 24  | 27.5  | 20 | 8  | 12 | 12.45 | 25.08 | 3   | 61 | -0.050       | 0.050 |
|     | 64 | 96  | 95.5  | 56 | 16 | 12 | 15    | 30.35 |     | 39 | -0.050       | 0.050 |
| 2   | 16 | 32  | 37    | 26 | 10 | 16 | 11.2  | 28.11 | 4   | 76 | -0.050       | 0.050 |
|     | 64 | 128 | 127.5 | 75 | 16 | 16 | 16    | 32.47 |     | 44 | -0.050       | 0.050 |
| 2.5 | 16 | 40  | 46.5  | 32 | 14 | 20 | 14    | 35.13 | 5   | 95 | -0.060       | 0.060 |
|     | 64 | 160 | 159.5 | 90 | 20 | 20 | 20    | 40.58 |     | 55 | -0.060       | 0.060 |

Gear ratio = 1:4



MATERIAL: C 43 STEEL – UNI 7847

| M   | z  | do  | da    | Dm  | Df | B  | Lm   | A     | S | Qm  | Tolerance Qm |       |
|-----|----|-----|-------|-----|----|----|------|-------|---|-----|--------------|-------|
|     |    |     |       |     |    |    |      |       |   |     | min.         | max   |
| 3   | 16 | 48  | 56    | 40  | 14 | 25 | 13   | 39.12 | 2 | 110 | -0.060       | 0.060 |
|     | 64 | 192 | 191.5 | 100 | 20 | 25 | 20   | 44.93 |   | 62  | -0.060       | 0.060 |
| 3.5 | 16 | 56  | 66    | 48  | 16 | 28 | 15   | 44.19 | 3 | 128 | -0.070       | 0.070 |
|     | 64 | 224 | 223.5 | 120 | 20 | 28 | 30   | 59.82 |   | 80  | -0.070       | 0.070 |
| 4   | 16 | 64  | 75    | 52  | 16 | 32 | 20.5 | 54.22 | 3 | 150 | -0.070       | 0.070 |
|     | 64 | 256 | 255.5 | 140 | 20 | 32 | 35   | 70.93 |   | 8   | -0.070       | 0.070 |
| 5   | 16 | 80  | 94.5  | 65  | 16 | 36 | 22.1 | 60.44 | 4 | 184 | -0.080       | 0.080 |
|     | 64 | 320 | 320   | 170 | 20 | 36 | 35   | 75.24 |   | 10  | -0.080       | 0.080 |