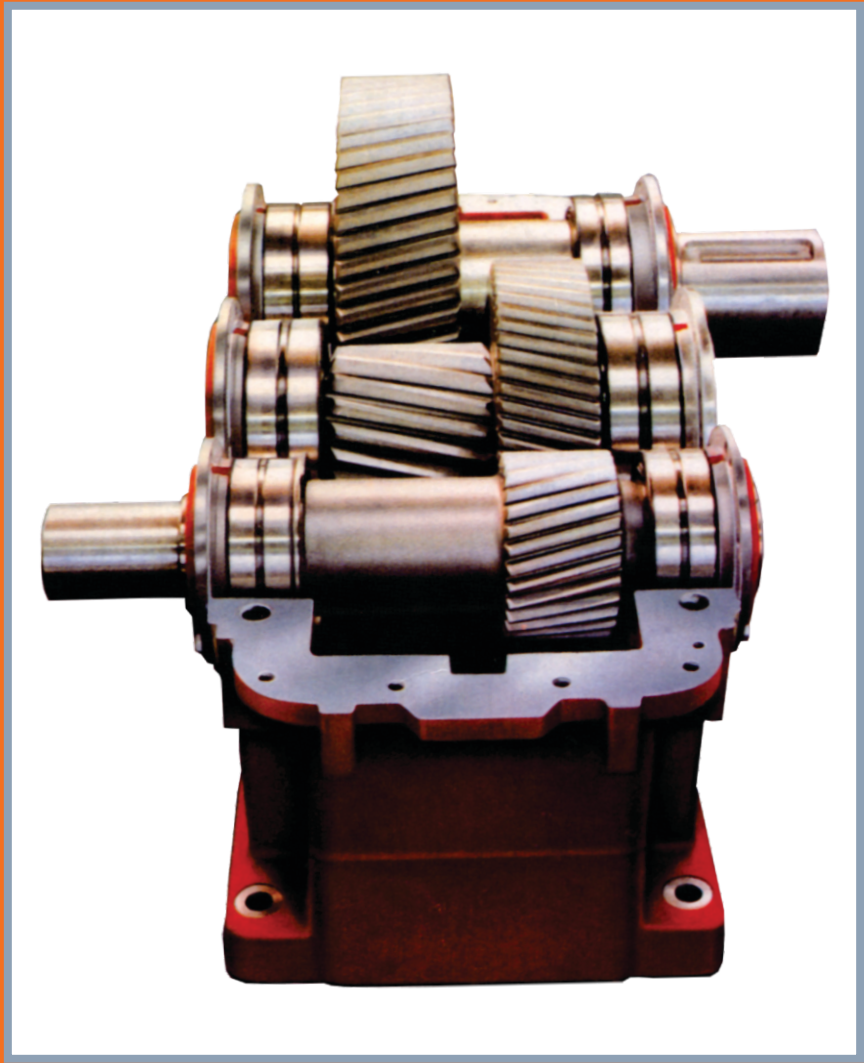
# G.G. AUTOMOTIVE GEARS LTD.

An ISO 9001:2015 & OHSAS: 18001:2007
certified company

# HARDENDEND AND GROUND GEAR UNITS



# Selection of Gear unit

**1. Determination of type of Gear unit :**

1.1 Determine whether Helical gear unit or Bevel Helical gear unit.

1.2 Determination of nominal transmission ratio

$$i_N = \frac{n_1}{n_2}$$

With this, the Gear unit type is fixed.

**2. Determination of size of Gear unit :**

2.1 Finding out gear unit size from nominal rating

$P_N \geqslant P_2 \times f_1 \times f_2 \times f_3$.

**3. Checking Heating effect :**

Additional cooling fan, cooling coil or external oil filter cooler is necessary, if the thermal capacity $P_G$ is less than the effective output of the processing machine $P_2$. No cooling is necessary if the effective output of the processing machine $P_2$ is lesser than the product of thermal capacity $P_G$ and the factor for Thermal capacity $f_4$ ($P_2 \leqslant f_4 \times P_G$).

**4. Symbols used :**

$i_N$ = Nominal transmission ratio
$n_1$ = Input speed in r.p.m.
$n_2$ = Output speed in r.p.m.
$P_N$ = Nominal gear unit rating in kW (Power rating)
$P_2$ = Effective output of processing machine in kW
$P_G$ = Thermal capacity in kW
$f_1$ = Factor for Propulsion machines (Table 1)
$f_2$ = Factor for Processing machines (Table 2)
$f_3$ = Factor for frequency of starts (Table 3)
$f_4$ = Factor for Thermal capacities (Table 4)

**5. Example of calculation :**

Data :

**Propulsion machine :**

Electric motor, $n_1 = 1500$ r.p.m.
$P_{Motor} = 250$ kW

**Processing machine :**

Belt conveyor carrying bulk material

| | |
|---|---|
| Required power consumption : | $P_2 = 225$ kW |
| Output speed : | $n_2 = 30$ r.p.m. |
| Working time : | 24 hours per day |
| Frequency of starts per hour : | 1 |
| Duty cycle : | 100% |
| Ambient temperature : | 40°C |
| Type of Gear unit : | Helical |

**Required :**

Gear unit type and Gear unit size.

**Calculation :**

5.1 Determination of Gear unit type :

5.1.1 Helical gearing system is specified
$n_1 = 1500$ r.p.m., $n_2 = 30$ r.p.m.

5.1.2 $i_N = \frac{n_1}{n_2} = \frac{1500}{30} = 50$

Selected : Gear unit type CHS,
Three Stage Helical gearing system.

5.2 Determination of size of Gear unit :

5.2.1 Determination of factors :

| | | |
|---|---|---|
| Factor for Propulsion machine | : | $f_1 = 1$ |
| Factor for Processing machine | : | $f_2 = 1.7$ |
| Factor for Frequency of starts | : | $f_3 = 1$ |
| Factor for Thermal capacities | : | $f_4 = 0.82$ |

5.2.2 Nominal Gear unit rating
$P_2 \times f_1 \times f_2 \times f_3 = 225 \text{ kW} \times 1 \times 1.7 \times 1 = 382.5$ kW.

5.2.3 From the performance table of CHS - Gear unit size 500 with $i_N = 50$ and $P_N = 560$ kW is selected.

5.3 Calculation of heating :
Thermal capacity $P_G = 410$ kW
$P_2 = 225 \text{ kW} \leqslant (P_G \times f_4 = 336.2 \text{ kW})$
An additional cooling is not necessary.

**Table 1**
**Factor for Propulsion Machines – $f_1$**

| Electric Motors, Turbines | Piston engines 4-6 Cylinders Cyclic variation 1 : 100 upto 1 : 200 | Piston engines 1-3 Cylinders Cyclic variation upto 1 : 100 |
|---|---|---|
| 1.0 | 1.25 | 1.5 |

**Table 3**
**Factor for Frequency of Starts – $f_3$**

| Starts per Hour | Factor for Processing Machine – $f_2$ | | | | | |
|---|---|---|---|---|---|---|
| | ⩾ 1.0 | ⩾ 1.2 | ⩾ 1.4 | ⩾ 1.6 | ⩾ 1.8 | ⩾ 2.0 |
| 1 - 5 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 6 - 20 | 1.2 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 21 - 40 | 1.3 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 |
| 41 - 80 | 1.5 | 1.4 | 1.3 | 1.3 | 1.2 | 1.1 |
| 81 - 160 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 |
| Above 160 | 2.0 | 1.8 | 1.7 | 1.6 | 1.3 | 1.1 |

**Table 4**
**Factor for Thermal Capacities – $f_4$**

| Ambient Temperature | Duty Cycle | | | | |
|---|---|---|---|---|---|
| | 100% | 80% | 60% | 40% | 20% |
| 20°C | 1.00 | 1.04 | 1.09 | 1.16 | 1.27 |
| 30°C | 0.91 | 0.95 | 1.00 | 1.07 | 1.18 |
| 40°C | 0.82 | 0.86 | 0.91 | 0.98 | 1.09 |
| 50°C | 0.73 | 0.77 | 0.82 | 0.89 | 1.00 |

# Power ratings

| Nominal transmission ratio $i_N$ | Speeds r.p.m. $n_1$ | $n_2$ | Size of gear unit 160 | 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 560 | 630 | 710 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Nominal Gear unit ratings $P_N$ (kW) | | | | | | | | | | | | | | |
| 90 | 1500 | 16.7 | | | 15 | 23 | 30 | 42 | 68 | 105 | 145 | 205 | 300 | 420 | 560 | 800 | 1150 |
| | 1000 | 11.1 | | | 10 | 15 | 20 | 28 | 45 | 70 | 97 | 137 | 200 | 280 | 373 | 533 | 767 |
| | 750 | 8.3 | | | 7.5 | 12 | 15 | 21 | 34 | 53 | 73 | 103 | 150 | 210 | 280 | 400 | 575 |
| 100 | 1500 | 15 | 7.4 | 10.5 | 14.5 | 22 | 30 | 42 | 66 | 99 | 135 | 185 | 290 | 400 | 540 | 780 | 1130 |
| | 1000 | 10 | 4.9 | 7 | 9.7 | 15 | 20 | 28 | 44 | 66 | 90 | 123 | 193 | 267 | 360 | 520 | 753 |
| | 750 | 7.5 | 3.7 | 5.3 | 7.3 | 11 | 15 | 21 | 33 | 50 | 68 | 93 | 145 | 200 | 270 | 390 | 565 |
| 112 | 1500 | 13.4 | 6.5 | 9.5 | 13.5 | 21 | 28 | 38 | 59 | 87 | 115 | 170 | 255 | 360 | 480 | 690 | 940 |
| | 1000 | 8.9 | 4.3 | 6.3 | 9 | 14 | 19 | 25 | 39 | 58 | 77 | 113 | 170 | 240 | 320 | 460 | 627 |
| | 750 | 6.7 | 3.3 | 4.8 | 6.8 | 11 | 14 | 19 | 30 | 44 | 58 | 85 | 128 | 180 | 240 | 345 | 470 |
| 125 | 1500 | 12 | 5.8 | 9 | 12.5 | 18.5 | 25 | 34 | 52 | 79 | 100 | 150 | 230 | 320 | 430 | 610 | 880 |
| | 1000 | 8 | 3.9 | 6 | 8.3 | 12.3 | 17 | 23 | 35 | 53 | 67 | 100 | 153 | 213 | 287 | 407 | 587 |
| | 750 | 6 | 2.9 | 4.5 | 6.3 | 9.3 | 13 | 17 | 26 | 40 | 50 | 75 | 115 | 160 | 215 | 305 | 440 |
| 140 | 1500 | 10.7 | 5.2 | 8 | 11.5 | 16.5 | 23 | 30 | 47 | 71 | 89 | 135 | 205 | 295 | 380 | 550 | 800 |
| | 1000 | 7.1 | 3.5 | 5.3 | 7.7 | 11 | 15 | 20 | 31 | 47 | 59 | 90 | 137 | 197 | 253 | 367 | 533 |
| | 750 | 5.4 | 2.6 | 4 | 5.8 | 8.3 | 12 | 15 | 24 | 36 | 45 | 68 | 103 | 148 | 190 | 275 | 400 |
| 160 | 1500 | 9.4 | 4.6 | 7.5 | 10 | 14.5 | 20 | 28 | 42 | 63 | 81 | 115 | 180 | 260 | 340 | 495 | 710 |
| | 1000 | 6.3 | 3.1 | 5 | 6.7 | 9.7 | 13.3 | 19 | 28 | 42 | 54 | 77 | 120 | 173 | 227 | 330 | 473 |
| | 750 | 4.7 | 2.3 | 3.8 | 5 | 7.3 | 10 | 14 | 21 | 32 | 41 | 58 | 90 | 130 | 170 | 248 | 355 |
| 180 | 1500 | 8.3 | 4.1 | 6.5 | 9.1 | 13 | 17.5 | 25 | 38 | 57 | 72 | 100 | 160 | 225 | 295 | 440 | 630 |
| | 1000 | 5.6 | 2.7 | 4.3 | 6.1 | 8.7 | 11.7 | 17 | 25 | 38 | 48 | 67 | 107 | 150 | 197 | 293 | 420 |
| | 750 | 4.2 | 2.1 | 3.3 | 4.6 | 6.5 | 8.8 | 13 | 19 | 29 | 36 | 50 | 80 | 113 | 148 | 220 | 315 |
| 200 | 1500 | 7.5 | 3.6 | 5.8 | 8.1 | 12 | 15.5 | 23 | 33 | 51 | 64 | 92 | 145 | 205 | 270 | 395 | 560 |
| | 1000 | 5 | 2.4 | 3.9 | 5.4 | 8 | 10.3 | 15 | 22 | 34 | 43 | 61 | 97 | 137 | 180 | 263 | 373 |
| | 750 | 3.8 | 1.8 | 2.9 | 4.1 | 6 | 7.8 | 12 | 17 | 26 | 32 | 46 | 73 | 103 | 135 | 198 | 280 |
| 224 | 1500 | 6.7 | 3.2 | 5.1 | 7.1 | 10.5 | 14 | 19.5 | 30 | 46 | 57 | 83 | 130 | 185 | 240 | 360 | 500 |
| | 1000 | 4.5 | 2.1 | 3.4 | 4.7 | 7 | 9.3 | 13 | 20 | 31 | 38 | 55 | 87 | 123 | 160 | 240 | 333 |
| | 750 | 3.3 | 1.6 | 2.6 | 3.6 | 5.3 | 7 | 9.8 | 15 | 23 | 29 | 42 | 65 | 93 | 120 | 180 | 250 |
| 250 | 1500 | 6 | 2.9 | 4.7 | 6.6 | 9.5 | 12.5 | 17.5 | 27 | 40 | 51 | 72 | 115 | 165 | 215 | 320 | 450 |
| | 1000 | 4 | 1.9 | 3.1 | 4.4 | 6.3 | 8.3 | 11.7 | 18 | 27 | 34 | 48 | 77 | 110 | 143 | 213 | 300 |
| | 750 | 3 | 1.5 | 2.4 | 3.3 | 4.8 | 6.3 | 8.8 | 14 | 20 | 26 | 36 | 58 | 83 | 108 | 160 | 225 |
| 280 | 1500 | 5.4 | 2.7 | 3.5 | 5.6 | 8.1 | 11.5 | 16 | 24 | 36 | 46 | 66 | 100 | 145 | 195 | 280 | 395 |
| | 1000 | 3.6 | 1.8 | 2.3 | 3.7 | 5.4 | 7.7 | 10.7 | 16 | 24 | 31 | 44 | 67 | 97 | 130 | 187 | 263 |
| | 750 | 2.7 | 1.4 | 1.8 | 2.8 | 4.1 | 5.8 | 8 | 12 | 18 | 23 | 33 | 50 | 73 | 98 | 140 | 198 |
| 320 | 1500 | 4.7 | 2.4 | 3.2 | 5.1 | 7.5 | 9.6 | 14 | 21 | 33 | 40 | 58 | 92 | 130 | 170 | 250 | 340 |
| | 1000 | 3.1 | 1.6 | 2.1 | 3.4 | 5 | 6.4 | 9.3 | 14 | 22 | 27 | 39 | 61 | 87 | 113 | 167 | 227 |
| | 750 | 2.3 | 1.2 | 1.6 | 2.6 | 3.8 | 4.8 | 7 | 11 | 17 | 20 | 29 | 46 | 65 | 85 | 125 | 170 |
| 360 | 1500 | 4.2 | 2.2 | 2.9 | 4.6 | 6.6 | 8.6 | 12 | 18 | 24 | 36 | 49 | 83 | 115 | 155 | 210 | 275 |
| | 1000 | 2.8 | 1.5 | 1.9 | 3.1 | 4.4 | 5.7 | 8 | 12 | 16 | 24 | 33 | 55 | 77 | 103 | 140 | 183 |
| | 750 | 2.1 | 1.1 | 1.5 | 2.3 | 3.3 | 4.3 | 6 | 9 | 12 | 18 | 25 | 42 | 58 | 78 | 105 | 138 |
| 400 | 1500 | 3.8 | 1.8 | 2.5 | 3.9 | 5.7 | 7.5 | 10 | 15.5 | 22 | 30 | 41 | 72 | 100 | 125 | 175 | 245 |
| | 1000 | 2.5 | 1.2 | 1.7 | 2.6 | 3.8 | 5 | 6.7 | 10.3 | 15 | 20 | 27 | 48 | 67 | 83 | 117 | 163 |
| | 750 | 1.9 | 0.9 | 1.3 | 2 | 2.9 | 3.8 | 5 | 7.8 | 11 | 15 | 21 | 36 | 50 | 63 | 88 | 123 |
| 450 | 1500 | 3.3 | 1.5 | 2.2 | 3.1 | 5 | 7 | 9 | 13.5 | 19.5 | 28 | 37 | 58 | 88 | 110 | 155 | 220 |
| | 1000 | 2.2 | 1 | 1.5 | 2.1 | 3.3 | 4.7 | 6 | 9 | 13 | 19 | 25 | 39 | 59 | 73 | 103 | 147 |
| | 750 | 1.7 | 0.8 | 1.1 | 1.6 | 2.5 | 3.5 | 4.5 | 6.8 | 9.8 | 14 | 19 | 29 | 44 | 55 | 78 | 110 |
| 500 | 1500 | 3 | | 1.9 | 2.7 | 3.9 | 6.1 | 7.3 | 10.6 | 17 | 24 | 33 | 50 | 71 | 97 | 150 | 190 |
| | 1000 | 2 | | 1.3 | 1.8 | 2.6 | 4.1 | 4.9 | 7.1 | 11.3 | 16 | 22 | 33 | 47 | 65 | 100 | 127 |
| | 750 | 1.5 | | 1 | 1.4 | 2 | 3.1 | 3.7 | 5.3 | 8.5 | 12 | 17 | 25 | 36 | 49 | 75 | 95 |

# Thermal capacities

| Nominal transmission ratio $i_N$ | Input speed r.p.m. $n_1$ | Size of gear unit 160 | 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 560 | 630 | 710 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Thermal capacities $P_G$ in kW for gear units without cooling | | | | | | | | | | | | | | |
| 90-500 | 1500 | 17.5 | 23 | 29 | 36 | 46 | 60 | 78 | 100 | 125 | 155 | 195 | 245 | 310 | 390 | 510 |

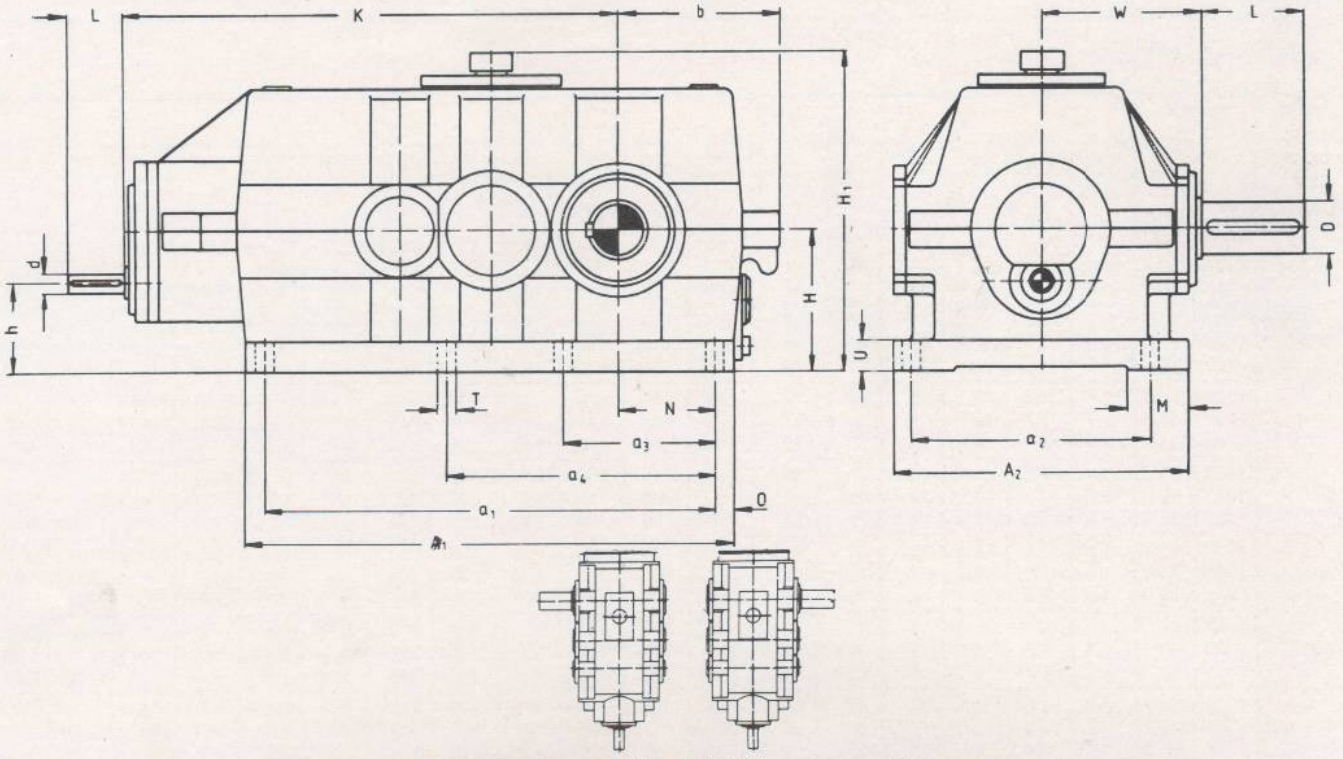
The nominal gear ratings $P_N$ in kW marked with • require forced-feed lubrication by a pump.

Tolerance on the nominal transmission ratio is ± 3%.

# GGAG

## Bevel Helical Gear Units

**DBS**




**Left-hand assembly** **Right-hand assembly**

Dimensions in mm

| Size of gear unit | Housing dimensions | | | | | | | | | | | | | | | Input shaft | | | | | Output shaft | | | Avg. Wt. Kg. | Oil Qty. ltrs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | $i_N \leq 360$ | | $i_N \geq 400$ upto 500 | | | | | | | |
| | $A_1$ | $A_2$ | $a_1$ | $a_2$ | $a_3$ | $a_4$ | b | H | $H_1$ | h | M | N | O | T | U | d | l | d | l | K | D | L | W | | |
| 160 | 600 | 290 | 540 | 245 | 225 | | 190 | 180 | 430 | 117 | 75 | 135 | 30 | 18 | 35 | 19 | 40 | 19 | 40 | 512 | 80 | 170 | 150 | 175 | 12 |
| 180 | 665 | 320 | 605 | 275 | 250 | | 215 | 200 | 475 | 130 | 80 | 155 | 30 | 18 | 35 | 19 | 40 | 19 | 40 | 575 | 90 | 170 | 160 | 235 | 16 |
| 200 | 745 | 355 | 675 | 300 | 280 | | 240 | 225 | 520 | 145 | 85 | 170 | 35 | 23 | 40 | 22 | 50 | 19 | 40 | 640 | 100 | 210 | 175 | 350 | 22 |
| 225 | 840 | 390 | 770 | 335 | 315 | | 265 | 250 | 570 | 160 | 90 | 190 | 35 | 23 | 45 | 25 | 60 | 22 | 50 | 725 | 110 | 210 | 200 | 470 | 32 |
| 250 | 930 | 450 | 850 | 380 | 350 | | 290 | 280 | 625 | 180 | 100 | 210 | 40 | 27 | 50 | 30 | 80 | 24 | 50 | 815 | 120 | 210 | 220 | 615 | 45 |
| 280 | 1025 | 500 | 935 | 430 | 390 | | 325 | 320 | 690 | 208 | 110 | 235 | 45 | 27 | 55 | 35 | 80 | 28 | 60 | 905 | 130 | 250 | 260 | 855 | 63 |
| 320 | 1160 | 570 | 1060 | 490 | 440 | 700 | 370 | 360 | 785 | 235 | 115 | 270 | 50 | 33 | 65 | 40 | 110 | 30 | 80 | 1025 | 140 | 250 | 295 | 1155 | 90 |
| 360 | 1300 | 500 | 1190 | 520 | 495 | 790 | 415 | 400 | 865 | 260 | 120 | 305 | 55 | 33 | 65 | 45 | 110 | 35 | 80 | 1145 | 170 | 300 | 320 | 1500 | 140 |
| 400 | 1460 | 590 | 1340 | 590 | 560 | 890 | 465 | 450 | 960 | 290 | 130 | 345 | 60 | 39 | 80 | 50 | 110 | 40 | 110 | 1275 | 180 | 300 | 370 | 2150 | 190 |
| 450 | 1640 | 750 | 1520 | 650 | 630 | 1000 | 525 | 500 | 1065 | 320 | 140 | 390 | 60 | 39 | 80 | 55 | 110 | 45 | 110 | 1425 | 220 | 350 | 415 | 2900 | 265 |
| 500 | 1830 | 830 | 1690 | 710 | 700 | 1110 | 585 | 560 | 1185 | 360 | 150 | 430 | 70 | 45 | 100 | 60 | 140 | 50 | 110 | 1585 | 240 | 410 | 475 | 4260 | 370 |
| 560 | 2040 | 910 | 1900 | 790 | 785 | 1245 | 650 | 630 | 1325 | 405 | 160 | 485 | 70 | 45 | 100 | 70 | 140 | 55 | 110 | 1775 | 270 | 410 | 510 | 5850 | 560 |
| 630 | 2300 | 1030 | 2140 | 890 | 880 | 1410 | 725 | 710 | 1485 | 460 | 170 | 545 | 80 | 52 | 125 | 80 | 170 | 60 | 140 | 1995 | 300 | 470 | 560 | 7950 | 570 |
| 710 | 2590 | 1160 | 2410 | 1000 | 1000 | 1580 | 810 | 800 | 1665 | 520 | 190 | 620 | 90 | 52 | 125 | 90 | 170 | 70 | 140 | 2235 | 340 | 550 | 600 | 10650 | 900 |
| 800 | 2900 | 1320 | 2700 | 1140 | 1130 | 1730 | 900 | 900 | 1870 | 580 | 200 | 695 | 100 | 60 | 160 | 100 | 210 | 90 | 170 | 2505 | 400 | 650 | 645 | 14700 | 1270 |

- Shaft ends as per IS 3688 (Long series)
- Tolerance field for shaft ends ISO fit upto 50 mm ∅ k6, over 50 mm ∅ m6
- Shaft ends with keys as per IS 2048 (Both ends round)
- Shaft centering as per IS 2540 (Threaded centre hole)

## Table 2
## Factor for Processing Machines - $f_2$

| Processing machines | Daily service in hours upto 3 | 3-10 | 10-24 |
|---|---|---|---|
| **Blowers, Fans, Ventilators** | | | |
| Axial blowers | 1.3 | 1.7 | 2.0 |
| Centrifugal blowers | 1.0 | 1.3 | 1.7 |
| Cooling tower fans | 1.3 | 1.7 | 2.0 |
| Impeller blowers | 1.0 | 1.3 | 1.7 |
| Induced draught fans & blowers | 1.3 | 1.7 | 2.0 |
| Large ventilators (mining) | 1.3 | 1.7 | 2.0 |
| Radial blowers | 1.3 | 1.7 | 2.0 |
| Rotary piston blowers | 1.3 | 1.7 | 2.0 |
| Turbo blowers | 1.0 | 1.3 | 1.7 |
| **Chemical Industry** | | | |
| Agitators (liquid material) | 1.0 | 1.3 | 1.7 |
| Agitators (semi liquid material) | 1.3 | 1.7 | 2.0 |
| Centrifuges (heavy) | 1.3 | 1.7 | 2.0 |
| Centrifuges (light) | 1.0 | 1.3 | 1.7 |
| Cooling drums | | | 2.0 |
| Mixers | 1.3 | 1.7 | 2.0 |
| Rotary drying kilns | | | 2.0 |
| **Compressors** | | | |
| Centrifugal compressors | 1.3 | 1.7 | 2.0 |
| Rotary piston compressors (U ≥ 1 : 100-200) | 1.3 | 1.7 | 2.0 |
| Rotary piston compressors (U < 1 : 100) | 2.0 | 2.3 | 2.6 |
| Turbo compressors | 1.3 | 1.7 | 2.0 |
| **Construction Machinery** | | | |
| Building elevators | 1.0 | 1.3 | 1.7 |
| Concrete mixers | 1.3 | 1.7 | 2.0 |
| Hoists | 1.3 | 1.7 | 2.0 |
| Road construction machinery | 1.3 | 1.7 | 2.0 |
| **Conveyors** | | | |
| Apron conveyors | 1.3 | 1.7 | 2.0 |
| Assembly line belts | 1.3 | 1.7 | 2.0 |
| Ballast elevators | 1.3 | 1.7 | 2.0 |
| Band pocket conveyors | 1.3 | 1.7 | 2.0 |
| Belt conveyors (bulk material) | 1.0 | 1.3 | 1.7 |
| Belt conveyors (piece goods) | 1.3 | 1.7 | 2.0 |
| Bucket conveyors | 1.3 | 1.7 | 2.0 |
| Bucket elevators | 1.0 | 1.3 | 1.7 |
| Chain conveyors | 1.3 | 1.7 | 2.0 |
| Chain elevators | 1.0 | 1.3 | 1.7 |
| Circular conveyors | 1.3 | 1.7 | 2.0 |
| Conveyor winches | | | 2.6 |
| Drag chain conveyors | 1.0 | 1.3 | 1.7 |
| Goods lifts | 1.3 | 1.7 | 2.0 |
| Gravel conveyors | 1.0 | 1.3 | 1.7 |
| Haulage winches | 1.3 | 1.7 | 2.0 |
| Hoists | | | 2.6 |
| Inclined hoists | | | 2.6 |
| Link conveyors | 1.3 | 1.7 | 2.0 |
| Overhead conveyors | 1.0 | 1.3 | 1.7 |
| Passanger lifts | 1.3 | 1.7 | 2.0 |
| Powder elevators | 1.0 | 1.3 | 1.7 |
| Roasting furnace conveyors | 1.0 | 1.3 | 1.7 |
| Screw conveyors | 1.3 | 1.7 | 2.0 |
| Shaft sinking machines | 2.0 | 2.3 | 2.6 |
| Slug haulers | 1.0 | 1.3 | 1.7 |
| Steel belt conveyors | 1.3 | 1.7 | 2.0 |
| Trough chain conveyors | 1.3 | 1.7 | 2.0 |
| Worm conveyors | 1.3 | 1.7 | 2.0 |
| **Cranes** | | | |
| Derricking jib gears | 1.3 | 1.7 | 2.0 |
| Hoisting gears | 1.3 | 1.7 | 2.0 |
| Landing gears | 1.3 | 1.7 | 2.0 |
| Luffing gears | 1.0 | 1.3 | 1.7 |
| Slewing gears | 1.3 | 1.7 | 2.0 |
| Travelling gears | 2.0 | 2.3 | 2.6 |
| Traversing gears | 1.0 | 1.3 | 1.7 |
| Winches | 1.0 | 1.3 | 1.7 |
| **Excavators and Stackers** | | | |
| Bucket conveyor excavators | 2.0 | 2.3 | 2.6 |
| Bucket wheels (Overburden/Limestone/Coal) | 2.0 | 2.3 | 2.6 |
| Bucket wheel stackers | 2.0 | 2.3 | 2.6 |
| Cable drums | 1.3 | 1.7 | 2.0 |
| Cutter heads | 2.0 | 2.3 | 2.6 |
| Landing gears (caterpillar) | 2.0 | 2.3 | 2.6 |
| Landing gears (rails) | 1.3 | 1.7 | 2.0 |
| Manoeuvring winches | 1.3 | 1.7 | 2.0 |
| Suction pumps | 1.3 | 1.7 | 2.0 |
| Traversing gears | 1.0 | 1.3 | 1.7 |
| Winches | 1.3 | 1.7 | 2.0 |
| **Food Industry Machinery** | | | |
| Cane crushers | | | 2.0 |
| Cane knives | | | 2.0 |
| Cane mills | 2.0 | 2.3 | 2.6 |
| Filling machines | 1.0 | 1.3 | 1.7 |
| Kneading machines | 1.3 | 1.7 | 2.0 |
| Mash tubs, Crystallizers | 1.3 | 1.7 | 2.0 |
| Packaging machines | 1.0 | 1.3 | 1.7 |
| Sugar beat cutters | 1.3 | 1.7 | 2.0 |
| Sugar beat washing machines | 1.3 | 1.7 | 2.0 |
| Sugar cane cutters | | | 2.0 |
| Weighing machines | 1.3 | 1.7 | 2.0 |
| **Generators & Transformers** | | | |
| Frequency transformers | 2.0 | 2.3 | 2.6 |
| Generators | 1.0 | 1.3 | 1.7 |
| Water turbines | | | 1.7 |
| Welding generators | 2.0 | 2.3 | 2.6 |
| **Iron and Steel Industry** | | | |
| Blast furnace blowers | | | 1.7 |
| Car tippers | 2.0 | 2.3 | 2.6 |
| Crushers | | | 2.6 |
| Foundry cranes | | | 2.6 |
| Inclined elevators for blast furnace | | | 2.0 |
| Slag cars | | | 1.7 |
| **Laundry Machines** | | | |
| Rotary driers | 1.0 | 1.3 | 1.7 |
| Tumblers | 1.3 | 1.7 | 2.0 |
| Washing machines | 1.3 | 1.7 | 2.0 |
| **Metal Working Machines** | | | |
| Bending machines | 1.3 | 1.7 | 2.0 |
| Countershafts, Line shafts | 1.0 | 1.3 | 1.7 |
| Forging presses | 2.0 | 2.3 | 2.6 |
| Hammers | | | 2.6 |
| Machine tools, Auxiliary drives | 1.0 | 1.3 | 1.7 |
| Machine tools, Main drives | 1.3 | 1.7 | 2.0 |
| Planing machines | 2.0 | 2.3 | 2.6 |
| Presses | 2.0 | 2.3 | 2.6 |
| Punching presses | 2.0 | 2.3 | 2.6 |
| Shearing machines | | | 2.0 |
| Straightening machines | 2.0 | 2.3 | 2.6 |
| **Mining, Stone and Soil Working Machines** | | | |
| Ball mills | | | 2.6 |
| Brick making presses | 2.0 | 2.3 | 2.6 |
| Centrifugal grinders | | | 2.6 |
| Chain conveyors | | | 1.7 |
| Clay mixers | 1.3 | 1.7 | 2.0 |
| Cone crushers | | | 2.6 |
| Crushers, Breakers | 2.0 | 2.3 | 2.6 |
| Edge mills | | | 2.6 |
| Gyratory breakers | | | 2.6 |
| Hammer mills | | | 2.6 |
| Impact mills | | | 2.6 |
| Impact pulverizers | | | 2.6 |
| Jaw crushers, Jaw breakers | | | 2.6 |
| Mine blowers | | | 1.7 |
| Pendulum mills | | | 2.6 |
| Pneumatic softeners | 1.3 | 1.7 | 2.0 |
| Ram moulding machines | | | 2.0 |
| Rod mills | | | 2.6 |
| Roll crushers | | | 2.0 |
| Rolling mills | | | 2.6 |
| Rotating cylindrical kilns | | | 2.6 |
| Screens | | | 2.0 |
| Sharp point breakers | | | 2.0 |
| Tube mills | | | 2.6 |
| Wagon pushers | | | 2.0 |
| **Oil Industry** | | | |
| Filter presses | | | 2.0 |
| Hydraulic pumps | | | 2.0 |
| Pipeline pumps | | | 2.0 |
| Rotary drilling equipments | 2.0 | 2.3 | 2.6 |
| Rotary kilns | 1.3 | 1.7 | 2.0 |
| Scavenging pumps | | | 2.0 |
| **Paper Machines** | | | |
| Calenders | | | 2.0 |
| Couches | | | 2.6 |
| Drying cylinders | | | 2.6 |
| Drying rollers | | | 2.0 |
| Glue presses | | | 2.6 |
| Horizontal rollers | | | 2.0 |
| Machine glaze cylinders | | | 2.6 |
| Mixers | 1.3 | 1.7 | 2.0 |
| Pulpers | | | 2.0 |
| Pulp grinders | | | 2.6 |
| Suction moulders | | | 2.0 |
| Suction presses | | | 2.6 |
| Suction rolls | | | 2.6 |
| Wet batches | | | 2.0 |
| Wet presses | | | 2.6 |
| Willows | 2.0 | 2.3 | 2.6 |
| Wood grinders | | | 2.0 |
| **Pumps** | | | |
| Centrifugal pumps (light liquids) | 1.0 | 1.3 | 1.7 |
| Centrifugal pumps (semi liquids) | 1.3 | 1.7 | 2.0 |
| Compression pumps | 2.0 | 2.3 | 2.6 |
| Piston pumps (U ≥ 1 : 100-200) | | | 2.0 |
| Piston pumps (U < 1 : 100) | 2.0 | 2.3 | 2.6 |
| Plunger pumps | | | 2.6 |
| Pressure pumps | | | 2.6 |
| Proportioning pumps | 1.3 | 1.7 | 2.0 |
| Sand pumps | | | 2.0 |
| **Rolling Mills** | | | |
| Billet shears | | | 2.6 |
| Capstan handles | | | 1.7 |
| Chain transfers | | | 2.0 |
| Coiling machines | | | 1.7 |
| Cold rolling mills | | | 2.6 |
| Continuous casting equipments | | | 2.6 |
| Cooling beds | | | 2.0 |
| Cropping shears | | | 2.6 |
| Cross transfers | | | 2.0 |
| Descaling machines | | | 2.6 |
| Draw benches for wire drawing | | | 1.7 |
| Fast rollers | | | 2.0 |
| Fix transportations (rope) | | | 1.7 |
| Ingot and blooming mills | | | 2.6 |
| Ingot handling machinery | | | 2.6 |
| Ingot pushers | | | 2.6 |
| Lift conveyors | | | 2.0 |
| Live roller-type feeding tables | | | 1.7 |
| Manipulators | | | 2.6 |
| Plate mills | | | 2.6 |
| Plate shearing machines | | | 2.6 |
| Plate tilters | | | 2.0 |
| Revolving turrets (continuous casting) | | | 2.0 |
| Roller adjustment devices | 1.3 | 1.7 | 2.0 |
| Roller straighteners | | | 2.0 |
| Rollertables (heavy) | | | 2.6 |
| Rollertables (light) | | | 2.0 |
| Rollertransporters | | | 2.0 |
| Sheetrolling mills | | | 2.6 |
| Shunting installations | | | 1.7 |
| Slow rollers | | | 1.7 |
| Tape spools | | | 2.0 |
| Trimming shears | | | 2.0 |
| Tube welding machines | 2.0 | 2.3 | 2.6 |
| Winding machines (strip and wire) | | | 2.0 |
| Wire drawing machines | 1.3 | 1.7 | 2.0 |
| Wire reels | | | 2.0 |
| Wire rope winches | | | 1.7 |
| **Rubber and Plastic Machinery** | | | |
| Calenders | | | 2.0 |
| Crushing machines | | | 2.0 |
| Extruders | | | 2.6 |
| Kneading machines | | | 2.6 |
| Mixers | | | 2.0 |
| Pug mills | | | 2.6 |
| Rolling mills | | | 2.6 |
| **Textile Machines** | | | |
| Batchers | 1.3 | 1.7 | 2.0 |
| Bobbin winding machines | 1.3 | 1.7 | 2.0 |
| Calenders | 1.3 | 1.7 | 2.0 |
| Drying machines | 1.3 | 1.7 | 2.0 |
| Looms | 1.3 | 1.7 | 2.0 |
| Printing & Dyeing machines | 1.3 | 1.7 | 2.0 |
| Tanning vats | 1.3 | 1.7 | 2.0 |
| Willows | 1.3 | 1.7 | 2.0 |
| **Water Treatment** | | | |
| Aerators | | | 2.0 |
| Gyroscopic ventilators | 1.3 | 1.7 | 2.0 |
| Mixers | 1.3 | 1.7 | 2.0 |
| Rate screen drives | 1.0 | 1.3 | 1.7 |
| Screw pumps | 1.3 | 1.7 | 2.0 |
| Thickeners | 1.3 | 1.7 | 2.0 |
| Vacuum filter presses | 1.3 | 1.7 | 2.0 |
| **Wood Working Machines** | | | |
| Barkers | 2.0 | 2.3 | 2.6 |
| Decorticating drums | 2.0 | 2.3 | 2.6 |
| Planing machines | 1.3 | 1.7 | 2.0 |
| Sawmills | | | 2.6 |
| Wood working machines | 1.0 | 1.3 | 1.7 |

# Power ratings

| Nominal transmission ratio $i_N$ | Speeds r.p.m. $n_1$ | $n_2$ | Size of gear unit 112 | 125 | 140 | 160 | 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 560 | 630 | 710 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Nominal Gear unit ratings $P_N$ (kW) | | | | | | | | | | | | | | | | | |
| 14 | 1500 | 107.1 | 16 | 22 | 32 | 52 | 74 | 96 | 135 | 180 | 253 | 372 | 578 | 811 • | 1193 • | 1600 • | 2301 • | 3193 • | | |
| | 1000 | 71.4 | 10.7 | 15 | 21 | 35 | 49 | 64 | 90 | 120 | 169 | 248 | 385 | 541 | 795 | 1067 | 1534 • | 2129 • | 2550 • | 2950 • |
| | 750 | 53.6 | 8 | 11 | 16 | 26 | 37 | 48 | 68 | 90 | 127 | 186 | 289 | 406 | 597 | 800 | 1151 | 1597 | 1913 • | 2213 • |
| 16 | 1500 | 93.8 | 15 | 22 | 32 | 47 | 65 | 87 | 125 | 165 | 235 | 327 | 516 | 724 • | 1054 • | 1408 • | 2026 • | 2810 • | | |
| | 1000 | 62.5 | 10 | 15 | 21 | 31 | 43 | 58 | 83 | 110 | 157 | 218 | 344 | 483 | 703 | 939 | 1351 • | 1873 • | 2550 • | 2950 • |
| | 750 | 46.9 | 7.5 | 11 | 16 | 24 | 33 | 44 | 63 | 83 | 118 | 164 | 258 | 362 | 527 | 704 | 1013 | 1405 | 1913 • | 2213 • |
| 18 | 1500 | 83.3 | 14.5 | 20 | 29 | 43 | 59 | 76 | 115 | 155 | 215 | 295 | 470 | 664 | 944 • | 1350 • | 1850 • | 2617 • | | |
| | 1000 | 55.6 | 9.7 | 13.3 | 19 | 29 | 39 | 51 | 77 | 103 | 143 | 197 | 313 | 443 | 629 | 900 | 1233 • | 1745 • | 2550 • | 2950 • |
| | 750 | 41.7 | 7.3 | 10 | 15 | 22 | 30 | 38 | 58 | 78 | 108 | 148 | 235 | 332 | 472 | 675 | 925 | 1309 | 1913 • | 2213 • |
| 20 | 1500 | 75 | 3 | 17.5 | 26 | 40 | 54 | 69 | 105 | 140 | 200 | 280 | 440 | 587 | 835 • | 1350 • | 1800 • | 2460 • | 2800 • | |
| | 1000 | 50 | 8.7 | 11.7 | 17 | 27 | 36 | 46 | 70 | 93 | 133 | 187 | 293 | 391 | 557 | 900 | 1200 • | 1640 • | 1867 • | 2850 • |
| | 750 | 37.5 | 6.5 | 8.8 | 13 | 20 | 27 | 35 | 53 | 70 | 100 | 140 | 220 | 294 | 418 | 675 | 900 | 1230 | 1400 • | 2138 • |
| 22.4 | 1500 | 67 | 11.5 | 15.5 | 23 | 35 | 50 | 66 | 95 | 135 | 180 | 255 | 400 | 522 | 750 • | 1200 • | 1550 • | 2200 • | 2789 • | 3400 • |
| | 1000 | 44.6 | 7.7 | 10.3 | 15 | 23 | 33 | 44 | 63 | 90 | 120 | 170 | 267 | 348 | 500 | 800 | 1033 | 1467 • | 1859 • | 2267 • |
| | 750 | 33.5 | 5.8 | 7.8 | 12 | 18 | 25 | 33 | 48 | 68 | 90 | 128 | 200 | 261 | 375 | 600 | 775 | 1100 | 1395 | 1700 • |
| 25 | 1500 | 60 | 10 | 14 | 21 | 31 | 45 | 62 | 85 | 120 | 165 | 230 | 360 | 470 | 670 | 1050 • | 1460 • | 1950 • | 2600 • | 3300 • |
| | 1000 | 40 | 6.7 | 9.3 | 14 | 21 | 30 | 41 | 57 | 80 | 110 | 153 | 240 | 313 | 447 | 700 | 973 | 1300 • | 1733 • | 2200 • |
| | 750 | 30 | 5 | 7 | 11 | 16 | 23 | 31 | 43 | 60 | 83 | 115 | 180 | 235 | 335 | 525 | 730 | 975 | 1300 | 1650 • |
| 28 | 1500 | 53.6 | 9.2 | 12.5 | 18.5 | 26 | 38 | 52 | 76 | 100 | 145 | 220 | 330 | 418 | 600 | 930 • | 1300 • | 1750 • | 2450 • | 3000 • |
| | 1000 | 35.7 | 6.1 | 8.3 | 12.3 | 17 | 25 | 35 | 51 | 67 | 97 | 147 | 220 | 279 | 400 | 620 | 867 | 1167 • | 1633 • | 2000 • |
| | 750 | 26.8 | 4.6 | 6.3 | 9.3 | 13 | 19 | 26 | 38 | 50 | 73 | 110 | 165 | 209 | 300 | 465 | 650 | 875 | 1225 | 1500 • |
| 32 | 1500 | 46.9 | 7.7 | 11 | 16.5 | 23 | 34 | 46 | 69 | 91 | 130 | 200 | 295 | 390 | 560 | 840 • | 1200 • | 1550 • | 2300 • | 2700 • |
| | 1000 | 31.3 | 5.1 | 7.3 | 11 | 15 | 23 | 31 | 46 | 61 | 87 | 133 | 197 | 260 | 373 | 560 | 800 | 1033 • | 1533 • | 1800 • |
| | 750 | 23.4 | 3.9 | 5.5 | 8.3 | 12 | 17 | 23 | 35 | 46 | 65 | 100 | 148 | 195 | 280 | 420 | 600 | 775 | 1150 | 1350 • |
| 36 | 1500 | 41.7 | 6.6 | 9.6 | 15 | 20 | 31 | 41 | 62 | 81 | 110 | 180 | 265 | 350 | 510 | 780 • | 1100 • | 1450 • | 2150 • | 2400 • |
| | 1000 | 27.8 | 4.4 | 6.4 | 10 | 13.3 | 21 | 27 | 41 | 54 | 73 | 120 | 177 | 233 | 340 | 520 | 733 | 967 | 1433 • | 1600 • |
| | 750 | 20.8 | 3.3 | 4.8 | 7.5 | 10 | 16 | 21 | 31 | 41 | 55 | 90 | 133 | 175 | 255 | 390 | 550 | 725 | 1075 | 1200 |
| 40 | 1500 | 37.5 | 6 | 8.6 | 13 | 18 | 28 | 37 | 56 | 71 | 98 | 160 | 240 | 310 | 460 | 690 | 990 • | 1300 • | 1950 • | 2200 • |
| | 1000 | 25 | 4 | 5.7 | 8.7 | 12 | 19 | 25 | 37 | 47 | 65 | 107 | 160 | 207 | 307 | 460 | 660 | 867 | 1300 • | 1467 • |
| | 750 | 18.8 | 3 | 4.3 | 6.5 | 9 | 14 | 19 | 28 | 36 | 49 | 80 | 120 | 155 | 230 | 345 | 495 | 650 | 975 | 1100 |
| 45 | 1500 | 33.3 | 5.2 | 7.6 | 12 | 15.5 | 24 | 33 | 50 | 65 | 91 | 145 | 215 | 280 | 410 | 620 | 880 | 1150 • | 1750 • | 2100 • |
| | 1000 | 22.2 | 3.5 | 5.1 | 8 | 10.3 | 16 | 22 | 33 | 43 | 61 | 97 | 143 | 187 | 273 | 413 | 587 | 767 | 1167 | 1400 |
| | 750 | 16.7 | 2.6 | 3.8 | 6 | 7.8 | 12 | 17 | 25 | 33 | 46 | 73 | 108 | 140 | 205 | 310 | 440 | 575 | 875 | 1050 |
| 50 | 1500 | 30 | 4.7 | 7 | 11 | 13.5 | 22 | 30 | 44 | 58 | 81 | 130 | 195 | 245 | 360 | 550 | 780 | 1050 | 1550 • | 2050 • |
| | 1000 | 20 | 3.1 | 4.7 | 7.3 | 9 | 15 | 20 | 29 | 39 | 54 | 87 | 130 | 163 | 240 | 367 | 520 | 700 | 1033 | 1367 |
| | 750 | 15 | 2.4 | 3.5 | 5.5 | 6.8 | 11 | 15 | 22 | 29 | 41 | 65 | 98 | 123 | 180 | 275 | 390 | 525 | 775 | 1025 |
| 56 | 1500 | 26.8 | 4.2 | 6.1 | 9.5 | 12 | 19.5 | 27 | 40 | 51 | 72 | 115 | 170 | 225 | 320 | 500 | 700 | 920 | 1370 • | 1980 • |
| | 1000 | 17.9 | 2.8 | 4.1 | 6.3 | 8 | 13 | 18 | 27 | 34 | 48 | 77 | 113 | 150 | 213 | 333 | 467 | 613 | 913 | 1320 |
| | 750 | 13.4 | 2.1 | 3.1 | 4.8 | 6 | 9.8 | 14 | 20 | 26 | 36 | 58 | 85 | 113 | 160 | 250 | 350 | 460 | 685 | 990 |
| 63 | 1500 | 23.8 | 3.8 | 5.5 | 8.5 | 11 | 17 | 24 | 35 | 45 | 64 | 100 | 150 | 200 | 285 | 440 | 620 | 810 | 1250 | 1550 • |
| | 1000 | 15.9 | 2.5 | 3.7 | 5.7 | 7.3 | 11.3 | 16 | 23 | 30 | 43 | 67 | 100 | 133 | 190 | 293 | 413 | 540 | 833 | 1033 |
| | 750 | 11.9 | 1.9 | 2.8 | 4.3 | 5.5 | 8.5 | 12 | 18 | 23 | 32 | 50 | 75 | 100 | 143 | 220 | 310 | 405 | 625 | 775 |
| 71 | 1500 | 21.1 | 3.3 | 4.8 | 7.5 | 9.5 | 15 | 22 | 31 | 41 | 57 | 91 | 135 | 180 | 250 | 400 | 560 | 730 | 1000 | 1200 |
| | 1000 | 14.1 | 2.2 | 3.2 | 5 | 6.3 | 10 | 15 | 21 | 27 | 38 | 61 | 90 | 120 | 167 | 267 | 373 | 487 | 667 | 800 |
| | 750 | 10.6 | 1.7 | 2.4 | 3.8 | 4.8 | 7.5 | 11 | 16 | 21 | 29 | 46 | 68 | 90 | 125 | 200 | 280 | 365 | 500 | 600 |
| 80 | 1500 | 18.8 | 3 | 4.4 | 6.2 | 9 | 12.4 | 19.5 | 29 | 40 | 55 | 74 | 115 | 160 | 218 | 350 | 480 | 610 | 860 | 1100 |
| | 1000 | 12.5 | 2 | 2.9 | 4.1 | 6 | 8 | 13 | 19 | 27 | 37 | 49 | 77 | 107 | 145 | 233 | 320 | 407 | 573 | 733 |
| | 750 | 9.4 | 1.5 | 2.2 | 3.1 | 4.5 | 6 | 9.8 | 15 | 20 | 28 | 37 | 58 | 80 | 109 | 175 | 240 | 305 | 430 | 550 |
| 90 | 1500 | 16.7 | 2.4 | 3.9 | 5.5 | 8 | 10.5 | 18 | 26 | 36 | 46 | 67 | 110 | 145 | 190 | 310 | 385 | 520 | 800 | 920 |
| | 1000 | 11.1 | 1.6 | 2.6 | 3.7 | 5.3 | 7 | 12 | 17 | 24 | 31 | 45 | 73 | 97 | 127 | 207 | 257 | 347 | 533 | 613 |
| | 750 | 8.3 | 1.2 | 2 | 2.8 | 4 | 5.3 | 9 | 13 | 18 | 23 | 34 | 55 | 73 | 95 | 155 | 193 | 260 | 400 | 460 |

# Thermal capacities

| Nominal transmission ratio $i_N$ | Input speed r.p.m. $n_1$ | Size of gear unit 112 | 125 | 140 | 160 | 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 560 | 630 | 710 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Thermal capacities $P_G$ in kW for gear units without cooling | | | | | | | | | | | | | | | | | |
| 14 - 90 | 1500 | 22 | 27 | 34 | 46 | 54 | 66 | 85 | 105 | 135 | 170 | 205 | 250 | 310 | 390 | 490 | 610 | 760 | 960 |

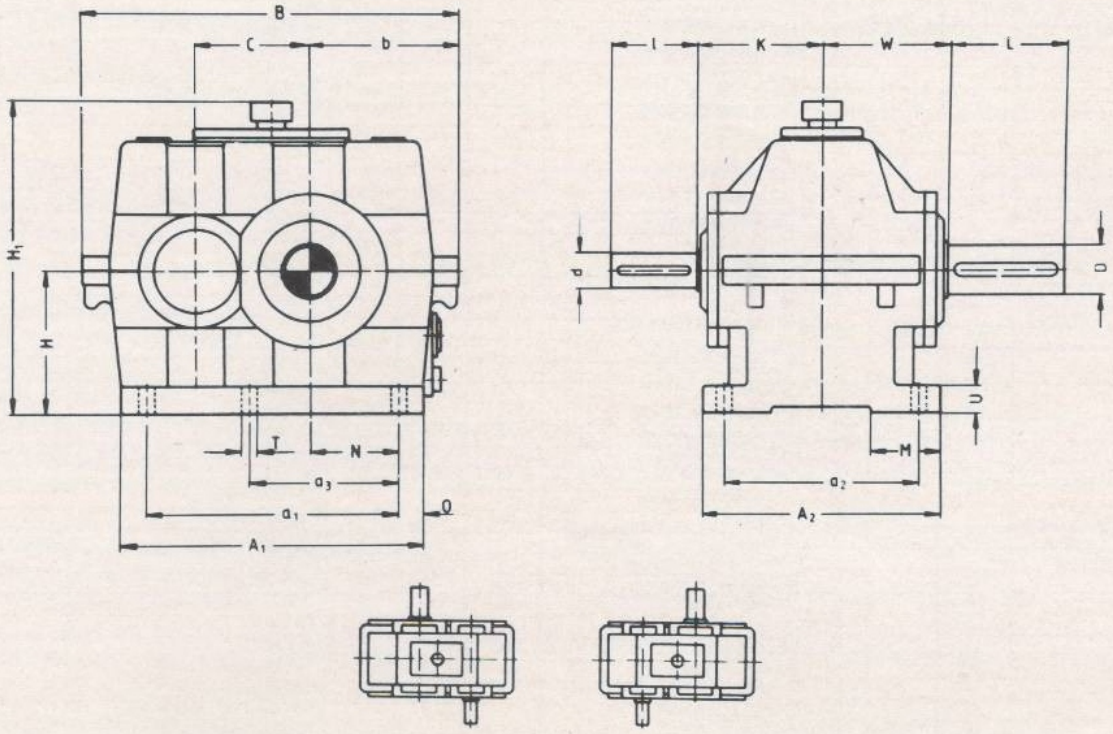
The nominal gear ratings $P_N$ in kW marked with • require forced-feed lubrication by a pump.

Tolerance on the nominal transmission ratio is ± 3%.

# GGAG

## Helical Gear Units

**AHS**




**Left-hand assembly** **Right-hand assembly**

Dimensions in mm

| Size of gear unit | Centre distance C | Housing dimensions | | | | | | | | | | | | | | Input shaft $i_N \leq 3.2$ | | Input shaft $i_N \geq 3.6$ upto 5 | | Input shaft $i_N \geq 5.6$ upto 6.3 | | | Output shaft | | | Avg. Wt. kg. | Oil Qty. ltrs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $A_1$ | $A_2$ | $a_1$ | $a_2$ | $a_3$ | B | b | H | $H_1$ | M | N | O | T | U | d | l | d | l | d | l | K | D | L | W | | |
| 80 | 80 | 235 | 170 | 205 | 140 | | 285 | 115 | 100 | 240 | 50 | 65 | 15 | 14 | 20 | 28 | 60 | 24 | 50 | 19 | 40 | 90 | 32 | 80 | 90 | 19 | 0.9 |
| 90 | 90 | 260 | 180 | 230 | 150 | | 310 | 125 | 112 | 260 | 50 | 75 | 15 | 14 | 20 | 35 | 80 | 28 | 60 | 20 | 50 | 95 | 38 | 80 | 95 | 25 | 1.2 |
| 100 | 100 | 290 | 190 | 250 | 160 | | 340 | 135 | 125 | 290 | 50 | 80 | 20 | 14 | 25 | 42 | 110 | 30 | 60 | 22 | 50 | 100 | 48 | 110 | 100 | 35 | 1.6 |
| 112 | 112 | 320 | 200 | 280 | 170 | | 370 | 145 | 140 | 320 | 55 | 92 | 20 | 14 | 25 | 45 | 110 | 35 | 80 | 25 | 60 | 105 | 48 | 110 | 105 | 52 | '2.4 |
| 125 | 125 | 355 | 220 | 305 | 190 | | 420 | 165 | 160 | 355 | 60 | 105 | 25 | 14 | 25 | 50 | 110 | 40 | 110 | 30 | 80 | 115 | 55 | 110 | 115 | 65 | 3.2 |
| 140 | 140 | 400 | 240 | 350 | 210 | | 460 | 180 | 180 | 410 | 70 | 120 | 25 | 14 | 35 | 55 | 110 | 45 | 110 | 35 | 80 | 125 | 60 | 140 | 125 | 95 | 4.9 |
| 160 | 160 | 445 | 270 | 385 | 225 | | 520 | 205 | 200 | 450 | 75 | 135 | 30 | 18 | 35 | 65 | 140 | 50 | 110 | 40 | 110 | 140 | 70 | 140 | 140 | 120 | 6.5 |
| 180 | 180 | 495 | 285 | 435 | 240 | | 560 | 220 | 225 | 505 | 80 | 155 | 30 | 18 | 35 | 70 | 140 | 55 | 110 | 45 | 110 | 150 | 80 | 170 | 150 | 175 | 9.5 |
| 200 | 200 | 545 | 310 | 475 | 255 | | 640 | 250 | 250 | 550 | 85 | 170 | 35 | 23 | 40 | 80 | 170 | 60 | 140 | 50 | 110 | 160 | 90 | 170 | 160 | 230 | 12.5 |
| 225 | 225 | 610 | 335 | 540 | 280 | | 710 | 275 | 280 | 605 | 90 | 190 | 35 | 23 | 45 | 90 | 170 | 70 | 140 | 55 | 110 | 175 | 100 | 210 | 175 | 320 | 18.0 |
| 250 | 250 | 680 | 370 | 600 | 300 | 350 | 790 | 315 | 320 | 665 | 100 | 210 | 40 | 27 | 50 | 100 | 210 | 80 | 170 | 60 | 140 | 190 | 110 | 210 | 190 | 420 | 23.0 |
| 280 | 280 | 755 | 450 | 665 | 380 | 390 | 880 | 340 | 360 | 735 | 110 | 235 | 45 | 27 | 55 | 110 | 210 | 90 | 170 | 70 | 140 | 220 | 130 | 250 | 220 | 580 | 36.0 |
| 320 | 320 | 840 | 500 | 740 | 420 | 440 | 975 | 375 | 400 | 815 | 115 | 270 | 50 | 33 | 65 | 130 | 250 | 95 | 170 | 80 | 170 | 245 | 140 | 250 | 245 | 800 | 45.0 |
| 360 | 360 | 930 | 550 | 820 | 470 | 495 | 1100 | 425 | 450 | 905 | 120 | 305 | 55 | 33 | 65 | 140 | 250 | 110 | 210 | 90 | 170 | 270 | 160 | 300 | 270 | 1050 | 70.0 |
| 400 | 400 | 1040 | 605 | 920 | 505 | 560 | 1230 | 475 | 500 | 1000 | 130 | 345 | 60 | 39 | 80 | 150 | 250 | 120 | 210 | 100 | 210 | 285 | 170 | 300 | 285 | 1450 | 90.0 |
| 450 | 450 | 1160 | 645 | 1040 | 545 | 630 | 1385 | 535 | 560 | 1120 | 140 | 390 | 60 | 39 | 80 | 160 | 300 | 130 | 250 | 110 | 210 | 305 | 190 | 350 | 305 | 2000 | 125.0 |
| 500 | 500 | 1290 | 710 | 1150 | 590 | 700 | 1535 | 590 | 630 | 1275 | 150 | 430 | 70 | 45 | 100 | 180 | 300 | 140 | 250 | 120 | 210 | 340 | 220 | 350 | 340 | 2800 | 180.0 |
| 560 | 560 | 1440 | 780 | 1300 | 660 | 785 | 1700 | 650 | 710 | 1410 | 160 | 485 | 70 | 45 | 100 | 200 | 350 | 160 | 300 | 130 | 250 | 380 | 240 | 410 | 380 | 3810 | 250.0 |

- Shaft ends as per IS 3688 (Long series)
- Tolerance field for shaft ends ISO fit upto 50 mm ∅ k6, over 50 mm ∅ m6
- Shaft ends with keys as per IS 2048 (Both ends round)
- Shaft centering as per IS 2540 (Threaded centre hole)

# Power ratings

| Nominal transmission ratio $i_N$ | Speeds r.p.m. $n_1$ | $n_2$ | Size of gear unit 80 | 90 | 100 | 112 | 125 | 140 | 160 | 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 560 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Nominal Gear unit ratings $P_N$ (kW) | | | | | | | | | | | | | | | | | |
| 1.25 | 1500 | 1200 | 63 | 81 | 115 | 166 | 211 | 287 | 439 | 590 | 795 • | 1115 • | 1350 • | 2030 • | 2927 • | 4430 • | | | | |
| | 1000 | 800 | 42 | 54 | 77 | 111 | 141 | 191 | 293 | 393 | 530 | 743 | 900 | 1353 | 1951 • | 2953 • | 4159 • | | | |
| | 750 | 600 | 32 | 41 | 58 | 83 | 106 | 144 | 220 | 295 | 398 | 558 | 675 | 1015 | 1464 | 2215 | 3119 | 4603 • | | |
| 1.4 | 1500 | 1071 | 58 | 76 | 108 | 154 | 197 | 280 | 410 | 570 | 745 | 1051 • | 1300 • | 1900 • | 2753 • | 4176 • | | | | |
| | 1000 | 714 | 39 | 51 | 72 | 103 | 131 | 187 | 273 | 380 | 497 | 701 | 867 | 1267 | 1835 • | 2784 • | 3925 • | | | |
| | 750 | 536 | 29 | 38 | 54 | 77 | 99 | 140 | 205 | 285 | 373 | 526 | 650 | 950 | 1377 | 2088 | 2944 | 4329 • | | |
| 1.6 | 1500 | 938 | 54 | 74 | 99 | 141 | 185 | 278 | 381 | 500 | 690 | 939 | 1200 • | 1750 • | 2510 • | 3802 • | | | | |
| | 1000 | 625 | 36 | 49 | 66 | 94 | 123 | 185 | 254 | 333 | 460 | 626 | 800 | 1167 | 1673 | 2535 • | 3687 • | | | |
| | 750 | 469 | 27 | 37 | 50 | 71 | 93 | 139 | 191 | 250 | 345 | 470 | 600 | 875 | 1255 | 1901 | 2765 | 3840 • | | |
| 1.8 | 1500 | 833 | 52 | 67 | 94 | 135 | 175 | 228 | 351 | 475 | 637 | 908 | 1100 • | 1600 • | 2329 • | 3537 • | | | | |
| | 1000 | 556 | 35 | 45 | 63 | 90 | 117 | 152 | 234 | 317 | 425 | 605 | 733 | 1067 | 1553 | 2358 • | 3444 • | | | |
| | 750 | 417 | 26 | 34 | 47 | 68 | 88 | 114 | 176 | 238 | 319 | 454 | 550 | 800 | 1165 | 1769 | 2583 | 3764 | 4737 • | |
| 2 | 1500 | 750 | 46 | 58 | 87 | 121 | 155 | 219 | 322 | 436 | 609 | 837 | 1000 | 1500 • | 2156 • | 3283 • | 4695 • | | | |
| | 1000 | 500 | 31 | 39 | 58 | 81 | 103 | 146 | 215 | 291 | 406 | 558 | 667 | 1000 | 1437 | 2189 | 3130 • | 4569 • | | |
| | 750 | 375 | 23 | 29 | 44 | 61 | 78 | 110 | 161 | 218 | 305 | 419 | 500 | 750 | 1078 | 1642 | 2348 | 3427 | 4425 | |
| 2.24 | 1500 | 670 | 43 | 54 | 77 | 113 | 144 | 197 | 293 | 415 | 553 | 762 | 950 | 1400 • | 2062 • | 3188 • | 4326 • | | | |
| | 1000 | 446 | 29 | 36 | 51 | 75 | 96 | 131 | 195 | 277 | 369 | 508 | 633 | 933 | 1375 | 2125 | 2884 | 4178 • | | |
| | 750 | 335 | 22 | 27 | 39 | 57 | 72 | 99 | 147 | 208 | 277 | 381 | 475 | 700 | 1031 | 1594 | 2163 | 3134 | 4077 | |
| 2.5 | 1500 | 600 | 36 | 49 | 71 | 95 | 130 | 189 | 275 | 380 | 500 | 690 | 890 | 1250 | 1887 • | 2872 • | 3952 • | | | |
| | 1000 | 400 | 24 | 33 | 47 | 63 | 87 | 126 | 183 | 253 | 333 | 460 | 593 | 833 | 1258 | 1915 | 2635 | 3803 • | 4995 • | |
| | 750 | 300 | 18 | 25 | 36 | 48 | 65 | 95 | 138 | 190 | 250 | 345 | 445 | 625 | 944 | 1436 | 1976 | 2852 | 3746 | |
| 2.8 | 1500 | 536 | 33 | 45 | 58 | 86 | 121 | 160 | 253 | 348 | 437 | 651 | 820 | 1164 | 1677 | 2550 • | 3573 • | | | |
| | 1000 | 357 | 22 | 30 | 39 | 57 | 81 | 107 | 169 | 232 | 291 | 434 | 547 | 776 | 1118 | 1700 | 2382 | 3643 | 4546 • | |
| | 750 | 268 | 17 | 23 | 29 | 43 | 61 | 80 | 127 | 174 | 219 | 326 | 410 | 582 | 839 | 1275 | 1787 | 2732 | 3410 | 4849 |
| 3.2 | 1500 | 469 | 27 | 37 | 52 | 74 | 99 | 140 | 210 | 292 | 395 | 524 | 750 | 1028 | 1509 | 2301 • | 3127 • | 4294 • | | |
| | 1000 | 313 | 18 | 25 | 35 | 49 | 66 | 93 | 140 | 195 | 263 | 349 | 500 | 685 | 1006 | 1534 | 2085 | 2863 | 4094 | |
| | 750 | 234 | 14 | 19 | 26 | 37 | 50 | 70 | 105 | 146 | 198 | 262 | 375 | 514 | 755 | 1151 | 1564 | 2147 | 3071 | 4247 |
| 3.6 | 1500 | 417 | 22 | 28 | 43 | 59 | 92 | 125 | 185 | 240 | 330 | 470 | 680 | 920 | 1271 | 2008 | 2799 • | 3856 • | | |
| | 1000 | 278 | 15 | 19 | 29 | 39 | 61 | 83 | 123 | 160 | 220 | 313 | 453 | 613 | 847 | 1339 | 1866 | 2571 | 3443 | |
| | 750 | 208 | 11 | 14 | 22 | 30 | 46 | 63 | 93 | 120 | 165 | 235 | 340 | 460 | 636 | 1004 | 1400 | 1928 | 2582 | 3836 |
| 4 | 1500 | 375 | 20 | 27 | 38 | 54 | 76 | 105 | 160 | 210 | 310 | 460 | 640 | 850 | 1230 | 1699 | 2354 | 3252 • | 4316 • | |
| | 1000 | 250 | 13.3 | 18 | 25 | 36 | 51 | 70 | 107 | 140 | 207 | 307 | 427 | 567 | 820 | 1133 | 1569 | 2168 | 2877 | 4300 |
| | 750 | 188 | 10 | 14 | 19 | 27 | 38 | 53 | 80 | 105 | 155 | 230 | 320 | 425 | 615 | 850 | 1177 | 1626 | 2158 | 3225 |
| 4.5 | 1500 | 333 | 16 | 25 | 33 | 42 | 61 | 85 | 140 | 195 | 270 | 375 | 560 | 800 | 1110 | 1510 | 2066 | 2911 | 3954 • | 5170 • |
| | 1000 | 222 | 10.7 | 17 | 22 | 28 | 41 | 57 | 93 | 130 | 180 | 250 | 373 | 533 | 740 | 1007 | 1377 | 1941 | 2636 | 3447 |
| | 750 | 167 | 8 | 13 | 17 | 21 | 31 | 43 | 70 | 98 | 135 | 188 | 280 | 400 | 555 | 755 | 1033 | 1456 | 1977 | 2585 |
| 5 | 1500 | 300 | 15 | 19 | 28 | 37 | 54 | 73 | 125 | 151 | 220 | 355 | 480 | 670 | 1020 | 1303 | 1725 | 2470 | 3303 | 4670 • |
| | 1000 | 200 | 10 | 12.7 | 19 | 25 | 36 | 49 | 83 | 101 | 147 | 237 | 320 | 447 | 680 | 869 | 1150 | 1647 | 2202 | 3113 |
| | 750 | 150 | 7.5 | 9.5 | 14 | 19 | 27 | 37 | 63 | 76 | 110 | 178 | 240 | 335 | 510 | 652 | 863 | 1235 | 1652 | 2335 |
| 5.6 | 1500 | 268 | 11.5 | 16 | 23 | 32 | 43 | 68 | 105 | 135 | 200 | 310 | 420 | 570 | 880 | 1050 | 1520 | 2050 | 2750 | 4000 • |
| | 1000 | 179 | 7.7 | 10.7 | 15 | 21 | 29 | 45 | 70 | 90 | 133 | 207 | 280 | 380 | 587 | 700 | 1013 | 1367 | 1833 | 2667 |
| | 750 | 134 | 5.8 | 8 | 12 | 16 | 22 | 34 | 53 | 68 | 100 | 155 | 210 | 285 | 440 | 525 | 760 | 1025 | 1375 | 2000 |
| 6.3 | 1500 | 238 | 10.5 | 14.5 | 18 | 24 | 41 | 57 | 84 | 120 | 160 | 240 | 345 | 500 | 720 | 940 | 1250 | 1850 | 2203 | 3246 |
| | 1000 | 159 | 7 | 9.7 | 12 | 16 | 27 | 38 | 56 | 80 | 107 | 160 | 230 | 333 | 480 | 627 | 833 | 1233 | 1469 | 2164 |
| | 750 | 119 | 5.3 | 7.3 | 9 | 12 | 21 | 29 | 42 | 60 | 80 | 120 | 173 | 250 | 360 | 470 | 625 | 925 | 1102 | 1623 |

# Thermal capacities

| Nominal transmission ratio $i_N$ | Input speed r.p.m. $n_1$ | Size of gear unit 80 | 90 | 100 | 112 | 125 | 140 | 160 | 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 560 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Thermal capacities $P_G$ in kW for gear units without cooling | | | | | | | | | | | | | | | | | |
| 1.25 - 2.8 | 1500 | 23 | 29 | 37 | 50 | 59 | 75 | 92 | 115 | 145 | 175 | 225 | 280 | 355 | 450 | | | | |
| 3.2 - 6.3 | 1500 | 18 | 24 | 32 | 38 | 51 | 66 | 82 | 102 | 125 | 160 | 220 | 270 | 345 | 440 | 560 | 690 | | |

The nominal gear ratings $P_N$ in kW marked with • require forced-feed lubrication by a pump.

Tolerance on the nominal transmission ratio is ± 3%.

# Power ratings

| Nominal transmission ratio $i_N$ | Speeds r.p.m. | | Size of gear unit | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 80 | 90 | 100 | 112 | 125 | 140 | 160 | 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 |
| | $n_1$ | $n_2$ | Nominal Gear unit ratings $P_N$ (kW) | | | | | | | | | | | | | | | |
| 5 | 1500 | 300 | 12 | 18 | 24 | 34 | 47 | 72 | 102 | 141 | 199 | 272 | 389 | 569 | 808 • | 1100 • | 1533 • | 2118 • | 2946 • |
| | 1000 | 200 | 8 | 12 | 16 | 23 | 31 | 48 | 68 | 94 | 133 | 181 | 259 | 379 | 539 | 733 | 1022 | 1412 | 1964 |
| | 750 | 150 | 6 | 9 | 12 | 17 | 24 | 36 | 51 | 71 | 100 | 136 | 195 | 285 | 404 | 550 | 767 | 1059 | 1473 |
| 5.6 | 1500 | 268 | 12 | 18 | 24 | 34 | 47 | 72 | 102 | 141 | 199 | 272 | 389 | 569 | 808 | 1100 • | 1533 • | 2118 • | 2946 • |
| | 1000 | 179 | 8 | 12 | 16 | 23 | 31 | 48 | 68 | 94 | 133 | 181 | 259 | 379 | 539 | 733 | 1022 | 1412 | 1964 |
| | 750 | 134 | 6 | 9 | 12 | 17 | 24 | 36 | 51 | 71 | 100 | 136 | 195 | 285 | 404 | 550 | 767 | 1059 | 1473 |
| 6.3 | 1500 | 238 | 12 | 18 | 24 | 34 | 47 | 72 | 102 | 141 | 199 | 272 | 389 | 564 | 808 | 1100 | 1533 • | 2118 • | 2946 • |
| | 1000 | 159 | 8 | 12 | 16 | 23 | 31 | 48 | 68 | 94 | 133 | 181 | 259 | 376 | 539 | 733 | 1022 | 1412 | 1964 |
| | 750 | 119 | 6 | 9 | 12 | 17 | 24 | 36 | 51 | 71 | 100 | 136 | 195 | 282 | 404 | 550 | 767 | 1059 | 1473 |
| 7.1 | 1500 | 211 | 12 | 16 | 24 | 31 | 46 | 65 | 98 | 128 | 179 | 263 | 360 | 460 | 711 | 1090 | 1499 • | 2099 • | 2946 • |
| | 1000 | 141 | 8 | 10.7 | 16 | 21 | 31 | 43 | 65 | 85 | 119 | 175 | 240 | 307 | 474 | 727 | 999 | 1399 | 1964 |
| | 750 | 106 | 6 | 8 | 12 | 16 | 23 | 33 | 49 | 64 | 90 | 132 | 180 | 230 | 356 | 545 | 750 | 1050 | 1473 |
| 8 | 1500 | 188 | 10.5 | 13 | 20.5 | 28 | 41 | 56 | 84 | 115 | 162 | 237 | 320 | 440 | 640 | 960 | 1350 • | 1862 • | 2595 • |
| | 1000 | 125 | 7 | 8.7 | 13.7 | 19 | 27 | 37 | 56 | 77 | 108 | 158 | 213 | 293 | 427 | 640 | 900 | 1241 | 1730 |
| | 750 | 94 | 5.3 | 6.5 | 10.3 | 14 | 21 | 28 | 42 | 58 | 81 | 119 | 160 | 220 | 320 | 480 | 675 | 931 | 1298 |
| 9 | 1500 | 167 | 9.2 | 12 | 18.5 | 25 | 37 | 51 | 74 | 103 | 144 | 211 | 290 | 400 | 571 | 876 | 1204 | 1685 • | 2389 • |
| | 1000 | 111 | 6.1 | 8 | 12.3 | 17 | 25 | 34 | 49 | 69 | 96 | 141 | 193 | 267 | 381 | 584 | 803 | 1123 | 1593 |
| | 750 | 83 | 4.6 | 6 | 9.3 | 13 | 19 | 26 | 37 | 52 | 72 | 106 | 145 | 200 | 286 | 438 | 602 | 843 | 1195 |
| 10 | 1500 | 150 | 7.7 | 10 | 16.5 | 22 | 32 | 46 | 67 | 92 | 130 | 181 | 260 | 350 | 512 | 805 | 1029 | 1550 | 2110 • |
| | 1000 | 100 | 5.1 | 6.7 | 11 | 15 | 21 | 31 | 45 | 61 | 87 | 121 | 173 | 233 | 341 | 537 | 686 | 1033 | 1407 |
| | 750 | 75 | 3.9 | 5 | 8.3 | 11 | 16 | 23 | 34 | 46 | 65 | 91 | 130 | 175 | 256 | 403 | 515 | 775 | 1055 |
| 11.2 | 1500 | 134 | 7.1 | 9.5 | 14.5 | 20 | 30 | 41 | 60 | 86 | 120 | 162 | 235 | 330 | 450 | 715 | 927 | 1390 | 1892 |
| | 1000 | 89 | 4.7 | 6.3 | 9.7 | 13.3 | 20 | 27 | 40 | 57 | 80 | 108 | 157 | 220 | 300 | 477 | 618 | 927 | 1261 |
| | 750 | 67 | 3.6 | 4.8 | 7.3 | 10 | 15 | 21 | 30 | 43 | 60 | 81 | 118 | 165 | 225 | 358 | 464 | 695 | 946 |
| 12.5 | 1500 | 120 | 5.6 | 8.5 | 13 | 18 | 27 | 36 | 53 | 77 | 105 | 144 | 210 | 290 | 394 | 644 | 827 | 1240 | 1687 |
| | 1000 | 80 | 3.7 | 5.7 | 8.7 | 12 | 18 | 24 | 35 | 51 | 70 | 96 | 140 | 193 | 263 | 429 | 551 | 827 | 1125 |
| | 750 | 60 | 2.8 | 4.3 | 6.5 | 9 | 14 | 18 | 27 | 39 | 53 | 72 | 105 | 145 | 197 | 322 | 414 | 620 | 844 |
| 14 | 1500 | 107 | 5 | 7.5 | 10 | 15 | 23 | 32 | 48 | 66 | 89 | 125 | 190 | 260 | 345 | 500 | 692 | 960 | 1346 |
| | 1000 | 71 | 3.3 | 5 | 6.7 | 10 | 15 | 21 | 32 | 44 | 59 | 83 | 127 | 173 | 230 | 333 | 461 | 640 | 897 |
| | 750 | 54 | 2.5 | 3.8 | 5 | 7.5 | 12 | 16 | 24 | 33 | 45 | 63 | 95 | 130 | 173 | 250 | 346 | 480 | 673 |
| 16 | 1500 | 94 | 4.3 | 6 | 7.9 | 12 | 18 | 26 | 37 | 51 | 71 | 105 | 138 | 205 | 299 | 410 | 565 | 761 | 1082 |
| | 1000 | 63 | 2.9 | 4 | 5.3 | 8 | 12 | 17 | 25 | 34 | 47 | 70 | 92 | 137 | 199 | 273 | 377 | 507 | 721 |
| | 750 | 47 | 2.2 | 3 | 4 | 6 | 9 | 13 | 19 | 26 | 36 | 53 | 69 | 103 | 150 | 205 | 283 | 381 | 541 |
| 18 | 1500 | 83 | 3.3 | 4.5 | 6 | 9.5 | 13 | 20 | 28 | 39 | 56 | 77 | 109 | 163 | 231 | 321 | 450 | 609 | 857 |
| | 1000 | 56 | 2.2 | 3 | 4 | 6.3 | 8.7 | 13.3 | 19 | 26 | 37 | 51 | 73 | 109 | 154 | 214 | 300 | 406 | 571 |
| | 750 | 42 | 1.7 | 2.3 | 3 | 4.8 | 6.5 | 10 | 14 | 20 | 28 | 39 | 55 | 82 | 116 | 161 | 225 | 305 | 429 |

# Thermal capacities

| Nominal transmission ratio $i_N$ | Input speed r.p.m. | Size of gear unit | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 80 | 90 | 100 | 112 | 125 | 140 | 160 | 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 |
| | $n_1$ | Thermal capacities $P_G$ in kW for gear units without cooling | | | | | | | | | | | | | | | | |
| 5 - 10 | 1500 | 12 | 16 | 21 | 26 | 31 | 38 | 50 | 65 | 90 | 125 | 140 | 170 | 220 | 275 | 355 | 430 | 550 |
| 11.2 - 18 | 1500 | 10 | 15 | 18 | 24 | 28 | 36 | 48 | 62 | 86 | 110 | 135 | 165 | 215 | 265 | 340 | 420 | 545 |

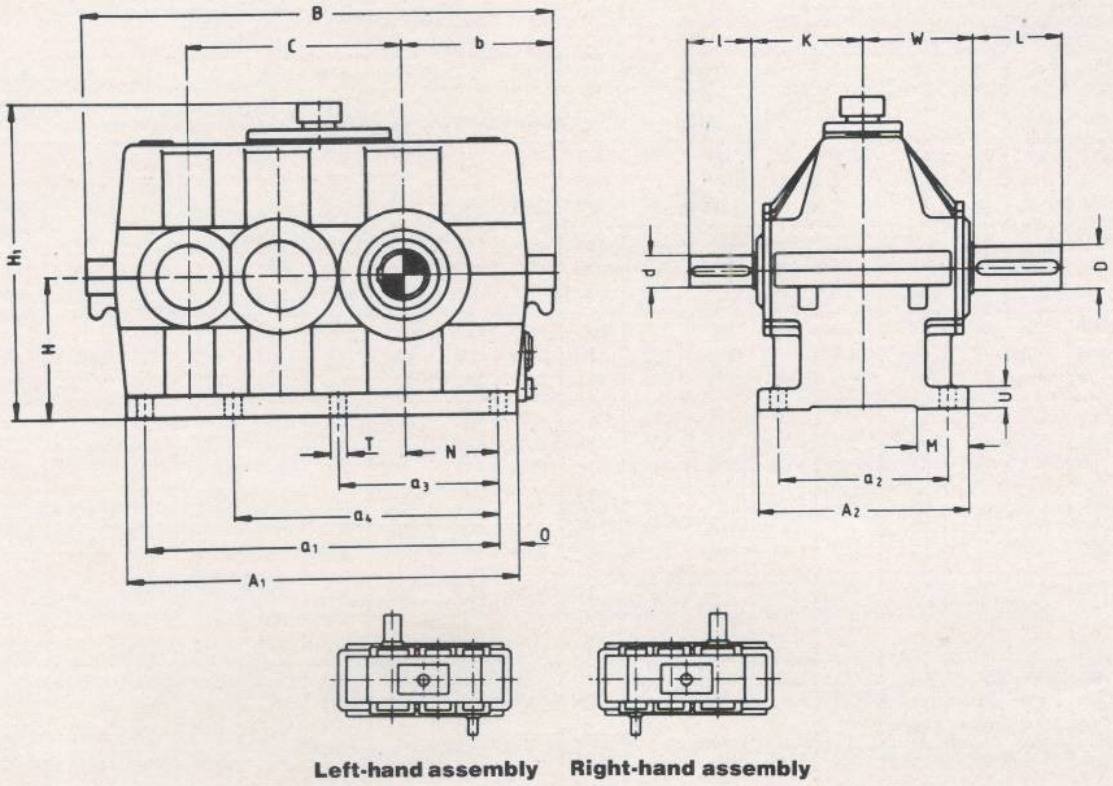
The nominal gear ratings $P_N$ in kW marked with • require forced-feed lubrication by a pump.

Tolerance on the nominal transmission ratio is ± 3%.

# GGAG

## Helical Gear Units

**BHS**






**Left-hand assembly** **Right-hand assembly**

Dimensions in mm

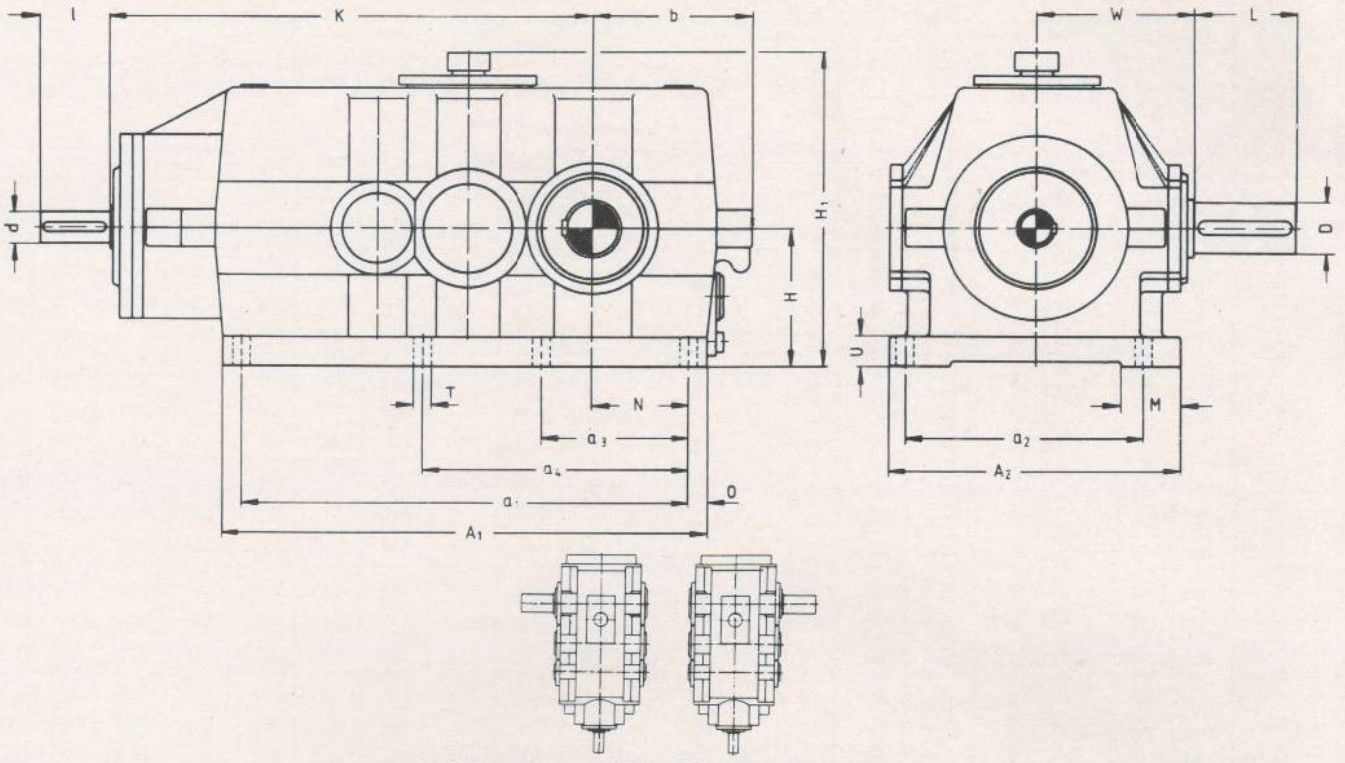
| Size of gear unit | Centre distance C | Housing dimensions | | | | | | | | | | | | | | | Input shaft $i_N \leq 12.5$ | | Input shaft $i_N \geq 14$ upto 20 | | | Output shaft | | | Avg. Wt. kg. | Oil Qty. ltrs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $A_1$ | $A_2$ | $a_1$ | $a_2$ | $a_3$ | $a_4$ | B | b | H | $H_1$ | M | N | O | T | U | d | l | d | l | K | D | L | W | | |
| 112 | 192 | 385 | 230 | 345 | 200 | 155 | | 430 | 140 | 125 | 310 | 55 | 92 | 20 | 14 | 25 | 25 | 60 | 22 | 50 | 120 | 55 | 110 | 120 | 65 | 3.0 |
| 125 | 215 | 425 | 250 | 375 | 220 | 175 | | 475 | 155 | 140 | 340 | 60 | 105 | 25 | 14 | 25 | 30 | 80 | 25 | 60 | 130 | 60 | 140 | 130 | 80 | 4.3 |
| 140 | 240 | 475 | 270 | 425 | 240 | 195 | | 530 | 175 | 160 | 380 | 70 | 120 | 25 | 14 | 35 | 35 | 80 | 30 | 80 | 140 | 70 | 140 | 140 | 115 | 6.0 |
| 160 | 272 | 540 | 290 | 480 | 245 | 225 | | 590 | 190 | 180 | 430 | 75 | 135 | 30 | 18 | 35 | 45 | 110 | 35 | 80 | 150 | 80 | 170 | 150 | 150 | 8.5 |
| 180 | 305 | 600 | 320 | 540 | 275 | 250 | | 665 | 215 | 200 | 475 | 80 | 155 | 30 | 18 | 35 | 50 | 110 | 40 | 110 | 160 | 90 | 170 | 160 | 200 | 11.5 |
| 200 | 340 | 665 | 355 | 595 | 300 | 280 | | 745 | 240 | 225 | 520 | 85 | 170 | 35 | 23 | 40 | 55 | 110 | 45 | 110 | 175 | 100 | 210 | 175 | 280 | 16.5 |
| 225 | 385 | 755 | 390 | 685 | 335 | 315 | | 825 | 265 | 250 | 570 | 90 | 190 | 35 | 23 | 45 | 60 | 140 | 50 | 110 | 200 | 110 | 210 | 200 | 370 | 23.0 |
| 250 | 430 | 830 | 450 | 750 | 380 | 350 | | 925 | 290 | 280 | 625 | 100 | 210 | 40 | 27 | 50 | 70 | 140 | 55 | 110 | 220 | 120 | 210 | 220 | 500 | 32.0 |
| 280 | 480 | 920 | 500 | 830 | 430 | 390 | | 1035 | 325 | 320 | 690 | 110 | 235 | 45 | 27 | 55 | 75 | 140 | 60 | 140 | 260 | 130 | 250 | 260 | 700 | 46.0 |
| 320 | 545 | 1030 | 570 | 930 | 490 | 440 | 700 | 1145 | 370 | 360 | 785 | 115 | 270 | 50 | 33 | 65 | 85 | 170 | 70 | 140 | 295 | 140 | 250 | 295 | 950 | 65.0 |
| 360 | 610 | 1150 | 600 | 1040 | 520 | 495 | 790 | 1265 | 415 | 400 | 865 | 120 | 305 | 55 | 33 | 65 | 95 | 170 | 80 | 170 | 320 | 170 | 300 | 320 | 1300 | 100.0 |
| 400 | 680 | 1280 | 690 | 1160 | 590 | 560 | 890 | 1425 | 465 | 450 | 960 | 130 | 345 | 60 | 39 | 80 | 105 | 210 | 90 | 170 | 370 | 180 | 300 | 370 | 1750 | 145.0 |
| 450 | 770 | 1450 | 750 | 1330 | 650 | 630 | 1000 | 1595 | 525 | 500 | 1065 | 140 | 390 | 60 | 39 | 80 | 115 | 210 | 95 | 170 | 415 | 220 | 350 | 415 | 2450 | 200.0 |
| 500 | 860 | 1600 | 830 | 1460 | 710 | 700 | 1110 | 1785 | 585 | 560 | 1185 | 150 | 430 | 70 | 45 | 100 | 125 | 210 | 110 | 210 | 475 | 240 | 410 | 475 | 3500 | 265.0 |
| 560 | 960 | 1760 | 910 | 1620 | 790 | 785 | 1245 | 1985 | 650 | 630 | 1325 | 160 | 485 | 70 | 45 | 100 | 145 | 250 | 120 | 210 | 510 | 270 | 410 | 510 | 4800 | 330.0 |
| 630 | 1080 | 1980 | 1030 | 1820 | 890 | 880 | 1410 | 2215 | 725 | 710 | 1485 | 170 | 545 | 80 | 52 | 125 | 160 | 300 | 130 | 250 | 560 | 300 | 470 | 560 | 6500 | 390.0 |
| 710 | 1210 | 2220 | 1160 | 2040 | 1000 | 1000 | 1580 | 2480 | 810 | 800 | 1665 | 190 | 620 | 90 | 52 | 125 | 180 | 300 | 140 | 250 | 600 | 340 | 550 | 600 | 9100 | 480.0 |
| 800 | 1360 | 2420 | 1320 | 2220 | 1140 | 1130 | 1730 | 2770 | 900 | 900 | 1870 | 200 | 695 | 100 | 60 | 160 | 190 | 350 | 160 | 300 | 645 | 400 | 650 | 645 | 12500 | 600.0 |

- Shaft ends as per IS 3688 (Long series)
- Tolerance field for shaft ends ISO fit upto 50 mm ∅ k6, over 50 mm ∅ m6
- Shaft ends with keys as per IS 2048 (Both ends round)
- Shaft centering as per IS 2540 (Threaded centre hole)

# GGAG

## Bevel Helical Gear Units

**CBS**




**Left-hand assembly** **Right-hand assembly**

Dimensions in mm

| Size of gear unit | Housing dimensions | | | | | | | | | | | | | | Input shaft $i_N \leq 50$ | | Input shaft $i_N \geq 56$ upto 90 | | | Output shaft | | | Avg. Wt. kg. | Oil Qty. ltrs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $A_1$ | $A_2$ | $a_1$ | $a_2$ | $a_3$ | $a_4$ | b | H | $H_1$ | M | N | O | T | U | d | l | d | l | K | D | L | W | | |
| 112 | 430 | 230 | 390 | 200 | 155 | | 140 | 125 | 310 | 55 | 92 | 20 | 14 | 25 | 19 | 40 | 16 | 40 | 362 | 55 | 110 | 120 | 70 | 4 |
| 125 | 480 | 250 | 430 | 220 | 175 | | 155 | 140 | 340 | 60 | 105 | 25 | 14 | 25 | 22 | 50 | 20 | 50 | 405 | 60 | 140 | 130 | 95 | 6 |
| 140 | 530 | 270 | 480 | 240 | 195 | | 175 | 160 | 380 | 70 | 120 | 25 | 14 | 35 | 24 | 50 | 20 | 50 | 455 | 70 | 140 | 140 | 130 | 8 |
| 160 | 600 | 290 | 540 | 245 | 225 | | 190 | 180 | 430 | 75 | 135 | 30 | 18 | 35 | 28 | 60 | 22 | 50 | 512 | 80 | 170 | 150 | 180 | 11 |
| 180 | 665 | 320 | 605 | 275 | 250 | | 215 | 200 | 475 | 80 | 155 | 30 | 18 | 35 | 32 | 80 | 25 | 60 | 575 | 90 | 170 | 160 | 235 | 16 |
| 200 | 745 | 355 | 675 | 300 | 280 | | 240 | 225 | 520 | 85 | 170 | 35 | 23 | 40 | 38 | 80 | 30 | 80 | 640 | 100 | 210 | 175 | 330 | 21 |
| 225 | 840 | 390 | 770 | 335 | 315 | | 265 | 250 | 570 | 90 | 190 | 35 | 23 | 45 | 42 | 110 | 35 | 80 | 725 | 110 | 210 | 200 | 450 | 30 |
| 250 | 930 | 450 | 850 | 380 | 350 | | 290 | 280 | 625 | 100 | 210 | 40 | 27 | 50 | 48 | 110 | 40 | 110 | 815 | 120 | 210 | 220 | 595 | 40 |
| 280 | 1025 | 500 | 935 | 430 | 390 | | 325 | 320 | 690 | 110 | 235 | 45 | 27 | 55 | 55 | 110 | 45 | 110 | 905 | 130 | 250 | 260 | 840 | 58 |
| 320 | 1160 | 570 | 1060 | 490 | 440 | 700 | 370 | 360 | 785 | 115 | 270 | 50 | 33 | 65 | 60 | 140 | 50 | 110 | 1025 | 140 | 250 | 295 | 1115 | 80 |
| 360 | 1300 | 600 | 1190 | 520 | 495 | 790 | 415 | 400 | 865 | 120 | 305 | 55 | 33 | 65 | 65 | 140 | 55 | 110 | 1145 | 170 | 300 | 320 | 1455 | 115 |
| 400 | 1460 | 690 | 1340 | 590 | 560 | 890 | 465 | 450 | 960 | 130 | 345 | 60 | 39 | 80 | 70 | 140 | 60 | 140 | 1275 | 180 | 300 | 370 | 2100 | 160 |
| 450 | 1640 | 750 | 1520 | 650 | 630 | 1000 | 525 | 500 | 1065 | 140 | 390 | 60 | 39 | 80 | 80 | 170 | 70 | 140 | 1425 | 220 | 350 | 415 | 2850 | 220 |
| 500 | 1830 | 830 | 1690 | 710 | 700 | 1110 | 585 | 560 | 1185 | 150 | 430 | 70 | 45 | 100 | 100 | 210 | 80 | 170 | 1585 | 240 | 410 | 475 | 4280 | 300 |
| 560 | 2040 | 910 | 1900 | 790 | 785 | 1245 | 650 | 630 | 1325 | 160 | 485 | 70 | 45 | 100 | 110 | 210 | 90 | 170 | 1775 | 270 | 410 | 510 | 5580 | 450 |
| 630 | 2300 | 1030 | 2140 | 890 | 880 | 1410 | 725 | 710 | 1485 | 170 | 545 | 80 | 52 | 125 | 120 | 210 | 100 | 210 | 1995 | 300 | 470 | 560 | 7950 | 520 |
| 710 | 2590 | 1160 | 2410 | 1000 | 1000 | 1580 | 810 | 800 | 1665 | 190 | 620 | 90 | 52 | 125 | 130 | 250 | 110 | 210 | 2235 | 340 | 550 | 600 | 10650 | 820 |
| 800 | 2900 | 1320 | 2700 | 1140 | 1130 | 1730 | 900 | 900 | 1870 | 200 | 695 | 100 | 60 | 160 | 140 | 250 | 120 | 210 | 2505 | 400 | 650 | 645 | 14700 | 1150 |

- Shaft ends as per IS 3688 (Long series)
- Tolerance field for shaft ends ISO fit upto 50 mm ∅ k6, over 50 mm ∅ m6
- Shaft ends with keys as per IS 2048 (Both ends round)
- Shaft centering as per IS 2540 (Threaded centre hole)

# Power ratings

| Nominal transmission ratio $i_N$ | Speeds r.p.m. $n_1$ | Speeds r.p.m. $n_2$ | Size of gear unit 112 | 125 | 140 | 160 | 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 560 | 630 | 710 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Nominal Gear unit ratings $P_N$ (kW) | | | | | | | | | | | | | | | | | |
| 6.3 | 1500 | 238 | 37 | 50 | 72 | 110 | 155 | 215 | 305 | 415 | 580 | 790 | 1210 • | 1650 • | 2320 • | 3740 • | 5060 • | 7020 • | 10680 • | 15400 • |
| | 1000 | 159 | 25 | 33 | 48 | 73 | 103 | 143 | 203 | 277 | 387 | 527 | 807 | 1100 | 1547 | 2493 | 3373 • | 4680 • | 7120 • | 10267 • |
| | 750 | 119 | 19 | 25 | 36 | 55 | 78 | 108 | 153 | 208 | 290 | 395 | 605 | 825 | 1160 | 1870 | 2530 | 3510 | 5340 • | 7700 • |
| 7.1 | 1500 | 211 | 37 | 50 | 70 | 107 | 150 | 205 | 295 | 400 | 560 | 746 | 1150 • | 1550 • | 2200 • | 3400 • | 4800 • | 6700 • | 9450 • | 13400 • |
| | 1000 | 141 | 25 | 33 | 47 | 71 | 100 | 137 | 197 | 267 | 373 | 497 | 767 | 1033 | 1467 | 2267 | 3200 • | 4467 • | 6300 • | 8933 • |
| | 750 | 106 | 19 | 25 | 35 | 54 | 75 | 103 | 148 | 200 | 280 | 373 | 575 | 775 | 1100 | 1700 | 2400 | 3350 | 4725 | 6700 • |
| 8 | 1500 | 188 | 33 | 46 | 66 | 97 | 135 | 185 | 270 | 360 | 510 | 700 | 1050 | 1400 | 2062 • | 3100 • | 4400 • | 5900 • | 8600 • | 12140 • |
| | 1000 | 125 | 22 | 31 | 44 | 65 | 90 | 123 | 180 | 240 | 340 | 467 | 700 | 933 | 1375 | 2067 | 2933 | 3933 | 5733 • | 8093 • |
| | 750 | 94 | 17 | 23 | 33 | 49 | 68 | 93 | 135 | 180 | 255 | 350 | 525 | 700 | 1031 | 1550 | 2200 | 2950 | 4300 | 6070 |
| 9 | 1500 | 167 | 31 | 41 | 60 | 87 | 130 | 170 | 245 | 330 | 460 | 660 | 930 | 1250 | 1856 • | 2850 • | 3900 • | 5200 • | 7650 • | 11520 • |
| | 1000 | 111 | 21 | 27 | 40 | 58 | 87 | 113 | 163 | 220 | 307 | 440 | 620 | 833 | 1237 | 1900 | 2600 | 3467 | 5100 • | 7680 • |
| | 750 | 83 | 16 | 21 | 30 | 44 | 65 | 85 | 123 | 165 | 230 | 330 | 465 | 625 | 928 | 1425 | 1950 | 2600 | 3825 | 5760 |
| 10 | 1500 | 150 | 28 | 37 | 52 | 78 | 105 | 155 | 220 | 290 | 400 | 580 | 820 | 1164 | 1655 | 2540 • | 3600 • | 4700 • | 6900 • | 10320 • |
| | 1000 | 100 | 19 | 25 | 35 | 52 | 70 | 103 | 147 | 193 | 267 | 387 | 547 | 776 | 1103 | 1693 | 2400 | 3133 | 4600 • | 6880 • |
| | 750 | 75 | 14 | 19 | 26 | 39 | 53 | 78 | 110 | 145 | 200 | 290 | 410 | 582 | 828 | 1270 | 1800 | 2350 | 3450 | 5160 |
| 11.2 | 1500 | 134 | 23 | 34 | 47 | 69 | 96 | 140 | 195 | 260 | 370 | 530 | 750 | 1021 | 1448 | 2300 | 3200 • | 4200 • | 6480 • | 9220 • |
| | 1000 | 89 | 15 | 23 | 31 | 46 | 64 | 93 | 130 | 173 | 247 | 353 | 500 | 681 | 965 | 1533 | 2133 | 2800 | 4320 | 6147 • |
| | 750 | 67 | 12 | 17 | 24 | 35 | 48 | 70 | 98 | 130 | 185 | 265 | 375 | 511 | 724 | 1150 | 1600 | 2100 | 3240 | 4610 |
| 12.5 | 1500 | 120 | 21 | 30 | 41 | 61 | 82 | 110 | 170 | 230 | 330 | 460 | 660 | 900 | 1271 | 2050 | 2900 • | 3800 • | 5700 • | 8180 • |
| | 1000 | 80 | 14 | 20 | 27 | 41 | 55 | 73 | 113 | 153 | 220 | 307 | 440 | 600 | 847 | 1367 | 1933 | 2533 | 3800 | 5453 |
| | 750 | 60 | 11 | 15 | 21 | 31 | 41 | 55 | 85 | 115 | 165 | 230 | 330 | 450 | 636 | 1025 | 1450 | 1900 | 2850 | 4090 |
| 14 | 1500 | 107 | 18 | 26 | 37 | 51 | 74 | 105 | 155 | 205 | 285 | 400 | 590 | 800 | 1100 | 1800 | 2550 | 3400 • | 4900 • | 7260 • |
| | 1000 | 71 | 12 | 17 | 25 | 34 | 49 | 70 | 103 | 137 | 190 | 267 | 393 | 533 | 733 | 1200 | 1700 | 2267 | 3267 | 4840 |
| | 750 | 54 | 9 | 13 | 19 | 26 | 37 | 53 | 78 | 103 | 143 | 200 | 295 | 400 | 550 | 900 | 1275 | 1700 | 2450 | 3630 |
| 16 | 1500 | 94 | 16 | 22 | 31 | 47 | 66 | 97 | 135 | 185 | 255 | 360 | 520 | 710 | 1000 | 1600 | 2250 | 3000 • | 4400 • | 6440 • |
| | 1000 | 63 | 10.7 | 15 | 21 | 31 | 44 | 65 | 90 | 123 | 170 | 240 | 347 | 473 | 667 | 1067 | 1500 | 2000 | 2933 | 4293 |
| | 750 | 47 | 8 | 11 | 16 | 24 | 33 | 49 | 68 | 93 | 128 | 180 | 260 | 355 | 500 | 800 | 1125 | 1500 | 2200 | 3220 |
| 18 | 1500 | 83 | 14 | 19.5 | 29 | 41 | 60 | 87 | 120 | 165 | 230 | 340 | 470 | 640 | 890 | 1500 | 1950 | 2750 | 4020 • | 6220 • |
| | 1000 | 56 | 9.3 | 13 | 19 | 27 | 40 | 58 | 80 | 110 | 153 | 227 | 313 | 427 | 593 | 1000 | 1300 | 1833 | 2680 | 4147 |
| | 750 | 42 | 7 | 9.8 | 15 | 21 | 30 | 44 | 60 | 83 | 115 | 170 | 235 | 320 | 445 | 750 | 975 | 1375 | 2010 | 3110 |
| 20 | 1500 | 75 | 12.5 | 17.5 | 25 | 39 | 56 | 78 | 110 | 155 | 210 | 295 | 410 | 559 | 783 | 1320 | 1860 | 2460 | 3600 • | 5560 • |
| | 1000 | 50 | 8.3 | 11.7 | 17 | 26 | 37 | 52 | 73 | 103 | 140 | 197 | 273 | 373 | 522 | 880 | 1240 | 1640 | 2400 | 3707 |
| | 750 | 38 | 6.3 | 8.8 | 13 | 20 | 28 | 39 | 55 | 78 | 105 | 148 | 205 | 280 | 392 | 660 | 930 | 1230 | 1800 | 2780 |

# Thermal capacities

| Nominal transmission ratio $i_N$ | Input speed r.p.m. $n_1$ | Size of gear unit 112 | 125 | 140 | 160 | 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 560 | 630 | 710 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Thermal capacities $P_G$ in kW for gear units without cooling | | | | | | | | | | | | | | | | | |
| 6.3 - 11.2 | 1500 | 30 | 40 | 48 | 62 | 80 | 100 | 122 | 155 | 205 | 245 | 300 | 390 | 480 | 630 | 780 | 1000 | 1200 | 1500 |
| 12.5 - 20 | 1500 | 25 | 34 | 42 | 56 | 73 | 94 | 120 | 147 | 185 | 240 | 290 | 380 | 465 | 610 | 760 | 970 | 1170 | 1470 |

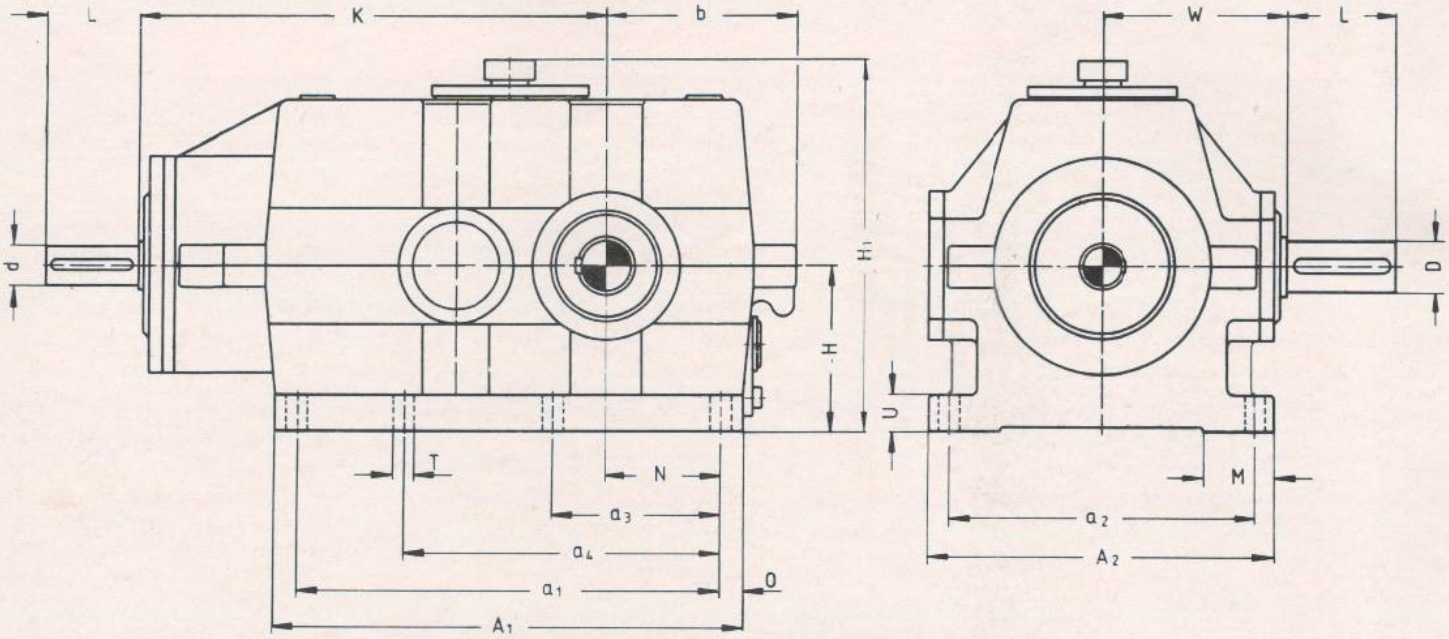
The nominal gear ratings $P_N$ in kW marked with • require forced-feed lubrication by a pump.

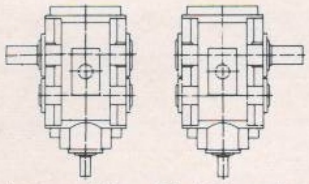
Tolerance on the nominal transmission ratio is ± 3%.

# GGAG

## Bevel Helical Gear Units

**BBS**



**Left-hand assembly** **Right-hand assembly**

Dimensions in mm

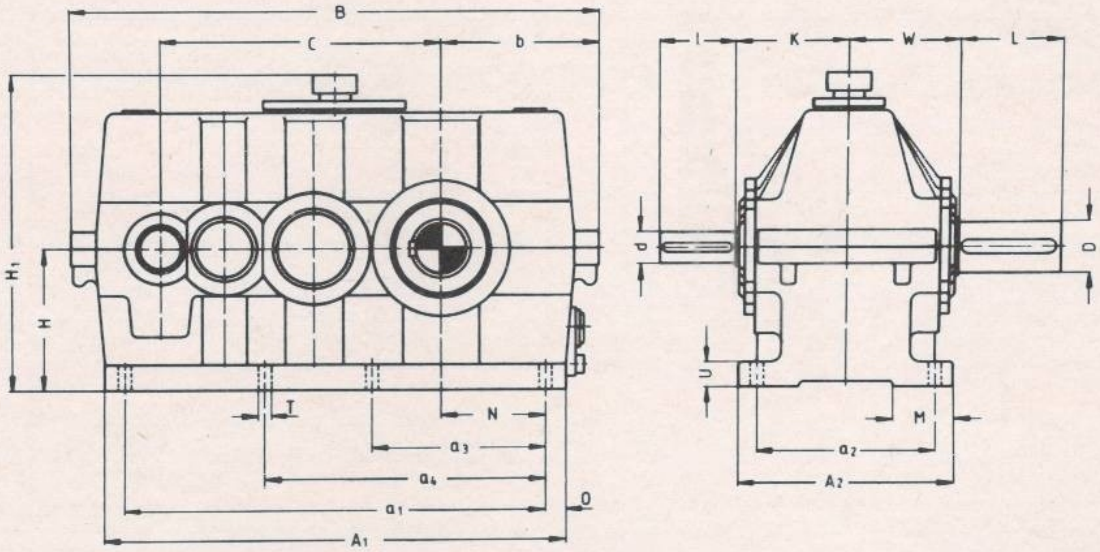
| Size of gear unit | Housing dimensions | | | | | | | | | | | | | | Input shaft $i_N \leq 10$ | | Input shaft $i_N \geq 11.2$ upto 18 | | | Output shaft | | | Avg. Wt. kg. | Oil Qty. ltrs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $A_1$ | $A_2$ | a | $a_2$ | $a_3$ | $a_4$ | b | H | $H_1$ | M | N | O | T | U | d | l | d | l | K | D | L | W | | |
| 80 | 265 | 170 | 255 | 140 | 110 | | 100 | 90 | 230 | 50 | 65 | 15 | 14 | 20 | 19 | 40 | 16 | 40 | 250 | 38 | 80 | 90 | 28 | 1.5 |
| 90 | 310 | 180 | 280 | 150 | 125 | | 115 | 100 | 250 | 50 | 75 | 15 | 14 | 20 | 22 | 50 | 20 | 50 | 280 | 38 | 80 | 95 | 37 | 2.0 |
| 100 | 340 | 200 | 300 | 170 | 135 | | 125 | 112 | 270 | 50 | 80 | 20 | 14 | 25 | 24 | 50 | 22 | 50 | 315 | 48 | 110 | 100 | 50 | 2.5 |
| 112 | 385 | 230 | 345 | 200 | 155 | | 140 | 125 | 310 | 55 | 92 | 20 | 14 | 25 | 28 | 60 | 25 | 60 | 352 | 55 | 110 | 120 | 70 | 3.5 |
| 125 | 425 | 250 | 375 | 220 | 175 | | 155 | 140 | 340 | 60 | 105 | 25 | 14 | 25 | 32 | 80 | 30 | 80 | 395 | 60 | 140 | 130 | 100 | 5.0 |
| 140 | 475 | 270 | 425 | 240 | 195 | | 175 | 160 | 380 | 70 | 120 | 25 | 14 | 35 | 38 | 80 | 35 | 80 | 440 | 70 | 140 | 140 | 130 | 7.0 |
| 160 | 540 | 290 | 480 | 245 | 225 | | 190 | 180 | 430 | 75 | 135 | 30 | 18 | 35 | 42 | 110 | 40 | 110 | 500 | 80 | 170 | 150 | 180 | 9.0 |
| 180 | 600 | 320 | 540 | 275 | 250 | | 215 | 200 | 475 | 80 | 155 | 30 | 18 | 35 | 48 | 110 | 42 | 110 | 565 | 90 | 170 | 160 | 235 | 13.0 |
| 200 | 665 | 355 | 595 | 300 | 280 | | 240 | 225 | 520 | 85 | 170 | 35 | 23 | 40 | 55 | 110 | 50 | 110 | 625 | 100 | 210 | 175 | 315 | 17.0 |
| 225 | 755 | 390 | 685 | 335 | 315 | | 265 | 250 | 570 | 90 | 190 | 35 | 23 | 45 | 60 | 140 | 55 | 110 | 705 | 110 | 210 | 200 | 425 | 22.0 |
| 250 | 830 | 450 | 750 | 380 | 350 | | 290 | 280 | 625 | 100 | 210 | 40 | 27 | 50 | 65 | 140 | 60 | 140 | 785 | 120 | 210 | 220 | 575 | 32.0 |
| 280 | 920 | 500 | 830 | 430 | 390 | | 325 | 320 | 690 | 110 | 235 | 45 | 27 | 55 | 70 | 140 | 65 | 140 | 875 | 130 | 250 | 260 | 780 | 46.0 |
| 320 | 1030 | 570 | 930 | 490 | 440 | 700 | 370 | 360 | 785 | 115 | 270 | 50 | 33 | 65 | 80 | 170 | 75 | 140 | 975 | 140 | 250 | 295 | 1050 | 65.0 |
| 360 | 1150 | 600 | 1040 | 520 | 495 | 790 | 415 | 400 | 865 | 120 | 305 | 55 | 33 | 65 | 100 | 210 | 90 | 170 | 1085 | 170 | 300 | 320 | 1450 | 100.0 |
| 400 | 1280 | 690 | 1160 | 590 | 560 | 890 | 465 | 450 | 960 | 130 | 345 | 60 | 39 | 80 | 110 | 210 | 100 | 210 | 1215 | 180 | 300 | 370 | 2050 | 145.0 |
| 450 | 1450 | 750 | 1330 | 650 | 630 | 1000 | 525 | 500 | 1065 | 140 | 390 | 60 | 39 | 80 | 120 | 210 | 110 | 210 | 1365 | 220 | 350 | 415 | 2800 | 200.0 |
| 500 | 1600 | 830 | 1460 | 710 | 700 | 1110 | 585 | 560 | 1185 | 150 | 430 | 70 | 45 | 100 | 130 | 250 | 120 | 210 | 1525 | 240 | 410 | 475 | 3950 | 265.0 |

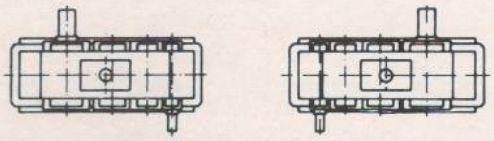
- Shaft ends as per IS 3688 (Long series)
- Tolerance field for shaft ends ISO fit upto 50 mm ∅ k6, over 50 mm ∅ m6
- Shaft ends with keys as per IS 2048 (Both ends round)
- Shaft centering as per IS 2540 (Threaded centre hole)

# GGAG

## Helical Gear Units

**CHS**



**Left-hand assembly** **Right-hand assembly**

Dimensions in mm

| Size of gear unit | Centre distance | Housing dimensions | | | | | | | | | | | | | | | Input shaft $i_N \leq 71$ | | Input shaft $i_N \geq 80$ upto 100 | | | Output shaft | | | Avg. Wt. kg. | Oil Qty. ltrs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C | $A_1$ | $A_2$ | $a_1$ | $a_2$ | $a_3$ | $a_4$ | B | b | H | $H_1$ | M | N | O | T | U | d | l | d | l | K | D | L | W | | |
| 160 | 352 | 600 | 290 | 540 | 245 | 225 | | 645 | 190 | 180 | 430 | 75 | 135 | 30 | 18 | 35 | 25 | 60 | 20 | 50 | 150 | 80 | 170 | 150 | 170 | 10 |
| 180 | 395 | 665 | 320 | 605 | 275 | 250 | | 725 | 215 | 200 | 475 | 80 | 155 | 30 | 18 | 35 | 30 | 80 | 25 | 60 | 160 | 90 | 170 | 160 | 215 | 14 |
| 200 | 440 | 745 | 355 | 675 | 300 | 280 | | 810 | 240 | 225 | 520 | 85 | 170 | 35 | 23 | 40 | 35 | 80 | 30 | 80 | 175 | 100 | 210 | 175 | 310 | 19 |
| 225 | 497 | 840 | 390 | 770 | 335 | 315 | | 900 | 265 | 250 | 570 | 90 | 190 | 35 | 23 | 45 | 45 | 110 | 35 | 80 | 200 | 110 | 210 | 200 | 420 | 26 |
| 250 | 555 | 930 | 450 | 850 | 380 | 350 | | 1000 | 290 | 280 | 625 | 100 | 210 | 40 | 27 | 50 | 50 | 110 | 40 | 110 | 220 | 120 | 210 | 220 | 550 | 36 |
| 280 | 620 | 1025 | 500 | 935 | 430 | 390 | | 1120 | 325 | 320 | 690 | 110 | 235 | 45 | 27 | 55 | 55 | 110 | 45 | 110 | 260 | 130 | 250 | 260 | 750 | 53 |
| 320 | 705 | 1160 | 570 | 1060 | 490 | 440 | 700 | 1260 | 370 | 360 | 785 | 115 | 270 | 50 | 33 | 65 | 60 | 140 | 50 | 110 | 295 | 140 | 250 | 295 | 1050 | 75 |
| 360 | 790 | 1300 | 600 | 1190 | 520 | 495 | 790 | 1440 | 415 | 400 | 865 | 120 | 305 | 55 | 33 | 65 | 70 | 140 | 55 | 110 | 320 | 170 | 300 | 320 | 1400 | 115 |
| 400 | 880 | 1460 | 690 | 1340 | 590 | 560 | 890 | 1590 | 465 | 450 | 960 | 130 | 345 | 60 | 39 | 80 | 75 | 140 | 60 | 140 | 370 | 180 | 300 | 370 | 1950 | 160 |
| 450 | 995 | 1640 | 750 | 1520 | 650 | 630 | 1000 | 1790 | 525 | 500 | 1065 | 140 | 390 | 60 | 39 | 80 | 85 | 170 | 70 | 140 | 415 | 220 | 350 | 415 | 2650 | 220 |
| 500 | 1110 | 1830 | 830 | 1690 | 710 | 700 | 1110 | 2000 | 585 | 560 | 1185 | 150 | 430 | 70 | 45 | 100 | 100 | 210 | 80 | 170 | 475 | 240 | 410 | 475 | 3850 | 300 |
| 560 | 1240 | 2040 | 910 | 1900 | 790 | 785 | 1245 | 2220 | 650 | 630 | 1325 | 160 | 485 | 70 | 45 | 100 | 105 | 210 | 90 | 170 | 510 | 270 | 410 | 510 | 5300 | 450 |
| 630 | 1400 | 2300 | 1030 | 2140 | 890 | 880 | 1410 | 2485 | 725 | 710 | 1485 | 170 | 545 | 80 | 52 | 125 | 120 | 210 | 95 | 170 | 560 | 300 | 470 | 560 | 7250 | 520 |
| 710 | 1570 | 2590 | 1160 | 2410 | 1000 | 1000 | 1580 | 2790 | 810 | 800 | 1665 | 190 | 620 | 90 | 52 | 125 | 140 | 250 | 110 | 210 | 600 | 340 | 550 | 600 | 10100 | 820 |
| 800 | 1760 | 2900 | 1320 | 2700 | 1140 | 1130 | 1730 | 3100 | 900 | 900 | 1870 | 200 | 695 | 100 | 60 | 160 | 160 | 300 | 120 | 210 | 645 | 400 | 650 | 645 | 14100 | 1150 |

- Shaft ends as per IS 3688 (Long series)
- Tolerance field for shaft ends ISO fit upto 50 mm ∅ k6, over 50 mm ∅ m6
- Shaft ends with keys as per IS 2048 (Both ends round)
- Shaft centering as per IS 2540 (Threaded centre hole)

# Power ratings

| Nominal transmission ratio $i_N$ | Speeds r.p.m. $n_1$ | Speeds r.p.m. $n_2$ | Size of gear unit 90 | 100 | 112 | 125 | 140 | 160 | 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 560 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Nominal Gear unit ratings $P_N$ (kW) | | | | | | | | | | | | | | | | |
| 1 | 1500 | 1500 | 36 | 49 | 69 | 97 | 134 | 200 | 266 • | 395 • | 548 • | 755 • | 1050 • | 1565 • | 2190 • | 2996 • | 4180 • | | |
| | 1000 | 1000 | 24 | 33 | 46 | 65 | 89 | 133 | 191 | 263 | 365 | 503 | 700 • | 1043 • | 1460 • | 1997 • | 2787 • | | |
| | 750 | 750 | 18 | 25 | 35 | 49 | 67 | 100 | 143 | 198 | 274 | 378 | 525 | 783 | 1095 • | 1498 • | 2090 • | | |
| 1.12 | 1500 | 1339 | 26 | 37 | 53 | 72 | 101 | 169 | 214 | 296 • | 424 • | 568 • | 800 • | 1183 • | 1674 • | 2271 • | 3206 • | 4344 • | |
| | 1000 | 893 | 17 | 25 | 35 | 48 | 67 | 113 | 143 | 197 | 283 | 379 | 533 | 789 • | 1116 • | 1514 • | 2137 • | 2896 • | |
| | 750 | 670 | 13 | 19 | 27 | 36 | 51 | 85 | 107 | 148 | 212 | 284 | 400 | 592 | 837 | 1136 • | 1603 • | 2172 • | |
| 1.25 | 1500 | 1200 | 22 | 30 | 43 | 59 | 83 | 124 | 177 | 243 | 341 • | 468 • | 646 • | 971 • | 1364 • | 1868 • | 2648 • | 3575 • | |
| | 1000 | 800 | 15 | 20 | 29 | 39 | 55 | 83 | 118 | 162 | 227 | 312 | 431 | 647 • | 909 • | 1245 • | 1765 • | 2383 • | |
| | 750 | 600 | 11 | 15 | 22 | 30 | 42 | 62 | 89 | 122 | 171 | 234 | 323 | 486 | 682 | 934 | 1324 • | 1788 • | |
| 1.4 | 1500 | 1071 | 19.7 | 28 | 39 | 53 | 75 | 111 | 157 | 216 | 309 | 420 | 583 • | 867 • | 1236 • | 1674 • | 2363 • | 3226 • | |
| | 1000 | 714 | 13.1 | 19 | 26 | 35 | 50 | 74 | 105 | 144 | 206 | 280 | 389 | 578 | 824 | 1116 • | 1575 • | 2151 • | |
| | 750 | 536 | 9.9 | 14 | 20 | 27 | 38 | 56 | 79 | 108 | 155 | 210 | 292 | 434 | 618 | 837 | 1182 | 1613 • | |
| 1.6 | 1500 | 938 | 15.3 | 22 | 31 | 38 | 60 | 90 | 126 | 174 | 245 | 339 | 473 | 687 • | 987 • | 1347 • | 1902 • | 2594 • | |
| | 1000 | 625 | 10.2 | 15 | 21 | 25 | 40 | 60 | 84 | 116 | 163 | 226 | 315 | 458 | 658 | 898 | 1268 • | 1729 • | |
| | 750 | 469 | 7.7 | 11 | 16 | 19 | 30 | 45 | 63 | 87 | 123 | 170 | 237 | 344 | 494 | 674 | 951 | 1297 | |
| 1.8 | 1500 | 833 | 13.1 | 16.8 | 25 | 35 | 48 | 73 | 102 | 141 | 199 | 272 | 389 | 569 • | 808 • | 1104 • | 1553 • | 2118 • | 2946 • |
| | 1000 | 556 | 8.7 | 11.2 | 17 | 23 | 32 | 49 | 68 | 94 | 133 | 181 | 259 | 379 | 539 | 736 | 1035 | 1412 • | 1964 • |
| | 750 | 417 | 6.6 | 8.4 | 13 | 18 | 24 | 37 | 51 | 71 | 100 | 136 | 195 | 285 | 404 | 552 | 777 | 1059 | 1473 |
| 2 | 1500 | 750 | 11.1 | 15.2 | 22 | 30 | 39 | 63 | 89 | 123 | 174 | 238 | 334 | 500 | 695 • | 966 • | 1362 • | 1862 • | 2595 • |
| | 1000 | 500 | 7.4 | 10.1 | 15 | 20 | 26 | 42 | 59 | 82 | 116 | 159 | 223 | 333 | 463 | 644 | 908 | 1241 • | 1730 • |
| | 750 | 375 | 5.6 | 7.6 | 11 | 15 | 20 | 32 | 45 | 62 | 87 | 119 | 167 | 250 | 348 | 483 | 681 | 931 | 1298 |
| 2.24 | 1500 | 670 | 10.3 | 14.1 | 20 | 28 | 39 | 52 | 83 | 113 | 160 | 222 | 311 | 460 | 646 | 885 • | 1261 • | 1717 • | 2390 • |
| | 1000 | 446 | 6.9 | 9.4 | 13.3 | 19 | 26 | 35 | 55 | 75 | 107 | 148 | 207 | 307 | 431 | 590 | 841 | 1145 | 1593 |
| | 750 | 335 | 5.2 | 7.1 | 10 | 14 | 20 | 26 | 42 | 57 | 80 | 111 | 156 | 230 | 323 | 443 | 631 | 859 | 1195 |
| 2.5 | 1500 | 600 | 8.1 | 11 | 15.8 | 23 | 28 | 48 | 67 | 94 | 132 | 181 | 254 | 380 | 533 | 715 | 1029 • | 1400 • | 1958 • |
| | 1000 | 400 | 5.4 | 7.3 | 10.5 | 15 | 19 | 32 | 45 | 63 | 88 | 121 | 169 | 253 | 355 | 477 | 686 | 933 | 1305 |
| | 750 | 300 | 4.1 | 5.5 | 7.9 | 12 | 14 | 24 | 34 | 47 | 66 | 91 | 127 | 190 | 267 | 358 | 515 | 700 | 979 |
| 2.8 | 1500 | 536 | 6.8 | 10.3 | 14.5 | 21 | 26 | 44 | 62 | 84 | 119 | 163 | 229 | 348 | 485 | 651 | 941 | 1282 • | 1780 • |
| | 1000 | 357 | 4.5 | 6.9 | 9.7 | 14 | 17 | 29 | 41 | 56 | 79 | 109 | 153 | 232 | 323 | 434 | 627 | 855 | 1187 |
| | 750 | 268 | 3.4 | 5.2 | 7.3 | 11 | 13 | 22 | 31 | 42 | 60 | 82 | 115 | 174 | 243 | 326 | 471 | 641 | 890 |
| 3.2 | 1500 | 469 | 4.8 | 6.8 | 10.9 | 15.2 | 22 | 32 | 44 | 64 | 90 | 123 | 171 | 257 | 367 | 500 | 692 | 960 | 1346 • |
| | 1000 | 313 | 3.2 | 4.5 | 7.3 | 10.1 | 15 | 21 | 29 | 43 | 60 | 82 | 114 | 171 | 245 | 333 | 461 | 640 | 897 |
| | 750 | 234 | 2.4 | 3.4 | 5.5 | 7.6 | 11 | 16 | 22 | 32 | 45 | 62 | 86 | 129 | 184 | 250 | 346 | 480 | 673 |
| 3.6 | 1500 | 417 | 3.8 | 5.5 | 8.7 | 12.1 | 17 | 26 | 37 | 50 | 72 | 98 | 138 | 205 | 299 | 404 | 565 | 761 | 1082 |
| | 1000 | 278 | 2.5 | 3.7 | 5.8 | 8.1 | 11.3 | 17 | 25 | 33 | 48 | 65 | 92 | 137 | 199 | 269 | 377 | 507 | 721 |
| | 750 | 208 | 1.9 | 2.8 | 4.4 | 6.1 | 8.5 | 13 | 19 | 25 | 36 | 49 | 69 | 103 | 150 | 202 | 283 | 381 | 541 |
| 4 | 1500 | 375 | 3 | 4.2 | 6.4 | 9.5 | 12.7 | 20.1 | 29 | 40 | 57 | 78 | 109 | 163 | 231 | 321 | 450 | 609 | 857 |
| | 1000 | 250 | 2 | 2.8 | 4.3 | 6.3 | 8.5 | 13.4 | 19 | 27 | 38 | 52 | 73 | 109 | 154 | 214 | 300 | 406 | 571 |
| | 750 | 188 | 1.5 | 2.1 | 3.2 | 4.8 | 6.4 | 10.1 | 15 | 20 | 29 | 39 | 55 | 82 | 116 | 161 | 225 | 305 | 429 |
| 4.5 | 1500 | 333 | 2.2 | 3.2 | 5 | 7.1 | 10.5 | 15.8 | 23 | 32 | 45 | 62 | 86 | 129 | 183 | 251 | 362 | 500 | 674 |
| | 1000 | 222 | 1.5 | 2.1 | 3.3 | 4.7 | 7 | 10.5 | 15 | 21 | 30 | 41 | 57 | 86 | 122 | 167 | 241 | 333 | 449 |
| | 750 | 167 | 1.1 | 1.6 | 2.5 | 3.6 | 5.3 | 7.9 | 12 | 16 | 23 | 31 | 43 | 65 | 92 | 126 | 181 | 250 | 337 |
| 5 | 1500 | 300 | 1.6 | 2.5 | 4 | 5.7 | 8.3 | 12.7 | 17.2 | 26 | 37 | 50 | 70 | 103 | 149 | 204 | 291 | 399 | 555 |
| | 1000 | 200 | 1.1 | 1.7 | 2.7 | 3.8 | 5.5 | 8.5 | 11.5 | 17 | 25 | 33 | 47 | 69 | 99 | 136 | 194 | 266 | 370 |
| | 750 | 150 | 0.8 | 1.3 | 2 | 2.9 | 4.2 | 6.4 | 8.6 | 13 | 19 | 25 | 35 | 52 | 75 | 102 | 146 | 200 | 278 |
| 5.6 | 1500 | 268 | 1.2 | 1.9 | 3 | 4.3 | 6.3 | 9.6 | 14.1 | 19.5 | 28 | 39 | 55 | 81 | 115 | 159 | 225 | 310 | 436 |
| | 1000 | 179 | 0.8 | 1.3 | 2 | 2.9 | 4.2 | 6.4 | 9.4 | 13 | 19 | 26 | 37 | 54 | 77 | 106 | 150 | 207 | 291 |
| | 750 | 134 | 0.6 | 1 | 1.5 | 2.2 | 3.2 | 4.8 | 7.1 | 9.8 | 14 | 20 | 28 | 41 | 58 | 80 | 113 | 155 | 218 |

# Thermal capacities

| Nominal transmission ratio $i_N$ | Input speed r.p.m. $n_1$ | Size of gear unit 90 | 100 | 112 | 125 | 140 | 160 | 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 560 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Thermal capacities $P_G$ in kW for gear units without cooling | | | | | | | | | | | | | | | | |
| 1 - 2.24 | 1500 | 11 | 15 | 18 | 22 | 26 | 33 | 39 | 46 | 56 | 69 | 84 | 104 | 125 | 153 | 185 | 228 | 287 |
| 2.5 - 5.6 | 1500 | 10 | 14 | 16 | 20 | 24 | 30 | 35 | 42 | 51 | 63 | 77 | 95 | 113 | 140 | 168 | 207 | 261 |

The nominal gear ratings $P_N$ in kW marked with • require forced-feed lubrication by a pump.

Tolerance on the nominal transmission ratio is ± 3%.

# Power ratings

| Nominal transmission ratio $i_N$ | Speeds r.p.m. $n_1$ | $n_2$ | Size of gear unit 160 | 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 560 | 630 | 710 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Nominal Gear unit ratings $P_N$ (kW) | | | | | | | | | | | | | | |
| 20 | 1500 | 75 | 39 | 59 | 73 | 105 | 145 | 205 | 295 | 460 | 605 | 880 | 1350 • | 1860 • | 2500 • | 3600 • | 4800 • |
| | 1000 | 50 | 26 | 39 | 49 | 70 | 97 | 137 | 197 | 307 | 403 | 587 | 900 | 1240 | 1667 | 2400 • | 3200 • |
| | 750 | 37.5 | 20 | 30 | 37 | 53 | 73 | 103 | 148 | 230 | 303 | 440 | 675 | 930 | 1250 | 1800 | 2400 |
| 22.4 | 1500 | 67 | 36 | 53 | 70 | 100 | 135 | 185 | 275 | 410 | 542 | 800 | 1200 • | 1650 • | 2200 • | 3200 • | 4300 • |
| | 1000 | 44.6 | 24 | 35 | 47 | 67 | 90 | 123 | 183 | 273 | 361 | 533 | 800 | 1100 | 1467 | 2133 | 2867 • |
| | 750 | 33.5 | 18 | 27 | 35 | 50 | 68 | 93 | 138 | 205 | 271 | 400 | 600 | 825 | 1100 | 1600 | 2150 |
| 25 | 1500 | 60 | 32 | 47 | 62 | 89 | 115 | 160 | 245 | 370 | 484 | 710 | 1050 • | 1500 • | 2000 • | 2850 • | 4000 • |
| | 1000 | 40 | 21 | 31 | 41 | 59 | 77 | 107 | 163 | 247 | 323 | 473 | 700 | 1000 | 1333 | 1900 | 2667 • |
| | 750 | 30 | 16 | 24 | 31 | 45 | 58 | 80 | 123 | 185 | 242 | 355 | 525 | 750 | 1000 | 1425 | 2000 |
| 28 | 1500 | 53.6 | 29 | 43 | 56 | 80 | 110 | 145 | 225 | 330 | 432 | 630 | 920 • | 1300 • | 1750 • | 2500 • | 3600 • |
| | 1000 | 35.7 | 19 | 29 | 37 | 53 | 73 | 97 | 150 | 220 | 288 | 420 | 613 | 867 | 1167 | 1667 | 2400 • |
| | 750 | 26.8 | 15 | 22 | 28 | 40 | 55 | 73 | 113 | 165 | 216 | 315 | 460 | 650 | 875 | 1250 | 1800 |
| 31.5 | 1500 | 47.6 | 25 | 38 | 49 | 70 | 95 | 130 | 200 | 295 | 400 | 570 | 840 • | 1200 • | 1600 • | 2260 • | 3300 • |
| | 1000 | 31.7 | 17 | 25 | 33 | 47 | 63 | 87 | 133 | 197 | 267 | 380 | 560 | 800 | 1067 | 1507 | 2200 • |
| | 750 | 23.8 | 13 | 19 | 25 | 35 | 48 | 65 | 100 | 148 | 200 | 285 | 420 | 600 | 800 | 1130 | 1650 |
| 35.5 | 1500 | 42.3 | 23 | 34 | 46 | 63 | 88 | 120 | 180 | 280 | 360 | 520 | 780 | 1100 • | 1450 • | 2150 • | 3100 • |
| | 1000 | 28.2 | 15 | 23 | 31 | 42 | 59 | 80 | 120 | 187 | 240 | 347 | 520 | 733 | 967 | 1433 | 2067 • |
| | 750 | 21.1 | 12 | 17 | 23 | 32 | 44 | 60 | 90 | 140 | 180 | 260 | 390 | 550 | 725 | 1075 | 1550 |
| 40 | 1500 | 37.5 | 20 | 30 | 43 | 57 | 79 | 110 | 160 | 240 | 320 | 470 | 700 | 990 | 1300 • | 1950 • | 2770 • |
| | 1000 | 25 | 13.3 | 20 | 29 | 38 | 53 | 73 | 107 | 160 | 213 | 313 | 467 | 660 | 867 | 1300 | 1847 |
| | 750 | 18.8 | 10 | 15 | 22 | 29 | 40 | 55 | 80 | 120 | 160 | 235 | 350 | 495 | 650 | 975 | 1385 |
| 45 | 1500 | 33.3 | 18 | 26 | 36 | 50 | 70 | 98 | 145 | 220 | 285 | 420 | 630 | 880 | 1150 • | 1750 • | 2480 • |
| | 1000 | 22.2 | 12 | 17 | 24 | 33 | 47 | 65 | 97 | 147 | 190 | 280 | 420 | 587 | 767 | 1167 | 1653 |
| | 750 | 16.7 | 9 | 13 | 18 | 25 | 35 | 49 | 73 | 110 | 143 | 210 | 315 | 440 | 575 | 875 | 1240 |
| 50 | 1500 | 30 | 15.5 | 23 | 32 | 46 | 63 | 87 | 130 | 200 | 250 | 370 | 560 | 780 | 1050 | 1550 • | 2250 • |
| | 1000 | 20 | 10.3 | 15 | 21 | 31 | 42 | 58 | 87 | 133 | 167 | 247 | 373 | 520 | 700 | 1033 | 1500 |
| | 750 | 15 | 7.8 | 12 | 16 | 23 | 32 | 44 | 65 | 100 | 125 | 185 | 280 | 390 | 525 | 775 | 1125 |
| 56 | 1500 | 26.8 | 14 | 20 | 28 | 41 | 56 | 78 | 115 | 175 | 225 | 320 | 500 | 700 | 920 | 1400 | 1980 • |
| | 1000 | 17.9 | 9.3 | 13.3 | 19 | 27 | 37 | 52 | 77 | 117 | 150 | 213 | 333 | 467 | 613 | 933 | 1320 |
| | 750 | 13.4 | 7 | 10 | 14 | 21 | 28 | 39 | 58 | 88 | 113 | 160 | 250 | 350 | 460 | 700 | 990 |
| 63 | 1500 | 23.8 | 11.5 | 17 | 24 | 35 | 45 | 63 | 105 | 150 | 200 | 290 | 440 | 630 | 810 | 1250 | 1760 |
| | 1000 | 15.9 | 7.7 | 11.3 | 16 | 23 | 30 | 42 | 70 | 100 | 133 | 193 | 293 | 420 | 540 | 833 | 1173 |
| | 750 | 11.9 | 5.8 | 8.5 | 12 | 18 | 23 | 32 | 53 | 75 | 100 | 145 | 220 | 315 | 405 | 625 | 880 |
| 71 | 1500 | 21.1 | 10.5 | 15 | 21.5 | 31 | 40 | 57 | 91 | 135 | 180 | 250 | 400 | 560 | 740 | 1100 | 1570 |
| | 1000 | 14.1 | 7 | 10 | 14.3 | 21 | 27 | 38 | 61 | 90 | 120 | 167 | 267 | 373 | 493 | 733 | 1047 |
| | 750 | 10.6 | 5.3 | 7.5 | 10.8 | 16 | 20 | 29 | 46 | 68 | 90 | 125 | 200 | 280 | 370 | 550 | 785 |
| 80 | 1500 | 18.8 | 9.4 | 14 | 19.5 | 29 | 36 | 52 | 82 | 120 | 160 | 230 | 350 | 495 | 650 | 960 | 1400 |
| | 1000 | 12.5 | 6.3 | 9.3 | 13 | 19 | 24 | 35 | 55 | 80 | 107 | 153 | 233 | 330 | 433 | 640 | 933 |
| | 750 | 9.4 | 4.7 | 7 | 9.8 | 15 | 18 | 26 | 41 | 60 | 80 | 115 | 175 | 248 | 325 | 480 | 700 |
| 90 | 1500 | 16.7 | 8.4 | 12 | 17.5 | 26 | 33 | 47 | 75 | 110 | 145 | 210 | 320 | 460 | 600 | 880 | 1260 |
| | 1000 | 11.1 | 5.6 | 8 | 11.7 | 17 | 22 | 31 | 50 | 73 | 97 | 140 | 213 | 307 | 400 | 587 | 840 |
| | 750 | 8.3 | 4.2 | 6 | 8.8 | 13 | 17 | 24 | 38 | 55 | 73 | 105 | 160 | 230 | 300 | 440 | 630 |
| 100 | 1500 | 15 | 7.5 | 10.5 | 16 | 24 | 30 | 44 | 61 | 95 | 130 | 176 | 290 | 410 | 540 | 780 | 1130 |
| | 1000 | 10 | 5 | 7 | 10.7 | 16 | 20 | 29 | 41 | 63 | 87 | 117 | 193 | 273 | 360 | 520 | 753 |
| | 750 | 7.5 | 3.8 | 5.3 | 8 | 12 | 15 | 22 | 31 | 48 | 65 | 88 | 145 | 205 | 270 | 390 | 565 |

# Thermal capacities

| Nominal transmission ratio $i_N$ | Input speed r.p.m. $n_1$ | Size of gear unit 160 | 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 560 | 630 | 710 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Thermal capacities $P_G$ in kW for gear units without cooling | | | | | | | | | | | | | | |
| 20 - 71 | 1500 | 44 | 55 | 70 | 90 | 108 | 135 | 175 | 215 | 265 | 340 | 410 | 510 | 650 | 800 | 1010 |
| 80 - 100 | 1500 | 39 | 50 | 63 | 82 | 100 | 125 | 165 | 205 | 260 | 330 | 400 | 500 | 630 | 780 | 990 |

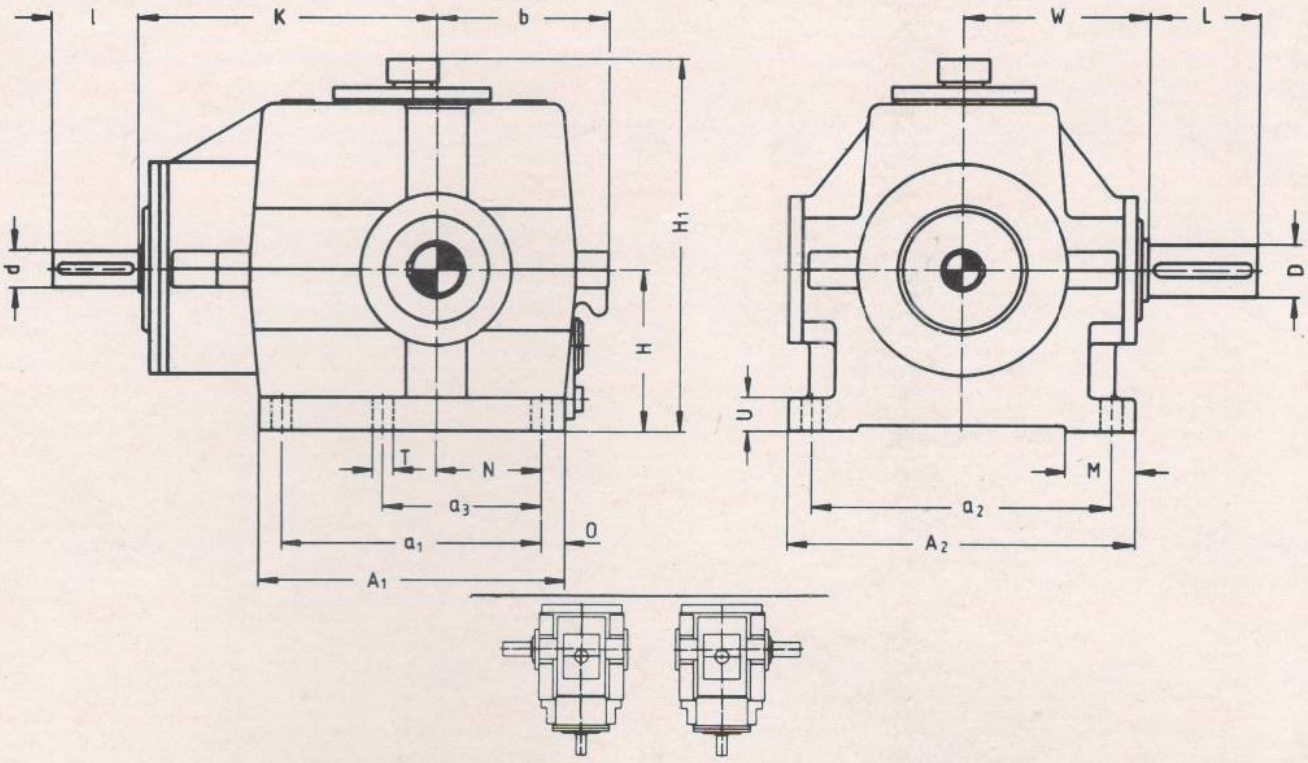
The nominal gear ratings $P_N$ in kW marked with • require forced-feed lubrication by a pump.

Tolerance on the nominal transmission ratio is ± 3%.

# GGAG

## Bevel Gear Units

**ABS**




**Left-hand assembly** **Right-hand assembly**

Dimensions in mm

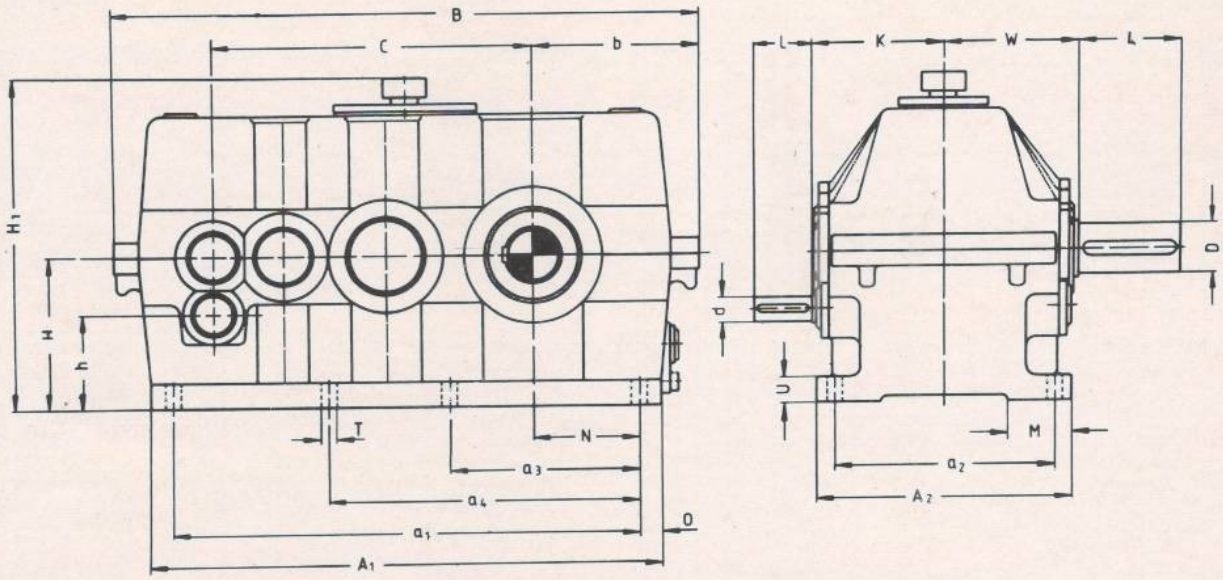
| Size of gear unit | Housing dimensions | | | | | | | | | | | | | Input shaft | | | | | | | Output shaft | | | Avg. Wt. kg. | Oil Qty. ltrs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | $i_N \leq 1.8$ | | $i_N \geq 2$ upto 2.5 | | $i_N \geq 2.8$ upto 5.6 | | | | | | | |
| | $A_1$ | $A_2$ | $a_1$ | $a_2$ | $a_3$ | b | H | $H_1$ | M | N | O | T | U | d | l | d | l | d | l | K | D | L | W | | |
| 90 | 160 | 180 | 130 | 145 | | 95 | 90 | 200 | 40 | 47 | 15 | 14 | 20 | 19 | 40 | 16 | 40 | 14 | 30 | 190 | 22 | 50 | 100 | 24 | 1.3 |
| 100 | 175 | 200 | 145 | 165 | | 100 | 95 | 220 | 40 | 52 | 15 | 14 | 25 | 22 | 50 | 20 | 50 | 16 | 40 | 205 | 25 | 60 | 110 | 30 | 1.5 |
| 112 | 190 | 220 | 160 | 185 | | 110 | 105 | 240 | 40 | 60 | 15 | 14 | 25 | 25 | 60 | 22 | 50 | 19 | 40 | 220 | 28 | 60 | 120 | 38 | 1.8 |
| 125 | 210 | 240 | 180 | 205 | | 120 | 115 | 270 | 50 | 65 | 15 | 14 | 25 | 28 | 60 | 25 | 60 | 20 | 50 | 240 | 32 | 80 | 130 | 46 | 2.1 |
| 140 | 230 | 260 | 200 | 225 | | 140 | 125 | 300 | 50 | 75 | 15 | 14 | 35 | 32 | 80 | 30 | 80 | 25 | 60 | 270 | 38 | 80 | 145 | 58 | 2.5 |
| 160 | 255 | 300 | 215 | 265 | | 145 | 135 | 330 | 50 | 80 | 20 | 14 | 35 | 38 | 80 | 35 | 80 | 30 | 80 | 295 | 45 | 110 | 165 | 74 | 3.0 |
| 180 | 280 | 330 | 240 | 295 | | 150 | 145 | 350 | 55 | 92 | 20 | 14 | 35 | 42 | 110 | 40 | 110 | 35 | 80 | 325 | 48 | 110 | 180 | 100 | 4.2 |
| 200 | 310 | 360 | 260 | 325 | | 175 | 160 | 380 | 60 | 100 | 25 | 14 | 40 | 48 | 110 | 42 | 110 | 40 | 110 | 350 | 55 | 110 | 195 | 133 | 5.5 |
| 225 | 360 | 400 | 310 | 365 | | 185 | 170 | 400 | 70 | 115 | 25 | 14 | 45 | 55 | 110 | 50 | 110 | 45 | 110 | 385 | 60 | 140 | 205 | 190 | 7.7 |
| 250 | 410 | 440 | 350 | 395 | | 200 | 195 | 450 | 75 | 130 | 30 | 18 | 50 | 60 | 140 | 55 | 110 | 50 | 110 | 420 | 70 | 140 | 225 | 260 | 10.2 |
| 280 | 465 | 480 | 405 | 435 | | 225 | 215 | 490 | 80 | 150 | 30 | 18 | 55 | 65 | 140 | 60 | 140 | 55 | 110 | 455 | 80 | 170 | 250 | 355 | 14.2 |
| 320 | 515 | 540 | 445 | 485 | | 250 | 245 | 550 | 85 | 170 | 35 | 23 | 65 | 70 | 140 | 65 | 140 | 60 | 140 | 505 | 90 | 170 | 280 | 485 | 19.0 |
| 360 | 580 | 600 | 510 | 545 | | 270 | 260 | 580 | 90 | 190 | 35 | 23 | 65 | 80 | 170 | 75 | 140 | 70 | 140 | 550 | 100 | 210 | 315 | 640 | 25.0 |
| 400 | 645 | 660 | 565 | 590 | 350 | 300 | 290 | 660 | 100 | 210 | 40 | 27 | 80 | 100 | 210 | 90 | 170 | 80 | 170 | 610 | 110 | 210 | 345 | 920 | 38.0 |
| 450 | 720 | 720 | 630 | 650 | 390 | 325 | 320 | 720 | 110 | 235 | 45 | 27 | 80 | 110 | 210 | 100 | 210 | 90 | 170 | 690 | 120 | 210 | 375 | 1220 | 50.0 |
| 500 | 815 | 800 | 715 | 720 | 440 | 365 | 360 | 800 | 115 | 270 | 50 | 33 | 100 | 120 | 210 | 110 | 210 | 95 | 170 | 760 | 140 | 250 | 425 | 1740 | 68.0 |
| 560 | 915 | 900 | 805 | 820 | 495 | 420 | 420 | 920 | 120 | 305 | 55 | 33 | 100 | 130 | 250 | 120 | 210 | 110 | 210 | 865 | 160 | 300 | 465 | 2310 | 100.0 |

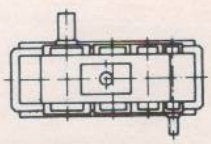
- Shaft ends as per IS 3688 (Long series)
- Tolerance field for shaft ends ISO fit upto 50 mm ∅ k6, over 50 mm ∅ m6
- Shaft ends with keys as per IS 2048 (Both ends round)
- Shaft centering as per IS 2540 (Threaded centre hole)

# GGAG

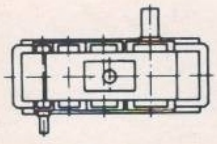
## Helical Gear Units

**DHS**



**Left-hand assembly**



**Right-hand assembly**

Dimensions in mm

| Size of gear unit | Centre distance | Housing dimensions | | | | | | | | | | | | | | | | Input shaft $i_N \leq 500$ | | | Output shaft | | | Avg. Wt. kg. | Oil Qty. ltrs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C | $A_1$ | $A_2$ | $a_1$ | $a_2$ | $a_3$ | $a_4$ | B | b | H | $H_1$ | h | M | N | O | T | U | d | l | K | D | L | W | | |
| 180 | 395 | 665 | 320 | 605 | 275 | 250 | | 725 | 215 | 200 | 475 | 137 | 80 | 155 | 30 | 18 | 35 | 16 | 40 | 160 | 90 | 170 | 160 | 205 | 16 |
| 200 | 440 | 745 | 355 | 675 | 300 | 280 | | 810 | 240 | 225 | 520 | 155 | 85 | 170 | 35 | 23 | 40 | 19 | 40 | 175 | 100 | 210 | 175 | 290 | 21 |
| 225 | 497 | 840 | 390 | 770 | 335 | 315 | | 900 | 265 | 250 | 570 | 170 | 90 | 190 | 35 | 23 | 45 | 22 | 50 | 200 | 110 | 210 | 200 | 425 | 29 |
| 250 | 555 | 930 | 450 | 850 | 380 | 350 | | 1000 | 290 | 280 | 625 | 190 | 100 | 210 | 40 | 27 | 50 | 24 | 50 | 220 | 120 | 210 | 220 | 560 | 40 |
| 280 | 620 | 1025 | 500 | 935 | 430 | 390 | | 1120 | 325 | 320 | 690 | 220 | 110 | 235 | 45 | 27 | 55 | 28 | 60 | 260 | 130 | 250 | 260 | 760 | 58 |
| 320 | 705 | 1160 | 570 | 1060 | 490 | 440 | 700 | 1260 | 370 | 360 | 785 | 248 | 115 | 270 | 50 | 33 | 65 | 32 | 80 | 295 | 140 | 250 | 295 | 1100 | 82 |
| 360 | 790 | 1300 | 600 | 1190 | 520 | 495 | 790 | 1440 | 415 | 400 | 865 | 275 | 120 | 305 | 55 | 33 | 65 | 40 | 110 | 320 | 170 | 300 | 320 | 1450 | 140 |
| 400 | 880 | 1460 | 690 | 1340 | 590 | 560 | 890 | 1590 | 465 | 450 | 960 | 310 | 130 | 345 | 60 | 39 | 80 | 45 | 110 | 370 | 180 | 300 | 370 | 2000 | 185 |
| 450 | 995 | 1640 | 750 | 1520 | 650 | 630 | 1000 | 1790 | 525 | 500 | 1065 | 340 | 140 | 390 | 60 | 39 | 80 | 50 | 110 | 415 | 220 | 350 | 415 | 2700 | 260 |
| 500 | 1110 | 1830 | 830 | 1690 | 710 | 700 | 1110 | 2000 | 585 | 560 | 1185 | 380 | 150 | 430 | 70 | 45 | 100 | 55 | 110 | 475 | 240 | 410 | 475 | 3900 | 360 |
| 560 | 1240 | 2040 | 910 | 1900 | 790 | 785 | 1245 | 2220 | 650 | 630 | 1325 | 430 | 160 | 485 | 70 | 45 | 100 | 60 | 140 | 510 | 270 | 410 | 510 | 5300 | 530 |
| 630 | 1400 | 2300 | 1030 | 2140 | 890 | 880 | 1410 | 2485 | 725 | 710 | 1485 | 485 | 170 | 545 | 80 | 52 | 125 | 70 | 140 | 560 | 300 | 470 | 560 | 7300 | 570 |
| 710 | 1570 | 2590 | 1160 | 2410 | 1000 | 1000 | 1580 | 2790 | 810 | 800 | 1665 | 550 | 190 | 620 | 90 | 52 | 125 | 75 | 140 | 600 | 340 | 550 | 600 | 10100 | 900 |
| 800 | 1760 | 2900 | 1320 | 2700 | 1140 | 1130 | 1730 | 3100 | 900 | 900 | 1870 | 620 | 200 | 695 | 100 | 60 | 160 | 85 | 170 | 645 | 400 | 650 | 645 | 14100 | 1200 |

- Shaft ends as per IS 3688 (Long series)
- Tolerance field for shaft ends ISO fit upto 50 mm ∅ k6, over 50 mm ∅ m6
- Shaft ends with keys as per IS 2048 (Both ends round)
- Shaft centering as per IS 2540 (Threaded centre hole)

# Power ratings

| Nominal transmission ratio $i_N$ | Speeds r.p.m. $n_1$ | $n_2$ | Size of gear unit 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 560 | 630 | 710 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Nominal Gear unit ratings $P_N$ (kW) | | | | | | | | | | | | | |
| 100 | 1500 | 15 | | | | | | | 99 | 130 | 190 | 290 | 400 | 540 | 780 | 1100 |
| | 1000 | 10 | | | | | | | 66 | 87 | 127 | 193 | 267 | 360 | 520 | 733 |
| | 750 | 7.5 | | | | | | | 50 | 65 | 95 | 145 | 200 | 270 | 390 | 550 |
| 112 | 1500 | 13.4 | 9.2 | 15 | 21 | 29 | 40 | 59 | 91 | 115 | 170 | 255 | 360 | 480 | 690 | 990 |
| | 1000 | 8.9 | 6.1 | 10 | 14 | 19 | 27 | 39 | 61 | 77 | 113 | 170 | 240 | 320 | 460 | 660 |
| | 750 | 6.7 | 4.6 | 7.5 | 11 | 15 | 20 | 30 | 46 | 58 | 85 | 128 | 180 | 240 | 345 | 495 |
| 125 | 1500 | 12 | 9.2 | 12 | 18.5 | 26 | 36 | 52 | 81 | 105 | 150 | 230 | 320 | 430 | 610 | 890 |
| | 1000 | 8 | 6.1 | 8 | 12.3 | 17 | 24 | 35 | 54 | 70 | 100 | 153 | 213 | 287 | 407 | 593 |
| | 750 | 6 | 4.6 | 6 | 9.3 | 13 | 18 | 26 | 41 | 53 | 75 | 115 | 160 | 215 | 305 | 445 |
| 140 | 1500 | 10.7 | 8.4 | 11 | 16.5 | 23 | 32 | 46 | 72 | 92 | 135 | 205 | 290 | 380 | 550 | 800 |
| | 1000 | 7.1 | 5.6 | 7.3 | 11 | 15 | 21 | 31 | 48 | 61 | 90 | 137 | 193 | 253 | 367 | 533 |
| | 750 | 5.4 | 4.2 | 5.5 | 8.3 | 12 | 16 | 23 | 36 | 46 | 68 | 103 | 145 | 190 | 275 | 400 |
| 160 | 1500 | 9.4 | 7.5 | 9.6 | 14.5 | 20 | 28 | 41 | 64 | 81 | 120 | 180 | 255 | 340 | 495 | 710 |
| | 1000 | 6.3 | 5 | 6.4 | 9.7 | 13.3 | 19 | 27 | 43 | 54 | 80 | 120 | 170 | 227 | 330 | 473 |
| | 750 | 4.7 | 3.8 | 4.8 | 7.3 | 10 | 14 | 21 | 32 | 41 | 60 | 90 | 128 | 170 | 248 | 355 |
| 180 | 1500 | 8.3 | 6.6 | 8.4 | 13 | 19 | 25 | 37 | 57 | 70 | 105 | 160 | 225 | 300 | 440 | 630 |
| | 1000 | 5.6 | 4.4 | 5.6 | 8.7 | 12.7 | 17 | 25 | 38 | 47 | 70 | 107 | 150 | 200 | 293 | 420 |
| | 750 | 4.2 | 3.3 | 4.2 | 6.5 | 9.5 | 13 | 19 | 29 | 35 | 53 | 80 | 113 | 150 | 220 | 315 |
| 200 | 1500 | 7.5 | 5.6 | 7.5 | 12 | 15.5 | 22 | 33 | 51 | 64 | 95 | 145 | 205 | 270 | 395 | 560 |
| | 1000 | 5 | 3.7 | 5 | 8 | 10.3 | 15 | 22 | 34 | 43 | 63 | 97 | 137 | 180 | 263 | 373 |
| | 750 | 3.8 | 2.8 | 3.8 | 6 | 7.8 | 11 | 17 | 26 | 32 | 48 | 73 | 103 | 135 | 198 | 280 |
| 224 | 1500 | 6.7 | 4.8 | 6.7 | 10.5 | 14 | 20 | 29 | 45 | 57 | 83 | 130 | 185 | 240 | 360 | 510 |
| | 1000 | 4.5 | 3.2 | 4.5 | 7 | 9.3 | 13.3 | 19 | 30 | 38 | 55 | 87 | 123 | 160 | 240 | 340 |
| | 750 | 3.3 | 2.4 | 3.4 | 5.3 | 7 | 10 | 15 | 23 | 29 | 42 | 65 | 93 | 120 | 180 | 255 |
| 250 | 1500 | 6 | 4.5 | 6.1 | 9.5 | 12.5 | 17.5 | 26 | 41 | 51 | 73 | 115 | 165 | 215 | 320 | 450 |
| | 1000 | 4 | 3 | 4.1 | 6.3 | 8.3 | 11.7 | 17 | 27 | 34 | 49 | 77 | 110 | 143 | 213 | 300 |
| | 750 | 3 | 2.3 | 3.1 | 4.8 | 6.3 | 8.8 | 13 | 21 | 26 | 37 | 58 | 83 | 108 | 160 | 225 |
| 280 | 1500 | 5.4 | 3.9 | 5.3 | 8.2 | 11 | 15.5 | 23 | 37 | 46 | 66 | 100 | 145 | 195 | 280 | 400 |
| | 1000 | 3.6 | 2.6 | 3.5 | 5.5 | 7.3 | 10.3 | 15 | 25 | 31 | 44 | 67 | 97 | 130 | 187 | 267 |
| | 750 | 2.7 | 2 | 2.7 | 4.1 | 5.5 | 7.8 | 12 | 19 | 23 | 33 | 50 | 73 | 98 | 140 | 200 |
| 315 | 1500 | 4.8 | 3.5 | 4.7 | 7.5 | 9.5 | 13.5 | 21 | 32 | 42 | 59 | 92 | 130 | 175 | 250 | 360 |
| | 1000 | 3.2 | 2.3 | 3.1 | 5 | 6.3 | 9 | 14 | 21 | 28 | 39 | 61 | 87 | 117 | 167 | 240 |
| | 750 | 2.4 | 1.8 | 2.4 | 3.8 | 4.8 | 6.8 | 11 | 16 | 21 | 30 | 46 | 65 | 88 | 125 | 180 |
| 355 | 1500 | 4.2 | 2.9 | 4 | 6.5 | 8.5 | 12 | 18 | 29 | 37 | 52 | 83 | 115 | 155 | 225 | 320 |
| | 1000 | 2.8 | 1.9 | 2.7 | 4.3 | 5.7 | 8 | 12 | 19 | 25 | 35 | 55 | 77 | 103 | 150 | 213 |
| | 750 | 2.1 | 1.5 | 2 | 3.3 | 4.3 | 6 | 9 | 15 | 19 | 26 | 42 | 58 | 78 | 113 | 160 |
| 400 | 1500 | 3.8 | 2.6 | 3.6 | 6 | 8 | 11 | 16.5 | 26 | 33 | 46 | 72 | 100 | 135 | 195 | 280 |
| | 1000 | 2.5 | 1.7 | 2.4 | 4 | 5.3 | 7.3 | 11 | 17 | 22 | 31 | 48 | 67 | 90 | 130 | 187 |
| | 750 | 1.9 | 1.3 | 1.8 | 3 | 4 | 5.5 | 8.3 | 13 | 17 | 23 | 36 | 50 | 68 | 98 | 140 |
| 450 | 1500 | 3.3 | 2.3 | 3.2 | 5 | 7.5 | 10 | 13.5 | 21.5 | 29 | 40 | 65 | 93 | 125 | 175 | 255 |
| | 1000 | 2.2 | 1.5 | 2.1 | 3.3 | 5 | 6.7 | 9 | 14.3 | 19 | 27 | 43 | 62 | 83 | 117 | 170 |
| | 750 | 1.7 | 1.2 | 1.6 | 2.5 | 3.8 | 5 | 6.8 | 10.8 | 15 | 20 | 33 | 47 | 63 | 88 | 128 |
| 500 | 1500 | 3 | 2.1 | 2.9 | 4.2 | 6.5 | 9.1 | 12 | 19.5 | 26 | 36 | 59 | 82 | 110 | 155 | 225 |
| | 1000 | 2 | 1.4 | 1.9 | 2.8 | 4.3 | 6.1 | 8 | 13 | 17 | 24 | 39 | 55 | 73 | 103 | 150 |
| | 750 | 1.5 | 1.1 | 1.5 | 2.1 | 3.3 | 4.6 | 6 | 9.8 | 13 | 18 | 30 | 41 | 55 | 78 | 113 |

# Thermal capacities

| Nominal transmission ratio $i_N$ | Input speed r.p.m. $n_1$ | Size of gear unit 180 | 200 | 225 | 250 | 280 | 320 | 360 | 400 | 450 | 500 | 560 | 630 | 710 | 800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Thermal capacities $P_G$ in kW for gear units without cooling | | | | | | | | | | | | | |
| 100 - 500 | 1500 | 25 | 32 | 41 | 52 | 66 | 90 | 110 | 140 | 175 | 220 | 280 | 360 | 450 | 560 |

The nominal gear ratings $P_N$ in kW marked with ● require forced-feed lubrication by a pump.

Tolerance on the nominal transmission ratio is ±3%.

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