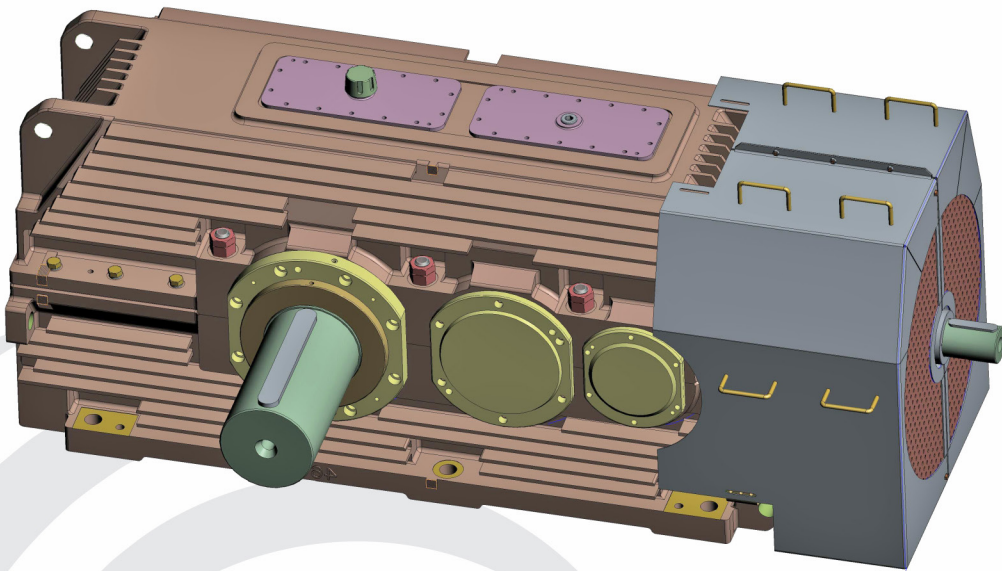


ELECON

EON SERIES CONVEYOR DRIVE

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WORLD'S MOST TECHNOLOGICALLY ADVANCED GEAR MANUFACTURING FACILITY

BHANUBHAI MEMORIAL CENTRE OF EXCELLENCE (BMCE)

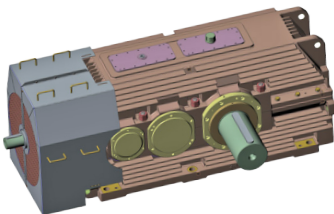
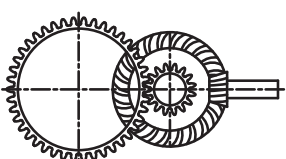
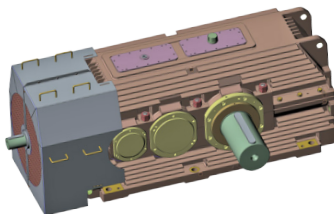
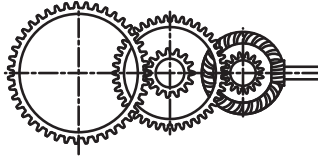
In the last six decades, Elecon have conducted intensive research in gear technology and manufacturing techniques. We have developed a variety of products in the transmission industry from worm gears to helical, from planetary to variable speed fluid couplings. This development has demanded a significant investment in manufacturing capability from gear cutting right through to heat treatment and profile grinding. This new plant has the capacity to manufacture sufficient helical gears to produce 1000 assembled gear units per month.

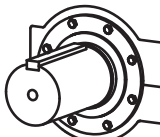
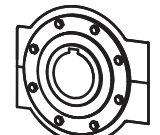
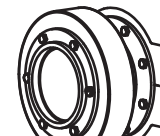
This plant is a tribute to our founding Chairman, Lt. Shri Bhanubhai Patel, who wanted to remain "Always a step ahead in technology"



Contents

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| Nomenclature | | | | | |
|---|--|---|--|----|---|
| | | K | 3 | 46 | H |
| Gear Unit Type | Number Of Stages | Size | Gear Unit Mounting | | |
|  <div style="font-size: 48px; font-weight: bold; text-align: center;">K</div> |  Bevel-Helical 2 -Stage | 46 59 | <div style="font-size: 24px; font-weight: bold;">Horizontal</div>  | | |
| |  Bevel-Helical 3 -Stage | | | | |

| N | 1 | A | 0 | 0 | 0500 | 11 |
|--|--|--------------------|----------------------|---|--------------------|-------------------------------|
| Type Of Output Shaft | Type Of Gear-Case | Attachments | Type Of Cooling | Type Of Lubrication | Nominal Ratio * 10 | Shaft Attangement (Handing) |
| N -Sholid Shaft  | 1 -Cast Iron Gearcase | A -None | 0 -None | 0 -Splash 3 -Forced 9 -Special | | |
| | Hollow Shaft With K eyway  | | | | | |
| Hollow Shaft With shrink D isc  | 3 -SG Iron Gearcase | B -Backstop | 1 -Single Fan | | | |
| | 8 -Semi Special Gearcase | | | C -RTD | | |
| | 9 -Special Gearcase | | | | | |

Characteristic of Gear Units

Overview

The EON Conveyor series of bevel helical gear units is designed to Elecon's proven quality standards. These quiet running units provide exceptional levels of performance, versatility and life expectancy to meet the demanding requirements of modern industry.

Elecon EON conveyor Series offers a comprehensive range of right angle and parallel shaft combinations with ratios to suit market requirement. Both solid and hollow output shaft combination are available including keyed, keyless including double extended output shaft.

Not only that but also a favorable thermal conditions with including

- Enlarged gear housing surface area
- non-contacting labyrinth seals
- Highly efficient fans with optimized design of fan cowl.

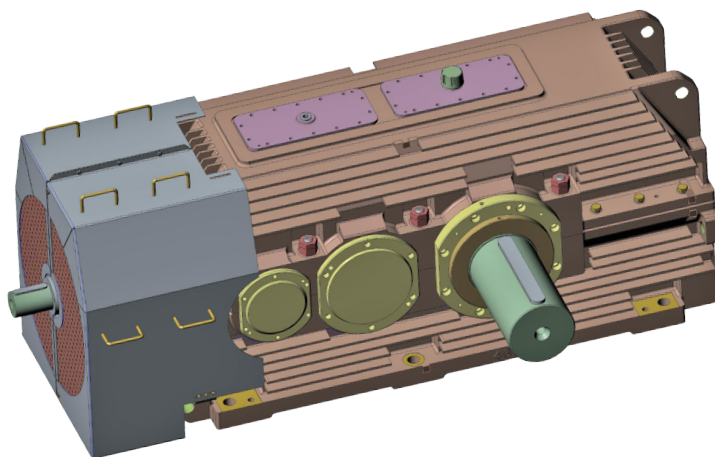
Technical

Elecon's EON Conveyor Series range is designed to balance thermal & mechanical ratings with bearing life to ensure the unit has the best optimal performance.

Gear case have been optimized to reduce weight & increase stiffness ensure superior power to weight ratio. The horizontal split case design makes for simple inspection & maintenance.

Quality & Testing :

Elecon utilize state-of-the art gear & CMM inspection machine which ensures elecon's product are of the highest quality & robustness. All external gears are ground. Elecon offers No-Load testing at assembly line end.



Selection of Gear:

Double stage
Bevel Helical Gear
iN =5 to 11.2

Triple stage
Bevel Helical Gear
iN =12.5 to 71

General Information





The following items are absolutely to be observed!

1. The weight of gearbox are mean values and not strictly binding.
2. Prior to commissioning, the operating instructions must be observed. The gear units are delivered ready for operation but without oil filling.
3. Oil quantities given are guide value only. The exact quantity of oil depends on the marks on the oil level dipstick.
4. The oil viscosity has to correspond to the data given on the name plate.
5. Approved lubricants should be used only. (Refer operating instruction manual)
6. The Gear case housings are protected against corrosion.
7. Rating calculations are as per DIN-3990.
8. Foundation bolts are minimum property class-8.8.
9. Allowable vibration limits is generally as per ISO 10816
10. Allowable noise level is 85 ± 2 dB.

Standard Gearbox includes:

1. Oil dipstick
2. Breather plug
3. Lifting provision
4. Oil filling and drain plug
5. RTD provisions
6. Shaft End Key

Symbols used:

1. Oil dipstick 
2. Breather 
3. Drain plug 
4. Oil filling 

Selection of Gear Unit

1. Determination of gear unit type and size:-

1.1 Find the transmission ratio

$$i_N = n_1/n_2$$

1.2 Determine nominal power rating of the gear unit

$$P_N \geq P_e \times f$$

1.3 Checking starting torque

$$\frac{M_k \cdot n_1}{P_N \cdot 9550} < 2.5$$

Gear unit sizes and number of reduction stages are given in rating tables depending on i_N and P_N

1.4 Check whether the actual ratio i as per tables on Pages 18

i_N = Nominal transmission ratio

n_1 = Input speed (rpm);

n_2 = Output speed (rpm);

P_N = Nominal gear box rating (kW) (see power table :)

P_e = Absorbed power of the connected machine (kW)

f = Service factor = $f_1 \times f_2$ (from table 1,2 & 3)

f_3 = Service factor (see table :)

M_k = Starting torque or max. Input torque (Nm)

2. Determination of required thermal capacity:-

2.1 Gear unit without additional cooling when

$$P_e \leq P_1 \times F_w$$

2.2 Gear unit with fan possible when

$$P_e \leq P_2 \times F_w$$

2.3 Gear unit with external oil cooler when

$$P_e \geq P_2 \times F_w$$

t = Ambient temperature (°C)

E_D = Running period (%), e.g. ED = 80%

P_1 = Thermal capacity without additional cooling at $t = 25$ °C; $E_D = 100\%$

P_2 = Thermal capacity with fan at $t = 25$ °C; $E_D = 100\%$

$F_w = B_1 \times B_2 \times B_3 \times B_4 \times E_D$ (Table 4/5/6/7/8)

Calculation Example

Prime Mover

Electric Motor = 350 kW
 Motor Speed n1 = 1500 RPM
 Max. starting torque MK = 2228 Nm

Gear Unit Design

Bevel-Helical gear unit

Driven Machine

Heavy rubber-belt conveyor Pe = 300 kW
 Speed n2 = 30 RPM
 Duty = 12 h/day
 Starts = 1 per hour
 Running duration per hour, ED = 100%
 Ambient temperature = 40°C
 Wind velocity ≤ 1.4 m/s
 Altitude = Sea Level

Determination of gear unit type and size:-

1.1 Calculation of transmission ratio

$$i_N = \frac{n1}{n2} = \frac{1500}{30} = 50 : 1$$

Selected gearbox type is K3, Triple reduction bevel helical unit

1.2 Determination of the gear size

Operating factor “f” from table 1 & 2 = 1.5
 Required nominal gearbox rating

$$P_N = P_e \times f = 300 \times 1.5 = 450 \text{ kW}$$

From power table select K3 gearbox size = 46 with P_N = 478 kW ≥ 300kW × 1.5 = 450kW

1.3. Checking starting torque

$$\frac{(Mk \cdot n_1)}{(P_N \cdot 9550)} < 2.5 = \frac{(2228 \cdot 1500)}{(478 \cdot 9550)} = 0.73 < 2.5$$

Checking Heating effects

2.1 Gear unit without additional cooling

From table 4/5/6/7/8, Fw = 0.67
 Pe ≤ P1 x Fw,
 As 300 >= 256(382*0.67)

2.2 Gear unit with fan cooling

From table 3, Fw = 0.67
 Pe ≤ P2 x Fw,
 As 300 >= 453(676*0.67)

Selected Gearbox : K3-46, Ratio - 50:1 and requires Fan Cooling

Service Factors

| Table - 1 | | Load parameters | | | | | |
|------------------------------|-----|-----------------------------------|------|-------------------------------|-----|-----------------------------|-----|
| Driven machines | | Driven machines | | Driven machines | | Driven machines | |
| Bucket chain excavators | S* | Blowers, Fans, Ventilators | | Foodstuffs machines | | Pipe straightening machines | M** |
| Travelling gear | | Axial blowers | M | Filling machines | G | Roller gear beds | |
| ---Caterpillar track | S* | Rotary piston blowers | M | Kneading machines | M | ---Light | M** |
| ---Rail | M | Large ventilators (mining) | M | Packing machines | G | ---Heavy | S** |
| Bucket-wheel stacker | M* | Cooling tower fans | *** | Weighing machines | M | Shears | |
| Bucket wheels | | Radial blowers | M | Sugarcane crushers | M** | ---Plates | S** |
| ---Clearing | S* | Induced draft fans | M | Sugarcane mills | S** | ---Wire | M** |
| ---Coal | S* | Impeller blowers | G | Sugarcane cutters | M** | ---Billet | S** |
| ---Lime | S* | Turbo blowers | G | Sugar-beet cutters | M | ---Cropping | S** |
| Cutter heads | S* | Centrifugal blowers | G | Paper machines | | ---Plate trimming | M** |
| Slewing machines | M* | Generators | | Couchers | S** | Winding turret | M** |
| Suction pumps | M* | Generators, under uni. load | G | Glazing cylinders | S** | Winding tractor | M** |
| Cable drums | M | Welding generators | *** | Calenders | M** | Continuous casting plants | S** |
| Winches | M | Rubber and plastics | | Mixers | M | Shifting device | S |
| Winches | M | Extruders | | Presses | | Roller adjusting device | M |
| Mining, Rock, Earth | | ---Rubber | S** | ---Glue | S** | Water recycling machine | |
| Concrete mixer | M | ---Plastics | M** | --Wet | S** | Thickeners | M |
| Crushers | S* | Calenders | M** | --Suction | S** | Gyroscopic ventilators | M |
| Briquetting presses | H | Kneading machines, rubber | S** | Suction rollers | S** | Mixers | M |
| Rotary kilns | S** | Mixers | M** | Drying cylinders | S** | Water screw | M |
| Pneumatic sifters | M* | Mills, rubber | M** | Pumps | | Vacuum filter presses | M |
| Clay mixers | M | Rolling mills, rubber | S** | Proportioning pumps | M | Rate/screen drives | G |
| Chemical industry | | Wood-working machinery | | Piston pumps | | | |
| Mixers | M | Decorticating drums | S | - U < 1:100 | S | | |
| Agitators | | Planing machines | M | - U > 1:100 - 1:200 | M** | | |
| ---Pure liquids | G | Saw frames | M | Centrifugal pumps | | | |
| ---Liquids and solids | M | Iron and steel industry | | Light liquids | G | | |
| Liquids with various density | M | Foundry crane (hoist gear) | S** | - Viscous liquids | M | | |
| Rotary dryer | M | Converters | *** | Compression pumps | S | | |
| Centrifuges | | Slag cars | G*** | Plunger pumps | S** | | |
| ---Light | G | Sintering belts | M** | Sand pumps | M** | | |
| ---Heavy | M | Crushers | S** | Machines for textile industry | | | |
| Petroleum industry | | Torpedo mixers | *** | Bobbin winding machines | M | | |
| Drilling pumps | *** | Car tipper | S | Printing machines | M | | |
| Rotary kilns | M | Cranes | | Dyeing machines | M | | |
| Filter presses | M** | Luffing gear | G* | Tan-liquor vessels | M | | |
| Pipeline pumps | M** | Travelling gear | M* | Calenders | M | | |
| Scavenging pumps | M** | Hoisting gear | M* | Willowing machines | M | | |
| Conveying plants | | Slewing gear | M* | Drying machines | M | | |
| Uniform load | | Winches | G | Looms | M | | |
| Bucket conveyors | G | Metal working | | Compressors | | | |
| Roasting furnace conveyor | G | Floding presses | S | Rotary piston compressor | | | |
| Assembly line belts | G | Plate bending machines | M** | - U < 1:100 | S | | |
| Band conveyors | G | Plate straightening presses | S | - U > 1:100 - 1:200 | M | | |
| Overhead conveyors | G | Eccentric presses | S | Centrifugal compressors | M | | |
| Chain conveyors | G | Hammers | S** | Turbo compressors | M | | |
| Apron conveyors | G | Planing machines | S | Rolling mills | | | |
| Worm conveyors | G | Crank presses | S | Plate titers | M** | | |
| Medium and heavy load | | Shearing machine | M** | Bloom pushers | H** | | |
| Shaft- sinking machines | S* | Forging presses | S | Bloom conveying plants | S** | | |
| Bucket conveyors | M | Punching presses | S | Wire pulls | M | | |
| Bucket belts | M** | Mills, rubber | | Revolving turrets | M** | | |
| Assembly line conveyors | M | Hammer mills | H** | (conti.casting) | | | |
| Conveyors winders | M** | Edge mills | H** | De-scaling crushers | S** | | |
| Conveyors | S* | Ball mills | H** | Reels | | | |
| Belt conveyors | M | Pendulum mills | H** | - Strip | M* | | |
| Chain conveyors | M | Impact mills | H** | - Wire | M** | | |
| Goods lifts | M | Tube mills | H** | Walking beam conveyors | M* | | |
| Passengers lifts | *** | Beating mills | H** | Chain transporter | M** | | |
| Apron conveyors | M | Rod mills | H** | Cooling trough | M** | | |
| Shaker conveyors | M | Roller mills | H** | Traverse tractors | M** | | |
| Worm conveyors | M | | | Pipe welding machines | S | | |
| Inclined lifts | S** | | | Pipe drawing machines | S* | | |

Service Factors

| Table 2 | Service factor | | | | f1 |
|---|------------------------|----------------------------|---------------|--------------|--------------------|
| Prime Mover | Hours of operation/day | Prime mover load parameter | | | Extra heavy duty H |
| | | Uniform Load G | Medium Load M | Heavy load S | |
| Electric Motor Turbine | up to 3 | 0.80 | 1.00 | 1.50 | 2.00 |
| | over 3 to 10 | 1.00 | 1.25 | 1.75 | 2.25 |
| | over 10 to 24 | 1.25 | 1.50 | 2.00 | 2.50 |
| Piston Engines 4-6 cylinder U>1:100 - 1:200 | up to 3 | 1.00 | 1.25 | 1.75 | 2.25 |
| | over 3 to 10 | 1.25 | 1.50 | 2.00 | 2.50 |
| | over 10 to 24 | 1.50 | 1.75 | 2.25 | 2.75 |
| Piston Engines 1-3 cylinder U<1:100 | up to 3 | 1.25 | 1.50 | 2.00 | 2.50 |
| | over 3 to 10 | 1.50 | 1.75 | 2.25 | 2.75 |
| | over 10 to 24 | 1.75 | 2.00 | 2.50 | 3.00 |

Load parameters

- G = Uniform load
- M = Medium load
- S = Heavy load
- H = Extra heavy load
- * = Detailed calculation on request
- ** = Only calculated for 24-hour period of operation
- *** = Load parameter on request
- U = Cyclic variation

The load parameters quoted are parameters gained from experience. Calculation for driven machines not mentioned above or deviations from the norm obtainable on request.

| Table 3 | Starting frequency factor | | | | | f ₂ |
|-----------------|---------------------------|-----|-----|-----|-----|----------------|
| Starts per hour | Service factor (f1) | | | | | 2.0 |
| | 1.0 | 1.2 | 1.4 | 1.6 | 1.8 | |
| 1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 2 to 20 | 1.2 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 21 to 40 | 1.3 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 |
| 41 to 80 | 1.5 | 1.4 | 1.3 | 1.2 | 1.2 | 1.1 |
| 281 to 160 | 1.6 | 1.5 | 1.4 | 1.3 | 1.2 | 1.1 |
| 161 to 320 | 2.0 | 1.8 | 1.7 | 1.6 | 1.5 | 1.4 |
| over 320 | 2.5 | 2.3 | 2.0 | 1.9 | 1.8 | 1.8 |

Service Factors

Ambient temperature factor, B1:

When the ambient temperature is below 25°C, B1 allows an increase in the thermal rating. Conversely, with an ambient air temperature above 25°C, the thermal rating is reduced. See Table 4A & 4B.

| Gear units without auxiliary cooling or with fan | |
|---|----------------------|
| Table 4A Ambient temperature factor, B₁ | |
| Ambient temperature, °C | B₁ |
| 10 | 1.15 |
| 18 | 1.07 |
| 25 | 1.00 |
| 30 | 0.93 |
| 40 | 0.83 |
| 43 | 0.75 |
| 50 | 0.67 |

| Gear units with cooling coil or with fan and cooling coil | |
|--|----------------------|
| Table 4B Ambient temperature factor, B₁ | |
| Ambient temperature, °C | B₁ |
| 10 | 1.05 |
| 18 | 1.03 |
| 25 | 1.00 |
| 30 | 0.97 |
| 40 | 0.87 |
| 43 | 0.84 |
| 50 | 0.81 |

Ambient air velocity factor, B2 :

When the surrounding air has a steady velocity in excess of 1.4 m/s, due to natural or operational wind fields, the increased convection heat transfer allows the thermal rating to be increased by applying B2. Conversely, with an ambient air velocity of ≤ 0.50 m/s, the thermal rating is reduced. See Table 5.

| Table 5 Ambient air velocity factor, B2 | |
|--|-----------|
| Ambient air velocity, m/s | B2 |
| ≤ 0.5 | 0.75 |
| > 0.5 ≤ 1.4 | 1.00 |
| > 1.4 < 3.7 | 1.40 |
| ≥ 3.7 | 1.90 |

Service Factors

Altitudes factor, B3 :

At high altitudes the decrease in air density results in the derating factor B3. See Table 6

| Table 6 Altitude factor, B3 | |
|-----------------------------|------|
| Altitude, m | B3 |
| 0 (sea level) | 1.15 |
| 750 | 1.07 |
| 1500 | 0.90 |
| 2250 | 0.85 |
| 3000 | 0.81 |
| 3750 | 0.77 |
| 4500 | 0.72 |
| 5250 | 0.68 |

Maximum allowable oil sump temperature factor, B4 :

The standard maximum allowable oil sump temperature is 95°C. A lower sump temperature requires a reduction in the thermal rating using B4 (See Table 7). A maximum allowable sump temperature in excess of 95°C will increase the thermal rating and can provide acceptable gear drive performance in some applications. However, it must be recognized that operating above 95°C may reduce lubricant and contact seal life and increase the surface deterioration on the gears and bearings, with a subsequent increase in the frequency of maintenance. The gear manufacturer should be consulted when a maximum allowable oil sump temperature in excess of 95°C is being considered.

| Table 7 Maximum allowable oil sump temperature factor, B4 | |
|---|----------------|
| Maximum oil sump temperature, °C | B ₃ |
| 85 | 0.81 |
| 95 | 1.00 |
| 105 | 1.13 |

Operation time factor, E_D :

When a gear drive sees less than continuous operation with periods of zero speed, the resulting “cool-off” time allows the thermal rating to be increased by E_D. See Table 8.

| Table 8 Operation time factor, E _D | |
|---|----------------|
| Operation time per each hour, % | E _D |
| 100 (Continuous) | 1.00 |
| 80 | 1.05 |
| 70 | 1.15 |
| 40 | 1.35 |
| 20 | 1.80 |

Nominal Power Rating (kW)

Bevel - Double Stage

Type - K2

| Ratio i_N | n_1 rpm | n_2 rpm | GEAR UNIT SIZE | | | | | | | | | | | | | |
|----------------|--------------|--------------|----------------|------|------|------|----|----|----|----|----|----|----|----|----|----|
| | | | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 |
| 5 | 1500 | 300 | 3295 | - | 5033 | - | - | - | - | - | - | - | - | - | - | - |
| | 1000 | 200 | 2197 | - | 3355 | - | - | - | - | - | - | - | - | - | - | - |
| | 750 | 150 | 1648 | - | 2516 | - | - | - | - | - | - | - | - | - | - | - |
| 5.6 | 1500 | 268 | 3289 | 3294 | 5128 | 5105 | - | - | - | - | - | - | - | - | - | - |
| | 1000 | 179 | 2193 | 2196 | 3419 | 3403 | - | - | - | - | - | - | - | - | - | - |
| | 750 | 134 | 1644 | 1647 | 2564 | 2552 | - | - | - | - | - | - | - | - | - | - |
| 6.3 | 1500 | 238 | 3214 | 3316 | 5023 | 4960 | - | - | - | - | - | - | - | - | - | - |
| | 1000 | 159 | 2143 | 2210 | 3349 | 3307 | - | - | - | - | - | - | - | - | - | - |
| | 750 | 119 | 1607 | 1658 | 2512 | 2480 | - | - | - | - | - | - | - | - | - | - |
| 7.1 | 1500 | 211 | 3007 | 3239 | 4465 | 5161 | - | - | - | - | - | - | - | - | - | - |
| | 1000 | 141 | 2004 | 2159 | 2977 | 3441 | - | - | - | - | - | - | - | - | - | - |
| | 750 | 106 | 1503 | 1620 | 2233 | 2580 | - | - | - | - | - | - | - | - | - | - |
| 8 | 1500 | 188 | 2612 | 2965 | 3907 | 4579 | - | - | - | - | - | - | - | - | - | - |
| | 1000 | 125 | 1741 | 1976 | 2605 | 3053 | - | - | - | - | - | - | - | - | - | - |
| | 750 | 94 | 1306 | 1482 | 1954 | 2290 | - | - | - | - | - | - | - | - | - | - |
| 9 | 1500 | 167 | 2389 | 2618 | 3473 | 4014 | - | - | - | - | - | - | - | - | - | - |
| | 1000 | 111 | 1593 | 1745 | 2315 | 2676 | - | - | - | - | - | - | - | - | - | - |
| | 750 | 83 | 1195 | 1309 | 1736 | 2007 | - | - | - | - | - | - | - | - | - | - |
| 10 | 1500 | 150 | 2171 | 2402 | 3225 | 3613 | - | - | - | - | - | - | - | - | - | - |
| | 1000 | 100 | 1448 | 1601 | 2150 | 2408 | - | - | - | - | - | - | - | - | - | - |
| | 750 | 75 | 1086 | 1201 | 1612 | 1806 | - | - | - | - | - | - | - | - | - | - |
| 11.2 | 1500 | 134 | 1887 | 2141 | 2822 | 3307 | - | - | - | - | - | - | - | - | - | - |
| | 1000 | 89 | 1258 | 1427 | 1881 | 2205 | - | - | - | - | - | - | - | - | - | - |
| | 750 | 67 | 943 | 1071 | 1411 | 1654 | - | - | - | - | - | - | - | - | - | - |
| 12.5 | 1500 | 120 | - | 1891 | - | 2899 | - | - | - | - | - | - | - | - | - | - |
| | 1000 | 80 | - | 1261 | - | 1933 | - | - | - | - | - | - | - | - | - | - |
| | 750 | 60 | - | 945 | - | 1449 | - | - | - | - | - | - | - | - | - | - |

Nominal Output Torque (KNm)

Bevel - Double Stage

Type – K2

| Size | i _N | GEAR UNIT SIZE | | | | | | | | | | | | 58 | 59 | |
|------|----------------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|---|
| | | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | | | |
| K2 | 5 | 106 | - | 157 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5.6 | 114 | 117 | 185 | 182 | - | - | - | - | - | - | - | - | - | - | - |
| | 6.3 | 130 | 129 | 199 | 200 | - | - | - | - | - | - | - | - | - | - | - |
| | 7.1 | 135 | 148 | 199 | 230 | - | - | - | - | - | - | - | - | - | - | - |
| | 8 | 135 | 151 | 199 | 230 | - | - | - | - | - | - | - | - | - | - | - |
| | 9 | 135 | 151 | 199 | 230 | - | - | - | - | - | - | - | - | - | - | - |
| | 10 | 135 | 151 | 199 | 230 | - | - | - | - | - | - | - | - | - | - | - |
| K3 | 11.2 | 135 | 151 | 199 | 230 | - | - | - | - | - | - | - | - | - | - | - |
| | 12.5 | 135 | 151 | 199 | 230 | 255 | - | 340 | - | - | - | - | - | - | - | - |
| | 14 | 140 | 151 | 199 | 235 | 267 | 301 | 360 | 405 | - | - | - | - | - | - | - |
| | 16 | 145 | 157 | 203 | 235 | 280 | 314 | 380 | 422 | - | - | - | - | - | - | - |
| | 18 | 151 | 163 | 203 | 245 | 294 | 326 | 400 | 438 | - | - | - | - | - | - | - |
| | 20 | 153 | 170 | 203 | 245 | 306 | 339 | 420 | 455 | 640 | - | 860 | - | 1230 | - | - |
| | 22.4 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 640 | 725 | 860 | 1030 | 1230 | 1400 | - |
| | 25 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 640 | 725 | 860 | 1030 | 1230 | 1400 | - |
| | 28 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 640 | 725 | 860 | 1030 | 1230 | 1400 | - |
| | 31.5 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 640 | 725 | 860 | 1030 | 1230 | 1400 | - |
| | 35.5 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 630 | 725 | 860 | 1030 | 1230 | 1400 | - |
| | 40 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 630 | 700 | 860 | 1030 | 1230 | 1400 | - |
| | 45 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 630 | 700 | 860 | 1030 | 1230 | 1400 | - |
| | 50 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 630 | 700 | 860 | 1030 | 1230 | 1400 | - |
| | 56 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 630 | 700 | 860 | 1030 | 1230 | 1400 | - |
| 63 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 630 | 700 | 860 | 1030 | 1230 | 1400 | - | |
| 71 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 630 | 700 | 800 | 1030 | 1150 | 1400 | - | |
| 80 | | 173 | | 245 | | 352 | | 470 | | 700 | | 910 | | 1310 | | |

Thermal Capacity (kW)

Bevel-Helical - Double Stage

Type-K2

| Ratio i_N | | GEAR UNIT SIZE | | | | | | | | | | | | | |
|----------------|----------------|----------------|------|------|------|----|----|----|----|----|----|----|----|----|----|
| | | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 |
| 5 to 5.6 | P ₁ | * | * | * | * | | | | | | | | | | |
| | P ₂ | 1209 | 1482 | 1517 | 1798 | | | | | | | | | | |
| 6.3 to 7.1 | P ₁ | * | * | * | * | | | | | | | | | | |
| | P ₂ | 1154 | 1287 | 1447 | 1562 | | | | | | | | | | |
| 8 to 9 | P ₁ | * | * | * | * | | | | | | | | | | |
| | P ₂ | 873 | 974 | 1095 | 1182 | | | | | | | | | | |
| 10 to 12.5 | P ₁ | * | * | * | * | | | | | | | | | | |
| | P ₂ | 924 | 1031 | 1160 | 1250 | | | | | | | | | | |

*Thermal Capacity On Request

P1 (kW) Gear units without auxiliary cooling

P2 (kW) Gear units with fan cooling

Nominal Power Rating (kW)

Bevel - Three Stage

Type - K3

| Ratio i_N | n_1 rpm | n_2 rpm | GEAR UNIT SIZE | | | | | | | | | | | | | |
|----------------|--------------|--------------|----------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
| | | | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 |
| 12.5 | 1500 | 120 | 1659 | | 2496 | | 3256 | | 4341 | | | | | | | |
| | 1000 | 80 | 1106 | | 1664 | | 2170 | | 2894 | | | | | | | |
| | 750 | 60 | 830 | | 1248 | | 1628 | | 2170 | | | | | | | |
| 14 | 1500 | 107 | 1558 | 1663 | 2268 | 2620 | 2986 | 3416 | 4022 | 4566 | | | | | | |
| | 1000 | 71 | 1038 | 1109 | 1512 | 1747 | 1990 | 2277 | 2681 | 3044 | | | | | | |
| | 750 | 54 | 779 | 831 | 1134 | 1310 | 1493 | 1708 | 2011 | 2283 | | | | | | |
| 16 | 1500 | 94 | 1460 | 1565 | 2054 | 2381 | 2908 | 3118 | 3940 | 4163 | | | | | | |
| | 1000 | 63 | 973 | 1043 | 1369 | 1587 | 1939 | 2079 | 2626 | 2776 | | | | | | |
| | 750 | 47 | 730 | 783 | 1027 | 1190 | 1454 | 1559 | 1970 | 2082 | | | | | | |
| 18 | 1500 | 83 | 1353 | 1471 | 1785 | 2203 | 2610 | 3004 | 3554 | 4010 | | | | | | |
| | 1000 | 56 | 902 | 981 | 1190 | 1469 | 1740 | 2003 | 2369 | 2674 | | | | | | |
| | 750 | 42 | 676 | 735 | 892 | 1102 | 1305 | 1502 | 1777 | 2005 | | | | | | |
| 20 | 1500 | 75 | 1216 | 1365 | 1637 | 1914 | 2449 | 2677 | 3362 | 3570 | 5238 | | 6980 | | 9991 | |
| | 1000 | 50 | 811 | 910 | 1091 | 1276 | 1633 | 1785 | 2241 | 2380 | 3492 | | 4653 | | 6661 | |
| | 750 | 38 | 608 | 682 | 818 | 957 | 1225 | 1339 | 1681 | 1785 | 2619 | | 3490 | | 4996 | |
| 22.4 | 1500 | 67 | 1064 | 1232 | 1432 | 1756 | 2128 | 2504 | 2920 | 3322 | 4583 | 5231 | 6159 | 7369 | 8808 | 10026 |
| | 1000 | 45 | 709 | 821 | 955 | 1171 | 1419 | 1669 | 1947 | 2215 | 3055 | 3487 | 4106 | 4913 | 5872 | 6684 |
| | 750 | 33 | 532 | 616 | 716 | 878 | 1064 | 1252 | 1460 | 1661 | 2292 | 2615 | 3079 | 3685 | 4404 | 5013 |
| 25 | 1500 | 60 | 951 | 1078 | 1296 | 1537 | 1946 | 2176 | 2671 | 2886 | 4074 | 4577 | 5474 | 6502 | 7940 | 8838 |
| | 1000 | 40 | 634 | 719 | 864 | 1024 | 1297 | 1450 | 1781 | 1924 | 2716 | 3051 | 3650 | 4335 | 5293 | 5892 |
| | 750 | 30 | 476 | 539 | 648 | 768 | 973 | 1088 | 1336 | 1443 | 2037 | 2288 | 2737 | 3251 | 3970 | 4419 |
| 28 | 1500 | 54 | 851 | 964 | 1133 | 1390 | 1727 | 1990 | 2371 | 2640 | 3666 | 4068 | 4927 | 5780 | 7130 | 7967 |
| | 1000 | 36 | 567 | 643 | 755 | 927 | 1152 | 1327 | 1580 | 1760 | 2444 | 2712 | 3285 | 3853 | 4754 | 5311 |
| | 750 | 27 | 426 | 482 | 566 | 695 | 864 | 995 | 1185 | 1320 | 1833 | 2034 | 2463 | 2890 | 3565 | 3983 |
| 31.5 | 1500 | 48 | 740 | 862 | 996 | 1215 | 1480 | 1766 | 2032 | 2343 | 3188 | 3662 | 4284 | 5202 | 6127 | 7155 |
| | 1000 | 32 | 493 | 575 | 664 | 810 | 987 | 1177 | 1354 | 1562 | 2125 | 2441 | 2856 | 3468 | 4085 | 4770 |
| | 750 | 24 | 370 | 431 | 498 | 607 | 740 | 883 | 1016 | 1171 | 1594 | 1831 | 2142 | 2601 | 3064 | 3577 |
| 35.5 | 1500 | 42 | 662 | 750 | 902 | 1069 | 1354 | 1514 | 1858 | 2008 | 2790 | 3184 | 3808 | 4523 | 5523 | 6148 |
| | 1000 | 28 | 441 | 500 | 601 | 713 | 903 | 1009 | 1239 | 1339 | 1860 | 2123 | 2539 | 3016 | 3682 | 4099 |
| | 750 | 21 | 331 | 375 | 451 | 534 | 677 | 757 | 929 | 1004 | 1395 | 1592 | 1904 | 2262 | 2762 | 3074 |
| 40 | 1500 | 38 | 592 | 670 | 788 | 967 | 1202 | 1384 | 1649 | 1836 | 2511 | 2733 | 3427 | 4021 | 4960 | 5542 |
| | 1000 | 25 | 395 | 447 | 525 | 645 | 801 | 923 | 1099 | 1224 | 1674 | 1822 | 2285 | 2681 | 3307 | 3695 |
| | 750 | 19 | 296 | 335 | 394 | 484 | 601 | 692 | 825 | 918 | 1255 | 1366 | 1714 | 2010 | 2480 | 2771 |
| 45 | 1500 | 33 | 524 | 600 | 713 | 845 | 1056 | 1229 | 1450 | 1630 | 2232 | 2459 | 3013 | 3619 | 4325 | 4977 |
| | 1000 | 22 | 349 | 400 | 475 | 563 | 704 | 819 | 967 | 1087 | 1488 | 1640 | 2009 | 2413 | 2883 | 3318 |
| | 750 | 17 | 262 | 300 | 357 | 423 | 528 | 614 | 725 | 815 | 1116 | 1230 | 1507 | 1809 | 2163 | 2489 |
| 50 | 1500 | 30 | 478 | 531 | 651 | 765 | 978 | 1080 | 1342 | 1433 | 2015 | 2186 | 2750 | 3181 | 3989 | 4340 |
| | 1000 | 20 | 319 | 354 | 434 | 510 | 652 | 720 | 895 | 955 | 1343 | 1457 | 1834 | 2121 | 2659 | 2893 |
| | 750 | 15 | 239 | 266 | 326 | 383 | 489 | 540 | 671 | 716 | 1007 | 1093 | 1375 | 1591 | 1995 | 2170 |
| 56 | 1500 | 27 | 428 | 484 | 569 | 698 | 868 | 1000 | 1191 | 1326 | 1813 | 1974 | 2475 | 2904 | 3582 | 4003 |
| | 1000 | 18 | 285 | 323 | 379 | 466 | 579 | 667 | 794 | 884 | 1209 | 1316 | 1650 | 1936 | 2388 | 2668 |
| | 750 | 13 | 214 | 242 | 285 | 349 | 434 | 500 | 596 | 663 | 907 | 987 | 1238 | 1452 | 1791 | 2001 |
| 63 | 1500 | 24 | 379 | 433 | 515 | 610 | 763 | 887 | 1047 | 1177 | 1612 | 1776 | 2176 | 2614 | 3124 | 3595 |
| | 1000 | 16 | 252 | 289 | 343 | 407 | 509 | 592 | 698 | 785 | 1075 | 1184 | 1451 | 1742 | 2083 | 2396 |
| | 750 | 12 | 189 | 217 | 258 | 305 | 381 | 444 | 524 | 589 | 806 | 888 | 1088 | 1307 | 1562 | 1797 |
| 71 | 1500 | 21 | 331 | 384 | 451 | 553 | 677 | 780 | 929 | 1035 | 1395 | 1579 | 1771 | 2298 | 2582 | 3134 |
| | 1000 | 14 | 221 | 256 | 301 | 368 | 451 | 520 | 619 | 690 | 930 | 1053 | 1181 | 1532 | 1721 | 2090 |
| | 750 | 11 | 165 | 192 | 225 | 276 | 338 | 390 | 465 | 517 | 697 | 789 | 886 | 1149 | 1291 | 1567 |
| 80 | 1500 | 19 | | 335 | | 484 | | 692 | | 918 | | 1366 | | 1776 | | 2593 |
| | 1000 | 13 | | 223 | | 322 | | 461 | | 612 | | 911 | | 1184 | | 1729 |
| | 750 | 9 | | 168 | | 242 | | 346 | | 459 | | 683 | | 888 | | 1296 |

Forced lubrication required

Nominal Output Torque (KNm)

Bevel - Three Stage

Type - K3

| Size | i _N | GEAR UNIT SIZE | | | | | | | | | | | | 58 | 59 | |
|------|----------------|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|---|
| | | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | | | |
| K2 | 5 | 106 | - | 157 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5.6 | 114 | 117 | 185 | 182 | - | - | - | - | - | - | - | - | - | - | - |
| | 6.3 | 130 | 129 | 199 | 200 | - | - | - | - | - | - | - | - | - | - | - |
| | 7.1 | 135 | 148 | 199 | 230 | - | - | - | - | - | - | - | - | - | - | - |
| | 8 | 135 | 151 | 199 | 230 | - | - | - | - | - | - | - | - | - | - | - |
| | 9 | 135 | 151 | 199 | 230 | - | - | - | - | - | - | - | - | - | - | - |
| | 10 | 135 | 151 | 199 | 230 | - | - | - | - | - | - | - | - | - | - | - |
| K3 | 11.2 | 135 | 151 | 199 | 230 | - | - | - | - | - | - | - | - | - | - | - |
| | 12.5 | 135 | 151 | 199 | 230 | 255 | - | 340 | - | - | - | - | - | - | - | - |
| | 14 | 140 | 151 | 199 | 235 | 267 | 301 | 360 | 405 | - | - | - | - | - | - | - |
| | 16 | 145 | 157 | 203 | 235 | 280 | 314 | 380 | 422 | - | - | - | - | - | - | - |
| | 18 | 151 | 163 | 203 | 245 | 294 | 326 | 400 | 438 | - | - | - | - | - | - | - |
| | 20 | 153 | 170 | 203 | 245 | 306 | 339 | 420 | 455 | 640 | - | 860 | - | 1230 | - | - |
| | 22.4 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 640 | 725 | 860 | 1030 | 1230 | 1400 | - |
| | 25 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 640 | 725 | 860 | 1030 | 1230 | 1400 | - |
| | 28 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 640 | 725 | 860 | 1030 | 1230 | 1400 | - |
| | 31.5 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 640 | 725 | 860 | 1030 | 1230 | 1400 | - |
| | 35.5 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 630 | 725 | 860 | 1030 | 1230 | 1400 | - |
| | 40 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 630 | 700 | 860 | 1030 | 1230 | 1400 | - |
| | 45 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 630 | 700 | 860 | 1030 | 1230 | 1400 | - |
| | 50 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 630 | 700 | 860 | 1030 | 1230 | 1400 | - |
| | 56 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 630 | 700 | 860 | 1030 | 1230 | 1400 | - |
| 63 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 630 | 700 | 860 | 1030 | 1230 | 1400 | - | |
| 71 | 153 | 173 | 203 | 245 | 306 | 352 | 420 | 470 | 630 | 700 | 800 | 1030 | 1150 | 1400 | - | |
| 80 | | 173 | | 245 | | 352 | | 470 | | 700 | | 910 | | 1310 | - | |

Thermal Capacity (kW)

Bevel-Helical - Three Stage

Type-K3

| Ratio i_N | | GEAR UNIT SIZE | | | | | | | | | | | | | |
|----------------|----------------|----------------|------|------|------|------|------|------|------|-------------------|----|----|----|----|----|
| | | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 |
| 12.5 to 14 | P ₁ | 558 | 584 | 672 | 738 | 870 | 946 | 1012 | 1110 | On Request | | | | | |
| | P ₂ | 988 | 1030 | 1186 | 1302 | 1538 | 1670 | 1786 | 1960 | | | | | | |
| 16 to 18 | P ₁ | 536 | 560 | 644 | 706 | 834 | 906 | 970 | 1064 | | | | | | |
| | P ₂ | 994 | 1036 | 1194 | 1310 | 1546 | 1680 | 1798 | 1972 | | | | | | |
| 20 to 22.4 | P ₁ | 474 | 494 | 568 | 624 | 736 | 800 | 856 | 940 | | | | | | |
| | P ₂ | 914 | 954 | 1098 | 1206 | 1424 | 1546 | 1654 | 1816 | | | | | | |
| 25 to 28 | P ₁ | 450 | 470 | 540 | 594 | 700 | 760 | 814 | 894 | | | | | | |
| | P ₂ | 798 | 834 | 960 | 1054 | 1244 | 1350 | 1444 | 1586 | | | | | | |
| 31.5 to 35.5 | P ₁ | 424 | 444 | 510 | 560 | 660 | 718 | 768 | 842 | | | | | | |
| | P ₂ | 760 | 792 | 912 | 1002 | 1182 | 1284 | 1374 | 1508 | | | | | | |
| 40 to 45 | P ₁ | 386 | 402 | 464 | 508 | 600 | 652 | 698 | 766 | | | | | | |
| | P ₂ | 760 | 794 | 914 | 1002 | 1184 | 1286 | 1376 | 1510 | | | | | | |
| 50 to 56 | P ₁ | 382 | 400 | 460 | 504 | 596 | 646 | 692 | 760 | | | | | | |
| | P ₂ | 676 | 706 | 814 | 892 | 1054 | 1144 | 1224 | 1344 | | | | | | |
| 63 to 80 | P ₁ | 346 | 362 | 416 | 456 | 538 | 584 | 626 | 686 | | | | | | |
| | P ₂ | 628 | 656 | 756 | 830 | 980 | 1064 | 1138 | 1248 | | | | | | |

P1 (kW) Gear units without auxiliary cooling

P2 (kW) Gear units with fan cooling

Actual Ratios

Bevel Units

Type - K2, K3

| Size | i _N | GEAR UNIT SIZE | | | | | | | | | | | | | |
|-----------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 |
| K2 | 5 | 4.906 | - | 4.87 | - | 2 | - | - | - | - | - | - | - | - | - |
| | 5.6 | 5.647 | 5.565 | 5.565 | 5.488 | 2.278 | - | - | - | - | - | - | - | - | - |
| | 6.3 | 6.353 | 6.302 | 6.222 | 6.261 | 2.526 | - | - | - | - | - | - | - | - | - |
| | 7.1 | 7.053 | 7.176 | 7 | 7 | 2.778 | - | - | - | - | - | - | - | - | - |
| | 8 | 8.118 | 8 | 8 | 7.889 | 3.167 | - | - | - | - | - | - | - | - | - |
| | 9 | 8.875 | 9.059 | 9 | 9 | 3.529 | - | - | - | - | - | - | - | - | - |
| | 10 | 9.765 | 9.875 | 9.692 | 10 | 4 | - | - | - | - | - | - | - | - | - |
| | 11.2 | 11.24 | 11.077 | 11.077 | 10.923 | 4.5 | - | - | - | - | - | - | - | - | - |
| K3 | 12.5 | 12.78 | 12.543 | 12.522 | 12.462 | 12.302 | - | 12.302 | - | - | - | - | - | - | - |
| | 14 | 14.118 | 14.262 | 13.781 | 14.087 | 14.059 | 13.84 | 14.059 | 13.93 | - | - | - | - | - | - |
| | 16 | 15.597 | 15.754 | 15.524 | 15.503 | 15.15 | 15.817 | 15.15 | 15.92 | - | - | - | - | - | - |
| | 18 | 17.536 | 17.405 | 17.867 | 17.465 | 17.678 | 17.043 | 17.678 | 17.155 | - | - | - | - | - | - |
| | 20 | 19.765 | 19.569 | 19.478 | 20.101 | 19.625 | 19.887 | 19.625 | 20.017 | 19.192 | - | 19.353 | - | 19.336 | - |
| | 22.4 | 22.588 | 22.056 | 22.261 | 21.913 | 22.588 | 22.078 | 22.588 | 22.222 | 21.934 | 21.77 | 21.934 | 21.953 | 21.934 | 21.934 |
| | 25 | 25.263 | 25.207 | 24.604 | 25.043 | 24.696 | 25.412 | 24.696 | 25.578 | 24.675 | 24.88 | 24.675 | 24.88 | 24.332 | 24.88 |
| | 28 | 28.235 | 28.192 | 28.153 | 27.68 | 27.826 | 27.783 | 27.826 | 27.964 | 27.417 | 27.99 | 27.417 | 27.99 | 27.094 | 27.601 |
| | 31.5 | 32.471 | 31.509 | 32 | 31.673 | 32.471 | 31.304 | 32.471 | 31.509 | 31.529 | 31.1 | 31.529 | 31.1 | 31.529 | 30.734 |
| | 35.5 | 36.316 | 36.235 | 35.368 | 36 | 35.5 | 36.529 | 35.5 | 36.768 | 35.471 | 35.765 | 35.471 | 35.765 | 34.978 | 35.765 |
| | 40 | 40.588 | 40.526 | 40.471 | 39.789 | 40 | 39.938 | 40 | 40.199 | 39.412 | 40.235 | 39.412 | 40.235 | 38.948 | 39.676 |
| | 45 | 45.841 | 45.294 | 44.706 | 45.529 | 45.5 | 45 | 45.5 | 45.294 | 44.338 | 44.706 | 44.831 | 44.706 | 44.667 | 44.18 |
| | 50 | 50.283 | 51.156 | 48.972 | 50.294 | 49.154 | 51.188 | 49.154 | 51.522 | 49.113 | 50.294 | 49.113 | 50.853 | 48.431 | 50.667 |
| | 56 | 56.199 | 56.113 | 56.036 | 55.093 | 55.385 | 55.298 | 55.385 | 55.66 | 54.57 | 55.71 | 54.57 | 55.71 | 53.928 | 54.937 |
| | 63 | 63.472 | 62.715 | 61.9 | 63.041 | 63 | 62.308 | 63 | 62.715 | 61.391 | 61.9 | 62.074 | 61.9 | 61.846 | 61.172 |
| | 71 | 72.632 | 70.831 | 70.737 | 69.638 | 71 | 70.875 | 71 | 71.338 | 70.941 | 69.638 | 70.941 | 70.412 | 69.956 | 70.154 |
| 80 | | 81.053 | | 79.579 | | 79.875 | | 80.397 | | 80.471 | | 80.471 | | 79.353 | |

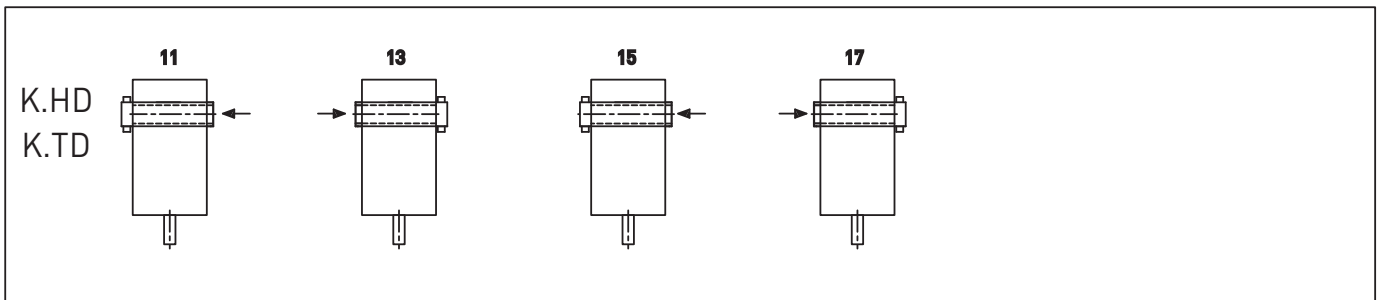
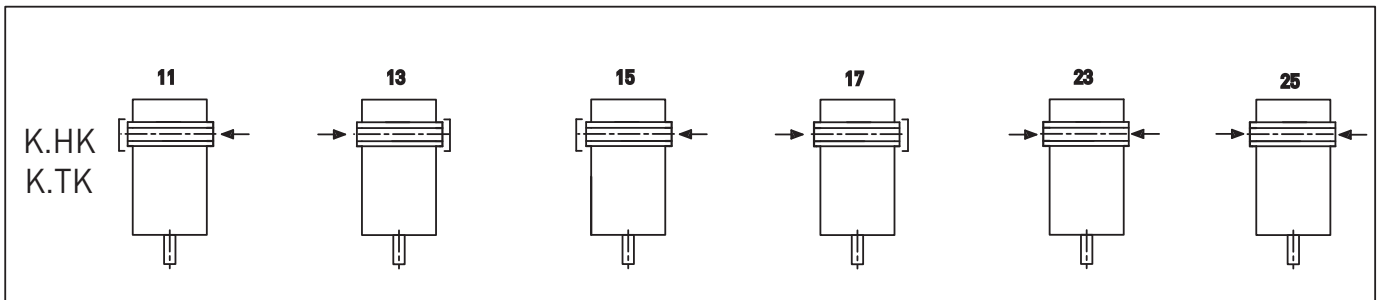
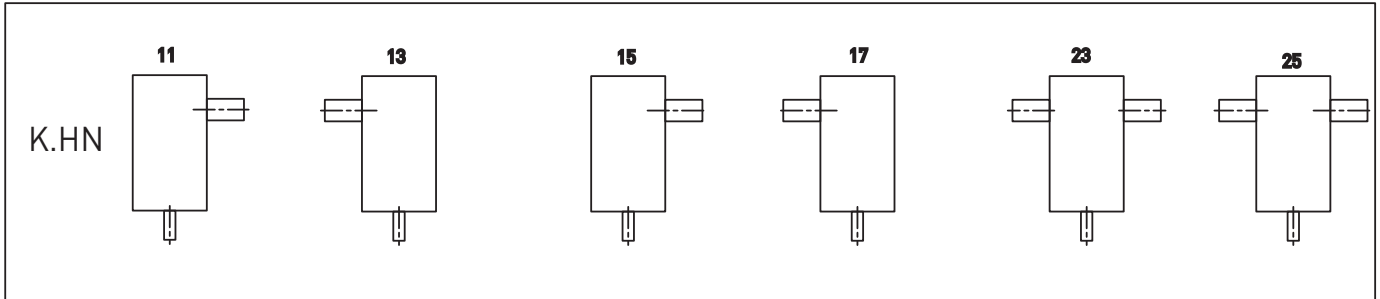
Mass moments of inertia (kg-m²)

Bevel Gear Units

Type - K2, K3

| Size | i _N | GEAR UNIT SIZE | | | | | | | | | | | | | 58 | 59 |
|------|----------------|----------------|--------|--------|--------|--------|--------|---------|---------|----|----|----|----|---|----|----|
| | | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | | | |
| K2 | 5 | 4.6248 | - | 8.7069 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 5.6 | 4.4851 | 6.656 | 8.1791 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 6.3 | 4.2022 | 5.723 | 7.8543 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 7.1 | 4.0605 | 4.745 | 7.5241 | 9.065 | - | - | - | - | - | - | - | - | - | - | - |
| | 8 | 3.8962 | 3.965 | 7.2179 | 7.519 | - | - | - | - | - | - | - | - | - | - | - |
| | 9 | 3.8008 | 2.932 | 6.9853 | 5.300 | - | - | - | - | - | - | - | - | - | - | - |
| | 10 | 1.8408 | 2.167 | 4.0646 | 4.775 | - | - | - | - | - | - | - | - | - | - | - |
| K3 | 11.2 | 1.7551 | 2.268 | 3.9050 | 4.045 | - | - | - | - | - | - | - | - | - | - | |
| | 12.5 | 2.2770 | 1.897 | 4.5869 | 3.482 | 8.7944 | - | 10.5192 | - | - | - | - | - | - | - | |
| | 14 | 2.1407 | 1.760 | 4.3403 | 3.604 | 8.0176 | 8.9483 | 9.5726 | 10.8327 | - | - | - | - | - | - | |
| | 16 | 2.0168 | 1.709 | 4.0720 | 3.544 | 7.6447 | 8.1355 | 9.1228 | 9.8126 | - | - | - | - | - | - | |
| | 18 | 1.9015 | 1.521 | 3.8007 | 3.140 | 6.9215 | 7.7463 | 8.2728 | 9.3295 | - | - | - | - | - | - | |
| | 20 | 1.7958 | 1.489 | 3.6743 | 3.103 | 6.5563 | 6.9961 | 7.8414 | 8.4246 | - | - | - | - | - | - | |
| | 22.4 | 1.6965 | 1.399 | 3.4813 | 2.930 | 6.1404 | 6.6168 | 7.3558 | 7.9646 | - | - | - | - | - | - | |
| | 25 | 1.6370 | 1.167 | 3.3623 | 2.467 | 5.9049 | 6.1861 | 7.0851 | 7.4487 | - | - | - | - | - | - | |
| | 28 | 1.5805 | 0.918 | 3.2317 | 1.949 | 5.6212 | 5.9431 | 6.7633 | 7.1629 | - | - | - | - | - | - | |
| | 31.5 | 0.7256 | 0.786 | 2.0342 | 1.700 | 2.7329 | 5.6513 | 4.2019 | 6.8245 | - | - | - | - | - | - | |
| | 35.5 | 0.6969 | 0.572 | 1.9766 | 1.234 | 2.6189 | 2.7313 | 4.0709 | 4.2593 | - | - | - | - | - | - | |
| | 40 | 0.6695 | 0.515 | 1.9134 | 1.112 | 2.4816 | 2.6137 | 3.9151 | 4.1210 | - | - | - | - | - | - | |
| | 45 | 0.6454 | 0.437 | 1.8764 | 0.960 | 2.3585 | 2.4725 | 3.7764 | 3.9573 | - | - | - | - | - | - | |
| | 50 | 0.3357 | 0.375 | 0.7483 | 0.829 | 1.2280 | 2.3461 | 1.8807 | 3.8118 | - | - | - | - | - | - | |
| | 56 | 0.3215 | 0.280 | 0.7153 | 0.579 | 1.1563 | 1.2375 | 1.7994 | 1.9003 | - | - | - | - | - | - | |
| 63 | 0.3019 | 0.232 | 0.6960 | 0.476 | 1.0921 | 1.1629 | 1.7271 | 1.8149 | - | - | - | - | - | - | | |
| 71 | 0.1583 | 0.198 | 0.3790 | 0.410 | 0.6370 | 1.0979 | 0.8980 | 1.7390 | - | - | - | - | - | - | | |
| 80 | | 0.161 | | 0.337 | | 0.6416 | | 0.9074 | - | - | - | - | - | - | | |

On Request



→ The arrow indicates the direction of insertion of the drive machine shaft.

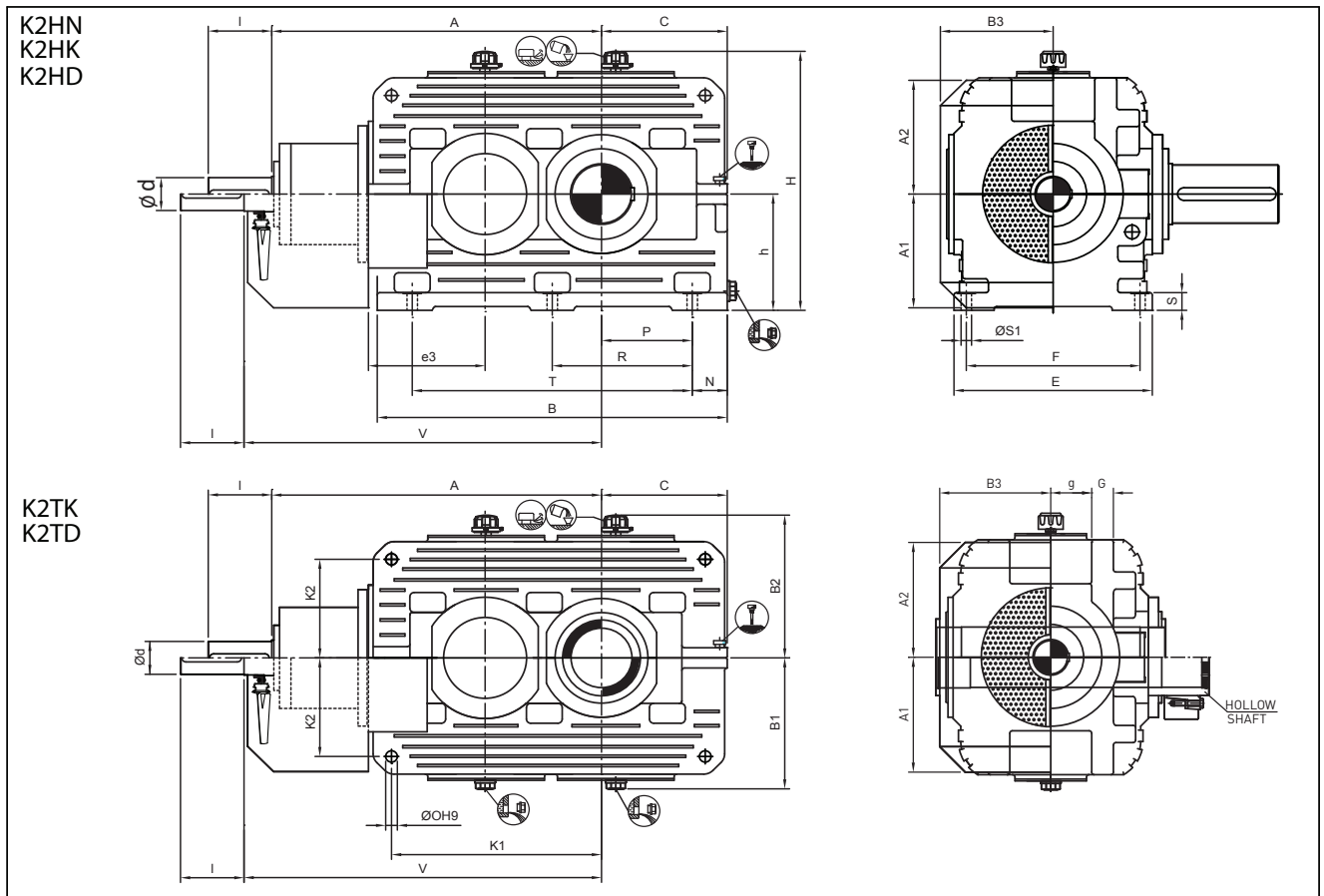
Types K2H, K2T

Horizontal/Torque Arm Mounting

Bevel-Helical Gear Unit

Double Stage

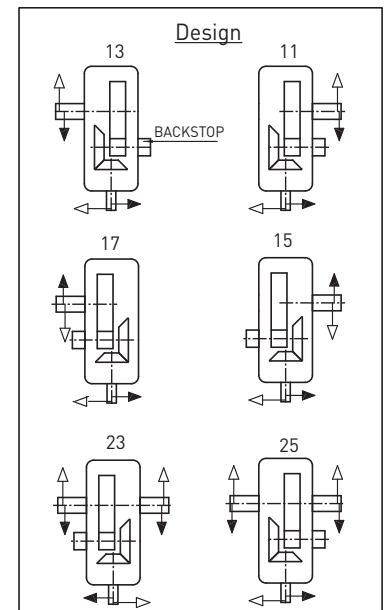
Size 46 to 49



| Size | Input | | Fan | | | | | | Gear Units | | | | | | | |
|---------|-------------------|-----|------|------|----|----|----|-----|------------|----|----|-------|-----|-----|-----|----------------|
| | $i_N = 5$ to 11.2 | | V | V | A1 | A2 | B3 | E | S | G | O | g | B2 | B2 | F | S ₁ |
| | d | l | | | | | | | | | | | | | | |
| 46 + 47 | 130 | 245 | 930 | 930 | * | * | * | 765 | 70 | 80 | 45 | 165.5 | 570 | 570 | 670 | 42 |
| 48 + 49 | 150 | 245 | 1052 | 1052 | * | * | * | 885 | 80 | 95 | 45 | 210 | 570 | 660 | 780 | 42 |

| Size | Gear Units | | | | | | | | | | | |
|------|------------|-----|------|-----|------|-----|-----|-----|-----|-----|-----|-----|
| | B | C | A | h | H | N | P | R | T | K1 | K2 | B1 |
| 46 | 1630 | 765 | 1272 | 460 | 1030 | 415 | 350 | 540 | 810 | 390 | 550 | 550 |
| 47 | 1720 | 810 | 1313 | 500 | 1070 | 410 | 400 | 640 | 850 | 430 | 550 | 550 |
| 48 | 1770 | 805 | 1435 | 510 | 1080 | 425 | 380 | 600 | 810 | 390 | 550 | 550 |
| 49 | 1890 | 865 | 1489 | 550 | 1210 | 415 | 450 | 740 | 925 | 470 | 640 | 640 |

* On Request



Types K2H, K2T

Horizontal/Torque Arm Mounting

Bevel Helical Gear Unit

Double Stage

Size 46 to 49

K2HN
Solid Shaft

| Size | K2HN | | |
|------|------|-----|----------------|
| | D | L | M ₂ |
| 46 | 230 | 410 | 460 |
| 47 | 240 | 410 | 460 |
| 48 | 250 | 410 | 540 |
| 49 | 270 | 470 | 540 |

K2HK, K2TK
Hollow Shaft

| Size | K2HK, K2TK | |
|------|----------------|----------------|
| | D ₁ | M ₃ |
| 46 | 235 | 450 |
| 47 | 245 | 450 |
| 48 | 260 | 515 |
| 49 | 285 | 515 |

K2HD, K2TD
Hollow Shaft for Shrink Disk

| Size | K2HD, K2TD | | |
|------|----------------|----------------|----------------|
| | D ₂ | M ₃ | M ₄ |
| 46 | 235 | 450 | 620 |
| 47 | 245 | 450 | 620 |
| 48 | 260 | 515 | 700 |
| 49 | 285 | 515 | 700 |

| Size | Weight (kg) | | Oil Qty |
|------|-------------|------|---------|
| | K2H | K2T | K2H |
| 46 | 4320 | 4104 | 220 |
| 47 | 4800 | 4560 | 230 |
| 48 | 6120 | 5760 | 320 |
| 49 | 6600 | 6360 | 340 |

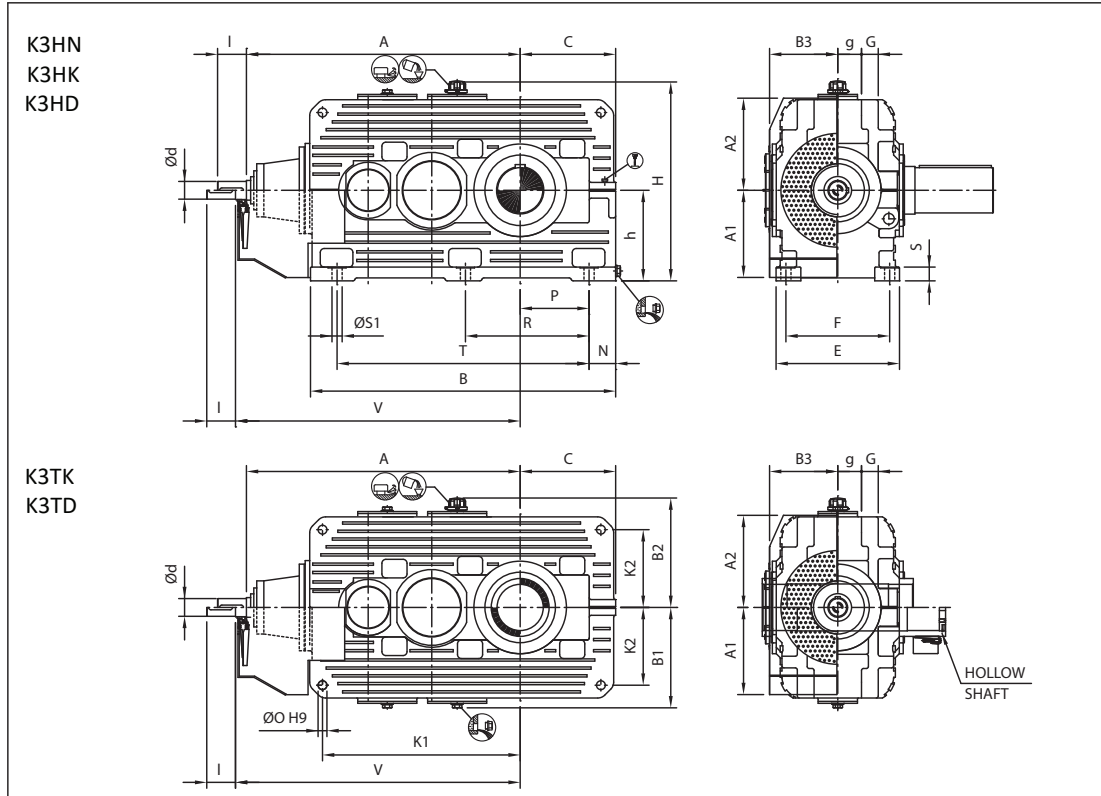
Types K3H, K3T

Horizontal/Torque Arm Mounting

Bevel Helical Gear Unit

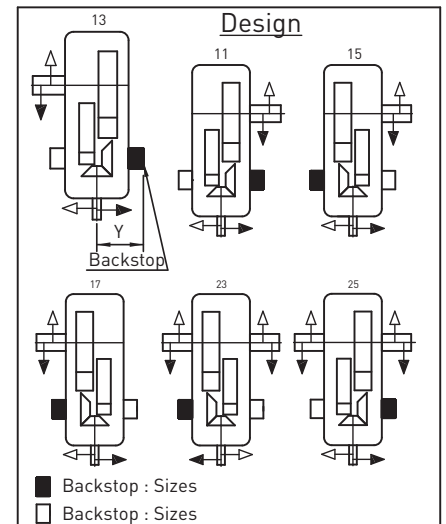
Triple Stage

Size 46 to 59



| Size | Input | | | | Fan | | | | | | Gear Units | | | | | | | | |
|------|--------------------|-----|------------------|-----|-----|------|------|----|----|---|------------|-----|-----|----|----------------|----------------|-----|----------------|----|
| | $i_N = 12.5$ to 45 | | $i_N = 50$ to 71 | | | | | | | | | | | | | | | | |
| | $i_N = 14$ to 50 | | $i_N = 56$ to 80 | | M | V | A1 | A2 | B3 | E | S | G | O | g | B ₂ | B ₂ | F | S ₁ | |
| 46 | +47 | 90 | 130 | 70 | 105 | 1477 | 1517 | * | * | * | 625 | 70 | 80 | 45 | 125.5 | 570 | 610 | 535 | 42 |
| 48 | +49 | 110 | 165 | 80 | 130 | 1671 | 1725 | * | * | * | 690 | 80 | 80 | 45 | 160 | 615 | 655 | 600 | 42 |
| 50 | +51 | 130 | 200 | 100 | 165 | 1942 | 1997 | * | * | * | 790 | 90 | 100 | 55 | 172 | 690 | 730 | 690 | 48 |
| 52 | +53 | 130 | 200 | 100 | 165 | 2002 | 2062 | * | * | * | 830 | 100 | 105 | 65 | 177 | 730 | 780 | 720 | 56 |
| 54 | +55 | 150 | 200 | 110 | 165 | 2230 | 2300 | * | * | * | 930 | 115 | 125 | 60 | 194 | 840 | 880 | 810 | 56 |
| 56 | +57 | 160 | 240 | 120 | 165 | 2480 | 2570 | * | * | * | 1045 | 130 | * | * | * | * | * | 910 | 66 |
| 58 | +59 | 180 | 240 | 130 | 200 | 2735 | 2825 | * | * | * | 1170 | 150 | * | * | * | * | * | 1030 | 74 |

| Size | Gear Units | | | | | | | | | | | |
|------|------------|------|------|-----|------|-----|-----|------|------|----------------|----------------|-----|
| | B | C | A | h | H | N | P | R | T | K ₁ | K ₂ | B1 |
| 46 | 1830 | 765 | 1372 | 460 | 1030 | 415 | 350 | 640 | 1280 | 1004 | 395 | 560 |
| 47 | 1920 | 810 | 1412 | 500 | 1110 | 410 | 400 | 750 | 1380 | 1040 | 430 | 590 |
| 48 | 2020 | 805 | 1566 | 510 | 1125 | 425 | 380 | 725 | 1450 | 1135 | 435 | 600 |
| 49 | 2140 | 865 | 1620 | 550 | 1205 | 415 | 450 | 810 | 1590 | 1165 | 480 | 640 |
| 50 | 2290 | 870 | 1837 | 580 | 1270 | 440 | 430 | 845 | 1690 | 1310 | 490 | 670 |
| 51 | 2410 | 930 | 1892 | 620 | 1310 | 430 | 500 | 925 | 1830 | 1365 | 520 | 710 |
| 52 | 2420 | 935 | 1897 | 650 | 1380 | 455 | 480 | 895 | 1790 | 1390 | 550 | 710 |
| 53 | 2530 | 990 | 1957 | 700 | 1480 | 440 | 550 | 1000 | 1930 | 1450 | 580 | 760 |
| 54 | 2660 | 1010 | 2125 | 740 | 1580 | 460 | 550 | 1010 | 2020 | 1535 | 595 | 820 |
| 55 | 2790 | 1075 | 2195 | 780 | 1660 | 465 | 610 | 1145 | 2140 | 1610 | 660 | 860 |
| 56 | 2925 | 1070 | 2375 | 820 | * | 490 | 580 | 1115 | 2225 | * | * | * |
| 57 | 3105 | * | 2465 | 860 | * | 470 | 690 | 1300 | 2445 | * | * | * |
| 58 | 3240 | * | 2630 | 880 | * | 510 | 650 | 1250 | 2500 | * | * | * |
| 59 | 3430 | * | 2720 | 950 | * | 495 | 760 | 1480 | 2720 | * | * | * |



* On Request

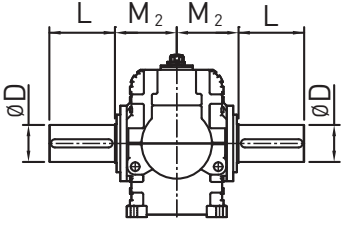
Types K3H, K3T

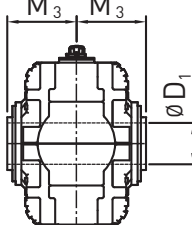
Horizontal/Torque Arm Mounting

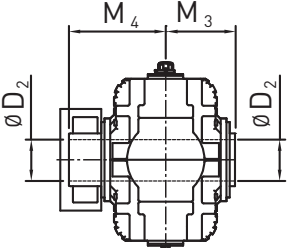
Bevel-Helical Gear Unit

Three Stage

Size 46 to 59

| K3HN Solid Shaft | Size | K3HN | | |
|---|------|------|-----|----------------|
| | | D | L | M ₂ |
|  | 46 | 230 | 410 | 380 |
| | 47 | 240 | 410 | 380 |
| | 48 | 250 | 410 | 415 |
| | 49 | 270 | 470 | 415 |
| | 50 | 290 | 470 | 465 |
| | 51 | 300 | 500 | 465 |
| | 52 | 320 | 500 | 490 |
| | 53 | 340 | 550 | 490 |
| | 54 | 360 | 590 | 540 |
| | 55 | 380 | 590 | 540 |
| | 56 | 400 | 650 | 605 |
| | 57 | 420 | 650 | 605 |
| | 58 | 440 | 690 | 680 |
| | 59 | 460 | 750 | 680 |

| K3HK, K3TK Hollow Shaft | Size | K3HK, K3TK | |
|--|------|----------------|----------------|
| | | D ₁ | M ₃ |
|  | 46 | 235 | 380 |
| | 47 | 245 | 380 |
| | 48 | 260 | 415 |
| | 49 | 285 | 415 |
| | 50 | 285 | 465 |
| | 51 | 315 | 465 |
| | 52 | 335 | 490 |
| | 53 | 345 | 490 |
| | 54 | 375 | 540 |
| | 55 | 395 | 540 |
| | 56 | 415 | 610 |
| | 57 | 435 | 610 |
| | 58 | 465 | 680 |
| | 59 | 475 | 680 |

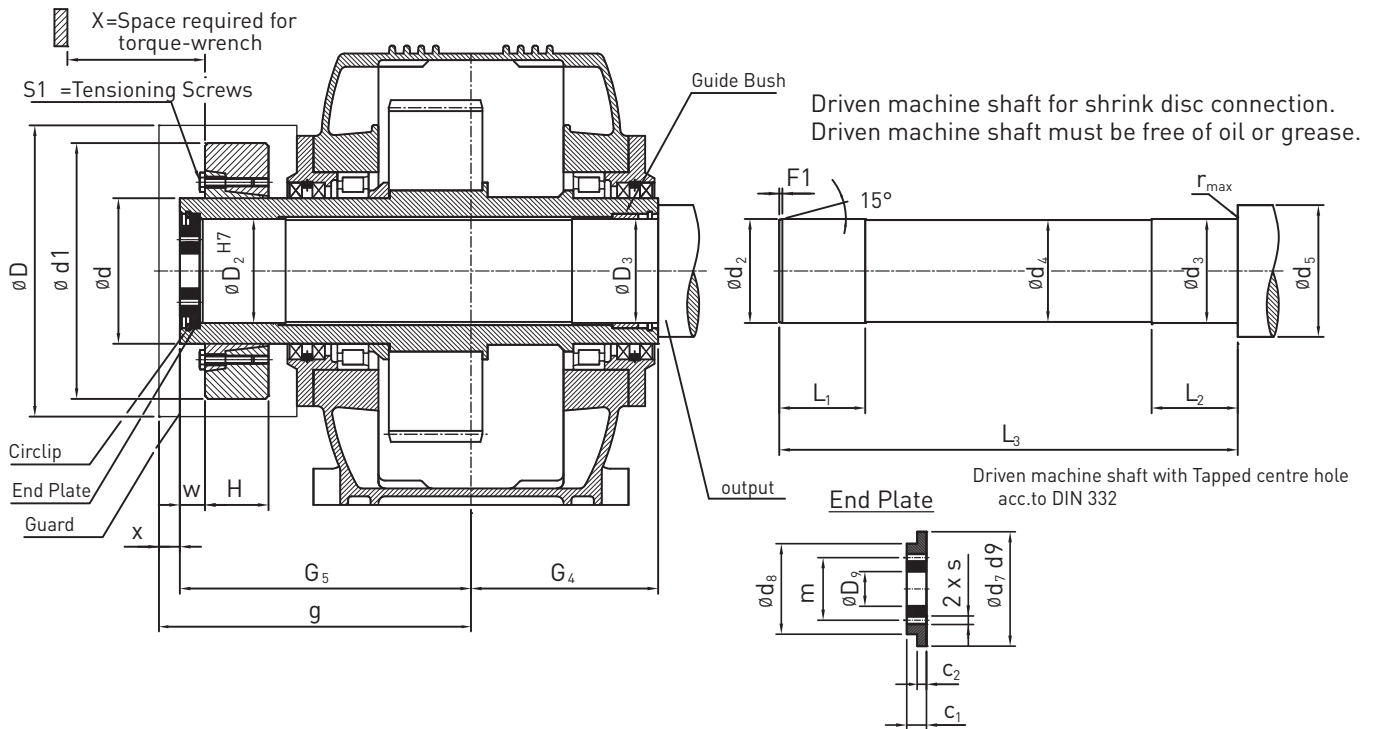
| K3HD, K3TD Hollow Shaft for Shrink Disk | Size | K3HD, K3TD | | |
|---|------|----------------|----------------|----------------|
| | | D ₂ | M ₃ | M ₄ |
|  | 46 | 235 | 380 | 550 |
| | 47 | 245 | 380 | 550 |
| | 48 | 260 | 415 | 600 |
| | 49 | 285 | 415 | 600 |
| | 50 | 285 | 465 | 670 |
| | 51 | 315 | 465 | 670 |
| | 52 | 335 | 490 | 715 |
| | 53 | 345 | 490 | 725 |
| | 54 | 375 | 540 | 800 |
| | 55 | 395 | 540 | 820 |
| | 56 | 415 | 610 | 895 |
| | 57 | 435 | 610 | 925 |
| | 58 | 465 | 680 | 1000 |
| | 59 | 475 | 680 | 1020 |

| Size | Weight (kg) | | Oil Qty |
|------|-------------|-------|---------|
| | K3H | K3T | K3H |
| 46 | 4032 | 3840 | 160 |
| 47 | 4320 | 4080 | 165 |
| 48 | 5400 | 5160 | 230 |
| 49 | 6000 | 5640 | 235 |
| 50 | 7560 | 7080 | 360 |
| 51 | 8760 | 8280 | 420 |
| 52 | 9960 | 9360 | 420 |
| 53 | 10692 | 10200 | 490 |
| 54 | On Request | | |
| 55 | | | |
| 56 | | | |
| 57 | | | |
| 58 | | | |
| 59 | | | |

Types K3

Hollow Shafts For Shrink Disks

Size 46 to 59



| Gear Unit Size | Driven Machine Shaft | | | | | | | | | | End Plate | | | | | | | Circlip | |
|----------------|----------------------|----------------|----------------|----------------|----------------|------|-----|-----|---|----------------|----------------|----------------|----------------|----------------|-----|-----|------|---------|--|
| | d ₂ | d ₃ | d ₄ | d ₅ | f ₁ | L | L1 | L2 | r | c ₁ | c ₂ | d ₇ | d ₈ | D ₉ | m | S | Qty. | DIN 472 | |
| | mm | | | | | | | | | | | | | | | | | | |
| 46 | 235 f6 | 235 m6 | 234.5 | 253 | 8 | 899 | 157 | 140 | 3 | 28 | 14 | 240 | 180 | 39 | 140 | M16 | 2 | 240 x 5 | |
| 47 | 245 f6 | 245 m6 | 244.5 | 263 | 8 | 899 | 157 | 140 | 3 | 28 | 14 | 250 | 180 | 39 | 150 | M20 | 2 | 250 x 5 | |
| 48 | 260 f6 | 260 m6 | 259.5 | 278 | 8 | 980 | 177 | 150 | 3 | 32 | 14 | 270 | 200 | 39 | 150 | M20 | 2 | 270 x 5 | |
| 49 | 285 f6 | 285 m6 | 284.5 | 306 | 9 | 980 | 177 | 150 | 3 | 32 | 14 | 290 | 210 | 39 | 160 | M20 | 2 | 290 x 5 | |
| 50 | 285 f6 | 285 m6 | 284.5 | 306 | 9 | 1096 | 187 | 150 | 3 | 36 | 15 | 290 | 220 | 39 | 170 | M24 | 2 | 290 x 5 | |
| 51 | 315 f6 | 315 m6 | 314.5 | 336 | 9 | 1096 | 187 | 150 | 3 | 36 | 15 | 320 | 230 | 39 | 180 | M24 | 2 | 320 x 6 | |
| 52 | 335 f6 | 335 m6 | 334.5 | 358 | 9 | 1157 | 205 | 160 | 3 | 45 | 20 | 340 | 250 | 45 | 190 | M24 | 2 | 340 x 6 | |
| 53 | 345 f6 | 345 m6 | 344.5 | 368 | 9 | 1167 | 215 | 160 | 3 | 45 | 20 | 350 | 260 | 45 | 200 | M24 | 2 | 350 x 6 | |
| 54 | 375 f6 | 375 m6 | 374.5 | 398 | 10 | 1292 | 225 | 160 | 3 | 45 | 20 | 380 | 270 | 45 | 210 | M30 | 2 | 380 x 6 | |
| 55 | 395 f6 | 395 m6 | 394.5 | 425 | 10 | 1312 | 245 | 160 | 3 | 45 | 20 | 400 | 280 | 45 | 220 | M30 | 2 | 400 x 6 | |
| 56 | 415 f6 | 415 m6 | 414.5 | 445 | 10 | 1452 | - | - | 5 | 50 | 25 | 420 | 290 | 45 | 230 | M30 | 2 | 420 x 7 | |
| 57 | 435 f6 | 435 m6 | 434.5 | 465 | 10 | 1482 | - | - | 5 | 50 | 25 | 440 | 310 | 45 | 250 | M30 | 2 | 440 x 7 | |
| 58 | 465 f6 | 465 m6 | 464.5 | 495 | 10 | 1627 | - | - | 5 | 50 | 25 | 470 | 340 | 45 | 280 | M30 | 2 | 470 x 7 | |
| 59 | 475 f6 | 475 m6 | 474.5 | 505 | 10 | 1648 | - | - | 5 | 50 | 25 | 480 | 350 | 45 | 290 | M30 | 2 | 480 x 7 | |

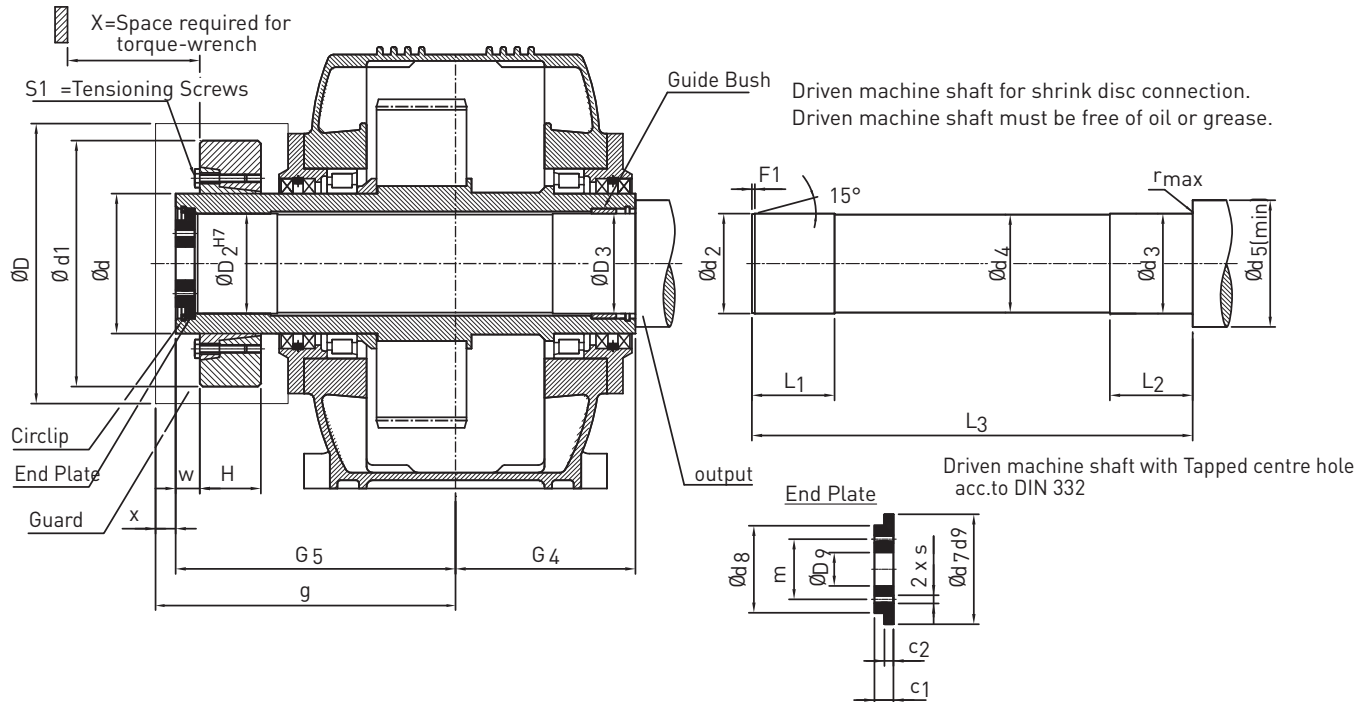
| Gear Unit Size | Hollow Shaft | | | | | | Shrink Disk | | | | | | Guard | | | | | |
|----------------|----------------|----------------|----------------|------|----------------|-----|-------------|----------------|-----|-----|-----|----|-------|-----|-----|------|------|------|
| | D ₂ | M ₃ | M ₄ | d | d ₁ | H | W | s ₁ | D | g | | | | | | | | |
| | mm | | | | | | | | | | | | | | | | | |
| 46 + 47 | 235 | 245 | 380 | 550 | 550 | 300 | 320 | 485 | 520 | 140 | 140 | 35 | M24 | M24 | 575 | 595 | 575 | 575 |
| 48 + 49 | 260 | 285 | 415 | 600 | 600 | 340 | 360 | 570 | 590 | 155 | 162 | 35 | M24 | M24 | 615 | 635 | 630 | 625 |
| 50 + 51 | 285 | 315 | 465 | 670 | 670 | 380 | 390 | 640 | 650 | 166 | 166 | 40 | M27 | M27 | 685 | 695 | 695 | 695 |
| 52 + 53 | 335 | 345 | 490 | 715 | 725 | 420 | 440 | 670 | 740 | 185 | 194 | 45 | M27 | M27 | 715 | 785 | 740 | 750 |
| 54 + 55 | 375 | 395 | 540 | 800 | 820 | 460 | 480 | 770 | 800 | 194 | 213 | 45 | M27 | M30 | 815 | 845 | 825 | 845 |
| 56 + 57 | 415 | 435 | 610 | 895 | 925 | 500 | 530 | 850 | 910 | 213 | 238 | 50 | M30 | M30 | 895 | 955 | 920 | 950 |
| 58 + 59 | 465 | 475 | 680 | 1000 | 1020 | 560 | 590 | 940 | 960 | 238 | 260 | 50 | M30 | M30 | 985 | 1005 | 1025 | 1045 |

Note :- Shrink disk on machine side on request.

Types K2

Hollow Shafts For Shrink Disks

Size 46 to 49

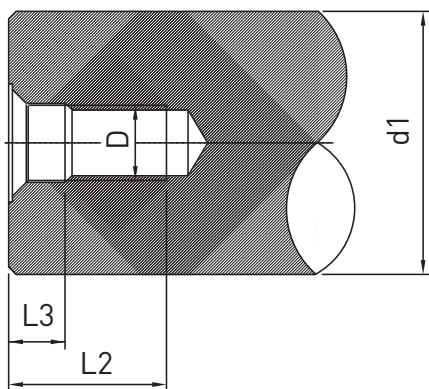


| Gear Unit Size | Driven Machine Shaft | | | | | | | | | | End Plate | | | | | | Qty. | Circlip DIN 472 |
|----------------|----------------------|----------------|----------------|----------------|----------------|---|-----|-----|---|----------------|----------------|----------------|----------------|----------------|-----|-----|------|--------------------|
| | d ₂ | d ₃ | d ₄ | d ₅ | f ₁ | L | L1 | L2 | r | c ₁ | c ₂ | d ₇ | d ₈ | D ₉ | m | S | | |
| | mm | | | | | | | | | | | | | | | | | |
| 46 | 235 f6 | 235 m6 | 234.5 | 253 | 8 | - | 157 | 140 | 3 | 28 | 14 | 240 | 180 | 39 | 140 | M16 | 2 | 240 x 5 |
| 47 | 245 f6 | 245 m6 | 244.5 | 263 | 8 | - | 157 | 140 | 3 | 28 | 14 | 250 | 180 | 39 | 150 | M20 | 2 | 250 x 5 |
| 48 | 260 f6 | 260 m6 | 259.5 | 278 | 8 | - | 177 | 150 | 3 | 32 | 14 | 270 | 200 | 39 | 150 | M20 | 2 | 270 x 5 |
| 49 | 285 f6 | 285 m6 | 284.5 | 306 | 9 | - | 177 | 150 | 3 | 32 | 14 | 290 | 210 | 39 | 160 | M20 | 2 | 290 x 5 |

| Gear Unit Size | Hollow Shaft | | | | | | Shrink Disk | | | | | | Guard | | | | | | |
|----------------|----------------|----------------|----------------|-----|----------------|-----|-------------|----------------|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|
| | D ₂ | M ₃ | M ₄ | d | d ₁ | H | W | s ₁ | D | g | | | | | | | | | |
| | mm | | | | | | | | | | | | | | | | | | |
| 46 + | 47 | 235 | 245 | 450 | 620 | 620 | 300 | 320 | 485 | 520 | 140 | 140 | 35 | M24 | M24 | 575 | 595 | 575 | 575 |
| 48 + | 49 | 260 | 285 | 515 | 700 | 700 | 340 | 360 | 570 | 590 | 155 | 162 | 35 | M24 | M24 | 615 | 635 | 630 | 625 |

Note :- Shrink disk on machine side on request.

Centre Hole Details in Shaft Ends



| Diameter range as per DIN 332 Nominal dimensions, d1 | | Dimensions | | |
|---|-----|------------|----|-----|
| Above | To | D | L2 | L3 |
| mm | | mm | | |
| 16 | 21 | M6 | 16 | 5 |
| 21 | 24 | M8 | 19 | 6 |
| 24 | 30 | M10 | 22 | 7.5 |
| 30 | 38 | M12 | 28 | 9.5 |
| 38 | 50 | M16 | 36 | 12 |
| 50 | 85 | M20 | 42 | 15 |
| 85 | 130 | M24 | 50 | 18 |
| 130 | 225 | M30 | 60 | 22 |
| 225 | 320 | M36 | 74 | 22 |
| 320 | 500 | M42 | 84 | 26 |

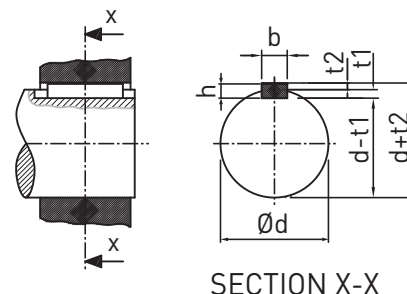
Tolerance Classes

| Diameter range as per DIN 332 | | Tolerance Classes | | |
|-------------------------------|-------|-------------------|------------|----------------|
| From | To | Shafts | Split Bore | Non Split Bore |
| mm | | | | |
| 10 | ≤ 18 | j6 | | |
| > 18 | ≤ 100 | k6 | | |
| > 100 | ≤ 200 | m6 | J7 & H7 | H6 |
| > 200 | | n6 | | |

Parallel keyways and parallel keys

| Nominal Diameter, d | | Width | Height | Depth of key-way in shaft | Depth of key-way in hub |
|---------------------|-----|-------|--------|---------------------------|-------------------------|
| Above | To | b | h | t1 | t2 |
| mm | | mm | | | |
| 17 | 22 | 6 | 6 | 3.5 | 2.8 |
| 22 | 30 | 8 | 7 | 4 | 3.3 |
| 30 | 38 | 10 | 8 | 5 | 3.3 |
| 38 | 44 | 12 | 8 | 5 | 3.3 |
| 44 | 50 | 14 | 9 | 5.5 | 3.8 |
| 50 | 58 | 16 | 10 | 6 | 4.3 |
| 58 | 65 | 18 | 11 | 7 | 4.4 |
| 65 | 75 | 20 | 12 | 7.5 | 4.9 |
| 75 | 85 | 22 | 14 | 9 | 5.4 |
| 85 | 95 | 25 | 14 | 9 | 5.4 |
| 95 | 110 | 28 | 16 | 10 | 6.4 |
| 110 | 130 | 32 | 18 | 11 | 7.4 |
| 130 | 150 | 36 | 20 | 12 | 8.4 |
| 150 | 170 | 40 | 22 | 13 | 9.4 |
| 170 | 200 | 45 | 25 | 15 | 10.4 |
| 200 | 230 | 50 | 28 | 17 | 11.4 |
| 230 | 260 | 56 | 32 | 20 | 12.4 |
| 260 | 290 | 63 | 32 | 20 | 12.4 |
| 290 | 330 | 70 | 36 | 22 | 14.4 |
| 330 | 380 | 80 | 40 | 25 | 15.4 |
| 380 | 440 | 90 | 45 | 28 | 17.4 |

Parallel key acc. to DIN 6885/1 form B and parallel keyway acc. to DIN 6885/1



The tolerance zone for the hub keyway width b is JS9.

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