Technical dates

Housing and flange	Design Material Speciale design	Roundly form Cast iron EN-GJL-250 (0.6025) or spherulitic graphite iron EN-GJS-400-15 (0.7040) or aluminum G-Al Si 10 Mg Cast steel or fabricated Stainless steel
Shaft	Design Tolerance Material Speciale design	Shaft centering DIN 332 page 2 With keyway DIN 6885, page1 j6 C 45 (1.0503) or 42 Cr Mo 4 (1.7225) Stainless steel or chromium plated Shafts without keyway Involute spline DIN 5480
Hollow shaft	Design Tolerance Material Speciale design	With shaft locking device H7 C 45 (1.0503) Stainless steel Involute spline DIN 5480
Gear tooth parts **Planet gears+ sun gear** **Outer gear**	Design Design Material Design Material Speciale design	Spur gear Optimized for low noise and high torque Case-hardened and fine ground teeth 16 Mn Cr 5 (1.7131) or 17 Cr Ni Mo 6 (1.6587) slotted Spheroidal graphite iron EN-GJS-700-2 (0.7070) Speciale ratios
Connection hub to shaft	Design	form-fit with involute spline
Oil seals	Design Material Speciale design	With or without dust lip DIN 3760 NBR or Viton Special oilseals, PTFE, Labyrinth oil seals
Bearings	Design Speciale design	Taper roller bearings and needle bearings reinforced bearings for higher radial and axial load
Lubrication	Design Filling capacity Speciale design	DIN 51502 Mineral oil according to mounting positio, see manual instruction Synthetic oil Special Oil with USDA-H1-certification for food processing Special high temperatur oil forced oil lubrication
Surface treatment	Design Color shade Speciale design	Under coat RAL 9005 black Special colours and paints
Noise		approx. 75 dB(A) in 1m distance
Backlash on output shaft		1-stage max. 10 arcmin 2-stage max. 15 arcmin 3-stage max. 20 arcmin
Efficiency	Nominal torque	1-stage $\eta \approx 0{,}97$ 2-stage $\eta \approx 0{,}96$ 3-stage $\eta \approx 0{,}95$
Bearing life time		approx. 20 000 hours by 1500 rpm

Einsatzbedingungen
Auswahl der Getriebegrösse

How to use it
Selecting the right size

Einsatzbedingungen

Bei der Berechnung der max. geforderten Einsatzleistung P der anzutreibenden Maschine müssen folgende Einsatzbedingungen beachtet werden:
c_1 = Stossfaktor in Abhängigkeit von der Anzahl der Anläufe pro Stunde und der Betriebsdauer
c_2 = Umgebungstemperatur
Die geforderte Eingangsleistung P errechnet sich wie folgt:

$P = P_1 \times c_1 \times c_2$ [KW]

- c_2: Umgebungstemp. (Tabelle 2)
- c_1: Stossfaktor (Tabelle 1)
- P_1: Nennleistung
- P: errechnete Eingangsleistung

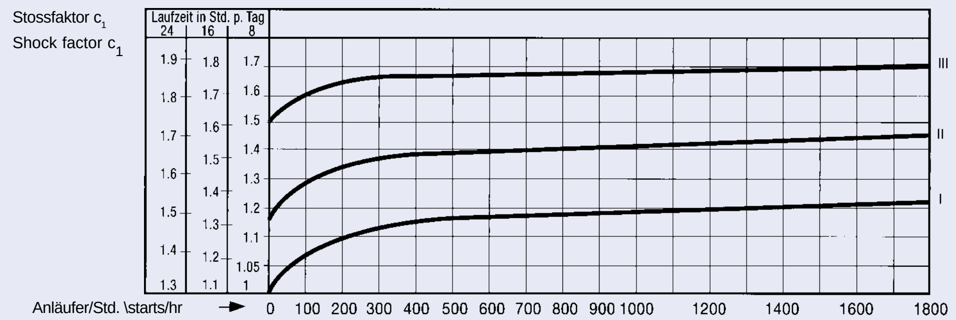
How to use it

When calculating the maximum required input power P of the machine to be driven, the following application conditions have to be observed:
c_1 = Shock factor - this depends on the “starts per hour” and on the “duration of operation”
c_2 = Ambient temperature the required input power P can then be calculated as follows:

$P = P_1 \times c_1 \times c_2$ [KW]

- c_2: Ambient temperatur factor (Table 2)
- c_1: Shock factor (Table 1)
- P_1: Nominal power
- P: Input power calculated

Tabelle 1 / Table 1



Betriebsart der Arbeitsmaschine

I <u>gleichförmig</u> (Md_2+10%) keine zu beschleunigenden Massen.
II <u>mittlere Stösse</u> kurzzeitige Überlastung (Md2 + 25%) grösser zu beschleunigende Massen.
III <u>starke Stösse</u> kurzzeitige Überlastung (Md2 + 100%) sehr grosse zu beschleunigende Massen.

Operating mode of the machine

I <u>uniformly</u> (torque change +10%) no masses to be accelerated.
II <u>medium shocks</u> short term overload (torque change +25%) larger masses to be accelerated.
III <u>heavy shocks</u> short term overload (torque change +100%) very large masses to be accelerated.

Tabelle 2 / Table 2

Temperatur Temperature	Umgebungstemperatur c_2 Ambient temperature c_2
10⁰ C	1,0
20⁰ C	1,0
30⁰ C	1,1
40⁰ C	1,2
50⁰ C	1,4

Auswahl der Getriebegrösse

Aus der errechneten Eingangsleistung P [KW] der anzutreibenden Maschine errechnet sich das Abtriebsmoment Md2 des **Vogel Getriebes** n_2 = Abtriebsdrehzahl des Getriebes [min-1].

$$Md_2 = \frac{9550 \times P \times \eta(0{,}95)}{n_2} \text{ [Nm]}$$

Mit Md_2 und i kann in der folgenden Tabelle die Getriebegrösse bestimmt werden.

Selecting the rigt size

From the calculated input power P [KW] of the machine to be driven, the output torque T_2 of the **Vogel gearbox** can be found n_2 = output speed of the gearbox [rpm]

$$T_2 = \frac{9550 \times P \times \eta(0{,}95)}{n_2} \text{ [Nm]}$$

With T_2 and i in the following table the size can be found.