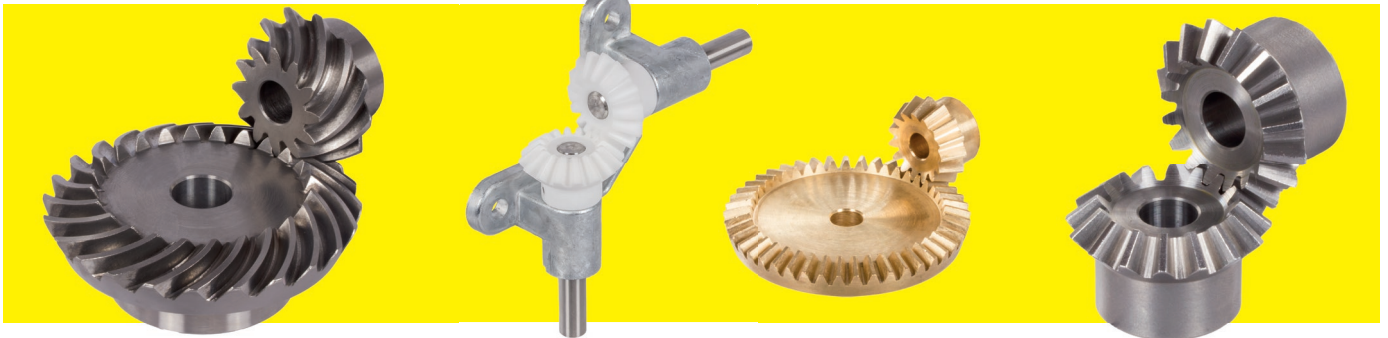



Bevel Gears Overview



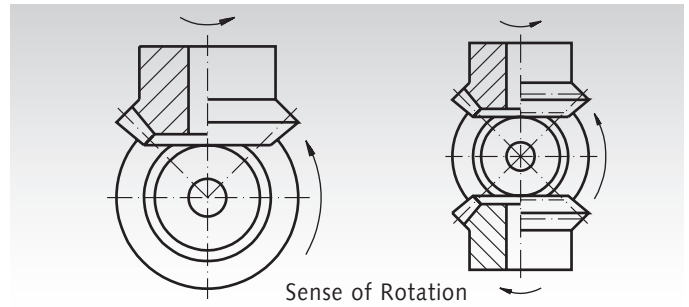
Contents

Material	Tooth System	Ratio	Module	perm. Output Torque	Page	
Acetal Resin	straight teeth	1:1	0,5 - 3,5	0,009 - 4,4 Nm	270	
		as ready-to-install angular gear drive				271
		2:1	1 - 3	0,012 - 7,4 Nm	270	
		3:1	1 - 2,5	0,083 - 1,8 Nm	270	
		4:1	1 - 2	0,045 - 1,6 Nm	270	
		5:1	1	0,6 Nm	270	
Zinc die-cast	straight teeth	1:1	1 - 3,5	0,14 - 5,8 Nm	271	
Brass	straight teeth	1:1	0,5 - 1	0,009 - 1,97 Nm	272	
		1,5:1	0,5 - 1	0,036 - 0,27 Nm	272	
		2:1	0,5 - 1	0,027 - 0,41 Nm	272	
		2,5:1	0,5	0,075 Nm	272	
		3:1	0,5 - 1	0,045 - 0,33 Nm	272	
		4:1	1	0,49 Nm	272	
Steel	straight teeth	1:1	0,5 - 8	0,011 - 181,6 Nm	273	
		1,25:1	3 - 5	6,5 - 31,8 Nm	274	
		1,5:1	0,5 - 5	0,021 - 90,9 Nm	274	
		2:1	0,5 - 6	0,034 - 260 Nm	275	
		2,5:1	0,5 - 5	0,018 - 152,5 Nm	276	
		3:1	0,5 - 6	0,027 - 212 Nm	276	
		3,5:1	1 - 4	0,445 - 86,5 Nm	277	
		4:1	1 - 4	0,468 - 86,8 Nm	277	
Stainless steel 	straight teeth	1:1	1 - 4	0,06 - 4,8 Nm	278	
		2:1	1 - 4	0,16 - 12 Nm	278	
		3:1	1 - 4	0,30 - 28,2 Nm	278	
		4:1	1 - 4	0,56 - 35,6 Nm	278	
Steel hardened	spiral teeth	1:1	0,6 - 3,5	2,1 - 238 Nm	279	
		1,24:1	1,5	17,1 Nm	280	
		1,39:1	1,5	15,7 Nm	280	
		1,5:1	0,6 - 3	3,3 - 215 Nm	280	
		1,62:1	1	3,9 Nm	280	
		2:1	0,6 - 3,5	4,6 - 394 Nm	281	
		2,07:1	1	7,4 Nm	281	
		2,5:1	0,6 - 3,5	6,5 - 315 Nm	281	
		3:1	0,6 - 3,5	6,3 - 396 Nm	282	
		4:1	1 - 1,5	31,2 - 45,2 Nm	282	

General Basics about Bevel Gears

Bevel gears enable a non-slip power transmission between two shafts mounted at 90 degrees.

Available from stock are transmission ratios of 1:1 up to max. 1:5 (depending on the material used). Other than for spur gears, the module is not standardized, but is chosen with view to technical considerations. The module of the bevel gear is not a constant value, but it changes with the diameter.



Sense of Rotation

Bevel Gears with Straight-Tooth System

to be calculated	given unit	formula	
Module = m	Pitch	$\frac{t}{\pi}$	
	Pitch Ø and No. of Teeth	$\frac{d}{z}$	
Pitch Ø = d	No. of Teeth and Module	$z \cdot m$	
Pitch (Cone) Angle Gear 1 = δ_{01}	No. of Teeth Gear 1 and Gear 2	$\frac{z_2}{z_1} = \tan \delta_{01}$	
Pitch (Cone) Angle Gear 2 = δ_{02}	Angle of Axles and Pitch (Cone) Angle, Gear 1	$\delta_a - \delta_{01}$	
Addendum Angle = χ_k	Pitch (Cone) Angle and No. of Teeth	$\frac{2 \cdot \sin \delta_0}{z} = \tan \chi_k$	
	Module and Outer Cone Distance R_a	$\frac{m}{R_a} = \tan \chi_k$	
Tip Ø = d_a	Pitch Ø, Pitch (Cone) Angle and Module	$d + (2m \cdot \cos \delta_0)$	
	No. of Teeth, Pitch (Cone) Angle and Module	$z \cdot m + (2m \cdot \cos \delta_0)$	
Tip (Cone) Angle = δ_k	Pitch (Cone) Angle and Addendum Angle	$\delta_0 + \chi_k$	
Outer Cone Distance Cone Distance = R_a	Pitch (Cone) Diameter Ø and Pitch (Cone) Angle	$\frac{d}{2 \cdot \sin \delta_0}$	
Gear 1 = big gear, Gear 2 = small gear			
Torque = Md in Nm	Power and Speed	Gear 1	Gear 2
		$9550 \frac{P}{n_1}$	$9550 \frac{P}{n_2}$
Tooth Width maximum 0.4 x Outer Cone Distance R_a . For Bevel Gears with a Shaft Angle larger or smaller than 90°, the following formula applies for the calculation of the Pitch (Cone) Angle			
$\frac{z_2}{z_1 \cdot \sin \delta_a} + \cot \delta_a = \cot \delta_{01}$			

Note: if δ_{01} is given, then $\delta_{k2} = \delta_a - (\delta_{01} - \chi_k)$
Addendum Angle is the same for both gears: $\chi_k = \chi_{k1} = \chi_{k2}$
Tangent = tan, Cotangent = cot

Material quality: information about the material quality can be found at each individual group of bevel gears.

Recommendations for the Lubrication of Bevel-Gear Sets

Peripheral speed	Lubrication	Lubricant
up to 1 m/s	Application of Lubricant	Adhesive Lubricant
up to 4 m/s	Splash Lubrication/Spray Lubrication	Grease or Adh. Lubricant
up to 15 m/s	Splash Lubrication	Oil
over 15 m/s	Pressure-Circulation or Spray Lubrication	Oil

Notes Regarding the Torque Values Stated

The load bearing capacity calculations for the bevel gears are based on the basic principles regarding the pitting resistance of the tooth flanks and the occurring tooth root stress. The calculations are based on the DIN 3991. For the calculation, the following assumptions were made:

If the transmission ratio is not 1 : 1 the stated max. torque applies to the smaller gear.

Calc. Factor/Determining Factor	Abbreviation	Value	Note
Calculation Method	-	-	DIN 3991
Normal Pressure Angle	-	20° (17.5° for spiral tooth system module 0.6 to 1.5)	
Spiral Angle	-	0° (38° for spiral tooth system)	
DIN Quality	-	8	-
Flank Safety	S_H	1.0 (apart from zinc)	Endurance strength 10.000 h (for steel)
Tooth-Root Safety	S_F	1.5	Endurance strength 10.000 h (for steel)
Application Factor	K_A	1.25	Industrial gear mechanisms, uniform, light shocks
Dynamics Factor	K_V	1.0	Usually without great influence
Load Distribution over Width	$K_{H\beta}$	1.5 (1 for Acetal Resin, Ms58 and ZnAl 4 Cu1)	Double-sided support
Lubricant/Surface Structure Speed Factor	$Z_L * Z_V * Z_R$	1	<ul style="list-style-type: none"> sufficient oil lubrication relative surface roughness $R_{Z100} = 10$ peripheral speed 8 m/s
Lifetime Factor	Z_N	1	Endurance strength 10.000 h (for steel)
Operating temperature for plastic gears	T_{Betr}	up to 60°C	The material parameters of plastic gears highly depend on the temperature

The load bearing capacity of a bevel gear depends on various different factors. The torques stated are only reference values serving to facilitate the selection process. If necessary a specific calculation of strength and load bearing capacity must be carried out for each application.

Depending on the operating conditions the wear lifespan may be influenced by adequate grease/oil lubrication. Please also note that insufficient lubrication may lead to scuffing of the gear flanks.

IMPORTANT

Please make sure you always check the permissible torque separately for the pinion and the gear side!

Plastic gears are, due to the higher elasticity, calculated with a $K_{H\beta}$ of 1. Gears made from brass and zinc-die-cast are also calculated with a $K_{H\beta}$ of 1, as a good running-in characteristic is assumed for these materials.

In the torque calculation of zinc-die-cast bevel gears only the root strength was considered. Due to the material properties these gears are only to a limited extent suitable for continuous operation.

For the materials used, the following characteristic values were taken as basis:

Material	Perm. Pulsating Fatigue Strength under Bending Stress s_{bW} in N/mm ²	Perm. Flank Pressure U_{Hlim} in N/mm ²
Acetal Resin	28 (VDI-2545)	40 (VDI-2545)
ZnAl4Cu1	60	150
Ms58 (2.0401)	100	250
11SMnPb30 (alt: 9SMn28K)	150	350
C45 normalized	200	590
42CrMo4 hardened	350	1360
16MnCr5 case hardened	400	1630
X10CrNiS18 9 (1.4305, stainless, austenitic)	200	400

Bevel Gears Made from Acetal Resin, Straight-Tooth System, Ratio 1:1 to 5:1

Shaft angle 90°. Version: injection-moulded.

Bores from Module 1.5 machined.

Material properties see page 821.

Thermoplastic materials have a far larger thermal expansion than metals. This fact must be considered with view to the crown and flank clearance when mounting the gear. Crown clearance $S_k \sim 0.25 \cdot m$, flank clearance $S_c \sim 0.05 \cdot m$.

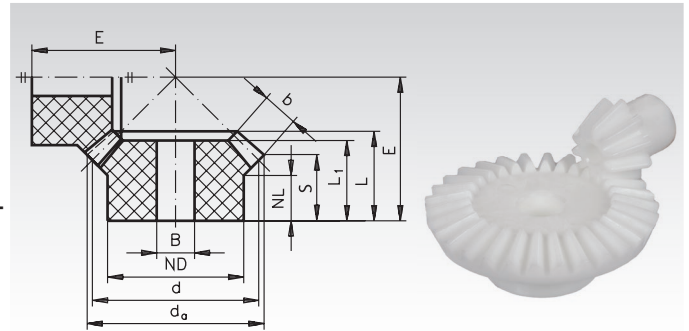
Thermal expansion coefficient = $1.1 \cdot 10^{-4} 1/^\circ\text{C}$.

The bevel gears are also available with smaller bores, or with feather key groove. Additional charge worked out on time basis.

Ordering Details: e.g.:

1 Pair of Bevel Gears Ratio 1:1 Mod. 0.5 16 Teeth = 2 Piece Product No. 355 207 00.

1 Pair of Bevel Gears Ratio 2:1 Mod. 1 15/30 Teeth = 1 Piece Product No. 355 556 00 and 1 Piece 355 557 00.



Drawing: Ratio 1:1, photo: ratio 2:1

Ratio 1:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	b mm	B mm	E mm	S mm	Torque* Ncm	Weight g
355 207 00	0,5	16	8,7	8	7	6	8	8	2	3	10,5	6,6	0,9	0,3
355 507 00	1	16	17,6	16	12	8	13,6	13,6	4,7	5	18,4	10,6	8,3	1,9
355 520 00	1	30	31,4	30	15	7,4	12,9	15,3	7,4	6	24,8	10,8	58,0	5,9
355 707 00	1,5	16	26,4	24	18,5	10	16,2	18,4	7	8	25,8	14,4	29,0	5,9
356 007 00	2	16	34,9	32	21,9	9,6	18,3	21,2	10	10	30,4	14,9	73,0	10,4
356 107 00	2,5	16	43,5	40	25,2	11,5	22,9	25,5	12,3	12	37	18,2	145,0	20,0
356 407 00	3	16	52,3	48	28,8	13,2	25,8	29,2	13,8	14	43	20,6	250,0	32,0
356 507 00	3,5	16	61,4	56	33,3	14,4	28,1	33,1	15,8	18	49,5	22,8	440,0	50,0

Ratio 2:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	b mm	B mm	E mm	S mm	Torque* Ncm	Weight g
355 556 00	1	15	16,8	15	12,2	10,6	17	17	6,6	5	26,4	11,5	12	2,4
355 557 00	1	30	31,1	30	18	9,1	14,8	16,2	6,6	8	20,9	13,6	24	6,3
355 756 00	1,5	15	25,4	22,5	17	11,5	22,8	22,8	10,5	8	35,8	13,8	43	7,5
355 757 00	1,5	30	46,4	45	23,4	9,6	17,5	19,5	10,5	10	26,2	15,0	86	17,0
356 056 00	2	15	33,6	30	22,5	11,8	26	27	14,6	10	44,2	14,5	107	13,3
356 057 00	2	30	62,2	60	30,2	11,8	22,6	24,2	14,6	12	32,6	18,5	214	41,0
356 156 00	2,5	15	42	37,5	26,5	13	29,6	31,2	17,3	12	53,3	16,4	209	23,6
356 157 00	2,5	30	77,3	75	36,1	15	27,5	29,5	17,3	16	40,5	22,8	418	69,0
356 456 00	3	15	50,3	45	31,2	14,8	35	36,3	20,5	14	63,3	19,0	370	38,0
356 457 00	3	30	93	90	45	19	34,2	37	20,5	18	49,5	29,2	740	129,0

Ratio 3:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	b mm	B mm	E mm	S mm	Torque* Ncm	Weight g
355 576 00	1	15	16,6	15	12,3	11	20,4	20,4	9,2	5	34,3	12,1	16	2,7
355 577 00	1	45	46,1	45	23,4	9,6	16,5	18,2	9,2	10	22,7	15,7	48	16,0
355 776 00	1,5	15	25,1	22,5	17,2	12,5	26,8	26,8	14	8	47,9	13,5	64	8,5
355 777 00	1,5	45	68,8	67,5	30,4	11,5	21,5	23	14	12	29,4	19,2	192	49,0
356 074 00	2	10	24,0	20	15,6	12	25,0	25	12,5	6	43,7	13,2	30	6,1
356 075 00	2	30	61,7	60	30,3	11,5	20,2	22,5	12,5	12	28	19,0	90	38,0
356 174 00	2,5	10	29,7	25	18,8	13	28,8	28,8	15,7	8	52,4	14,1	60	10,2
356 175 00	2,5	30	77,2	75	36,1	15,5	25,2	29	15,7	18	35,7	24,1	180	68,0

Ratio 4:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	b mm	B mm	E mm	S mm	Torque* Ncm	Weight g
355 588 00	1	10	12	10	7,8	9,3	17,7	17,7	8,2	4	30,1	10,1	4,5	0,9
355 589 00	1	40	40,8	40	23,4	10,8	15,7	17	8,2	10	20,1	15,1	18	12,6
355 788 00	1,5	10	18	15	11,3	10,9	23,5	23,5	12,3	5	41,7	11,7	17	3,0
355 789 00	1,5	40	61,2	60	30,4	12,8	20	21,7	12,3	12	26,2	18,6	68	32,0
356 088 00	2	10	23,8	20	14,3	12,8	28,9	28,9	16,3	6	54	13,2	40	6,4
356 089 00	2	40	81,5	80	36	16,6	24,7	27	16,3	18	32,5	23,1	160	65,0

Ratio 5:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	b mm	B mm	E mm	S mm	Torque* Ncm	Weight g
355 598 00	1	12	13,7	12	9,5	10	20,3	20,3	9,5	4	40,5	10,5	12	2
355 599 00	1	60	60,4	60	20,5	11	15,5	17,4	9,5	10	21	15,4	60	17

Note Regarding the Gears Made from Acetal Resin

Inside these injection-moulded parts are some cavities caused by production. These parts should therefore not be drilled too deep. With larger bores or when grooving the cavities might become visible. This often does not affect the functionality.

* Basis for calculations see page 269.

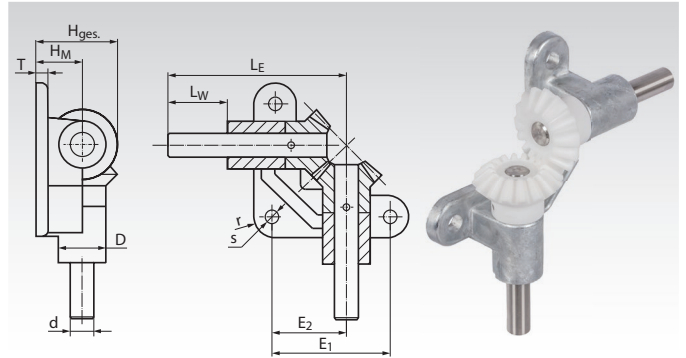
Angular Drive with Acetal Bevel Gears, Ratio 1:1

Material: Housing made from zinc die-cast ZnAl4Cu1.
Shafts made from stainless steel 1.4301, dismountable.
Bevel gears from acetal resin, injection-moulded.



- Low cost angular gear drive, ratio 1:1, 6 sizes.
- Suitable for lower torques and intermittent use.
- Shafts running directly in the self-lubricating housing material.
- Easy to mount and maintenance-free.

Shaft angle = 90°. Temperature range - 20°C to +100° C.



Ordering details: e.g.:

Art.-Nr. 410 355 10, Angular drive with acetal bevel gears, shaft-Ø d=5mm

Ratio 1:1

Product No.	dh6 mm	D mm	E ₁ mm	E ₂ mm	H _{Ges} mm	H _M mm	L _E mm	L _W mm	r mm	s mm	T mm	Module mm	Number of teeth	T _{max.} Ncm	Weight g
410 355 10	5	12	32	19,4	18,8	10	50	15	6	4,8	4	1,0	16/16	8,3	60
410 355 15	8	18	45	28,4	28,2	15	70	20	9	5,8	5	1,5	16/16	29	180
410 355 20	10	22	55	35,0	37,5	20	90	30	11	7,0	6	2,0	16/16	73	320
410 355 25	12	25	65	41,0	46,8	25	105	35	12,5	9,0	7	2,5	16/16	145	480
410 355 30	15	30	75	47,5	56,2	30	120	40	15	9,0	8	3,0	16/16	250	760
410 355 35	18	33	85	54,0	65,7	35	135	45	16	11,0	9	3,5	16/16	440	1080

*asis for calculations see page 269.

Bevel gears Made from Zinc Die-Cast, Straight-Tooth System, Ratio 1:1

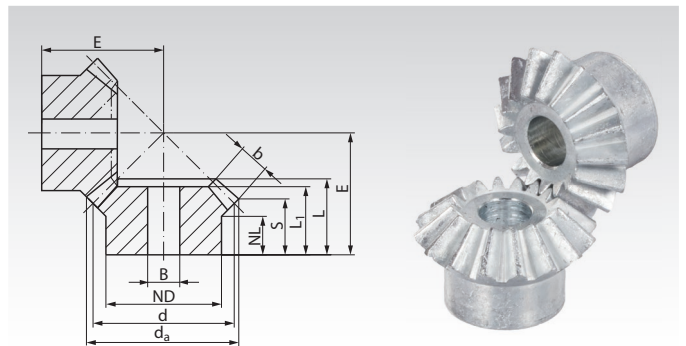
Material: ZnAl4Cu1.

Shaft angle = 90°.

Bores machined.

Zinc-die-cast gears under load should not be used at operating temperatures higher than 100°C.

The bevel gears only run as a pair at same module.



Ordering Details: e.g.:

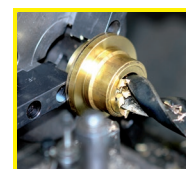
1 Pair of Bevel Gears Ratio 1:1 Mod. 1 16 Teeth = 2 Pieces Product No. 358 507 00

Ratio 1:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	b mm	BH9 mm	E mm	S mm	Torque* Ncm	Weight g
358 507 00	1	16	17,3	16	12	7,5	13,1	13,1	4,5	6	17,7	10,5	14	8
358 707 00	1,5	16	26,0	24	19	10,8	17,0	18,6	6,7	8	25,7	14,5	46	27
359 007 00	2	16	34,6	32	23	10	19,2	21,3	9,6	10	30	15,1	110	51
359 107 00	2,5	16	43,3	40	26	12	22,9	25,5	12,3	12	36	17,6	230	87
359 407 00	3	16	52,3	48	30	13	26,0	29,3	14	14	42,5	20,6	380	145
359 507 00	3,5	16	61,5	56	34	14	29,1	33,2	15,5	16	49,4	23,2	580	227

* In the torque calculation of zinc-die-cast bevel gears only the root strength was considered.

Due to the material properties these gears are only to a limited extend suitable for continuous operation.



**Reworking within
24h-service possible.
Custom made parts
on request.**

Bevel Gears Made from Brass, Straight-Tooth System, Ratio 1:1 to 4:1

Material: Ms58 (2.0401).

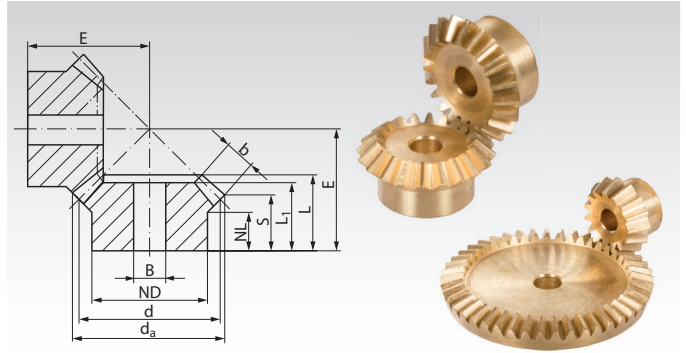
Milled teeth. Shaft angle = 90°.

The bevel gears only run as a pair at the stated ratio and same module.

Ordering Details: e.g.:

1 Pair of Bevel Gears Ratio 1:1 Mod. 0.5 15 teeth = 2 pieces Product No. 350 206 00.

1 Pair of Bevel Gears Ratio 1.5:1 Mod. 0.5 20/30 Teeth = 1 Piece Product No. 350 252 00 and 1 Piece 350 253 00.



Ratio 1:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Ncm	Weight g
350 206 00	0,5	15	8,2	7,5	6	5	6,3	7,3	6,1	2	3	9,5	0,9	1
350 211 00	0,5	20	10,7	10	8	4	-	7	5	3	4	9,7	1,9	1
350 215 00	0,5	24	12,7	12	8	4	6,4	7	5	3	4	10,7	3,0	3
350 220 00	0,5	30	15,7	15	10	4	7,5	8,5	6,6	3	4	13,7	5,3	4
350 223 00	0,5	36	18,7	18	12	5	9	10,1	8	3	4	16,7	8,2	10
350 226 00	0,5	40	20,7	20	12	5	8,5	9,5	7,5	3	4	17,1	10,6	10
350 232 00	0,5	50	25,7	25	14	5	8,5	9,5	7,5	3	4	19,6	18,0	16
350 503 00	1	12	13,0	12	8	5	8,5	9,6	7,7	3	5	13,2	5,0	3
350 507 00	1	16	17,4	16	12	5	9	10,3	7,8	4	5	15,1	6,0	9
350 511 00	1	20	21,4	20	15	5	9	10,4	7,8	4	5	17,1	13,0	15
350 516 00	1	25	26,4	25	16	6,7	11,5	13	9,7	5	5	21,5	26,0	26
350 520 00	1	30	31,4	30	16	7	11,5	13,1	9,7	5	5	24,0	40,0	33
350 523 00	1	36	37,4	36	16	7	11,5	13	9,6	5	5	26,9	62,0	43
350 526 00	1	40	41,4	40	16	8	12,5	14	10,6	5	5	29,9	79,0	53
350 532 00	1	50	51,4	50	16	8	12,5	14	10,6	5	6	34,9	130,0	76
350 535 00	1	60	61,4	60	16	8	12,5	14,1	10,6	5	6	39,9	197,0	110

Ratio 1.5:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Ncm	Weight g
350 252 00	0,5	20	11,0	10	8	3,5	6,5	7,1	4,7	3	4	11,9	2,4	2
350 253 00	0,5	30	15,4	15	10	4	6	7	5,4	3	4	10,1	3,6	4
350 552 00	1	20	22,1	20	15	5	10	11,1	7,2	5	5	21,5	18,0	16
350 553 00	1	30	30,8	30	16	5	9	10,9	8,3	5	5	17,7	27,0	28

Ratio 2:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Ncm	Weight g
350 260 00	0,5	20	11,2	10	8	4	7	7,5	5,0	3	4	14,65	2,7	2
350 261 00	0,5	40	20,3	20	12	5	7,5	8,4	7,1	3	4	11,83	5,4	8
350 556 00	1	15	17,4	15	12,5	4,5	9	10,1	5,8	5	5	20,2	9,4	9
350 557 00	1	30	30,6	30	16	5	9	10,8	8,8	5	5	15,7	18,8	27
350 560 00	1	20	22,4	20	15	5	10	11,1	6,8	5	5	26,2	20,6	17
350 561 00	1	40	40,6	40	16	8	12	13,8	11,7	5	6	21,1	41,2	50

Ratio 2.5:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Ncm	Weight g
350 272 00	0,5	20	11,3	10	8	4	7	7,6	4,9	3	4	17,1	3,0	3
350 273 00	0,5	50	25,2	25	14	5	7	7,8	6,8	3	4	11,5	7,5	12

Ratio 3:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Ncm	Weight g
350 276 00	0,5	15	8,8	7,5	6	3,7	6,5	7	4,3	3	3	15,3	1,5	1
350 277 00	0,5	45	22,7	22,5	12	5	7,5	8,4	7,5	3	4	11,0	4,5	11
350 576 00	1	15	17,7	15	13	5	10	11,1	6,5	5	5	28,5	11,0	10
350 577 00	1	45	45,4	45	16	8	12,5	14,7	13,2	5	6	20,2	33,0	68

Ratio 4:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Ncm	Weight g
350 592 00	1	15	17,8	15	13	5,5	10	11	6,3	5	5	35,9	12,2	10
350 593 00	1	60	60,3	60	16	8	12,5	14,6	13,6	5	6	20,5	48,8	110

* Basis for calculations see page 269.

Bevel gears Made from Steel, Straight-Tooth System, Ratio 1:1

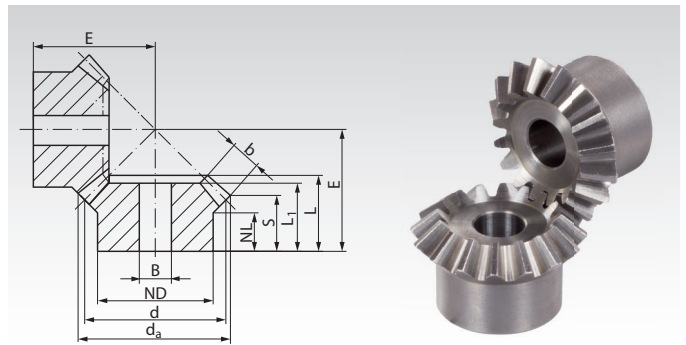
Material: up to module 2: 11SMnPb30.
from module 2.5: C45.

Tooth quality 8 modelled on DIN 3967 (from module 2).
Up to module 5 with crowned, milled teeth.
From module 6 with planed teeth. Not hardened – not lapped.
Shaft angle = 90°.

The bevel gears only run as a pair at the stated ratio and at the same module.

Ordering Details: e.g.:

1 Pair of Bevel Gears Ratio 1:1 Mod. 0.5 20 Teeth = 2 Pieces Product No. 360 211 00



Ratio 1:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g
360 211 00	0,5	20	10,7	10	8	4	-	7,0	5,0	3	4	9,7	0,011	1
360 215 00	0,5	24	12,7	12	8	4	6,4	7,0	5,0	3	4	10,7	0,018	3
360 220 00	0,5	30	15,7	15	10	4	7,5	8,5	6,6	3	4	13,7	0,032	4
360 223 00	0,5	36	18,7	18	12	5	9,0	10,1	8,0	3	4	16,7	0,050	10
360 226 00	0,5	40	20,7	20	12	5	8,5	9,5	7,5	3	4	17,1	0,064	10
360 232 00	0,5	50	25,7	25	14	5	8,5	9,5	7,5	3	4	19,6	0,108	16
360 507 00	1	16	17,4	16	14	7	10	11,2	8,7	4	5	16	0,052	9
360 510 00	1	19	20,4	19	15	6,5	10	11,8	9,2	4	5	18	0,085	14
360 513 00	1	22	23,4	22	18	7	11	12,8	9,7	4,7	5	20	0,158	22
360 518 00	1	26	27,4	26	22	7	12	13,4	9,7	5,5	5	22	0,193	35
360 520 00	1	30	31,4	30	22	7	14	16,0	11,7	6,4	5	26	0,29	50
360 526 00	1	40	41,4	40	30	10	18	19,8	15,7	6,0	8	35	0,55	111
360 707 00	1,5	16	26,1	24	20	11	15	17,3	14,1	5,1	8	25	0,18	32
360 711 00	1,5	20	32,1	30	22	9	15	17,2	13,1	6,4	8	27	0,34	47
360 713 00	1,5	22	35,1	33	20	8	15	17,1	12,6	7,0	8	28	0,44	50
360 716 00	1,5	25	39,6	37,5	25	8	15	17,6	12,3	8,0	10	30	0,62	70
360 720 00	1,5	30	47,1	45	30	12	20	21,9	15,6	9,6	10	37	1,01	135
360 726 00	1,5	40	62,1	60	40	12	25	27,7	19,1	12,7	15	48	2,46	310
361 007 00	2	16	34,8	32	25	11,5	18	20,7	16,4	6,8	10	31	0,45	66
361 011 00	2	20	42,8	40	30	10	17	19,9	14,4	8,5	10	33	0,84	104
361 013 00	2	22	46,8	44	30	10	19	21,0	15,4	9,3	10	36	1,08	130
361 016 00	2	25	52,8	50	35	8	19	21,4	14,4	10,6	10	38	1,50	182
361 020 00	2	30	62,8	60	40	12	25	26,9	18,4	12,7	15	47	2,45	306
361 026 00	2	40	82,8	80	50	15	31	33,7	23,4	15,2	20	62	16,3	660
361 107 00	2,5	16	43,7	40	30	10	21	23,8	16,8	11	10	35	2,6	120
361 109 00	2,5	18	48,7	45	30	10	22	25,0	17,4	12	10	38	3,6	150
361 111 00	2,5	20	53,7	50	35	10	22	25,9	16,9	14	10	40	4,9	210
361 113 00	2,5	22	58,7	55	30	10	24	27,1	17,3	15	10	43	6,3	240
361 116 00	2,5	25	66,2	62,5	45	10	25	28,8	17,6	17	15	47	9,3	370
361 120 00	2,5	30	78,7	75	50	12	29	32,7	19,3	20	15	55	16,3	560
361 126 00	2,5	40	103,6	100	60	14	31	35,4	21,8	20	25	70	33,6	1100
361 407 00	3	16	52,4	48	40	12	24	27,7	18,2	15	10	40	4,6	240
361 409 00	3	18	58,4	54	40	10	25	28,1	17,2	17	10	42	6,4	280
361 411 00	3	20	64,4	60	40	10	26	29,5	17,2	19	15	45	8,7	320
361 413 00	3	22	70,4	66	40	8	27	30,2	17,2	20	15	48	11,6	410
361 416 00	3	25	79,4	75	50	10	28	31,9	16,7	23	15	52	17,3	490
361 420 00	3	30	94,4	90	50	12	35	38,8	22,2	25	20	65	29,2	950
361 426 00	3	40	124,4	120	60	15	35	39,1	22,2	25	25	80	60,7	1600
361 807 00	4	16	70,0	64	50	11	29	32,9	21,0	19	20	50	11,1	420
361 809 00	4	18	78,0	72	50	16	36	41,0	27,0	22	20	60	15,6	640
361 811 00	4	20	85,9	80	50	16	39	43,5	28,0	24	20	65	20,8	810
361 813 00	4	22	93,9	88	50	12	37	40,9	24,0	26	20	65	27,9	940
361 816 00	4	25	105,9	100	60	12	38	42,7	23,0	30	20	70	41,9	1400
361 820 00	4	30	125,9	120	60	18	42	47,9	27,9	30	25	85	67,5	2000
361 826 00	4	40	165,8	160	80	20	48	53,2	32,9	30	30	110	138,0	4200
362 107 00	5	16	87,4	80	60	12	36	41,5	25,7	25	20	62	22,2	860
362 109 00	5	18	97,4	90	60	12	37	42,2	23,7	29	20	65	30,7	1050
362 111 00	5	20	107,4	100	60	12	39	44,4	23,7	32	25	70	42,7	1300
362 113 00	5	22	117,5	110	70	12	43	48,5	25,7	35	25	77	57,5	1840
362 116 00	5	25	132,4	125	70	12	42	47,5	21,2	40	30	80	85,8	2140
362 120 00	5	30	157,4	150	70	12	44	51,3	24,7	40	30	96	139,5	3520
362 126 00	5	40	207,3	200	90	20	52	60	32,9	40	35	128,1	288,0	7060
367 309 00	6	18	116,5	108	60	15	44	54	31,3	35	25	81,0	54,8	1770
367 311 00	6	20	128,5	120	70	15	44	54	27,8	40	30	83,4	76,3	2190
367 316 00	6	25	158,5	150	75	15	51	60	26,7	50	30	97,3	153,4	3790
367 320 00	6	30	188,5	180	90	15	51	60	26,4	50	35	112,1	250,6	5810
367 326 00	6	40	248,5	240	100	20	58	67	32,9	50	40	148,6	555,0	11600
367 711 00	8	20	171,3	160	90	15	52	62	29,20	50	40	103,3	181,6	4560

* Basis for calculations see page 269.

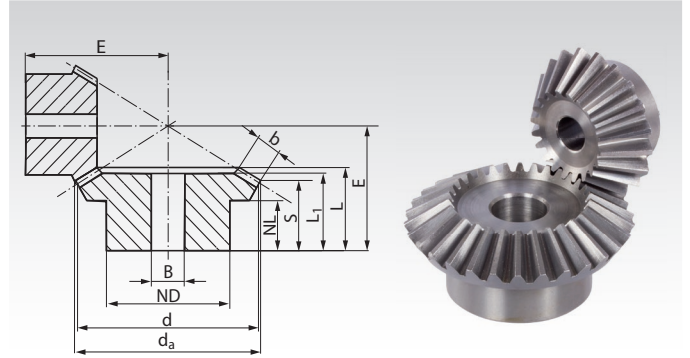
Bevel Gears Made from Steel, Straight-Tooth System, Ratio 1.25:1 and 1.5:1

Material: up to module 2: 11SMnPb30.
from module 2.5: C45.

Tooth quality 8 modelled on DIN 3967 (from module 2).
With crowned, milled teeth. Not hardened – not lapped.

Shaft angle = 90°.

The bevel gears only run as a pair at the stated ratio
and at the same module.



Ordering Details: e.g.:

1 Pair of Bevel Gears Ratio 1.25:1 Mod. 3 16/20 Teeth =

1 Piece Product No. 361 444 00 and

1 Piece Product No. 361 445 00

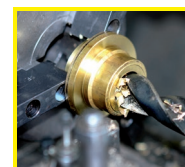
Ratio 1.25:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g
361 444 00	3	16	52,9	48	40	11,7	27	29,2	16,9	17	15	45	5,2	220
361 445 00	3	20	63,9	60	40	10,0	25	27,8	18,4	17	15	40	6,5	300
361 844 00	4	16	70,6	64	50	12,5	32	36,5	20,6	22	20	58	12,7	470
361 845 00	4	20	85,2	80	50	15,0	33	38,4	26,3	22	20	55	15,9	700
362 144 00	5	16	88,2	80	60	12,0	40	44,2	23,3	29	20	70	25,4	910
362 145 00	5	20	106,6	100	60	15,0	39	45,0	29,1	29	25	65	31,8	1300

Ratio 1.5:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g
360 252 00	0,5	20	11,0	10	8	3,5	6,5	7,1	4,7	3	4	11,9	0,014	2
360 253 00	0,5	30	15,4	15	10	4,0	6,0	7,0	5,4	3	4	10,1	0,021	4
360 548 00	1	16	18,1	16	13	6,9	11	12,0	8,7	4,3	5	20	0,066	10
360 549 00	1	24	24,8	24	20	8,8	13	14,8	12,6	4,3	5	20	0,099	32
360 748 00	1,5	16	27,1	24	20	8,7	14	16,1	11,0	6,5	8	28	0,023	34
360 749 00	1,5	24	37,2	36	20	12,0	17	20,2	16,9	6,5	10	28	0,035	55
360 752 00	1,5	20	33,1	30	20	9,0	17	18,9	12,5	8,1	8	34	0,43	52
360 753 00	1,5	30	46,2	45	30	12,0	20	22,1	17,9	8,1	10	32	0,65	133
361 048 00	2	16	35,5	32	20	8,0	21	22,6	13,1	12	10	36	0,57	60
361 049 00	2	24	50,3	48	30	8,0	18	21,5	15,7	12	10	30	0,86	151
361 052 00	2	20	43,5	40	30	7,5	20	22,3	11,2	14	10	40	1,15	119
361 053 00	2	30	62,3	60	40	15,0	25	28,7	21,7	14	15	40	1,73	301
361 148 00	2,5	16	44,3	40	30	11,6	26	28,2	16,4	14	10	45	3,3	150
361 149 00	2,5	24	62,9	60	30	12,0	26	29,4	22,1	14	10	40	5,0	300
361 152 00	2,5	20	54,3	50	30	10,0	27	30,2	16,0	18	10	52	6,8	230
361 153 00	2,5	30	77,9	75	50	14,0	27	31,1	22,2	18	15	45	10,2	550
361 448 00	3	16	53,2	48	40	13,2	30	32,7	17,7	19	15	52	5,9	250
361 449 00	3	24	75,5	72	50	8,0	24	27,8	18,6	19	15	40	8,9	490
361 452 00	3	20	65,2	60	40	10,0	33	35,8	16,8	24	15	60	12,4	390
361 453 00	3	30	93,5	90	50	15,0	33	37,6	25,7	24	20	53	18,6	860
361 848 00	4	16	71,0	64	50	12,5	36	38,9	19,3	25	20	65	14,3	500
361 849 00	4	24	100,7	96	60	12,0	31	35,6	23,5	25	20	52	21,5	1010
361 852 00	4	20	87,0	80	50	18,0	48	51,1	27,3	30	20	85	29,5	950
361 853 00	4	30	124,6	120	60	18,0	40	46,4	31,5	30	25	68	44,3	1900
362 152 00	5	20	108,7	100	60	12,0	50	54,7	22,9	40	25	95	60,6	1630
362 153 00	5	30	155,8	150	70	12,0	40	46,3	26,4	40	30	72	90,9	3070

* Basis for calculations see page 269.



**Reworking within
24h-service possible.
Custom made parts
on request.**

Bevel gears Made from Steel, Straight-Tooth System, Ratio 2:1

Material: up to product no. 36105700: 11SMnPb30.
from product no. 36106000: C45.

Tooth quality 8 modelled on DIN 3967 (from module 2).
Up to module 5 with crowned, milled teeth.
From module 6 with planed teeth. Not hardened – not lapped.
Shaft angle = 90°.

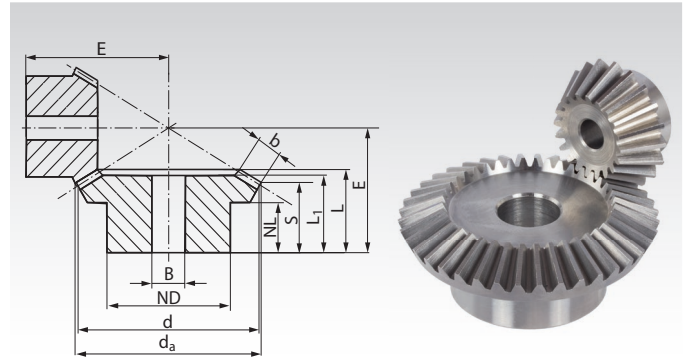
The bevel gears only run as a pair at the stated ratio and at the same module.

Ordering Details: e.g.:

1 Pair of Bevel Gears Ratio 2:1 Mod. 0.5 20/40 Teeth =

1 Piece Product No. 360 260 00 and

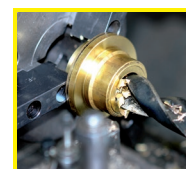
1 Piece Product No. 360 261 00



Ratio 2:1

Product No.	Module	Number of teeth	da mm	d mm	ND mm	NL mm	L1 mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g
360 260 00	0,5	20	11,2	10	8	4,0	7,0	7,5	5,0	3	4	14,65	0,017	2
360 261 00	0,5	40	20,3	20	12	5,0	7,5	8,4	7,1	3	4	11,83	0,034	8
360 556 00	1	15	17,4	15	13	6,5	11	11,9	7,6	5	5	22	0,063	10
360 557 00	1	30	30,6	30	20	9,0	13	15,1	13,1	5	5	20	0,126	40
360 756 00	1,5	15	26,1	22,5	18	6,5	13	14,8	8,4	7,6	8	30	0,22	26
360 757 00	1,5	30	45,9	45	30	12,0	18	20,7	17,6	7,6	10	28	0,44	124
360 760 00	1,5	20	33,6	30	20	9,5	19	21,6	12,9	10,1	8	42	0,54	59
360 761 00	1,5	40	60,9	60	40	12,0	19	22,0	17,9	10,1	15	32	1,08	234
361 056 00	2	15	33,7	30	20	7,5	22	23,0	10,9	14	10	40	0,59	58
361 057 00	2	30	61,8	60	40	12,0	24	27,2	21,9	14	15	35	1,18	312
361 060 00	2	20	43,7	40	30	7,5	22	24,0	10,9	15	10	50	1,4	132
361 061 00	2	40	81,8	80	50	18,0	29	32,8	26,9	15	20	45	2,8	593
361 156 00	2,5	15	42,2	37,5	30	15,4	31	33,3	18,6	17	10	55	3,4	160
361 157 00	2,5	30	77,3	75	50	10,0	24	28,1	21,6	17	15	38	6,8	530
361 160 00	2,5	20	54,6	50	30	14,0	34	36,6	19,2	20	10	68	4,3	280
361 161 00	2,5	40	102,3	100	60	15,0	29	33,3	25,3	20	25	48	8,6	970
361 456 00	3	15	50,6	45	30	11,5	33	35,4	16,4	22	10	60	6,1	270
361 457 00	3	30	92,8	90	50	10	26	30,7	22,3	22	20	42	12,2	750
361 460 00	3	20	65,6	60	40	10	33	36,1	14,4	25	15	73	15,2	450
361 461 00	3	40	122,8	120	60	18	34	38,7	28,8	25	25	56	30,4	1400
361 856 00	4	15	67,5	60	40	10	38	41,0	16,9	28	20	75	14,6	410
361 857 00	4	30	123,8	120	60	15	33	39,4	28,8	28	25	55	29,2	1600
361 860 00	4	20	87,4	80	50	13	45	48,0	21,9	30	20	100	35,0	970
361 861 00	4	40	163,7	160	80	20	40	45,7	33,7	30	30	70	70,0	3300
362 156 00	5	15	84,4	75	60	15	50	54,1	21,4	38	20	94	30,2	980
362 157 00	5	30	154,7	150	70	15	40	46,7	32,2	38	30	65	60,4	3030
362 160 00	5	20	109,3	100	60	18	58	62,1	27,3	40	25	125	72,4	1890
362 161 00	5	40	204,7	200	90	20	48	55,6	39,7	40	35	85	144,8	6480
367 360 00	6	20	130,7	120	70	15	58	67	23,6	50	30	139,9	130,0	2960
367 361 00	6	40	245,3	240	100	20	50	58	37,7	50	40	92,3	260,0	9610

* Basis for calculations see page 269.



**Reworking within
24h-service possible.
Custom made parts
on request.**

Bevel Gears Made from Steel, Straight-Tooth System, Ratio 2.5:1 and 3:1

Material: up to module 2: 11SMnPb30.
from module 2.5: C45.

Tooth quality 8 modelled on DIN 3967 (from module 2).
Up to module 5 with crowned, milled teeth.
From module 6 with planed teeth. Not hardened – not lapped.
Shaft angle = 90°.

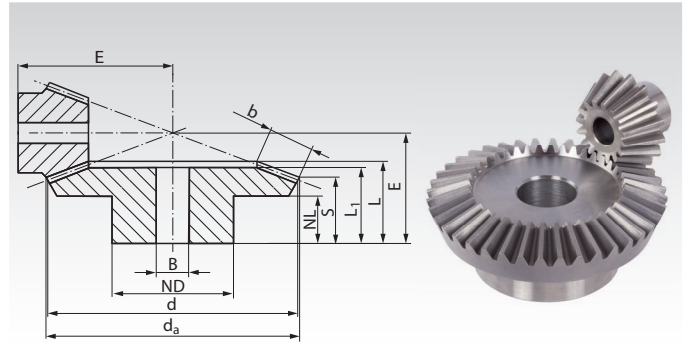
The bevel gears only run as a pair at the stated ratio and at the same module.

Ordering Details: e.g.:

1 Pair of Bevel Gears Ratio 2.5:1 Mod. 0.5 20/50 Teeth =

1 Piece Product No. 360 272 00 and

1 Piece Product No. 360 273 00



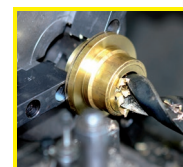
Ratio 2.5:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g
360 272 00	0,5	20	11,3	10	8	4,0	7	7,6	4,9	3	4	17,1	0,018	3
360 273 00	0,5	50	25,2	25	14	5,0	7	7,8	6,8	3	4	11,5	0,045	10
360 564 00	1	16	18,6	16	13	7,4	13	14,4	8,5	6,5	5	28	0,090	13
360 565 00	1	40	40,5	40	25	9,0	13	14,8	12,6	6,5	8	20	0,225	65
360 764 00	1,5	16	27,9	24	18	8,8	18	19,5	10,8	9,7	8	40	0,32	36
360 765 00	1,5	40	60,7	60	40	10,0	17	20,1	16,9	9,7	15	28	0,80	220
360 768 00	1,5	18	30,9	27	20	10,8	21	22,9	13,0	10,9	8	46	0,47	54
360 769 00	1,5	45	68,2	67,5	50	12,0	20	24,1	20,4	10,9	15	33	1,18	370
361 064 00	2	16	35,8	32	20	9,0	25	26,4	12,7	15	10	52	0,84	76
361 065 00	2	40	81,5	80	50	15,0	29	32,7	27,9	15	20	42	2,10	650
361 068 00	2	18	39,8	36	30	11,8	26	27,4	13,8	15	10	58	1,18	133
361 069 00	2	45	91,5	90	60	18,0	30	33,8	28,9	15	25	45	2,95	830
361 164 00	2,5	16	44,8	40	30	13,0	32	34,1	15,9	20	10	65	5,0	180
361 165 00	2,5	40	101,9	100	60	15,0	29	33,8	27,4	20	25	45	12,5	1000
361 168 00	2,5	18	49,8	45	30	15,6	36	37,9	19,7	20	10	75	7,1	240
361 169 00	2,5	45	114,4	112,5	70	15,0	28	33,4	26,9	20	25	47	17,8	1200
361 464 00	3	16	53,8	48	40	13,6	37	38,8	16,1	25	15	75	9,0	310
361 465 00	3	40	122,3	120	60	16,0	32	36,8	28,9	25	25	50	22,5	1400
361 468 00	3	18	59,8	54	40	11,7	36	38,4	15,7	25	15	82	12,8	380
361 469 00	3	45	137,3	135	70	18,0	34	39,0	30,9	25	30	55	32,0	1900
361 864 00	4	16	71,8	64	50	12,0	41	43,8	16,5	30	20	95	20,9	600
361 865 00	4	40	163,1	160	80	20,0	40	46,4	36,9	30	30	65	52,3	3400
361 868 00	4	18	79,7	72	50	13,8	44	46,8	19,5	30	20	108	29,3	800
361 869 00	4	45	183,0	180	90	20,0	43	49,6	39,9	30	30	72	73,3	4900
362 168 00	5	18	99,6	90	60	16,5	57	60,8	24,4	40	25	135	61,0	1560
362 169 00	5	45	228,8	225	100	20,0	50	57,8	44,8	40	40	85	152,5	9080

Ratio 3:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g
360 276 00	0,5	15	8,0	7,5	6	3,7	6,5	7,0	4,3	3	3	15,3	0,009	1
360 277 00	0,5	45	22,7	22,5	12	5,0	7,5	8,4	7,5	3	4	11,0	0,027	10
360 576 00	1	15	17,7	15	13	9,2	16	16,5	10,0	7,1	5	32	0,086	14
360 577 00	1	45	45,4	45	25	10	15	17,0	15,1	7,1	8	22	0,258	92
360 780 00	1,5	16	28	24	18	11	22	23,2	12,7	11,4	8	48	0,38	42
360 781 00	1,5	48	72,6	72	50	12	20	24,1	20,8	11,4	15	32	1,14	405
361 080 00	2	16	35,9	32	20	10	25	26,6	12,6	15	10	60	0,92	80
361 081 00	2	48	97,3	96	60	18	30	35,0	31,0	15	25	45	2,76	950
361 180 00	2,5	16	44,9	40	30	15	34	36,5	17,8	20	10	77	5,6	200
361 181 00	2,5	48	121,6	120	80	15	29	33,9	28,5	20	25	46	16,8	1600
361 480 00	3	16	53,9	48	40	12,5	36	38,3	15,0	25	15	86	10,0	310
361 481 00	3	48	145,9	144	70	18	34	38,7	32,0	25	30	53	30,0	2300
361 880 00	4	16	71,8	64	50	17	46	48,3	20,3	30	20	115	22,9	680
361 881 00	4	48	194,6	192	90	20	43	50,0	41,9	30	30	70	68,7	5700
362 176 00	5	15	84,9	75	60	15	53	56,4	19,1	40	20	130	39,3	1110
362 177 00	5	45	228,3	225	100	20	45	53,1	42,4	40	40	75	117,9	7920
362 180 00	5	16	89,8	80	60	16,5	55	59,0	21,6	40	20	140	47,7	1310
362 181 00	5	48	243,2	240	100	20	47	55,7	44,9	40	40	80	143,1	9640
367 376 00	6	15	101,4	90	70	20	67	73	26,2	50	30	159,2	70,7	1880
367 377 00	6	45	273,8	270	100	30	60	69	55,0	50	45	94,3	212,1	13170

* Basis for calculations see page 269.



**Reworking within
24h-service possible.
Custom made parts
on request.**

Bevel gears Made from Steel, Straight-Tooth System, Ratio 3.5:1 and 4:1

Material: up to module 2: 11SMnPb30.
from module 2.5: C45.

Tooth quality 8 modelled on DIN 3967 (from module 2).
With crowned, milled teeth. Not hardened – not lapped.

Shaft angle = 90°.

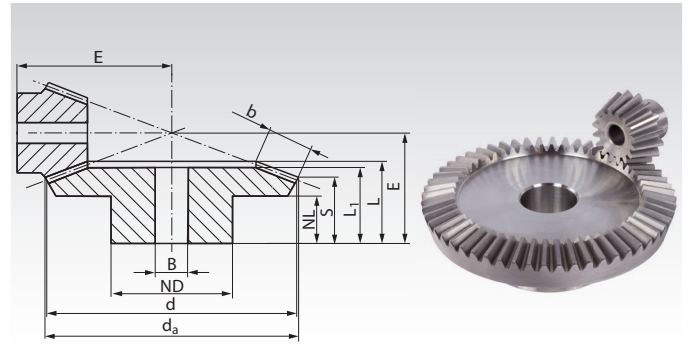
The bevel gears only run as a pair at the stated ratio
and at the same module.

Ordering Details: e.g.:

1 Pair of Bevel Gears Ratio 3.5:1 Mod. 1 16/56 Teeth =

1 Piece Product No. 360 584 00 and

1 Piece Product No. 360 585 00



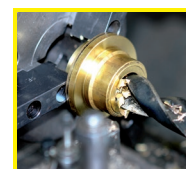
Ratio 3.5:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g
360 584 00	1	16	18,7	16	13	7,6	16	16,6	8,4	8,7	5	36	0,127	16
360 585 00	1	56	56,3	56	30	10,0	14	16,7	14,6	8,7	8	22	0,445	130
360 784 00	1,5	16	28,1	24	18	12,2	24	26	13,6	13,1	8	55	0,45	48
360 785 00	1,5	56	84,5	84	50	12	24	27,1	23,8	13,1	15	35	1,58	634
361 084 00	2	16	35,9	32	20	10	25	26,8	12,5	15	10	68	0,99	82
361 085 00	2	56	113,1	112	60	18	31	35,5	31,9	15	25	46	3,47	1200
361 184 00	2,5	16	44,9	40	30	16,5	36	37,7	18,7	20	10	88	6,0	220
361 185 00	2,5	56	141,4	140	80	18	32	37,2	32,4	20	25	50	21,0	2300
361 484 00	3	16	53,9	48	40	15	39	40,6	16,8	25	15	100	10,9	340
361 485 00	3	56	169,7	168	80	18	33	39,8	34,0	25	30	55	38,2	3100
361 884 00	4	16	71,9	64	50	13	42	44,6	16,1	30	20	127	24,7	660
361 885 00	4	56	226,3	224	90	20	40	49,0	42,0	30	30	70	86,5	6900

Ratio 4:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g
360 592 00	1	15	17,8	15	13	7,7	16	17,3	8,4	9,3	5	38	0,117	15
360 593 00	1	60	60,3	60	30	10,0	15	17,1	15,1	9,3	8	22	0,468	160
360 792 00	1,5	15	26,7	22,5	18	14,4	28	28,9	15,5	13,9	8	60	0,41	42
360 793 00	1,5	60	90,4	90	50	12,0	25	27,6	24,6	13,9	15	35	1,64	745
361 092 00	2	15	34,0	30	20	13,5	29	29,9	15,5	15	10	75	1,02	80
361 093 00	2	60	120,9	120	60	20,0	35	40,1	37,0	15	25	50	4,08	1600
361 192 00	2,5	15	42,5	37,5	30	16,0	35	36,8	17,6	20	10	92	5,3	190
361 193 00	2,5	60	151,2	150	80	18,0	33	37,8	33,8	20	25	50	21,2	2600
361 492 00	3	15	51,0	45	30	13,0	38	39,7	15,7	25	10	105	9,6	270
361 493 00	3	60	181,5	180	80	18,0	35	40,6	35,5	25	30	55	38,4	3800
361 892 00	4	15	68,0	60	40	12,5	43	44,8	16,0	30	20	135	21,7	520
361 893 00	4	60	242,0	240	90	20,0	41	50,1	44,0	30	30	70	86,8	8300

* Basis for calculations see page 269.



Reworking within
24h-service possible.
Custom made parts
on request.

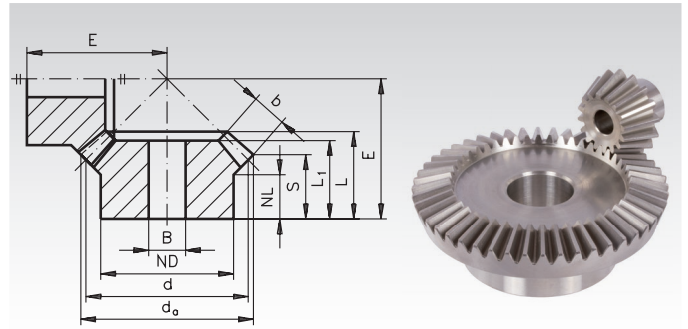
Bevel Gears Made from Stainless Steel, Straight-Tooth System, Ratio 1:1 to 4:1

Material: Stainless steel 1.4305.

Tooth quality 8 modelled on DIN 3967 (from module 2).
Crowned, milled teeth.

Shaft angle 90°.

The bevel gears only run as a pair at the stated ratio and at the same module.



Drawing: Ratio 1:1, photo: ratio 3:1

Ordering Details: e.g.:

1 Pair of Bevel Gears Ratio 1:1 Mod. 1 16 teeth = 2 pieces Product No. 360 995 07.

1 Pair of Bevel Gears Ratio 2:1 Mod. 1 15/30 Teeth = 1 Piece Product No. 360 995 56 and 1 Piece 360 995 57.

Ratio 1:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g
360 995 07	1	16	17,4	16	14	7	10	11,2	8,7	4,0	5	16	0,06	9
360 997 07	1,5	16	26,1	24	20	11	15	17,3	14,1	5,1	8	25	0,19	32
361 990 07	2	16	34,8	32	25	11,5	18	20,7	16,4	6,8	10	31	0,46	66
361 991 07	2,5	16	43,7	40	30	10	21	23,8	16,8	11	10	35	1,1	120
361 994 07	3	16	52,4	48	40	12	24	27,7	18,2	15	10	40	2,0	240
361 998 07	4	16	70,0	64	50	11	29	32,9	21,0	19	20	50	4,8	420

Ratio 2:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g
360 995 56	1	15	17,4	15	13	6,5	11	11,9	7,6	5,0	5	22	0,08	10
360 995 57	1	30	30,6	30	20	9,0	13	15,1	13,1	5,0	5	20	0,16	40
360 997 56	1,5	15	26,1	22,5	18	6,5	13	14,8	8,4	7,6	8	30	0,27	26
360 997 57	1,5	30	45,9	45	30	12,0	18	20,7	17,6	7,6	10	28	0,54	124
361 990 56	2	15	33,7	30	20	7,5	22	23,0	10,9	14	10	40	0,78	58
361 990 57	2	30	61,8	60	40	12,0	24	27,2	21,9	14	15	35	1,56	312
361 991 56	2,5	15	42,2	37,5	30	15,4	31	33,3	18,6	17	10	55	1,6	160
361 991 57	2,5	30	77,3	75	50	10,0	24	28,1	21,6	17	15	38	3,2	530
361 994 56	3	15	50,6	45	30	11,5	33	35,4	16,4	22	10	60	2,8	270
361 994 57	3	30	92,8	90	50	10,0	26	30,7	22,3	22	20	42	5,6	750
361 998 56	4	15	67,5	60	40	10,0	38	41,0	16,9	28	20	75	6,0	410
361 998 57	4	30	123,8	120	60	15,0	33	39,4	28,8	28	25	55	12,0	1600

Ratio 3:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g
360 995 76	1	15	17,7	15	13	9,2	16	16,5	10,0	7,1	5	32	0,10	14
360 995 77	1	45	45,4	45	25	10	15	17,0	15,1	7,1	8	22	0,30	92
360 997 80	1,5	16	28,0	24	18	11	21	23,2	12,7	11,4	8	48	0,45	42
360 997 81	1,5	48	72,6	72	50	12	20	24,1	20,8	11,4	15	32	1,35	405
361 990 80	2	16	35,9	32	20	10	25	26,6	12,6	15	10	60	1,21	80
361 990 81	2	48	97,3	96	60	18	30	35,0	31,0	15	25	45	3,63	95
361 991 80	2,5	16	44,9	40	30	15	34	36,5	17,8	20	10	77	2,6	200
361 991 81	2,5	48	121,6	120	80	15	29	33,9	28,5	20	25	46	7,8	1600
361 994 80	3	16	53,9	48	40	12,5	36	38,3	15,0	25	15	86	4,6	310
361 994 81	3	48	145,9	144	70	18	34	38,7	32,0	25	30	53	13,8	2300
361 998 80	4	16	71,8	64	50	17	46	48,3	20,3	30	20	115	9,4	680
361 998 81	4	48	194,6	192	90	20	43	50,0	41,9	30	30	70	28,2	5700

Ratio 4:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g
360 995 92	1	15	17,8	15	13	7,7	16	17,3	8,4	9,3	5	38	0,14	15
360 995 93	1	60	60,3	60	30	10,0	15	17,1	15,1	9,3	8	22	0,56	160
360 997 92	1,5	15	26,7	22,5	18	14,4	28	28,9	15,5	13,9	8	60	0,48	42
360 997 93	1,5	60	90,4	90	50	12,0	25	27,6	24,6	13,9	15	35	1,92	745
361 990 92	2	15	34,0	30	20	13,5	29	29,9	15,5	15	10	75	1,34	80
361 990 93	2	60	120,9	120	60	20,0	35	40,1	37,0	15	25	50	5,36	1600
361 991 92	2,5	15	42,5	37,5	30	16,0	35	36,8	17,6	20	10	92	2,5	190
361 991 93	2,5	60	151,2	150	80	18,0	33	37,8	33,8	20	25	50	10,0	2600
361 994 92	3	15	51,0	45	30	13,0	38	39,7	15,7	25	10	105	4,4	270
361 994 93	3	60	181,5	180	80	18,0	35	40,6	35,5	25	30	55	17,6	3800
361 998 92	4	15	68,0	60	40	12,5	43	44,8	16,0	30	20	135	8,9	520
361 998 93	4	60	242,0	240	90	20,0	41	50,1	44,0	30	30	70	35,6	8300

* Basis for calculations see page 269.

Bevel Gears Made from Steel, Spiral Tooth System, Ratio 1:1

Material up to module 1.5: 42CrMo4, with cyclo-palloid spiral tooth system, teeth induction hardened.

Material from module 2.0: 16MnCr5, with palloid spiral tooth system, teeth case hardened.

Hubs and bores soft.

Products marked with * are not hardened.**

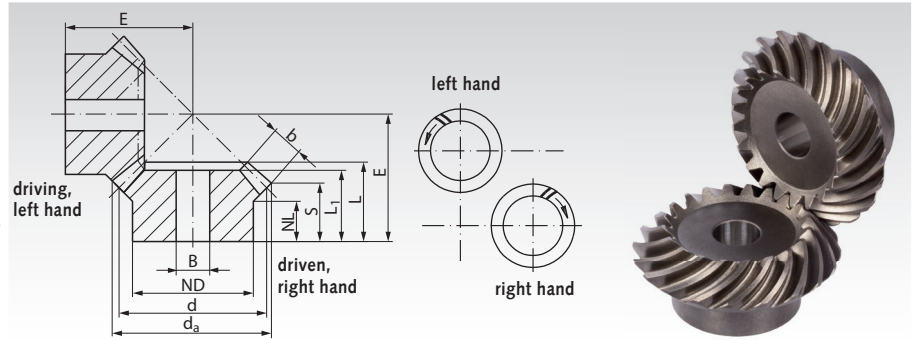
Tooth quality 8 modelled on DIN 3967.

Sold in pairs only.

Ordering Details: e.g.:

Product No. 385 316 00 = 1 Pair of Bevel Gears Ratio 1:1

Mod. 0.6 25/25 Teeth



Ratio 1:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S ¹⁾ mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g/Pair
385 316 00	0,6	25	23,3	22,5	19	7,2	12	13,4	9,2	6	6	20	2,1	50
385 320 00	0,6	30	27,8	27	22	7	13	14,9	9,9	7	8	23	3,0	75
385 322 00	0,6	35	32,3	31,5	25	7,2	15	16,3	10,6	8	8	26	3,5	116
385 511 00	1	20	31,4	30	25	8,4	15	17,3	11,7	8	8	26	6,3	112
385 516 00	1	25	38,9	37,5	25	8	16	19,0	11,9	10	10	30	10,0	155
385 520 00	1	30	46,4	45	30	8	19	21,7	13,2	12	10	35	14,3	278
385 611 00	1,3	20	41,8	40	30	7,3	19	20,7	12,9	11	10	32	14,8	222
385 616 00	1,3	25	51,8	50	30	8	19	21,8	11,9	14	10	36	18,5	326
385 620 00	1,3	30	61,8	60	35	8	21	24,2	12,9	16	12	42	31,5	530
385 709 00	1,5	18	41,7	39,6	30	8	17	20,3	13,2	10	10	32	15,9	209
385 715 00	1,5	24	54,9	52,8	35	8	20	22,6	12,7	14	10	38	21,2	408
385 719 00	1,5	28	63,7	61,6	40	8	20	23,2	13,3	14	12	43	34,5	576
386 011 00**	2	20	72,8	70	45	15	28	32,7	21,4	16	16	55	66,7	973
386 016 00**	2	25	80,3	78	45	15	29	32,3	22,4	14	16	60	72,8	1200
381 018 00***	2	26	82,8	80	55	20	35	37,7	26,4	16	16	65	42,0	1581
386 111 00**	2,5	20	91,5	88	56	18	34	36,9	22,8	20	20	65	130,5	1700
386 116 00**	2,5	25	99,5	96	54	16	32	37,2	23,8	19	20	70	154,7	2000
381 119 00***	2,5	28	109,9	106,4	70	25	44	47,7	33,6	20	20	85	98,6	3400
386 411 00**	3	20	104,2	100	68	17	36	43,4	27,1	23	25	75	216	2600
386 416 00**	3	25	116,2	112	64	18	34	41,7	26,1	22	25	80	257	2800
386 516 00**	3,5	25	132,9	128	72	20	38	46,2	28,5	25	30	90	396	4200
381 518 00***	3,5	26	144,9	140	85	30	57	62,3	42,5	28	30	110	238	7300

¹⁾ Theoretical dimensions, from module 2, tips of teeth levelled.

* Basis for calculations see page 269.

** Gears with ground hub contact surfaces and bores.

*** Not hardened.

Description of spiral toothed bevel gears

Distinctive features of bevel gears with spiral tooth system (spiral bevel gears):

Klingelberg Cyclo-Palloid Tooth System: These gears are produced using the continuous generating method with a two-part cutter head. The tooth curvature follows the path of an extended epicycloid.

Klingelberg Palloid Tooth System: These gears are produced using the continuous indexing method with a cone shaped gear hob. The tooth curvature follows the path of an extended involute.

Gleason-Circarc Gearing: These gears are produced using the continuous indexing method with a disk-shaped cutting head. The tooth curvature follows the path of a circular arc.

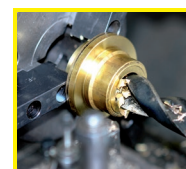
Cyclo-Palloid-, Palloid- and Gleason Tooth Systems are not interchangeable.

Available from stock: Cyclo-Palloid Tooth System Mod. 0.6 up to 1.5. Palloid Tooth System Mod. 2.0 up to 3.5. Gleason Tooth System not in stock, supplied on demand.

The spiral tooth system offers very quiet running as there are always several teeth in mesh. Without load, the contact profile zone should be in the middle of the tooth, lengthwise. Under load the contact profile zone evenly expands towards the inside and outside diameter. The ground contact surfaces of the hubs and bores guarantee an exact adjustment of the assembly dimension E.

Sense of rotation:

If the transmission ratio is not 1:1, the rotational direction marked on the drawing above should be preferred (more favourable direction of the axial forces).



Reworking within 24h-service possible. Custom made parts on request.

Bevel Gears Made from Steel, Spiral Tooth System, Ratio 1.214:1 to 1.615:1

Material up to module 1.5: 42CrMo4, with cyclo-palloid spiral tooth system, teeth induction hardened.

Material from module 2.0: 16MnCr5, with palloid spiral tooth system, teeth case hardened.

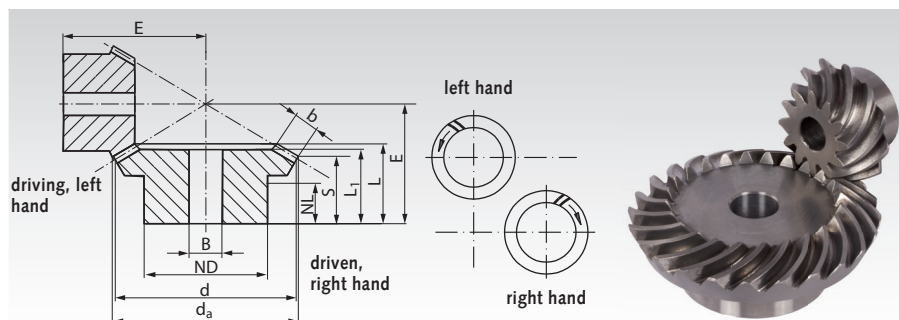
Hubs and bores soft.

Tooth quality 8 modelled on DIN 3967.

Sold in pairs only.

Ordering Details: e.g.:

Product No. 385 740 00 = 1 Pair of Bevel Gears
Ratio 1.214:1 Mod. 1.5 14/17 Teeth



Ratio 1.214:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g/Pair
385 740 00	1,5	14	41,0	38,7	22	11	21,1	24,2	15,4	11,5	12	38,0	14,1	236
		17	48,9	47,0	30	11	20,9	23,9	16,6	11,5	15	34,8	17,1	

Ratio 1.385:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g/Pair
385 744 00	1,5	13	36,7	33,9	22	11	21,6	24,0	15,9	10	12	38,5	11,3	216
		18	48,5	47,0	30	11	20,9	24,9	19,1	10	15	34,8	15,7	

Ratio 1.5:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S ¹⁾ mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g/Pair
385 354 00	0,6	22	20,8	19,8	17	7	13	14,3	8,5	7	6	23	2,2	116
		33	30,3	29,7	20	8	14	15,5	11,6	7	8	21	3,3	
385 552 00	1	20	31,6	30	25	8	17	18,3	10,0	10	8	32	8,1	166
		30	46,3	45	30	8	17	19,5	14,0	10	10	28	12,2	
385 648 00	1,3	16	34,3	32	25	8	18	19,9	10,7	11	8	34	11,9	220
		24	49,4	48	30	8	18	21,1	15,0	11	10	30	17,9	
385 748 00	1,5	16	37,8	35,8	30	8	17	18,8	10,5	10	10	36	14,3	273
		24	54,4	52,8	35	8	17	21,1	15,6	10	10	32	21,5	
386 048 00**	2	16	53,3	50	35	6	18	21,2	13,6	11	10	48,45	40,3	561
		24	77,2	75	39	15	24	27,7	21,7	11	16	45	60,5	
386 148 00**	2,5	16	68,2	64	40	14	25	31,7	18,4	16	16	65	83,8	1300
		24	98,8	96	54	14	23	28,9	20,1	16	20	50	125,7	
386 448 00**	3	16	81,0	76	50	15	28	35,5	19,7	19	20	75	143	1682
		24	117,3	114	64	18	28	35,0	24,5	19	25	60	215	

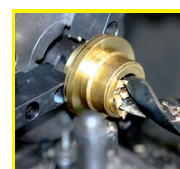
Ratio 1.615:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g/Pair
385 550 00	1	13	20,3	18,6	16	8,2	12	13,8	9,5	5	8	24	2,4	45
		21	31,1	30,0	20	6	10,5	12,2	9,6	5	10	18	3,9	

¹⁾ Theoretical dimensions, from module 2, tips of teeth levelled.

* Basis for calculations see page 269.

** Gears with ground hub contact surfaces and bores.



**Reworking within
24h-service possible.
Custom made parts
on request.**

Bevel Gears Made from Steel, Spiral Tooth System, Ratio 2:1 to 2.5:1

Material up to module 1.5: 42CrMo4, with cyclo-palloid spiral tooth system, teeth induction hardened.

Material from module 2.0: 16MnCr5, with palloid spiral tooth system, teeth case hardened.

Hubs and bores soft.

Products marked with * are not hardened.**

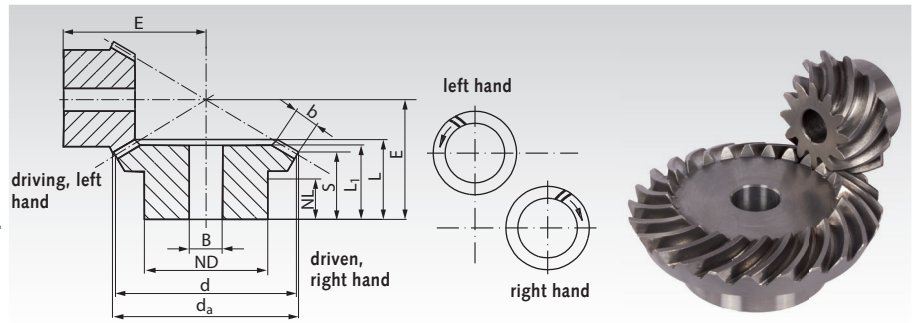
Tooth quality 8 modelled on DIN 3967.

Sold in pairs only.

Ordering Details: e.g.:

Product No. 385 362 00 = 1 Pair of Bevel Gears Ratio 2:1

Mod. 0.6 22/44 Teeth



Ratio 2:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S ¹⁾ mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g/Pair
385 362 00	0,6	22	20,8	19,8	16	7,4	15	15,6	8,5	8	6	28	2,3	116
		44	40,1	39,6	25	8	15	17,2	13,6	8	10	23	4,6	
385 560 00	1	20	31,8	30	25	8	19	20,2	9,4	12	8	39	9,8	323
		40	60,9	60	40	8	18	21,2	15,9	12	12	30	19,6	
385 658 00	1,3	16	34,4	32	25	7	20	22,1	9,6	14	8	41	12,0	397
		32	65,1	64	40	8	20	23,3	17,1	14	12	32	24,0	
385 756 00	1,5	16	38,0	35,2	30	8,4	19	21,2	10,5	12	10	45	14,4	435
		32	71,7	70,4	45	8	17	21,0	15,7	12	12	32	28,8	
381 054 00***	2	12	45,1	41,5	30	12	27,8	27,8	14,4	15	12	54,94	10,1	846
		24	84,5	83	50	15	29	32,6	26,0	15	16	44,97	20,2	
386 054 00**	2	13	48,6	45	30	15	30	33,0	20,9	15	10	63,65	40,2	818
		26	91,8	90	40	22	30	35,9	29,3	15	16	50	80,4	
381 154 00***	2,5	11	57,2	52,5	40	15	36,6	36,6	18,7	20	16	69,97	17,8	2000
		22	107,1	105	70	20	39	44,6	35,9	20	20	59,95	35,6	
386 154 00**	2,5	13	60,5	56	39	15	34	38,2	20,1	20	16	75,13	84	1400
		26	114,2	112	54	21	30	38,0	29,3	20	25	55	168	
386 454 00**	3	13	69,4	64	45	16	37	41,7	22,3	22	20	84,62	133	2000
		26	130,6	128	54	20	32	40,3	30,7	22	25	60	266	
381 456 00***	3	15	77,9	72,5	55	25	51,3	51,3	28,8	25	20	100	64	4800
		30	147,6	145	90	25	50	57,4	46,5	25	30	80	128	
386 554 00**	3,5	13	78,3	72	54	12	34	39,5	19,5	24	20	88,38	197	2800
		26	147,1	144	64	25	38	47,7	37,2	24	30	70	394	

Ratio 2.066:1

Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g/Pair
385 556 00	1	15	23,6	21,8	19	6	13,2	13,2	6,9	7	8	29,0	3,6	112
		31	45,9	45,0	24	8	14,1	16,6	13,5	7	10	23,5	7,4	

Ratio 2.5:1

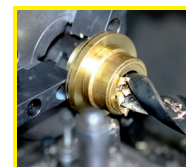
Product No.	Module	Number of teeth	d _a mm	d mm	ND mm	NL mm	L ₁ mm	L mm	S ¹⁾ mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g/Pair
385 374 00	0,6	22	20,9	19,8	16	6,8	16	16,7	7,5	10	6	32	2,6	172
		55	49,9	49,5	30	8	16	19,3	15,6	10	10	25	6,5	
385 572 00	1,0	20	31,8	30	25	8,4	21	22,8	9,8	14	8	47	9,9	355
		50	75,7	75	50	8	18	21,1	15,9	14	12	30	24,8	
385 666 00	1,3	14	30,5	28	22	8,7	20	21,6	10,5	12	8	45	11,3	420
		35	70,9	70	45	8	18	21,6	17,1	12	12	30	28,2	
385 764 00	1,5	16	38,0	35,2	30	7,5	20	21,6	9,6	13	10	53	14,5	624
		40	89,1	88	60	8	16	20,6	15,8	13	15	32	36,3	
386 162 00**	2,5	10	45,4	40	33	11	24,5	27,4	16,1	15	12	62,33	45,8	1200
		25	101,5	100	54	22	30	37,3	32,0	15	25	50	114,5	
386 462 00**	3,0	10	54,5	48	39	11	28	30,8	16,3	18	16	72,71	79	1700
		25	121,8	120	64	28	38	44,8	38,4	18	25	60	198	
386 562 00**	3,5	10	63,6	56	40	14	34	38,1	21,5	21	16	87,06	126	2400
		25	142,1	140	70	35	45	52,3	44,8	21	30	70	315	

¹⁾ Theoretical dimensions, from module 2, tips of teeth levelled.

* Basis for calculations see page 269.

** Gears with ground hub contact surfaces and bores.

*** Not hardened.



**Reworking within
24h-service possible.
Custom made parts
on request.**

Bevel Gears Made from Steel, Spiral Tooth System, Ratio 3:1 and 4:1

Material up to module 1.5: 42CrMo4, with cyclo-palloid spiral tooth system, teeth induction hardened.

Material from module 2.0: 16MnCr5, with palloid spiral tooth system, teeth case hardened.

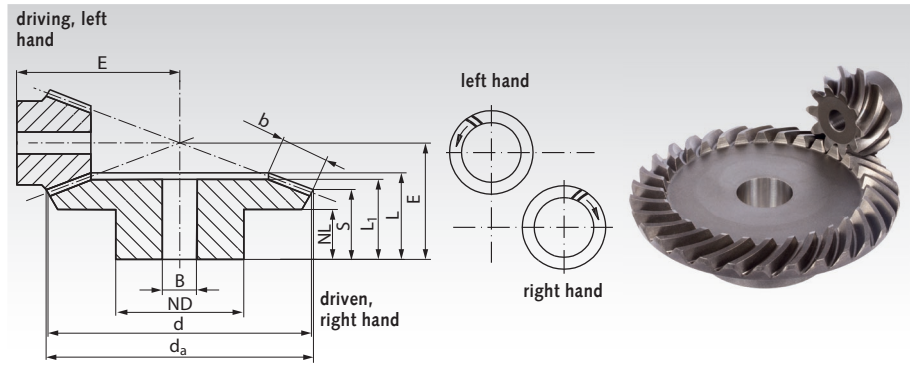
Hubs and bores soft.

Tooth quality 8 modelled on DIN 3967.

Sold in pairs only.

Ordering Details: e.g.:

Product No. 385 580 00 = 1 Pair of Bevel Gears
Ratio 2.882:1 Mod. 1 17/49 Teeth



Ratio 3:1

Product No.	Module	Number of teeth	d_a mm	d mm	ND mm	NL mm	L_1 mm	L mm	S ¹⁾ mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g/Pair
385 378 00	0,6	20	19,1	18	15	7,5	17	17,0	8,2	10	6	35	2,1	175
		60	54,3	54	45	8	16	19,7	16,6	10	10	25	6,3	
385 584 00	1	16	26,1	24	20	8,3	22	22,6	9,3	14	8	45	5,8	380
		48	72,5	72	50	8	18	21,3	16,8	14	12	28	17,4	
385 678 00	1,3	11	25,1	22	19	6	17	17,9	7,5	11	8	40	7,7	320
		33	66,6	60	40	8	17	20,4	16,9	11	12	27	23,1	
385 774 00	1,5	10	26,0	22	17	8	19	20,1	9,6	11	8	42	9,1	380
		30	66,6	66	40	8	17	21,3	17,8	11	12	28	27,3	
386 074 00**	2	10	36,5	32	22	11	24	25,6	17,7	13	8	60,52	25,4	638
		30	99,0	96	48	19	25	29,4	25,6	13	20	40	76,2	
386 174 00**	2,5	10	43,1	37,5	27	12	26,5	28,8	19,6	15	12	69,84	45,8	1100
		30	113,7	112,5	54	24	32	37,6	33,2	15	25	50	137,4	
386 574 00**	3,5	10	60,3	52,5	40	12	33	36,1	22,5	22	16	92,64	132	2700
		30	159,2	157,5	70	29	40	48,0	41,5	22	30	65	396	

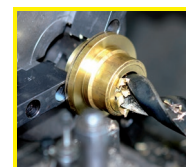
Ratio 4:1

Product No.	Module	Number of teeth	d_a mm	d mm	ND mm	NL mm	L_1 mm	L mm	S mm	b mm	BH7 mm	E mm	Torque* Nm	Weight g/Pair
385 594 00	1	16	25,9	24	20	7,3	21	21,8	8,2	14	8	56	7,8	842
		64	96,5	96	70	8	19	22,4	19	14	20	30	31,2	
385 784 00	1,5	11	27,8	24,2	20	8	19	20,7	9	12	8	57	11,3	775
		44	97,3	96,8	70	8	17	21,9	19	12	20	30	45,2	

¹⁾ Theoretical dimensions, from module 2, tips of teeth levelled.

* Basis for calculations see page 269.

** Gears with ground hub contact surfaces and bores.



**Reworking within
24h-service possible.
Custom made parts
on request.**

Mounting Options for Drive Wheels

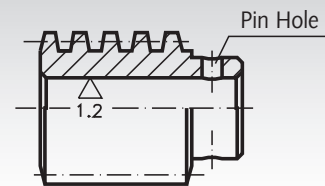
There are several possibilities for mounting driving wheels (sprockets, V-Belt Pulleys, pulleys, spur gears etc.) or hubs on shafts. Most wheels are stocked with a rather small bore to allow for further machining. Machining works as drilling out, keywaying a.s.o. can be done at extra charge.

Please note: for several shaft diameters a number of sprockets, V-belt pulleys, spur gears and worm-gear sets are in stock "ready-to-install", i.e. with custom bore and keyway or prepared for Taper clamping bushes.



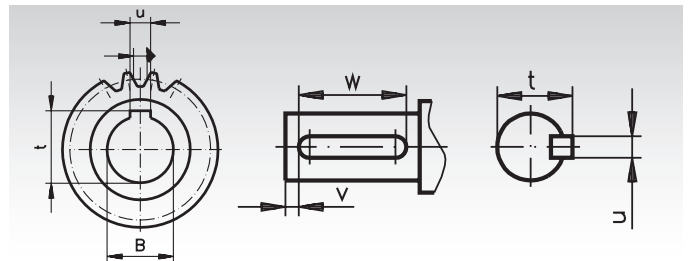
Fixing Pins

A hole is drilled through hub and shaft and both parts are then connected with a fixing pin. Usually only one side of the hub is pre-drilled, then the wheel is pushed onto the shaft and the hole is drilled through both shaft and the other side of the hub. Then the pin is driven in. This mounting method is suitable for low torques.



Feather Key Connection

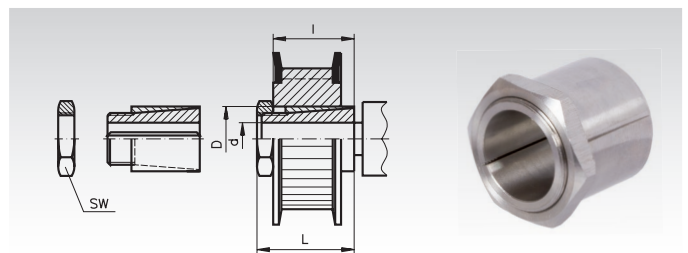
Shaft and hub both receive a keyway, a key is pushed into the keyway of the hub. The wheel is pushed onto the shaft and secured against axial movement (with a set screw or with a stepped shaft and axial screw and washer at the end of the shaft). The most common kind of keyway is DIN 6885/1. Key connections are suitable for medium torques. Keys DIN 6885 see page 578. Boxes with an assortment of keys DIN 6885 see page 577.



Clamping Sets, Clamping Bushes and Shrink Disks

Clamping sets and thin-walled clamping bushes are available for various diameters. They allow fast and easy mounting on round shafts. A keyway is not required. Shrink disks are special clamping sets which press a thin-walled hub onto a shaft. Clamping connections are suitable for rather high torques.

Clamping sets and bushes, and shrink disks see page 330.



Taper Clamping Bushes

These customary conical bushes are used for easy and fast mounting of driving elements in Taper version. They can be used with and without key.

The bushes are available with various outer dimensions. For every outside measure there are bushes with many different bores available. This mounting method is cost-efficient and fast, and suitable for rather high torques. A large selection of cost-efficient driving elements in Taper version are available ex stock.

Taper clamping bushes see page 360.

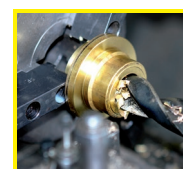
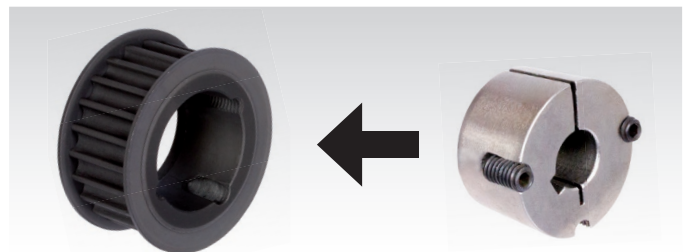
Welding hubs for taper bushes see page 362.

Taper sprockets see page 74, 92, 101.

Taper V-belt pulleys see page 183.

Taper pulleys see page 154.

Taper couplings see page 388.



**Reworking within
24h-service possible.
Custom made parts
on request.**