



ANTRIEBS SYSTEME

*Your partner for
intelligent solutions*



The perfect drive system for every application

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COMPANY FOCUS

ZAE is a highly traditional company which for many years is standing for...

...Experience:

We have a wide range of technical expertise and application experience. This means we are able to meet high highly exacting demands with short development times and high product quality - while simultaneously keeping down costs - by providing the correct products.



...Quality:



At ZAE, quality plays a central role - throughout the entire valued added process: it begins with design and bench testing within our development department, continues with the use of the latest machining centres in our production facilities and ends with competent, professional customer care.

In all our standard and bespoke solutions, quality always has a decisive role to play in their successful completion!

...Flexibility & speed:

The ability to integrate drive solutions quickly and straightforwardly in the appropriate application is often an important competitive advantage. We are able to provide this advantage thanks to intensive contact during the tendering and development phases and then through our lean production processes. Which means we can markedly reduce our delivery times.



3D- CAD



FEM- CALCULATIONS

PROTO

PRODUCT PORTFOLIO

Worm gear units
Worm spur gear units
Servo-angular gear units



Geared motors



Bevel gear units
Stainless steel bevel gear units



Special gear units



Worm gear sets



Technical services

TECHNICAL LAYOUTS

DOCUMENTATIONS

CALCULATIONS

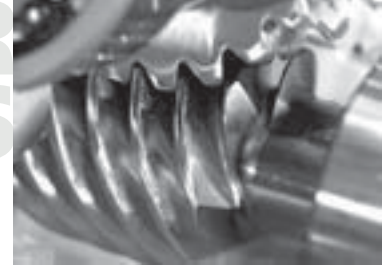
TEST BENCH EXPERIMENTS

DEVELOPMENT CONTRACTS



RAPID TYPING

WORM GEAR UNITS



1. WORM GEAR UNITS

Product concept

ZAE worm gear units are high-performance industrial gear units for use in machinery and plant construction. These gear units are characterized by low-noise operation, insensitivity to load peaks and high power density.

Modern worm gear units have a life-long synthetic lubrication system which results in minimal maintenance and nearly zero wear.



Options

The complete model range has 10 model sizes and a large number of available options, such as

- Free drive shaft
- IEC motor attachment
- Foot-mounted-, flange- or shaft-mounted versions
- Integrated overload coupling
- Low backlash version
- Hollow shaft with clamping set

Application examples

Chain carrier drive for bottle cleaning machines



Main turning drive for rinser

Turning drive for
parabolic reflector antennas



Fine
grinding
machine
for wafers
(7 drives
integrated)



Technical details type M 040 B - M 080 B

Power ratings worm gear units at $n_1 = 1,500 \text{ min}^{-1}$

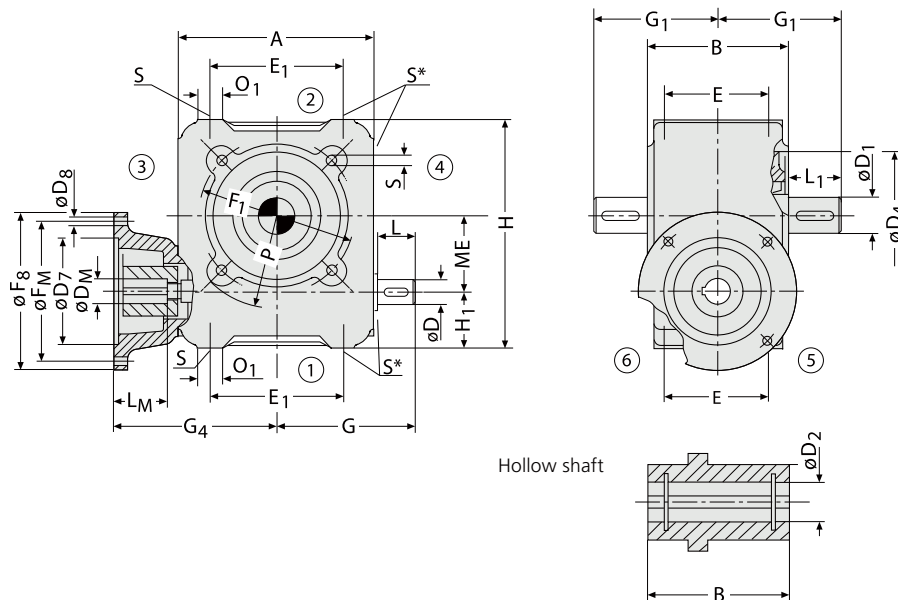
Every gear unit is available with following standard ratios:

$i = 5:1 \quad 7.5:1 \quad 10:1 \quad 13.3:1 \quad 15:1 \quad 20:1 \quad 26.5:1 \quad 30:1 \quad 40:1 \quad 53:1 \quad 62:1 \quad 83:1$

Output torque range (min./max. value) is valid for all ratios.

Gear unit size	40	50	63	80
Permanent output torque $T_{2 \text{ perm.}}$ [Nm]	32 - 56	59 - 118	135 - 191	187 - 304
Short-term acceptable peak $T_{2 \text{ max}}$ [Nm]	59 - 107	104 - 215	226 - 429	324 - 840

In the following, all gearbox sizes are represented in typical examples of different versions.



Type	Motor	ME	A B	Dk6 D _{1k6}	L L ₁	D ₂ ^{H7} D ₄ ^{H7}	D ₇ ^{H7}	D ₈	D _M ^{H7}	L _M	E E ₁ F ₁	F ₈	F _M	G G ₁ G ₄	H H ₁	O ₁ P S
M 040 B	63	40	104 90	14 22	24 36	22 70	80	7	11	23	70	120	100	79	124	14
	63						95	9	11	23	70	140	115	81	32	53
	71						70	7	14	30	105	85	85	89		M6x12
	71						95	9	14	30	85	140	115			
M 050 B	71	50	140 105	16 25	28 42	25 90	95	9	14	30	80	140	115	100	160	18
	71						110	9	14	30	160	130	130	94.5	40	65
	80						80	7	19	40	100	120	100	118		M8x14
	80						110	9	19	40	110	160	130			
M 063 B	80	63	164 120	18 30	28 58	30 110	130	12	19	40	200	165				
	80						95	9	24	50	130	140	115	137	190	80
	90						110	9	24	50		160	130		45	M8x14
	90						110	9	24	50		160	130			
M 080 B	80	80	204 140	24 38	36 58	38 140	110	9	19	40	115	160	130	141	237	22
	80						130	12	19	40	155	200	165	128	55	100
	90						110	9	24	50	165	160	130	164		M10x17
	90						130	12	28	60		200	165			
	100/112						110	9	28	60		200	165			
	100/112						130	12	28	60		200	165			
	100/112						180	14	28	60		250	215			



Technical details type M 100 G - M 200 G

Power ratings worm gear units at $n_1 = 1,500 \text{ min}^{-1}$

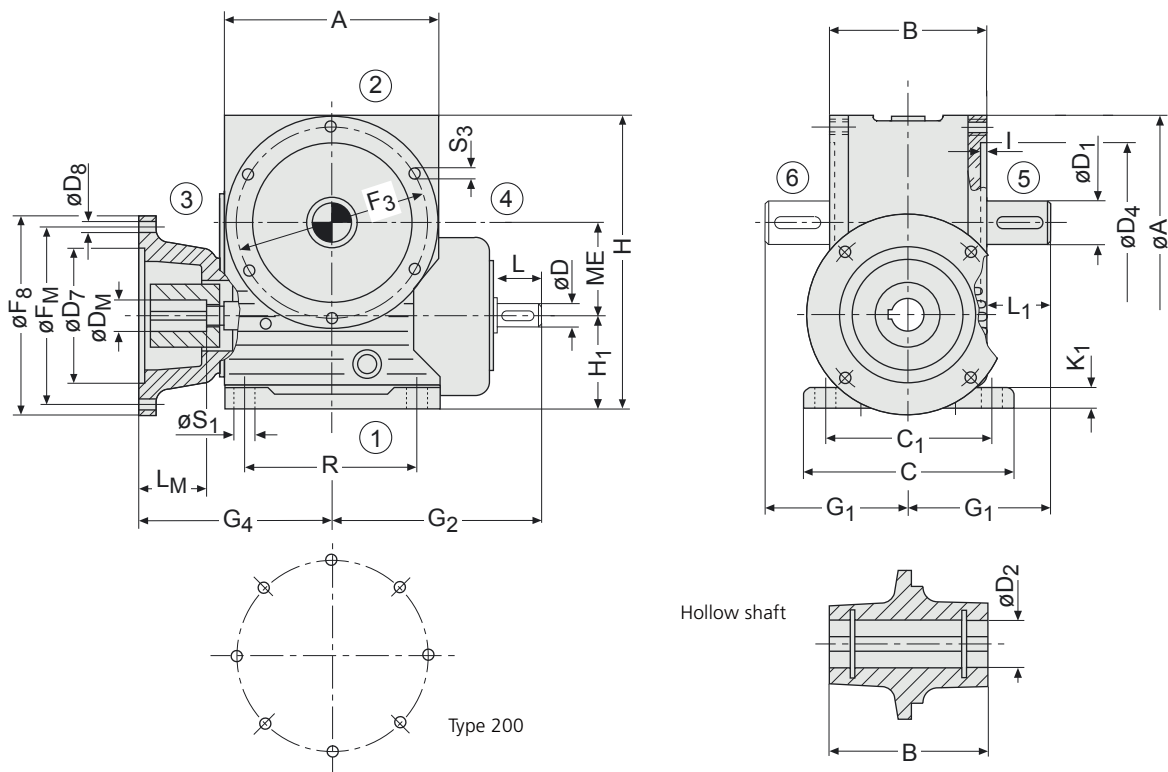
Every gear unit is available with following standard ratios:

$i = 5:1 \quad 7.5:1 \quad 10:1 \quad 13.3:1 \quad 15:1 \quad 20:1 \quad 26.5:1 \quad 30:1 \quad 40:1 \quad 53:1 \quad 62:1 \quad 83:1$

Output torque range (min./max. value) is valid for all ratios.

Gear unit size	100	125	160	200
Permanent output torque $T_{2 \text{ perm.}}$ [Nm]	464 - 817	763 - 1,243	1,600 - 2,372	2,591 - 3,797
Short-term acceptable peak $T_{2 \text{ max}}$ [Nm]	736 - 1,740	1,203 - 2,310	2,418 - 4,390	5,016 - 8,190

In the following, all gearbox sizes are represented in typical examples of different versions.



Type	Motor	ME	A B	C C ₁	D _{k6} D ₁	L L ₁	D ₂ ^{H7} D ₄ ^{H7}	D ₇ ^{H7}	D ₈	D _M ^{H7}	L _M	S ₃ F ₃	F ₈	F _M	G G ₂	G ₄	H H ₁	I	R S ₁
M 100 G	90	100	240	225	30	58	48	130	12	24	50	M12x22 210	200	165	177	183	330	4.5	200
	100/112							130	12	28	60		200	165		183			
	100/112							180	14	28	60		250	215		183			
	132		190	195	48 k6	82	180	230	14	38	80		300	165		203			
M 125 G	100/112	125	284	255	38	58	55	180	14	28	60	M16x25 254	250	215	187	203	392	4.5	240
	132							230	14	38	80		300	265		223			
	160		210	220	55 m6	82	225	250	18	42	110		350	300		253			
M 160 G	112	160	354	295	42	82	65	180	14	28	60	M16x30 320	250	215	230	238	487	6	300
	132							230	14	38	80		300	265		258			
	160		250	260	65	105	285	250	18	42	110		350	300		288			
	180							250	18	48	110		350	300		288			
M 200 G	132	200	430	360	48	82	80	230	14	38	80	M20x38 390	300	265	285	287	600	6	370
	160							250	18	42	110		350	300		317			
	180		310	310	80	130	360	250	18	48	110		350	300		317			
	200							300	18	55	110		400	350		317			

Technical details type E 250 G - E 315 G

Power ratings worm gear units at $n_1 = 1,500 \text{ min}^{-1}$

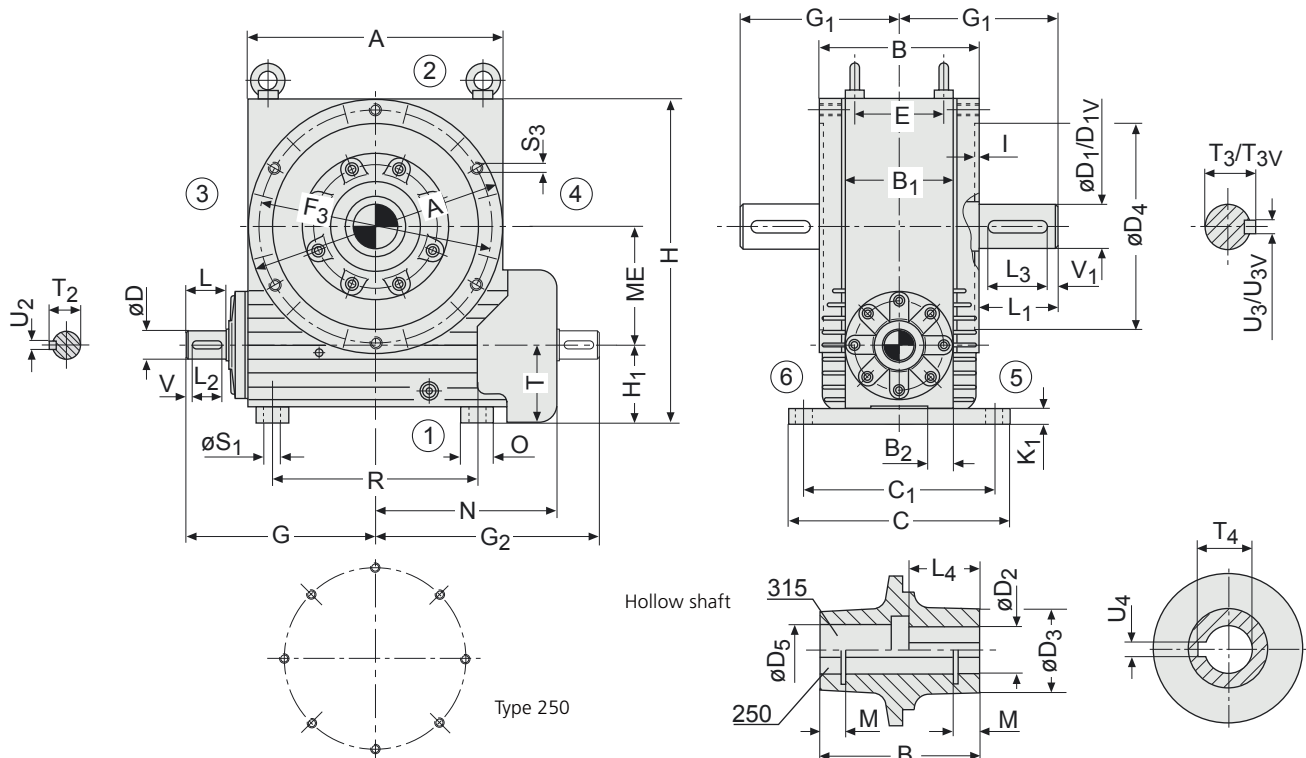
Every gear unit is available with following standard ratios:

$i = 5:1 \quad 7.5:1 \quad 10:1 \quad 13.3:1 \quad 15:1 \quad 20:1 \quad 26.5:1 \quad 30:1 \quad 40:1 \quad 53:1 \quad 62:1 \quad 83:1$

Output torque range (min./max. value) is valid for all ratios.

Gear unit size	250	315
Permanent output torque $T_{2 \text{ perm.}}$ [Nm]	6,508 - 7,863	11,986 - 13,035
Short-term acceptable peak $T_{2 \text{ max}}$ [Nm]	10,462 - 13,720	17,229 - 27,650

In the following, all gearbox sizes are represented in typical examples of different versions.



Type	ME	A B B ₁	B ₂ C C ₁	D _{m6} D _{1V} m6	L L ₁	D ₂ H7 D ₃ D ₄ H7	D ₅ E E ₁	F ₃ G G ₁	G ₂ H H ₁	I K ₁	L ₂ L ₃ L ₄	M N O	R S ₁	S ₃ T T ₂	T ₃ T _{3V} T ₄	U ₂ h9 U ₃ h9 U _{3V} h9	U ₄ h9 V V ₁
E 250 G	250	550	50	60	105 170	95	-	500	505	6 50	90	13.2	450 26	M20x45	100	18	25
		350	450	95		150	190	425	725		160	395		165	111	25	7
		240	380	105		450	450	345	200		-	100		64	100.4	28	2
E 315 G	315	670	66	70	105 210	125	130	620	585	7 50	90	-	570 33	M24x60	127	20	32
		420	530	120		190	220	495	865		200	475		200	-	32	7
		286	460	-		550	570	420	215		190	100		74.5	132.4	-	5



2. WORM SPUR GEAR UNITS (ETA-DRIVE)

Product concept

These gear units combine the advantages of worm gear units with those of spur gear units: In the first-gear, high revs range, the multiple worm shafts run at efficiencies of up to 95 % at lubrication favourable gear unit ratios. Here, the worm gear unit stages have optimum vibration damping properties that provide optimized smooth running.



Noise-optimized spur gear sets run in the downstream second or third gear reduction stages with equally high efficiency at lower speeds.

Advantages and features

- 5 sizes
- 2 or 3 gear speeds in the same casing
- Efficiency up to 95 %
- Low noise
- Ratios from 10 - 1,000:1
- Output torques up to approx. 5,000 Nm

Application examples



Turning drive for unwinding system in coating machines

Extremely noiseless - 48 dB(A) - stage drives on a cruiser ship



Technical details type M 012 B - M 513 B

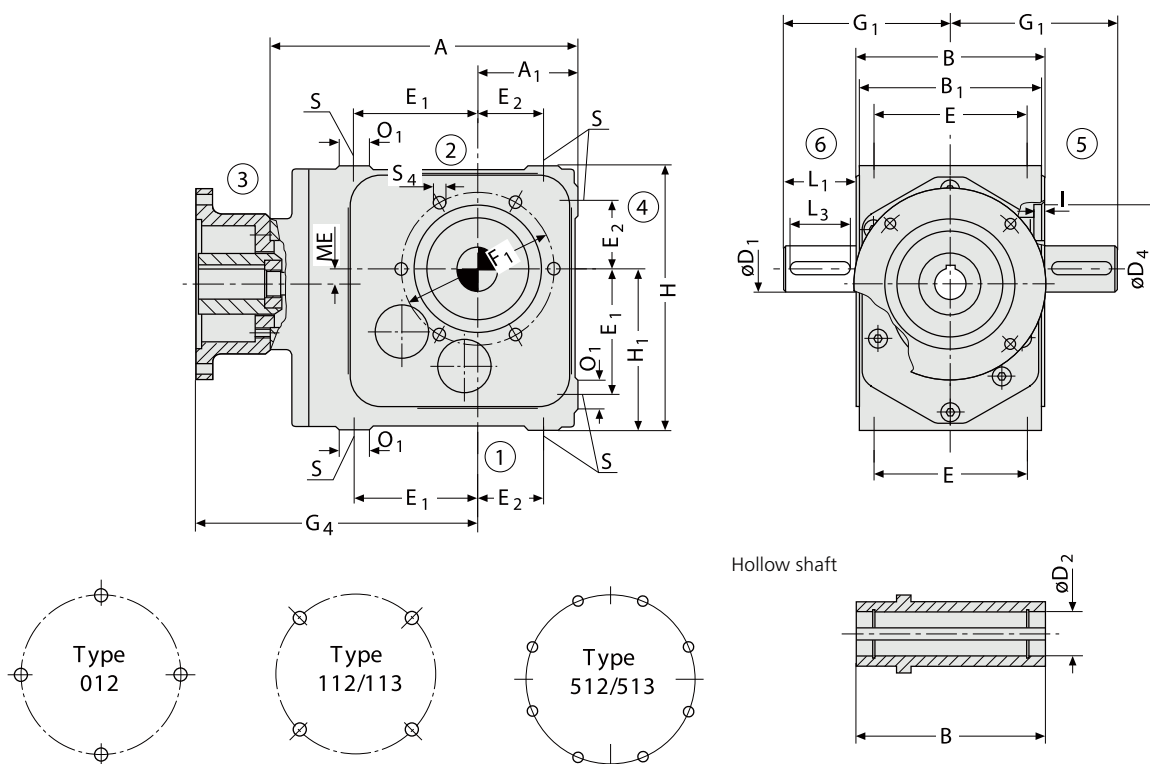
Power ratings worm spur gear units at $n_1 = 1,500 \text{ min}^{-1}$

Every gear unit is available with following standard ratios.

Output torque range (min./max. value) is valid for all ratios.

Gear unit size	012	112	212	312	512
Transmission range i	22.97 - 423.38	10.26 - 40.18	10.26 - 40.18	10.26 - 40.18	10.67 - 40.18
Permanent output torque $T_{2 \text{ perm.}}$ [Nm]	186 - 205	150 - 354	296 - 746	523 - 1,219	1,638 - 3,723
Short-term acceptable peak $T_{2 \text{ max}}$ [Nm]	237 - 250	217 - 522	403 - 974	687 - 1,705	2,782 - 5,212

Gear unit size	113	213	313	513
Transmission range i	52.87 - 888.16	52.91 - 913.53	52.87 - 1,053.1	54.97 - 1,053.1
Permanent output torque $T_{2 \text{ perm.}}$ [Nm]	381	631 - 746	1,200 - 1,219	3,604 - 3,707
Short-term acceptable peak $T_{2 \text{ max}}$ [Nm]	533	1,020	1,707	5,189



Type	Motor size	ME	A A ₁	B B ₁	D ₁ k6 L ₁	D ₂ ^{H7} D ₄ ^{H7}	E E ₁	E ₂ F ₁	G ₁	G ₄	H H ₁	I L ₃	O ₁	S ₄ S
M 012 B	71 and 80	8	196.5 58.5	120 -	25 50	25 68	85 75	35 85	110	170 - 184	157 98.5	1.7 40	20	M8x15 M8x16
M 112 B M 113 B	71 - 100/112	29.8	216.5 80	150 145	35 70	35 100	120 97.5	52.5 120	145	191.5 - 211.5	205 125	3.5 63	25	M10x17 M10x17
M 212 B M 213 B	80 - 112	4.3	286.5 90	180 175	40 80	40 110	140 105	50 150	170	260	240 150	3.5 70	35	M10x18 M12x24
M 312 B M 313 B	80 - 132	11.6	347 112	210 205	50m6 100	50 130	165 110	40 165	205	295 - 315	292 180	5 80	40	6x M12x20 M16x26
M 512 B M 513 B	100 - 180	14.8	500 160	300 297	70m6 140	70 215	240 165	75 250	290	398 - 448	425 265	6 125	60	8x M20x32 M24x38



3. SERVO-ANGULAR GEAR UNITS

Product concept

The new servo-angular gear units are individually matched at the drive side for each servomotor. Optionally a second drive shaft end is provided, e.g. for attachment of a rotary encoder.

Advantages and features

- Four different sizes
- Torsionally rigid metal bellows coupling
- Ratios from 5 to 40:1 (also available as mathematically precise ratios)
- Optional low backlash toothing ≤ 6 arcmin
- Optimum smooth running
- High EMERGENCY-OFF torques

Model range

The following five output side models are available:

- Hollow shaft with clamping set, single or double sided
- Hollow shaft with feather key groove
- Output shaft, single or double sided

Application examples

Automated manufacturing of door frames



Linear drive for part feeder



Technical details type S 040 - S 080

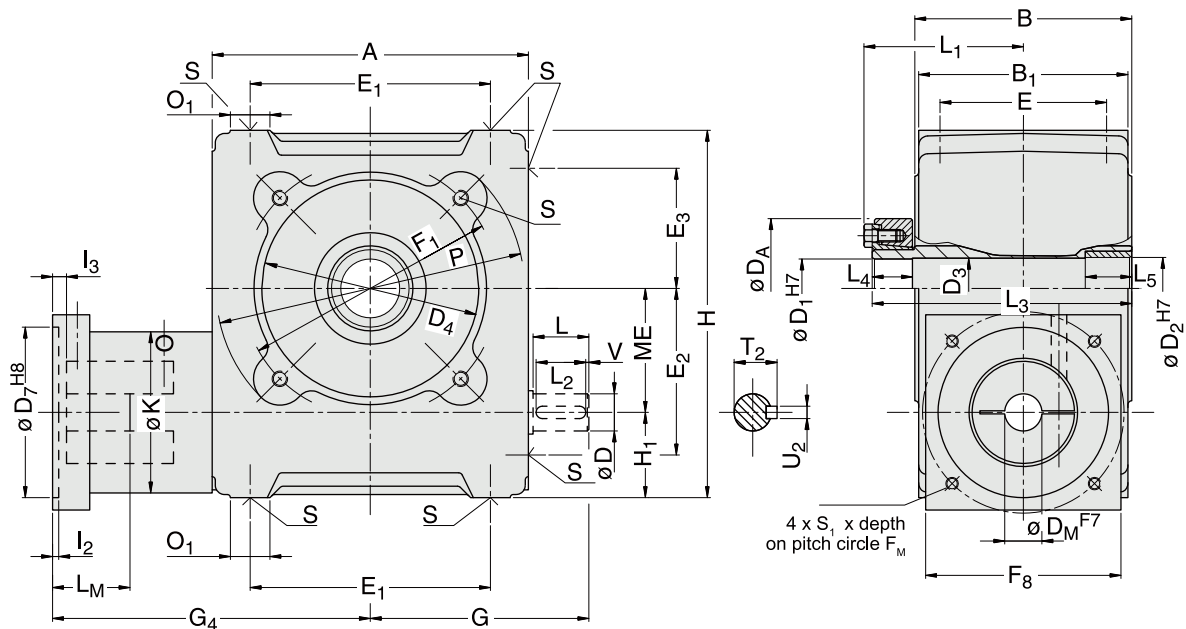
Power ratings servo-angular gear units at $n_1 = 1,500 \text{ min}^{-1}$ and $3,000 \text{ min}^{-1}$

Every gear unit is available with following standard ratios:

$i = 5:1 \quad 7.5:1 \quad 10:1 \quad 13.3:1 \quad 15:1 \quad 20:1 \quad 26.5:1 \quad 30:1 \quad 40:1$

Output torque range (min./max. value) is valid for all ratios.

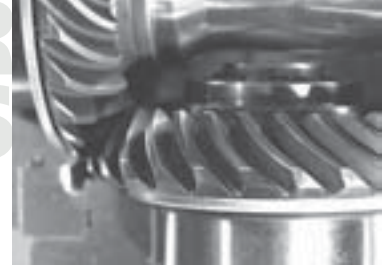
Gear unit size	40	50	63	80
Permanent output torque $T_{2 \text{ perm. at } 1,500 \text{ min}^{-1}} [\text{Nm}]$	32 - 56	59 - 115	135 - 182	187 - 297
Permanent output torque $T_{2 \text{ perm. at } 3,000 \text{ min}^{-1}} [\text{Nm}]$	31 - 44	55 - 85	92 - 132	134 - 208
Max. speed $n_{1 \text{ max}}$ [min^{-1}]	5,000	5,000	4,000	4,000



Dimensions D_7 ; F_M ; F_8 ; I_3 ; I_2 and S_1 are depending on motortype and -size.

Type ME	A B B ₁	D D _{1 k6}	L L ₁	D ₂ ^{H7} D ₃ ^{H7} D ₄ ^{H7}	E E ₁	E ₂ E ₃	F ₁ G	H H ₁	L ₂	O ₁ P	S T ₂	U _{2h9} V	L ₃ L ₄ L ₅	D _A	D _M ^{F7} K	L _M G ₄
S 040 40	104 90 85	14 20	24 73	22 20 70	70 70	55 35	85 79	124 32	20	14 53	M6x12 16	5 1.5	114 19 19	50	8 _{min} - 20 _{max} 70	40 _{max} 126
S 050 50	140 105 100	16 25	28 81,5	27 25 90	80 100	70 50	110 100	160 40	25	18 65	M8x14 18	5 1.5	130 21 21	60	8 _{min} - 20 _{max} 84	40 _{max} 145
S 063 63	164 120 115	18 30	28 92,8	32 30 110	95 125	87.5 62.5	130 113	190 45	25	18 80	M8x14 20,5	6 1.5	147.5 23 24	72	11 _{min} - 30 _{max} 95	50 _{max} 170
S 080 80	204 140 135	24 38	36 102.8	40 38.6 140	115 155	107.5 77.5	165 141	237 55	32	22 100	M10x17 27	8 2	167.5 27 29	90	18 _{min} - 38 _{max} 104	60 _{max} 210

BEVEL GEAR UNITS



BEVEL GEAR UNITS

Product concept

Bevel gear units are used when installation conditions necessitate a simple direction change in the power transmission and/or a low ratio is required.

The bevel gear sets have spiral toothing and are manufactured from alloyed case-hardened steel. All gear unit casings are cuboid in shape, are machined on all sides and also have mounting holes on all six sides. Additionally there is a centring fit on three sides.



Advantages and features

- 6 sizes from 88 to 260 mm edge length
- 4 standard ratios from 1:1 to 4:1
- Special ratios upon request
- Output torques up to 2,400 Nm

Stainless steel gear units

When high hygiene requirements (e.g. for foodstuff, chemical and pharmacological applications) are required, the ZAE stainless steel, bevel gear units, type W 088 to W 156 are available. They are corrosion-resistant and also resistant to frequent cleaning intervals using high pressures and aggressive media.

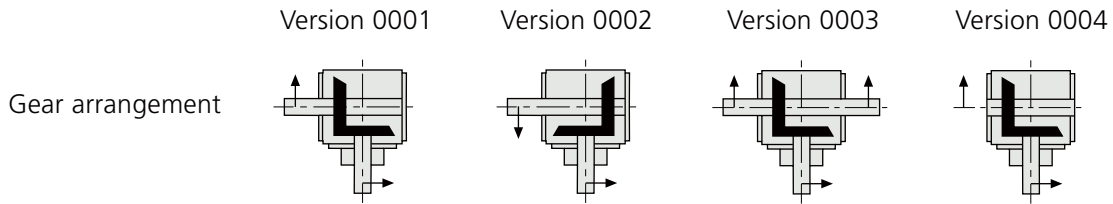


Application example

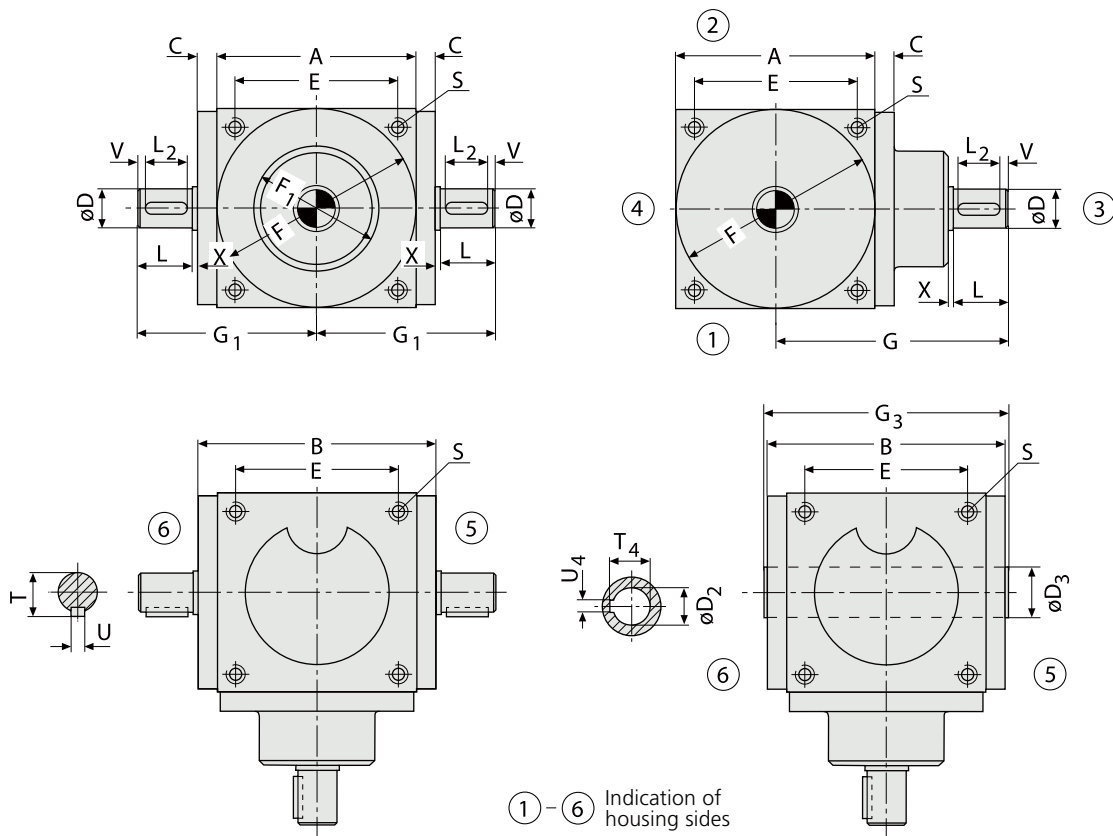


Striker adjustment on transfer press
(car industry)

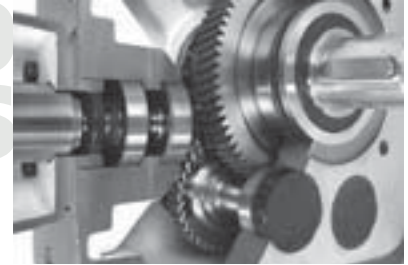
Technical details



Ratio	n_1 [min. ⁻¹]	Type W 088			Type W 110			Type W 136			Type W 156			Type W 199			Type W 260		
		P _{1 perm} [kW]	T _{2 perm} [Nm]	T _{2 max} [Nm]	P _{1 perm} [kW]	T _{2 perm} [Nm]	T _{2 max} [Nm]	P _{1 perm} [kW]	T _{2 perm} [Nm]	T _{2 max} [Nm]	P _{1 perm} [kW]	T _{2 perm} [Nm]	T _{2 max} [Nm]	P _{1 perm} [kW]	T _{2 perm} [Nm]	T _{2 max} [Nm]	P _{1 perm} [kW]	T _{2 perm} [Nm]	T _{2 max} [Nm]
1:1	1,500	4.71	28	82	12.96	78	151	24.65	149	307	32.71	198	532	67.09	406	1,111	upon request		
2:1	1,500	2.18	26	45	6.83	83	127	12.77	154	232	17.37	210	398	36.02	436	1,033	81.77	989	2,140
3:1	1,500	1.52	28	41	4.28	78	117	9.19	167	250	13.14	238	370	27.96	507	815	60.32	1,095	1,770
4:1	1,500	1.16	28	42	3.12	76	113	5.35	130	194	10.11	245	387	15.87	384	576	36.91	893	1,339
Thermal power limit		3.9 kW			6.3 kW			10.0 kW			13.5 kW			21.0 kW			37.5 kW		



	A	B	C	D ₁₆	D ₂ ^{H7}	D ₃	E	F _{f7}	F ₁	G	G ₁	G ₃	L	L ₂	S	T	T ₄	U _{h9}	U ₄ ^{JS9}	V	X
W 088	88	114	13	18	18	30	68	86	59	115	90	120	30	25	M6x10	20.5	20.8	6	6	2	3
W 110	110	134	12	22	22	35	88	108	72	145	110	140	40	32	M8x16	24.5	24.8	6	6	3	3
W 136	136	164	14	30	30	45	105	132	92	176	135	170	50	40	M10x22	33	33.3	8	8	3	3
W 156	156	188	16	38	38	55	122	150	110	203	157	194	60	50	M12x25	41	41.3	10	10	4	3
W 199	200	236	18	50	50	70	160	195	132	265	201	242	80	70	M16x30	53.5	53.8	14	14	4	3
W 260	260	300	20	60	60	85	210	255	160	345	258	306	105	9	M16x32	64	64.4	18	18	5	3



GEARED MOTORS

Product concept

For every job specification, the ideal drive solution can be selected - because ZAE uses IEC motors as a matter of course:

- Single stage worm geared motors
- Helical worm geared motors
- ETA-DRIVE (Worm helical geared motors, two or three stage)
- Double worm geared motors
- Bevel geared motors

Advantages and features

- See page on right

Model range

The ZAE modular system permits a maximum number of versions. The gear unit motors are available as foot-mounted, flange, or shaft-mounted versions, with or without torque converters.



Helical worm geared motors with stainless steel cover in fishing boat (lifting & lowering the nets)



Helical worm geared motors in diesel engines for ships (turn drive for service work)



Worm geared motor in paper cutting machine

Power ratings and type overview

Worm geared motors resp. double worm geared motors, Type M and DM

Gear unit size	40	50	63	80	100
Motor power P_1 [kW]	0.09 - 0.55	0.09 - 1.1	0.09 - 2.2	0.12 - 4.0	0.12 - 9.2
Output speed [min ⁻¹]	10.4 - 190.3	1.5 - 278	0.7 - 287	0.6 - 283	0.2 - 288

Gear unit size	125	160	200	250	315
Motor power P_1 [kW]	0.18 - 18.5	0.25 - 22.0	0.75 - 22.0	1.1 - 30.0	2.2 - 55.0
Output speed [min ⁻¹]	0.3 - 294	0.2 - 294	0.3 - 195	0.2 - 95	0.4 - 111

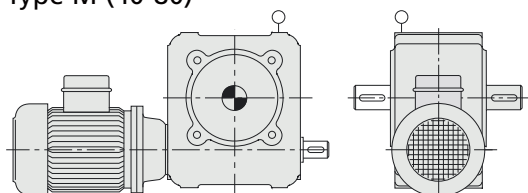
Helical worm geared motors, Type GM

Gear unit size	50	63	80	100	125
Motor power P_1 [kW]	0.09 - 1.5	0.12 - 2.2	0.12 - 4.0	0.25 - 7.5	0.55 - 18.5
Output speed [min ⁻¹]	2.7 - 78	1.8 - 142	1.4 - 216	1.2 - 109	1.5 - 231

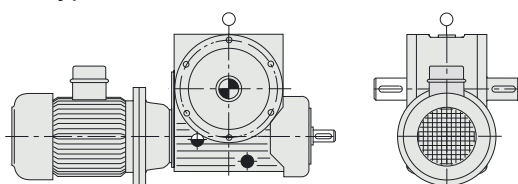
Worm helical geared motors, Type M (ETA-DRIVE)

Gear unit size	012	112 / 113	212 / 213	312 / 313	512 / 513
Motor power P_1 [kW]	0.18 - 1.1	0.18 - 2.2	0.37 - 4.0	0.37 - 7.5	0.75 - 18.5
Output speed [min ⁻¹]	6.2 - 119	3.4 - 135	3.5 - 112	1.7 - 113	1.1 - 84

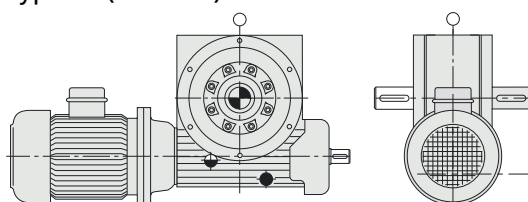
Type M (40-80)



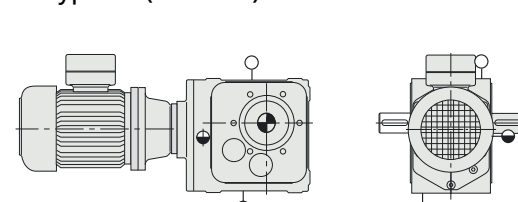
Type M (100-200)



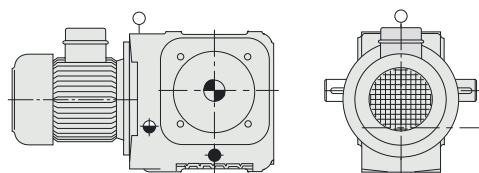
Type M (250-315)



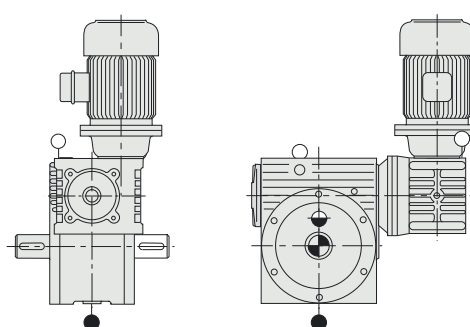
Type M (012-513)



Type GM (50-200)

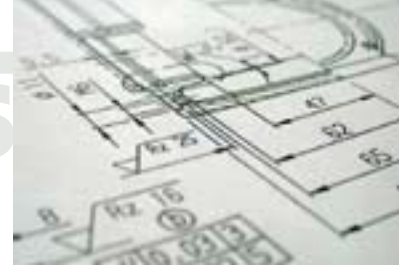


Type DM (50-315)



The great variety of possible combinations of geared motors cannot be shown here in total – please contact us for further information.

SPECIAL GEAR UNITS



SPECIAL GEAR UNITS

Product concept

Customer-tailored solutions are a regular part of our day-to-day work. Thanks to decades of experience in this area, we are able to quickly develop and produce complete drive solutions using *Rapid Prototyping*.

The very latest production equipment means ZAE can commit itself to batch production from the very small through to several thousand items per year, in a manner that can be flexibly matched to customer needs.



To summarize, you will profit from:

- Acceleration of the development process
- Quick prototyping
- Quick spares provision

Examples

Servo gear drive with integrated motor electronics on label printing machine



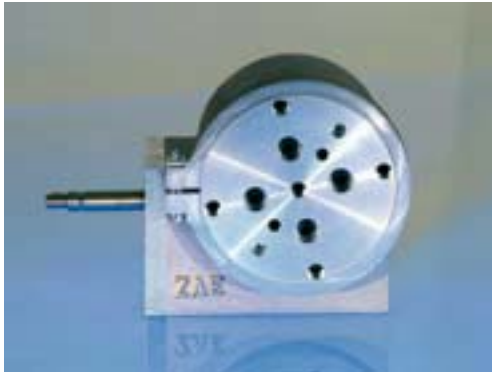
Spindle-lifting gear drive



Servo bevel gear drive for door frame profiling machine



3-stage helical worm gear drive
for adjustments in table machines



Special gear unit for width adjustment on a wood working machine



Main drive of a fine
grinding machine

Bevel gear units arranged at 60°



Pneumatically operated control gear unit



WORM GEAR SETS

Product concept

ZAE precision parts to match customers' own requirements.

Standard worm gear sets

The worm shafts are made from 16MnCr5BG, hardened and ground.

Various worm shaft versions are available. Alongside a worm shaft with a cylindrical shaft end and feather key groove, there are versions with toothed shaft ends. The short shaft end has a toothed shaft profile according to DIN 5482 - including the ZAE type K coupling. The worm gear unit rims are manufactured from centrifugally cast solid bronze GzCuSn12Ni with excellent anti-friction properties.



Worm gear sets based on customer drawings

Besides our comprehensive standard range, ZAE will also be happy to manufacture worm gear sets to your own specifications based on your production drawings.



Performance range

- Shaft centre distances from 30 to 400 mm (10 standard sizes from 40 to 315 mm)
- 12 standard ratios from 5:1 to 83:1 and individual ratios upon request
- Output torques up to 50,000 Nm

Applications



Worm gear sets in a proportioning pump system



Special designed worm gear set for swing cranes on ships

PRODUCTION



PRODUCTION

Product concept

ZAE produces parts according to customer drawings using the very latest manufacturing facilities. Alongside the standard gearbox and gear set range, a wide range of custom gearboxes and complete modules, we also manufacture a range of customer-specified toothed parts or provide a gear tooth forming service on customer supplied parts.

Production options

Turning

Amongst others we manufacture using Index G 200 and G 400, Okuma LB 15-2 and Weiler E 80 machines.

- Workpiece diameters up to approx. 800 mm and lengths up to 560 mm, or up to 520 mm diameter and 4500 mm length.



Gear tooth forming (hobbing)

Here we use, amongst others, Pfauter machines, e.g. P150, GP200, GP600/800, P1250.

- Workpiece diameters up to approx. 1000 mm with a module up to approx. $m = 16$.



Honing

We undertake fine machining of spur gears on a Fässler K 400.

- Wheel diameters up to approx. 320 mm with a module up to approx. $m = 6$.

PRODUCTION



PRODUCTION

Grinding

Worm gear teeth are ground on Klingelnberg HNC 35 and H10 machines.

- Worm diameter 10 – 350 mm, module $m = 0.5 - 25$.
- Grinding length 600 mm (span length 1330 mm), number of teeth 1 – 99



Circular grinding

Is carried out on Studer S30, S36 and Cincinatti machines.

- Workpiece diameters up to approx. 560 mm, workpiece lengths up to 3000 mm.

Drilling, milling - complete machining

We have many available options for finishing complex workpieces in various machining centres, e.g.:

Hüller Hille NBH 170R and Bluestar 5, Okuma MA 60 HB, Unisign – Univers 5 or Deckel – Maho DMU100 and DMU 60.

- Traverse paths (x,y,z) 1000 x 800 x 900 mm
- Traverse paths (x,y,z) 3000 x 550 x 420 mm

Balancing

Workpiece weights of up to 3000 kg and lengths up to 4500 mm can be balanced on a Schenk balancing bench.

- Holder dimension 15 – 600 mm and rotor diameter up to a maximum 1600 mm







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