maxon gear

Precision spur- and planetary gearheads matched to maxon motors. Gears are advantageously adapted directly to the desired motors in the delivery plant. The motor pinion is the input gearwheel for the first stage and is rigidly affixed to the motor shaft.

With our Standard Specification we offer you a means to judge maxon gearheads in the most important respects. To our knowledge it covers normal applications. The Standard Specification is part of our “General Conditions of Sale”.

For information on standards and directives, refer to page 14 and 15.

The Standard Specification No. 102 for maxon gear

1. **Principles**
   The **Standard Specification** defines checks and tests performed on the complete gearhead and during the production process. In order to guarantee our high quality standard, we check compliance to specified measurements and characteristics of materials, parts and subassemblies through the manufacturing process and the complete gearhead. The obtained measurements are recorded and can be made available to customers if required. Random sampling plans are according to ISO 2859, and DIN/ISO 3951 (inspection by attributes, sequential sampling, variables inspection) as well as internal manufacturing controls. This Standard Specification always applies unless a different one has been agreed between the customer and maxon.

2. **Data**

2.1 **Mechanical data** per outline drawing: Standard measuring instruments (for electrical length measuring DIN 32876, micrometer per DIN 863, dial indicator DIN 878, caliper per DIN 862, bore caliper DIN 2245, thread caliper per DIN 2280 and others) are used.

2.2 **Noise:** Tests are carried out for anomalies within a lot on a subjective basis. Depending on speed the motions in the gearhead cause noise and vibration of varying degrees, frequency and intensity. The noise level experienced with a single sample unit should not be interpreted as indicative of the noise or vibration level to be expected of future deliveries.

2.3 **Service life:** Durability tests are carried out under uniform internal criteria as part of product certification. A gearhead’s service life essentially depends on the operating and ambient conditions. Consequently, the many possible variations do not allow us to make a general statement on service life. Minimum expected service life for the relevant maxon gears is based on standard conditions
- 25°C
- Normal storage conditions
- Horizontal position of the unit
- No axial and radial load on the output shaft

2.4 **Environmental influences**
Protection against corrosion: Our products are tested during product certification on the basis of DIN EN 60068-2-30.
Coating of components: Surface treatment and coating procedures used by maxon are selected on the basis of their merits to resist corrosion. These treatments are evaluated at product certification according to their applicable standard.

3. Parameters that differ from or are additional to the data sheet can be set and are a central part of our systematic testing as the customer’s specification. Test/inspection certificates are issued by prior agreement.

April 2010 edition/subject to change

Explanation of the pages 310–357

Dimensional drawings
Presentation of the views according to the projection method E (ISO). All dimensions in [mm].

Mounting in plastic
Screwed connections on motors with plastic flanges require special attention.

M_A Max. tightening torque [Ncm]
A torque screwdriver may be adjusted to this value.

L Active thread depth [mm]
The relation of the thread depth to the thread diameter must be at least 2:1. The screw-in depth must be less than the usable length of the thread!

Gearhead data
Values are based on an ambient temperature of around 25°C (known as cold data).

Technical data

Max. continuous input speed
It is based on service life considerations. If this value is greatly exceeded, the service life can be shortened, the gear heats up more and more noise is generated.

Temperature range
The temperature range may be extended for some gears to –40°C and +100°C, but in extremely low temperatures, much greater power consumption must be expected. Special lubrication can be supplied on request, even for other temperature ranges.

Radial play
The radial play test value depends heavily on the mounting, measuring point and adjoining force. For this reason, the clearance of the measuring point to the flange is always given. Measurement is always carried out under a test force that is smaller than the maximum radial load.

Max. permissible radial load
Is stated in a specific distance from the gear flange. If it is not specified in stages, radial load is based on a reference speed of 1,000 rpm on the gear drive shaft.

Axial play
The value for the axial play of a gear is determined between the two axial end positions of the output shaft. This measurement is determined by the type of bearings and may be zero for preloaded ball bearings and low axial forces. Minimum play is required for any kind of friction bearings otherwise they will jam.

Max. axial load (dynamic)
Corresponds to the permissible axial load of the drive shaft without damaging the gear. Below the given load, axial play can be kept.

Max. permissible pressing force
Corresponds to the force with which, for example, a coupling element may be mounted to the gear drive shaft.

1 Reduction ratio
The reduction indicates the ratio by which the speed of the gear output shaft is smaller than the motor speed.

2 Absolute reduction ratio
Provides the reduction as an exact ratio of two natural numbers.

3 Max. motor shaft diameter [mm]
The max. motor shaft diameter is based on the motor pinion's internal diameter.

4 Number of stages
States the number of gear stages engaged in series.

5 Max. continuous torque [Nm]
The continuous torque provides the maximum load permanently applied to the output shaft. If it is exceeded, the service life is significantly shortened.

6 Intermittent torque [Nm]
The intermittent torque is the value that may be applied to the gears for a short period without causing damage. It is defined as follows:
– during 1 second
– during max. 10 % of the life expectancy
If these values are exceeded, a reduced service life must be expected.

7 Efficiency [%]
The specified efficiency is a maximum value that is valid for maximum continuous torque. The efficiency is greatly reduced with very small loads (see diagram). The efficiency is stage-dependent, but is unaffected by the motor speed.

8 Weight [g]

9 Median gear backlash unloaded [°]
Gear backlash is the turning angle of the gear output shaft which, when the input shaft is blocked, the gear output shaft covers when it is turned from one end position to the opposite position. The end positions depend on the torque applied to the output shaft. It should be noted that if the gear output shaft is blocked, based on the reversed reduction ratio, the motor shaft will turn through a much greater angle from stop to stop.

10 Mass inertia [gcm²]
The gear moment of inertia is given at the motor shaft. It is required in order to calculate the additional torque needed for acceleration of the gear components in the case of highly dynamic drives. Variations may arise depending on how lubrication is distributed.

11 Gear length L1 [mm]
L1 describes the gear length down to the motor's axial mount area (reference C in motors).

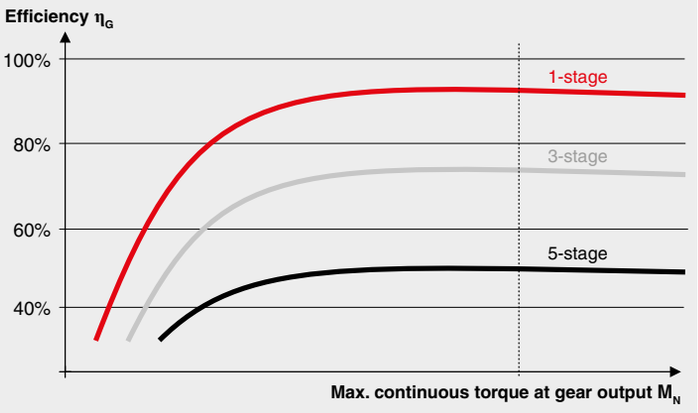
12 Direction of rotation
The Direction of rotation of our planetary gears is always the same as that of the motor shaft. With spur gears, it depends on the number of stages. With even numbers (i.e. 2, 4, 6, 8), the Direction of rotation is the same, but the opposite if the numbers are odd (exception: GS 20 A).

13 Max. transmittable power (continuous) [W]
This value gives the maximum constant output available on the output shaft. If it is exceeded, the service life is considerably shortened.

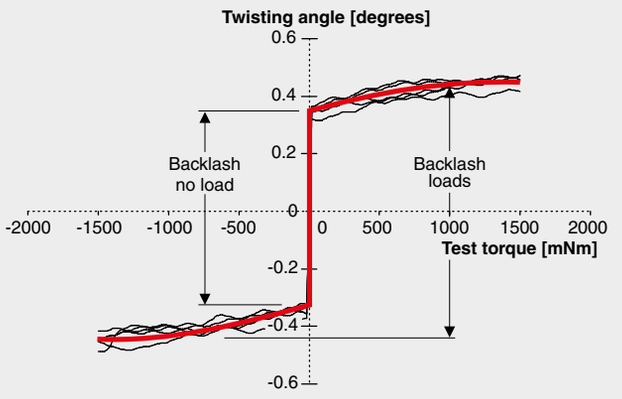
14 Max. transmittable power (intermittent) [W]
This value gives the maximum intermittent output available on the output shaft. This range may be used intermittently and repeatedly. It is defined as follows:
– during max. 1 second
– during max. 10% of the operating cycle
If these values are exceeded, a reduced service life must be expected.

15 Max. overload torque
The maximal permitted torque that can be applied for a short period of time (a few seconds) without destroying the gear. It can be considered as break free torque, for example, to overcome static friction of a mechanically jammed drive.

Gearhead efficiency as a function of torque (schematic)

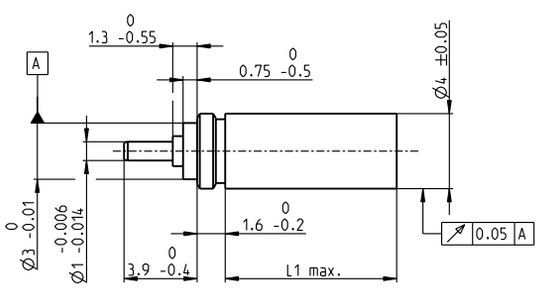


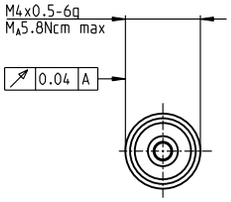
Gear play measurement



Planetary Gearhead GP 4 C ∅4 mm, 0.002–0.015 Nm

Ceramic Version



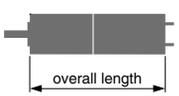


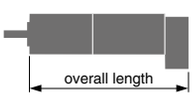
Technical Data			
Planetary Gearhead	special toothing		
Output shaft	stainless steel		
Bearing at output	ball bearings		
Radial play, 5 mm from flange	max. 0.14 mm		
Axial play	0.2 mm		
Max. axial load (dynamic)	5 N		
Max. force for press fits	5 N		
Direction of rotation, drive to output	=		
Max. continuous input speed	20000 rpm		
Recommended temperature range	-15…+80°C		
Number of stages	2	3	4
Max. radial load, 5 mm from flange	3 N	4 N	4 N

M 5:2

Stock program
Standard program
Special program (on request)

Part Numbers	484357	484358	484359
Gearhead Data (provisional)			
1 Reduction	17:1	68:1	280:1
2 Absolute reduction	$^{2025}/_{121}$	$^{91125}/_{1331}$	$^{4100625}/_{14641}$
3 Max. motor shaft diameter mm	0.6	0.6	0.6
4 Number of stages	2	3	4
5 Max. continuous torque Nm	0.002	0.006	0.015
6 Max. intermittent torque at gear output Nm	0.003	0.008	0.020
7 Max. efficiency %	76	70	65
8 Weight g	0.4	0.5	0.6
9 Average backlash no load °	5	5	5
10 Mass inertia gcm^2	0.0002	0.0002	0.0002
11 Gearhead length L1 mm	6.1	7.7	9.4





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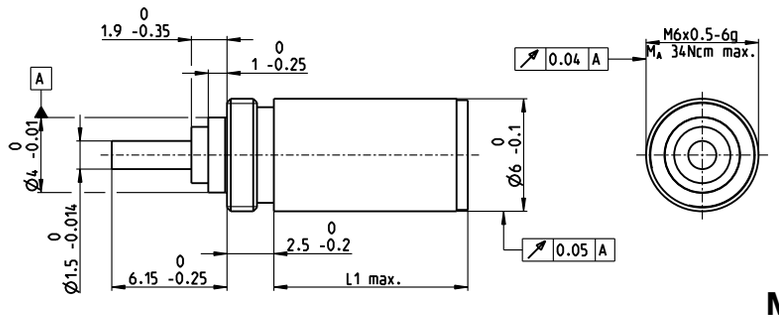
+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts		
EC 4, 0.5 W, A	234			24.9	26.6	28.3
EC 4, 0.5 W, B	234			24.9	26.6	28.3
EC 4, 1.0 W, A	235			31.9	33.6	35.3
EC 4, 1.0 W, B	235			31.9	33.6	35.3

Planetary Gearhead GP 6 A ∅6 mm, 0.002–0.03 Nm



M 5:2

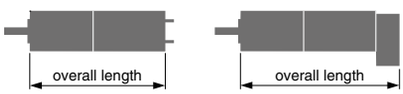
Technical Data

Planetary Gearhead					straight teeth
Output shaft					stainless steel
Bearing at output					ball bearing
Option					sleeve bearing
Radial play, 5 mm from flange					max. 0.12 mm
Axial play					max. 0.10 mm
Max. axial load (dynamic)					5 N
Max. force for press fits					10 N
Direction of rotation, drive to output					=
Max. continuous input speed					40000 rpm
Recommended temperature range					-40…+100°C
Number of stages	1	2	3	4	5
Max. radial load, 5 mm from flange	5 N	6 N	7 N	8 N	8 N

Stock program
Standard program
Special program (on request)

Part Numbers

		472919	472920	472921	472229	472922
Gearhead Data						
1 Reduction		3.9:1	15:1	57:1	221:1	854:1
2 Absolute reduction		$^{27}/_{7}$	$^{729}/_{49}$	$^{19683}/_{343}$	$^{531441}/_{2401}$	$^{14348907}/_{16807}$
3 Max. motor shaft diameter	mm	1	1	1	1	1
4 Number of stages		1	2	3	4	5
5 Max. continuous torque	Nm	0.002	0.005	0.010	0.030	0.030
6 Max. intermittent torque at gear output	Nm	0.005	0.010	0.020	0.060	0.060
7 Max. efficiency	%	88	77	68	60	52
8 Weight	g	1.7	2.1	2.5	2.9	3.3
9 Average backlash no load	°	1.8	2.0	2.2	2.5	2.8
10 Mass inertia	gcm²	0.001	0.001	0.001	0.001	0.001
11 Gearhead length L1	mm	5.3	7.8	10.4	13.0	15.6



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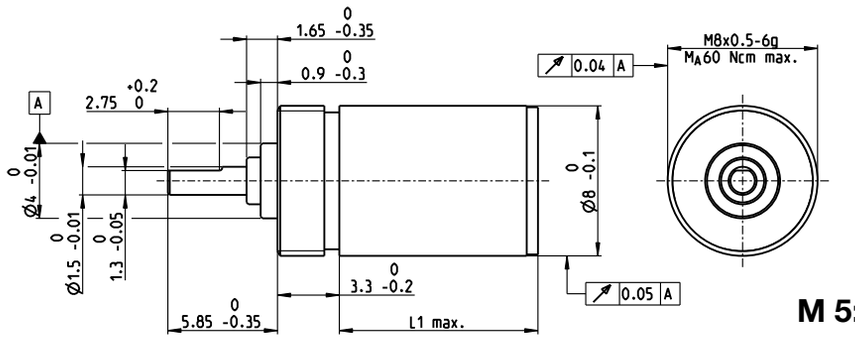
+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts				
RE 6, 0.3 W, A	152			21.0	23.5	26.1	28.7	31.3
RE 6, 0.3 W, B	152			25.0	27.5	30.1	32.7	35.3
EC 6, 1.5 W	236			26.7	29.2	31.8	34.4	37.0
EC 6, 1.5 W	236	Enc 6-8 MAG	384	28.8	31.3	33.9	36.5	39.1
EC 6, 1.5 W	236	Enc 6-8 OPT	394	28.8	31.3	33.9	36.5	39.1
EC 6, 2 W	237			26.7	29.2	31.8	34.4	37.0
EC 6, 2 W	237	Enc 6-8 MAG	384	28.8	31.3	33.9	36.5	39.1
EC 6, 2 W	237	Enc 6-8 OPT	394	28.8	31.3	33.9	36.5	39.1

Planetary Gearhead GP 8 A ∅8 mm, 0.01–0.1 Nm



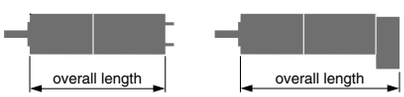
M 5:2

Technical Data	
Planetary Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	ball bearing
Radial play, 5 mm from flange	max. 0.08 mm
Axial play	max. 0.08 mm
Max. axial load (dynamic)	5 N
Max. force for press fits	10 N
Direction of rotation, drive to output	=
Max. continuous input speed	12 000 rpm
Recommended temperature range	-15…+80°C

Number of stages	1	2	3	4	5
Max. radial load, 5 mm from flange	5 N	6 N	7 N	8 N	8 N

Stock program
Standard program
Special program (on request)

Part Numbers	468999	468998	474124	468997	474127	468996	474129	468995
Gearhead Data								
1 Reduction	4:1	16:1	36:1	64:1	216:1	256:1	1296:1	1024:1
2 Absolute reduction	4	16	36	64	216	256	1296	1024
3 Max. motor shaft diameter mm	1	1	0.65	1	0.65	1	0.65	1
4 Number of stages	1	2	2	3	3	4	4	5
5 Max. continuous torque Nm	0.01	0.020	0.008	0.060	0.020	0.080	0.040	0.100
6 Max. intermittent torque at gear output Nm	0.015	0.030	0.012	0.090	0.030	0.120	0.060	0.150
7 Max. efficiency %	90	81	76	73	66	65	57	59
8 Weight g	2.6	3.2	3.2	3.8	3.8	4.4	4.4	5.0
9 Average backlash no load °	1.80	2.0	2.4	2.2	2.6	2.50	2.8	2.80
10 Mass inertia gcm²	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
11 Gearhead length L1 mm	5.5	8.1	8.3	10.7	11.1	13.3	13.9	15.9

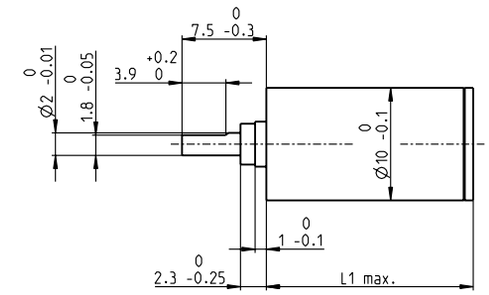


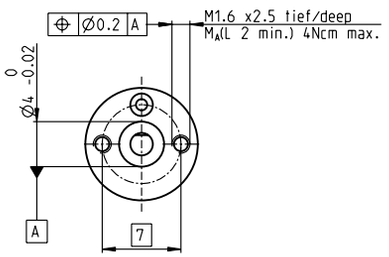
maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts							
RE 8, 0.5 W, A	153			22.2	24.8	25.0	27.4	27.8	30.0	30.6	32.6
RE 8, 0.5 W, B	153			25.2	27.8	28.0	30.4	30.8	33.0	33.6	35.6
RE 8, 0.5 W, A	153	MR	385/386	28.8	31.4	31.6	34.0	34.4	36.6	37.2	39.2
RE 8, 0.5 W, A	153	8 OPT	395	30.4	33.0	33.2	35.6	36.0	38.2	38.8	40.8
EC 8, 2 W	238			28.6	31.2	31.4	33.8	34.2	36.4	37.0	39.0

Planetary Gearhead GP 10 K ∅10 mm, 0.005–0.1 Nm

Plastic Version



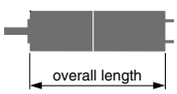


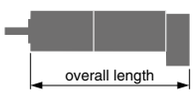
M 3:2

Technical Data	
Planetary Gearhead	straight teeth
Housing	plastic
Output shaft	stainless steel
Bearing at output	sleeve bearing
Radial play, 5 mm from flange	max. 0.14 mm
Axial play	0.02–0.10 mm
Max. axial load (dynamic)	2 N
Max. force for press fits	10 N
Direction of rotation, drive to output	=
Max. continuous input speed	8000 rpm
Recommended temperature range	-15…+80°C
Max. radial load, 5 mm from flange	1 N

Stock program
Standard program
Special program (on request)

Part Numbers					
	110308	110309	110310	**110311**	110312
Gearhead Data					
1 Reduction	4:1	16:1	64:1	256:1	1024:1
2 Absolute reduction	4	16	64	256	1024
3 Max. motor shaft diameter mm	1.2	1.2	1.2	1.2	1.2
4 Number of stages	1	2	3	4	5
5 Max. continuous torque Nm	0.005	0.015	0.054	0.100	0.100
6 Max. intermittent torque at gear output Nm	0.005	0.015	0.054	0.100	0.100
7 Max. efficiency %	90	80	70	60	55
8 Weight g	2.1	2.5	2.8	3.2	3.6
9 Average backlash no load °	1.8	2.0	2.2	2.5	2.8
10 Mass inertia gcm^2	0.004	0.003	0.003	0.003	0.003
11 Gearhead length L1 mm	10.2	14.3	18.4	22.5	26.6

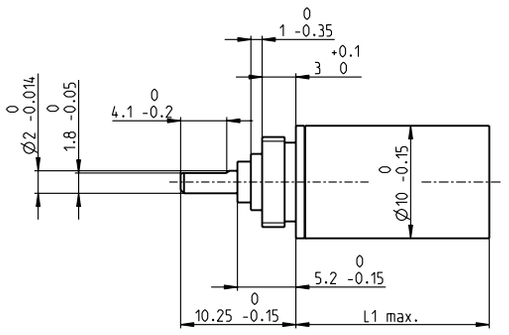


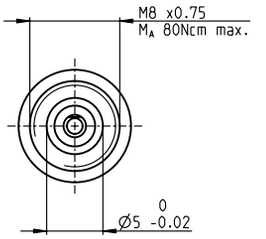


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	**Overall length [mm]** = Motor length + gearhead length + (sensor/brake) + assembly parts				
RE 10, 0.75 W	154/155			27.3	31.4	35.5	39.6	43.7
RE 10, 0.75 W	155	MR	385/386	33.1	37.2	41.3	45.4	49.5
RE 10, 0.75 W	155	MEnc 10	408	35.4	39.5	43.6	47.7	51.8
RE 10, 1.5 W	156/157			34.9	39.0	43.1	47.2	51.3
RE 10, 1.5 W	157	MR	385/386	40.7	44.8	48.9	53.0	57.1
RE 10, 1.5 W	157	MEnc 10	408	43.0	47.1	51.2	55.3	59.4
EC 9.2 flat, 0.5 W	288			22.8	26.9	31.0	35.1	39.2
EC 10 flat, 0.2 W	289			13.6	17.7	21.8	25.9	30.0

Planetary Gearhead GP 10 A ∅10 mm, 0.01–0.15 Nm





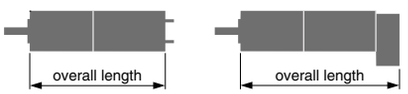
M 3:2

Technical Data

Planetary Gearhead					straight teeth
Output shaft					stainless steel
Bearing at output					preloaded ball bearings
Radial play, 5 mm from flange					max. 0.08 mm
Axial play at axial load					< 2 N 0 mm
					> 2 N max. 0.04 mm
Max. axial load (dynamic)					5 N
Max. force for press fits					10 N
Direction of rotation, drive to output					=
Max. continuous input speed					12000 rpm
Recommended temperature range					-15…+80°C
Extended range as option					-40…+100°C
Number of stages	1	2	3	4	5
Max. radial load, 5 mm from flange	5 N	10 N	15 N	20 N	25 N

Stock program
Standard program
Special program (on request)

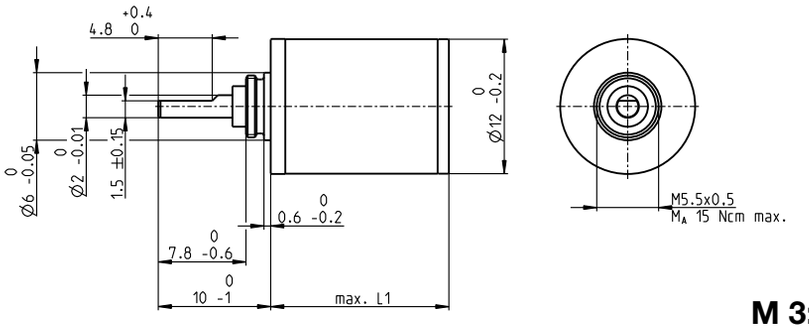
Part Numbers	218415	218416	218417	218418	218419	332422	332423	332424	332425	332426
Gearhead Data										
1 Reduction	4:1	16:1	64:1	256:1	1024:1	4:1	16:1	64:1	256:1	1024:1
2 Absolute reduction	4	16	64	256	1024	4	16	64	256	1024
3 Max. motor shaft diameter mm	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
4 Number of stages	1	2	3	4	5	1	2	3	4	5
5 Max. continuous torque Nm	0.010	0.030	0.100	0.150	0.150	0.010	0.030	0.100	0.150	0.150
6 Max. intermittent torque at gear output Nm	0.020	0.050	0.150	0.200	0.200	0.020	0.050	0.150	0.200	0.200
7 Max. efficiency %	90	81	73	65	59	90	81	73	65	59
8 Weight g	6.7	7.2	7.7	8.2	8.7	6.7	7.2	7.7	8.2	8.7
9 Average backlash no load °	1.5	1.8	2.0	2.2	2.5	1.5	1.8	2.0	2.2	2.5
10 Mass inertia gcm^2	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
11 Gearhead length L1 mm	10.4	14.1	17.2	20.4	23.5	10.4	14.1	17.2	20.4	23.5



maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts									
RE 10, 0.75 W	154/155			27.5	31.2	34.3	37.5	40.6					
RE 10, 0.75 W	155	MR	385/386	33.3	37.0	40.1	43.3	46.4					
RE 10, 0.75 W	155	MEnc 10	408	35.6	39.3	42.4	45.6	48.7					
RE 10, 1.5 W	156/157			35.1	38.8	41.9	45.1	48.2					
RE 10, 1.5 W	157	MR	385/386	40.9	44.6	47.7	50.9	54.0					
RE 10, 1.5 W	157	MEnc 10	408	43.2	46.9	50.0	53.2	56.3					
A-max 12	191/192			31.7	35.4	38.5	41.7	44.8					
A-max 12, 0.5 W	192	MR	385/386	35.8	39.5	42.6	45.8	48.9					
EC 10, 8 W	239								36.2	39.9	43.0	46.2	49.3
EC 9.2 flat, 0.5 W	288			23.0	26.7	29.8	33.0	36.1					
EC 10 flat, 0.2 W	289			13.8	17.5	20.6	23.8	26.9					

Spur Gearhead GS 12 A ∅12 mm, 0.01–0.03 Nm

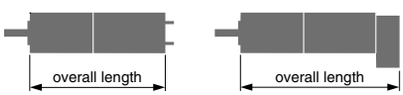


M 3:2

Technical Data	
Spur Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	sleeve bearing
Radial play, 6.5 mm from flange	max. 0.05 mm
Axial play	0.02–0.12 mm
Max. axial load (dynamic)	2 N
Max. force for press fits	30 N
Max. continuous input speed	8000 rpm
Recommended temperature range	-15…+100°C
Extended range as option	-40…+100°C
Max. radial load, 6.5 mm from flange	2 N

Stock program
Standard program
Special program (on request)

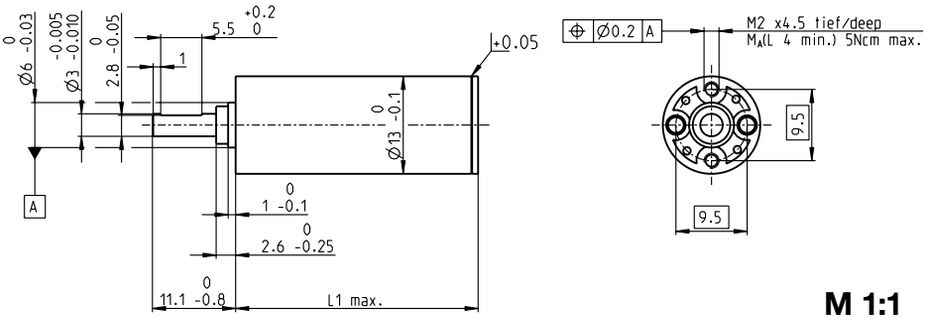
Gearhead Data		Part Numbers						
		310301	313872	313990	313991	310311	313993	310316
1 Reduction		6.4:1	13:1	58:1	141:1	371:1	485:1	3101:1
2 Absolute reduction		403/63	21866/1694	724594/12474	20138716/142884	26782109/72171	624300196/1285956	11537547853/3720087
3 Max. motor shaft diameter	mm	1.2	1.0	1.0	1.2	1.0	1.2	1.2
Part Numbers		310302	310304	310307	313992		310313	310317
1 Reduction		9.1:1	22:1	76:1	200:1		900:1	4402:1
2 Absolute reduction		899/99	12493/567	387283/5103	22462414/112266		372178963/413343	2573760674 9/5845851
3 Max. motor shaft diameter	mm	1.0	1.2	1.2	1.0		1.2	1.0
Part Numbers			310305	310308	310310		310314	
1 Reduction			31:1	108:1	261:1		1278:1	
2 Absolute reduction			27869/891	863939/8019	12005773/45927		830245379/649539	
3 Max. motor shaft diameter	mm		1.0	1.0	1.2		1.0	
4 Number of stages		2	3	4	5	5	6	7
5 Max. continuous torque	Nm	0.010	0.015	0.020	0.025	0.025	0.030	0.030
6 Max. intermittent torque at gear output	Nm	0.030	0.035	0.040	0.045	0.045	0.050	0.050
12 Direction of rotation, drive to output		=	≠	=	≠	≠	=	≠
7 Max. efficiency	%	81	73	66	59	59	53	48
8 Weight	g	6.5	7.4	8.3	9.2	9.2	10.1	11
9 Average backlash no load	°	1	1	1.2	1.2	1.2	1.2	1.5
10 Mass inertia	gcm²	0.002	0.002	0.002	0.002	0.002	0.002	0.002
11 Gearhead length L1	mm	10	12	14	16	16	18	20



maxon Modular System				Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts						
+ Motor	Page	+ Sensor/Brake	Page							
A-max 12	191/192			31.3	33.3	35.3	37.3	37.3	39.3	41.3
A-max 12, 0.5 W	192	MR	385/386	35.4	37.4	39.4	41.4	41.4	43.4	45.4

Planetary Gearhead GP 13 K ∅13 mm, 0.05–0.15 Nm

Plastic Version



M 1:1

Technical Data

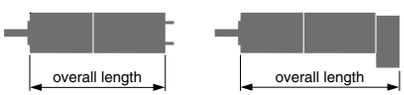
Planetary Gearhead	straight teeth
Housing, planetary wheels	plastic
Output shaft	stainless steel, hardened
Bearing at output	sleeve bearing
Radial play, 6 mm from flange	max. 0.12 mm
Axial play	0.02–0.10 mm
Max. axial load (dynamic)	5 N
Max. force for press fits	100 N
Direction of rotation, drive to output	=
Max. continuous input speed	8000 rpm
Recommended temperature range	-15…+80°C

Number of stages	1	2	3	4	5
Max. radial load, 6 mm from flange	2 N	3 N	4 N	5 N	5 N

Stock program
Standard program
Special program (on request)

Part Numbers

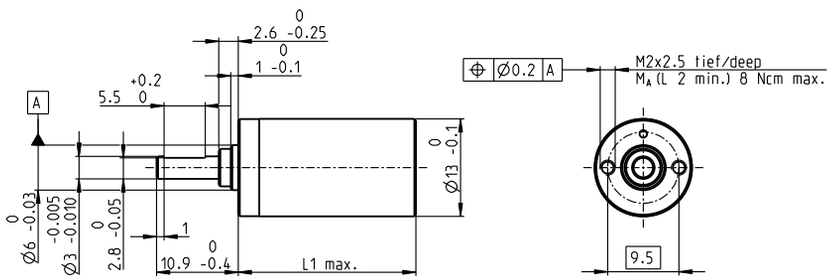
	137149	137150	137151	137152	137153
Gearhead Data					
1 Reduction	4.1:1	17:1	67:1	275:1	1119:1
2 Absolute reduction	$^{57}/_{14}$	$^{3249}/_{196}$	$^{185193}/_{2744}$	$^{10556001}/_{38416}$	$^{601692057}/_{537824}$
3 Max. motor shaft diameter mm	1.5	1.5	1.5	1.5	1.5
4 Number of stages	1	2	3	4	5
5 Max. continuous torque Nm	0.050	0.075	0.100	0.125	0.150
6 Max. intermittent torque at gear output Nm	0.050	0.075	0.100	0.125	0.150
7 Max. efficiency %	85	70	60	50	45
8 Weight g	5.9	6.5	7.0	7.5	8.0
9 Average backlash no load °	1.8	2.0	2.2	2.5	2.8
10 Mass inertia gcm^2	0.025	0.009	0.008	0.008	0.008
11 Gearhead length L1 mm	15.5	21.4	25.1	28.8	32.5



maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts				
RE 13	159/161			34.8	40.7	44.4	48.1	51.8
RE 13, 0.75 W	161	MR	385-387	41.9	47.8	51.5	55.2	58.9
RE 13, 0.75 W	161	MEnc 13	409	42.6	48.5	52.2	55.9	59.6
RE 13	163/165			47.0	52.9	56.6	60.3	64.0
RE 13, 2 W	165	MR	385-387	54.1	60.0	63.7	67.4	71.1
RE 13, 2 W	165	MEnc 13	409	54.8	60.7	64.4	68.1	71.8
RE 13, 1.5 W	167/169			37.9	43.8	47.5	51.2	54.9
RE 13, 1.5 W	169	MR	385-387	44.0	49.9	53.6	57.3	61.0
RE 13, 1.5 W	169	MEnc 13	409	45.9	51.8	55.5	59.2	62.9
RE 13, 3 W	171/173			50.1	56.0	59.7	63.4	67.1
RE 13, 3 W	173	MR	385-387	56.2	62.1	65.8	69.5	73.2
RE 13, 3 W	173	MEnc 13	409	58.1	64.0	67.7	71.4	75.1
A-max 12	191/192			36.8	42.7	46.4	50.1	53.8
A-max 12, 0.5 W	192	MR	385-387	40.7	46.6	50.3	54.0	57.7
RE-max 13	219/220			36.1	42.0	45.7	49.4	53.1
RE-max 13, 0.75 W	220	MR	385-387	40.8	46.7	50.4	54.1	57.8
RE-max 13	221/222			47.1	53.0	56.7	60.4	64.1
RE-max 13, 2 W	222	MR	385-387	51.8	57.7	61.4	65.1	68.8

Planetary Gearhead GP 13 A ∅13 mm, 0.2–0.35 Nm



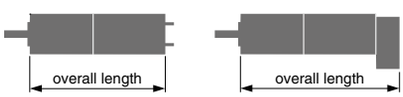
M 1:1

Technical Data					
Planetary Gearhead	straight teeth				
Output shaft	stainless steel, hardened				
Bearing at output	sleeve bearing				
Radial play, 6 mm from flange	max. 0.055 mm				
Axial play	0.02–0.10 mm				
Max. axial load (dynamic)	8 N				
Max. force for press fits	100 N				
Direction of rotation, drive to output	=				
Max. continuous input speed	8000 rpm				
Recommended temperature range	-40…+100°C				
Number of stages	1	2	3	4	5
Max. radial load, 6 mm from flange	8 N	12 N	16 N	20 N	20 N

Stock program
Standard program
Special program (on request)

Part Numbers	110313	110314	110315	110316	110317
Gearhead Data					
1 Reduction	4.1:1	17:1	67:1	275:1	1119:1
2 Absolute reduction	$^{57}/_{14}$	$^{3249}/_{196}$	$^{185193}/_{2744}$	$^{10556001}/_{38416}$	$^{601692057}/_{537824}$
3 Max. motor shaft diameter mm	1.5	1.5	1.5	1.5	1.5
Part Numbers	352365	352366	352367	352368	352369
1 Reduction	5.1:1	26:1	131:1	664:1	3373:1
2 Absolute reduction	$^{66}/_{13}$	$^{4356}/_{169}$	$^{287496}/_{2197}$	$^{18974736}/_{28561}$	$^{1252332576}/_{371293}$
3 Max. motor shaft diameter mm	1.5	1.5	1.5	1.5	1.5
4 Number of stages	1	2	3	4	5
5 Max. continuous torque Nm	0.20	0.20	0.30	0.30	0.35
6 Max. intermittent torque at gear output Nm	0.30	0.30	0.45	0.45	0.53
7 Max. efficiency %	91	83	75	69	62
8 Weight g	11	14	17	20	23
9 Average backlash no load °	1.0	1.2	1.5	1.8	2.0
10 Mass inertia gcm²	0.025	0.015	0.015	0.015	0.015
11 Gearhead length L1* mm	16.0	19.9	23.7	27.6	31.4

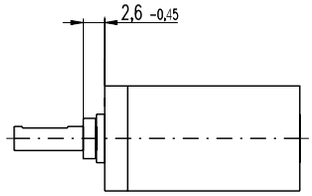
* for A-max 12 and RE-max 13 L1 is + 0.3 mm



maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts				
RE 13	159/161			35.4	39.3	43.1	47.0	50.8
RE 13, 0.75 W	161	MR	385-387	42.5	46.4	50.2	54.1	57.9
RE 13, 0.75 W	161	MEnc 13	409	43.2	47.1	50.9	54.8	58.6
RE 13	163/165			47.6	51.5	55.3	59.2	63.0
RE 13, 2 W	165	MR	385-387	54.7	58.6	62.4	66.3	70.1
RE 13, 2 W	165	MEnc 13	409	55.4	59.3	63.1	67.0	70.8
RE 13, 1.5 W	167/169			38.5	42.4	46.2	50.1	53.9
RE 13, 1.5 W	169	MR	385-387	44.6	48.5	52.3	56.2	60.0
RE 13, 1.5 W	169	MEnc 13	409	46.5	50.4	54.2	58.1	61.9
RE 13, 3 W	171/173			50.7	54.6	58.4	62.3	66.1
RE 13, 3 W	173	MR	385-387	56.8	60.7	64.5	68.4	72.2
RE 13, 3 W	173	MEnc 13	409	58.7	62.6	66.4	70.3	74.1
A-max 12	191/192			37.6	41.5	45.3	49.2	53.0
A-max 12, 0.5 W	192	MR	385-387	41.7	45.6	49.4	53.3	57.1
RE-max 13	219/220			36.9	40.8	44.6	48.5	52.3
RE-max 13, 0.75 W	220	MR	385-387	41.6	45.5	49.3	53.2	57.0
RE-max 13	221/222			47.9	51.8	55.6	59.5	63.3
RE-max 13, 2 W	222	MR	385-387	52.6	56.5	60.3	64.2	68.0
EC 13, 6 W	240			37.4	41.3	45.1	49.0	52.8
EC 13, 12 W	241			49.6	53.5	57.3	61.2	65.0

Option Ball Bearing



Gearhead length: L1 + 0.2 mm

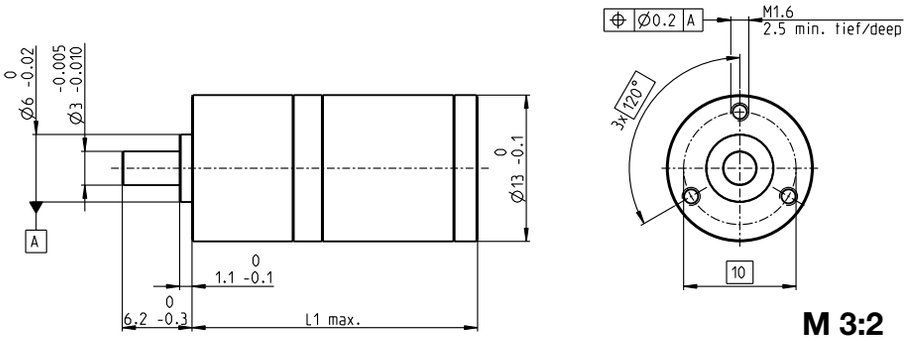
Part Numbers			
4.1 : 1	144300	131 : 1	352393
5.1 : 1	352391	275 : 1	144303
17 : 1	144301	664 : 1	352394
26 : 1	352392	1119 : 1	144304
67 : 1	144302	3373 : 1	352395

Technical Data					
Planetary Gearhead	straight teeth				
Output shaft	stainless steel, hardened				
Bearing at output	preloaded ball bearings				
Radial play, 6 mm from flange	max. 0.04 mm				
Axial play at axial load	< 5 N	0 mm			
	> 5 N	max. 0.04 mm			
Max. axial load (dynamic)	8 N				
Max. force for press fits	25 N				
Direction of rotation, drive to output	=				
Max. continuous input speed	8000 rpm				
Recommended temperature range	-40…+100°C				
Number of stages	1	2	3	4	5
Max. radial load, 6 mm from flange	10 N	15 N	20 N	25 N	25 N

Gearhead values according to sleeve bearing version

Planetary Gearhead GP 13 M Ø13 mm, 0.05–0.275 Nm

Sterilizable



M 3:2

Technical Data

Planetary Gearhead			straight teeth
Output shaft			stainless steel
Bearing at output			ball bearing
Radial play, 6 mm from flange			max. 0.2 mm
Axial play			max. 0.1 mm
Max. axial load (dynamic)			50 N
Max. force for press fits			80 N
Direction of rotation, drive to output			=
Max. continuous input speed			60 000 rpm
Recommended temperature range			-40…+100°C
with shaft seal			-10…+100°C
Number of stages	1	2	3
Max. radial load, 6 mm from flange	10 N	15 N	20 N

Option: Inch-version GP size 5 M as standard variant available.

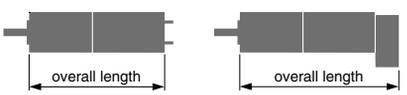
Stock program
Standard program
Special program (on request)

Part Numbers

with shaft seal	370275	370517	370611
without shaft seal	370617	370622	370623

Gearhead Data

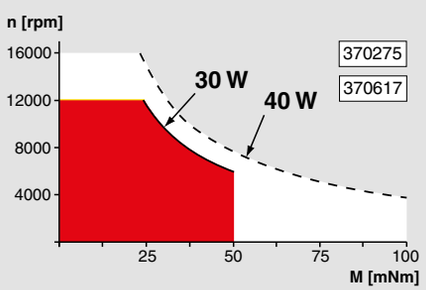
1	Reduction		5:1	25:1	125:1
2	Absolute reduction		5/1	25/1	125/1
3	Max. motor shaft diameter	mm	1.5	1.5	1.5
4	Number of stages		1	2	3
5	Max. continuous torque	Nm	0.05	0.225	0.275
6	Max. intermittent torque at gear output	Nm	0.1	0.25	0.3
7	Max. efficiency, sealed	%	85	80	70
8	Weight	g	16	20	23
9	Average backlash no load	°	1.2	1.4	1.6
10	Mass inertia	gcm²	0.017	0.016	0.016
11	Gearhead length L1	mm	25.4	31.3	37.2
13	Max. transmittable power (continuous)	W	30	20	15
14	Max. transmittable power (intermittent)	W	40	25	20



maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts		
EC 13, 30 W, ster.	242			62.5	68.4	74.3
EC 13, 50 W, ster.	243			73.5	79.4	85.3

Operating Range (Output shaft)



Comments

Continuous operating
Valid in an ambient temperature of 25°C and taking account of stage-dependent limits (points 5 and 13). The recommended motor speed must not be exceeded.

Short term operation
Valid in an ambient temperature of 25°C and taking account of stage-dependent limits (points 6 and 14). This range may be used intermittently and repeatedly. It is defined as follows

– during max. 1 second
– during max. 10% of the operating cycle

——— max. transferable continuous performance

- - - - - max. transferable intermittent performance

Application

135°C

Sterilizable Devices

- Saws
- Surgical Reamers
- Arthroscopic Shavers
- Surgical Staplers
- Dental Tools

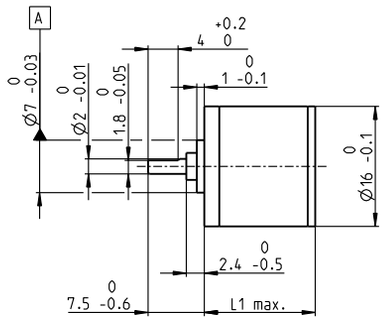
Sterilization information

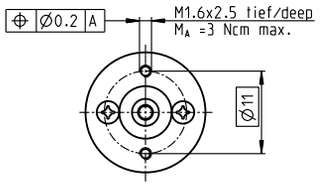
With shaft seal: typically 2000 autoclave cycles
Without shaft seal: typically 1000 autoclave cycles

Sterilization with steam	
Temperature	134°C ± 4°C
Compression pressure up to	2.3 bar
Rel. humidity	100 %
Cycle length	18 minutes

Spur Gearhead GS 16 K ∅16 mm, 0.01–0.03 Nm

Plastic Version





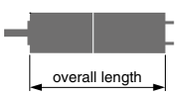
M 1:1

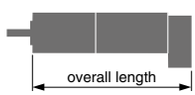
Technical Data

Spur Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	sleeve bearing
Radial play, 6.5 mm from flange	max. 0.15 mm
Axial play	0.02–0.12 mm
Max. axial load (dynamic)	2 N
Max. force for press fits	15 N
Max. continuous input speed	8000 rpm
Recommended temperature range	-15…+80°C
Max. radial load, 6.5 mm from flange	1 N

Stock program
Standard program
Special program (on request)

			Part Numbers						
			201463	201465	201467	201469	201471	201473	
Gearhead Data									
1	Reduction		6.4:1	22:1	76:1	261:1	900:1	3101:1	
2	Absolute reduction		403/63	12493/567	387283/5103	12005773/45927	372178963/413343	11537547853/3720087	
3	Max. motor shaft diameter	mm	1.5	1.5	1.5	1.5	1.5	1.5	
	Part Numbers		207405	207406	207407	207408	207409	207410	
1	Reduction		9.1:1	31:1	108:1	371:1	1278:1	4402:1	
2	Absolute reduction		899/99	27869/891	863939/8019	26782109/72171	830245379/649539	25737606749/5845851	
3	Max. motor shaft diameter	mm	1.5	1.5	1.5	1.5	1.5	1.5	
	Part Numbers		201464	201466	201468	201470	201472	201474	
1	Reduction		12:1	41:1	141:1	485:1	1670:1	5752:1	
2	Absolute reduction		961/81	29791/729	923521/6561	28629151/59049	887503681/531441	27512614111/4782969	
3	Max. motor shaft diameter	mm	1	1	1	1	1	1	
4	Number of stages		2	3	4	5	6	7	
5	Max. continuous torque	Nm	0.010	0.020	0.030	0.030	0.030	0.030	
6	Max. intermittent torque at gear output	Nm	0.10	0.10	0.10	0.10	0.10	0.10	
12	Direction of rotation, drive to output		=	≠	=	≠	=	≠	
7	Max. efficiency	%	81	73	66	59	53	48	
8	Weight	g	9.0	9.8	10.2	10.7	11.3	11.7	
9	Average backlash no load	°	1.0	1.0	1.2	1.2	1.5	1.5	
10	Mass inertia	gcm²	0.0032	0.0031	0.0031	0.0031	0.0031	0.0031	
11	Gearhead length L1	mm	11.8	12.8	14.8	16.8	18.8	20.8	

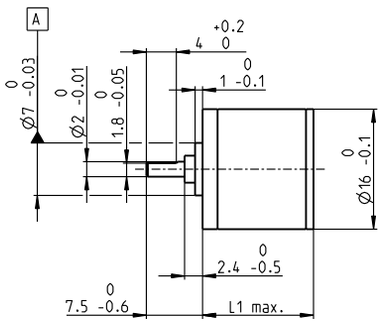


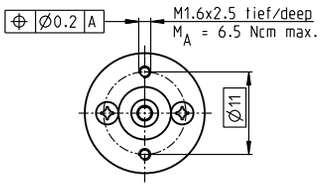


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts					
A-max 16	193-196			37.3	38.3	40.3	42.3	44.3	46.3
A-max 16	194/196	MR	388/390	42.3	43.3	45.3	47.3	49.3	51.3
A-max 16	194/196	MEnc 13	409	45.4	46.4	48.4	50.4	52.4	54.4

Spur Gearhead GS 16 A ∅16 mm, 0.015–0.04 Nm



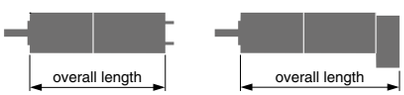


M 1:1

Technical Data	
Spur Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	sleeve bearing
Radial play, 6.5 mm from flange	max. 0.15 mm
Axial play	0.02–0.12 mm
Max. axial load (dynamic)	2 N
Max. force for press fits	30 N
Max. continuous input speed	8000 rpm
Recommended temperature range	-15…+100°C
Extended range as option	-40…+100°C
Max. radial load, 6.5 mm from flange	2 N

Stock program
Standard program
Special program (on request)

Part Numbers	144409	143761	143763	143765	143767	143769
Gearhead Data						
1 Reduction	6.4:1	22:1	76:1	261:1	900:1	3101:1
2 Absolute reduction	$^{403}/_{63}$	$^{12493}/_{567}$	$^{387283}/_{5103}$	$^{12005773}/_{45927}$	$^{372178963}/_{413343}$	$^{11537547853}/_{3720087}$
3 Max. motor shaft diameter mm	1.5	1.5	1.5	1.5	1.5	1.5
Part Numbers	207834	207835	207836	207837	207838	207839
1 Reduction	9.1:1	31:1	108:1	371:1	1278:1	4402:1
2 Absolute reduction	$^{899}/_{99}$	$^{27869}/_{891}$	$^{863939}/_{8019}$	$^{26782109}/_{72171}$	$^{830245379}/_{649539}$	$^{25737606749}/_{5845851}$
3 Max. motor shaft diameter mm	1.5	1.5	1.5	1.5	1.5	1.5
Part Numbers	144410	143762	143764	143766	143768	143770
1 Reduction	12:1	41:1	141:1	485:1	1670:1	5752:1
2 Absolute reduction	$^{961}/_{81}$	$^{29791}/_{729}$	$^{923521}/_{6561}$	$^{28629151}/_{59049}$	$^{887503681}/_{531441}$	$^{27512614111}/_{4782969}$
3 Max. motor shaft diameter mm	1	1	1	1	1	1
4 Number of stages	2	3	4	5	6	7
5 Max. continuous torque Nm	0.015	0.025	0.035	0.040	0.040	0.040
6 Max. intermittent torque at gear output Nm	0.10	0.10	0.10	0.10	0.10	0.10
12 Direction of rotation, drive to output	=	≠	=	≠	=	≠
7 Max. efficiency %	81	73	66	59	53	48
8 Weight g	9.0	9.8	10.2	10.7	11.3	11.7
9 Average backlash no load °	1.0	1.0	1.2	1.2	1.5	1.5
10 Mass inertia gcm^2	0.0032	0.0031	0.0031	0.0031	0.0031	0.0031
11 Gearhead length L1 mm	11.8	12.8	14.8	16.8	18.8	20.8

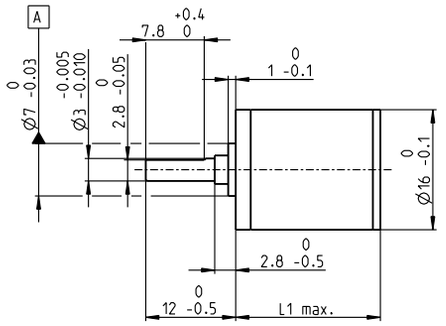


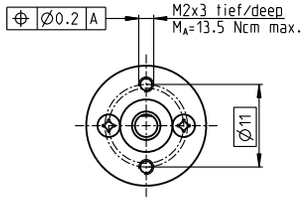
maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts					
A-max 16	193-196			37.3	38.3	40.3	42.3	44.3	46.3
A-max 16	194/196	MR	388/390	42.3	43.3	45.3	47.3	49.3	51.3
A-max 16	194/196	MEnc 13	409	45.4	46.4	48.4	50.4	52.4	54.4

Spur Gearhead GS 16 V ∅16 mm, 0.06–0.1 Nm

Reinforced





M 1:1

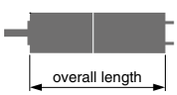
Technical Data

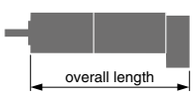
Spur Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	preloaded ball bearings
Radial play, 6.5 mm from flange	max. 0.02 mm
Axial play at axial load	< 5 N 0 mm
	> 5 N max. 0.05 mm
Max. axial load (dynamic)	5 N
Max. force for press fits	5 N
Max. continuous input speed	8000 rpm
Recommended temperature range	-15…+100°C
Extended range as option	-40…+100°C

Number of stages	2	3	4	5	6	7
Max. radial load, 6.5 mm from flange	10 N	15 N	20 N	22 N	22 N	22 N

Stock program
Standard program
Special program (on request)

			Part Numbers						
			235066	235070	235073	235076	235079	235082	
Gearhead Data									
1	Reduction		6.4:1	22:1	76:1	261:1	900:1	3101:1	
2	Absolute reduction		403/63	12493/567	387283/5103	12005773/45927	372178963/413343	11537547853/3720087	
3	Max. motor shaft diameter	mm	1.5	1.5	1.5	1.5	1.5	1.5	
	Part Numbers		235068	235071	235074	235077	235080	235083	
1	Reduction		9.1:1	31:1	108:1	371:1	1278:1	4402:1	
2	Absolute reduction		899/99	27869/891	863939/8019	26782109/72171	830245379/649539	25737606749/5845851	
3	Max. motor shaft diameter	mm	1.5	1.5	1.5	1.5	1.5	1.5	
	Part Numbers		235069	235072	235075	235078	235081	235084	
1	Reduction		12:1	41:1	141:1	485:1	1670:1	5752:1	
2	Absolute reduction		961/81	29791/729	923521/6561	28629151/59049	887503681/531441	27512614111/4782969	
3	Max. motor shaft diameter	mm	1	1	1	1	1	1	
4	Number of stages		2	3	4	5	6	7	
5	Max. continuous torque	Nm	0.06	0.06	0.10	0.10	0.10	0.10	
6	Max. intermittent torque at gear output	Nm	0.15	0.15	0.30	0.30	0.30	0.30	
12	Direction of rotation, drive to output		=	≠	=	≠	=	≠	
7	Max. efficiency	%	81	73	66	59	53	48	
8	Weight	g	13.8	14.5	15.8	17.0	17.9	18.5	
9	Average backlash no load	°	1.0	1.0	1.2	1.2	1.5	1.5	
10	Mass inertia	gcm²	0.0057	0.0052	0.0035	0.0032	0.0032	0.0032	
11	Gearhead length L1	mm	14.3	17.3	19.3	21.3	23.3	25.3	



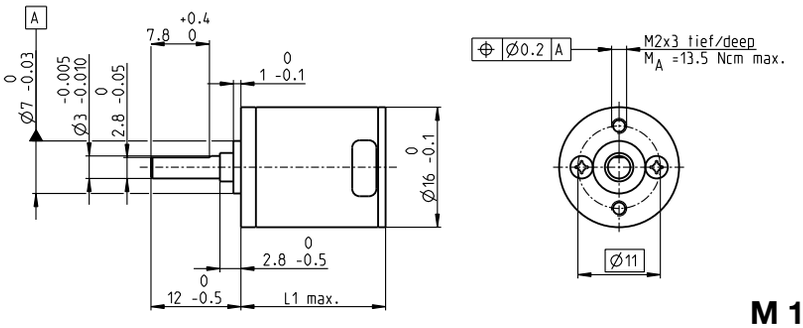


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts					
A-max 16	193-196			39.8	42.8	44.8	46.8	48.8	50.8
A-max 16	194/196	MR	388/390	44.8	47.8	49.8	51.8	53.8	55.8
A-max 16	194/196	MEnc 13	409	47.9	50.9	52.9	54.9	56.9	58.9

Spur Gearhead GS 16 VZ ∅16 mm, 0.06–0.1 Nm

Low Backlash



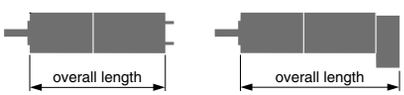
M 1:1

Technical Data

Spur Gearhead		straight teeth
Output shaft		stainless steel, hardened
Bearing at output		preloaded ball bearings
Radial play, 6.5 mm from flange		max. 0.02 mm
Axial play at axial load	< 5 N	0 mm
	> 5 N	max. 0.05 mm
Max. axial load (dynamic)		5 N
Max. force for press fits		5 N
Max. continuous input speed		8000 rpm
Recommended temperature range		-15…+100°C
Extended range as option		-40…+100°C
Number of stages	4	5 6
Max. radial load, 6.5 mm from flange	20 N	22 N 22 N

Stock program
Standard program
Special program (on request)

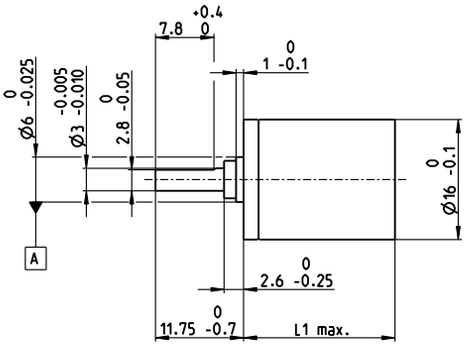
			Part Numbers		
			327789	327796	327800
Gearhead Data					
1	Reduction		76:1	261:1	900:1
2	Absolute reduction		$^{387283}/_{5103}$	$^{12005773}/_{45927}$	$^{372178963}/_{413343}$
3	Max. motor shaft diameter	mm	1.5	1.5	1.5
	Part Numbers		327788	327797	327801
1	Reduction		108:1	371:1	1278:1
2	Absolute reduction		$^{863939}/_{8019}$	$^{26782109}/_{72171}$	$^{830245379}/_{649539}$
3	Max. motor shaft diameter	mm	1.5	1.5	1.5
	Part Numbers		327790	327799	327802
1	Reduction		141:1	485:1	1670:1
2	Absolute reduction		$^{923521}/_{6561}$	$^{28629151}/_{59049}$	$^{887503681}/_{531441}$
3	Max. motor shaft diameter	mm	1	1	1
4	Number of stages		4	5	6
5	Max. continuous torque	Nm	0.10	0.10	0.10
6	Max. intermittent torque at gear output	Nm	0.30	0.30	0.30
12	Direction of rotation, drive to output		=	≠	=
7	Max. efficiency	%	62	54	48
8	Weight	g	17.2	18.7	20.2
9	Average backlash no load	°	0.3	0.45	0.5
10	Mass inertia	gcm^2	0.017	0.014	0.013
11	Gearhead length L1	mm	19.3	21.3	23.3

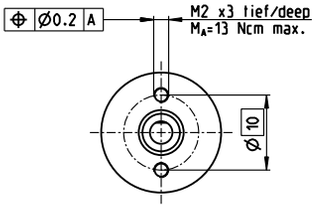


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts		
A-max 16	193-196			44.8	46.8	48.8
A-max 16	194/196	MR	388/390	49.8	51.8	53.8
A-max 16	194/196	MEnc 13	409	52.9	54.9	56.9

Planetary Gearhead GP 16 A ∅16 mm, 0.1–0.3 Nm





M 1:1

Technical Data

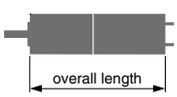
Planetary Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	sleeve bearing
Radial play, 6 mm from flange	max. 0.06 mm
Axial play	0.02–0.10 mm
Max. axial load (dynamic)	8 N
Max. force for press fits	100 N
Direction of rotation, drive to output	=
Max. continuous input speed	8000 rpm
Recommended temperature range	-30…+100°C
Extended range as option	-40…+100°C

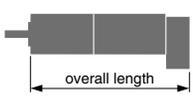
Number of stages	1	2	3	4	5
Max. radial load, 6 mm from flange	8 N	12 N	16 N	20 N	20 N

Stock program
Standard program
Special program (on request)

Part Numbers

Gearhead Data		110321	110322	110323	118186	110324	134782	110325	134785
1	Reduction		4.4:1	19:1	84:1	157:1	370:1	690:1	1621:1	3027:1
2	Absolute reduction		57/13	3249/169	185193/2197	19683/125	10556001/28561	1121931/1625	601692057/371293	63950067/21125
3	Max. motor shaft diameter	mm	2	2	2	1.5	2	2	2	2
	Part Numbers		118184	134777	134778		134780	118187	134783	134786
1	Reduction		5.4:1	24:1	104:1		455:1	850 :1	1996:1	3728:1
2	Absolute reduction		27/5	1539/65	87723/845		5000211/10985	531441/625	28501207/142805	30292137/8125
3	Max. motor shaft diameter	mm	1.5	2	2		2	1.5	2	2
	Part Numbers			118185	134779		134781		134784	118188
1	Reduction			29:1	128:1		561:1		2458:1	4592:1
2	Absolute reduction			729/25	41553/325		2368521/4225		135005697/54925	14348907/3125
3	Max. motor shaft diameter	mm		1.5	2		2		2	1.5
4	Number of stages		1	2	3	3	4	4	5	5
5	Max. continuous torque	Nm	0.10	0.15	0.20	0.20	0.25	0.25	0.30	0.30
6	Max. intermittent torque at gear output	Nm	0.150	0.225	0.300	0.300	0.375	0.375	0.450	0.450
7	Max. efficiency	%	90	81	73	73	65	65	59	59
8	Weight	g	20	23	27	27	31	31	35	35
9	Average backlash no load	°	1.4	1.6	2.0	2.0	2.4	2.4	3.0	3.0
10	Mass inertia	gcm²	0.07	0.05	0.05	0.04	0.05	0.05	0.05	0.05
11	Gearhead length L1	mm	15.5	19.1	22.7	22.7	26.3	26.3	29.9	29.9

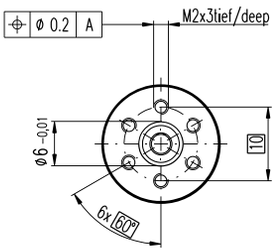




maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts							
RE 16, 2 W	174			37.9	41.5	45.1	45.1	48.7	48.7	52.3	52.3
RE 16, 2 W	174	MR	388/390	43.6	47.2	50.8	50.8	54.4	54.4	58.0	58.0
RE 16, 3.2 W	175/176			56.0	59.6	63.2	63.2	66.8	66.8	70.4	70.4
RE 16, 3.2 W	176	MR	388/390	61.0	64.6	68.2	68.2	71.8	71.8	75.4	75.4
RE 16, 3.2 W	176	MEnc 13	409	62.1	65.7	69.3	69.3	72.9	72.9	76.5	76.5
RE 16, 4.5 W	177/178			59.0	62.6	66.2	66.2	69.8	69.8	73.4	73.4
RE 16, 4.5 W	178	MR	388/390	64.0	67.6	71.2	71.2	74.8	74.8	78.4	78.4
RE 16, 4.5 W	178	MEnc 13	409	65.2	68.8	72.4	72.4	76.0	76.0	79.6	79.6
A-max 16	193-196			41.0	44.6	48.2	48.2	51.8	51.8	55.4	55.4
A-max 16	194/196	MR	388/390	46.0	49.6	53.2	53.2	56.8	56.8	60.4	60.4
A-max 16	194/196	MEnc 13	409	49.1	52.7	56.3	56.3	59.9	59.9	63.5	63.5
EC 16, 30 W	244			55.6	59.2	62.8	62.8	66.4	66.4	70.0	70.0
EC 16, 30 W	244	MR	391	66.3	69.9	73.5	73.5	77.1	77.1	80.7	80.7
EC-max 16, 5 W	259			39.6	43.2	46.8	46.8	50.4	50.4	54.0	54.0
EC-max 16, 5 W	259	MR	391	46.9	50.5	54.1	54.1	57.7	57.7	61.3	61.3
EC-max 16, 2-wire	260			49.1	52.7	56.3	56.3	59.9	59.9	63.5	63.5

Option Ball Bearing



Part Numbers

4.4 : 1	138333	455 : 1	138343
5.4 : 1	138334	561 : 1	138344
19 : 1	138335	690 : 1	138345
24 : 1	138336	850 : 1	138346
29 : 1	138337	1621 : 1	138347
84 : 1	138338	1996 : 1	138348
104 : 1	138339	2458 : 1	138349
128 : 1	138340	3027 : 1	138350
157 : 1	138341	3728 : 1	138351
370 : 1	138342	4592 : 1	138352

Technical Data

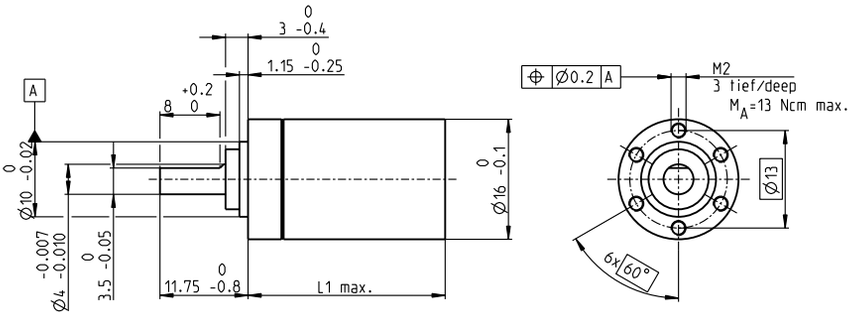
Planetary Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	preloaded ball bearings
Radial play, 6 mm from flange	max. 0.08 mm
Axial play at axial load	< 4 N 0 mm
	> 4 N max. 0.05 mm
Max. axial load (dynamic)	8 N
Max. force for press fits	25 N
Direction of rotation, drive to output	=
Max. continuous input speed	8000 rpm
Recommended temperature range	-40…+100°C

Number of stages	1	2	3	4	5
Max. radial load, 6 mm from flange	10 N	15 N	20 N	20 N	20 N

Gearhead values according to sleeve bearing version

Planetary Gearhead GP 16 C ∅16 mm, 0.2–0.6 Nm

Ceramic Version

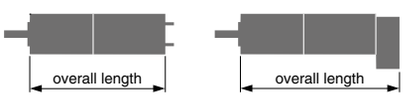


M 1:1

Technical Data						
Planetary Gearhead						straight teeth
Output shaft						stainless steel, hardened
Bearing at output						preloaded ball bearings
Radial play, 6 mm from flange						max. 0.08 mm
Axial play at axial load					< 4 N	0 mm
					> 4 N	max. 0.05 mm
Max. axial load (dynamic)						12 N
Max. force for press fits						100 N
Direction of rotation, drive to output						=
Max. continuous input speed						12000 rpm
Recommended temperature range						-40...+100°C
Number of stages	1	2	3	4	5	
Max. radial load, 6 mm from flange	20 N	40 N	60 N	80 N	80 N	

Stock program
Standard program
Special program (on request)

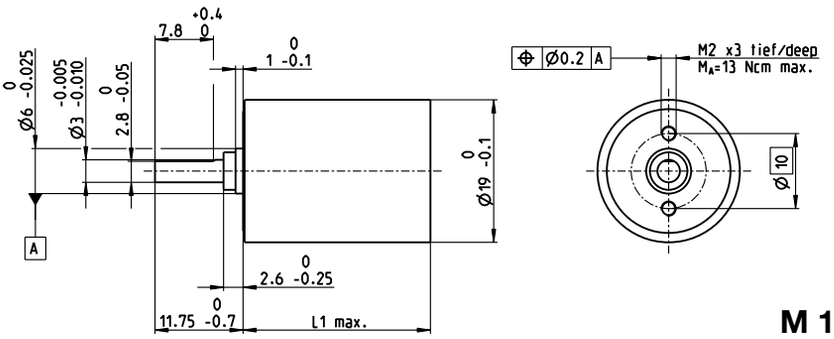
Part Numbers	416328	407883	416391	401954	328699	416028	416188	414453
Gearhead Data								
1 Reduction	4.4:1	19:1	84:1	157:1	370:1	690:1	1621:1	3027:1
2 Absolute reduction	$^{57}/_{13}$	$^{3249}/_{169}$	$^{185193}/_{2197}$	$^{19683}/_{125}$	$^{10556001}/_{28561}$	$^{1121931}/_{1625}$	$^{601692057}/_{371293}$	$^{6395006 7}/_{21125}$
3 Max. motor shaft diameter mm	2	2	2	1.5	2	1.5	2	2
Part Numbers	416500	416499	416385		416115	415807	415893	415476
1 Reduction	5.4:1	24:1	104:1		455:1	850:1	1996:1	3728:1
2 Absolute reduction	$^{27}/_{5}$	$^{1539}/_{65}$	$^{87723}/_{845}$		$^{5000211}/_{10985}$	$^{531441}/_{625}$	$^{285012027}/_{142805}$	$^{30292137}/_{8125}$
3 Max. motor shaft diameter mm	1.5	1.5	2		2	1.5	2	1.5
Part Numbers		416428	402672		416097		415786	409316
1 Reduction		29:1	128:1		561:1		2458:1	4592:1
2 Absolute reduction		$^{729}/_{25}$	$^{41553}/_{325}$		$^{2368521}/_{4225}$		$^{135005697}/_{54925}$	$^{14348907}/_{3125}$
3 Max. motor shaft diameter mm		1.5	1.5		2		2	1.5
4 Number of stages	1	2	3	3	4	4	5	5
5 Max. continuous torque Nm	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.6
6 Max. intermittent torque at gear output Nm	0.3	0.45	0.6	0.6	0.75	0.75	0.9	0.9
7 Max. efficiency %	90	81	73	73	65	65	59	59
8 Weight g	22	25	29	29	33	33	37	37
9 Average backlash no load °	1.4	1.6	2	2	2.4	2.4	3	3
10 Mass inertia gcm²	0.07	0.05	0.05	0.04	0.05	0.04	0.05	0.05
11 Gearhead length L1 mm	18.1	23.2	26.8	26.8	30.4	30.4	33.9	33.9



maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts							
RE 16, 2 W	174			40.5	45.6	49.2	49.2	52.8	52.8	56.3	56.3
RE 16, 2 W	174	MR	388/390	46.2	51.3	54.9	54.9	58.5	58.5	62.0	62.0
RE 16, 3.2 W	175/176			58.6	63.7	67.3	67.3	70.9	70.9	74.4	74.4
RE 16, 3.2 W	176	MR	388/390	63.6	68.7	72.3	72.3	75.9	75.9	79.4	79.4
RE 16, 3.2 W	176	MEnc 13	409	64.7	69.8	73.4	73.4	77.0	77.0	80.5	80.5
RE 16, 4.5 W	177/178			61.6	66.7	70.3	70.3	73.9	73.9	77.4	77.4
RE 16, 4.5 W	178	MR	388/390	66.6	71.7	75.3	75.3	78.9	78.9	82.4	82.4
RE 16, 4.5 W	178	MEnc 13	409	67.8	72.9	76.5	76.5	80.1	80.1	83.6	83.6
A-max 16	193-196			43.6	48.7	52.3	52.3	55.9	55.9	59.4	59.4
A-max 16	194/196	MR	388/390	48.6	53.7	57.3	57.3	60.9	60.9	64.4	64.4
A-max 16	194/196	MEnc 13	409	51.7	56.8	60.4	60.4	64.0	64.0	67.5	67.5
EC 16, 30 W	244			58.2	63.3	66.9	66.9	70.5	70.5	74.0	74.0
EC 16, 30 W	244	MR	391	68.9	74.0	77.6	77.6	81.2	81.2	84.7	84.7
EC 16, 60 W	245			74.2	79.3	82.9	82.9	86.5	86.5	90.0	90.0
EC 16, 60 W	245	MR	391	84.9	90.0	93.6	93.6	97.2	97.2	100.7	100.7
EC-max 16, 5 W	259			42.2	47.3	50.9	50.9	54.5	54.5	58.0	58.0
EC-max 16, 5 W	259	MR	391	49.5	54.6	58.2	58.2	61.8	61.8	65.3	65.3
EC-max 16, 8 W	261			54.2	59.3	62.9	62.9	66.5	66.5	70.0	70.0
EC-max 16, 8 W	261	MR	391	61.5	66.6	70.2	70.2	73.8	73.8	77.3	77.3

Planetary Gearhead GP 19 B ∅19 mm, 0.1–0.3 Nm



M 1:1

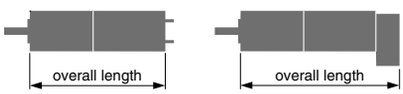
Technical Data

Planetary Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	sleeve bearing
Radial play, 6 mm from flange	max. 0.08 mm
Axial play	0.02–0.12 mm
Max. axial load (dynamic)	8 N
Max. force for press fits	100 N
Direction of rotation, drive to output	=
Max. continuous input speed	8000 rpm
Recommended temperature range	-30…+100°C
Extended range as option	-40…+100°C

Number of stages	1	2	3	4	5
Max. radial load, 6 mm from flange	8 N	12 N	16 N	20 N	20 N

Stock program
Standard program
Special program (on request)

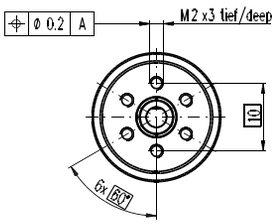
Part Numbers	149039	149041	149044	149047	149048	149051	149053	149056
Gearhead Data								
1 Reduction	4.4:1	19:1	84:1	157:1	370:1	690:1	1621:1	3027:1
2 Absolute reduction	57/13	3249/169	185193/2197	19683/125	10556001/28561	1121931/1625	601692057/371293	63950067/21125
3 Max. motor shaft diameter mm	2	2	2	1.5	2	2	2	2
Part Numbers	149040	149042	149045		149049	149052	149054	149057
1 Reduction	5.4:1	24:1	104:1		455:1	850 :1	1996:1	3728:1
2 Absolute reduction	27/5	1539/65	87723/845		5000211/10985	531441/625	28501027/142805	30292137/8125
3 Max. motor shaft diameter mm	1.5	2	2		2	1.5	2	2
Part Numbers		149043	149046		149050		149055	149058
1 Reduction		29:1	128:1		561:1		2458:1	4592:1
2 Absolute reduction		729/25	41553/325		2368521/4225		135005697/54925	14348907/3125
3 Max. motor shaft diameter mm		1.5	2		2		2	1.5
4 Number of stages	1	2	3	3	4	4	5	5
5 Max. continuous torque Nm	0.10	0.15	0.20	0.20	0.25	0.25	0.30	0.30
6 Max. intermittent torque at gear output Nm	0.150	0.225	0.300	0.300	0.375	0.375	0.450	0.450
7 Max. efficiency %	90	81	73	73	65	65	59	59
8 Weight g	26	31	36	36	41	41	46	46
9 Average backlash no load °	1.4	1.6	2.0	2.0	2.4	2.4	3.0	3.0
10 Mass inertia gcm²	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05
11 Gearhead length L1 mm	15.9	19.5	23.1	23.1	26.7	26.7	30.3	30.3



maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts							
A-max 19	197/198			44.9	48.5	52.1	52.1	55.7	55.7	59.3	59.3
A-max 19, 1.5 W	198	MR	388/390	50.0	53.6	57.2	57.2	60.8	60.8	64.4	64.4
A-max 19, 1.5 W	198	Enc 22	398	59.3	62.9	66.5	66.5	70.1	70.1	73.7	73.7
A-max 19, 1.5 W	198	MEnc 13	409	52.4	56.0	59.6	59.6	63.2	63.2	66.8	66.8
A-max 19, 2.5 W	199/200			47.5	51.1	54.7	54.7	58.3	58.3	61.9	61.9
A-max 19, 2.5 W	200	MR	388/390	51.8	55.4	59.0	59.0	62.6	62.6	66.2	66.2
A-max 19, 2.5 W	200	Enc 22	398	61.9	65.5	69.1	69.1	72.7	72.7	76.3	76.3
A-max 19, 2.5 W	200	MEnc 13	409	55.0	58.6	62.2	62.2	65.8	65.8	69.4	69.4

Option Ball Bearing



Part Numbers			
4.4 : 1	227632	455 : 1	227642
5.4 : 1	227633	561 : 1	227643
19 : 1	227634	690 : 1	227644
24 : 1	227635	850 : 1	227645
29 : 1	227636	1621 : 1	227646
84 : 1	227637	1996 : 1	227647
104 : 1	227638	2458 : 1	227648
128 : 1	227639	3027 : 1	227649
157 : 1	227640	3728 : 1	227650
370 : 1	227641	4592 : 1	227651

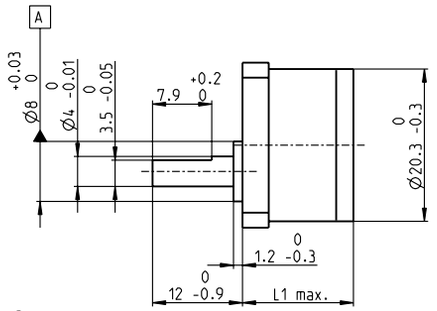
Technical Data

Planetary Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	preloaded ball bearings
Radial play, 6 mm from flange	max. 0.08 mm
Axial play at axial load	< 4 N 0 mm
	> 4 N max. 0.05 mm
Max. axial load (dynamic)	8 N
Max. force for press fits	25 N
Direction of rotation, drive to output	=
Max. continuous input speed	8000 rpm
Recommended temperature range	-40…+100°C

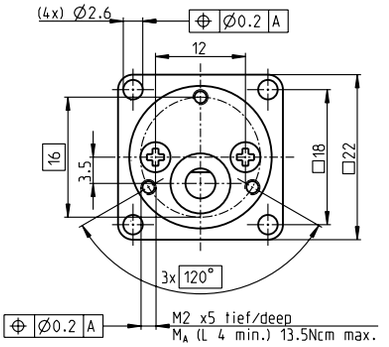
Number of stages	1	2	3	4	5
Max. radial load, 6 mm from flange	10 N	15 N	20 N	20 N	20 N

Gearhead values according to sleeve bearing version

Spur Gearhead GS 20 A ∅20.3 mm, 0.06–0.25 Nm



M 1:1



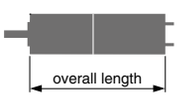
Technical Data

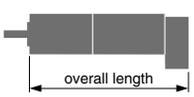
Spur Gearhead					straight teeth
Output shaft					stainless steel, hardened
Bearing at output					sleeve bearing
Radial play, 6 mm from flange					max. 0.1 mm
Axial play					max. 0.3 mm
Max. axial load (dynamic)					8 N
Max. force for press fits					20 N
Max. continuous input speed					8000 rpm
Recommended temperature range					-15…+80°C
Number of stages	2	3	4	5	6
Max. radial load, 6 mm from flange	8 N	12 N	16 N	20 N	20 N

Stock program
Standard program
Special program (on request)

Part Numbers

			258042	258044	258045	258047	258049
Gearhead Data							
1	Reduction		15:1	36:1	88:1	216:1	532:1
2	Absolute reduction		1696/117	54272/1521	1736704/19773	55574528/257049	1778384896/3341637
3	Max. motor shaft diameter	mm	2	2	2	2	2
4	Number of stages		2	3	4	5	6
5	Max. continuous torque	Nm	0.06	0.08	0.15	0.20	0.25
6	Max. intermittent torque at gear output	Nm	0.07	0.09	0.18	0.25	0.30
12	Direction of rotation, drive to output		≠	=	≠	=	≠
7	Max. efficiency	%	91	83	75	69	62
8	Weight	g	11.8	13.0	14.3	15.6	16.8
9	Average backlash no load	°	1.6	2.0	2.4	2.8	3.2
10	Mass inertia	gcm²	0.016	0.015	0.015	0.015	0.015
11	Gearhead length L1	mm	23.6	25.8	28.1	30.3	32.6

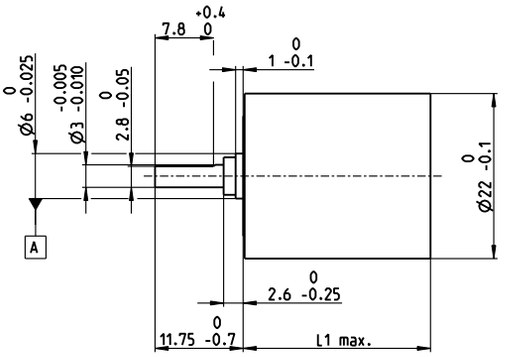


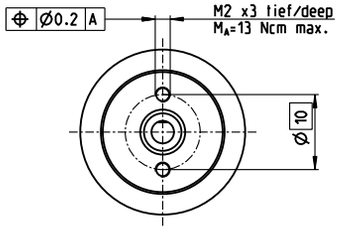


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts				
EC 20 flat, 3 W, A	291			34.1	36.3	38.6	40.8	43.1
EC 20 flat, 3 W, B	291			33.5	35.7	38.0	40.2	42.5
EC 20 flat, 5 W	292			37.7	39.9	42.2	44.4	46.7
EC 20 flat, IE, IP 00	293			40.7	42.9	45.2	47.4	49.7
EC 20 flat, IE, IP 40	293			41.8	44.0	46.3	48.5	50.8
EC 20 flat, IE, IP 00	294			44.7	46.9	49.2	51.4	53.7
EC 20 flat, IE, IP 40	294			45.8	48.0	50.3	52.5	54.8

Planetary Gearhead GP 22 B ∅22 mm, 0.1–0.3 Nm





M 1:1

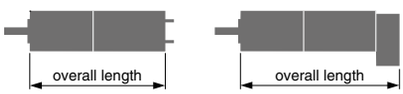
Technical Data

Planetary Gearhead					straight teeth
Housing					steel
Output shaft					stainless steel, hardened
Bearing at output					sleeve bearing
Radial play, 6 mm from flange					max. 0.06 mm
Axial play					0.02–0.10 mm
Max. axial load (dynamic)					8 N
Max. force for press fits					100 N
Direction of rotation, drive to output					=
Max. continuous input speed					8000 rpm
Recommended temperature range					-30…+100°C
Extended range as option					-40…+100°C
Number of stages	1	2	3	4	5
Max. radial load, 6 mm from flange	8 N	12 N	16 N	20 N	20 N

Stock program
Standard program
Special program (on request)

Part Numbers

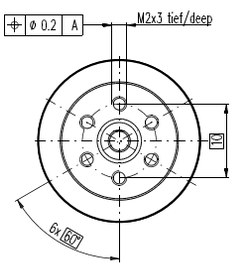
Gearhead Data		110355	110356	110357	118653	110358	134772	110359	134775
1	Reduction		4.4:1	19:1	84:1	157:1	370:1	690:1	1621:1	3027:1
2	Absolute reduction		57/13	3249/169	185193/2197	19683/125	10556001/28561	1121931/1625	601692057/371293	63950067/21125
3	Max. motor shaft diameter	mm	2	2	2	1.5	2	2	2	2
	Part Numbers		118651	134767	134768		134770	118654	134773	134776
1	Reduction		5.4:1	24:1	104:1		455:1	850 :1	1996:1	3728:1
2	Absolute reduction		27/5	1539/65	87723/845		5000211/10985	531441/625	28501207/142805	30292137/8125
3	Max. motor shaft diameter	mm	1.5	2	2		2	1.5	2	2
	Part Numbers			118652	134769		134771		134774	118655
1	Reduction			29:1	128:1		561:1		2458:1	4592:1
2	Absolute reduction			729/25	41553/325		2368521/4225		135005697/54925	14348907/3125
3	Max. motor shaft diameter	mm		1.5	2		2		2	1.5
4	Number of stages		1	2	3	3	4	4	5	5
5	Max. continuous torque	Nm	0.10	0.15	0.20	0.20	0.25	0.25	0.30	0.30
6	Max. intermittent torque at gear output	Nm	0.150	0.225	0.300	0.300	0.375	0.375	0.450	0.450
7	Max. efficiency	%	90	81	73	73	65	65	59	59
8	Weight	g	39	48	57	57	65	65	73	73
9	Average backlash no load	°	1.4	1.6	2.0	2.0	2.4	2.4	3.0	3.0
10	Mass inertia	gcm²	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05
11	Gearhead length L1	mm	15.9	19.5	23.1	23.1	26.7	26.7	30.3	30.3



maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts							
A-max 22	201-204			47.9	51.5	55.1	55.1	58.7	58.7	62.3	62.3
A-max 22	202/204	MR	388/390	52.9	56.5	60.1	60.1	63.7	63.7	67.3	67.3
A-max 22	202/204	Enc 22	398	62.3	65.9	69.5	69.5	73.1	73.1	76.7	76.7
A-max 22	202/204	MEnc 13	409	55.0	58.6	62.2	62.2	65.8	65.8	69.4	69.4

Option Ball Bearing



Part Numbers

4.4 : 1	144137	455 : 1	144147
5.4 : 1	144138	561 : 1	144148
19 : 1	144139	690 : 1	144149
24 : 1	144140	850 : 1	144150
29 : 1	144141	1621 : 1	144151
84 : 1	144142	1996 : 1	144152
104 : 1	144143	2458 : 1	144153
128 : 1	144144	3027 : 1	144154
157 : 1	144145	3728 : 1	144155
370 : 1	144146	4592 : 1	144156

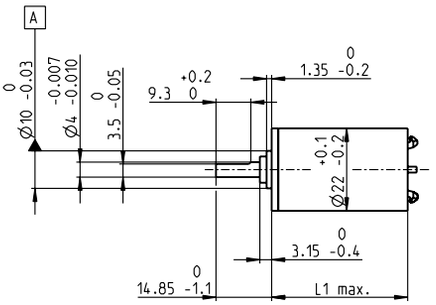
Technical Data

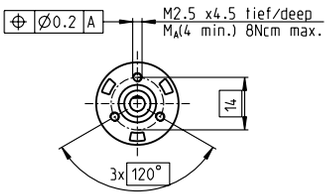
Planetary Gearhead					straight teeth
Housing					steel
Output shaft					stainless steel, hardened
Bearing at output					preloaded ball bearings
Radial play, 6 mm from flange					max. 0.08 mm
Axial play at axial load	< 4 N				0 mm
	> 4 N				max. 0.05 mm
Max. axial load (dynamic)					8 N
Max. force for press fits					25 N
Direction of rotation, drive to output					=
Max. continuous input speed					8000 rpm
Recommended temperature range					-40…+100°C
Number of stages	1	2	3	4	5
Max. radial load, 6 mm from flange	10 N	15 N	20 N	20 N	20 N

Gearhead values according to sleeve bearing version

Planetary Gearhead GP 22 L ∅22 mm, 0.2–0.6 Nm

Plastic Version





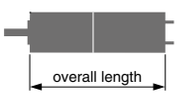
M 1:2

Technical Data					
Planetary Gearhead	straight teeth				
Housing	plastic				
Output shaft	stainless steel, hardened				
Bearing at output	sleeve bearing				
Radial play, 10 mm from flange	max. 0.1 mm				
Axial play	max. 0.15 mm				
Max. axial load (dynamic)	20 N				
Max. force for press fits	100 N				
Direction of rotation, drive to output	=				
Max. continuous input speed	6000 rpm				
Recommended temperature range	-15…+80°C				
Number of stages	1	2	3	4	5
Max. radial load, 10 mm from flange	15 N	20 N	25 N	30 N	30 N

Stock program
Standard program
Special program (on request)

Part Numbers											
232763	232766	232772	232778	232782	232788	232794	232796	232803	232809	232815

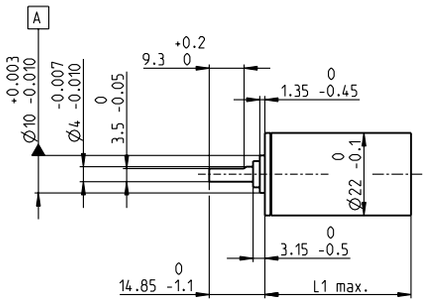
Gearhead Data												
1	Reduction		3.8:1	14:1	53:1	104:1	198:1	370:1	590:1	742:1	1386:1	1996:1	3189:1
2	Absolute reduction		15/4	225/16	3375/64	87723/845	50625/256	10556001/28561	59049/100	759375/1024	15834015/114244	28501227/142805	1594323/500
3	Max. motor shaft diameter	mm	4	4	4	3.2	4	3.2	4	4	3.2	3.2	4
	Part Numbers		232764	232767	232773	232779	**232783**	232789	232795	232798	232804	232810	232816
1	Reduction		4.4 :1	16:1	62:1	109:1	231:1	389:1	690:1	867:1	1460:1	2102:1	3728:1
2	Absolute reduction		57/13	855/52	12825/208	2187/20	192375/832	263169/676	1121931/1625	2885625/3328	3947535/2704	7105563/3380	30292137/8125
3	Max. motor shaft diameter	mm	3.2	3.2	3.2	4	3.2	3.2	3.2	3.2	3.2	3.2	3.2
	Part Numbers		232765	232768	232774	**232780**	232784	232790	232797	232799	232805	232811	232817
1	Reduction		5.4:1	19:1	72:1	128:1	270:1	410:1	850:1	1014:1	1538:1	2214:1	4592:1
2	Absolute reduction		27/5	3249/169	48735/676	41553/325	731025/2704	6561/16	531441/625	10965375/10816	98415/64	177147/80	14348907/3125
3	Max. motor shaft diameter	mm	2.5	3.2	3.2	3.2	3.2	4	2.5	3.2	4	4	2.5
	Part Numbers			232769	232775	232781	232785	232791		232800	232806	232812	
1	Reduction			20:1	76:1	157:1	285:1	455:1		1068:1	1621:1	2458:1	
2	Absolute reduction			81/4	1215/16	19683/125	18225/64	5000211/10985		273375/256	60169205/371293	135005697/54925	
3	Max. motor shaft diameter	mm		4	4	2.5	4	3.2		4	3.2	3.2	
	Part Numbers			232770	232776		232786	232792		232801	232807	232813	
1	Reduction			24:1	84:1		316:1	479:1		1185:1	1707:1	2589:1	
2	Absolute reduction			1539/65	185193/2197		2777895/8788	124659/260		41668425/35152	15000633/8788	3365793/1300	
3	Max. motor shaft diameter	mm		3.2	3.2		3.2	3.2		3.2	3.2	3.2	
	Part Numbers			232771	232777		232787	232793		232802	232808	232814	
1	Reduction			29:1	89:1		333:1	561:1		1249:1	1798:1	3027:1	
2	Absolute reduction			729/25	4617/52		69255/208	2368521/4225		1038825/832	373977/208	63950067/21125	
3	Max. motor shaft diameter	mm		2.5	3.2		3.2	3.2		3.2	3.2	3.2	
4	Number of stages		1	2	3	3	4	4	4	5	5	5	5
5	Max. continuous torque	Nm	0.2	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6
6	Max. intermittent torque at gear output	Nm	0.3	0.4	0.5	0.5	0.7	0.7	0.7	0.8	0.8	0.8	0.8
7	Max. efficiency	%	84	70	59	59	49	49	49	42	42	42	42
8	Weight	g	28	35	43	43	51	51	51	59	59	59	59
9	Average backlash no load	°	1.0	1.2	1.6	1.6	2.0	2.0	2.0	2.0	2.0	2.0	2.0
10	Mass inertia	gcm²	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
11	Gearhead length L1	mm	22.7	29.5	36.3	36.3	43.1	43.1	43.1	49.9	49.9	49.9	49.9

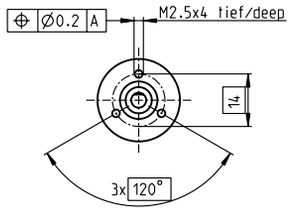


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts										
A-max 22	201-204			54.7	61.5	68.3	68.3	75.1	75.1	75.1	81.9	81.9	81.9	81.9
A-max 22	202/204	MR	388/390	59.7	66.5	73.3	73.3	80.1	80.1	80.1	86.9	86.9	86.9	86.9
A-max 22	202/204	Enc 22	398	69.1	75.9	82.7	82.7	89.5	89.5	89.5	96.3	96.3	96.3	96.3
A-max 22	202/204	MEnc 13	409	61.8	68.6	75.4	75.4	82.2	82.2	82.2	89.0	89.0	89.0	89.0

Planetary Gearhead GP 22 A ∅22 mm, 0.5–1.0 Nm





M 1:2

Technical Data

Planetary Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	ball bearing
Option	sleeve bearing
Radial play, 10 mm from flange	max. 0.2 mm
Axial play	max. 0.2 mm
Max. axial load (dynamic)	100 N
Max. force for press fits	100 N
Direction of rotation, drive to output	=
Max. continuous input speed	6000 rpm
Recommended temperature range	-40…+100°C

Number of stages	1	2	3	4	5
Max. radial load, 10 mm from flange	30 N	50 N	55 N	55 N	55 N

maxon gear

Stock program
Standard program
Special program (on request)

Gearhead Data		Part Numbers										
		134156	134158	134163	134168	134172	110340	134183	134186	134190	134195	134203
1 Reduction		3.8:1	14:1	53:1	104:1	198:1	370:1	590:1	742:1	1386:1	1996:1	3189:1
2 Absolute reduction		15/4	225/16	3375/64	87723/845	50625/256	10556001/28561	59049/100	759375/1024	158340015/114244	285012027/142805	1594323/500
3 Max. motor shaft diameter	mm	4	4	4	3.2	4	3.2	4	4	3.2	3.2	4
Part Numbers		**110337**	134159	134164	134169	**134173**	134178	**134184**	134187	134193	134198	134204
1 Reduction		4.4 :1	16:1	62:1	109:1	231:1	389:1	690:1	867:1	1460:1	2102:1	3728:1
2 Absolute reduction		57/13	855/52	12825/208	2187/20	192375/832	263169/676	1121931/1625	2885625/3328	3947535/2704	7105563/3380	30292137/8125
3 Max. motor shaft diameter	mm	3.2	3.2	3.2	4	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Part Numbers		134157	**110338**	134165	**134170**	134174	134180	134185	134188	134196	134200	134205
1 Reduction		5.4:1	19:1	72:1	128:1	270:1	410:1	850:1	1014:1	1538:1	2214:1	4592:1
2 Absolute reduction		27/5	3249/169	48735/676	41553/325	731025/2704	6561/16	531441/625	10965375/10816	98415/64	177147/80	14348907/3125
3 Max. motor shaft diameter	mm	2.5	3.2	3.2	3.2	3.2	4	2.5	3.2	4	4	2.5
Part Numbers			134160	134166	134171	134176	134179		134191	110341	134199	
1 Reduction			20:1	76:1	157:1	285:1	455:1		1068:1	1621:1	2458:1	
2 Absolute reduction			81/4	1215/16	19683/125	18225/64	5000211/10985		273375/256	60169205/371293	13500569/54925	
3 Max. motor shaft diameter	mm		4	4	2.5	4	3.2		4	3.2	3.2	
Part Numbers			134161	**110339**		134175	134181		134189	134194	134201	
1 Reduction			24:1	84:1		316:1	479:1		1185:1	1707:1	2589:1	
2 Absolute reduction			1539/65	185193/2197		2777895/8788	124659/260		41668425/35152	15000633/8788	3365793/1300	
3 Max. motor shaft diameter	mm		3.2	3.2		3.2	3.2		3.2	3.2	3.2	
Part Numbers			134162	134167		134177	134182		134192	134197	134202	
1 Reduction			29:1	89:1		333:1	561:1		1249:1	1798:1	3027:1	
2 Absolute reduction			729/25	4617/52		69255/208	2368521/4225		1038825/832	373977/208	63950067/21125	
3 Max. motor shaft diameter	mm		2.5	3.2		3.2	3.2		3.2	3.2	3.2	
4 Number of stages		1	2	3	3	4	4	4	5	5	5	5
5 Max. continuous torque	Nm	0.5	0.5	0.8	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0
6 Max. intermittent torque at gear output	Nm	0.8	0.8	1.2	1.2	1.6	1.6	1.6	1.6	1.6	1.6	1.6
7 Max. efficiency	%	84	70	59	59	49	49	49	42	42	42	42
8 Weight	g	42	55	68	68	81	81	81	94	94	94	94
9 Average backlash no load	°	1.0	1.2	1.6	1.6	2.0	2.0	2.0	2.0	2.0	2.0	2.0
10 Mass inertia	gcm²	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
11 Gearhead length L1*	mm	22.6	29.4	36.2	36.2	43.0	43.0	43.0	49.8	49.8	49.8	49.8

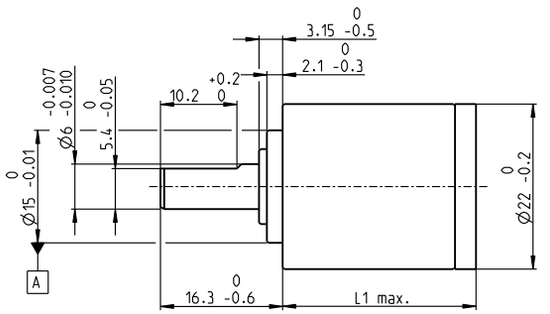
*for EC 32fl. L1 is + 7.1 mm

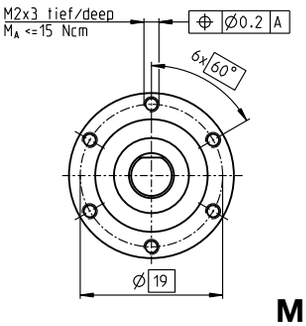
maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts										
A-max 19	197/198			51.6	58.4	65.2	65.2	72.0	72.0	72.0	78.8	78.8	78.8	78.8
A-max 19, 1.5 W	198	MR	388/390	56.7	63.5	70.3	70.3	77.1	77.1	77.1	83.9	83.9	83.9	83.9
A-max 19, 1.5 W	198	Enc 22	398	66.0	72.8	79.6	79.6	86.4	86.4	86.4	93.2	93.2	93.2	93.2
A-max 19, 1.5 W	198	MEnc 13	409	59.1	65.9	72.7	72.7	79.5	79.5	79.5	86.3	86.3	86.3	86.3
A-max 19, 2.5 W	199/200			54.2	61.0	67.8	67.8	74.6	74.6	74.6	81.4	81.4	81.4	81.4
A-max 19, 2.5 W	200	MR	388/390	58.5	65.3	72.1	72.1	78.9	78.9	78.9	85.7	85.7	85.7	85.7
A-max 19, 2.5 W	200	Enc 22	398	68.6	75.4	82.2	82.2	89.0	89.0	89.0	95.8	95.8	95.8	95.8
A-max 19, 2.5 W	200	MEnc 13	409	61.7	68.5	75.3	75.3	82.1	82.1	82.1	88.9	88.9	88.9	88.9
A-max 22	201-204			54.6	61.4	68.2	68.2	75.0	75.0	75.0	81.8	81.8	81.8	81.8
A-max 22	202/204	MR	388/390	59.6	66.4	73.2	73.2	80.0	80.0	80.0	86.8	86.8	86.8	86.8
A-max 22	202/204	Enc 22	398	69.0	75.8	82.6	82.6	89.4	89.4	89.4	96.2	96.2	96.2	96.2
A-max 22	202/204	MEnc 13	409	61.7	68.5	75.3	75.3	82.1	82.1	82.1	88.9	88.9	88.9	88.9
RE-max 21	223/224			51.6	58.4	65.2	65.2	72.0	72.0	72.0	78.8	78.8	78.8	78.8
RE-max 21, 3.5 W	224	MR	389/391	56.7	63.5	70.3	70.3	77.1	77.1	77.1	83.9	83.9	83.9	83.9
RE-max 21, 6 W	225/226			54.2	61.0	67.8	67.8	74.6	74.6	74.6	81.4	81.4	81.4	81.4
RE-max 21, 6 W	226	MR	389/391	58.5	65.3	72.1	72.1	78.9	78.9	78.9	85.7	85.7	85.7	85.7
EC 16, 30 W	244			65.5	72.3	79.1	79.1	85.9	85.9	85.9	92.7	92.7	92.7	92.7
EC 16, 30 W	244	MR	391	76.2	83	89.8	89.8	96.6	96.6	96.6	103.4	103.4	103.4	103.4
EC 16, 60 W	245			81.5	88.3	95.1	95.1	101.9	101.9	101.9	108.7	108.7	108.7	108.7
EC 16, 60 W	245	MR	391	92.2	99.0	105.8	105.8	112.6	112.6	112.6	119.4	119.4	119.4	119.4
EC 20 flat, 3 W, A	291			33.1	39.9	46.7	46.7	53.5	53.5	53.5	60.3	60.3	60.3	60.3
EC 20 flat, 3 W, B	291			32.5	39.3	46.1	46.1	52.9	52.9	52.9	59.7	59.7	59.7	59.7
EC 20 flat, 5 W	292			36.7	43.5	50.3	50.3	57.1	57.1	57.1	63.9	63.9	63.9	63.9
EC 20 flat, IE, IP 00	293			39.7	46.5	53.3	53.3	60.1	60.1	60.1	66.9	66.9	66.9	66.9
EC 20 flat, IE, IP 40	293			40.8	47.6	54.4	54.4	61.2	61.2	61.2	68.0	68.0	68.0	68.0
EC 20 flat, IE, IP 00	294			43.7	50.5	57.3	57.3	64.1	64.1	64.1	70.9	70.9	70.9	70.9
EC 20 flat, IE, IP 40	294			44.8	51.6	58.4	58.4	65.2	65.2	65.2	72.0	72.0	72.0	72.0
EC 32 flat, 6 W	295			39.8	46.6	53.4	53.4	60.2	60.2	60.2	67.0	67.0	67.0	67.0

Planetary Gearhead GP 22 AR ∅22 mm, 0.50 Nm

for high radial loads





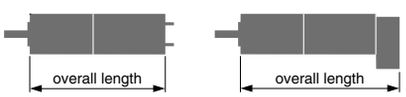
M 1:1

Technical Data

Planetary Gearhead	straight teeth
Output shaft	stainless steel
Bearing at output	ball bearing
Radial play, 10 mm from flange	max. 0.2 mm
Axial play	max. 0.1 mm
Max. axial load (dynamic)	100 N
Max. force for press fits	100 N
Direction of rotation, drive to output	=
Max. continuous input speed	6000 rpm
Recommended temperature range	-30...+100°C
Max. radial load, 10 mm from flange	70 N

Stock program
Standard program
Special program (on request)

Gearhead Data		Part Numbers		
		462695	438992	462696
1 Reduction		3.8:1	4.4:1	5.4:1
2 Absolute reduction		15/4	57/13	27/5
3 Max. motor shaft diameter	mm	4	3.2	2.5
4 Number of stages		1	1	1
5 Max. continuous torque	Nm	0.5	0.5	0.5
6 Max. intermittent torque at gear output	Nm	0.8	0.8	0.8
7 Max. efficiency	%	90	90	90
8 Weight	g	44	44	44
9 Average backlash no load	°	1.0	1.0	1.0
10 Mass inertia	gcm²	0.5	0.38	0.25
11 Gearhead length L1	mm	25.8	25.8	25.8

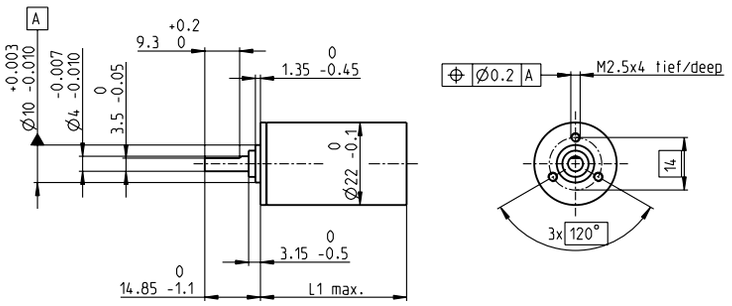


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts		
RE 25, 20 W	180			68.9	68.9	68.9
RE 25, 20 W	180	MR	392	79.9	79.9	79.9
RE 25, 20 W	180	HED_ 5540	400/403	89.7	89.7	89.7
RE 25, 20 W	180	DCT22	411	91.2	91.2	91.2
RE 25, 20 W	180	AB 28	446	103	103	103
RE 25, 20 W	180	HED_ 5540/AB 28	400/446	120.2	120.2	120.2
EC-max 22, 25 W	263			74.4	74.4	74.4
EC-max 22, 25 W	263	MR	391	84	84	84
EC-max 22, 25 W	263	AB 20	444	110	110	110

Planetary Gearhead GP 22 C ∅22 mm, 0.5–2.0 Nm

Ceramic Version



M 1:2

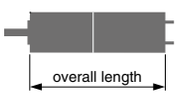
Technical Data	
Planetary Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	ball bearing
Radial play, 10 mm from flange	max. 0.2 mm
Axial play	max. 0.2 mm
Max. axial load (dynamic)	100 N
Max. force for press fits	100 N
Direction of rotation, drive to output	=
Max. continuous input speed	8000 rpm
Recommended temperature range	-40…+100°C

Number of stages	1	2	3	4	5
Max. radial load, 10 mm from flange	30 N	50 N	55 N	55 N	55 N

Stock program
Standard program
Special program (on request)

Part Numbers	143971	143974	143980	143986	143990	143996	144002	144004	144011	144017	144023
Gearhead Data											
1 Reduction	3.8:1	14:1	53:1	104:1	198:1	370:1	590:1	742:1	1386:1	1996:1	3189:1
2 Absolute reduction	$^{15}/_{4}$	$^{225}/_{16}$	$^{3375}/_{64}$	$^{87723}/_{845}$	$^{50625}/_{256}$	$^{10556001}/_{28561}$	$^{59049}/_{100}$	$^{759375}/_{1024}$	$^{158340015}/_{114244}$	$^{285012027}/_{142805}$	$^{1594323}/_{500}$
3 Max. motor shaft diameter mm	4	4	4	3.2	4	3.2	4	4	3.2	3.2	4
Part Numbers	**143972**	143975	143981	143987	**143991**	143997	**144003**	144006	144012	144018	144024
1 Reduction	4.4 :1	16:1	62:1	109:1	231:1	389:1	690:1	867:1	1460:1	2102:1	3728:1
2 Absolute reduction	$^{57}/_{13}$	$^{855}/_{52}$	$^{12825}/_{208}$	$^{2187}/_{20}$	$^{192375}/_{832}$	$^{263169}/_{676}$	$^{1121931}/_{1625}$	$^{2885625}/_{3328}$	$^{3947535}/_{2704}$	$^{7105563}/_{3380}$	$^{30292137}/_{8125}$
3 Max. motor shaft diameter mm	3.2	3.2	3.2	4	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Part Numbers	143973	**143976**	143982	**143988**	143992	143998	144005	144007	144013	144019	144025
1 Reduction	5.4:1	19:1	72:1	128:1	270:1	410:1	850:1	1014:1	1538:1	2214:1	4592:1
2 Absolute reduction	$^{27}/_{5}$	$^{3249}/_{169}$	$^{48735}/_{676}$	$^{41553}/_{325}$	$^{731025}/_{2704}$	$^{6561}/_{16}$	$^{531441}/_{625}$	$^{10965375}/_{10816}$	$^{98415}/_{64}$	$^{177147}/_{80}$	$^{14348907}/_{3125}$
3 Max. motor shaft diameter mm	2.5	3.2	3.2	3.2	3.2	4	2.5	3.2	4	4	2.5
Part Numbers		143977	143983	143989	143993	143999		144008	144014	144020	
1 Reduction		20:1	76:1	157:1	285:1	455:1		1068:1	1621:1	2458:1	
2 Absolute reduction		$^{81}/_{4}$	$^{1215}/_{16}$	$^{19683}/_{125}$	$^{18225}/_{64}$	$^{5000211}/_{10985}$		$^{273375}/_{256}$	$^{60169205 7}/_{371293}$	$^{135005697}/_{54925}$	
3 Max. motor shaft diameter mm		4	4	2.5	4	3.2		4	3.2	3.2	
Part Numbers		143978	**143984**		143994	144000		144009	144015	144021	
1 Reduction		24:1	84:1		316:1	479:1		1185:1	1707:1	2589:1	
2 Absolute reduction		$^{1539}/_{65}$	$^{185193}/_{2197}$		$^{2777895}/_{8788}$	$^{124659}/_{260}$		$^{41668425}/_{35152}$	$^{15000633}/_{8788}$	$^{3365793}/_{1300}$	
3 Max. motor shaft diameter mm		3.2	3.2		3.2	3.2		3.2	3.2	3.2	
Part Numbers		143979	143985		143995	144001		144010	144016	144022	
1 Reduction		29:1	89:1		333:1	561:1		1249:1	1798:1	3027:1	
2 Absolute reduction		$^{729}/_{25}$	$^{4617}/_{52}$		$^{69255}/_{208}$	$^{2368521}/_{4225}$		$^{1038825}/_{832}$	$^{373977}/_{208}$	$^{63950067}/_{21125}$	
3 Max. motor shaft diameter mm		2.5	3.2		3.2	3.2		3.2	3.2	3.2	
4 Number of stages	1	2	3	3	4	4	4	5	5	5	5
5 Max. continuous torque Nm	0.5	0.6	1.2	1.2	1.8	1.8	1.8	2.0	2.0	2.0	2.0
6 Max. intermittent torque at gear output Nm	0.8	0.9	1.9	1.9	2.7	2.7	2.7	3.0	3.0	3.0	3.0
7 Max. efficiency %	84	70	59	59	49	49	49	42	42	42	42
8 Weight g	42	55	68	68	81	81	81	94	94	94	94
9 Average backlash no load °	1.0	1.2	1.6	1.6	2.0	2.0	2.0	2.0	2.0	2.0	2.0
10 Mass inertia gcm^2	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
11 Gearhead length L1* mm	25.4	32.2	39.0	39.0	45.8	45.8	45.8	52.6	52.6	52.6	52.6

*L1 is–2.8 mm for calculating the overall length

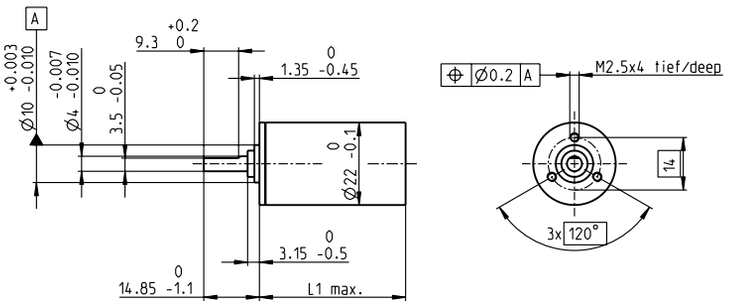


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts										
A-max 19	197/198			51.6	58.4	65.2	65.2	72.0	72.0	72.0	78.8	78.8	78.8	78.8
A-max 19, 1.5 W	198	MR	388/390	56.7	63.5	70.3	70.3	77.1	77.1	77.1	83.9	83.9	83.9	83.9
A-max 19, 1.5 W	198	Enc 22	398	66.0	72.8	79.6	79.6	86.4	86.4	86.4	93.2	93.2	93.2	93.2
A-max 19, 1.5 W	198	MEnc 13	409	59.1	65.9	72.7	72.7	79.5	79.5	79.5	86.3	86.3	86.3	86.3
A-max 19, 2.5 W	199/200			54.2	61.0	67.8	67.8	74.6	74.6	74.6	81.4	81.4	81.4	81.4
A-max 19, 2.5 W	200	MR	388/390	58.5	65.3	72.1	72.1	78.9	78.9	78.9	85.7	85.7	85.7	85.7
A-max 19, 2.5 W	200	Enc 22	398	68.6	75.4	82.2	82.2	89.0	89.0	89.0	95.8	95.8	95.8	95.8
A-max 19, 2.5 W	200	MEnc 13	409	61.7	68.5	75.3	75.3	82.1	82.1	82.1	88.9	88.9	88.9	88.9
A-max 22	201-204			54.6	61.4	68.2	68.2	75.0	75.0	75.0	81.8	81.8	81.8	81.8
A-max 22	202/204	MR	388/390	59.6	66.4	73.2	73.2	80.0	80.0	80.0	86.8	86.8	86.8	86.8
A-max 22	202/204	Enc 22	398	69.0	75.8	82.6	82.6	89.4	89.4	89.4	96.2	96.2	96.2	96.2
A-max 22	202/204	MEnc 13	409	61.7	68.5	75.3	75.3	82.1	82.1	82.1	88.9	88.9	88.9	88.9
RE-max 21	223/224			51.6	58.4	65.2	65.2	72.0	72.0	72.0	78.8	78.8	78.8	78.8
RE-max 21, 3.5 W	224	MR	389/391	56.7	63.5	70.3	70.3	77.1	77.1	77.1	83.9	83.9	83.9	83.9
RE-max 21	225/226			54.2	61.0	67.8	67.8	74.6	74.6	74.6	81.4	81.4	81.4	81.4
RE-max 21, 6 W	226	MR	389/391	58.5	65.3	72.1	72.1	78.9	78.9	78.9	85.7	85.7	85.7	85.7

Planetary Gearhead GP 22 C ∅22 mm, 0.5–2.0 Nm

Ceramic Version



M 1:2

Technical Data

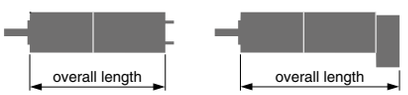
Planetary Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	ball bearing
Radial play, 10 mm from flange	max. 0.2 mm
Axial play	max. 0.2 mm
Max. axial load (dynamic)	100 N
Max. force for press fits	100 N
Direction of rotation, drive to output	=
Max. continuous input speed	8000 rpm
Recommended temperature range	-40...+100°C

Number of stages	1	2	3	4	5
Max. radial load, 10 mm from flange	30 N	50 N	55 N	55 N	55 N

Stock program
Standard program
Special program (on request)

Part Numbers	143971	143974	143980	143986	143990	143996	144002	144004	144011	144017	144023
Gearhead Data											
1 Reduction	3.8:1	14:1	53:1	104:1	198:1	370:1	590:1	742:1	1386:1	1996:1	3189:1
2 Absolute reduction	15/4	225/16	3375/64	87723/845	50625/256	10556001/28561	59049/100	759375/1024	158340015/114244	285012027/142805	1594323/500
3 Max. motor shaft diameter mm	4	4	4	3.2	4	3.2	4	4	3.2	3.2	4
Part Numbers	143972	143975	143981	143987	143991	143997	144003	144006	144012	144018	144024
1 Reduction	4.4 :1	16:1	62:1	109:1	231:1	389:1	690:1	867:1	1460:1	2102:1	3728:1
2 Absolute reduction	57/13	855/52	12825/208	2187/20	192375/832	263169/676	1121931/1625	2885625/3328	3947535/2704	7105563/3380	30292137/8125
3 Max. motor shaft diameter mm	3.2	3.2	3.2	4	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Part Numbers	143973	143976	143982	143988	143992	143998	144005	144007	144013	144019	144025
1 Reduction	5.4:1	19:1	72:1	128:1	270:1	410:1	850:1	1014:1	1538:1	2214:1	4592:1
2 Absolute reduction	27/5	3249/169	48735/676	41553/325	731025/2704	6561/16	531441/625	10965375/10816	98415/64	177147/80	14348907/3125
3 Max. motor shaft diameter mm	2.5	3.2	3.2	3.2	3.2	4	2.5	3.2	4	4	2.5
Part Numbers		143977	143983	143989	143993	143999		144008	144014	144020	
1 Reduction		20:1	76:1	157:1	285:1	455:1		1068:1	1621:1	2458:1	
2 Absolute reduction		81/4	1215/16	19683/125	18225/64	5000211/10985		273375/256	60169205/371293	135005697/54925	
3 Max. motor shaft diameter mm		4	4	2.5	4	3.2		4	3.2	3.2	
Part Numbers		143978	143984		143994	144000		144009	144015	144021	
1 Reduction		24:1	84:1		316:1	479:1		1185:1	1707:1	2589:1	
2 Absolute reduction		1539/65	185193/2197		2777895/8788	124659/260		41668425/35152	15000633/8788	3365793/1300	
3 Max. motor shaft diameter mm		3.2	3.2		3.2	3.2		3.2	3.2	3.2	
Part Numbers		143979	143985		143995	144001		144010	144016	144022	
1 Reduction		29:1	89:1		333:1	561:1		1249:1	1798:1	3027:1	
2 Absolute reduction		729/25	4617/52		69255/208	2368521/4225		1038825/832	373977/208	63950067/21125	
3 Max. motor shaft diameter mm		2.5	3.2		3.2	3.2		3.2	3.2	3.2	
4 Number of stages	1	2	3	3	4	4	4	5	5	5	5
5 Max. continuous torque Nm	0.5	0.6	1.2	1.2	1.8	1.8	1.8	2.0	2.0	2.0	2.0
6 Max. intermittent torque at gear output Nm	0.8	0.9	1.9	1.9	2.7	2.7	2.7	3.0	3.0	3.0	3.0
7 Max. efficiency %	84	70	59	59	49	49	49	42	42	42	42
8 Weight g	42	55	68	68	81	81	81	94	94	94	94
9 Average backlash no load °	1.0	1.2	1.6	1.6	2.0	2.0	2.0	2.0	2.0	2.0	2.0
10 Mass inertia gcm²	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
11 Gearhead length L1* mm	25.4	32.2	39.0	39.0	45.8	45.8	45.8	52.6	52.6	52.6	52.6

*for EC-max 16 L1 is–2.8 mm

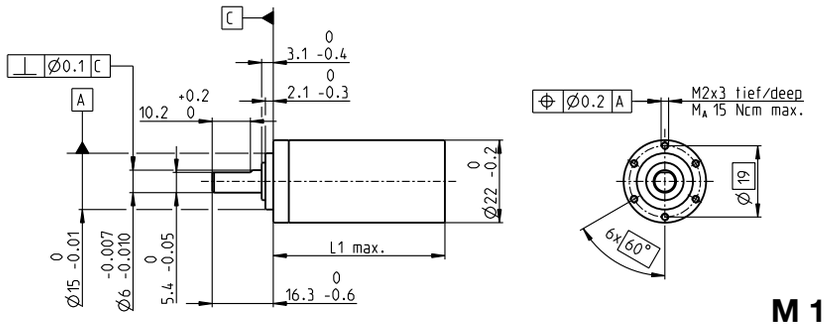


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts										
EC 16, 60 W	245			81.5	88.3	95.1	95.1	101.9	101.9	101.9	108.7	108.7	108.7	108.7
EC 16, 60 W	245	MR	391	92.2	99.0	105.8	105.8	112.6	112.6	112.6	119.4	119.4	119.4	119.4
EC 22, 40 W	246			70.0	76.8	83.6	83.6	90.4	90.4	90.4	97.2	97.2	97.2	97.2
EC 22, 40 W	246	MR	391	76.0	82.8	89.6	89.6	96.4	96.4	96.4	103.2	103.2	103.2	103.2
EC 22, 100 W	247			88.2	95.0	101.8	101.8	108.6	108.6	108.6	115.4	115.4	115.4	115.4
EC 22, 100 W	247	MR	391	94.2	101.0	107.8	107.8	114.6	114.6	114.6	121.4	121.4	121.4	121.4
EC-max 16, 8 W	261			58.7	65.5	72.3	72.3	79.1	79.1	79.1	85.9	85.9	85.9	85.9
EC-max 16, 8 W	261	MR	391	66.0	72.8	79.6	79.6	86.4	86.4	86.4	93.2	93.2	93.2	93.2
EC-max 22, 12 W	262			57.5	64.3	71.1	71.1	77.9	77.9	77.9	84.7	84.7	84.7	84.7
EC-max 22, 12 W	262	MR	391	67.2	74.0	80.8	80.8	87.6	87.6	87.6	94.4	94.4	94.4	94.4
EC-max 22, 12 W	262	AB 20	444	93.1	99.9	106.7	106.7	113.5	113.5	113.5	120.3	120.3	120.3	120.3
EC 20 flat, 3 W, A	291			33.1	39.9	46.7	46.7	53.5	53.5	53.5	60.3	60.3	60.3	60.3
EC 20 flat, 3 W, B	291			32.5	39.3	46.1	46.1	52.9	52.9	52.9	59.7	59.7	59.7	59.7
EC 20 flat, 5 W	292			36.7	43.5	50.3	50.3	57.1	57.1	57.1	63.9	63.9	63.9	63.9
EC 20 flat, IE, IP 00	293			39.7	46.5	53.3	53.3	60.1	60.1	60.1	66.9	66.9	66.9	66.9
EC 20 flat, IE, IP 40	293			40.8	47.6	54.4	54.4	61.2	61.2	61.2	68.0	68.0	68.0	68.0
EC 20 flat, IE, IP 00	294			43.7	50.5	57.3	57.3	64.1	64.1	64.1	70.9	70.9	70.9	70.9
EC 20 flat, IE, IP 40	294			44.8	51.6	58.4	58.4	65.2	65.2	65.2	72.0	72.0	72.0	72.0
EC 32 flat, 6 W	295			39.8	46.6	53.4	53.4	60.2	60.2	60.2	67.0	67.0	67.0	67.0

Planetary Gearhead GP 22 HP ∅22 mm, 2.0–3.4 Nm

High Power



M 1:2

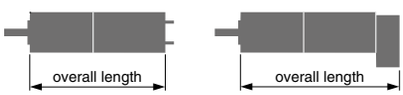
Technical Data

Planetary Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	ball bearing
Radial play, 10 mm from flange	max. 0.2 mm
Axial play	max. 0.1 mm
Max. axial load (dynamic)	100 N
Max. force for press fits	100 N
Direction of rotation, drive to output	=
Max. continuous input speed	12000 rpm
Recommended temperature range	-40…+100°C

Number of stages	1	2	3	4
Max. radial load, 10 mm from flange	55 N	85 N	100 N	110 N

Stock program
Standard program
Special program (on request)

Part Numbers	370683	370687	370690	**370776**	370780	370783	370792	370797	370802	370807
Gearhead Data (provisional)										
1 Reduction	3.8:1	14:1	20:1	53:1	76:1	104:1	198:1	316:1	410:1	590:1
2 Absolute reduction	15/4	225/16	81/4	3375/64	1215/16	87723/845	50625/256	2777895/8788	6561/16	59049/100
3 Max. motor shaft diameter mm	4	4	4	4	4	3.2	4	3.2	4	4
Part Numbers	370685	370688	370691	370778	370781	370784	370794	370799	370803	370808
1 Reduction	4.4:1	16:1	24:1	62:1	84:1	109:1	231:1	333:1	455:1	690:1
2 Absolute reduction	57/13	855/52	1539/65	12825/208	185193/2197	2187/20	192375/832	69255/208	5000211/10985	1121931/1625
3 Max. motor shaft diameter mm	3.2	3.2	3.2	3.2	3.2	4	3.2	3.2	3.2	3.2
Part Numbers	370686	**370689**	370692	370779	370782	**370785**	370795	**370800**	370805	370809
1 Reduction	5.4:1	19:1	29:1	72:1	89:1	128:1	270:1	370:1	479:1	850:1
2 Absolute reduction	27/5	3249/169	729/25	48735/676	4617/52	41553/325	731025/2704	10556001/28561	124659/260	531441/625
3 Max. motor shaft diameter mm	2.5	3.2	2.5	3.2	3.2	3.2	3.2	3.2	3.2	2.5
Part Numbers						370786	370796	370801	370806	
1 Reduction						157:1	285:1	389:1	561:1	
2 Absolute reduction						19683/125	18225/64	263169/676	2368521/4225	
3 Max. motor shaft diameter mm						2.5	4	3.2	3.2	
4 Number of stages	1	2	2	3	3	3	4	4	4	4
5 Max. continuous torque Nm	2	2.4	2.4	3	3	3	3.4	3.4	3.4	3.4
6 Max. intermittent torque at gear output Nm	2.5	3	3	3.5	3.5	3.5	3.8	3.8	3.8	3.8
7 Max. efficiency %	84	70	70	59	59	59	49	49	49	49
8 Weight g	51	64	64	78	78	78	91	91	91	91
9 Average backlash no load °	1.0	1.2	1.2	1.6	1.6	1.6	2.0	2.0	2.0	2.0
10 Mass inertia gcm²	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
11 Gearhead length L1 mm	25.3	32.3	32.3	39.0	39.0	39.0	45.7	45.7	45.7	45.7

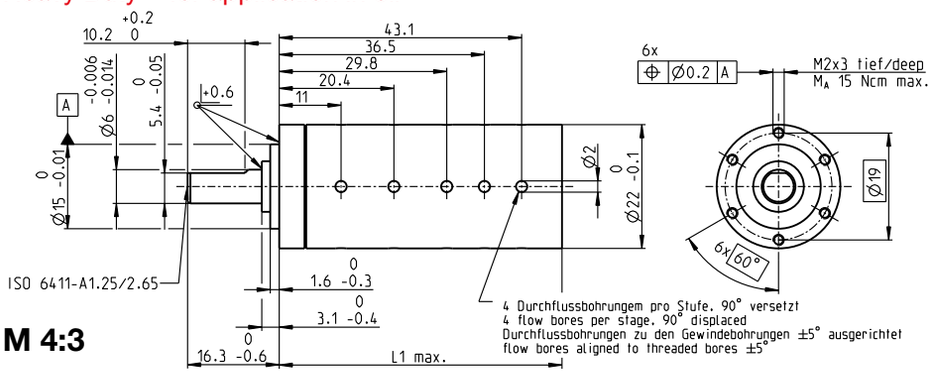


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts									
EC 22, 40 W	246			69.9	76.9	76.9	83.6	83.6	83.6	90.3	90.3	90.3	90.3
EC 22, 40 W	246	MR	391	75.9	82.9	82.9	89.6	89.6	89.6	96.3	96.3	96.3	96.3
EC 22, 100 W	247			88.1	95.1	95.1	101.8	101.8	101.8	108.5	108.5	108.5	108.5
EC 22, 100 W	247	MR	391	94.1	101.1	101.1	107.8	107.8	107.8	114.5	114.5	114.5	114.5
EC-max 22, 12 W	262			57.4	64.4	64.4	71.1	71.1	71.1	77.8	77.8	77.8	77.8
EC-max 22, 12 W	262	MR	391	67.0	74.0	74.0	80.7	80.7	80.7	87.4	87.4	87.4	87.4
EC-max 22, 12 W	262	AB 20	444	93.0	100.0	100.0	106.7	106.7	106.7	113.4	113.4	113.4	113.4
EC-max 22, 25 W	263			73.9	80.9	80.9	87.6	87.6	87.6	94.3	94.3	94.3	94.3
EC-max 22, 25 W	263	MR	391	83.5	90.5	90.5	97.2	97.2	97.2	103.9	103.9	103.9	103.9
EC-max 22, 25 W	263	AB 20	444	109.5	116.5	116.5	123.2	123.2	123.2	129.9	129.9	129.9	129.9
EC-4pole 22, 90 W	271			74.0	81.0	81.0	87.7	87.7	87.7	94.4	94.4	94.4	94.4
EC-4pole 22, 90 W	271	HEDL 5540	404	95.5	102.5	102.5	109.2	109.2	109.2	115.9	115.9	115.9	115.9
EC-4pole 22, 120 W	272			91.4	98.4	98.4	105.1	105.1	105.1	111.8	111.8	111.8	111.8
EC-4pole 22, 120 W	272	HEDL 5540	404	112.9	119.9	119.9	126.6	126.6	126.6	133.3	133.3	133.3	133.3

Planetary Gearhead GP 22 HD ∅22 mm, 2.0–4.0 Nm

Heavy Duty – for application in oil



M 4:3

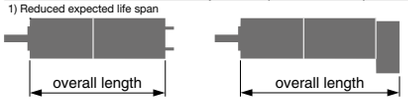
Technical Data	
Planetary Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	ball bearing
Radial play, 10 mm from flange	max. 0.2 mm
Axial play	max. 0.1 mm
Max. axial load (dynamic)	100 N
Max. force for press fits	100 N
Direction of rotation, drive to output	=
Max. continuous input speed	11'000 rpm
Recommended temperature range	-55…+200°C
Extended range as option	-55…+260°C

Number of stages	1	2	3	4	5
Max. radial load, 10 mm from flange	55 N	85 N	100 N	110 N	110 N

Stock program
Standard program
Special program (on request)

Part Numbers	410657	410637	410558	416698	409667	416709	416738	416211	416747	416753	416760
Gearhead Data (provisional)											
1 Reduction	3.8:1	14:1	53:1	104:1	198:1	370:1	561:1	742:1	1386:1	1798:1	3027:1
2 Absolute reduction	15/4	225/16	3375/64	87723/845	50625/256	10556001/28561	2368521/4225	759375/1024	158340015/114244	373977/208	63950067/21125
3 Max. motor shaft diameter mm	4	4	4	3.2	4	3.2	3.2	4	3.2	3.2	3.2
Part Numbers	416684	416686	416693	416699	416703	416710	416739	416742	416748	416754	416762
1 Reduction	4.4:1	16:1	62:1	109:1	231:1	389:1	590:1	867:1	1460:1	1996:1	3189:1
2 Absolute reduction	57/13	855/52	12825/208	2187/20	192375/832	263169/676	59049/100	2885625/3328	3947535/2704	285012027/142805	1594323/500
3 Max. motor shaft diameter mm	3.2	3.2	3.2	4	3.2	3.2	4	3.2	3.2	3.2	4
Part Numbers		416687	416694	416701	416704	416711	416740	416743	416749	416756	416763
1 Reduction		19:1	72:1	128:1	270:1	410:1	690:1	1014:1	1538:1	2102:1	3728:1
2 Absolute reduction		3249/169	48735/676	41553/325	731025/2704	6561/16	1121931/1625	10965375/10816	98415/64	7105563/3380	30292137/8125
3 Max. motor shaft diameter mm		3.2	3.2	3.2	3.2	4	3.2	3.2	4.0	3.2	3.2
Part Numbers		416688	416695		416706	416736		416744	416751	416757	
1 Reduction		20:1	76:1		285:1	455:1		1068:1	1621:1	2214:1	
2 Absolute reduction		81/4	1215/16		18225/64	5000211/10985		273375/256	601692057/371293	177147/80	
3 Max. motor shaft diameter mm		4	4		4	3.2		4	3.2	4	
Part Numbers		416689	416696		416707	416737		416745	416752	416758	
1 Reduction		24:1	84:1		316:1	479:1		1185:1	1707:1	2458:1	
2 Absolute reduction		1539/65	185193/2197		2777895/8788	124659/260		41668425/35152	15000633/8788	135005697/54925	
3 Max. motor shaft diameter mm		3.2	3.2		3.2	3.2		3.2	3.2	3.2	
Part Numbers			416697		416708			416746		416759	
1 Reduction			89:1		333:1			1249:1		2589:1	
2 Absolute reduction			4617/52		69255/208			1038825/832		3365793/1300	
3 Max. motor shaft diameter mm			3.2		3.2			3.2		3.2	
4 Number of stages	1	2	3	3	4	4	4	5	5	5	5
5 Max. continuous torque Nm	2	2.4	3	3	3.4	3.4	3.4	4	4	4	4
6 Max. intermittent torque at gear output Nm	2.5	3	3.5	3.5	3.8	3.8	3.8	4.4	4.4	4.4	4.4
15 Max. overload torque[1] Nm	6	9	12	12	12	12	12	12	12	12	12
7 Max. efficiency %	95	87	78	78	65	65	65	52	52	52	52
8 Weight g	46	65	82	82	96	96	96	110	110	110	110
9 Average backlash no load °	1.0	1.2	1.6	1.6	2.0	2.0	2.0	2.5	2.5	2.5	2.5
10 Mass inertia gcm²	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
11 Gearhead length L1 mm	20.6	29.7	38.2	38.2	45.0	45.0	45.0	51.8	51.8	51.8	51.8
13 Max. transmittable power (continuous) W	160	100	40	40	20	20	20	6	6	6	6
14 Max. transmittable power (intermittent) W	240	150	60	60	30	30	30	9	9	9	9

1) Reduced expected life span

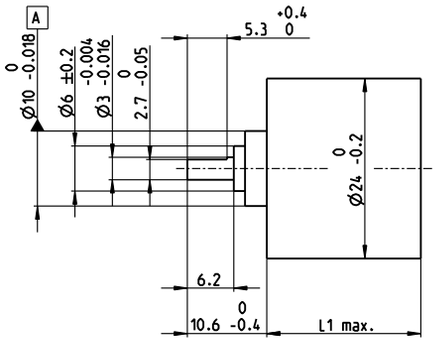


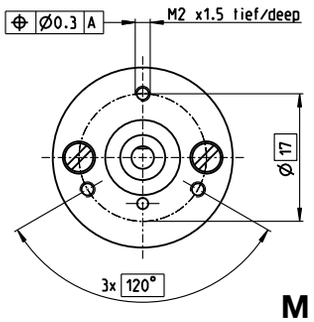
maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts										
EC 22, 240 W, A	249			110.5	119.5	128.0	128.0	135.0	135.0	135.0	141.5	141.5	141.5	141.5
EC 22, 240 W, B	249			98.1	107.5	116.0	116.0	122.4	122.4	122.4	129.5	129.5	129.5	129.5

Application	Important Notice
General	This gearhead has been designed for applications in oil and is only equipped with minimum lubrication. Therefore it is not permitted to use it under normal air conditions.
– extreme temperature applications	
– vibration tested according to MIL-STD810F/ Jan2000 Fig. 514.5C-10	
– operation in oil and high pressure	
Oil & Gas Industry	
– oil, gas and geothermal wells	

Spur Gearhead GS 24 A ∅24 mm, 0.1 Nm





M 1:1

Technical Data

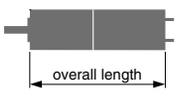
Spur Gearhead	straight teeth
Housing	plastic
Output shaft	stainless steel, hardened
Bearing at output	sleeve bearing
Radial play, 8 mm from flange	max. 0.038 mm
Axial play	0.03–0.30 mm
Max. axial load (dynamic)	8 N
Max. force for press fits	500 N
Max. continuous input speed	4000 rpm
Recommended temperature range	-15…+80°C
Max. radial load, 8 mm from flange	5 N

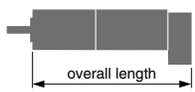
Stock program
Standard program
Special program (on request)

Part Numbers

			110480	110481	110482	110483	110484	110485	110486
Gearhead Data									
1	Reduction		7.2:1	20:1	32:1	64:1	131:1	199:1	325:1
2	Absolute reduction		93/13	753424/38025	923521/28561	837/13	212629/1625	887503681/4455516	14070001/43264
3	Max. motor shaft diameter	mm	2	2	2	2	2	2	2
4	Number of stages		2	4	4	4	4	6	6
5	Max. continuous torque	Nm	0.1	0.1	0.1	0.1	0.1	0.1	0.1
6	Max. intermittent torque at gear output	Nm	0.15	0.15	0.15	0.15	0.15	0.15	0.15
12	Direction of rotation, drive to output		=	=	=	=	=	=	=
7	Max. efficiency	%	81	66	66	66	66	53	53
8	Weight	g	25	28	28	28	28	30	30
9	Average backlash no load	°	1.0	2.0	2.0	2.0	2.0	3.0	3.0
10	Mass inertia	gcm²	0.008	0.01	0.008	0.007	0.006	0.008	0.006
11	Gearhead length L1*	mm	16.5	20.2	20.2	20.2	20.2	24	24

*L1 for A-max 22 L1 is–2.8 mm

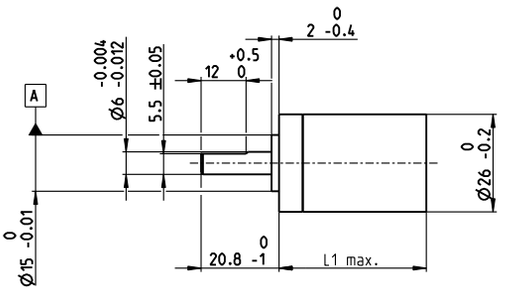


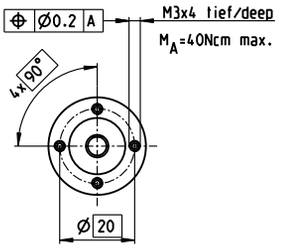


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts						
A-max 19	197/198			45.5	49.2	49.2	49.2	49.2	53.0	53.0
A-max 19, 1.5 W	198	MR	388/390	50.6	54.3	54.3	54.3	54.3	58.1	58.1
A-max 19, 1.5 W	198	Enc 22	398	59.9	63.6	63.6	63.6	63.6	67.4	67.4
A-max 19, 1.5 W	198	MEnc 13	409	53.0	56.7	56.7	56.7	56.7	60.5	60.5
A-max 19, 2.5 W	199/200			48.1	51.8	51.8	51.8	51.8	55.6	55.6
A-max 19, 2.5 W	200	MR	388/390	52.4	56.1	56.1	56.1	56.1	59.9	59.9
A-max 19, 2.5 W	200	Enc 22	398	62.5	66.2	66.2	66.2	66.2	70.0	70.0
A-max 19, 2.5 W	200	MEnc 13	409	55.6	59.3	59.3	59.3	59.3	63.1	63.1
A-max 22	201-204			45.7	49.4	49.4	49.4	49.4	53.2	53.2
A-max 22	202/204	MR	388/390	50.7	54.4	54.4	54.4	54.4	58.2	58.2
A-max 22	202/204	Enc 22	398	60.1	63.8	63.8	63.8	63.8	67.6	67.6
A-max 22	202/204	MEnc 13	409	52.8	56.5	56.5	56.5	56.5	60.3	60.3

Planetary Gearhead GP 26 A ∅26 mm, 0.75–4.5 Nm





M 1:2

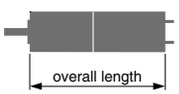
Technical Data

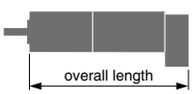
Planetary Gearhead			straight teeth
Output shaft			stainless steel, hardened
Bearing at output			preloaded ball bearings
Radial play, 5 mm from flange			max. 0.1 mm
Axial play at axial load	< 6 N		0 mm
	> 6 N		max. 0.4 mm
Max. axial load (dynamic)			120 N
Max. force for press fits			120 N
Direction of rotation, drive to output			=
Max. continuous input speed			8000 rpm
Recommended temperature range			-30…+100°C
Extended range as option			-40…+100°C
Number of stages	1	2	3
Max. radial load, 12 mm from flange	70 N	110 N	140 N

Stock program
Standard program
Special program (on request)

Part Numbers

	406757	406762	**406764**	406767	**406128**	406769	**406770**	406771	406092
Gearhead Data									
1 Reduction	5.2:1	19:1	27:1	35:1	71:1	100:1	139:1	181:1	236:1
2 Absolute reduction	$^{57}/_{11}$	$^{3591}/_{187}$	$^{3249}/_{121}$	$^{1539}/_{44}$	$^{226233}/_{3179}$	$^{204687}/_{2057}$	$^{185193}/_{1331}$	$^{87723}/_{484}$	$^{41553}/_{176}$
3 Max. motor shaft diameter mm	3	3	3	3	3	3	3	3	3
4 Number of stages	1	2	2	2	3	3	3	3	3
5 Max. continuous torque Nm	0.75	2.25	2.25	2.25	4.5	4.5	4.5	4.5	4.5
6 Max. intermittent torque at gear output Nm	1.1	3.2	3.2	3.2	6.2	6.2	6.2	6.2	6.2
7 Max. efficiency %	90	80	80	80	70	70	70	70	70
8 Weight g	53	77	77	77	93	93	93	93	93
9 Average backlash no load °	0.5	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8
10 Mass inertia gcm^2	0.96	0.54	0.54	0.54	0.31	0.31	0.31	0.31	0.31
11 Gearhead length L1 mm	23.4	32.9	32.9	32.9	39.5	39.5	39.5	39.5	39.5
13 Max. transmittable power (continuous) W	60	35	35	35	20	20	20	20	20
14 Max. transmittable power (intermittent) W	90	50	50	50	30	30	30	30	30

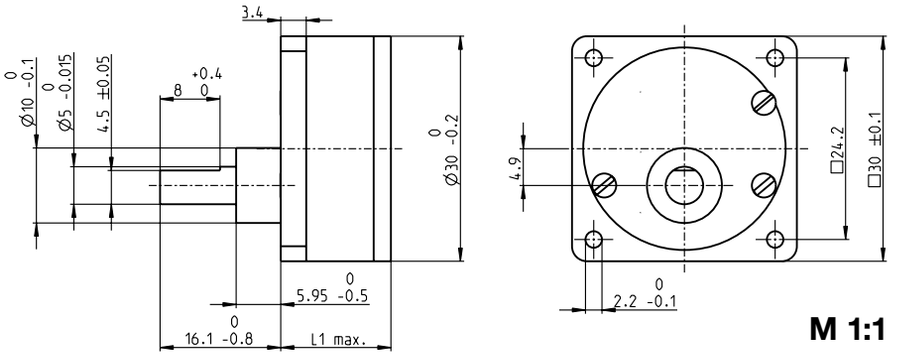




maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	**Overall length [mm]** = Motor length + gearhead length + (sensor/brake) + assembly parts								
RE 25	179/181			78.0	87.5	87.5	87.5	94.1	94.1	94.1	94.1	94.1
RE 25	179/181	MR	392	89.0	98.5	98.5	98.5	105.1	105.1	105.1	105.1	105.1
RE 25	179/181	Enc 22	398	92.1	101.6	101.6	101.6	108.2	108.2	108.2	108.2	108.2
RE 25	179/181	HED_ 5540	399/401	98.8	108.3	108.3	108.3	114.9	114.9	114.9	114.9	114.9
RE 25	179/181	DCT22	411	100.3	109.8	109.8	109.8	116.4	116.4	116.4	116.4	116.4
RE 25, 20 W	180			66.5	76.0	76.0	76.0	82.6	82.6	82.6	82.6	82.6
RE 25, 20 W	180	MR	392	77.5	87.0	87.0	87.0	93.6	93.6	93.6	93.6	93.6
RE 25, 20 W	180	HED_ 5540	400	87.3	96.8	96.8	96.8	103.4	103.4	103.4	103.4	103.4
RE 25, 20 W	180	DCT 22	411	88.8	98.3	98.3	98.3	104.9	104.9	104.9	104.9	104.9
RE 25, 20 W	180	AB 28	446	100.6	110.1	110.1	110.1	116.7	116.7	116.7	116.7	116.7
RE 25, 20 W	180	HED_5540/AB 28	400/446	117.8	127.3	127.3	127.3	133.9	133.9	133.9	133.9	133.9
RE 25, 20 W	181	AB 28	446	112.1	121.6	121.6	121.6	128.2	128.2	128.2	128.2	128.2
RE 25, 20 W	181	HED_ 5540/AB 28	401/446	129.3	138.8	138.8	138.8	145.4	145.4	145.4	145.4	145.4
A-max 26	205-212			68.2	77.7	77.7	77.7	84.3	84.3	84.3	84.3	84.3
A-max 26	205-212	MEnc 13	410	75.3	84.8	84.8	84.8	91.4	91.4	91.4	91.4	91.4
A-max 26	205-212	MR	392	77.0	86.5	86.5	86.5	93.1	93.1	93.1	93.1	93.1
A-max 26	205-212	Enc 22	398	82.6	92.1	92.1	92.1	98.7	98.7	98.7	98.7	98.7
A-max 26	205-212	HED_ 5540	400/402	86.6	96.1	96.1	96.1	102.7	102.7	102.7	102.7	102.7

Spur Gearhead GS 30 A ∅30 mm, 0.07–0.2 Nm



Technical Data

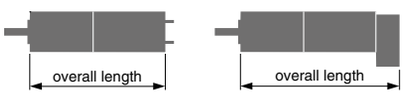
Spur Gearhead	straight teeth
Output shaft	stainless steel
Shaft diameter as option	8 mm
Bearing at output	sleeve bearing
Radial play, 5 mm from flange	max. 0.1 mm
Axial play	0.03–0.2 mm
Max. axial load (dynamic)	15 N
Max. force for press fits	400 N
Max. continuous input speed	5000 rpm
Recommended temperature range	-5…+80°C
Max. radial load, 5 mm from flange	35 N

Option: Low-noise version

Stock program
Standard program
Special program (on request)

Part Numbers

			110445	110446	110447	110448	110449	110450
Gearhead Data								
1	Reduction		15:1	30:1	60:1	100:1	200:1	500:1
2	Absolute reduction		15	30	60	100	200	500
3	Max. motor shaft diameter	mm	2	2	2	2	2	2
4	Number of stages		3	3	4	4	5	6
5	Max. continuous torque	Nm	0.07	0.07	0.10	0.10	0.20	0.20
6	Max. intermittent torque at gear output	Nm	0.21	0.21	0.30	0.30	0.60	0.60
12	Direction of rotation, drive to output		≠	≠	=	=	≠	=
7	Max. efficiency	%	73	73	66	66	60	53
8	Weight	g	40	40	45	45	50	55
9	Average backlash no load	°	1.0	1.0	1.5	1.5	2.0	2.5
10	Mass inertia	gcm²	0.17	0.14	0.12	0.10	0.10	0.10
11	Gearhead length L1	mm	23.0	23.0	25.5	25.5	30.5	30.5

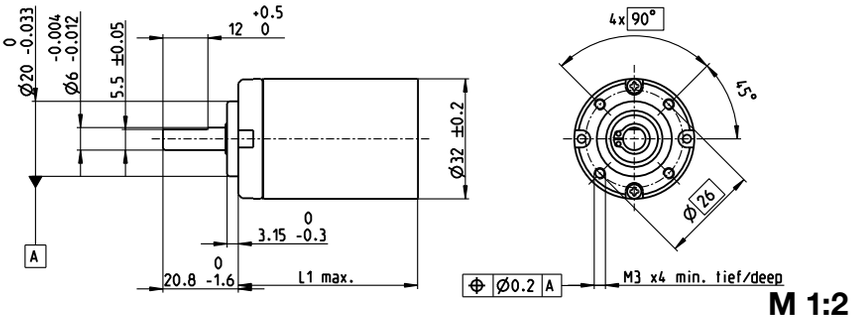


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts					
A-max 26	205-212			67.8	67.8	70.3	70.3	75.3	75.3
A-max 26	205-212	MEnc 13	410	74.9	74.9	77.4	77.4	82.4	82.4
A-max 26	205-212	MR	392	76.6	76.6	79.1	79.1	84.1	84.1
A-max 26	205-212	Enc 22	398	82.2	82.2	84.7	84.7	89.7	89.7
A-max 26	205-212	HED_ 5540	400/402	86.2	86.2	88.7	88.7	93.7	93.7

Planetary Gearhead GP 32 BZ ∅32 mm, 0.75–4.5 Nm

Low Backlash



M 1:2

Technical Data

Planetary Gearhead			straight teeth
Output shaft			stainless steel, hardened
Bearing at output			ball bearing
Radial play, 5 mm from flange			max. 0.1 mm
Axial play			max. 0.7 mm
Max. axial load (dynamic)			120 N
Max. force for press fits			120 N
Direction of rotation, drive to output			=
Max. continuous input speed			4000 rpm
Recommended temperature range			-40...+100°C
Number of stages	1	2	3
Max. radial load, 12 mm from flange	70 N	110 N	130 N

Stock program
Standard program
Special program (on request)

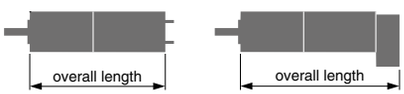
Part Numbers

	358975	351942	358331	357988	358335	358385	358512	358513	358515	358516

Gearhead Data

1	Reduction		3.7:1	5.2:1	19:1	27:1	35:1	71:1	100:1	139:1	181:1	236:1
2	Absolute reduction		$^{63}/_{17}$	$^{57}/_{11}$	$^{3591}/_{187}$	$^{3249}/_{121}$	$^{1539}/_{44}$	$^{226233}/_{3179}$	$^{204687}/_{2057}$	$^{185193}/_{1331}$	$^{87723}/_{484}$	$^{41553}/_{176}$
3	Max. motor shaft diameter	mm	5.5	3	3	3	3	3	3	3	3	3
4	Number of stages		1	1	2	2	2	3	3	3	3	3
5	Max. continuous torque	Nm	0.75	0.75	2.25	2.25	2.25	4.5	4.5	4.5	4.5	4.5
	Max. continuous torque within the preloading	Nm	0.5	0.5	1.1	1.1	1.1	1.7	1.7	1.7	1.7	1.7
6	Max. intermittent torque at gear output	Nm	1.1	1.1	3.2	3.2	3.2	6.2	6.2	6.2	6.2	6.2
7	Max. efficiency	%	85	85	80	80	80	70	70	70	70	70
8	Weight	g	150	150	190	190	190	240	240	240	240	240
9	Average backlash no load	°	0.15	0.15	0.35	0.35	0.35	0.5	0.5	0.5	0.5	0.5
10	Mass inertia	gcm²	1.25	1.25	0.75	0.75	0.75	0.7	0.7	0.7	0.7	0.7
11	Gearhead length L1*	mm	33.5	33.5	43.6	43.6	43.6	53.1	53.1	53.1	53.1	53.1

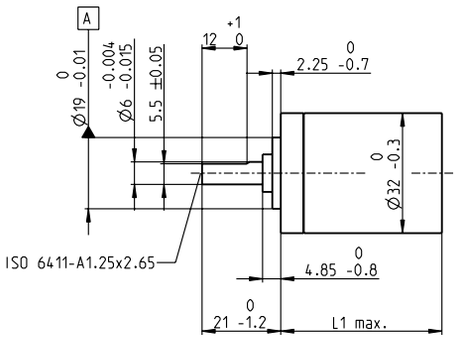
*for EC 32 L1 is + 6.4 mm, for RE 30 L1 is + 1.0 mm

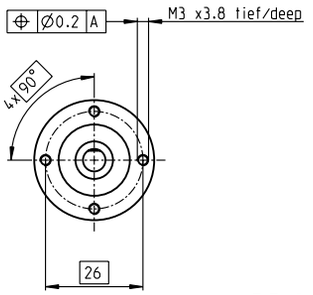


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts									
RE 25	179/181			88.1	88.1	98.2	98.2	98.2	107.7	107.7	107.7	107.7	107.7
RE 25	179/181	MR	392	99.1	99.1	109.2	109.2	109.2	118.7	118.7	118.7	118.7	118.7
RE 25	179/181	Enc 22	398	102.2	102.2	112.3	112.3	112.3	121.8	121.8	121.8	121.8	121.8
RE 25	179/181	HED_ 5540	399/401	108.9	108.9	119.0	119.0	119.0	128.5	128.5	128.5	128.5	128.5
RE 25	179/181	DCT 22	411	110.4	110.4	120.5	120.5	120.5	130.0	130.0	130.0	130.0	130.0
RE 25, 20 W	180			76.6	76.6	86.7	86.7	86.7	96.2	96.2	96.2	96.2	96.2
RE 25, 20 W	180	MR	392	87.6	87.6	97.7	97.7	97.7	107.2	107.2	107.2	107.2	107.2
RE 25, 20 W	180	HED_ 5540	400/401	97.4	97.4	107.5	107.5	107.5	117.0	117.0	117.0	117.0	117.0
RE 25, 20 W	180	DCT 22	411	98.9	98.9	109.0	109.0	109.0	118.5	118.5	118.5	118.5	118.5
RE 25, 20 W	180	AB 28	446	110.7	110.7	120.8	120.8	120.8	130.3	130.3	130.3	130.3	130.3
RE 25, 20 W	180	HED_ 5540/AB 28	400/446	127.9	127.9	138.0	138.0	138.0	147.5	147.5	147.5	147.5	147.5
RE 25, 20 W	181	AB 28	446	122.2	122.2	132.3	132.3	132.3	141.8	141.8	141.8	141.8	141.8
RE 25, 20 W	181	HED_ 5540/AB 28	399/446	139.4	139.4	149.5	149.5	149.5	159.0	159.0	159.0	159.0	159.0
RE 30, 60 W	183			102.6	102.6	112.7	112.7	112.7	122.2	122.2	122.2	122.2	122.2
RE 30, 60 W	183	MR	393	114.0	114.0	124.1	124.1	124.1	133.6	133.6	133.6	133.6	133.6
RE 30, 60 W	183	HED_ 5540	399/401	123.4	123.4	133.5	133.5	133.5	143.0	143.0	143.0	143.0	143.0
RE 35, 90 W	184			104.6	104.6	114.7	114.7	114.7	124.2	124.2	124.2	124.2	124.2
RE 35, 90 W	184	MR	393	116.0	116.0	126.1	126.1	126.1	135.6	135.6	135.6	135.6	135.6
RE 35, 90 W	184	HED_ 5540	399/401	125.3	125.3	135.4	135.4	135.4	144.9	144.9	144.9	144.9	144.9
RE 35, 90 W	184	DCT 22	411	122.7	122.7	132.8	132.8	132.8	142.3	142.3	142.3	142.3	142.3
RE 35, 90 W	184	AB 28	446	140.7	140.7	150.8	150.8	150.8	160.3	160.3	160.3	160.3	160.3
RE 35, 90 W	184	HEDS 5540/AB 28	399/446	157.9	157.9	168.0	168.0	168.0	177.5	177.5	177.5	177.5	177.5
A-max 26	205-212			78.3	78.3	88.4	88.4	88.4	97.9	97.9	97.9	97.9	97.9
A-max 26	206-212	MEnc 13	410	85.4	85.4	95.5	95.5	95.5	105.0	105.0	105.0	105.0	105.0
A-max 26	206-212	MR	392	87.1	87.1	97.2	97.2	97.2	106.7	106.7	106.7	106.7	106.7
A-max 26	206-212	Enc 22	398	92.7	92.7	102.8	102.8	102.8	112.3	112.3	112.3	112.3	112.3
A-max 26	206-212	HED_ 5540	400/402	96.7	96.7	106.8	106.8	106.8	116.3	116.3	116.3	116.3	116.3
A-max 32	213/215			96.5	96.5	106.6	106.6	106.6	116.1	116.1	116.1	116.1	116.1
A-max 32	214/216			95.1	95.1	105.2	105.2	105.2	114.7	114.7	114.7	114.7	114.7
A-max 32	214/216	MR	393	106.3	106.3	116.4	116.4	116.4	125.9	125.9	125.9	125.9	125.9
A-max 32	214/216	HED_ 5540	400/401	115.9	115.9	126.0	126.0	126.0	135.5	135.5	135.5	135.5	135.5
EC 32, 80 W	251			100.2	100.2	110.3	110.3	110.3	119.8	119.8	119.8	119.8	119.8
EC 32, 80 W	251	HED_ 5540	400/403	118.6	118.6	128.7	128.7	128.7	138.2	138.2	138.2	138.2	138.2
EC 32, 80 W	251	Res 26	412	120.3	120.3	130.4	130.4	130.4	139.9	139.9	139.9	139.9	139.9
MCD EPOS, 60 W	441			153.6	153.6	163.7	163.7	163.7	173.2	173.2	173.2	173.2	173.2
MCD EPOS P, 60 W	441			153.6	153.6	163.7	163.7	163.7	173.2	173.2	173.2	173.2	173.2

Planetary Gearhead GP 32 A ∅32 mm, 0.75–4.5 Nm





M 1:2

Technical Data

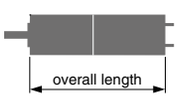
Planetary Gearhead	straight teeth
Output shaft	stainless steel
Shaft diameter as option	8 mm
Bearing at output	ball bearing
Radial play, 5 mm from flange	max. 0.14 mm
Axial play	max. 0.4 mm
Max. axial load (dynamic)	120 N
Max. force for press fits	120 N
Direction of rotation, drive to output	=
Max. continuous input speed	6000 rpm
Recommended temperature range	-40…+100°C

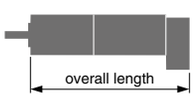
Number of stages	1	2	3	4	5
Max. radial load, 10 mm from flange	90 N	140 N	200 N	220 N	220 N

Option: Low-noise version

Stock program
Standard program
Special program (on request)

Part Numbers	166155	166158	166163	166164	166169	166174	166179	166184	166187	166192	166197	166202
Gearhead Data												
1 Reduction	3.7:1	14:1	33:1	51:1	111:1	246:1	492:1	762:1	1181:1	1972:1	2829:1	4380:1
2 Absolute reduction	$^{26}/_{7}$	$^{676}/_{49}$	$^{529}/_{16}$	$^{17576}/_{343}$	$^{13824}/_{125}$	$^{421824}/_{1715}$	$^{86112}/_{175}$	$^{19044}/_{25}$	$^{10123776}/_{8575}$	$^{8626176}/_{4375}$	$^{495144}/_{175}$	$^{109503}/_{25}$
3 Max. motor shaft diameter mm	6	6	3	6	4	4	3	3	4	4	3	3
Part Numbers	**166156**	**166159**		**166165**	166170	166175	**166180**	166185	166188	166193	166198	166203
1 Reduction	4.8:1	18:1		66:1	123:1	295:1	531:1	913:1	1414:1	2189:1	3052:1	5247:1
2 Absolute reduction	$^{24}/_{5}$	$^{624}/_{35}$		$^{16224}/_{245}$	$^{6877}/_{56}$	$^{101062}/_{343}$	$^{331776}/_{625}$	$^{36501}/_{40}$	$^{2425488}/_{1715}$	$^{536406}/_{245}$	$^{1907712}/_{625}$	$^{839523}/_{160}$
3 Max. motor shaft diameter mm	4	4		4	3	3	4	3	3	3	3	3
Part Numbers	166157	166160		166166	166171	**166176**	166181	166186	166189	166194	166199	166204
1 Reduction	5.8:1	21:1		79:1	132:1	318:1	589:1	1093:1	1526:1	2362:1	3389:1	6285:1
2 Absolute reduction	$^{23}/_{4}$	$^{299}/_{14}$		$^{3887}/_{49}$	$^{3312}/_{25}$	$^{389376}/_{1225}$	$^{20631}/_{35}$	$^{279841}/_{256}$	$^{9345024}/_{6125}$	$^{2066688}/_{875}$	$^{474513}/_{140}$	$^{6436343}/_{1024}$
3 Max. motor shaft diameter mm	3	3		3	3	4	3	3	4	3	3	3
Part Numbers		166161		166167	166172	166177	166182		166190	166195	166200	
1 Reduction		23:1		86:1	159:1	411:1	636:1		1694:1	2548:1	3656:1	
2 Absolute reduction		$^{576}/_{25}$		$^{14976}/_{175}$	$^{1587}/_{10}$	$^{359424}/_{875}$	$^{79488}/_{125}$		$^{1162213}/_{686}$	$^{7962624}/_{3125}$	$^{457056}/_{125}$	
3 Max. motor shaft diameter mm		4		4	3	4	3		3	4	3	
Part Numbers		166162		166168	166173	166178	166183		166191	166196	166201	
1 Reduction		28:1		103:1	190:1	456:1	706:1		1828:1	2623:1	4060:1	
2 Absolute reduction		$^{138}/_{5}$		$^{3588}/_{35}$	$^{12167}/_{64}$	$^{89401}/_{196}$	$^{158171}/_{224}$		$^{2238912}/_{1225}$	$^{2056223}/_{784}$	$^{3637933}/_{896}$	
3 Max. motor shaft diameter mm		3		3	3	3	3		3	3	3	
4 Number of stages	1	2	2	3	3	4	4	4	5	5	5	5
5 Max. continuous torque Nm	0.75	2.25	2.25	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
6 Max. intermittent torque at gear output Nm	1.1	3.4	3.4	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
7 Max. efficiency %	80	75	75	70	70	60	60	60	50	50	50	50
8 Weight g	118	162	162	194	194	226	226	226	258	258	258	258
9 Average backlash no load °	0.7	0.8	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
10 Mass inertia gcm²	1.5	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
11 Gearhead length L1 mm	26.5	36.4	36.4	43.1	43.1	49.8	49.8	49.8	56.5	56.5	56.5	56.5

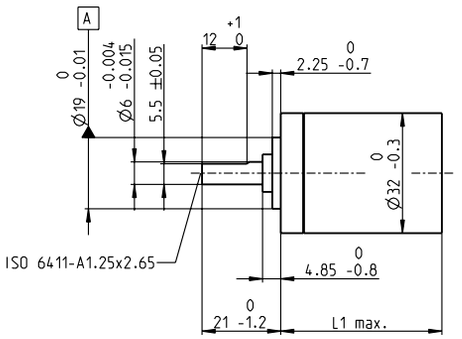


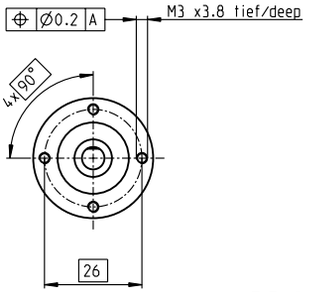


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts											
RE 25	179/181			81.1	91.0	91.0	97.7	97.7	104.4	104.4	104.4	111.1	111.1	111.1	111.1
RE 25	179/181	MR	392	92.1	102.0	102.0	108.7	108.7	115.4	115.4	115.4	122.1	122.1	122.1	122.1
RE 25	179/181	Enc 22	398	95.2	105.1	105.1	111.8	111.8	118.5	118.5	118.5	125.2	125.2	125.2	125.2
RE 25	179/181	HED_ 5540	399/401	101.9	111.8	111.8	118.5	118.5	125.2	125.2	125.2	131.9	131.9	131.9	131.9
RE 25	179/181	DCT 22	411	103.4	113.3	113.3	120.0	120.0	126.7	126.7	126.7	133.4	133.4	133.4	133.4
RE 25, 20 W	180			69.6	79.5	79.5	86.2	86.2	92.9	92.9	92.9	99.6	99.6	99.6	99.6
RE 25, 20 W	180	MR	392	80.6	90.5	90.5	97.2	97.2	103.9	103.9	103.9	110.6	110.6	110.6	110.6
RE 25, 20 W	180	HED_ 5540	400/403	90.4	100.3	100.3	107.0	107.0	113.7	113.7	113.7	120.4	120.4	120.4	120.4
RE 25, 20 W	180	DCT22	411	91.9	101.8	101.8	108.5	108.5	115.2	115.2	115.2	121.9	121.9	121.9	121.9
RE 25, 20 W	180	AB 28	446	103.7	113.6	113.6	120.3	120.3	127.0	127.0	127.0	133.7	133.7	133.7	133.7
RE 25, 20 W	180	HED_ 5540/AB 28	400/446	120.9	130.8	130.8	137.5	137.5	144.2	144.2	144.2	150.9	150.9	150.9	150.9
RE 25, 20 W	181	AB 28	446	115.2	125.1	125.1	131.8	131.8	138.5	138.5	138.5	145.2	145.2	145.2	145.2
RE 25, 20 W	181	HED_ 5540/AB 28	399/446	132.4	142.3	142.3	149.0	149.0	155.7	155.7	155.7	162.4	162.4	162.4	162.4
A-max 26	205-212			71.3	81.2	81.2	87.9	87.9	94.6	94.6	94.6	101.3	101.3	101.3	101.3
A-max 26	206-212	MEnc 13	410	78.4	88.3	88.3	95.0	95.0	101.7	101.7	101.7	108.4	108.4	108.4	108.4
A-max 26	206-212	MR	392	80.1	90.0	90.0	96.7	96.7	103.4	103.4	103.4	110.1	110.1	110.1	110.1
A-max 26	206-212	Enc 22	398	85.7	95.6	95.6	102.3	102.3	109.0	109.0	109.0	115.7	115.7	115.7	115.7
A-max 26	206-212	HED_ 5540	400/402	89.7	99.6	99.6	106.3	106.3	113.0	113.0	113.0	119.7	119.7	119.7	119.7
RE-max 29	227-230			71.3	81.2	81.2	87.9	87.9	94.6	94.6	94.6	101.3	101.3	101.3	101.3
RE-max 29	228/230	MR	392	80.1	90.0	90.0	96.7	96.7	103.4	103.4	103.4	110.1	110.1	110.1	110.1

Planetary Gearhead GP 32 A ∅32 mm, 0.75–4.5 Nm





M 1:2

Technical Data	
Planetary Gearhead	straight teeth
Output shaft	stainless steel
Shaft diameter as option	8 mm
Bearing at output	ball bearing
Radial play, 5 mm from flange	max. 0.14 mm
Axial play	max. 0.4 mm
Max. axial load (dynamic)	120 N
Max. force for press fits	120 N
Direction of rotation, drive to output	=
Max. continuous input speed	6000 rpm
Recommended temperature range	-40...+100°C

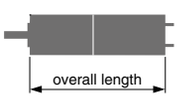
Number of stages	1	2	3	4	5
Max. radial load, 10 mm from flange	90 N	140 N	200 N	220 N	220 N

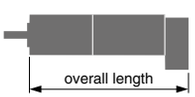
Option: Low-noise version

Stock program
Standard program
Special program (on request)

Part Numbers	166155	166158	166163	166164	166169	166174	166179	166184	166187	166192	166197	166202
Gearhead Data												
1 Reduction	3.7:1	14:1	33:1	51:1	111:1	246:1	492:1	762:1	1181:1	1972:1	2829:1	4380:1
2 Absolute reduction	26/7	676/49	529/16	17576/343	13824/125	421824/1715	86112/175	19044/25	10123776/8575	8626176/4375	495144/175	109503/25
3 Max. motor shaft diameter mm	6	6	3	6	4	4	3	3	4	4	3	3
Part Numbers	**166156**	**166159**		**166165**	166170	166175	**166180**	166185	166188	166193	166198	166203
1 Reduction	4.8:1	18:1		66:1	123:1	295:1	531:1	913:1	1414:1	2189:1	3052:1	5247:1
2 Absolute reduction	24/5	624/35		16224/245	6877/56	101062/343	331776/625	36501/40	2425488/1715	536406/245	1907712/625	839523/160
3 Max. motor shaft diameter mm	4	4		4	3	3	4	3	3	3	3	3
Part Numbers	166157	166160		166166	166171	**166176**	166181	166186	166189	166194	166199	166204
1 Reduction	5.8:1	21:1		79:1	132:1	318:1	589:1	1093:1	1526:1	2362:1	3389:1	6285:1
2 Absolute reduction	23/4	299/14		3887/49	3312/25	38976/1225	20631/35	279841/256	9345024/6125	2066688/875	474513/140	6436343/1024
3 Max. motor shaft diameter mm	3	3		3	3	4	3	3	4	3	3	3
Part Numbers		**166161**		**166167**	166172	166177	166182		166190	166195	166200	
1 Reduction		23:1		86:1	159:1	411:1	636:1		1694:1	2548:1	3656:1	
2 Absolute reduction		576/25		14976/175	1587/10	359424/875	79488/125		1162213/686	7962624/3125	457056/125	
3 Max. motor shaft diameter mm		4		4	3	4	3		3	4	3	
Part Numbers		166162		166168	166173	166178	166183		166191	166196	166201	
1 Reduction		28:1		103:1	190:1	456:1	706:1		1828:1	2623:1	4060:1	
2 Absolute reduction		138/5		3588/35	12167/64	89401/196	158171/224		2238912/1225	2056223/784	3637933/896	
3 Max. motor shaft diameter mm		3		3	3	3	3		3	3	3	
4 Number of stages	1	2	2	3	3	4	4	4	5	5	5	5
5 Max. continuous torque Nm	0.75	2.25	2.25	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
6 Max. intermittent torque at gear output Nm	1.1	3.4	3.4	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
7 Max. efficiency %	80	75	75	70	70	60	60	60	50	50	50	50
8 Weight g	118	162	162	194	194	226	226	226	258	258	258	258
9 Average backlash no load °	0.7	0.8	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
10 Mass inertia gcm²	1.5	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
11 Gearhead length L1* mm	26.5	36.4	36.4	43.1	43.1	49.8	49.8	49.8	56.5	56.5	56.5	56.5

*for EC 32 flat L1 is + 2.0 mm





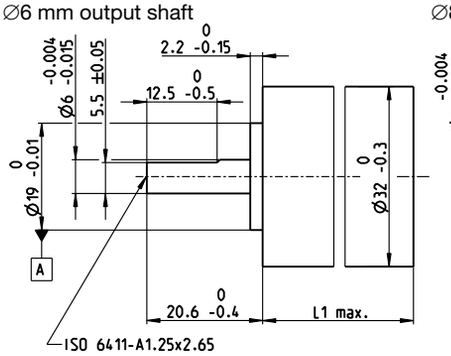
maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts											
RE 30, 15 W	182			94.6	104.5	104.5	111.2	111.2	117.9	117.9	117.9	124.6	124.6	124.6	124.6
RE 30, 15 W	182	MR	393	106.0	115.9	115.9	122.6	122.6	129.3	129.3	129.3	136.0	136.0	136.0	136.0
RE 30, 15 W	182	HED_ 5540	399/401	115.4	125.3	125.3	132.0	132.0	138.7	138.7	138.7	145.4	145.4	145.4	145.4
RE 30, 60 W	183			94.6	104.5	104.5	111.2	111.2	117.9	117.9	117.9	124.6	124.6	124.6	124.6
RE 30, 60 W	183	MR	393	106.0	115.9	115.9	122.6	122.6	129.3	129.3	129.3	136.0	136.0	136.0	136.0
RE 30, 60 W	183	HED_ 5540	399/401	115.4	125.3	125.3	132.0	132.0	138.7	138.7	138.7	145.4	145.4	145.4	145.4
RE 35, 90 W	184			97.6	107.5	107.5	114.2	114.2	120.9	120.9	120.9	127.6	127.6	127.6	127.6
RE 35, 90 W	184	MR	393	109.0	118.9	118.9	125.6	125.6	132.3	132.3	132.3	139.0	139.0	139.0	139.0
RE 35, 90 W	184	HED_ 5540	399/401	118.3	128.2	128.2	134.9	134.9	141.6	141.6	141.6	148.3	148.3	148.3	148.3
RE 35, 90 W	184	DCT 22	411	115.7	125.6	125.6	132.3	132.3	139.0	139.0	139.0	145.7	145.7	145.7	145.7
RE 35, 90 W	184	AB 28	446	133.7	143.6	143.6	150.3	150.3	157.0	157.0	157.0	163.7	163.7	163.7	163.7
RE 35, 90 W	184	HEDS 5540/AB 28	399/446	150.9	160.8	160.8	167.5	167.5	174.2	174.2	174.2	180.9	180.9	180.9	180.9
A-max 32	213/215			89.5	99.4	99.4	106.1	106.1	112.8	112.8	112.8	119.5	119.5	119.5	119.5
A-max 32	214/216			88.1	98.0	98.0	104.7	104.7	111.4	111.4	111.4	118.1	118.1	118.1	118.1
A-max 32	214/216	MR	393	99.3	109.2	109.2	115.9	115.9	122.6	122.6	122.6	129.3	129.3	129.3	129.3
A-max 32	214/216	HED_ 5540	400/402	108.9	118.8	118.8	125.5	125.5	132.2	132.2	132.2	138.9	138.9	138.9	138.9
EC 32, 80 W	251			86.6	96.5	96.5	103.2	103.2	109.9	109.9	109.9	116.6	116.6	116.6	116.6
EC 32, 80 W	251	HED_ 5540	400/403	105.0	114.9	114.9	121.6	121.6	128.3	128.3	128.3	135.0	135.0	135.0	135.0
EC 32, 80 W	251	Res 26	412	106.7	116.6	116.6	123.3	123.3	130.0	130.0	130.0	136.7	136.7	136.7	136.7
EC 32 flat, 15 W	296			44.5	54.4	54.4	61.1	61.1	67.8	67.8	67.8	74.5	74.5	74.5	74.5
EC 32 flat, IE, IP 00	297			54.6	64.5	64.5	71.2	71.2	77.9	77.9	77.9	84.6	84.6	84.6	84.6
EC 32 flat, IE, IP 40	297			56.3	66.2	66.2	72.9	72.9	79.6	79.6	79.6	86.3	86.3	86.3	86.3

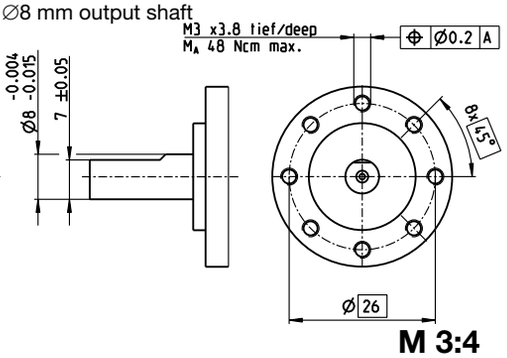
Planetary Gearhead GP 32 AR ∅32 mm, 0.75 Nm

for high radial loads

∅6 mm output shaft



∅8 mm output shaft



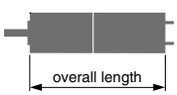
M 3:4

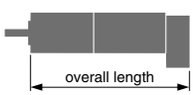
Technical Data

Planetary Gearhead	straight teeth
Output shaft	stainless steel
Bearing at output	ball bearing
Radial play, 5 mm from flange	max. 0.14 mm
Axial play	max. 0.1 mm
Max. axial load (dynamic)	120 N
Max. force for press fits	120 N
Direction of rotation, drive to output	=
Max. continuous input speed	6000 rpm
Recommended temperature range	-40…+100°C
Output shaft diameter	6 mm 8 mm
Max. radial load, 10 mm from flange	140 N 120 N

Stock program
Standard program
Special program (on request)

Gearhead Data			Part Numbers 425862	425861	425860
1	Reduction		3.7:1	4.8:1	5.8:1
2	Absolute reduction		26/7	24/5	23/4
3	Max. motor shaft diameter	mm	6	4	3
	Output shaft diameter	mm	6	6	6
	Part Numbers		425901	425899	425898
1	Reduction		3.7 : 1	4.8 : 1	5.8 : 1
2	Absolute reduction		26/7	24/5	23/4
3	Max. motor shaft diameter	mm	6	4	3
	Output shaft diameter	mm	8	8	8
4	Number of stages		1	1	1
5	Max. continuous torque	Nm	0.75	0.75	0.75
6	Max. intermittent torque at gear output	Nm	1.1	1.1	1.1
7	Max. efficiency	%	90	90	90
8	Weight	g	111	111	111
9	Average backlash no load	°	0.7	0.7	0.7
10	Mass inertia	gcm²	1.6	0.9	0.6
11	Gearhead length L1	mm	26.2	26.2	26.2



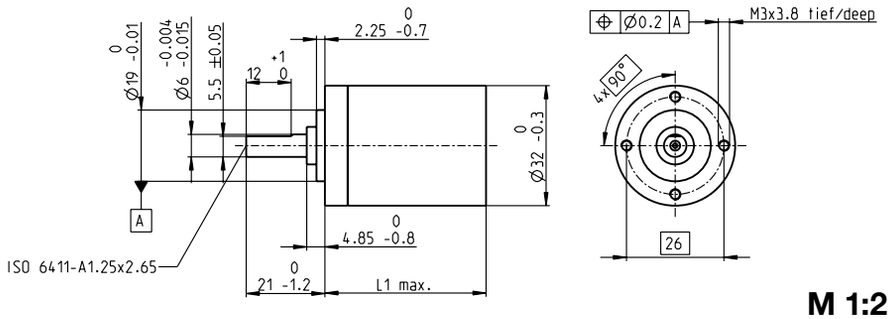


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts		
RE 30, 60 W	183			94.3	94.3	94.3
RE 30, 60 W	183	MR	393	105.7	105.7	105.7
RE 30, 60 W	183	HED_5540	399/403	115.1	115.1	115.1
RE 35, 90 W	184			97.3	97.3	97.3
RE 35, 90 W	184	MR	393	108.7	108.7	108.7
RE 35, 90 W	184	HED_5540	399/403	118.0	118.0	118.0
RE 35, 90 W	184	DCT22	411	115.4	115.4	115.4
RE 35, 90 W	184	AB 28	446	133.4	133.4	133.4
RE 35, 90 W	184	HED_ 5540/AB 28	399/446	150.5	150.5	150.5
EC 32, 80 W	251			86.3	86.3	86.3
EC 32, 80 W	251	HED_5540	400/402	104.7	104.7	104.7
EC 32, 80 W	251	Res 26	412	106.4	106.4	106.4

Planetary Gearhead GP 32 C ∅32 mm, 1.0–6.0 Nm

Ceramic Version



M 1:2

Technical Data

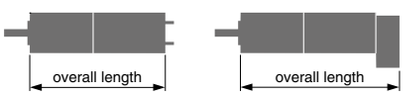
Planetary Gearhead	straight teeth
Output shaft	stainless steel
Shaft diameter as option	8 mm
Bearing at output	ball bearing
Radial play, 5 mm from flange	max. 0.14 mm
Axial play	max. 0.4 mm
Max. axial load (dynamic)	120 N
Max. force for press fits	120 N
Direction of rotation, drive to output	=
Max. continuous input speed	8000 rpm
Recommended temperature range	-40...+100°C

Number of stages	1	2	3	4	5
Max. radial load, 10 mm from flange	90 N	140 N	200 N	220 N	220 N

Option: Low-noise version

Stock program
Standard program
Special program (on request)

Part Numbers	166930	166933	166938	166939	166944	166949	166954	166959	166962	166967	166972	166977
Gearhead Data												
1 Reduction	3.7:1	14:1	33:1	51:1	111:1	246:1	492:1	762:1	1181:1	1972:1	2829:1	4380:1
2 Absolute reduction	$^{26}/_{7}$	$^{676}/_{49}$	$^{529}/_{16}$	$^{17576}/_{343}$	$^{13824}/_{125}$	$^{421824}/_{1715}$	$^{86112}/_{175}$	$^{19044}/_{25}$	$^{10123776}/_{8575}$	$^{8626176}/_{4375}$	$^{495144}/_{175}$	$^{109503}/_{25}$
3 Max. motor shaft diameter mm	6	6	3	6	4	4	3	3	4	4	3	3
Part Numbers	**166931**	**166934**		**166940**	166945	166950	**166955**	166960	166963	166968	166973	166978
1 Reduction	4.8:1	18:1		66:1	123:1	295:1	531:1	913:1	1414:1	2189:1	3052:1	5247:1
2 Absolute reduction	$^{24}/_{5}$	$^{624}/_{35}$		$^{16224}/_{245}$	$^{6877}/_{56}$	$^{101062}/_{343}$	$^{331776}/_{625}$	$^{36501}/_{40}$	$^{2425488}/_{1715}$	$^{536406}/_{245}$	$^{1907712}/_{625}$	$^{839523}/_{160}$
3 Max. motor shaft diameter mm	4	4		4	3	3	4	3	3	3	3	3
Part Numbers	166932	166935		166941	166946	**166951**	166956	166961	166964	166969	166974	166979
1 Reduction	5.8:1	21:1		79:1	132:1	318:1	589:1	1093:1	1526:1	2362:1	3389:1	6285:1
2 Absolute reduction	$^{23}/_{4}$	$^{299}/_{14}$		$^{3887}/_{49}$	$^{3312}/_{25}$	$^{389376}/_{1225}$	$^{20631}/_{35}$	$^{279841}/_{256}$	$^{9345024}/_{6125}$	$^{2066688}/_{875}$	$^{474513}/_{140}$	$^{6436343}/_{1024}$
3 Max. motor shaft diameter mm	3	3		3	3	4	3	3	4	3	3	3
Part Numbers		166936		166942	166947	166952	166957		166965	166970	166975	
1 Reduction		23:1		86:1	159:1	411:1	636:1		1694:1	2548:1	3656:1	
2 Absolute reduction		$^{576}/_{25}$		$^{14976}/_{175}$	$^{1587}/_{10}$	$^{359424}/_{875}$	$^{79488}/_{125}$		$^{1162213}/_{686}$	$^{7962624}/_{3125}$	$^{457056}/_{125}$	
3 Max. motor shaft diameter mm		4		4	3	4	3		3	4	3	
Part Numbers		166937		166943	166948	166953	166958		166966	166971	166976	
1 Reduction		28:1		103:1	190:1	456:1	706:1		1828:1	2623:1	4060:1	
2 Absolute reduction		$^{138}/_{5}$		$^{3588}/_{35}$	$^{12167}/_{64}$	$^{89401}/_{196}$	$^{158171}/_{224}$		$^{2238912}/_{1225}$	$^{2056223}/_{784}$	$^{3637933}/_{896}$	
3 Max. motor shaft diameter mm		3		3	3	3	3		3	3	3	
4 Number of stages	1	2	2	3	3	4	4	4	5	5	5	5
5 Max. continuous torque Nm	1	3	3	6	6	6	6	6	6	6	6	6
6 Max. intermittent torque at gear output Nm	1.25	3.75	3.75	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
7 Max. efficiency %	80	75	75	70	70	60	60	60	50	50	50	50
8 Weight g	118	162	162	194	194	226	226	226	258	258	258	258
9 Average backlash no load °	0.7	0.8	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
10 Mass inertia gcm²	1.5	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
11 Gearhead length L1 mm	26.5	36.4	36.4	43.1	43.1	49.8	49.8	49.8	56.5	56.5	56.5	56.5

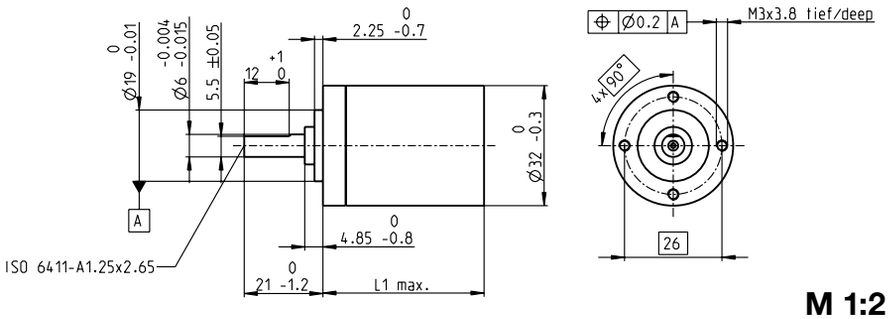


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts											
RE 25, 10 W	179/181			81.1	91.0	91.0	97.7	97.7	104.4	104.4	104.4	111.1	111.1	111.1	111.1
RE 25, 10 W	179/181	MR	392	92.1	102.0	102.0	108.7	108.7	115.4	115.4	115.4	122.1	122.1	122.1	122.1
RE 25, 10 W	179/181	Enc 22	398	95.2	105.1	105.1	111.8	111.8	118.5	118.5	118.5	125.2	125.2	125.2	125.2
RE 25, 10 W	179/181	HED_ 5540	399/401	101.9	111.8	111.8	118.5	118.5	125.2	125.2	125.2	131.9	131.9	131.9	131.9
RE 25, 10 W	179/181	DCT 22	411	103.4	113.3	113.3	120.0	120.0	126.7	126.7	126.7	133.4	133.4	133.4	133.4
RE 25, 20 W	180			69.6	79.5	79.5	86.2	86.2	92.9	92.9	92.9	99.6	99.6	99.6	99.6
RE 25, 20 W	180	MR	392	80.6	90.5	90.5	97.2	97.2	103.9	103.9	103.9	110.6	110.6	110.6	110.6
RE 25, 20 W	180	HED_ 5540	400/403	90.4	100.3	100.3	107.0	107.0	113.7	113.7	113.7	120.4	120.4	120.4	120.4
RE 25, 20 W	180	DCT22	411	91.9	101.8	101.8	108.5	108.5	115.2	115.2	115.2	121.9	121.9	121.9	121.9
RE 25, 20 W	180	AB 28	446	103.7	113.6	113.6	120.3	120.3	127.0	127.0	127.0	133.7	133.7	133.7	133.7
RE 25, 20 W	180	HED_ 5540/AB 28	400/446	120.9	130.8	130.8	137.5	137.5	144.2	144.2	144.2	150.9	150.9	150.9	150.9
RE 25, 20 W	181	AB 28	446	115.2	125.1	125.1	131.8	131.8	138.5	138.5	138.5	145.2	145.2	145.2	145.2
RE 25, 20 W	181	HED_5540/AB 28	446	132.4	142.3	142.3	149.0	149.0	155.7	155.7	155.7	162.4	162.4	162.4	162.4
RE 30, 60 W	183			94.6	104.5	104.5	111.2	111.2	117.9	117.9	117.9	124.6	124.6	124.6	124.6
RE 30, 60 W	183	MR	393	106.0	115.9	115.9	122.6	122.6	129.3	129.3	129.3	136.0	136.0	136.0	136.0
RE 30, 60 W	183	HED_ 5540	399/401	115.4	125.3	125.3	132.0	132.0	138.7	138.7	138.7	145.4	145.4	145.4	145.4
RE 35, 90 W	184			97.6	107.5	107.5	114.2	114.2	120.9	120.9	120.9	127.6	127.6	127.6	127.6
RE 35, 90 W	184	MR	393	109.0	118.9	118.9	125.6	125.6	132.3	132.3	132.3	139.0	139.0	139.0	139.0
RE 35, 90 W	184	HED_ 5540	399/401	118.3	128.2	128.2	134.9	134.9	141.6	141.6	141.6	148.3	148.3	148.3	148.3
RE 35, 90 W	184	DCT 22	412	115.7	125.6	125.6	132.3	132.3	139.0	139.0	139.0	145.7	145.7	145.7	145.7
RE 35, 90 W	184	AB 28	446	133.7	143.6	143.6	150.3	150.3	157.0	157.0	157.0	163.7	163.7	163.7	163.7
RE 35, 90 W	184	HEDS 5540/AB 28	399/446	150.9	160.8	160.8	167.5	167.5	174.2	174.2	174.2	180.9	180.9	180.9	180.9
A-max 26	205-212			71.3	81.2	81.2	87.9	87.9	94.6	94.6	94.6	101.3	101.3	101.3	101.3
A-max 26	206-212	MEnc 13	410	78.4	88.3	88.3	95.0	95.0	101.7	101.7	101.7	108.4	108.4	108.4	108.4
A-max 26	206-212	MR	392	80.1	90.0	90.0	96.7	96.7	103.4	103.4	103.4	110.1	110.1	110.1	110.1
A-max 26	206-212	Enc 22	398	85.7	95.6	95.6	102.3	102.3	109.0	109.0	109.0	115.7	115.7	115.7	115.7
A-max 26	206-212	HED_ 5540	400/402	89.7	99.6	99.6	106.3	106.3	113.0	113.0	113.0	119.7	119.7	119.7	119.7
A-max 32	213/215			89.5	99.4	99.4	106.1	106.1	112.8	112.8	112.8	119.5	119.5	119.5	119.5
A-max 32	214/216			88.1	98.0	98.0	104.7	104.7	111.4	111.4	111.4	118.1	118.1	118.1	118.1
A-max 32	214/216	MR	393	99.3	109.2	109.2	115.9	115.9	122.6	122.6	122.6	129.3	129.3	129.3	129.3
A-max 32	214/216	HED_ 5540	400/402	108.9	118.8	118.8	125.5	125.5	132.2	132.2	132.2	138.9	138.9	138.9	138.9

Planetary Gearhead GP 32 C ∅32 mm, 1.0–6.0 Nm

Ceramic Version



Technical Data

Planetary Gearhead	straight teeth
Output shaft	stainless steel
Shaft diameter as option	8 mm
Bearing at output	ball bearing
Radial play, 5 mm from flange	max. 0.14 mm
Axial play	max. 0.4 mm
Max. axial load (dynamic)	120 N
Max. force for press fits	120 N
Direction of rotation, drive to output	=
Max. continuous input speed	8000 rpm
Recommended temperature range	-40...+100°C

Number of stages	1	2	3	4	5
Max. radial load, 10 mm from flange	90 N	140 N	200 N	220 N	220 N

Option: Low-noise version

Stock program
Standard program
Special program (on request)

Part Numbers	166930	166933	166938	166939	166944	166949	166954	166959	166962	166967	166972	166977
Gearhead Data												
1 Reduction	3.7:1	14:1	33:1	51:1	111:1	246:1	492:1	762:1	1181:1	1972:1	2829:1	4380:1
2 Absolute reduction	$^{26}/_{7}$	$^{676}/_{49}$	$^{529}/_{16}$	$^{17576}/_{343}$	$^{13824}/_{125}$	$^{421824}/_{1715}$	$^{86112}/_{175}$	$^{19044}/_{25}$	$^{10123776}/_{8575}$	$^{8626176}/_{4375}$	$^{495144}/_{175}$	$^{109503}/_{25}$
3 Max. motor shaft diameter mm	6	6	3	6	4	4	3	3	4	4	3	3
Part Numbers	**166931**	**166934**		**166940**	166945	166950	**166955**	166960	166963	166968	166973	166978
1 Reduction	4.8:1	18:1		66:1	123:1	295:1	531:1	913:1	1414:1	2189:1	3052:1	5247:1
2 Absolute reduction	$^{24}/_{5}$	$^{624}/_{35}$		$^{16224}/_{245}$	$^{6877}/_{56}$	$^{101062}/_{343}$	$^{331776}/_{625}$	$^{36501}/_{40}$	$^{2425488}/_{1715}$	$^{536406}/_{245}$	$^{1907712}/_{625}$	$^{839523}/_{160}$
3 Max. motor shaft diameter mm	4	4		4	3	3	4	3	3	3	3	3
Part Numbers	166932	166935		166941	166946	**166951**	166956	166961	166964	166969	166974	166979
1 Reduction	5.8:1	21:1		79:1	132:1	318:1	589:1	1093:1	1526:1	2362:1	3389:1	6285:1
2 Absolute reduction	$^{23}/_{4}$	$^{299}/_{14}$		$^{3887}/_{49}$	$^{3312}/_{25}$	$^{389376}/_{1225}$	$^{20631}/_{35}$	$^{279841}/_{256}$	$^{9345024}/_{6125}$	$^{2066688}/_{875}$	$^{474513}/_{140}$	$^{6436343}/_{1024}$
3 Max. motor shaft diameter mm	3	3		3	3	4	3	3	4	3	3	3
Part Numbers		166936		166942	166947	166952	166957		166965	166970	166975	
1 Reduction		23:1		86:1	159:1	411:1	636:1		1694:1	2548:1	3656:1	
2 Absolute reduction		$^{576}/_{25}$		$^{14976}/_{175}$	$^{1587}/_{10}$	$^{359424}/_{875}$	$^{79488}/_{125}$		$^{1162213}/_{686}$	$^{7962624}/_{3125}$	$^{457056}/_{125}$	
3 Max. motor shaft diameter mm		4		4	3	4	3		3	4	3	
Part Numbers		166937		166943	166948	166953	166958		166966	166971	166976	
1 Reduction		28:1		103:1	190:1	456:1	706:1		1828:1	2623:1	4060:1	
2 Absolute reduction		$^{138}/_{5}$		$^{3588}/_{35}$	$^{12167}/_{64}$	$^{89401}/_{196}$	$^{158171}/_{224}$		$^{2238912}/_{1225}$	$^{2056223}/_{784}$	$^{3637933}/_{896}$	
3 Max. motor shaft diameter mm		3		3	3	3	3		3	3	3	
4 Number of stages	1	2	2	3	3	4	4	4	5	5	5	5
5 Max. continuous torque Nm	1	3	3	6	6	6	6	6	6	6	6	6
6 Max. intermittent torque at gear output Nm	1.25	3.75	3.75	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
7 Max. efficiency %	80	75	75	70	70	60	60	60	50	50	50	50
8 Weight g	118	162	162	194	194	226	226	226	258	258	258	258
9 Average backlash no load °	0.7	0.8	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
10 Mass inertia gcm²	1.5	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
11 Gearhead length L1 mm	26.5	36.4	36.4	43.1	43.1	49.8	49.8	49.8	56.5	56.5	56.5	56.5

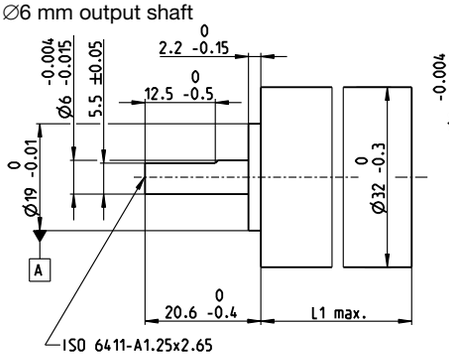
maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts											
RE-max 29	227-230			71.3	81.2	81.2	87.9	87.9	94.6	94.6	94.6	101.3	101.3	101.3	101.3
RE-max 29	228/230	MR	392	80.1	90.0	90.0	96.7	96.7	103.4	103.4	103.4	110.1	110.1	110.1	110.1
EC 32, 80 W	251			86.6	96.5	96.5	103.2	103.2	109.9	109.9	109.9	116.6	116.6	116.6	116.6
EC 32, 80 W	251	HED_ 5540	400/403	105.0	114.9	114.9	121.6	121.6	128.3	128.3	128.3	135.0	135.0	135.0	135.0
EC 32, 80 W	251	Res 26	412	106.7	116.6	116.6	123.3	123.3	130.0	130.0	130.0	136.7	136.7	136.7	136.7
EC-max 22, 25 W	263			75.1	85.0	85.0	91.7	91.7	98.4	98.4	98.4	105.1	105.1	105.1	105.1
EC-max 22, 25 W	263	MR	391	84.8	94.7	94.7	101.4	101.4	108.1	108.1	108.1	114.8	114.8	114.8	114.8
EC-max 22, 25 W	263	AB 20	444	110.7	120.5	120.5	127.2	127.2	133.9	133.9	133.9	140.6	140.6	140.6	140.6
EC-max 30, 40 W	264			68.9	78.8	78.8	85.5	85.5	92.2	92.2	92.2	98.9	98.9	98.9	98.9
EC-max 30, 40 W	264	MR	392	81.1	91.0	91.0	97.7	97.7	104.4	104.4	104.4	111.1	111.1	111.1	111.1
EC-max 30, 40 W	264	HEDL 5540	402	89.5	99.4	99.4	106.1	106.1	112.8	112.8	112.8	119.5	119.5	119.5	119.5
EC-max 30, 40 W	264	AB 20	444	104.5	114.4	114.4	121.1	121.1	127.8	127.8	127.8	134.5	134.5	134.5	134.5
EC-max 30, 40 W	264	HEDL 5540/AB 20	403/444	125.1	135.0	135.0	141.7	141.7	148.4	148.4	148.4	155.1	155.1	155.1	155.1
EC-max 30, 60 W	265			90.9	100.8	100.8	107.4	107.4	114.7	114.7	114.7	120.8	120.8	120.8	120.8
EC-max 30, 60 W	265	MR	392	103.1	113.0	113.0	119.7	119.7	126.4	126.4	126.4	133.1	133.1	133.1	133.1
EC-max 30, 60 W	265	HEDL 5540	403	111.5	121.4	121.4	128.0	128.0	134.7	134.7	134.7	141.4	141.4	141.4	141.4
EC-max 30, 60 W	265	AB 20	444	126.5	136.4	136.4	143.0	143.0	149.7	149.7	149.7	156.4	156.4	156.4	156.4
EC-max 30, 60 W	265	HEDL 5540/AB 20	403/444	147.9	157.2	157.2	163.8	163.8	170.5	170.5	170.5	177.2	177.2	177.2	177.2
EC-4pole 22, 90 W	271			75.2	85.1	85.1	91.8	91.8	98.5	98.5	98.5	105.2	105.2	105.2	105.2
EC-4pole 22, 90 W	271	HEDL 5540	404	96.7	106.6	106.6	113.3	113.3	120.0	120.0	120.0	126.7	126.7	126.7	126.7
EC-4pole 22, 120 W	272			92.6	102.5	102.5	109.2	109.2	115.9	115.9	115.9	122.6	122.6	122.6	122.6
EC-4pole 22, 120 W	272	HEDL 5540	404	114.1	124.0	124.0	130.7	130.7	137.4	137.4	137.4	144.1	144.1	144.1	144.1
EC 32 flat, 15 W	296			44.5	54.4	54.4	61.1	61.1	67.8	67.8	67.8	74.5	74.5	74.5	74.5
EC 32 flat IE, IP 00	297			54.6	64.5	64.5	71.2	71.2	77.9	77.9	77.9	84.6	84.6	84.6	84.6
EC 32 flat IE, IP 40	297			56.3	66.2	66.2	72.9	72.9	79.6	79.6	79.6	86.3	86.3	86.3	86.3
EC-i 40, 50 W	281			58.3	68.2	68.2	74.9	74.9	81.6	81.6	81.6	88.3	88.3	88.3	88.3
EC-i 40, 50 W	281	16 EASY	382/383	70.0	79.9	79.9	86.6	86.6	93.3	93.3	93.3	100.0	100.0	100.0	100.0
EC-i 40, 50 W	281	HEDL 5540	404	81.3	91.2	91.2	97.9	97.9	104.6	104.6	104.6	111.3	111.3	111.3	111.3
EC-i 40, 70 W	283			68.3	78.2	78.2	84.9	84.9	91.6	91.6	91.6	98.3	98.3	98.3	98.3
EC-i 40, 70 W	283	16 EASY	382/383	80.0	89.9	89.9	96.6	96.6	103.3	103.3	103.3	110.0	110.0	110.0	110.0
EC-i 40, 70 W	283	HEDL 5540	403	91.3	101.2	101.2	107.9	107.9	114.6	114.6	114.6	121.3	121.3	121.3	121.3
MCD EPOS, 60 W	441			150.2	160.1	160.1	166.8	166.8	173.5	173.5	173.5	180.2	180.2	180.2	180.2
MCD EPOS P, 60 W	441			150.2	160.1	160.1	166.8	166.8	173.5	173.5	173.5	180.2	180.2	180.2	180.2

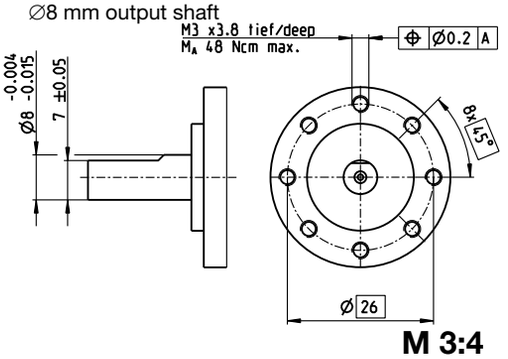
Planetary Gearhead GP 32 CR ∅32 mm, 1.0 Nm

for high radial loads, ceramic version

∅6 mm output shaft



∅8 mm output shaft



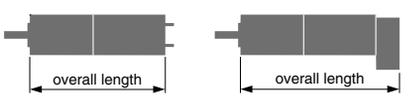
M 3:4

Technical Data

Planetary Gearhead	straight teeth
Output shaft	stainless steel
Bearing at output	ball bearing
Radial play, 5 mm from flange	max. 0.14 mm
Axial play	max. 0.1 mm
Max. axial load (dynamic)	120 N
Max. force for press fits	120 N
Direction of rotation, drive to output	=
Max. continuous input speed	8000 rpm
Recommended temperature range	-40…+100°C
Output shaft diameter	6 mm 8 mm
Max. radial load, 10 mm from flange	140 N 120 N

Stock program
Standard program
Special program (on request)

Gearhead Data		Part Numbers		
		425240	425241	425242
1 Reduction		3.7:1	4.8:1	5.8:1
2 Absolute reduction		26/7	24/5	23/4
3 Max. motor shaft diameter	mm	6	4	3
Output shaft diameter	mm	6	6	6
Part Numbers		413746	425160	425161
1 Reduction		3.7 : 1	4.8 : 1	5.8 : 1
2 Absolute reduction		26/7	24/5	23/4
3 Max. motor shaft diameter	mm	6	4	3
Output shaft diameter	mm	8	8	8
4 Number of stages		1	1	1
5 Max. continuous torque	Nm	1.0	1.0	1.0
6 Max. intermittent torque at gear output	Nm	1.25	1.25	1.25
7 Max. efficiency	%	90	90	90
8 Weight	g	111	111	111
9 Average backlash no load	°	0.7	0.7	0.7
10 Mass inertia	gcm²	1.6	0.9	0.6
11 Gearhead length L1	mm	26.2	26.2	26.2

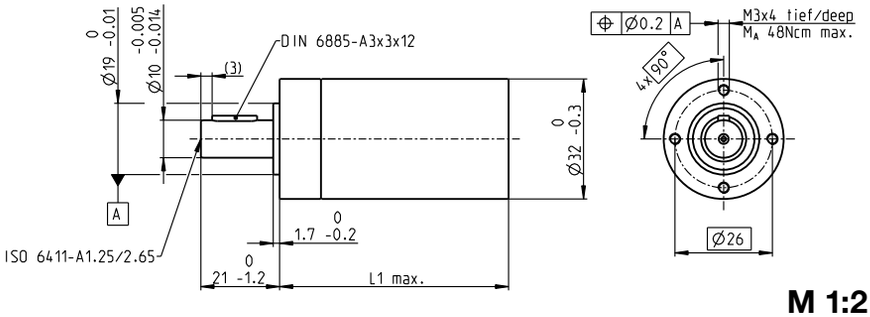


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts		
RE 30, 60 W	183			94.3	94.3	94.3
RE 30, 60 W	183	MR	393	105.7	105.7	105.7
RE 30, 60 W	183	HED_5540	399/401	115.1	115.1	115.1
RE 35, 90 W	184			97.3	97.3	97.3
RE 35, 90 W	184	MR	393	108.7	108.7	108.7
RE 35, 90 W	184	HED_5540	399/401	118.0	118.0	118.0
RE 35, 90 W	184	DCT22	411	115.4	115.4	115.4
RE 35, 90 W	184	AB 28	446	133.4	133.4	133.4
RE 35, 90 W	184	HED_ 5540/AB 28	399/446	150.5	150.5	150.5
EC 32, 80 W	251			86.3	86.3	86.3
EC 32, 80 W	251	HED_5540	400/403	104.7	104.7	104.7
EC 32, 80 W	251	Res 26	412	106.4	106.4	106.4

Planetary Gearhead GP 32 HP ∅32 mm, 4.0–8.0 Nm

High Power

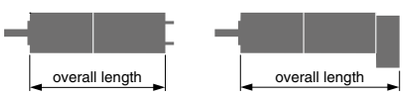


M 1:2

Technical Data	
Planetary Gearhead	straight teeth
Output shaft	stainless steel
Bearing at output	ball bearing
Radial play, 10 mm from flange	max. 0.14 mm
Axial play	max. 0.4 mm
Max. axial load (dynamic)	120 N
Max. force for press fits	120 N
Direction of rotation, drive to output	=
Max. continuous input speed	8000 rpm
Recommended temperature range	-40…+100°C
Number of stages	2 3 4
Max. radial load, 10 mm from flange	200 N 250 N 300 N

Stock program
Standard program
Special program (on request)

Part Numbers	320247	326663	326664	326668	326672	324947	324952
Gearhead Data							
1 Reduction	14:1	33:1	51:1	111:1	190:1	456:1	706:1
2 Absolute reduction	676/49	529/16	17576/343	13824/125	456976/2401	89401/196	158171/224
3 Max. motor shaft diameter mm	6	3	6	4	6	3	3
Part Numbers	326659		326665	326669	324942	324948	324953
1 Reduction	18:1		66:1	123:1	246:1	492:1	762:1
2 Absolute reduction	624/35		16224/245	6877/56	421824/1715	86112/175	19044/25
3 Max. motor shaft diameter mm	6		6	3	6	6	4
Part Numbers	326660		326666	326670	324944	324949	324954
1 Reduction	21:1		79:1	132:1	295:1	531:1	913:1
2 Absolute reduction	299/14		3887/49	3312/25	101062/343	331776/625	36501/40
3 Max. motor shaft diameter mm	6		6	4	6	4	3
Part Numbers	326661		326667	326671	324945	324950	
1 Reduction	23:1		86:1	159:1	318:1	589:1	
2 Absolute reduction	576/25		14976/175	1587/10	389376/1225	20631/35	
3 Max. motor shaft diameter mm	4		6	3	6	6	
Part Numbers	326662		320297		324946	324951	
1 Reduction	28:1		103:1		411:1	636:1	
2 Absolute reduction	138/5		3588/35		359424/875	79488/125	
3 Max. motor shaft diameter mm	4		6		6	4	
4 Number of stages	2	2	3	3	4	4	4
5 Max. continuous torque Nm	4	4	8	8	8	8	8
6 Max. intermittent torque at gear output Nm	6	6	12	12	12	12	12
7 Max. efficiency %	75	75	70	70	60	60	60
8 Weight g	178	178	213	213	249	249	249
9 Average backlash no load °	0.8	0.8	1.0	1.0	1.0	1.0	1.0
10 Mass inertia gcm²	1.6	0.5	1.5	0.7	1.5	1.5	0.7
11 Gearhead length L1 mm	48.3	48.3	55.0	55.0	61.7	61.7	61.7

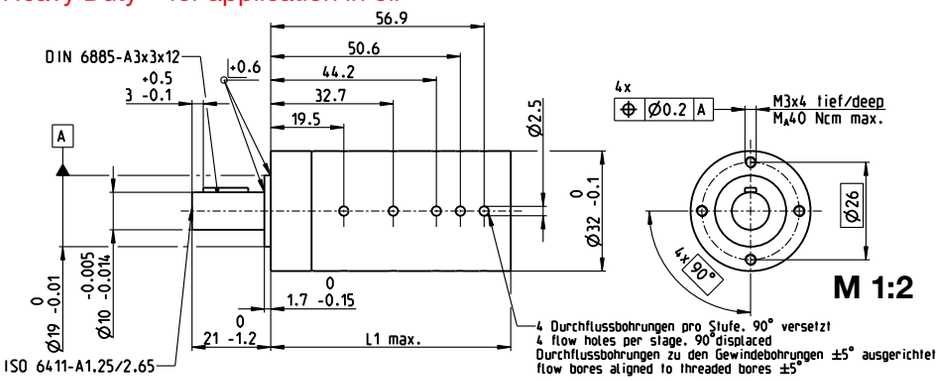


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts						
RE 35, 90 W	184			119.4	119.4	126.1	126.1	132.8	132.8	132.8
RE 35, 90 W	184	MR	393	130.8	130.8	137.5	137.5	144.2	144.2	144.0
RE 35, 90 W	184	HED_ 5540	399/401	140.1	140.1	146.8	146.8	153.5	153.5	153.5
RE 35, 90 W	184	DCT 22	411	137.5	137.5	144.2	144.2	150.9	150.9	150.9
RE 35, 90 W	184	AB 28	446	155.5	155.5	162.2	162.2	168.9	168.9	168.9
RE 35, 90 W	184	HEDS 5540/AB 28	399/446	172.7	172.7	179.4	179.4	186.1	186.1	186.1
EC-max 30, 40 W	264			90.2	90.2	96.9	96.9	103.6	103.6	103.6
EC-max 30, 40 W	264	MR	392	102.4	102.4	109.1	109.1	115.8	115.8	115.8
EC-max 30, 40 W	264	HEDL 5540	403	110.8	110.8	117.5	117.5	124.2	124.2	124.2
EC-max 30, 40 W	264	AB 20	444	125.8	125.8	132.5	132.5	139.2	139.2	139.2
EC-max 30, 40 W	264	HEDL 5540/AB 20	403/444	146.4	146.4	153.1	153.1	159.8	159.8	159.8
EC-max 30, 60 W	265			112.2	112.2	118.9	118.9	125.6	125.6	125.6
EC-max 30, 60 W	265	MR	392	124.4	124.4	131.1	131.1	137.8	137.8	137.8
EC-max 30, 60 W	265	HEDL 5540	403	132.8	132.8	139.5	139.5	146.2	146.2	146.2
EC-max 30, 60 W	265	AB 20	444	147.8	147.8	154.5	154.5	161.2	161.2	161.2
EC-max 30, 60 W	265	HEDL 5540/AB 20	403/444	168.4	168.4	175.1	175.1	181.8	181.8	181.8
EC-4pole 30, 100 W	273			95.2	95.2	101.9	101.9	108.6	108.6	108.6
EC-4pole 30, 100 W	273	MR	392	107.4	107.4	114.1	114.1	120.8	120.8	120.8
EC-4pole 30, 100 W	273	HEDL 5540	404	115.8	115.8	122.5	122.5	129.2	129.2	129.2
EC-4pole 30, 100 W	273	AB 20	444	131.4	131.4	138.1	138.1	144.8	144.8	144.8
EC-4pole 30, 100 W	273	HEDL 5540/AB 20	404/444	152.2	152.2	158.9	158.9	165.6	165.6	165.6
EC-4pole 30, 200 W	275			112.2	112.2	118.9	118.9	125.6	125.6	125.6
EC-4pole 30, 200 W	275	MR	392	124.4	124.4	131.1	131.1	137.8	137.8	137.8
EC-4pole 30, 200 W	275	HEDL 5540	404	132.8	132.8	139.5	139.5	146.2	146.2	146.2
EC-4pole 30, 200 W	275	AB 20	444	148.4	148.4	155.1	155.1	161.8	161.8	161.8
EC-4pole 30, 200 W	275	HEDL 5540/AB 20	404/444	169.2	169.2	175.9	175.9	182.6	182.6	182.6
MCD EPOS, 60 W	441			168.2	168.2	174.9	174.9	181.6	181.6	181.6
MCD EPOS P, 60 W	441			168.2	168.2	174.9	174.9	181.6	181.6	181.6

Planetary Gearhead GP 32 HD ∅32 mm, 3.0–8.0 Nm

Heavy Duty – for application in oil



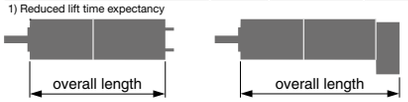
Technical Data	
Planetary Gearhead	straight teeth
Output shaft	stainless steel
Bearing at output	ball bearing
Radial play, 10 mm from flange	max. 0.14 mm
Axial play	max. 0.4 mm
Max. axial load (dynamic)	120 N
Max. force for press fits	120 N
Direction of rotation, drive to output	=
Max. continuous input speed	< 8000 rpm
Recommended temperature range	-55…+200°C
Extended range as option	-55…+260°C

Number of stages	1	2	3	4	5
Max. radial load, 10 mm from flange	120 N	200 N	250 N	300 N	300 N

Stock program
Standard program
Special program (on request)

Part Numbers		526077	526080	526086	526092	526095	526101	526106	526112	526117	526123
Gearhead Data (provisional)											
1 Reduction		3.7:1	14:1	51:1	123:1	190:1	492:1	707:1	1694:1	2548:1	4060:1
2 Absolute reduction		26/7	676/49	17576/343	6877/56	456976/2401	86112/175	11881376/16807	1162213/686	7962624/3125	3637933/896
3 Max. motor shaft diameter	mm	6	6	6	3	6	6	6	6	4	6
Part Numbers		526078	526081	526087	526093	526096	526102	526107	526113	526118	526124
1 Reduction		4.8:1	18:1	66:1	132:1	246:1	531:1	914:1	1828:1	2623:1	4380:1
2 Absolute reduction		24/5	624/35	16224/245	3312/25	421824/1715	331776/625	10967424/12005	2238912/1225	2056223/784	109503/25
3 Max. motor shaft diameter	mm	4	6	6	4	6	4	6	6	6	4
Part Numbers		526079*	526082	526088	526094*	526097	526103	526108	526114	526119	526125
1 Reduction		5.8:1	21:1	79:1	159:1	295:1	589:1	1094:1	1972:1	2829:1	5247:1
2 Absolute reduction		23/4	299/14	3887/49	1587/10	101062/343	20631/35	2627612/2401	8626176/4375	495144/175	839523/160
3 Max. motor shaft diameter	mm	3	6	6	3	6	6	6	4	6	4
Part Numbers			526083	526089		526098	526104	526109	526115	526120	526126*
1 Reduction			23:1	86:1		318:1	636:1	1181:1	2189:1	3052:1	6285:1
2 Absolute reduction			576/25	14976/175		389376/1225	79488/125	10123776/8575	536406/245	1907712/625	6436343/1024
3 Max. motor shaft diameter	mm		4	6		6	4	6	6	4	3
Part Numbers			526084	526090		526099	526105	526110	526116	526121	
1 Reduction			28:1	103:1		411:1	762:1	1414:1	2362:1	3389:1	
2 Absolute reduction			138/5	3588/35		359424/875	19044/25	2425488/1715	2066688/875	474513/140	
3 Max. motor shaft diameter	mm		4	6		6	4	6	6	6	
Part Numbers			526085*	526091		526100		526111		526122	
1 Reduction			33:1	111:1		456:1		1526:1		3656:1	
2 Absolute reduction			529/16	13824/125		89401/196		9345024/6125		457056/125	
3 Max. motor shaft diameter	mm		3	4		6		4		4	
4 Number of stages		1	2	3	3	4	4	5	5	5	5
5 Max. continuous torque	Nm	3	4	8	8	8	8	8	8	8	8
6 Max. intermittent torque at gear output	Nm	4.5	6	12	12	12	12	12	12	12	12
15 Max. overload torque[1]	Nm	9	12	24	24	24	24	24	24	24	24
7 Max. efficiency	%	95	87	78	78	65	65	53	53	53	53
8 Weight	g	176	234	277	277	309	309	340	340	340	340
9 Average backlash no load	°	0.7	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
10 Mass inertia	gcm²	1.59	1.59	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
11 Gearhead length L1	mm	29.0	41.4	51.2	51.2	57.7	57.7	64.2	64.2	64.2	64.2
13 Max. transmittable power (continuous)	W	320	200	80	80	40	40	12	12	12	12
14 Max. transmittable power (intermittent)	W	480	300	120	120	60	60	18	18	18	18

1) Reduced lift time expectancy



maxon Modular System

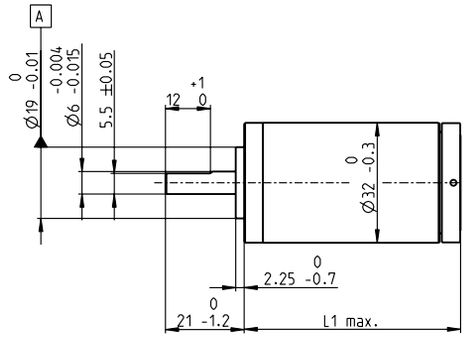
+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts									
EC 32 HD oil, A	277			194.0	206.5	216.5	216.5	223.0	223.0	229.5	229.5	229.5	229.5
EC 32 HD oil, B	277			174.0	186.5	196.5	196.5	203.0	203.0	209.5	209.5	209.5	209.5

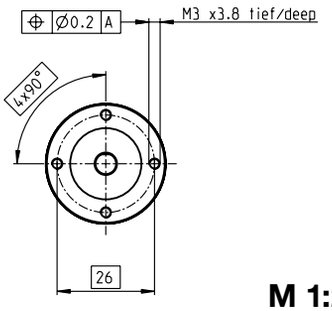
*Overall length + 2 mm

Application	Important Notice
General	This gearhead has been designed for applications in oil and is only equipped with minimum lubrication. Therefore it is not permitted to use it under normal air conditions.
– extreme temperature applications	
– vibration tested according to MIL-STD810F/ Jan2000 Fig. 514.5C-10	
– operation in oil and high pressure	
Oil & Gas Industry	
– oil, gas and geothermal wells	

Koaxdrive KD 32 ∅32 mm, 1.0–4.5 Nm

Low Noise





M 1:2

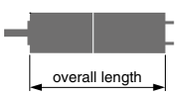
Technical Data

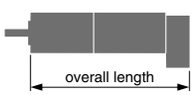
Planetary Gearhead	special toothing
Output shaft	stainless steel
Bearing at output	ball bearing
Radial play, 5 mm from flange	max. 0.14 mm
Axial play	max. 0.4 mm
Max. axial load (dynamic)	120 N
Max. force for press fits	120 N
Direction of rotation, drive to output	=
Max. continuous input speed	8000 rpm
Recommended temperature range	-15…+80°C
Number of stages	1 2 3
Max. radial load, 10 mm from flange	90 N 140 N 200 N

Option: higher reduction ratio on request

Stock program
Standard program
Special program (on request)

			Part Numbers								
			354722	354725	354962	354730	354731	354734	354737	354963	**354742**
Gearhead Data											
1	Reduction		11:1	41:1	82:1	158:1	152:1	253:1	392:1	705:1	1091:1
2	Absolute reduction		$^{11}/_{1}$	$^{286}/_{7}$	$^{408}/_{5}$	$^{792}/_{5}$	$^{7436}/_{49}$	$^{6336}/_{25}$	$^{9792}/_{25}$	$^{9867}/_{14}$	$^{17457}/_{16}$
7	Max. efficiency	%	78	70	65	61	63	63	59	55	55
10	Mass inertia	gcm²	0.65	0.60	0.60	0.35	0.60	0.60	0.35	0.35	0.22
	Part Numbers		**354723**	354726	354728	354744	354732	354735	**354738**	354740	
1	Reduction		17:1	53:1	98:1	190:1	196:1	304:1	455:1	760:1	
2	Absolute reduction		$^{17}/_{1}$	$^{264}/_{5}$	$^{391}/_{4}$	$^{759}/_{4}$	$^{6864}/_{35}$	$^{1518}/_{5}$	$^{22308}/_{49}$	$^{19008}/_{25}$	
7	Max. efficiency	%	72	70	65	65	63	63	55	55	
10	Mass inertia	gcm²	0.38	0.60	0.35	0.35	0.60	0.60	0.22	0.22	
	Part Numbers		**354724**	**354727**	**354729**		**354733**	354736	354739	354741	
1	Reduction		33:1	63:1	123:1		235:1	364:1	588:1	911:1	
2	Absolute reduction		$^{33}/_{1}$	$^{442}/_{7}$	$^{858}/_{7}$		$^{11492}/_{49}$	$^{5819}/_{16}$	$^{20592}/_{35}$	$^{4554}/_{5}$	
7	Max. efficiency	%	68	70	61		63	63	59	55	
10	Mass inertia	gcm²	0.65	0.60	0.22		0.60	0.60	0.35	0.22	
3	Max. motor shaft diameter	mm	3	3	3	3	3	3	3	3	3
4	Number of stages		1	2	2	2	3	3	3	3	3
5	Max. continuous torque	Nm	1	3.5	3.5	3.5	4.5	4.5	4.5	4.5	4.5
6	Max. intermittent torque at gear output	Nm	1.25	4.4	4.4	4.4	6.5	6.5	6.5	6.5	6.5
8	Weight	g	130	230	230	230	262	262	262	262	262
9	Average backlash no load	°	3.5	1	1	1	1	1	1	1	1
11	Gearhead length L1	mm	40.7	57.9	57.9	57.9	67.6	67.6	67.6	67.6	67.6

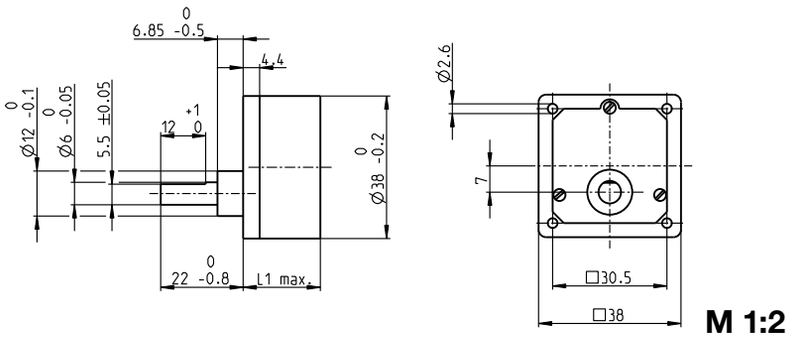




maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	**Overall length [mm]** = Motor length + gearhead length + (sensor/brake) + assembly parts								
RE 25	179/181			95.3	112.5	112.5	112.5	122.2	122.2	122.2	122.2	122.2
RE 25	179/181	MR	392	106.3	123.5	123.5	123.5	133.2	133.2	133.2	133.2	133.2
RE 25	179/181	Enc 22	398	109.4	126.6	126.6	126.6	136.3	136.3	136.3	136.3	136.3
RE 25	179/181	HED_5540	399/401	116.1	133.3	133.3	133.3	143.0	143.0	143.0	143.0	143.0
RE 25	179/181	DCT 22	411	117.6	134.8	134.8	134.8	144.5	144.5	144.5	144.5	144.5
RE 25, 20 W	180			83.8	101.0	101.0	101.0	110.7	110.7	110.7	110.7	110.7
RE 25, 20 W	180	MR	392	94.8	112.0	112.0	112.0	121.7	121.7	121.7	121.7	121.7
RE 25, 20 W	180	HED_5540	400/401	104.6	121.8	121.8	121.8	131.5	131.5	131.5	131.5	131.5
RE 25, 20 W	180	DCT 22	411	106.1	123.3	123.3	123.3	133.0	133.0	133.0	133.0	133.0
RE 25, 20 W	180	AB 28	446	117.9	135.1	135.1	135.1	144.8	144.8	144.8	144.8	144.8
RE 25, 20 W	180	HED_5540/AB 28	400/446	135.1	152.3	152.3	152.3	162.0	162.0	162.0	162.0	162.0
RE 30, 60 W	183			108.8	126.0	126.0	126.0	135.7	135.7	135.7	135.7	135.7
RE 30, 60 W	183	MR	393	120.2	137.4	137.4	137.4	147.1	147.1	147.1	147.1	147.1
RE 30, 60 W	183	HEDL 5540	401	129.6	146.8	146.8	146.8	156.5	156.5	156.5	156.5	156.5
EC-max 22, 12 W	262			72.8	90.0	90.0	90.0	99.7	99.7	99.7	99.7	99.7
EC-max 22, 12 W	262	MR	391	82.4	99.6	99.6	99.6	109.3	109.3	109.3	109.3	109.3
EC-max 22, 12 W	262	AB 20	444	108.4	125.6	125.6	125.6	135.3	135.3	135.3	135.3	135.3
EC-max 22, 25 W	263			89.3	106.5	106.5	106.5	116.2	116.2	116.2	116.2	116.2
EC-max 22, 25 W	263	MR	391	98.9	116.1	116.1	116.1	125.8	125.8	125.8	125.8	125.8
EC-max 22, 25 W	263	AB 20	444	125.0	142.2	142.2	142.2	151.9	151.9	151.9	151.9	151.9
EC-max 30, 40 W	264			82.8	100.0	100.0	100.0	109.7	109.7	109.7	109.7	109.7
EC-max 30, 40 W	264	MR	392	95.0	112.2	112.2	112.2	121.9	121.9	121.9	121.9	121.9
EC-max 30, 40 W	264	HEDL 5540	403	103.4	120.6	120.6	120.6	130.3	130.3	130.3	130.3	130.3
EC-max 30, 40 W	264	AB 20	444	118.4	135.6	135.6	135.6	145.3	145.3	145.3	145.3	145.3
EC-max 30, 40 W	264	HEDL 5540/AB 20	403/444	139.2	156.2	156.2	156.2	165.7	165.7	165.7	165.7	165.7
EC-max 30, 60 W	265			104.8	122.0	122.0	122.0	131.7	131.7	131.7	131.7	131.7
EC-max 30, 60 W	265	MR	392	117.0	134.2	134.2	134.2	143.9	143.9	143.9	143.9	143.9
EC-max 30, 60 W	265	HEDL 5540	403	125.4	142.6	142.6	142.6	152.3	152.3	152.3	152.3	152.3
EC-max 30, 60 W	265	AB 20	444	140.4	157.6	157.6	157.6	167.3	167.3	167.3	167.3	167.3
EC-max 30, 60 W	265	HEDL 5540/AB 20	403/444	161.2	178.2	178.2	178.2	187.7	187.7	187.7	187.7	187.7

Spur Gearhead GS 38 A ∅38 mm, 0.1–0.6 Nm



M 1:2

Technical Data

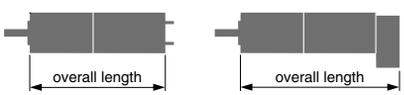
Spur Gearhead	straight teeth				
Output shaft	stainless steel				
Bearing at output	sleeve bearing				
Radial play, 12 mm from flange	max. 0.1 mm				
Axial play	0.03–0.2 mm				
Max. axial load (dynamic)	30 N				
Max. force for press fits	500 N				
Max. continuous input speed	5000 rpm				
Recommended temperature range	-5…+80°C				
Number of stages	1	2	3	4	5
Max. radial load, 12 mm from flange	50 N	50 N	50 N	50 N	50 N

Stock program
Standard program
Special program (on request)

Part Numbers

		110451	110452	110453	110454	110455	110456	110457	110458	110459
Gearhead Data										
1	Reduction	6:1	10:1	18:1	30:1	60:1	100:1	200:1	500:1	900:1
2	Absolute reduction	6	10	18	30	60	100	200	500	900
3	Max. motor shaft diameter	mm	3	3	3	3	3	3	3	3	3
4	Number of stages		2	2	3	3	4	4	5	6	6
5	Max. continuous torque	Nm	0.1	0.1	0.2	0.2	0.3	0.3	0.6	0.6	0.6
6	Max. intermittent torque at gear output	Nm	0.3	0.3	0.6	0.6	0.9	0.9	1.8	1.8	1.8
12	Direction of rotation, drive to output		=	=	≠	≠	=	=	≠	=	=
7	Max. efficiency	%	81	81	73	73	66	66	59	53	53
8	Weight	g	55	55	60	60	65	65	70	75	75
9	Average backlash no load	°	1.0	1.0	1.5	1.5	2.0	2.0	2.5	3.0	3.0
10	Mass inertia	gcm^2	0.7	0.6	0.4	0.4	0.3	0.3	0.2	0.2	0.2
11	Gearhead length L1*	mm	20.6	20.6	23.1	23.1	25.6	25.6	28.1	30.6	30.6

*for EC 32 flat L1 is + 2.0 mm

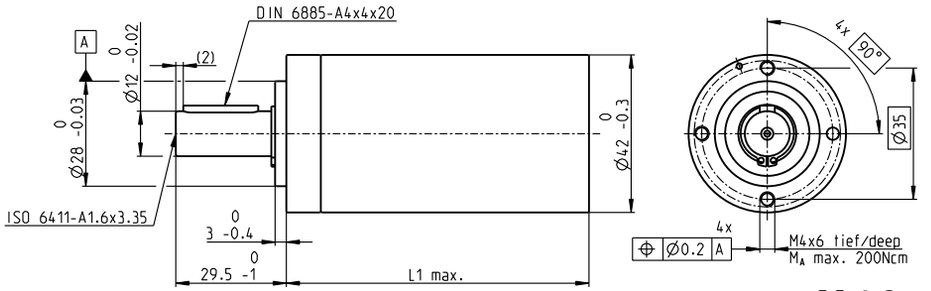


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts								
A-max 26	205-212			65.4	65.4	67.9	67.9	70.4	70.4	72.9	75.4	75.4
A-max 26	206-212	MEnc 13	410	72.5	72.5	75.0	75.0	77.5	77.5	80.0	82.5	82.5
A-max 26	206-212	MR	392	74.2	74.2	76.7	76.7	79.2	79.2	81.7	84.2	84.2
A-max 26	206-212	Enc 22	398	79.8	79.8	82.3	82.3	84.8	84.8	87.3	89.8	89.8
A-max 26	206-212	HED_ 5540	400/402	83.8	83.8	86.3	86.3	88.8	88.8	91.3	93.8	93.8
A-max 32	213/215			83.6	83.6	86.1	86.1	88.6	88.6	91.1	93.6	93.6
A-max 32	214/216			82.2	82.2	84.7	84.7	87.2	87.2	89.7	92.2	92.2
A-max 32	214/216	MR	393	93.4	93.4	95.9	95.9	98.4	98.4	100.9	103.4	103.4
A-max 32	214/216	HED_ 5540	400/402	103.0	103.0	105.5	105.5	108.0	108.0	110.5	113.0	113.0
RE-max 21	223/224			49.6	49.6	52.1	52.1	54.6	54.6	57.1	59.6	59.6
RE-max 21, 3.5 W	224	MR	389/391	54.7	54.7	57.2	57.2	59.7	59.7	62.2	64.7	64.7
RE-max 21	225/226			52.2	52.2	54.7	54.7	57.2	57.2	59.7	62.2	62.2
RE-max 21, 6 W	226	MR	389/391	56.5	56.5	59.0	59.0	61.5	61.5	64.0	66.5	66.5
EC 32 flat, 15 W	296			38.6	38.6	41.1	41.1	43.6	43.6	46.1	48.6	48.6
EC 32 flat, IE, IP 00	297			48.7	48.7	51.2	51.2	53.7	53.7	56.2	58.7	58.7
EC 32 flat, IE, IP 40	297			50.4	50.4	52.9	52.9	55.4	55.4	57.9	60.4	60.4

Planetary Gearhead GP 42 C ∅42 mm, 3–15 Nm

Ceramic Version



M 1:2

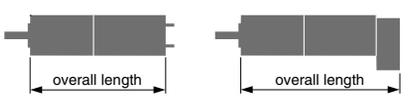
Technical Data

Planetary Gearhead				straight teeth
Output shaft				stainless steel
Bearing at output				preloaded ball bearings
Radial play, 12 mm from flange				max. 0.06 mm
Axial play at axial load	< 5 N			0 mm
	> 5 N			max. 0.3 mm
Max. axial load (dynamic)				150 N
Max. force for press fits				300 N
Direction of rotation, drive to output				=
Max. continuous input speed				8000 rpm
Recommended temperature range				-40…+100°C
Number of stages	1	2	3	4
Max. radial load, 12 mm from flange	120 N	240 N	360 N	360 N

Stock program
Standard program
Special program (on request)

Part Numbers	203113	203115	203119	203120	203124	203129	203128	203133	203137	203141
Gearhead Data										
1 Reduction	3.5:1	12:1	26:1	43:1	81:1	156:1	150:1	285:1	441:1	756:1
2 Absolute reduction	7/2	49/4	26	343/8	2197/27	156	2401/16	15379/54	441	756
10 Mass inertia gcm²	14	15	9.1	15	9.4	9.1	15	15	14	14
3 Max. motor shaft diameter mm	10	10	8	10	8	8	10	10	10	10
Part Numbers	**203114**	**203116**	260552*	203121	203125	260553*	203130	203134	203138	203142
1 Reduction	4.3:1	15:1	36:1	53:1	91:1	216:1	186:1	319:1	488:1	936:1
2 Absolute reduction	13/3	91/6	36/1	637/12	91	216/1	4459/24	637/2	4394/9	936
10 Mass inertia gcm²	9.1	15	5.0	15	15	5.0	15	15	9.4	9.1
3 Max. motor shaft diameter mm	8	10	4	10	10	4	10	10	8	8
Part Numbers	260551*	203117		203122	203126		**203131**	203135	**203139**	260554*
1 Reduction	6:1	19:1		66:1	113:1		230:1	353 :1	546:1	1296:1
2 Absolute reduction	6/1	169/9		1183/18	338/3		8281/36	28561/81	546	1296/1
10 Mass inertia gcm²	4.9	9.4		15	9.4		15	9.4	14	5.0
3 Max. motor shaft diameter mm	4	8		10	8		10	8	10	4
Part Numbers		203118		**203123**	203127		203132	203136	203140	
1 Reduction		21:1		74:1	126:1		257:1	394:1	676:1	
2 Absolute reduction		21		147/2	126		1029/4	1183/3	676	
10 Mass inertia gcm²		14		15	14		15	15	9.1	
3 Max. motor shaft diameter mm		10		10	10		10	10	8	
4 Number of stages	1	2	2	3	3	3	4	4	4	4
5 Max. continuous torque Nm	3.0	7.5	7.5	15.0	15.0	15.0	15.0	15.0	15.0	15.0
6 Max. intermittent torque at gear output Nm	4.5	11.3	11.3	22.5	22.5	22.5	22.5	22.5	22.5	22.5
7 Max. efficiency %	90	81	81	72	72	72	64	64	64	64
8 Weight g	260	360	360	460	460	460	560	560	560	560
9 Average backlash no load °	0.6	0.8	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0
11 Gearhead length L1 mm	41.0	55.5	55.5	70.0	70.0	70.0	84.5	84.5	84.5	84.5

*no combination with EC 45 (150 W and 250 W)

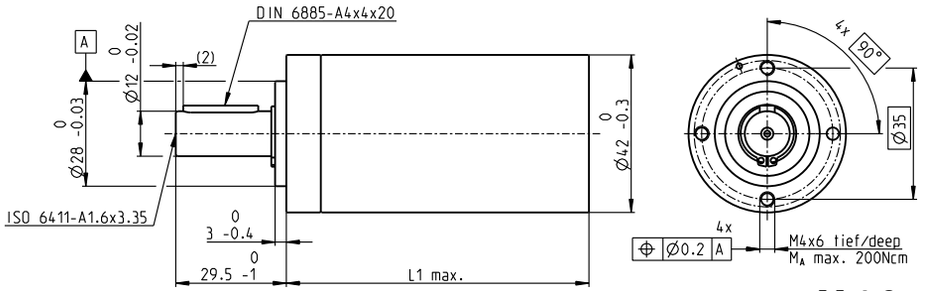


maxon Modular System

+ Motor	Page	+ Sensor	Page	Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts									
RE 35, 90 W	184					112.1	126.6	126.6	141.1	141.1	141.1	155.6	155.6	155.6	155.6
RE 35, 90 W	184	MR	393			123.5	138.0	138.0	152.5	152.5	152.5	167.0	167.0	167.0	167.0
RE 35, 90 W	184	HED_ 5540	399/401			132.8	147.3	147.3	161.8	161.8	161.8	176.3	176.3	176.3	176.3
RE 35, 90 W	184	DCT 22	411			130.2	144.7	144.7	159.2	159.2	159.2	173.7	173.7	173.7	173.7
RE 35, 90 W	184			AB 28	446	148.2	162.7	162.7	177.2	177.2	177.2	191.7	191.7	191.7	191.7
RE 35, 90 W	184	HED_ 5540	399/401	AB 28	446	165.4	179.9	179.9	194.4	194.4	194.4	208.9	208.9	208.9	208.9
RE 40, 150 W	186					112.1	126.6	126.6	141.1	141.1	141.1	155.6	155.6	155.6	155.6
RE 40, 150 W	186	MR	393			123.5	138.0	138.0	152.5	152.5	152.5	167.0	167.0	167.0	167.0
RE 40, 150 W	186	HED_ 5540	399/402			132.8	147.3	147.3	161.8	161.8	161.8	176.3	176.3	176.3	176.3
RE 40, 150 W	186	HEDL 9140	405			166.2	180.7	180.7	195.2	195.2	195.2	209.7	209.7	209.7	209.7
RE 40, 150 W	186			AB 28	446	148.2	162.7	162.7	177.2	177.2	177.2	191.7	191.7	191.7	191.7
RE 40, 150 W	186			AB 28	447	156.2	170.7	170.7	185.2	185.2	185.2	199.7	199.7	199.7	199.7
RE 40, 150 W	186	HED_ 5540	399/402	AB 28	446	165.4	179.9	179.9	194.4	194.4	194.4	208.9	208.9	208.9	208.9
RE 40, 150 W	186	HEDL 9140	405	AB 28	447	176.7	191.2	191.2	205.7	205.7	205.7	220.2	220.2	220.2	220.2
EC 40, 170 W	252					121.1	135.6	135.6	150.1	150.1	150.1	164.6	164.6	164.6	164.6
EC 40, 170 W	252	HED_ 5540	400/402			144.5	159.0	159.0	173.5	173.5	173.5	188.0	188.0	188.0	188.0
EC 40, 170 W	252	Res 26	412			148.3	162.8	162.8	177.3	177.3	177.3	191.8	191.8	191.8	191.8
EC 40, 170 W	252			AB 32	448	163.8	178.3	178.3	192.8	192.8	192.8	207.3	207.3	207.3	207.3
EC 40, 170 W	252	HED_ 5540	400/402	AB 32	448	182.2	196.7	196.7	211.2	211.2	211.2	225.7	225.7	225.7	225.7
EC 45, 150 W	253					152.3	166.8	166.8	181.3	181.3	181.3	195.8	195.8	195.8	195.8
EC 45, 150 W	253	HEDL 9140	405			167.9	182.4	182.4	196.9	196.9	196.9	211.4	211.4	211.4	211.4
EC 45, 150 W	253	Res 26	412			152.3	166.8	166.8	181.3	181.3	181.3	195.8	195.8	195.8	195.8
EC 45, 150 W	253			AB 28	447	159.7	174.2	174.2	188.7	188.7	188.7	203.2	203.2	203.2	203.2
EC 45, 150 W	253	HEDL 9140	405	AB 28	447	176.7	191.2	191.2	205.7	205.7	205.7	220.2	220.2	220.2	220.2
EC 45, 250 W	254					185.1	199.6	199.6	214.1	214.1	214.1	228.6	228.6	228.6	228.6
EC 45, 250 W	254	HEDL 9140	405			200.7	215.2	215.2	229.7	229.7	229.7	244.2	244.2	244.2	244.2
EC 45, 250 W	254	Res 26	412			185.1	199.6	199.6	214.1	214.1	214.1	228.6	228.6	228.6	228.6
EC 45, 250 W	254			AB 28	447	192.5	207.0	207.0	221.5	221.5	221.5	236.0	236.0	236.0	236.0
EC 45, 250 W	254	HEDL 9140	405	AB 28	447	209.5	224.0	224.0	238.5	238.5	238.5	253.0	253.0	253.0	253.0

Planetary Gearhead GP 42 C ∅42 mm, 3–15 Nm

Ceramic Version



M 1:2

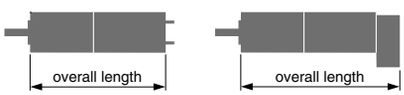
Technical Data

Planetary Gearhead				straight teeth
Output shaft				stainless steel
Bearing at output				preloaded ball bearings
Radial play, 12 mm from flange				max. 0.06 mm
Axial play at axial load	< 5 N			0 mm
	> 5 N			max. 0.3 mm
Max. axial load (dynamic)				150 N
Max. force for press fits				300 N
Direction of rotation, drive to output				=
Max. continuous input speed				8000 rpm
Recommended temperature range				-40...+100°C
Number of stages	1	2	3	4
Max. radial load, 12 mm from flange	120 N	240 N	360 N	360 N

Stock program
Standard program
Special program (on request)

			Part Numbers									
			203113	203115	203119	203120	203124	203129	203128	203133	203137	203141
Gearhead Data												
1	Reduction		3.5:1	12:1	26:1	43:1	81:1	156:1	150:1	285:1	441:1	756:1
2	Absolute reduction		7/2	49/4	26	343/8	2197/27	156	2401/16	15379/54	441	756
10	Mass inertia	gcm²	14	15	9.1	15	9.4	9.1	15	15	14	14
3	Max. motor shaft diameter	mm	10	10	8	10	8	8	10	10	10	10
	Part Numbers		203114	203116	260552*	203121	203125	260553*	203130	203134	203138	203142
1	Reduction		4.3:1	15:1	36:1	53:1	91:1	216:1	186:1	319:1	488:1	936:1
2	Absolute reduction		13/3	91/6	36/1	637/12	91	216/1	4459/24	637/2	4394/9	936
10	Mass inertia	gcm²	9.1	15	5.0	15	15	5.0	15	15	9.4	9.1
3	Max. motor shaft diameter	mm	8	10	4	10	10	4	10	10	8	8
	Part Numbers		260551*	203117		203122	203126		203131	203135	203139	260554*
1	Reduction		6:1	19:1		66:1	113:1		230:1	353 :1	546:1	1296:1
2	Absolute reduction		6/1	169/9		1183/18	338/3		8281/36	28561/81	546	1296/1
10	Mass inertia	gcm²	4.9	9.4		15	9.4		15	9.4	14	5.0
3	Max. motor shaft diameter	mm	4	8		10	8		10	8	10	4
	Part Numbers			203118		203123	203127		203132	203136	203140	
1	Reduction			21:1		74:1	126:1		257:1	394:1	676:1	
2	Absolute reduction			21		147/2	126		1029/4	1183/3	676	
10	Mass inertia	gcm²		14		15	14		15	15	9.1	
3	Max. motor shaft diameter	mm		10		10	10		10	10	8	
4	Number of stages		1	2	2	3	3	3	4	4	4	4
5	Max. continuous torque	Nm	3.0	7.5	7.5	15.0	15.0	15.0	15.0	15.0	15.0	15.0
6	Max. intermittent torque at gear output	Nm	4.5	11.3	11.3	22.5	22.5	22.5	22.5	22.5	22.5	22.5
7	Max. efficiency	%	90	81	81	72	72	72	64	64	64	64
8	Weight	g	260	360	360	460	460	460	560	560	560	560
9	Average backlash no load	°	0.6	0.8	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0
11	Gearhead length L1**	mm	41.0	55.5	55.5	70.0	70.0	70.0	84.5	84.5	84.5	84.5

*no combination with EC-i 40 (50 W and 70 W)

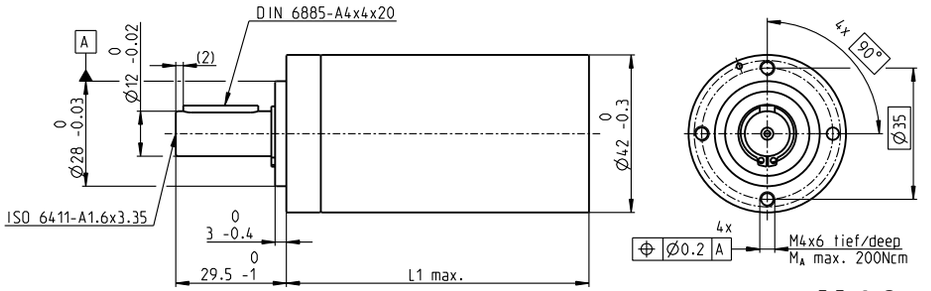


maxon Modular System

+ Motor	Page	+ Sensor	Page	Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts									
EC-max 30, 60 W	265					105.1	119.6	119.6	134.1	134.1	134.1	148.6	148.6	148.6	148.6
EC-max 30, 60 W	265	MR	392			117.3	131.8	131.8	146.3	146.3	146.3	160.8	160.8	160.8	160.8
EC-max 30, 60 W	265	HEDL 5540	403			125.7	140.2	140.2	154.7	154.7	154.7	169.2	169.2	169.2	169.2
EC-max 30, 60 W	265			AB 20	444	141.2	155.1	155.1	169.6	169.6	169.6	184.1	184.1	184.1	184.1
EC-max 30, 60 W	265	HEDL 5540	403	AB 20	444	161.4	175.9	175.9	190.4	190.4	190.4	204.9	204.9	204.9	204.9
EC-max 40, 70 W	266					99.1	113.6	113.6	128.1	128.1	128.1	142.6	142.6	142.6	142.6
EC-max 40, 70 W	266	MR	393			115.0	129.5	129.5	144.0	144.0	144.0	158.5	158.5	158.5	158.5
EC-max 40, 70 W	266	HEDL 5540	403			122.5	137.0	137.0	151.5	151.5	151.5	166.0	166.0	166.0	166.0
EC-max 40, 70 W	266			AB 28	445	133.4	147.9	147.9	162.4	162.4	162.4	176.9	176.9	176.9	176.9
EC-max 40, 70 W	266	HEDL 5540	403	AB 28	445	151.7	166.2	166.2	180.7	180.7	180.7	195.2	195.2	195.2	195.2
EC-4pole 30, 100 W	273					88.1	102.6	102.6	117.1	117.1	117.1	131.6	131.6	131.6	131.6
EC-4pole 30, 100 W	273	MR	392			100.3	114.8	114.8	129.3	129.3	129.3	143.8	143.8	143.8	143.8
EC-4pole 30, 100 W	273	HEDL 5540	404			108.7	123.2	123.2	137.7	137.7	137.7	152.2	152.2	152.2	152.2
EC-4pole 30, 100 W	273			AB 20	444	124.3	138.8	138.8	153.3	153.3	153.3	167.8	167.8	167.8	167.8
EC-4pole 30, 100 W	273	HEDL 5540	404	AB 20	444	145.1	159.6	159.6	174.1	174.1	174.1	188.6	188.6	188.6	188.6
EC-4pole 30, 200 W	275					105.1	119.6	119.6	134.1	134.1	134.1	148.6	148.6	148.6	148.6
EC-4pole 30, 200 W	275	MR	392			117.3	131.8	131.8	146.3	146.3	146.3	160.8	160.8	160.8	160.8
EC-4pole 30, 200 W	275	HEDL 5540	403			125.7	140.2	140.2	154.7	154.7	154.7	169.2	169.2	169.2	169.2
EC-4pole 30, 200 W	275			AB 20	444	141.3	155.8	155.8	170.3	170.3	170.3	184.8	184.8	184.8	184.8
EC-4pole 30, 200 W	275	HEDL 5540	403	AB 20	444	162.1	176.6	176.6	191.1	191.1	191.1	205.6	205.6	205.6	205.6
EC-i 40, 50 W	281/282					67.1	81.6	81.6	96.1	96.1	96.1	110.6	110.6	110.6	110.6
EC-i 40, 50 W	281/282	16 EASY	382			78.8	93.3	93.3	107.8	107.8	107.8	122.3	122.3	122.3	122.3
EC-i 40, 50 W	281/282	HEDL 5540	404			90.1	104.6	104.6	119.1	119.1	119.1	133.6	133.6	133.6	133.6
EC-i 40, 70 W	283/284					77.1	91.6	91.6	106.1	106.1	106.1	120.6	120.6	120.6	120.6
EC-i 40, 70 W	283/284	16 EASY	382			88.8	103.3	103.3	117.8	117.8	117.8	132.3	132.3	132.3	132.3
EC-i 40, 70 W	283/284	HEDL 5540	404			100.1	114.6	114.6	129.1	129.1	129.1	143.6	143.6	143.6	143.6
EC-i 40, 100 W	285					97.1	111.6	111.6	126.1	126.1	126.1	140.6	140.6	140.6	140.6
EC-i 40, 100 W	285	16 EASY	382			108.8	123.3	123.3	137.8	137.8	137.8	152.3	152.3	152.3	152.3
EC-i 40, 100 W	285	HEDL 5540	404			120.1	134.6	134.6	149.1	149.1	149.1	163.6	163.6	163.6	163.6

Planetary Gearhead GP 42 C ∅42 mm, 3–15 Nm

Ceramic Version



M 1:2

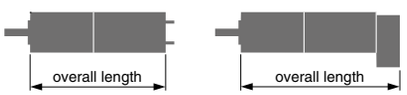
Technical Data

Planetary Gearhead				straight teeth
Output shaft				stainless steel
Bearing at output				preloaded ball bearings
Radial play, 12 mm from flange				max. 0.06 mm
Axial play at axial load	< 5 N			0 mm
	> 5 N			max. 0.3 mm
Max. axial load (dynamic)				150 N
Max. force for press fits				300 N
Direction of rotation, drive to output				=
Max. continuous input speed				8000 rpm
Recommended temperature range				-40…+100°C
Number of stages	1	2	3	4
Max. radial load, 12 mm from flange	120 N	240 N	360 N	360 N

Stock program
Standard program
Special program (on request)

Part Numbers		203113	203115	**203119**	**203120**	203124	**203129**	203128	203133	203137	203141
Gearhead Data											
1 Reduction		3.5:1	12:1	26:1	43:1	81:1	156:1	150:1	285:1	441:1	756:1
2 Absolute reduction		7/2	49/4	26	343/8	2197/27	156	2401/16	15379/54	441	756
10 Mass inertia	gcm²	14	15	9.1	15	9.4	9.1	15	15	14	14
3 Max. motor shaft diameter	mm	10	10	8	10	8	8	10	10	10	10
Part Numbers		**203114**	**203116**	260552*	203121	203125	260553*	203130	203134	203138	203142
1 Reduction		4.3:1	15:1	36:1	53:1	91:1	216:1	186:1	319:1	488:1	936:1
2 Absolute reduction		13/3	91/6	36/1	637/12	91	216/1	4459/24	637/2	4394/9	936
10 Mass inertia	gcm²	9.1	15	5.0	15	15	5.0	15	15	9.4	9.1
3 Max. motor shaft diameter	mm	8	10	4	10	10	4	10	10	8	8
Part Numbers		260551*	203117		203122	203126		**203131**	203135	**203139**	260554*
1 Reduction		6:1	19:1		66:1	113:1		230:1	353 :1	546:1	1296:1
2 Absolute reduction		6/1	169/9		1183/18	338/3		8281/36	28561/81	546	1296/1
10 Mass inertia	gcm²	4.9	9.4		15	9.4		15	9.4	14	5.0
3 Max. motor shaft diameter	mm	4	8		10	8		10	8	10	4
Part Numbers			203118		**203123**	203127		203132	203136	203140	
1 Reduction			21:1		74:1	126:1		257:1	394:1	676:1	
2 Absolute reduction			21		147/2	126		1029/4	1183/3	676	
10 Mass inertia	gcm²		14		15	14		15	15	9.1	
3 Max. motor shaft diameter	mm		10		10	10		10	10	8	
4 Number of stages		1	2	2	3	3	3	4	4	4	4
5 Max. continuous torque	Nm	3.0	7.5	7.5	15.0	15.0	15.0	15.0	15.0	15.0	15.0
6 Max. intermittent torque at gear output	Nm	4.5	11.3	11.3	22.5	22.5	22.5	22.5	22.5	22.5	22.5
7 Max. efficiency	%	90	81	81	72	72	72	64	64	64	64
8 Weight	g	260	360	360	460	460	460	560	560	560	560
9 Average backlash no load	°	0.6	0.8	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0
11 Gearhead length L1**	mm	41.0	55.5	55.5	70.0	70.0	70.0	84.5	84.5	84.5	84.5

**for EC 45 flat L1 is -3.6 mm



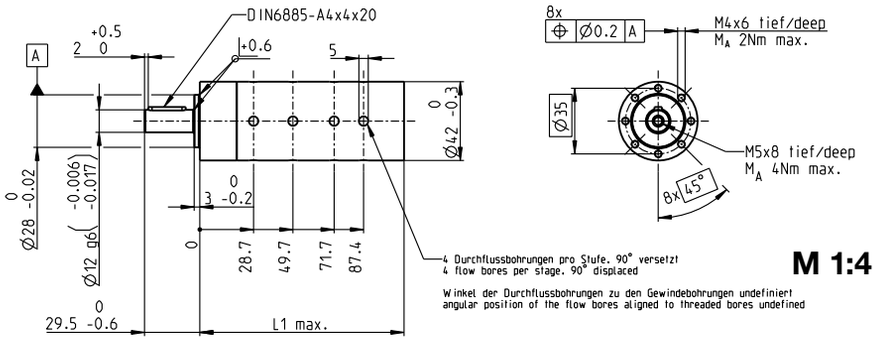
maxon Modular System

+ Motor	Page	+ Sensor	Page	Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts									
EC 45 flat, 30 W	299					53.9	68.4	68.4	82.9	82.9	82.9	97.4	97.4	97.4	97.4
EC 45 flat, 30 W	299	MILE	379			56.9	71.4	71.4	85.9	85.9	85.9	100.4	100.4	100.4	100.4
EC 45 flat, 50 W	300					58.8	73.3	73.3	87.8	87.8	87.8	102.3	102.3	102.3	102.3
EC 45 flat, 50 W	300	MILE	379			60.1	74.6	74.6	89.1	89.1	89.1	103.6	103.6	103.6	103.6
EC 45 flat, 70 W	301					64.2	78.7	78.7	93.2	93.2	93.2	107.7	107.7	107.7	107.7
EC 45 flat, 70 W	301	MILE	379			65.9	80.4	80.4	94.9	94.9	94.9	109.4	109.4	109.4	109.4
EC 45 flat, IE, IP 00	302					72.7	87.2	87.2	101.7	101.7	101.7	116.2	116.2	116.2	116.2
EC 45 flat, IE, IP 40	302					74.9	89.4	89.4	103.9	103.9	103.9	118.4	118.4	118.4	118.4
EC 45 flat, IE, IP 00	303					77.7	92.2	92.2	106.7	106.7	106.7	121.2	121.2	121.2	121.2
EC 45 flat, IE, IP 40	303					79.9	94.4	94.4	108.9	108.9	108.9	123.4	123.4	123.4	123.4
MCD EPOS, 60 W	441					161.1	175.6	175.6	190.1	190.1	190.1	204.6	204.6	204.6	204.6
MCD EPOS P, 60 W	441					161.1	175.6	175.6	190.1	190.1	190.1	204.6	204.6	204.6	204.6

Planetary Gearhead GP 42 HD ∅42 mm, 10–50 Nm

NEW

Heavy Duty – for application in oil



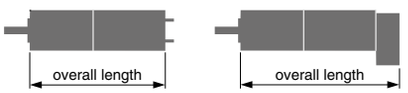
Technical Data	
Planetary Gearhead	straight teeth
Output shaft	stainless steel
Bearing at output	ball bearing
Radial play, 12 mm from flange	max. 0.05 mm
Axial play	max. 0.2 mm
Max. axial load (dynamic)	250 N
Max. force for press fits	450 N
Direction of rotation, drive to output	=
Max. continuous input speed	< 8000 rpm
Recommended temperature range	-55…+200°C
Extended range as option	-55…+260°C

Number of stages	1	2	3	4
Max. radial load, 12 mm from flange	250 N	480 N	720 N	720 N

Stock program
Standard program
Special program (on request)

Part Numbers							
	454742	454744	454745	476936	454280	476945	476949
Gearhead Data (provisional)							
1 Reduction	3.5:1	12:1	43:1	81:1	150:1	285:1	441:1
2 Absolute reduction	$^{7}/_{2}$	$^{49}/_{4}$	$^{343}/_{8}$	$^{2197}/_{27}$	$^{2401}/_{16}$	$^{15379}/_{54}$	$^{441}/_{1}$
10 Mass inertia gcm²	17.5	29	35.5	23.9	41.3	33.1	30.6
3 Max. motor shaft diameter mm	10	10	10	8	10	8	10
Part Numbers	476927	476928	476933	476937	476942	476946	476950
1 Reduction	4.3:1	15:1	53:1	91:1	186:1	319:1	488:1
2 Absolute reduction	$^{13}/_{3}$	$^{91}/_{6}$	$^{637}/_{12}$	$^{91}/_{1}$	$^{4459}/_{24}$	$^{637}/_{2}$	$^{4394}/_{9}$
10 Mass inertia gcm²	11.1	23.3	31.8	25.4	37.6	34.2	26.3
3 Max. motor shaft diameter mm	8	8	10	8	10	10	8
Part Numbers		476929	476934	476938	476943	476947	476951
1 Reduction		19:1	66:1	113:1	230:1	353:1	546:1
2 Absolute reduction		$^{169}/_{9}$	$^{1183}/_{18}$	$^{338}/_{3}$	$^{8281}/_{36}$	$^{28561}/_{81}$	$^{546}/_{1}$
10 Mass inertia gcm²		19.1	28.1	21.2	36.6	28.9	28.1
3 Max. motor shaft diameter mm		8	8	8	10	8	8
Part Numbers			454746		476944	476948	476952
1 Reduction			74:1		257:1	394:1	676:1
2 Absolute reduction			$^{147}/_{2}$		$^{1029}/_{4}$	$^{1183}/_{3}$	$^{676}/_{1}$
10 Mass inertia gcm²			28.2		37.6	30.4	23.9
3 Max. motor shaft diameter mm			10		10	8	8
4 Number of stages	1	2	3	3	4	4	4
5 Max. continuous torque Nm	10	20	40	40	50	50	50
6 Max. intermittent torque at gear output Nm	15	30	60	60	75	75	75
15 Max. overload torque[1] Nm	20	40	80	80	100	100	100
7 Max. efficiency %	95	87	78	78	65	65	65
8 Weight g	430	600	710	710	780	780	780
9 Average backlash no load °	0.6	0.8	0.8	1.0	1.0	1.0	1.0
11 Gearhead length L1 mm	57.7	79.9	102.2	102.2	116.9	116.9	116.9
13 Max. transmittable power (continuous) W	2000	880	300	300	62	62	62
14 Max. transmittable power (intermittent) W	3000	1320	450	450	93	93	93

1) Reduced lift time expectancy

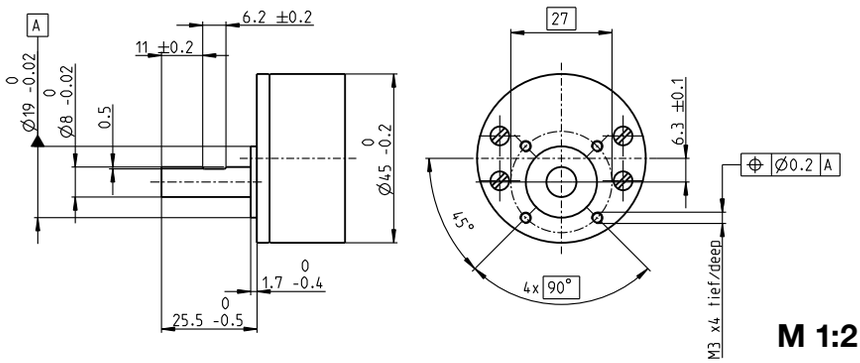


maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts						
EC 32 HD oil, A	277			221.3	243.5	265.8	265.8	280.5	280.5	280.5
EC 32 HD oil, B	277			241.3	263.5	285.8	285.8	300.5	300.5	300.5

Application	Important Notice
General	This gearhead has been designed for applications in oil and is only equipped with minimum lubrication. Therefore it is not permitted to use it under normal air conditions.
– extreme temperature applications	
– vibration tested according to MIL-STD810F/ Jan2000 Fig. 514.5C-10	
– operation in oil and high pressure	
Oil & Gas Industry	
– oil, gas and geothermal wells	

Spur Gearhead GS 45 A ∅45 mm, 0.5–2.0 Nm



M 1:2

Technical Data

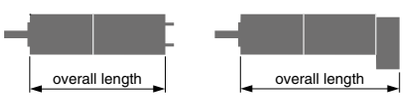
Spur Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	ball bearing
Radial play, 10 mm from flange	max. 0.15 mm
Axial play	0.02–0.2 mm
Max. axial load (dynamic)	60 N
Max. force for press fits	60 N
Max. continuous input speed	6000 rpm
Recommended temperature range	-15…+80°C

Number of stages	2	3	4	5	6
Max. radial load, 10 mm from flange	120 N	180 N	190 N	190 N	190 N

Stock program
Standard program
Special program (on request)

Part Numbers	301177	301175	301181	301186	301191
Gearhead Data					
1 Reduction	5:1	18:1	61:1	212:1	732:1
2 Absolute reduction	$^{51}/_{10}$	$^{459}/_{26}$	$^{20655}/_{338}$	$^{125862}/_{595}$	$^{492790}/_{673}$
10 Mass inertia gcm²	3.7	1.6	1.0	0.8	0.8
3 Max. motor shaft diameter mm	3	3	3	3	3
Part Numbers	301178	301173	301182	301187	301192
1 Reduction	7:1	26:1	89:1	310:1	1072:1
2 Absolute reduction	$^{209}/_{28}$	$^{9405}/_{364}$	$^{66632}/_{745}$	$^{183281}/_{592}$	$^{307572}/_{287}$
10 Mass inertia gcm²	3.1	1.4	1.0	0.8	0.8
3 Max. motor shaft diameter mm	3	3	3	3	3
Part Numbers	301179	266595	301184	301188	301193
1 Reduction	9:1	32:1	111:1	385:1	1334:1
2 Absolute reduction	$^{2295}/_{247}$	$^{8523}/_{265}$	$^{334}/_{3}$	$^{173808}/_{451}$	$^{198769}/_{149}$
10 Mass inertia gcm²	2.1	1.4	0.6	0.5	0.4
3 Max. motor shaft diameter mm	3	3	3	3	3
Part Numbers	301180	301171	301185	301189	301194
1 Reduction	14:1	47:1	163:1	564:1	1952:1
2 Absolute reduction	$^{2475}/_{182}$	$^{6221}/_{132}$	$^{141157}/_{861}$	$^{161880}/_{287}$	$^{1929023}/_{988}$
10 Mass inertia gcm²	2.2	0.9	0.5	0.5	0.4
3 Max. motor shaft diameter mm	3	3	3	3	3
4 Number of stages	2	3	4	5	6
5 Max. continuous torque Nm	0.5	2.0	2.0	2.0	2.0
6 Max. intermittent torque at gear output Nm	0.75	2.5	2.5	2.5	2.5
12 Direction of rotation, drive to output	=	≠	=	≠	=
7 Max. efficiency %	87	76	66	59	53
8 Weight g	224	224	255	287	313
9 Average backlash no load °	1.6	2.0	2.4	2.8	3.2
11 Gearhead length L1* mm	23.5	23.5	26.9	30.4	33.8

*for EC 45 flat, IE, L1 is max. + 4.0 mm

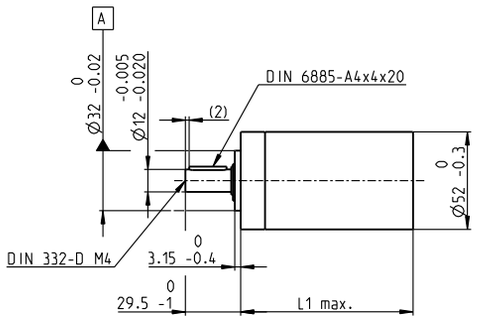


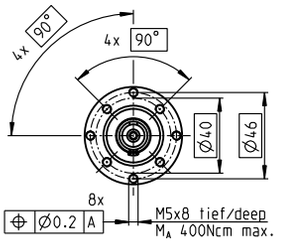
maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts				
EC 45 flat, 30 W	299			40.0	40.0	43.4	46.9	50.3
EC 45 flat, 30 W	299	MILE	379	43.0	43.0	46.4	49.9	53.3
EC 45 flat, 50 W	300			44.9	44.9	48.3	51.8	55.2
EC 45 flat, 50 W	300	MILE	379	46.2	46.2	49.6	53.1	56.5
EC 45 flat, 70 W	301			50.3	50.3	53.7	57.2	60.6
EC 45 flat, 70 W	301	MILE	379	52.0	52.0	55.4	58.9	62.3
EC 45 flat, IE, IP 00	302			59.2	59.2	62.6	66.1	69.5
EC 45 flat, IE, IP 40	302			61.4	61.4	64.8	68.3	71.7
EC 45 flat, IE, IP 00	303			64.2	64.2	67.6	71.1	74.5
EC 45 flat, IE, IP 40	303			66.4	66.4	69.8	73.3	76.7

Planetary Gearhead GP 52 C ∅52 mm, 4–30 Nm

Ceramic Version





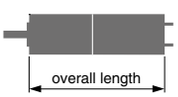
M 1:4

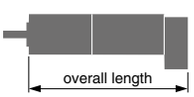
Technical Data

Planetary Gearhead				straight teeth
Output shaft				stainless steel
Bearing at output				preloaded ball bearings
Radial play, 12 mm from flange				max. 0.06 mm
Axial play at axial load	< 5 N			0 mm
	> 5 N			max. 0.3 mm
Max. axial load (dynamic)				200 N
Max. force for press fits				500 N
Direction of rotation, drive to output				=
Max. continuous input speed				6000 rpm
Recommended temperature range				-15…+80°C
Extended range as option				-40…+100°C
Number of stages	1	2	3	4
Max. radial load, 12 mm from flange	420 N	630 N	900 N	900 N

Stock program
Standard program
Special program (on request)

			Part Numbers						
			223080	223083	223089	223094	223097	223104	223109
Gearhead Data									
1	Reduction		3.5:1	12:1	43:1	91:1	150:1	319:1	546:1
2	Absolute reduction		7/2	49/4	343/8	91	2401/16	637/2	546
10	Mass inertia	gcm²	20.7	17.6	17.3	16.7	17.3	16.8	16.4
3	Max. motor shaft diameter	mm	10	10	10	10	10	10	10
	Part Numbers		**223081**	223084	223090	223095	223099	**223105**	223110
1	Reduction		4.3:1	15:1	53:1	113:1	186:1	353 :1	676:1
2	Absolute reduction		13/3	91/6	637/12	338/3	4459/24	28561/81	676
10	Mass inertia	gcm²	12	16.8	17.2	9.3	17.3	9.4	9.1
3	Max. motor shaft diameter	mm	8	10	10	8	10	8	8
	Part Numbers			**223085**	223091	223096	223101	223106	223111
1	Reduction			19:1	66:1	126:1	230:1	394:1	756:1
2	Absolute reduction			169/9	1183/18	126	8281/36	1183/3	756
10	Mass inertia	gcm²		9.5	16.7	16.4	16.8	16.7	16.4
3	Max. motor shaft diameter	mm		8	10	10	10	10	10
	Part Numbers			223086	223092	223098	223102	223107	223112
1	Reduction			21:1	74:1	156:1	257:1	441:1	936:1
2	Absolute reduction			21	147/2	156	1029/4	441	936
10	Mass inertia	gcm²		16.5	17.2	9.1	17.3	16.5	9.1
3	Max. motor shaft diameter	mm		10	10	8	10	10	8
	Part Numbers			223087	**223093**		223103	223108	
1	Reduction			26:1	81:1		285:1	488:1	
2	Absolute reduction			26	2197/27		15379/54	4394/9	
10	Mass inertia	gcm²		9.1	9.4		16.7	9.4	
3	Max. motor shaft diameter	mm		8	8		10	8	
4	Number of stages		1	2	3	3	4	4	4
5	Max. continuous torque	Nm	4	15	30	30	30	30	30
6	Max. intermittent torque at gear output	Nm	6	22.5	45	45	45	45	45
7	Max. efficiency	%	91	83	75	75	68	68	68
8	Weight	g	460	620	770	770	920	920	920
9	Average backlash no load	°	0.6	0.8	1.0	1.0	1.0	1.0	1.0
11	Gearhead length L1	mm	49.0	65.0	78.5	78.5	92.0	92.0	92.0



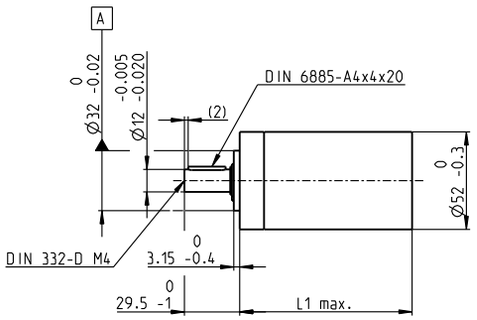


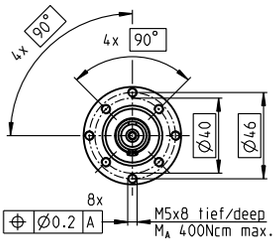
maxon Modular System

+ Motor	Page	+ Sensor	Page	Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts						
RE 40, 150 W	186					120.1	136.1	149.6	149.6	163.1	163.1	163.1
RE 40, 150 W	186	MR	393			131.5	147.5	161.0	161.0	174.5	174.5	174.5
RE 40, 150 W	186	HED_ 5540	399/402			140.8	156.8	170.3	170.3	183.8	183.8	183.8
RE 40, 150 W	186	HEDL 9140	405			174.1	190.1	203.6	203.6	217.1	217.1	217.1
RE 40, 150 W	186			AB 28	446	156.2	172.2	185.7	185.7	199.2	199.2	199.2
RE 40, 150 W	186			AB 28	447	164.2	180.2	193.7	193.7	207.2	207.2	207.2
RE 40, 150 W	186	HED_ 5540	399/402	AB 28	446	173.4	189.4	202.9	202.9	216.4	216.4	216.4
RE 40, 150 W	186	HEDL 9140	405	AB 28	447	184.6	200.6	214.1	214.1	227.6	227.6	227.6
RE 50, 200 W	187					157.1	173.1	186.6	186.6	200.1	200.1	200.1
RE 50, 200 W	187	HED_5540	400/402			177.8	193.8	207.3	207.3	220.8	220.8	220.8
RE 50, 200 W	187	HEDL 9140	406			219.5	235.5	249.0	249.0	262.5	262.5	262.5
RE 50, 200 W	187			AB 44	450	219.5	235.5	249.0	249.0	262.5	262.5	262.5
RE 50, 200 W	187	HEDL 9140	406	AB 44	450	232.5	248.5	262.0	262.0	275.5	275.5	275.5
EC 40, 170 W	252					129.1	145.1	158.6	158.6	172.1	172.1	172.1
EC 40, 170 W	252	HED_5540	400/402			152.5	168.5	182.0	182.0	195.5	195.5	195.5
EC 40, 170 W	252	Res 26	412			156.3	172.3	185.8	185.8	199.3	199.3	199.3
EC 40, 170 W	252			AB 32	448	171.8	187.8	201.3	201.3	214.8	214.8	214.8
EC 40, 170 W	252	HED_5540	400/402	AB 32	448	190.2	206.2	219.7	219.7	233.2	233.2	233.2

Planetary Gearhead GP 52 C ∅52 mm, 4–30 Nm

Ceramic Version



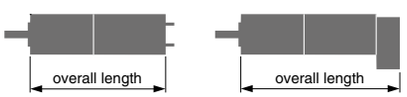


M 1:4

Technical Data					
Planetary Gearhead					straight teeth
Output shaft					stainless steel
Bearing at output					preloaded ball bearings
Radial play, 12 mm from flange					max. 0.06 mm
Axial play at axial load	< 5 N				0 mm
	> 5 N				max. 0.3 mm
Max. axial load (dynamic)					200 N
Max. force for press fits					500 N
Direction of rotation, drive to output					=
Max. continuous input speed					6000 rpm
Recommended temperature range					-15…+80°C
Extended range as option					-40…+100°C
Number of stages	1	2	3	4	
Max. radial load, 12 mm from flange	420 N	630 N	900 N	900 N	

Stock program
Standard program
Special program (on request)

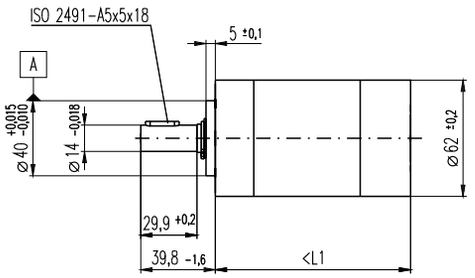
Part Numbers							
	223080	223083	223089	223094	223097	223104	223109
Gearhead Data							
1 Reduction	3.5:1	12:1	43:1	91:1	150:1	319:1	546:1
2 Absolute reduction	7/2	49/4	343/8	91	2401/16	637/2	546
10 Mass inertia gcm²	20.7	17.6	17.3	16.7	17.3	16.8	16.4
3 Max. motor shaft diameter mm	10	10	10	10	10	10	10
Part Numbers	**223081**	223084	223090	223095	223099	**223105**	223110
1 Reduction	4.3:1	15:1	53:1	113:1	186:1	353:1	676:1
2 Absolute reduction	13/3	91/6	637/12	338/3	4459/24	28561/81	676
10 Mass inertia gcm²	12	16.8	17.2	9.3	17.3	9.4	9.1
3 Max. motor shaft diameter mm	8	10	10	8	10	8	8
Part Numbers		**223085**	223091	223096	223101	223106	223111
1 Reduction		19:1	66:1	126:1	230:1	394:1	756:1
2 Absolute reduction		169/9	1183/18	126	8281/36	1183/3	756
10 Mass inertia gcm²		9.5	16.7	16.4	16.8	16.7	16.4
3 Max. motor shaft diameter mm		8	10	10	10	10	10
Part Numbers		223086	223092	223098	223102	223107	223112
1 Reduction		21:1	74:1	156:1	257:1	441:1	936:1
2 Absolute reduction		21	147/2	156	1029/4	441	936
10 Mass inertia gcm²		16.5	17.2	9.1	17.3	16.5	9.1
3 Max. motor shaft diameter mm		10	10	8	10	10	8
Part Numbers		223087	**223093**		223103	223108	
1 Reduction		26:1	81:1		285:1	488:1	
2 Absolute reduction		26	2197/27		15379/54	4394/9	
10 Mass inertia gcm²		9.1	9.4		16.7	9.4	
3 Max. motor shaft diameter mm		8	8		10	8	
4 Number of stages	1	2	3	3	4	4	4
5 Max. continuous torque Nm	4	15	30	30	30	30	30
6 Max. intermittent torque at gear output Nm	6	22.5	45	45	45	45	45
7 Max. efficiency %	91	83	75	75	68	68	68
8 Weight g	460	620	770	770	920	920	920
9 Average backlash no load °	0.6	0.8	1.0	1.0	1.0	1.0	1.0
11 Gearhead length L1 mm	49.0	65.0	78.5	78.5	92.0	92.0	92.0

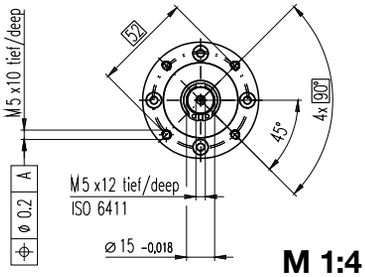


maxon Modular System

+ Motor	Page	+ Sensor	Page	Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts						
EC 45, 150 W	253					160.3	176.3	189.8	189.8	203.3	203.3	203.3
EC 45, 150 W	253	HEDL 9140	405			175.9	191.9	205.4	205.4	218.9	218.9	218.9
EC 45, 150 W	253	Res 26	412			160.3	176.3	189.8	189.8	203.3	203.3	203.3
EC 45, 150 W	253			AB 28	447	167.7	183.7	197.2	197.2	210.7	210.7	210.7
EC 45, 150 W	253	HEDL 9140	405	AB 28	447	184.7	200.7	214.2	214.2	227.7	227.7	227.7
EC 45, 250 W	254					193.1	209.1	222.6	222.6	236.1	236.1	236.1
EC 45, 250 W	254	HEDL 9140	405			208.7	224.7	238.2	238.2	251.7	251.7	251.7
EC 45, 250 W	254	Res 26	412			193.1	209.1	222.6	222.6	236.1	236.1	236.1
EC 45, 250 W	254			AB 28	447	200.5	216.5	230.0	230.0	243.5	243.5	243.5
EC 45, 250 W	254	HEDL 9140	405	AB 28	447	217.5	233.5	247.0	247.0	260.5	260.5	260.5
EC-max 40, 120 W	267					137.1	153.1	166.6	166.6	180.1	180.1	180.1
EC-max 40, 120 W	267	MR	393			153.0	169.0	182.5	182.5	196.0	196.0	196.0
EC-max 40, 120 W	267	HEDL 5540	403			160.5	176.5	190.0	190.0	203.5	203.5	203.5
EC-max 40, 120 W	267			AB 28	445	171.5	187.5	201.0	201.0	214.5	214.5	214.5
EC-max 40, 120 W	267	HEDL 5540	403	AB 28	445	189.8	205.8	219.3	219.3	232.8	232.8	232.8
EC-i 52, 180 W	286					129.1	145.1	158.6	158.6	172.1	172.1	172.1
EC-i 52, 180 W	286	EASY				142.8	158.8	172.3	172.3	185.8	185.8	185.8
EC-i 52, 180 W	286	EASY, Absolute				142.8	158.8	172.3	172.3	185.8	185.8	185.8
EC-i 52, 180 W	286	HEDL 5540				149.8	165.8	179.3	179.3	192.8	192.8	192.8
EC-i 52, 180 W	286	AEDL 5810				149.8	165.8	179.3	179.3	192.8	192.8	192.8
EC 60 flat, IP 00	304					89.8	105.8	119.3	119.3	132.8	132.8	132.8
EC 60 flat, IP 54	304					94.8	110.8	124.3	124.3	137.8	137.8	137.8
EC 60 flat, IP 00	304	MILE	379			90.8	106.8	120.3	120.3	133.8	133.8	133.8
EC 60 flat, IP 54	304	MILE	379			94.8	110.8	124.3	124.3	137.8	137.8	137.8
EC 90 flat, 90 W	305					81.0	97.0	110.5	110.5	124.0	124.0	124.0
EC 90 flat, 90 W	305	MILE	379			81.0	97.0	110.5	110.5	124.0	124.0	124.0

Planetary Gearhead GP 62 A ∅62 mm, 8–50 Nm



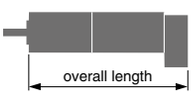


M 1:4

Technical Data			
Planetary Gearhead			straight teeth
Output shaft			steel
Bearing at output			ball bearing
Radial play, 7 mm from flange			max. 0.08 mm
Axial play			max. 1 mm
Max. axial load (dynamic)			120 N
Max. force for press fits			1000 N
Direction of rotation, drive to output			=
Max. continuous input speed			3000 rpm
Recommended temperature range			-30...+140°C
Number of stages	1	2	3
Max. radial load, 24 mm from flange	240 N	360 N	570 N

Stock program
Standard program
Special program (on request)

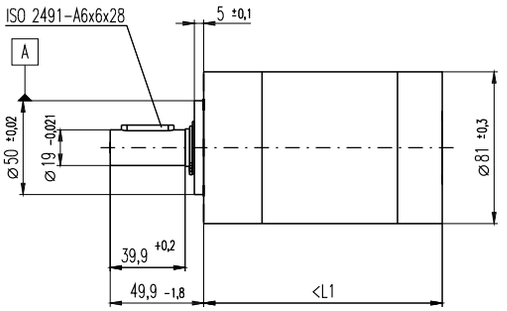
Part Numbers									
	110499	**110501**	110502	110503	**110504**	110505	110506	110507	**110508**
Gearhead Data									
1 Reduction	5.2:1	19:1	27:1	35:1	71:1	100:1	139:1	181:1	236:1
2 Absolute reduction	$^{57}/_{11}$	$^{3591}/_{187}$	$^{3249}/_{121}$	$^{1539}/_{44}$	$^{226223}/_{3179}$	$^{204687}/_{2057}$	$^{185193}/_{1331}$	$^{87723}/_{484}$	$^{41553}/_{176}$
3 Max. motor shaft diameter mm	8	8	8	8	8	8	8	8	8
4 Number of stages	1	2	2	2	3	3	3	3	3
5 Max. continuous torque Nm	8	25	25	25	50	50	50	50	50
6 Max. intermittent torque at gear output Nm	12	37	37	37	75	75	75	75	75
7 Max. efficiency %	80	75	75	75	70	70	70	70	70
8 Weight g	950	1250	1250	1250	1540	1540	1540	1540	1540
9 Average backlash no load °	1.0	1.5	1.5	1.5	2.0	2.0	2.0	2.0	2.0
10 Mass inertia gcm^2	109	100	105	89	104	105	102	88	89
11 Gearhead length L1 mm	72.5	88.3	88.3	88.3	104.2	104.2	104.2	104.2	104.2

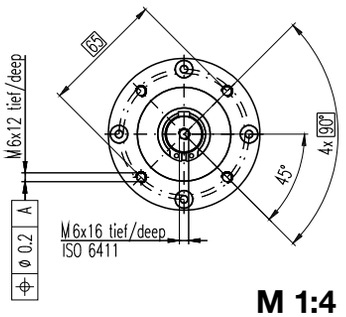


maxon Modular System

+ Motor	Page	+ Sensor	Page	Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts							
RE 50, 200 W	187					180.6	196.4	196.4	196.4	212.3	212.3	212.3	212.3
RE 50, 200 W	187	HEDS 5540	400			201.3	217.1	217.1	217.1	233.0	233.0	233.0	233.0
RE 50, 200 W	187	HEDL 5540	402			201.3	217.1	217.1	217.1	233.0	233.0	233.0	233.0
RE 50, 200 W	187	HEDL 9140	406			243.0	258.8	258.8	258.8	2747	274.7	274.7	278.7
RE 50, 200 W	187			AB 44	450	243.0	258.8	258.8	258.8	2747	274.7	274.7	278.7
RE 50, 200 W	187	HEDL 9140	406	AB 44	450	256.0	271.8	271.8	271.8	287.7	287.7	287.7	287.7
EC 45, 250 W	254					216.6	232.4	232.4	232.4	248.3	248.3	248.3	248.3
EC 45, 250 W	254	HEDL 9140	405			232.2	248.0	248.0	248.0	263.9	263.9	263.9	263.9
EC 45, 250 W	254	Res 26	412			216.6	232.4	232.4	232.4	248.3	248.3	248.3	248.3
EC 45, 250 W	254			AB 28	447	224.0	239.8	239.8	239.8	255.7	255.7	255.7	255.7
EC 45, 250 W	254	HEDL 9140	405	AB 28	447	241.0	256.8	256.8	256.8	272.7	272.7	272.7	272.7

Planetary Gearhead GP 81 A ∅81 mm, 20–120 Nm



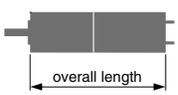


M 1:4

Technical Data			
Planetary Gearhead			straight teeth
Output shaft			steel
Bearing at output			ball bearing
Radial play, 8 mm from flange			max. 0.1 mm
Axial play			max. 1 mm
Max. force for press fits			1500 N
Direction of rotation, drive to output			=
Max. continuous input speed			3000 rpm
Recommended temperature range			-30…+140°C
Number of stages	1	2	3
Max. radial load, 24 mm from flange	400 N	600 N	1000 N
Max. axial load (dynamic)	80 N	120 N	200 N

Stock program
Standard program
Special program (on request)

Part Numbers	110408	110409	110410	110411	110412	110413
Gearhead Data						
1 Reduction	3.7:1	14:1	25:1	51:1	93:1	308:1
2 Absolute reduction	$^{63}/_{17}$	$^{3969}/_{289}$	$^{1701}/_{68}$	$^{250047}/_{4913}$	$^{107163}/_{1156}$	$^{19683}/_{64}$
3 Max. motor shaft diameter mm	14	14	14	14	14	14
4 Number of stages	1	2	2	3	3	3
5 Max. continuous torque Nm	20	60	60	120	120	120
6 Max. intermittent torque at gear output Nm	30	90	90	180	180	180
7 Max. efficiency %	80	75	75	70	70	70
8 Weight g	2300	3000	3000	3700	3700	3700
9 Average backlash no load °	0.5	0.55	0.55	0.6	0.6	0.6
10 Mass inertia gcm²	165	155	125	88	154	89
11 Gearhead length L1 mm	92.0	113.7	113.7	135.3	135.3	135.3



maxon Modular System

+ Motor	Page	+ Sensor	Page	Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts					
RE 65, 250 W	188					223.5	245.2	245.2	266.8	266.8	266.8
RE 65, 250 W	188	HEDS 5540	400			249.4	271.1	271.1	292.7	292.7	292.7
RE 65, 250 W	188	HEDL 5540	402			249.4	271.1	271.1	292.7	292.7	292.7
RE 65, 250 W	188	HEDL 9140	406			279.6	301.3	301.3	322.9	322.9	322.9
RE 65, 250 W	188			AB 44	450	279.6	301.3	301.3	322.9	322.9	322.9
RE 65, 250 W	188	HEDL 9140	406	AB 44	450	297.6	319.3	319.3	340.9	340.9	340.9
EC 60, 400 W	255					269.4	291.1	291.1	312.7	312.7	312.7
EC 60, 400 W	255	HEDL 9140	405			269.4	291.1	291.1	312.7	312.7	312.7
EC 60, 400 W	255	Res 26	412			269.4	291.1	291.1	312.7	312.7	312.7
EC 60, 400 W	255			AB 41	449	283.0	304.7	304.7	326.3	326.3	326.3
EC 60, 400 W	255	HEDL 9140	405	AB 41	449	307.0	328.7	328.7	350.3	350.3	350.3