

# maxon gear

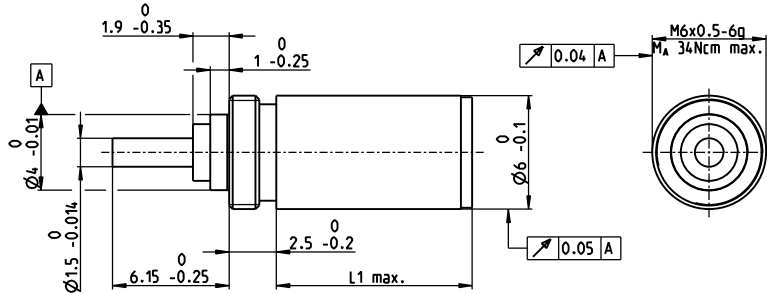
Standard Specification No. 102	69
Explanation	318
GPX Program	320-355
maxon gear	320-404



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.

# Planetary Gearhead GP 6 A $\varnothing 6$ mm, 0.002–0.03 Nm

gear



**M 5:2**

## Technical Data

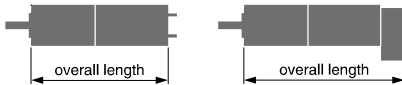
Planetary Gearhead	straight teeth
Output shaft	stainless steel
Bearing at output	ball bearing
Option	sleeve bearing
Radial play, 5 mm from flange	max. 0.12 mm
Axial play	max. 0.10 mm
Max. axial load (dynamic)	5 N
Max. force for press fits	10 N
Direction of rotation, drive to output	=
Max. continuous 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
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Gearhead Data		472919	472920	472921	472229	472922
1 Reduction		3,9:1	15:1	57:1	221:1	854:1
2 Absolute reduction		$\frac{27}{7}$	$\frac{729}{49}$	$\frac{19683}{343}$	$\frac{531441}{2401}$	$\frac{14348907}{16807}$
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	gcm <sup>2</sup>	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



## maxon Modular System

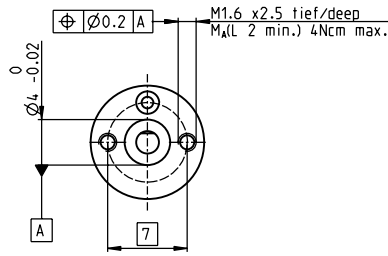
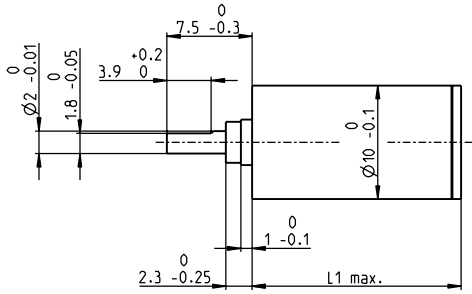
+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts				
RE 6, 0,3 W, A	107			21,0	23,5	26,1	28,7	31,3
RE 6, 0,3 W, B	107			25,0	27,5	30,1	32,7	35,3



# Planetary Gearhead GP 10 K $\varnothing 10$ mm, 0.005–0.1 Nm

Plastic Version

gear



## Technical Data

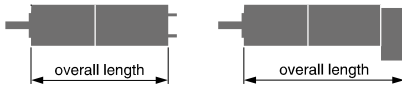
Planetary Gearhead	straight teeth
Housing	plastic
Output shaft	stainless steel
Bearing at output	sleeve bearing
Radial play, 5 mm from flange	max. 0.14 mm
Axial play	0.02–0.10 mm
Max. axial load (dynamic)	2 N
Max. force for press fits	10 N
Direction of rotation, drive to output	=
Max. continuous input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

M 3:2

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

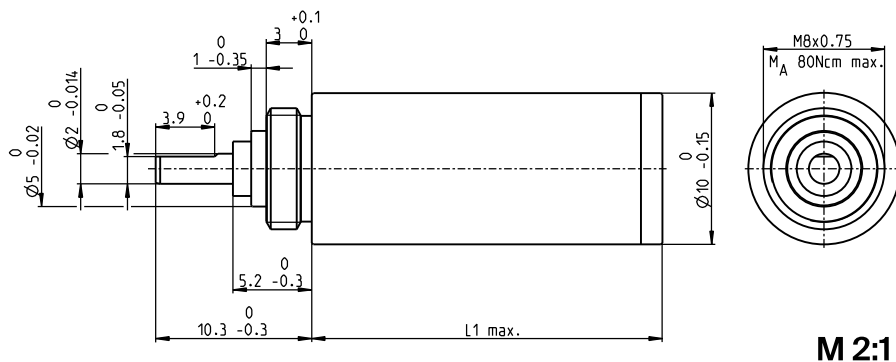
Gearhead Data	Part Numbers					
	110308	110309	110310	110311	110312	
1 Reduction	4:1	16:1	64:1	256:1	1024:1	
2 Absolute reduction	4	16	64	256	1024	
3 Max. motor shaft diameter	mm 1.2	1.2	1.2	1.2	1.2	
4 Number of stages	1	2	3	4	5	
5 Max. continuous torque	Nm 0.005	0.015	0.054	0.100	0.100	
6 Max. intermittent 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 <sup>2</sup> 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	109/110			27.3	31.4	35.5	39.6	43.7
RE 10, 0.75 W	110	MR	457/458	33.1	37.2	41.3	45.4	49.5
RE 10, 1.5 W	111/112			34.9	39.0	43.1	47.2	51.3
RE 10, 1.5 W	112	MR	457/458	40.7	44.8	48.9	53.0	57.1
EC 9.2 flat, 0.5 W	275			22.8	26.9	31.0	35.1	39.2

# Planetary Gearhead GP 10 A Ø10 mm, 0.01–0.15 Nm



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	-40...+80°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

gear

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

218415	218416	218417	218418	218419	332422	332423	332424	332425	332426
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## Gearhead Data

		4:1	16:1	64:1	256:1	1024:1	4:1	16:1	64:1	256:1	1024:1
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 <sup>2</sup>	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

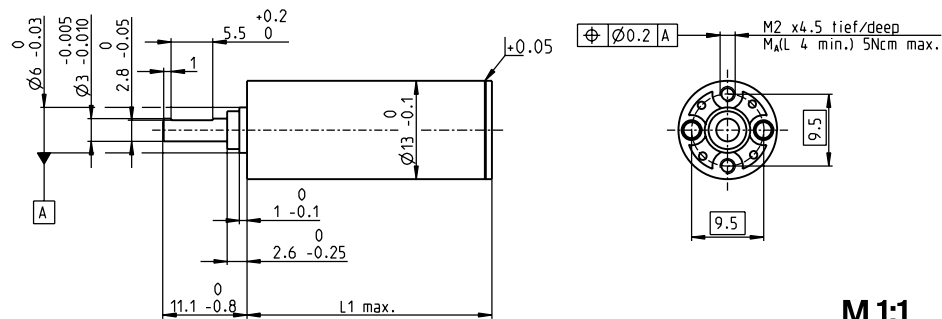


## maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts									
RE 10, 0.75 W	109/110			27,5	31,2	34,3	37,5	40,6					
RE 10, 0.75 W	110	MR	457/458	33,3	37,0	40,1	43,3	46,4					
RE 10, 1.5 W	111/112			35,1	38,8	41,9	45,1	48,2					
RE 10, 1.5 W	112	MR	457/458	40,9	44,6	47,7	50,9	54,0					
A-max 12	147/148			31,7	35,4	38,5	41,7	44,8					
A-max 12, 0.5 W	148	MR	457/458	35,8	39,5	42,6	45,8	48,9					
EC 10, 8 W	225								36,2	39,9	43,0	46,2	49,3
EC 9.2 flat, 0.5 W	275			23,0	26,7	29,8	33,0	36,1					

# Planetary Gearhead GP 13 K $\varnothing 13$ mm, 0.05–0.15 Nm

Plastic Version



## 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

M 1:1

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

Gearhead Data	Part Numbers				
	137149	137150	137151	137152	137153
1 Reduction	4.1:1	17:1	67:1	275:1	1119:1
2 Absolute reduction	$\frac{57}{14}$	$\frac{3249}{196}$	$\frac{185193}{2744}$	$\frac{1055600}{38416}$	$\frac{601692057}{537824}$
3 Max. motor shaft diameter	mm 1.5	1.	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 <sup>2</sup> 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



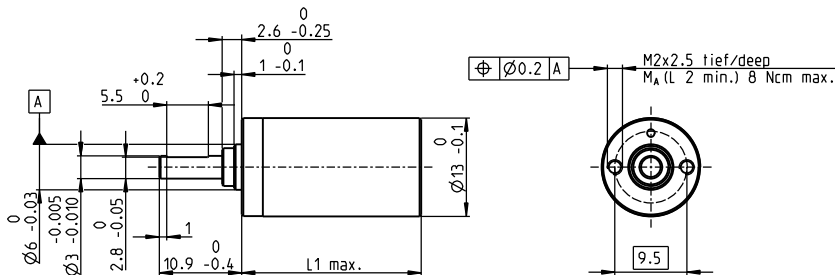
## maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts				
RE 13	114/116			34.8	40.7	44.4	48.1	51.8
RE 13, 0.75 W	116	MR	457-459	41.9	47.8	51.5	55.2	58.9
RE 13	118/120			47.0	52.9	56.6	60.3	64.0
RE 13, 2 W	120	MR	457-459	54.1	60.0	63.7	67.4	71.1
RE 13, 1.5 W	122/124			37.9	43.8	47.5	51.2	54.9
RE 13, 1.5 W	124	MR	457-459	44.0	49.9	53.6	57.3	61.0
RE 13, 3 W	126/128			50.1	56.0	59.7	63.4	67.1
RE 13, 3 W	128	MR	457-459	56.2	62.1	65.8	69.5	73.2
A-max 12	147/148			36.8	42.7	46.4	50.1	53.8
A-max 12, 0.5 W	148	MR	457-459	40.7	46.6	50.3	54.0	57.7

gear

# Planetary Gearhead GP 13 A Ø13 mm, 0.2–0.35 Nm

gear



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

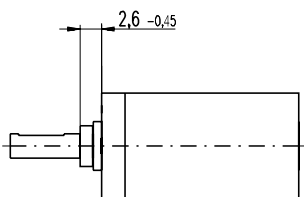
	Part Numbers				
	110313	110314	110315	110316	110317
<b>Stock program</b>					
<b>Standard program</b>					
<b>Special program (on request)</b>					
<b>Gearhead Data</b>					
1 Reduction	4.1:1	17:1	67:1	275:1	1119:1
2 Absolute reduction	57/14	3249/196	185193/2744	1055600/38416	601692057/537824
3 Max. motor shaft diameter mm	1.5	1.5	1.5	1.5	1.5
<b>Part Numbers</b>					
1 Reduction	352365	352366	352367	352368	352369
2 Absolute reduction	5.1:1	26:1	131:1	664:1	3373:1
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 gcm <sup>2</sup>	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 is L1 + 0.3 mm



maxon Modular System				
+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts
RE 13	114/116			35.4 39.3 43.1 47.0 50.8
RE 13, 0.75 W	116	MR	457-459	42.5 46.4 50.2 54.1 57.9
RE 13	118/120			47.6 51.5 55.3 59.2 63.0
RE 13, 2 W	120	MR	457-459	54.7 58.6 62.4 66.3 70.1
RE 13, 1.5 W	122/124			38.5 42.4 46.2 50.1 53.9
RE 13, 1.5 W	124	MR	457-459	44.6 48.5 52.3 56.2 60.0
RE 13, 3 W	126/128			50.7 54.6 58.4 62.3 66.1
RE 13, 3 W	128	MR	457-459	56.8 60.7 64.5 68.4 72.2
A-max 12	147/148			37.6 41.5 45.3 49.2 53.0
A-max 12, 0.5 W	148	MR	457-459	41.7 45.6 49.4 53.3 57.1

## Option Ball Bearing

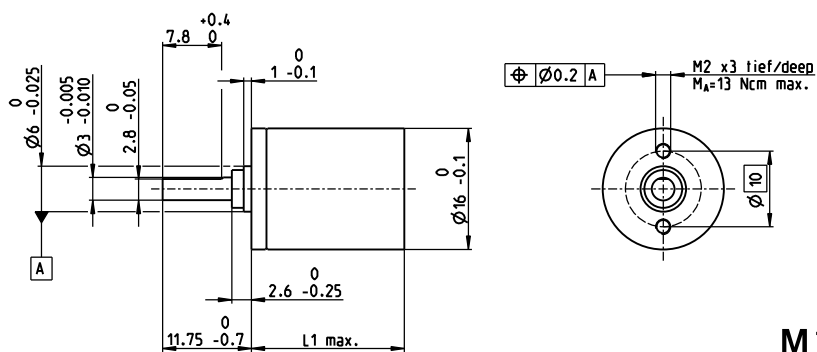


Gearhead length: L1 + 0.2 mm

	Part Numbers			Technical Data	
4.1:1	144300	131:1	352393	Planetary Gearhead	straight teeth
5.1:1	352391	275:1	144303	Output shaft	stainless steel, hardened
17:1	144301	664:1	352394	Bearing at output	preloaded ball bearings
26:1	352392	1119:1	144304	Radial play, 6 mm from flange	max. 0.04 mm
67:1	144302	3373:1	352395	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 16 A $\varnothing 16$ mm, 0.1–0.3 Nm

gear



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	$\frac{57}{13}$	$\frac{3249}{169}$	$\frac{185193}{2197}$	$\frac{19683}{125}$	$\frac{1055600}{28561}$	$\frac{112193}{1625}$	$\frac{601692057}{371293}$	$\frac{63950067}{21125}$
3 Max. motor shaft diameter	2 mm	2	2	1.5	2	2	2	2
<b>Part Numbers</b>	<b>118184</b>	<b>134777</b>	<b>134778</b>		<b>134780</b>	<b>118187</b>	<b>134783</b>	<b>134786</b>
1 Reduction	5.4:1	24:1	104:1		455:1	850:1	1996:1	3728:1
2 Absolute reduction	$\frac{27}{5}$	$\frac{1539}{65}$	$\frac{87723}{845}$		$\frac{500211}{10985}$	$\frac{531441}{625}$	$\frac{285012027}{142805}$	$\frac{30292137}{8125}$
3 Max. motor shaft diameter	1.5 mm	2	2		2	1.5	2	2
<b>Part Numbers</b>		<b>118185</b>	<b>134779</b>		<b>134781</b>		<b>134784</b>	<b>118188</b>
1 Reduction		29:1	128:1		561:1		2458:1	4592:1
2 Absolute reduction		$\frac{729}{25}$	$\frac{41553}{325}$		$\frac{2368521}{4225}$		$\frac{135005697}{54925}$	$\frac{14348907}{3125}$
3 Max. motor shaft diameter		1.5 mm	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	gcm <sup>2</sup> 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



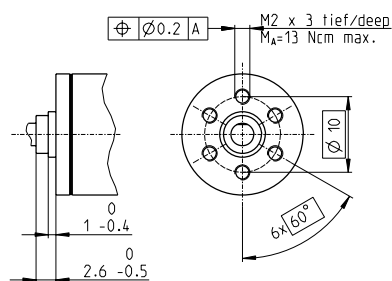
### maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts							
RE 16, 2 W	129			37.9	41.5	45.1	45.1	48.7	48.7	52.3	52.3
RE 16, 2 W	129	MR	460/461	43.6	47.2	50.8	50.8	54.4	54.4	58.0	58.0
RE 16, 3.2 W	130/131			56.0	59.6	63.2	63.2	66.8	66.8	70.4	70.4
RE 16, 3.2 W	131	MR	460/461	61.0	64.6	68.2	68.2	71.8	71.8	75.4	75.4
RE 16, 4.5 W	132/133			59.0	62.6	66.2	66.2	69.8	69.8	73.4	73.4
RE 16, 4.5 W	133	MR	460/461	64.0	67.6	71.2	71.2	74.8	74.8	78.4	78.4
A-max 16	149-152			41.0	44.6	48.2	48.2	51.8	51.8	55.4	55.4
A-max 16	150/152	MR	460/461	46.0	49.6	53.2	53.2	56.8	56.8	60.4	60.4
EC-max 16, 5 W	235			39.6	43.2	46.8	46.8	50.4	50.4	54.0	54.0
EC-max 16, 5 W	235	MR	462	46.9	50.5	54.1	54.1	57.7	57.7	61.3	61.3
EC-max 16, 2-wire	236			49.1	52.7	56.3	56.3	59.9	59.9	63.5	63.5

### Option Ball Bearing

### Part Numbers

### Technical Data



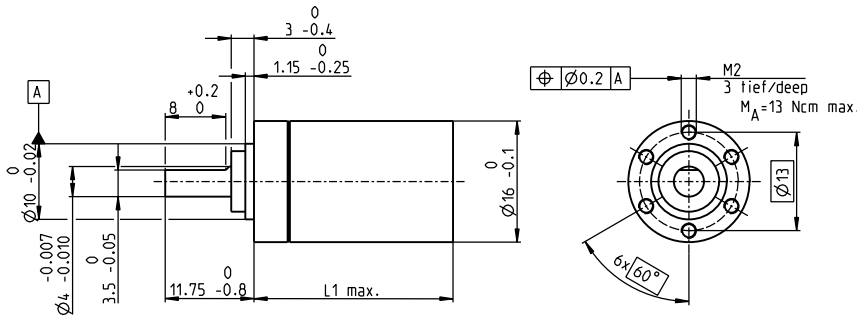
4.4:1	138333	455:1	138343	Planetary Gearhead	straight teeth
5.4:1	138334	561:1	138344	Output shaft	stainless steel, hardened
19:1	138335	690:1	138345	Bearing at output	preloaded ball bearings
24:1	138336	850:1	138346	Radial play, 6 mm from flange	max. 0.08 mm
29:1	138337	1621:1	138347	Axial play at axial load	< 4 N 0 mm
84:1	138338	1996:1	138348		> 4 N max. 0.05 mm
104:1	138339	2458:1	138349	Max. axial load (dynamic)	8 N
128:1	138340	3027:1	138350	Max. force for press fits	25 N
157:1	138341	3728:1	138351	Direction of rotation, drive to output	=
370:1	138342	4592:1	138352	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 $\varnothing 16$ mm, 0.2–0.6 Nm

Ceramic Version

gear



## Technical Data

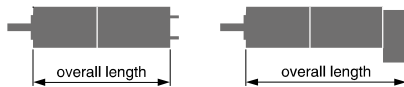
Planetary Gearhead	straight teeth
Output shaft	stainless steel, hardened
Bearing at output	preloaded ball bearings
Radial play, 6 mm from flange	max. 0.08 mm
Axial play at axial load	< 4 N 0 mm > 4 N max. 0.05 mm
Max. axial load (dynamic)	12 N
Max. force for press fits	100 N
Direction of rotation, drive to output	=
Max. continuous input speed	12 000 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

M 1:1

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

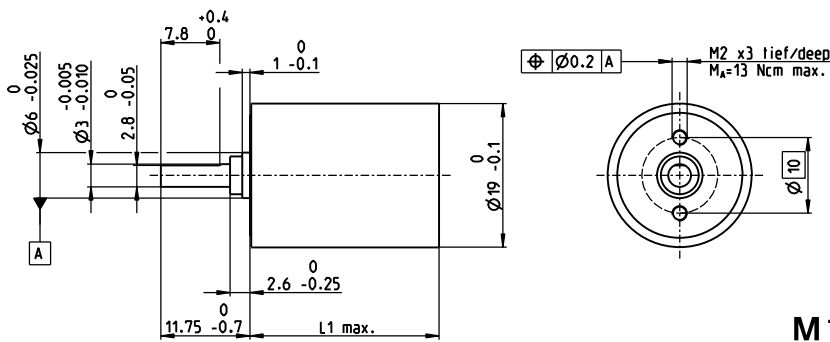
Gearhead Data	416328	407883	416391	401954	328699	416028	416188	414453
1 Reduction	4.4:1	19:1	84:1	157:1	370:1	690:1	1621:1	3027:1
2 Absolute reduction	$\frac{57}{13}$	$\frac{3249}{169}$	$\frac{185193}{2197}$	$\frac{19683}{125}$	$\frac{10558001}{28561}$	$\frac{1121931}{1625}$	$\frac{601692057}{371293}$	$\frac{63950067}{21125}$
3 Max. motor shaft diameter	mm 2	2	2	1.5	2	1.5	2	2
<b>Part Numbers</b>	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	$\frac{27}{5}$	$\frac{1539}{65}$	$\frac{87723}{845}$		$\frac{5000211}{10985}$	$\frac{531441}{625}$	$\frac{285012027}{142805}$	$\frac{30292137}{8125}$
3 Max. motor shaft diameter	mm 1.5	1.5	2		2	1.5	2	1.5
<b>Part Numbers</b>		416428	402672		416097		415786	409316
1 Reduction		29:1	128:1		561:1		2458:1	4592:1
2 Absolute reduction		$\frac{729}{25}$	$\frac{41553}{325}$		$\frac{2368521}{4225}$		$\frac{135005697}{54925}$	$\frac{14348907}{3125}$
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 Max. continuous torque	Nm	0.2	0.3	0.4	0.4	0.5	0.5	0.6
6 Max. intermittent torque at gear output	Nm	0.3	0.45	0.6	0.6	0.75	0.75	0.9
7 Max. efficiency	%	90	81	73	73	65	65	59
8 Weight	g	22	25	29	29	33	33	37
9 Average backlash no load	°	1.4	1.6	2	2	2.4	2.4	3
10 Mass inertia	gcm <sup>2</sup>	0.07	0.05	0.05	0.04	0.05	0.04	0.05
11 Gearhead length L1	mm	18.1	23.2	26.8	26.8	30.4	30.4	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	129			40.5	45.6	49.2	49.2	52.8	52.8	56.3	56.3
RE 16, 2 W	129	MR	460/461	46.2	51.3	54.9	54.9	58.5	58.5	62.0	62.0
RE 16, 3,2 W	130/131			58.6	63.7	67.3	67.3	70.9	70.9	74.4	74.4
RE 16, 3,2 W	131	MR	460/461	63.6	68.7	72.3	72.3	75.9	75.9	79.4	79.4
RE 16, 4,5 W	132/133			61.6	66.7	70.3	70.3	73.9	73.9	77.4	77.4
RE 16, 4,5 W	133	MR	460/461	66.6	71.7	75.3	75.3	78.9	78.9	82.4	82.4
A-max 16	149-152			43.6	48.7	52.3	52.3	55.9	55.9	59.4	59.4
A-max 16	150/152	MR	460/461	48.6	53.7	57.3	57.3	60.9	60.9	64.4	64.4
EC-max 16, 5 W	235			42.2	47.3	50.9	50.9	54.5	54.5	58.0	58.0
EC-max 16, 5 W	235	MR	462	49.5	54.6	58.2	58.2	61.8	61.8	65.3	65.3
EC-max 16, 8 W	237			54.2	59.3	62.9	62.9	66.5	66.5	70.0	70.0
EC-max 16, 8 W	237	MR	462	61.5	66.6	70.2	70.2	73.8	73.8	77.3	77.3

# Planetary Gearhead GP 19 B $\varnothing 19$ mm, 0.1–0.3 Nm



## 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

gear

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

Gearhead Data	149039	149041	149044	149047	149048	149051	149053	149056
1 Reduction	4.4:1	19:1	84:1	157:1	370:1	690:1	1621:1	3027:1
2 Absolute reduction	$\frac{57}{13}$	$\frac{3249}{169}$	$\frac{185193}{2197}$	$\frac{19683}{125}$	$\frac{1055600}{28561}$	$\frac{112193}{1625}$	$\frac{601692057}{371293}$	$\frac{63950067}{21125}$
3 Max. motor shaft diameter	mm 2	2	2	1.5	2	2	2	2
<b>Part Numbers</b>	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	$\frac{27}{5}$	$\frac{1539}{65}$	$\frac{87723}{845}$		$\frac{500211}{10985}$	$\frac{531441}{625}$	$\frac{285012027}{142805}$	$\frac{30292137}{8125}$
3 Max. motor shaft diameter	mm 1.5	2	2		2	1.5	2	2
<b>Part Numbers</b>		149043	149046		149050		149055	149058
1 Reduction		29:1	128:1		561:1		2458:1	4592:1
2 Absolute reduction		$\frac{729}{25}$	$\frac{41553}{325}$		$\frac{2368521}{4225}$		$\frac{135005697}{54925}$	$\frac{14348907}{3125}$
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 Max. continuous torque	Nm	0.10	0.15	0.20	0.20	0.25	0.25	0.30
6 Max. intermittent torque at gear output	Nm	0.150	0.225	0.300	0.300	0.375	0.375	0.450
7 Max. efficiency	%	90	81	73	73	65	65	59
8 Weight	g	26	31	36	36	41	41	46
9 Average backlash no load	°	1.4	1.6	2.0	2.0	2.4	2.4	3.0
10 Mass inertia	gcm <sup>2</sup>	0.07	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



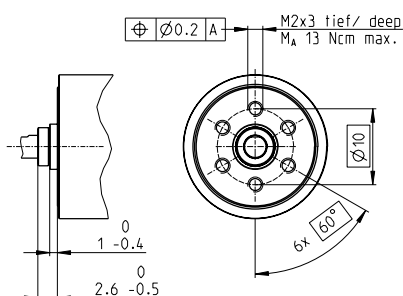
## maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts							
A-max 19	153/154			44.9	48.5	52.1	52.1	55.7	55.7	59.3	59.3
A-max 19, 1.5 W	154	MR	460/461	50.0	53.6	57.2	57.2	60.8	60.8	64.4	64.4
A-max 19, 1.5 W	154	Enc 22	468	59.3	62.9	66.5	66.5	70.1	70.1	73.7	73.7
A-max 19, 2.5 W	155/156			47.5	51.1	54.7	54.7	58.3	58.3	61.9	61.9
A-max 19, 2.5 W	156	MR	460/461	51.8	55.4	59.0	59.0	62.6	62.6	66.2	66.2
A-max 19, 2.5 W	156	Enc 22	468	61.9	65.5	69.1	69.1	72.7	72.7	76.3	76.3

## Option Ball Bearing

## Part Numbers

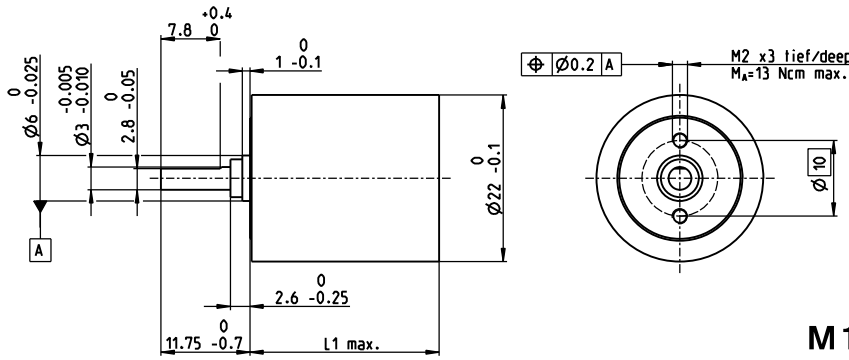
## Technical Data



4.4:1	227632	455:1	227642	Planetary Gearhead	straight teeth
5.4:1	227633	561:1	227643	Output shaft	stainless steel, hardened
19:1	227634	690:1	227644	Bearing at output	preloaded ball bearings
24:1	227635	850:1	227645	Radial play, 6 mm from flange	max. 0.08 mm
29:1	227636	1621:1	227646	Axial play at axial load	< 4 N 0 mm
84:1	227637	1996:1	227647		> 4 N max. 0.05 mm
104:1	227638	2458:1	227648	Max. axial load (dynamic)	8 N
128:1	227639	3027:1	227649	Max. force for press fits	25 N
157:1	227640	3728:1	227650	Direction of rotation, drive to output	=
370:1	227641	4592:1	227651	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 B Ø22 mm, 0.1–0.3 Nm

gear



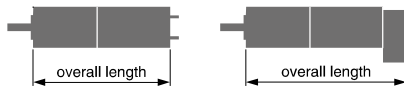
## Technical Data

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

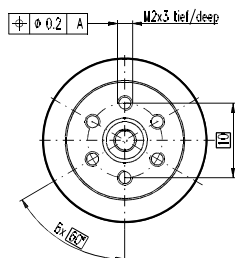
Gearhead Data	110355	110356	110357	118653	110358	134772	110359	134775
1 Reduction	4.4:1	19:1	84:1	157:1	370:1	690:1	1621:1	3027:1
2 Absolute reduction	57/13	3249/169	185193/2197	19683/125	10558001/28561	112193/1625	601692057/371293	63950067/21125
3 Max. motor shaft diameter	mm 2	2	2	1.5	2	2	2	2
<b>Part Numbers</b>	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		500021/10985	531441/625	285012027/142805	30292137/8125
3 Max. motor shaft diameter	mm 1.5	2	2		2	1.5	2	2
<b>Part Numbers</b>		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		135005687/54925	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 Max. continuous torque	Nm	0.10	0.15	0.20	0.20	0.25	0.25	0.30
6 Max. intermittent torque at gear output	Nm	0.150	0.225	0.300	0.300	0.375	0.375	0.450
7 Max. efficiency	%	90	81	73	73	65	65	59
8 Weight	g	39	48	57	57	65	65	73
9 Average backlash no load	°	1.4	1.6	2.0	2.0	2.4	2.4	3.0
10 Mass inertia	gcm <sup>2</sup>	0.07	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



## maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts							
A-max 22	157-160			47.9	51.5	55.1	55.1	58.7	58.7	62.3	62.3
A-max 22	158/160	MR	460/461	52.9	56.5	60.1	60.1	63.7	63.7	67.3	67.3
A-max 22	158/160	Enc 22	468	62.3	65.9	69.5	69.5	73.1	73.1	76.7	76.7

## 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

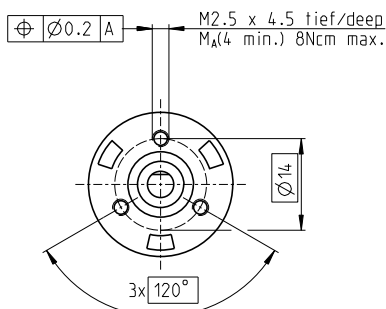
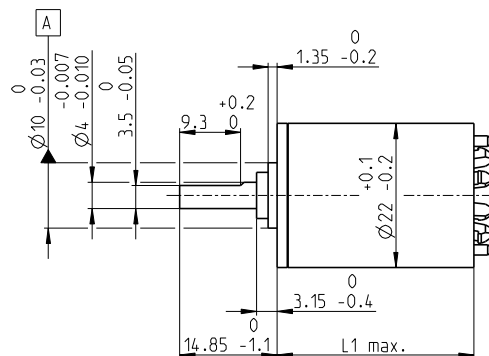
## Technical Data

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 Ø22 mm, 0.2–0.6 Nm

Plastic Version



M 1:1

## 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

gear

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

Gearhead Data	232763	232766	232772	232778	232782	232788	232794	232796	232803	232809	232815
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	$\frac{15}{4}$	$\frac{225}{16}$	$\frac{3375}{64}$	$\frac{87723}{845}$	$\frac{50625}{256}$	$\frac{10556001}{28561}$	$\frac{58049}{100}$	$\frac{759375}{1024}$	$\frac{158340015}{114244}$	$\frac{285012027}{142805}$	$\frac{1594323}{500}$
3 Max. motor shaft diameter	mm 4	4	4	3.2	4	3.2	4	4	3.2	3.2	4
<b>Part Numbers</b>	<b>232764</b>	<b>232767</b>	<b>232773</b>	<b>232779</b>	<b>232783</b>	<b>232789</b>	<b>232795</b>	<b>232798</b>	<b>232804</b>	<b>232810</b>	<b>232816</b>
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	$\frac{57}{13}$	$\frac{855}{52}$	$\frac{12825}{208}$	$\frac{2187}{20}$	$\frac{192375}{832}$	$\frac{263169}{676}$	$\frac{1121931}{1625}$	$\frac{2885625}{3328}$	$\frac{3947535}{2704}$	$\frac{7105563}{3380}$	$\frac{30292137}{8125}$
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
<b>Part Numbers</b>	<b>232765</b>	<b>232768</b>	<b>232774</b>	<b>232780</b>	<b>232784</b>	<b>232790</b>	<b>232797</b>	<b>232799</b>	<b>232805</b>	<b>232811</b>	<b>232817</b>
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	$\frac{27}{5}$	$\frac{3249}{169}$	$\frac{48735}{676}$	$\frac{41553}{325}$	$\frac{731025}{2704}$	$\frac{6561}{16}$	$\frac{531441}{625}$	$\frac{10965375}{10816}$	$\frac{98415}{64}$	$\frac{177147}{80}$	$\frac{14348907}{3125}$
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
<b>Part Numbers</b>		<b>232769</b>	<b>232775</b>	<b>232781</b>	<b>232785</b>	<b>232791</b>		<b>232800</b>	<b>232806</b>	<b>232812</b>	
1 Reduction		20:1	76:1	157:1	285:1	455:1		1068:1	1621:1	2458:1	
2 Absolute reduction		$\frac{8}{4}$	$\frac{1215}{16}$	$\frac{19683}{125}$	$\frac{18225}{64}$	$\frac{500021}{10985}$		$\frac{273375}{256}$	$\frac{601692057}{371293}$	$\frac{135005697}{54925}$	
3 Max. motor shaft diameter	mm	4	4	2.5	4	3.2		4	3.2	3.2	
<b>Part Numbers</b>		<b>232770</b>	<b>232776</b>		<b>232786</b>	<b>232792</b>		<b>232801</b>	<b>232807</b>	<b>232813</b>	
1 Reduction		24:1	84:1		316:1	479:1		1185:1	1707:1	2589:1	
2 Absolute reduction		$\frac{1539}{65}$	$\frac{185193}{2187}$		$\frac{2777895}{8788}$	$\frac{124659}{260}$		$\frac{41668425}{35152}$	$\frac{15000633}{6788}$	$\frac{3365793}{1300}$	
3 Max. motor shaft diameter	mm	3.2	3.2		3.2	3.2		3.2	3.2	3.2	
<b>Part Numbers</b>		<b>232771</b>	<b>232777</b>		<b>232787</b>	<b>232793</b>		<b>232802</b>	<b>232808</b>	<b>232814</b>	
1 Reduction		29:1	89:1		333:1	561:1		1249:1	1798:1	3027:1	
2 Absolute reduction		$\frac{729}{25}$	$\frac{4617}{52}$		$\frac{69285}{208}$	$\frac{2368521}{4225}$		$\frac{1038825}{832}$	$\frac{373977}{208}$	$\frac{63950067}{21125}$	
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 Max. continuous torque	Nm	0.2	0.3	0.4	0.4	0.5	0.5	0.5	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
7 Max. efficiency	%	84	70	59	59	49	49	49	42	42	42
8 Weight	g	28	35	43	43	51	51	51	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
10 Mass inertia	gcm <sup>2</sup>	0.5	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

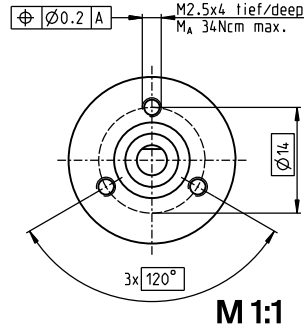
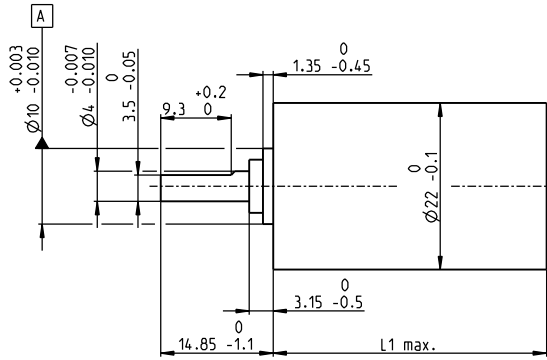


## maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts									
A-max 22	157-160			54.7	61.5	68.3	68.3	75.1	75.1	75.1	81.9	81.9	81.9
A-max 22	158/160 MR		460/461	59.7	66.5	73.3	73.3	80.1	80.1	80.1	86.9	86.9	86.9
A-max 22	158/160 Enc 22		468	69.1	75.9	82.7	82.7	89.5	89.5	89.5	96.3	96.3	96.3

# Planetary Gearhead GP 22 A Ø22 mm, 0.5–1.0 Nm

gear

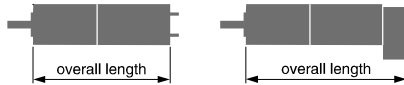


## Technical Data

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

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	<sup>15</sup> / <sub>4</sub>	<sup>225</sup> / <sub>16</sub>	<sup>3375</sup> / <sub>64</sub>	<sup>8723</sup> / <sub>645</sub>	<sup>50625</sup> / <sub>256</sub>	<sup>10556001</sup> / <sub>28561</sub>	<sup>59049</sup> / <sub>100</sub>	<sup>759375</sup> / <sub>1024</sub>	<sup>158340015</sup> / <sub>114244</sub>	<sup>28501202</sup> / <sub>142805</sub>	<sup>1594323</sup> / <sub>500</sub>
3 Max. motor shaft diameter	mm 4	4	4	3.2	4	3.2	4	4	3.2	3.2	4
<b>Part Numbers</b>	<b>110337</b>	<b>134159</b>	<b>134164</b>	<b>134169</b>	<b>134173</b>	<b>134178</b>	<b>134184</b>	<b>134187</b>	<b>134193</b>	<b>134198</b>	<b>134204</b>
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	<sup>57</sup> / <sub>13</sub>	<sup>855</sup> / <sub>52</sub>	<sup>12825</sup> / <sub>208</sub>	<sup>2187</sup> / <sub>20</sub>	<sup>192375</sup> / <sub>832</sub>	<sup>263169</sup> / <sub>676</sub>	<sup>1121931</sup> / <sub>1625</sub>	<sup>2885625</sup> / <sub>3328</sub>	<sup>3947535</sup> / <sub>2704</sub>	<sup>7105563</sup> / <sub>3380</sub>	<sup>30292137</sup> / <sub>8125</sub>
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
<b>Part Numbers</b>	<b>134157</b>	<b>110338</b>	<b>134165</b>	<b>134170</b>	<b>134174</b>	<b>134180</b>	<b>134185</b>	<b>134188</b>	<b>134196</b>	<b>134200</b>	<b>134205</b>
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	<sup>27</sup> / <sub>5</sub>	<sup>3249</sup> / <sub>169</sub>	<sup>48735</sup> / <sub>676</sub>	<sup>41553</sup> / <sub>325</sub>	<sup>731029</sup> / <sub>2704</sub>	<sup>6561</sup> / <sub>16</sub>	<sup>531441</sup> / <sub>625</sub>	<sup>10985375</sup> / <sub>10816</sub>	<sup>98415</sup> / <sub>64</sub>	<sup>177147</sup> / <sub>60</sub>	<sup>14348907</sup> / <sub>3125</sub>
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
<b>Part Numbers</b>		<b>134160</b>	<b>134166</b>	<b>134171</b>	<b>134176</b>	<b>134179</b>		<b>134191</b>	<b>110341</b>	<b>134199</b>	
1 Reduction		20:1	76:1	157:1	285:1	455:1		1068:1	1621:1	2458:1	
2 Absolute reduction		<sup>8</sup> / <sub>4</sub>	<sup>1215</sup> / <sub>16</sub>	<sup>19683</sup> / <sub>125</sub>	<sup>18225</sup> / <sub>64</sub>	<sup>5000211</sup> / <sub>10985</sub>		<sup>273375</sup> / <sub>256</sub>	<sup>601692057</sup> / <sub>37283</sub>	<sup>13500569</sup> / <sub>54825</sub>	
3 Max. motor shaft diameter	mm	4	4	2.5	4	3.2		4	3.2	3.2	
<b>Part Numbers</b>		<b>134161</b>	<b>110339</b>		<b>134175</b>	<b>134181</b>		<b>134189</b>	<b>134194</b>	<b>134201</b>	
1 Reduction		24:1	84:1		316:1	479:1		1185:1	1707:1	2589:1	
2 Absolute reduction		<sup>1539</sup> / <sub>65</sub>	<sup>185193</sup> / <sub>2197</sub>		<sup>2777895</sup> / <sub>8788</sub>	<sup>124659</sup> / <sub>260</sub>		<sup>41668425</sup> / <sub>35152</sub>	<sup>15000633</sup> / <sub>8788</sub>	<sup>3365793</sup> / <sub>1300</sub>	
3 Max. motor shaft diameter	mm	3.2	3.2		3.2	3.2		3.2	3.2	3.2	
<b>Part Numbers</b>		<b>134162</b>	<b>134167</b>		<b>134177</b>	<b>134182</b>		<b>134192</b>	<b>134197</b>	<b>134202</b>	
1 Reduction		29:1	89:1		333:1	561:1		1249:1	1798:1	3027:1	
2 Absolute reduction		<sup>729</sup> / <sub>25</sub>	<sup>4617</sup> / <sub>52</sub>		<sup>69259</sup> / <sub>208</sub>	<sup>2368521</sup> / <sub>4225</sub>		<sup>1038825</sup> / <sub>832</sub>	<sup>373977</sup> / <sub>208</sub>	<sup>63950067</sup> / <sub>21125</sub>	
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	4	4		4	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
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
7 Max. efficiency	%	84	70	59	59	49		49	42	42	42
8 Weight	g	42	55	68	68	81		81	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
10 Mass inertia	gcm <sup>2</sup>	0.5	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	49.8	49.8	49.8

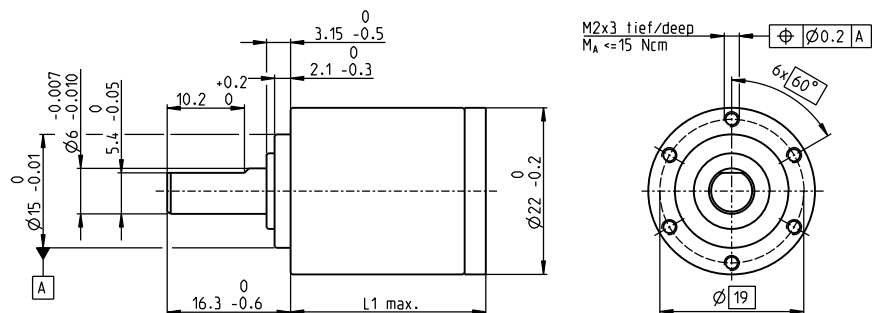
\*for EC 32fl, L1 is + 7.1 mm



maxon Modular System												
+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts								
A-max 19, 1.5 W	154	MR	460/461	56.7	63.5	70.3	70.3	77.1	77.1	83.9	83.9	83.9
A-max 19, 1.5 W	154	Enc 22	468	66.0	72.8	79.6	79.6	86.4	86.4	93.2	93.2	93.2
A-max 19, 2.5 W	155/156			54.2	61.0	67.8	67.8	74.6	74.6	81.4	81.4	81.4
A-max 19, 2.5 W	156	MR	460/461	58.5	65.3	72.1	72.1	78.9	78.9	85.7	85.7	85.7
A-max 19, 2.5 W	156	Enc 22	468	68.6	75.4	82.2	82.2	89.0	89.0	95.8	95.8	95.8
A-max 22	157-160			54.6	61.4	68.2	68.2	75.0	75.0	81.8	81.8	81.8
A-max 22	158/160	MR	460/461	59.6	66.4	73.2	73.2	80.0	80.0	86.8	86.8	86.8
A-max 22	158/160	Enc 22	468	69.0	75.8	82.6	82.6	89.4	89.4	96.2	96.2	96.2
EC 20 flat, 3 W, A	277			33.1	39.9	46.7	46.7	53.5	53.5	60.3	60.3	60.3
EC 20 flat, 3 W, B	277			32.5	39.3	46.1	46.1	52.9	52.9	59.7	59.7	59.7
EC 20 flat, 5 W	278			36.7	43.5	50.3	50.3	57.1	57.1	63.9	63.9	63.9
EC 20 flat, IE, IP 00	279			39.7	46.5	53.3	53.3	60.1	60.1	66.9	66.9	66.9
EC 20 flat, IE, IP 40	279			40.8	47.6	54.4	54.4	61.2	61.2	68.0	68.0	68.0
EC 20 flat, IE, IP 00	280			43.7	50.5	57.3	57.3	64.1	64.1	70.9	70.9	70.9
EC 20 flat, IE, IP 40	280			44.8	51.6	58.4	58.4	65.2	65.2	72.0	72.0	72.0
EC 32 flat, 6 W	281			39.8	46.6	53.4	53.4	60.2	60.2	67.0	67.0	67.0

# Planetary Gearhead GP 22 AR $\varnothing 22$ mm, 0.50 Nm

for high radial loads



## 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

M 1:1

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

462695	438992	462696
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## Gearhead Data

		462695	438992	462696
1 Reduction		3.8:1	4.4:1	5.4:1
2 Absolute reduction		$\frac{15}{4}$	$\frac{57}{13}$	$\frac{27}{5}$
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	gcm <sup>2</sup>	0.5	0.38	0.25
11 Gearhead length L1	mm	25.8	25.8	25.8



## maxon Modular System

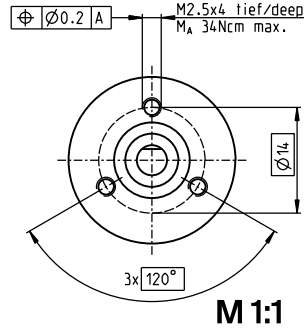
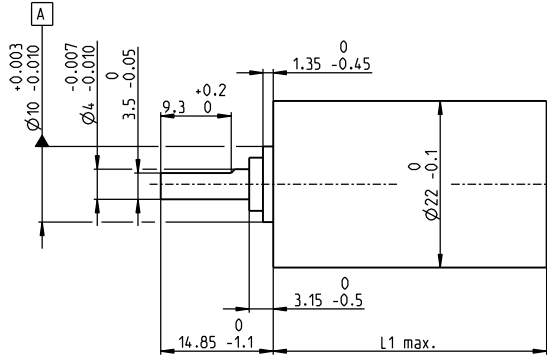
+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts		
RE 25, 20 W	135			68,9	68,9	68,9
RE 25, 20 W	135	MR	463	79,9	79,9	79,9
RE 25, 20 W	135	HED_ 5540	472/473	89,7	89,7	89,7
RE 25, 20 W	135	DCT 22	480	91,2	91,2	91,2
RE 25, 20 W	135	AB 28	519	103	103	103
RE 25, 20 W	135	HED_ 5540/AB 28	472/519	120,2	120,2	120,2
EC-max 22, 25 W	239			74,4	74,4	74,4
EC-max 22, 25 W	239	MR	462	84	84	84
EC-max 22, 25 W	239	AB 20	516	110	110	110



# Planetary Gearhead GP 22 C Ø22 mm, 0.5–2.0 Nm

Ceramic Version

gear

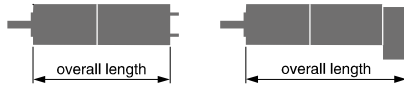


## Technical Data

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

	Part Numbers										
	143971	143974	143980	143986	143990	143996	144002	144004	144011	144017	144023
<b>Gearhead Data</b>											
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	<sup>15</sup> / <sub>4</sub>	<sup>225</sup> / <sub>16</sub>	<sup>3375</sup> / <sub>64</sub>	<sup>87723</sup> / <sub>645</sub>	<sup>50625</sup> / <sub>256</sub>	<sup>1055600</sup> / <sub>28561</sub>	<sup>59049</sup> / <sub>100</sub>	<sup>759375</sup> / <sub>1024</sub>	<sup>158340015</sup> / <sub>14244</sub>	<sup>28501202</sup> / <sub>142805</sub>	<sup>1584323</sup> / <sub>500</sub>
3 Max. motor shaft diameter	mm 4	4	4	3.2	4	3.2	4	4	3.2	3.2	4
<b>Part Numbers</b>	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	<sup>57</sup> / <sub>13</sub>	<sup>855</sup> / <sub>52</sub>	<sup>12825</sup> / <sub>208</sub>	<sup>2187</sup> / <sub>20</sub>	<sup>192375</sup> / <sub>832</sub>	<sup>263169</sup> / <sub>676</sub>	<sup>112193</sup> / <sub>1625</sub>	<sup>2885625</sup> / <sub>3328</sub>	<sup>3947535</sup> / <sub>2704</sub>	<sup>7105563</sup> / <sub>3380</sub>	<sup>30292137</sup> / <sub>8125</sub>
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
<b>Part Numbers</b>	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	<sup>27</sup> / <sub>5</sub>	<sup>3249</sup> / <sub>169</sub>	<sup>48735</sup> / <sub>676</sub>	<sup>41553</sup> / <sub>325</sub>	<sup>731029</sup> / <sub>2704</sub>	<sup>6561</sup> / <sub>16</sub>	<sup>531441</sup> / <sub>625</sub>	<sup>10965375</sup> / <sub>10816</sub>	<sup>98415</sup> / <sub>64</sub>	<sup>17714</sup> / <sub>80</sub>	<sup>14348907</sup> / <sub>3125</sub>
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
<b>Part Numbers</b>		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		<sup>8</sup> / <sub>4</sub>	<sup>1215</sup> / <sub>16</sub>	<sup>19683</sup> / <sub>125</sub>	<sup>18225</sup> / <sub>64</sub>	<sup>500021</sup> / <sub>10985</sub>		<sup>273375</sup> / <sub>256</sub>	<sup>60169205</sup> / <sub>371293</sub>	<sup>13500597</sup> / <sub>54925</sub>	
3 Max. motor shaft diameter	mm	4	4	2.5	4	3.2		4	3.2	3.2	
<b>Part Numbers</b>		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		<sup>1539</sup> / <sub>65</sub>	<sup>185193</sup> / <sub>2197</sub>		<sup>2777895</sup> / <sub>8788</sub>	<sup>124659</sup> / <sub>260</sub>		<sup>41668425</sup> / <sub>35152</sub>	<sup>15000633</sup> / <sub>8788</sub>	<sup>3365793</sup> / <sub>1300</sub>	
3 Max. motor shaft diameter	mm	3.2	3.2		3.2	3.2		3.2	3.2	3.2	
<b>Part Numbers</b>		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		<sup>729</sup> / <sub>25</sub>	<sup>4617</sup> / <sub>52</sub>		<sup>69259</sup> / <sub>208</sub>	<sup>2368521</sup> / <sub>4225</sub>		<sup>1038925</sup> / <sub>832</sub>	<sup>373977</sup> / <sub>208</sub>	<sup>63950067</sup> / <sub>21125</sub>	
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	4	4	4	5	5	5	5
5 Max. continuous torque	Nm	0.5	0.6	1.2	1.2	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
7 Max. efficiency	%	84	70	59	59	49	49	49	42	42	42
8 Weight	g	42	55	68	68	81	81	81	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
10 Mass inertia	gcm <sup>2</sup>	0.5	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

\*L1 is -2.8 mm for calculating the overall length

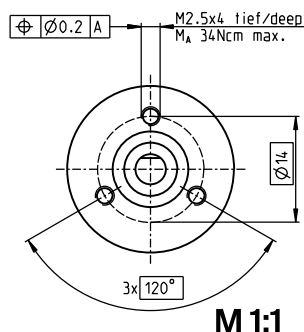
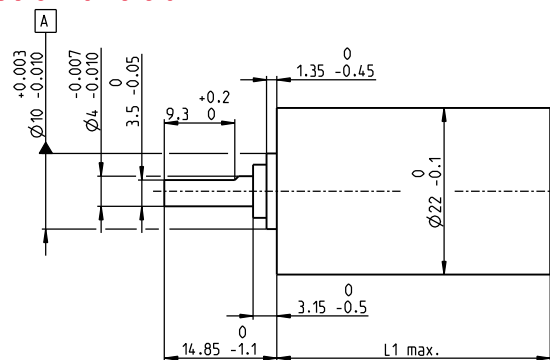


maxon Modular System													
+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts									
A-max 19	153/154			51.6	58.4	65.2	65.2	72.0	72.0	72.0	78.8	78.8	78.8
A-max 19, 1.5 W	154	MR	460/461	56.7	63.5	70.3	70.3	77.1	77.1	77.1	83.9	83.9	83.9
A-max 19, 1.5 W	154	Enc 22	468	66.0	72.8	79.6	79.6	86.4	86.4	86.4	93.2	93.2	93.2
A-max 19, 2.5 W	155/156			54.2	61.0	67.8	67.8	74.6	74.6	74.6	81.4	81.4	81.4
A-max 19, 2.5 W	156	MR	460/461	58.5	65.3	72.1	72.1	78.9	78.9	78.9	85.7	85.7	85.7
A-max 19, 2.5 W	156	Enc 22	468	68.6	75.4	82.2	82.2	89.0	89.0	89.0	95.8	95.8	95.8
A-max 22	157-160			54.6	61.4	68.2	68.2	75.0	75.0	75.0	81.8	81.8	81.8
A-max 22	158/160	MR	460/461	59.6	66.4	73.2	73.2	80.0	80.0	80.0	86.8	86.8	86.8
A-max 22	158/160	Enc 22	468	69.0	75.8	82.6	82.6	89.4	89.4	89.4	96.2	96.2	96.2



# Planetary Gearhead GP 22 C $\varnothing 22$ mm, 0.5–2.0 Nm

Ceramic Version



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

gear

Gearhead Data	Part Numbers										
	143971	143974	143980	143986	143990	143996	144002	144004	144011	144017	144023
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	$\frac{15}{4}$	$\frac{225}{16}$	$\frac{3375}{64}$	$\frac{87723}{845}$	$\frac{50625}{256}$	$\frac{1055600}{28561}$	$\frac{59049}{100}$	$\frac{759375}{1024}$	$\frac{158340015}{114244}$	$\frac{285010207}{142805}$	$\frac{1594323}{500}$
3 Max. motor shaft diameter	mm 4	4	4	3.2	4	3.2	4	4	3.2	3.2	4
<b>Part Numbers</b>	<b>143972</b>	<b>143975</b>	<b>143981</b>	<b>143987</b>	<b>143991</b>	<b>143997</b>	<b>144003</b>	<b>144006</b>	<b>144012</b>	<b>144018</b>	<b>144024</b>
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	$\frac{57}{13}$	$\frac{855}{62}$	$\frac{12825}{208}$	$\frac{2187}{20}$	$\frac{192375}{832}$	$\frac{263169}{676}$	$\frac{1121931}{1825}$	$\frac{2885625}{3328}$	$\frac{3947535}{2704}$	$\frac{7105563}{3380}$	$\frac{30292137}{8125}$
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
<b>Part Numbers</b>	<b>143973</b>	<b>143976</b>	<b>143982</b>	<b>143988</b>	<b>143992</b>	<b>143998</b>	<b>144005</b>	<b>144007</b>	<b>144013</b>	<b>144019</b>	<b>144025</b>
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	$\frac{27}{5}$	$\frac{3249}{169}$	$\frac{48735}{676}$	$\frac{41553}{325}$	$\frac{731025}{2704}$	$\frac{6561}{16}$	$\frac{531441}{625}$	$\frac{10965375}{10816}$	$\frac{98415}{64}$	$\frac{177147}{60}$	$\frac{14348907}{3125}$
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
<b>Part Numbers</b>	<b>143977</b>	<b>143983</b>	<b>143989</b>	<b>143993</b>	<b>143999</b>			<b>144008</b>	<b>144014</b>	<b>144020</b>	
1 Reduction		20:1	76:1	157:1	285:1	455:1		1068:1	1621:1	2458:1	
2 Absolute reduction		$\frac{8}{4}$	$\frac{1215}{16}$	$\frac{19683}{125}$	$\frac{18225}{64}$	$\frac{500021}{10985}$		$\frac{273375}{256}$	$\frac{60169205}{371293}$	$\frac{135005697}{54925}$	
3 Max. motor shaft diameter	mm	4	4	2.5	4	3.2		4	3.2	3.2	
<b>Part Numbers</b>	<b>143978</b>	<b>143984</b>			<b>143994</b>	<b>144000</b>		<b>144009</b>	<b>144015</b>	<b>144021</b>	
1 Reduction		24:1	84:1		316:1	479:1		1185:1	1707:1	2589:1	
2 Absolute reduction		$\frac{1539}{65}$	$\frac{185193}{2187}$		$\frac{2777895}{6788}$	$\frac{124659}{260}$		$\frac{41668425}{35152}$	$\frac{15000633}{6788}$	$\frac{3365793}{1300}$	
3 Max. motor shaft diameter	mm	3.2	3.2		3.2	3.2		3.2	3.2	3.2	
<b>Part Numbers</b>	<b>143979</b>	<b>143985</b>			<b>143995</b>	<b>144001</b>		<b>144010</b>	<b>144016</b>	<b>144022</b>	
1 Reduction		29:1	89:1		333:1	561:1		1249:1	1798:1	3027:1	
2 Absolute reduction		$\frac{729}{25}$	$\frac{4817}{52}$		$\frac{69285}{208}$	$\frac{2368521}{4225}$		$\frac{1038825}{832}$	$\frac{373977}{208}$	$\frac{63950067}{21125}$	
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 Max. continuous torque	Nm	0.5	0.6	1.2	1.2	1.8	1.8	1.8	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
7 Max. efficiency	%	84	70	59	59	49	49	49	42	42	42
8 Weight	g	42	55	68	68	81	81	81	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
10 Mass inertia	gcm <sup>2</sup>	0.5	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

\*for EC-max 16 L1 is=2.8 mm



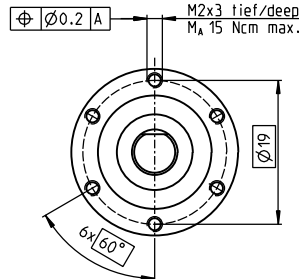
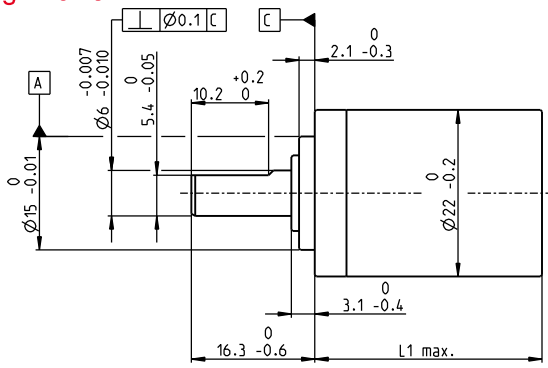
maxon Modular System													
+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts									
EC-max 16, 8 W	237			58.7	65.5	72.3	72.3	79.1	79.1	79.1	85.9	85.9	85.9
EC-max 16, 8 W	237	MR	462	66.0	72.8	79.6	79.6	86.4	86.4	86.4	93.2	93.2	93.2
EC-max 22, 12 W	238			57.5	64.3	71.1	71.1	77.9	77.9	77.9	84.7	84.7	84.7
EC-max 22, 12 W	238	MR	462	67.2	74.0	80.8	80.8	87.6	87.6	87.6	94.4	94.4	94.4
EC-max 22, 12 W	238	AB 20	516	93.1	99.9	106.7	106.7	113.5	113.5	113.5	120.3	120.3	120.3
EC 20 flat, 3 W, A	277			33.1	39.9	46.7	46.7	53.5	53.5	53.5	60.3	60.3	60.3
EC 20 flat, 3 W, B	277			32.5	39.3	46.1	46.1	52.9	52.9	52.9	59.7	59.7	59.7
EC 20 flat, 5 W	278			36.7	43.5	50.3	50.3	57.1	57.1	57.1	63.9	63.9	63.9
EC 20 flat, IE, IP 00	279			39.7	46.5	53.3	53.3	60.1	60.1	60.1	66.9	66.9	66.9
EC 20 flat, IE, IP 40	279			40.8	47.6	54.4	54.4	61.2	61.2	61.2	68.0	68.0	68.0
EC 20 flat, IE, IP 00	280			43.7	50.5	57.3	57.3	64.1	64.1	64.1	70.9	70.9	70.9
EC 20 flat, IE, IP 40	280			44.8	51.6	58.4	58.4	65.2	65.2	65.2	72.0	72.0	72.0
EC 32 flat, 6 W	281			39.8	46.6	53.4	53.4	60.2	60.2	60.2	67.0	67.0	67.0



# Planetary Gearhead GP 22 HP $\varnothing 22$ mm, 2.0–3.4 Nm

High Power

gear



M 1:1

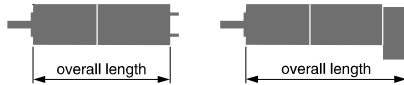
## Technical Data

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

Gearhead Data (provisional)	370683	370687	370690	370776	370780	370783	370792	370797	370802	370807
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	$\frac{15}{4}$	$\frac{225}{16}$	$\frac{81}{4}$	$\frac{3375}{64}$	$\frac{1215}{16}$	$\frac{8723}{645}$	$\frac{50625}{256}$	$\frac{2777895}{8788}$	$\frac{6561}{16}$	$\frac{59049}{100}$
3 Max. motor shaft diameter	mm 4	4	4	4	4	3.2	4	3.2	4	4
<b>Part Numbers</b>	<b>370685</b>	<b>370688</b>	<b>370691</b>	<b>370778</b>	<b>370781</b>	<b>370784</b>	<b>370794</b>	<b>370799</b>	<b>370803</b>	<b>370808</b>
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	$\frac{57}{13}$	$\frac{855}{52}$	$\frac{1539}{65}$	$\frac{12825}{208}$	$\frac{185193}{2197}$	$\frac{2187}{20}$	$\frac{192375}{632}$	$\frac{69255}{208}$	$\frac{500021}{10985}$	$\frac{112193}{1625}$
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
<b>Part Numbers</b>	<b>370686</b>	<b>370689</b>	<b>370692</b>	<b>370779</b>	<b>370782</b>	<b>370785</b>	<b>370795</b>	<b>370800</b>	<b>370805</b>	<b>370809</b>
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	$\frac{27}{5}$	$\frac{3249}{169}$	$\frac{729}{25}$	$\frac{48735}{676}$	$\frac{4617}{62}$	$\frac{41553}{325}$	$\frac{731025}{2704}$	$\frac{10556001}{28561}$	$\frac{124659}{260}$	$\frac{53144}{625}$
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
<b>Part Numbers</b>						<b>370786</b>	<b>370796</b>	<b>370801</b>	<b>370806</b>	
1 Reduction						157:1	285:1	389:1	561:1	
2 Absolute reduction						$\frac{19683}{125}$	$\frac{18225}{64}$	$\frac{283169}{676}$	$\frac{236852}{4225}$	
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
5 Max. continuous torque	Nm	2	2.4	2.4	3	3	3	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
7 Max. efficiency	%	84	70	70	59	59	59	49	49	49
8 Weight	g	51	64	64	78	78	78	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
10 Mass inertia	gcm <sup>2</sup>	0.6	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

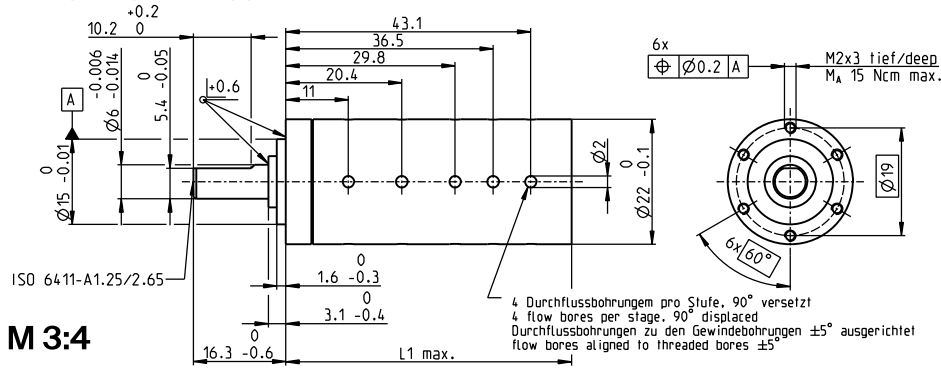


## maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts									
EC-max 22, 12 W	238			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	238	MR	462	67.1	74.1	74.1	80.8	80.8	80.8	87.5	87.5	87.5	87.5
EC-max 22, 12 W	238	AB 20	516	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	239			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	239	MR	462	83.6	90.6	90.6	97.3	97.3	97.3	104.0	104.0	104.0	104.0
EC-max 22, 25 W	239	AB 20	516	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	247			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	247	16 EASY/XT/Abs.	449-453	86.2	93.2	93.2	99.9	99.9	99.9	106.6	106.6	106.6	106.6
EC-4pole 22, 90 W	247	16 EASY Abs. XT	455	86.7	93.7	93.7	100.4	100.4	100.4	107.1	107.1	107.1	107.1
EC-4pole 22, 90 W	247	16 RIO	466	84.7	91.7	91.7	98.4	98.4	98.7	105.1	105.1	105.1	105.1
EC-4pole 22, 90 W	247	AEDL/HEDL	469/475	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	248			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	248	16 EASY/XT/Abs.	449-453	103.6	110.6	110.6	117.3	117.3	117.3	124.0	124.0	124.0	124.0
EC-4pole 22, 120 W	248	16 EASY Abs. XT	455	104.1	111.1	111.1	117.8	117.8	117.8	124.5	124.5	124.5	124.5
EC-4pole 22, 120 W	248	16 RIO	466	102.1	109.1	109.1	115.8	115.8	115.8	122.5	122.5	122.5	122.5
EC-4pole 22, 120 W	248	AEDL/HEDL	469/475	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 Ø22 mm, 2.0–4.0 Nm

Heavy Duty – for application in oil



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

M 3:4

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

Gearhead Data (provisional)	410657	410637	410558	416698	409667	416709	416738	416211	416747	416753	416760
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	1055600/28561	236852/4225	759375/1024	1583400/114244	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
<b>Part Numbers</b>	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	28502027/142805	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
<b>Part Numbers</b>	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	6581/16	112193/1625	10965375/10616	98415/64	7105569/3380	30292137/6125
3 Max. motor shaft diameter	mm 3.2	3.2	3.2	4	3.2	4	3.2	4.0	3.2	3.2	
<b>Part Numbers</b>	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		8/4	1215/16	18225/64	500021/10985		273375/256	601692057/371293	177147/80		
3 Max. motor shaft diameter	mm 4	4	4	4	3.2	4	3.2	4	4	4	
<b>Part Numbers</b>	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	3.2		
<b>Part Numbers</b>	416697			416708			416746		416759		
1 Reduction	89:1			333:1			1249:1		2589:1		
2 Absolute reduction		4617/52		69255/208			1038825/632		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 <sup>1)</sup>	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	gcm <sup>2</sup> 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



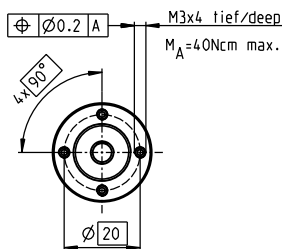
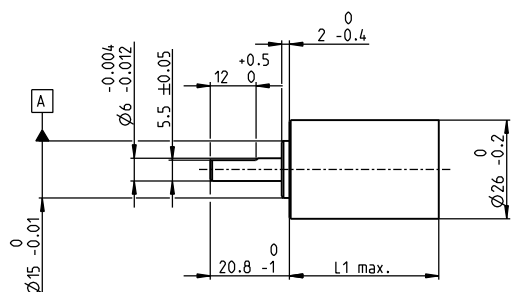
## maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts									
EC 22, 240 W, A	227			110.5	119.5	128.0	128.0	135.0	135.0	135.0	141.5	141.5	141.5
EC 22, 240 W, B	227			98.1	107.5	116.0	116.0	122.4	122.4	122.4	129.5	129.5	129.5

Application	Important Notice
<b>General</b>	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	
<b>Oil &amp; Gas Industry</b>	
- oil, gas and geothermal wells	

gear

# Planetary Gearhead GP 26 A $\varnothing 26$ 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

gear

- Stock program
- Standard program
- Special program (on request)

### Part Numbers

Gearhead Data	Part Numbers									
	406757	406762	406764	406767	406128	406769	406770	406771	406092	
1 Reduction	5.2:1	19:1	27:1	35:1	71:1	100:1	139:1	181:1	236:1	
2 Absolute reduction	$\frac{57}{11}$	$\frac{359}{187}$	$\frac{3249}{121}$	$\frac{1539}{44}$	$\frac{226233}{3179}$	$\frac{204687}{2057}$	$\frac{185193}{1331}$	$\frac{87723}{484}$	$\frac{41553}{176}$	
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 <sup>2</sup> 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	

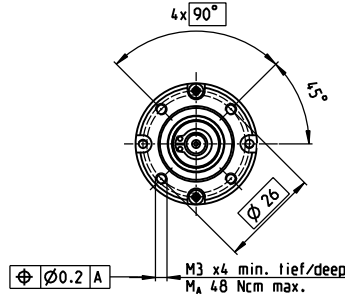
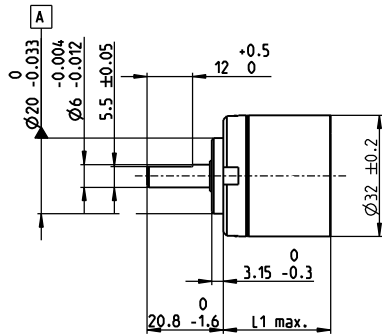


### maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts								
RE 25	134/136			78,0	87,5	87,5	87,5	94,1	94,1	94,1	94,1	94,1
RE 25	134/136	MR	463	89,0	98,5	98,5	98,5	105,1	105,1	105,1	105,1	105,1
RE 25	134/136	Enc 22	468	92,1	101,6	101,6	101,6	108,2	108,2	108,2	108,2	108,2
RE 25	134/136	HED_ 5540	471/473	98,8	108,3	108,3	108,3	114,9	114,9	114,9	114,9	114,9
RE 25	134/136	DCT 22	480	100,3	109,8	109,8	109,8	116,4	116,4	116,4	116,4	116,4
RE 25, 20 W	135			66,5	76,0	76,0	76,0	82,6	82,6	82,6	82,6	82,6
RE 25, 20 W	135	MR	463	77,5	87,0	87,0	87,0	93,6	93,6	93,6	93,6	93,6
RE 25, 20 W	135	HED_ 5540	472	87,3	96,8	96,8	96,8	103,4	103,4	103,4	103,4	103,4
RE 25, 20 W	135	DCT 22	480	88,8	98,3	98,3	98,3	104,9	104,9	104,9	104,9	104,9
RE 25, 20 W	135	AB 28	519	100,6	110,1	110,1	110,1	116,7	116,7	116,7	116,7	116,7
RE 25, 20 W	135	HED_ 5540/AB 28	472/519	117,8	127,3	127,3	127,3	133,9	133,9	133,9	133,9	133,9
RE 25, 20 W	136	AB 28	519	112,1	121,6	121,6	121,6	128,2	128,2	128,2	128,2	128,2
RE 25, 20 W	136	HED_ 5540/AB 28	473/519	129,3	138,8	138,8	138,8	145,4	145,4	145,4	145,4	145,4
A-max 26	161-164			68,2	77,7	77,7	77,7	84,3	84,3	84,3	84,3	84,3
A-max 26	161-164	MR	463	77,0	86,5	86,5	86,5	93,1	93,1	93,1	93,1	93,1
A-max 26	161-164	Enc 22	468	82,6	92,1	92,1	92,1	98,7	98,7	98,7	98,7	98,7
A-max 26	161-164	HED_ 5540	472/474	86,6	96,1	96,1	96,1	102,7	102,7	102,7	102,7	102,7

# Planetary Gearhead GP 32 BZ Ø32 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

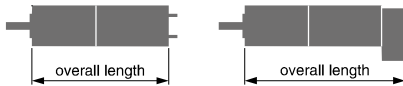
gear

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

Gearhead Data	358975	351942	358331	357988	358335	358385	358512	358513	358515	358516
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	<sup>63</sup> / <sub>17</sub>	<sup>57</sup> / <sub>11</sub>	<sup>359</sup> / <sub>187</sub>	<sup>3249</sup> / <sub>121</sub>	<sup>1539</sup> / <sub>44</sub>	<sup>226233</sup> / <sub>3179</sub>	<sup>204687</sup> / <sub>2057</sub>	<sup>185193</sup> / <sub>1331</sub>	<sup>87723</sup> / <sub>484</sub>	<sup>41553</sup> / <sub>176</sub>
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	gcm <sup>2</sup> 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



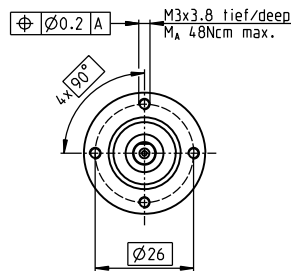
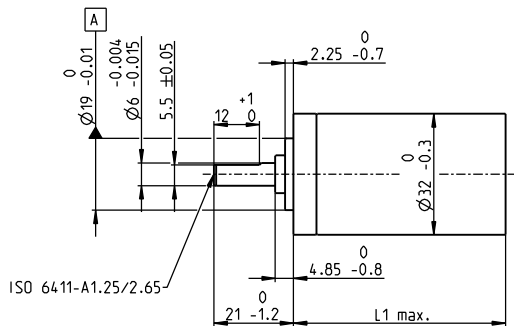
## maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts										
RE 25	134/136			88.1	88.1	98.2	98.2	98.2	107.7	107.7	107.7	107.7	107.7	
RE 25	134/136	MR	463	99.1	99.1	109.2	109.2	109.2	118.7	118.7	118.7	118.7	118.7	
RE 25	134/136	Enc 22	468	102.2	102.2	112.3	112.3	112.3	121.8	121.8	121.8	121.8	121.8	
RE 25	134/136	HED_ 5540	471/473	108.9	108.9	119.0	119.0	119.0	128.5	128.5	128.5	128.5	128.5	
RE 25	134/136	DCT 22	480	110.4	110.4	120.5	120.5	120.5	130.0	130.0	130.0	130.0	130.0	
RE 25, 20 W	135			76.6	76.6	86.7	86.7	86.7	96.2	96.2	96.2	96.2	96.2	
RE 25, 20 W	135	MR	463	87.6	87.6	97.7	97.7	97.7	107.2	107.2	107.2	107.2	107.2	
RE 25, 20 W	135	HED_ 5540	472/473	97.4	97.4	107.5	107.5	107.5	117.0	117.0	117.0	117.0	117.0	
RE 25, 20 W	135	DCT 22	480	98.9	98.9	109.0	109.0	109.0	118.5	118.5	118.5	118.5	118.5	
RE 25, 20 W	135	AB 28	519	110.7	110.7	120.8	120.8	120.8	130.3	130.3	130.3	130.3	130.3	
RE 25, 20 W	135	HED_ 5540/AB 28	472/519	127.9	127.9	138.0	138.0	138.0	147.5	147.5	147.5	147.5	147.5	
RE 25, 20 W	136	AB 28	519	122.2	122.2	132.3	132.3	132.3	141.8	141.8	141.8	141.8	141.8	
RE 25, 20 W	136	HED_ 5540/AB 28	471/519	139.4	139.4	149.5	149.5	149.5	159.0	159.0	159.0	159.0	159.0	
RE 30, 60 W	138			102.6	102.6	112.7	112.7	112.7	122.2	122.2	122.2	122.2	122.2	
RE 30, 60 W	138	MR	464	114.0	114.0	124.1	124.1	124.1	133.6	133.6	133.6	133.6	133.6	
RE 30, 60 W	138	HED_ 5540	471/473	123.4	123.4	133.5	133.5	133.5	143.0	143.0	143.0	143.0	143.0	
RE 35, 90 W	139			104.6	104.6	114.7	114.7	114.7	124.2	124.2	124.2	124.2	124.2	
RE 35, 90 W	139	MR	464	116.0	116.0	126.1	126.1	126.1	135.6	135.6	135.6	135.6	135.6	
RE 35, 90 W	139	HED_ 5540	471/473	125.3	125.3	135.4	135.4	135.4	144.9	144.9	144.9	144.9	144.9	
RE 35, 90 W	139	DCT 22	480	122.7	122.7	132.8	132.8	132.8	142.3	142.3	142.3	142.3	142.3	
RE 35, 90 W	139	AB 28	519	140.7	140.7	150.8	150.8	150.8	160.3	160.3	160.3	160.3	160.3	
RE 35, 90 W	139	HEDS 5540/AB 28	471/519	157.9	157.9	168.0	168.0	168.0	177.5	177.5	177.5	177.5	177.5	
A-max 26	161-164			78.3	78.3	88.4	88.4	88.4	97.9	97.9	97.9	97.9	97.9	
A-max 26	161-164	MR	463	87.1	87.1	97.2	97.2	97.2	106.7	106.7	106.7	106.7	106.7	
A-max 26	161-164	Enc 22	468	92.7	92.7	102.8	102.8	102.8	112.3	112.3	112.3	112.3	112.3	
A-max 26	161-164	HED_ 5540	472/474	96.7	96.7	106.8	106.8	106.8	116.3	116.3	116.3	116.3	116.3	
A-max 32	165			96.5	96.5	106.6	106.6	106.6	116.1	116.1	116.1	116.1	116.1	
A-max 32	166			95.1	95.1	105.2	105.2	105.2	114.7	114.7	114.7	114.7	114.7	
A-max 32	166	MR	464	106.3	106.3	116.4	116.4	116.4	125.9	125.9	125.9	125.9	125.9	
A-max 32	166	HED_ 5540	472/473	115.9	115.9	126.0	126.0	126.0	135.5	135.5	135.5	135.5	135.5	
EC 32, 80 W	228			100.2	100.2	110.3	110.3	110.3	119.8	119.8	119.8	119.8	119.8	
EC 32, 80 W	228	HED_ 5540	472/475	118.6	118.6	128.7	128.7	128.7	138.2	138.2	138.2	138.2	138.2	
EC 32, 80 W	228	Res 26	481	120.3	120.3	130.4	130.4	130.4	139.9	139.9	139.9	139.9	139.9	





# Planetary Gearhead GP 32 A Ø32 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

gear

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

Gearhead Data	166155	166158	166163	166164	166169	166174	166179	166184	166187	166192	166197	166202
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	$\frac{26}{7}$	$\frac{676}{49}$	$\frac{529}{16}$	$\frac{1756}{343}$	$\frac{13824}{125}$	$\frac{421824}{1715}$	$\frac{86112}{175}$	$\frac{19044}{25}$	$\frac{10123776}{8575}$	$\frac{8626176}{4375}$	$\frac{495144}{175}$	$\frac{109503}{25}$
3 Max. motor shaft diameter	mm 6	6	3	6	4	4	3	3	4	4	3	3
<b>Part Numbers</b>	<b>166156</b>	<b>166159</b>		<b>166165</b>	<b>166170</b>	<b>166175</b>	<b>166180</b>	<b>166185</b>	<b>166188</b>	<b>166193</b>	<b>166198</b>	<b>166203</b>
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	$\frac{24}{5}$	$\frac{624}{35}$		$\frac{16224}{245}$	$\frac{687}{56}$	$\frac{101062}{343}$	$\frac{331776}{625}$	$\frac{3650}{40}$	$\frac{2425488}{1715}$	$\frac{536406}{245}$	$\frac{1907712}{625}$	$\frac{839523}{160}$
3 Max. motor shaft diameter	mm 4	4		4	3	3	4	3	3	3	3	3
<b>Part Numbers</b>	<b>166157</b>	<b>166160</b>		<b>166166</b>	<b>166171</b>	<b>166176</b>	<b>166181</b>	<b>166186</b>	<b>166189</b>	<b>166194</b>	<b>166199</b>	<b>166204</b>
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	$\frac{23}{4}$	$\frac{297}{14}$		$\frac{3887}{49}$	$\frac{3312}{25}$	$\frac{38976}{1225}$	$\frac{2063}{35}$	$\frac{27984}{256}$	$\frac{9345024}{6125}$	$\frac{2066688}{675}$	$\frac{474519}{140}$	$\frac{6436349}{1024}$
3 Max. motor shaft diameter	mm 3	3		3	3	4	3	3	4	3	3	3
<b>Part Numbers</b>		<b>166161</b>		<b>166167</b>	<b>166172</b>	<b>166177</b>	<b>166182</b>		<b>166190</b>	<b>166195</b>	<b>166200</b>	
1 Reduction		23:1		86:1	159:1	411:1	636:1		1694:1	2548:1	3656:1	
2 Absolute reduction		$\frac{576}{25}$		$\frac{14976}{175}$	$\frac{1587}{10}$	$\frac{359424}{675}$	$\frac{79488}{125}$		$\frac{1162213}{686}$	$\frac{7962624}{3125}$	$\frac{457056}{125}$	
3 Max. motor shaft diameter	mm 4	4		4	3	4	3		3	4	3	
<b>Part Numbers</b>		<b>166162</b>		<b>166168</b>	<b>166173</b>	<b>166178</b>	<b>166183</b>		<b>166191</b>	<b>166196</b>	<b>166201</b>	
1 Reduction		28:1		103:1	190:1	456:1	706:1		1828:1	2623:1	4060:1	
2 Absolute reduction		$\frac{138}{5}$		$\frac{3588}{35}$	$\frac{12167}{64}$	$\frac{8940}{196}$	$\frac{15817}{224}$		$\frac{2238912}{1225}$	$\frac{2056223}{784}$	$\frac{3637933}{696}$	
3 Max. motor shaft diameter	mm 3	3		3	3	3	3		3	3	3	
4 Number of stages		1	2	2	3	3	4	4	4	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
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
7 Max. efficiency	%	80	75	75	70	70	60	60	60	50	50	50
8 Weight	g	118	162	162	194	194	226	226	226	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
10 Mass inertia	gcm <sup>2</sup>	1.5	0.8	0.8	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

\*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	137			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	137	MR	464	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	137	HED_ 5540	471/473	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	138			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	138	MR	464	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	138	HED_ 5540	471/473	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	139			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	139	MR	464	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	139	HED_ 5540	471/473	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	139	DCT 22	480	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	139	AB 28	519	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	139	HEDS 5540/AB 28	471/519	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	165			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	166			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	166	MR	464	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	166	HED_ 5540	472/474	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	228			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	228	HED_ 5540	472/475	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	228	Res 26	481	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	282			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	283			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	283			56.3	66.2	66.2	72.9	72.9	79.6	79.6	79.6	86.3	86.3	86.3	86.3

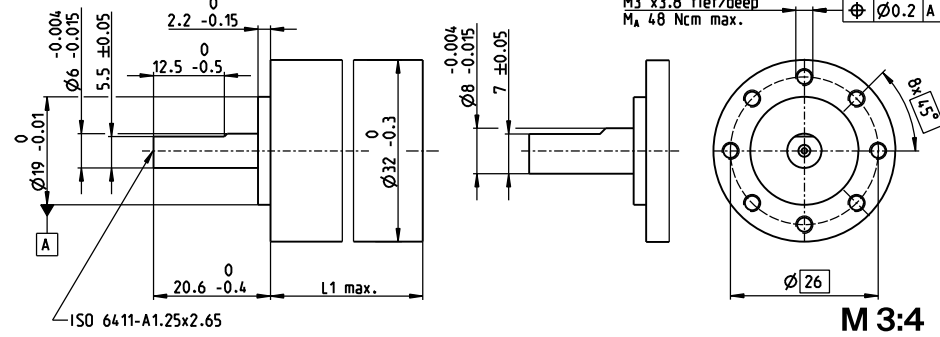
# Planetary Gearhead GP 32 AR $\varnothing 32$ mm, 0.75 Nm

for high radial loads

$\varnothing 6$  mm output shaft

$\varnothing 8$  mm output shaft

gear



## 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)

## Part Numbers

		425862	425861	425860
<b>Gearhead Data</b>				
1	Reduction	3,7:1	4,8:1	5,8:1
2	Absolute reduction	$\frac{29}{7}$	$\frac{24}{5}$	$\frac{23}{4}$
3	Max. motor shaft diameter	mm 6	4	3
	Output shaft diameter	mm 6	6	6
<b>Part Numbers</b>				
1	Reduction	3,7:1	4,8:1	5,8:1
2	Absolute reduction	$\frac{29}{7}$	$\frac{24}{5}$	$\frac{23}{4}$
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	gcm <sup>2</sup> 1.6	0.9	0.6
11	Gearhead length L1	mm 26.2	26.2	26.2

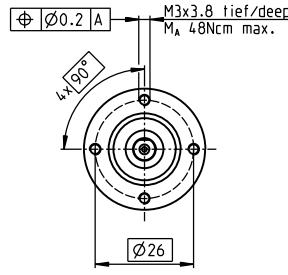
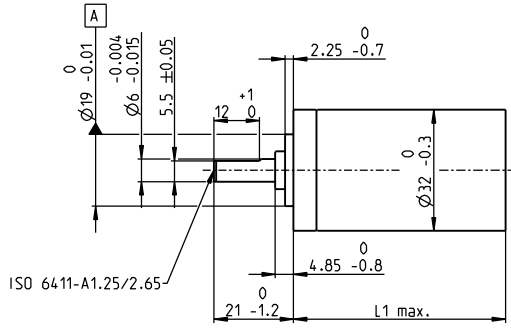


## maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts		
RE 30, 60 W	138			94.3	94.3	94.3
RE 30, 60 W	138	MR	464	105.7	105.7	105.7
RE 30, 60 W	138	HED_5540	471/475	115.1	115.1	115.1
RE 35, 90 W	139			97.3	97.3	97.3
RE 35, 90 W	139	MR	464	108.7	108.7	108.7
RE 35, 90 W	139	HED_5540	471/475	118.0	118.0	118.0
RE 35, 90 W	139	DCT 22	480	115.4	115.4	115.4
RE 35, 90 W	139	AB 28	519	133.4	133.4	133.4
RE 35, 90 W	139	HED_5540/AB 28	471/519	150.5	150.5	150.5
EC 32, 80 W	228			86.3	86.3	86.3
EC 32, 80 W	228	HED_5540	472/474	104.7	104.7	104.7
EC 32, 80 W	228	Res 26	481	106.4	106.4	106.4

# Planetary Gearhead GP 32 C $\varnothing 32$ 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

gear

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

Gearhead Data	166930	166933	166938	166939	166944	166949	166954	166959	166962	166967	166972	166977
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	$\frac{26}{7}$	$\frac{676}{49}$	$\frac{529}{16}$	$\frac{17576}{343}$	$\frac{13824}{125}$	$\frac{421824}{1715}$	$\frac{86112}{175}$	$\frac{19044}{25}$	$\frac{10123776}{8575}$	$\frac{8626176}{4375}$	$\frac{495144}{175}$	$\frac{109503}{25}$
3 Max. motor shaft diameter	mm 6	6	3	6	4	4	3	3	4	4	3	3
<b>Part Numbers</b>	<b>166931</b>	<b>166934</b>		<b>166940</b>	<b>166945</b>	<b>166950</b>	<b>166955</b>	<b>166960</b>	<b>166963</b>	<b>166968</b>	<b>166973</b>	<b>166978</b>
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	$\frac{24}{5}$	$\frac{624}{35}$		$\frac{16224}{245}$	$\frac{6877}{56}$	$\frac{101062}{343}$	$\frac{331776}{625}$	$\frac{3650}{40}$	$\frac{2425488}{1715}$	$\frac{536406}{245}$	$\frac{1907712}{625}$	$\frac{839523}{160}$
3 Max. motor shaft diameter	mm 4	4		4	3	3	4	3	3	3	3	3
<b>Part Numbers</b>	<b>166932</b>	<b>166935</b>		<b>166941</b>	<b>166946</b>	<b>166951</b>	<b>166956</b>	<b>166961</b>	<b>166964</b>	<b>166969</b>	<b>166974</b>	<b>166979</b>
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	$\frac{23}{4}$	$\frac{299}{14}$		$\frac{3887}{49}$	$\frac{3312}{25}$	$\frac{389376}{1225}$	$\frac{20631}{35}$	$\frac{27984}{256}$	$\frac{9345024}{6125}$	$\frac{2056688}{875}$	$\frac{474519}{140}$	$\frac{6436343}{1024}$
3 Max. motor shaft diameter	mm 3	3		3	3	4	3	3	3	4	3	3
<b>Part Numbers</b>		<b>166936</b>		<b>166942</b>	<b>166947</b>	<b>166952</b>	<b>166957</b>		<b>166965</b>	<b>166970</b>	<b>166975</b>	
1 Reduction		23:1		86:1	159:1	411:1	636:1		1694:1	2548:1	3656:1	
2 Absolute reduction		$\frac{576}{25}$		$\frac{14976}{175}$	$\frac{1587}{10}$	$\frac{359424}{875}$	$\frac{79488}{125}$		$\frac{1162213}{688}$	$\frac{7962524}{3125}$	$\frac{457056}{125}$	
3 Max. motor shaft diameter	mm 4	4		4	3	4	3		3	4	3	
<b>Part Numbers</b>		<b>166937</b>		<b>166943</b>	<b>166948</b>	<b>166953</b>	<b>166958</b>		<b>166966</b>	<b>166971</b>	<b>166976</b>	
1 Reduction		28:1		103:1	190:1	456:1	706:1		1828:1	2623:1	4060:1	
2 Absolute reduction		$\frac{138}{5}$		$\frac{3588}{35}$	$\frac{12167}{64}$	$\frac{8940}{196}$	$\frac{15817}{224}$		$\frac{2238912}{1225}$	$\frac{2056223}{784}$	$\frac{3637933}{696}$	
3 Max. motor shaft diameter	mm 3	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	gcm <sup>2</sup> 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

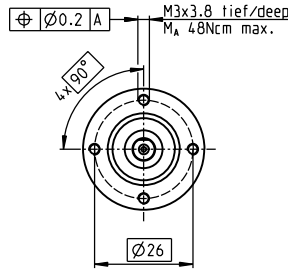
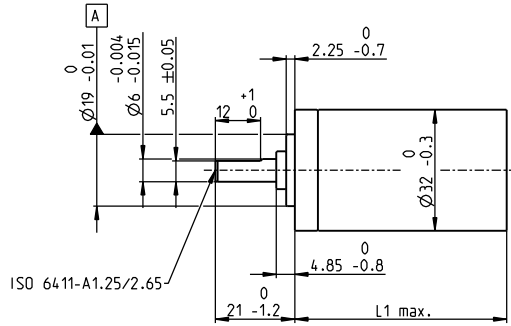
+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts									
RE 25, 10 W	134			81.1	91.0	91.0	97.7	97.7	104.4	104.4	111.1	111.1	111.1
RE 25, 10 W	134	MR	463	92.1	102.0	102.0	108.7	108.7	115.4	115.4	122.1	122.1	122.1
RE 25, 10 W	134	Enc 22	468	95.2	105.1	105.1	111.8	111.8	118.5	118.5	125.2	125.2	125.2
RE 25, 10 W	134	HED_5540	471/473	101.9	111.8	111.8	118.5	118.5	125.2	125.2	131.9	131.9	131.9
RE 25, 10 W	134	DCT 22	480	103.4	113.3	113.3	120.0	120.0	126.7	126.7	133.4	133.4	133.4
RE 25, 20 W	135			69.6	79.5	79.5	86.2	86.2	92.9	92.9	99.6	99.6	99.6
RE 25, 20 W	135	MR	463	80.6	90.5	90.5	97.2	97.2	103.9	103.9	110.6	110.6	110.6
RE 25, 20 W	135	HED_5540	471-473	90.4	100.3	100.3	107.0	107.0	113.7	113.7	120.4	120.4	120.4
RE 25, 20 W	135	DCT 22	480	91.9	101.8	101.8	108.5	108.5	115.2	115.2	121.9	121.9	121.9
RE 25, 20 W	135	AB 28	519	103.7	113.6	113.6	120.3	120.3	127.0	127.0	133.7	133.7	133.7
RE 25, 20 W	135	HED_5540/AB 28	471/519	120.9	130.8	130.8	137.5	137.5	144.2	144.2	150.9	150.9	150.9
RE 25, 20 W	136	AB 28	519	115.2	125.1	125.1	131.8	131.8	138.5	138.5	145.2	145.2	145.2
RE 25, 20 W	136	HED_5540/AB 28	471/519	132.4	142.3	142.3	149.0	149.0	155.7	155.7	162.4	162.4	162.4
RE 30, 60 W	138			94.6	104.5	104.5	111.2	111.2	117.9	117.9	124.6	124.6	124.6
RE 30, 60 W	138	MR	464	106.0	115.9	115.9	122.6	122.6	129.3	129.3	136.0	136.0	136.0
RE 30, 60 W	138	HED_5540	471/473	115.4	125.3	125.3	132.0	132.0	138.7	138.7	145.4	145.4	145.4
RE 35, 90 W	139			97.6	107.5	107.5	114.2	114.2	120.9	120.9	127.6	127.6	127.6
RE 35, 90 W	139	MR	464	109.0	118.9	118.9	125.6	125.6	132.3	132.3	139.0	139.0	139.0
RE 35, 90 W	139	HED_5540	471/473	118.3	128.2	128.2	134.9	134.9	141.6	141.6	148.3	148.3	148.3
RE 35, 90 W	139	DCT 22	480	115.7	125.6	125.6	132.3	132.3	139.0	139.0	145.7	145.7	145.7
RE 35, 90 W	139	AB 28	519	133.7	143.6	143.6	150.3	150.3	157.0	157.0	163.7	163.7	163.7
RE 35, 90 W	139	HEDS 5540/AB 28	471/519	150.9	160.8	160.8	167.5	167.5	174.2	174.2	180.9	180.9	180.9
A-max 26	161-164			71.3	81.2	81.2	87.9	87.9	94.6	94.6	101.3	101.3	101.3
A-max 26	162-164	MR	463	80.1	90.0	90.0	96.7	96.7	103.4	103.4	110.1	110.1	110.1
A-max 26	162-164	Enc 22	468	85.7	95.6	95.6	102.3	102.3	109.0	109.0	115.7	115.7	115.7
A-max 26	162-164	HED_5540	472/474	89.7	99.6	99.6	106.3	106.3	113.0	113.0	119.7	119.7	119.7
A-max 32	165			89.5	99.4	99.4	106.1	106.1	112.8	112.8	119.5	119.5	119.5
A-max 32	166			88.1	98.0	98.0	104.7	104.7	111.4	111.4	118.1	118.1	118.1
A-max 32	166	MR	464	99.3	109.2	109.2	115.9	115.9	122.6	122.6	129.3	129.3	129.3
A-max 32	166	HED_5540	472/474	108.9	118.8	118.8	125.5	125.5	132.2	132.2	138.9	138.9	138.9



# Planetary Gearhead GP 32 C Ø32 mm, 1.0–6.0 Nm

Ceramic Version

gear



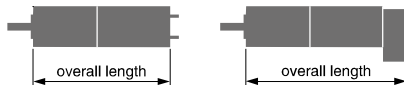
M 1:2

## 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

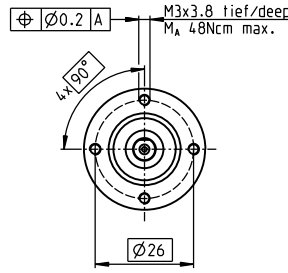
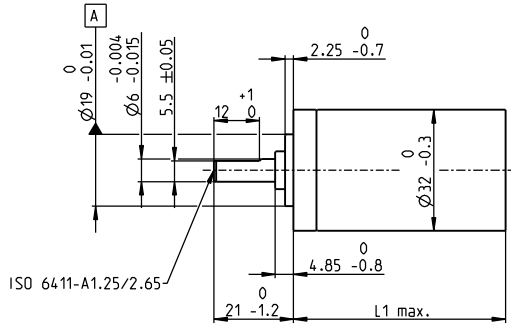
	Part Numbers											
	166930	166933	166938	166939	166944	166949	166954	166959	166962	166967	166972	166977
<b>Gearhead Data</b>												
1 Reduction	3.7:1	14:1	33:1	51:1	111:1	246:1	492:1	762:1	1181:1	1972:1	2829:1	4380:1
2 Absolute reduction	26/1	676/49	529/16	1757/343	13824/125	421824/1715	86112/175	19044/25	10123776/6575	8626176/4375	495144/175	109503/25
3 Max. motor shaft diameter	mm 6	6	3	6	4	4	3	3	4	4	3	3
<b>Part Numbers</b>	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	6877/66	101062/343	331776/625	3650/40	2425488/1715	536408/245	1907712/625	839523/160
3 Max. motor shaft diameter	mm 4	4		4	3	3	4	3	3	3	3	3
<b>Part Numbers</b>	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	2066888/875	474513/140	6436343/1024
3 Max. motor shaft diameter	mm 3	3		3	3	4	3	3	4	3	3	3
<b>Part Numbers</b>		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	
<b>Part Numbers</b>		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		139/5		3589/35	12167/64	89401/96	15817/224		2238917/1225	2066223/84	3637933/696	
3 Max. motor shaft diameter		mm 3		3	3	3	3		3	3	3	
4 Number of stages		1	2	3	3	4	4		5	5	5	
5 Max. continuous torque	Nm	1	3	3	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 Max. efficiency	%	80	75	75	70	70	60		60	50	50	
8 Weight	g	118	162	162	194	194	226		226	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	
10 Mass inertia	gcm <sup>2</sup>	1.5	0.8	0.8	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	56.5	56.5	



maxon Modular System													
+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts									
EC 32, 80 W	228			86.6	96.5	96.5	103.2	103.2	109.9	109.9	116.6	116.6	116.6
EC 32, 80 W	228	HED_5540	472/475	105.0	114.9	114.9	121.6	121.6	128.3	128.3	135.0	135.0	135.0
EC 32, 80 W	228	Res 26	481	106.7	116.6	116.6	123.3	123.3	130.0	130.0	136.7	136.7	136.7
EC-max 22, 25 W	239			75.1	85.0	85.0	91.7	91.7	98.4	98.4	105.1	105.1	105.1
EC-max 22, 25 W	239	MR	462	84.8	94.7	94.7	101.4	101.4	108.1	108.1	114.8	114.8	114.8
EC-max 22, 25 W	239	AB 20	516	110.7	120.5	120.5	127.2	127.2	133.9	133.9	140.6	140.6	140.6
EC-max 30, 40 W	240			68.9	78.8	78.8	85.5	85.5	92.2	92.2	98.9	98.9	98.9
EC-max 30, 40 W	240	MR	463	81.1	91.0	91.0	97.7	97.7	104.4	104.4	111.1	111.1	111.1
EC-max 30, 40 W	240	HEDL 5540	474	89.5	99.4	99.4	106.1	106.1	112.8	112.8	119.5	119.5	119.5
EC-max 30, 40 W	240	AB 20	516	104.5	114.4	114.4	121.1	121.1	127.8	127.8	134.5	134.5	134.5
EC-max 30, 40 W	240	HEDL 5540/AB 20	475/516	125.1	135.0	135.0	141.7	141.7	148.4	148.4	155.1	155.1	155.1
EC-max 30, 60 W	241			90.9	100.8	100.8	107.4	107.4	114.1	114.1	120.8	120.8	120.8
EC-max 30, 60 W	241	MR	463	103.1	113.0	113.0	119.7	119.7	126.4	126.4	133.1	133.1	133.1
EC-max 30, 60 W	241	HEDL 5540	475	111.5	121.4	121.4	128.0	128.0	134.7	134.7	141.4	141.4	141.4
EC-max 30, 60 W	241	AB 20	516	126.5	136.4	136.4	143.0	143.0	149.7	149.7	156.4	156.4	156.4
EC-max 30, 60 W	241	HEDL 5540/AB 20	475/516	147.9	157.2	157.2	163.8	163.8	170.5	170.5	177.2	177.2	177.2
EC-4pole 22, 90 W	247			75.2	85.1	85.1	91.8	91.8	98.5	98.5	105.2	105.2	105.2
EC-4pole 22, 90 W	247	16 EASY/XT/Abs.	449-453	87.4	97.3	97.3	104.0	104.0	110.7	110.7	117.4	117.4	117.4
EC-4pole 22, 90 W	247	16 EASY Abs. XT	455	87.9	97.8	97.8	104.5	104.5	111.2	111.2	117.9	117.9	117.9
EC-4pole 22, 90 W	247	16 RIO	466	85.9	95.8	95.8	102.5	102.5	109.2	109.2	115.9	115.9	115.9
EC-4pole 22, 90 W	247	AEDL/HEDL	469/475	96.7	106.6	106.6	113.3	113.3	120.0	120.0	126.7	126.7	126.7
EC-4pole 22, 120 W	248			92.6	102.5	102.5	109.2	109.2	115.9	115.9	122.6	122.6	122.6
EC-4pole 22, 120 W	248	16 EASY/XT/Abs.	449-453	104.8	114.7	114.7	121.4	121.4	128.1	128.1	134.8	134.8	134.8
EC-4pole 22, 120 W	248	16 EASY Abs. XT	455	105.3	115.3	115.3	121.9	121.9	128.6	128.6	135.3	135.3	135.3
EC-4pole 22, 120 W	248	16 RIO	466	103.3	113.3	113.3	119.9	119.9	126.6	126.6	133.3	133.3	133.3
EC-4pole 22, 120 W	248	AEDL/HEDL	469/475	114.1	124.0	124.0	130.7	130.7	137.4	137.4	144.1	144.1	144.1
EC 32 flat, 15 W	282			44.5	54.4	54.4	61.1	61.1	67.8	67.8	74.5	74.5	74.5
EC 32 flat IE, IP 00	283			54.6	64.5	64.5	71.2	71.2	77.9	77.9	84.6	84.6	84.6
EC 32 flat IE, IP 40	283			56.3	66.2	66.2	72.9	72.9	79.6	79.6	86.3	86.3	86.3

# Planetary Gearhead GP 32 C $\varnothing 32$ 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

gear

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

Gearhead Data	166930	166933	166938	166939	166944	166949	166954	166959	166962	166967	166972	166977
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	$\frac{26}{7}$	$\frac{676}{49}$	$\frac{529}{16}$	$\frac{17576}{343}$	$\frac{13824}{125}$	$\frac{421824}{1715}$	$\frac{86112}{175}$	$\frac{19044}{25}$	$\frac{10123776}{8575}$	$\frac{8626176}{4375}$	$\frac{495144}{175}$	$\frac{109503}{25}$
3 Max. motor shaft diameter	mm 6	6	3	6	4	4	3	3	4	4	3	3
<b>Part Numbers</b>	<b>166931</b>	<b>166934</b>		<b>166940</b>	<b>166945</b>	<b>166950</b>	<b>166955</b>	<b>166960</b>	<b>166963</b>	<b>166968</b>	<b>166973</b>	<b>166978</b>
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	$\frac{24}{5}$	$\frac{624}{35}$		$\frac{16224}{245}$	$\frac{687}{56}$	$\frac{101062}{343}$	$\frac{331776}{625}$	$\frac{3650}{40}$	$\frac{2425488}{1715}$	$\frac{536406}{245}$	$\frac{1907712}{625}$	$\frac{839523}{160}$
3 Max. motor shaft diameter	mm 4	4		4	3	3	4	3	3	3	3	3
<b>Part Numbers</b>	<b>166932</b>	<b>166935</b>		<b>166941</b>	<b>166946</b>	<b>166951</b>	<b>166956</b>	<b>166961</b>	<b>166964</b>	<b>166969</b>	<b>166974</b>	<b>166979</b>
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	$\frac{23}{4}$	$\frac{297}{14}$		$\frac{3887}{49}$	$\frac{3312}{25}$	$\frac{389376}{1225}$	$\frac{2063}{65}$	$\frac{27984}{256}$	$\frac{9345024}{6125}$	$\frac{2066688}{675}$	$\frac{474519}{140}$	$\frac{6436349}{1024}$
3 Max. motor shaft diameter	mm 3	3		3	3	4	3	3	4	3	3	3
<b>Part Numbers</b>		<b>166936</b>		<b>166942</b>	<b>166947</b>	<b>166952</b>	<b>166957</b>		<b>166965</b>	<b>166970</b>	<b>166975</b>	
1 Reduction		23:1		86:1	159:1	411:1	636:1		1694:1	2548:1	3656:1	
2 Absolute reduction		$\frac{576}{25}$		$\frac{14976}{175}$	$\frac{1587}{10}$	$\frac{359424}{675}$	$\frac{79488}{125}$		$\frac{1162213}{686}$	$\frac{7962624}{3125}$	$\frac{457059}{125}$	
3 Max. motor shaft diameter	mm 4	4		4	3	4	3		3	4	3	
<b>Part Numbers</b>		<b>166937</b>		<b>166943</b>	<b>166948</b>	<b>166953</b>	<b>166958</b>		<b>166966</b>	<b>166971</b>	<b>166976</b>	
1 Reduction		28:1		103:1	190:1	456:1	706:1		1828:1	2623:1	4060:1	
2 Absolute reduction		$\frac{138}{5}$		$\frac{3588}{35}$	$\frac{12167}{64}$	$\frac{8940}{196}$	$\frac{15817}{224}$		$\frac{2238912}{1225}$	$\frac{2056223}{784}$	$\frac{3637933}{696}$	
3 Max. motor shaft diameter	mm 3	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	gcm <sup>2</sup> 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



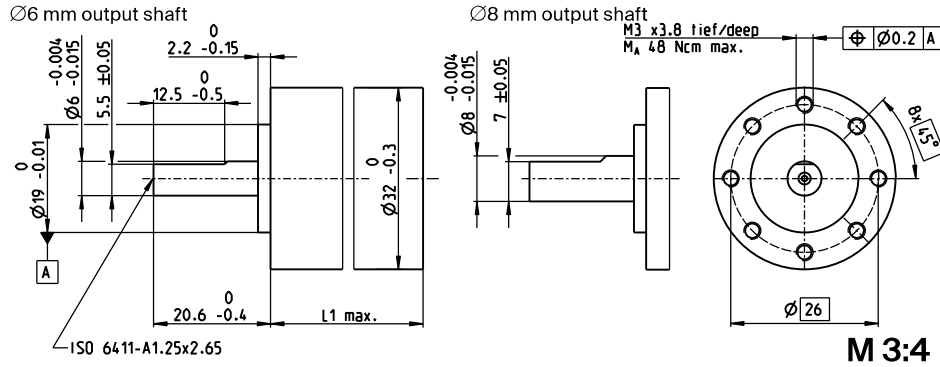
## maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts										
EC-i 30, 20 W	257			68.6	78.5	78.5	85.2	85.2	91.9	91.9	91.9	98.6	98.6	98.6
EC-i 30, 30 W	258			68.8	78.7	78.7	85.4	85.4	92.1	92.1	92.1	98.8	98.8	98.8
EC-i 30, 30 W	258	16 EASY/Abs.	449-453	80.5	90.4	90.4	97.1	97.1	103.8	103.8	103.8	110.5	110.5	110.5
EC-i 30, 30 W	258	16 RIO	466	79.0	88.9	88.9	95.6	95.6	102.3	102.3	102.3	109.0	109.0	109.0
EC-i 30, 30 W	258	AEDL/HEDL	469/476	89.5	99.4	99.4	106.1	106.1	112.8	112.8	112.8	119.5	119.5	119.5
EC-i 30, 45 W	259			68.8	78.7	78.7	85.4	85.4	92.1	92.1	92.1	98.8	98.8	98.8
EC-i 30, 45 W	259	16 EASY/Abs.	449-453	80.5	90.4	90.4	97.1	97.1	103.8	103.8	103.8	110.5	110.5	110.5
EC-i 30, 45 W	259	16 RIO	466	79.0	88.9	88.9	95.6	95.6	102.3	102.3	102.3	109.0	109.0	109.0
EC-i 30, 45 W	259	AEDL/HEDL	469/476	89.5	99.4	99.4	106.1	106.1	112.8	112.8	112.8	119.5	119.5	119.5
EC-i 30, 50 W	260			90.8	100.7	100.7	107.4	107.4	114.1	114.1	114.1	120.8	120.8	120.8
EC-i 30, 50 W	260	16 EASY/Abs.	450-454	102.5	112.4	112.4	119.1	119.1	125.8	125.8	125.8	132.5	132.5	132.5
EC-i 30, 50 W	260	16 RIO	467	101.0	110.9	110.9	117.6	117.6	124.3	124.3	124.3	131.0	131.0	131.0
EC-i 30, 50 W	260	AEDL/HEDL	469/476	111.5	121.4	121.4	128.1	128.1	134.8	134.8	134.8	141.5	141.5	141.5
EC-i 30, 75 W	261			90.8	100.7	100.7	107.4	107.4	114.1	114.1	114.1	120.8	120.8	120.8
EC-i 30, 75 W	261	16 EASY/Abs.	450-454	102.5	112.4	112.4	119.1	119.1	125.8	125.8	125.8	132.5	132.5	132.5
EC-i 30, 75 W	261	16 RIO	467	101.0	110.9	110.9	117.6	117.6	124.3	124.3	124.3	131.0	131.0	131.0
EC-i 30, 75 W	261	AEDL/HEDL	469/476	111.5	121.4	121.4	128.1	128.1	134.8	134.8	134.8	141.5	141.5	141.5
EC-i 40, 50 W	262			58.3	68.2	68.2	74.9	74.9	81.6	81.6	81.6	88.3	88.3	88.3
EC-i 40, 50 W	262	16 EASY/Abs.	450-454	70.0	79.9	79.9	86.6	86.6	93.3	93.3	93.3	100.0	100.0	100.0
EC-i 40, 50 W	262	16 RIO	467	72.8	82.7	82.7	89.4	89.4	96.1	96.1	96.1	102.8	102.8	102.8
EC-i 40, 50 W	262	AEDL/HEDL	470/477	81.3	91.2	91.2	97.9	97.9	104.6	104.6	104.6	111.3	111.3	111.3
EC-i 40, 70 W	264			68.3	78.2	78.2	84.9	84.9	91.6	91.6	91.6	98.3	98.3	98.3
EC-i 40, 70 W	264	16 EASY/Abs.	450-454	80.0	89.9	89.9	96.6	96.6	103.3	103.3	103.3	110.0	110.0	110.0
EC-i 40, 70 W	264	16 RIO	467	82.8	92.7	92.7	99.4	99.4	106.1	106.1	106.1	112.8	112.8	112.8
EC-i 40, 70 W	264	AEDL/HEDL	470/477	91.3	101.2	101.2	107.9	107.9	114.6	114.6	114.6	121.3	121.3	121.3

# Planetary Gearhead GP 32 CR Ø32 mm, 1.0 Nm

for high radial loads, ceramic version

gear

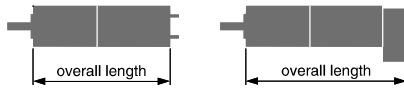


Technical Data	
Planetary Gearhead	straight teeth
Output shaft	stainless steel
Bearing at output	ball bearing
Radial play, 5 mm from flange	max. 0.14 mm
Axial play	max. 0.1 mm
Max. axial load (dynamic)	120 N
Max. force for press fits	120 N
Direction of rotation, drive to output	=
Max. continuous input 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)

## Part Numbers

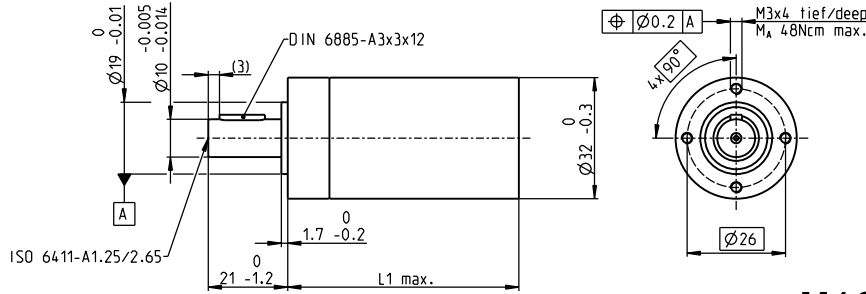
		425240	425241	425242
<b>Gearhead Data</b>				
1	Reduction	3,7:1	4,8:1	5,8:1
2	Absolute reduction	$\frac{29}{7}$	$\frac{24}{5}$	$\frac{23}{4}$
3	Max. motor shaft diameter	mm 6	4	3
	Output shaft diameter	mm 6	6	6
<b>Part Numbers</b>				
1	Reduction	3,7:1	4,8:1	5,8:1
2	Absolute reduction	$\frac{29}{7}$	$\frac{24}{5}$	$\frac{23}{4}$
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	gcm <sup>2</sup> 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	138			94,3 94,3 94,3
RE 30, 60 W	138	MR	464	105,7 105,7 105,7
RE 30, 60 W	138	HED_5540	471/473	115,1 115,1 115,1
RE 35, 90 W	139			97,3 97,3 97,3
RE 35, 90 W	139	MR	464	108,7 108,7 108,7
RE 35, 90 W	139	HED_5540	471/473	118,0 118,0 118,0
RE 35, 90 W	139	DCT 22	480	115,4 115,4 115,4
RE 35, 90 W	139	AB 28	519	133,4 133,4 133,4
RE 35, 90 W	139	HED_5540/AB 28	471/519	150,5 150,5 150,5
EC 32, 80 W	228			86,3 86,3 86,3
EC 32, 80 W	228	HED_5540	472/474	104,7 104,7 104,7
EC 32, 80 W	228	Res 26	481	106,4 106,4 106,4

# Planetary Gearhead GP 32 HP $\varnothing 32$ 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

gear

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

Gearhead Data	320247	326663	326664	326668	326672	324947	324952
1 Reduction	14:1	33:1	51:1	111:1	190:1	456:1	706:1
2 Absolute reduction	$\frac{676}{49}$	$\frac{529}{16}$	$\frac{17576}{343}$	$\frac{13824}{125}$	$\frac{456976}{2401}$	$\frac{89401}{196}$	$\frac{15817}{224}$
3 Max. motor shaft diameter mm	6	3	6	4	6	3	3
<b>Part Numbers</b>	<b>326659</b>		<b>326665</b>	<b>326669</b>	<b>324942</b>	<b>324948</b>	<b>324953</b>
1 Reduction	18:1		66:1	123:1	246:1	492:1	762:1
2 Absolute reduction	$\frac{624}{35}$		$\frac{16224}{245}$	$\frac{6877}{56}$	$\frac{421824}{1715}$	$\frac{86112}{175}$	$\frac{19044}{25}$
3 Max. motor shaft diameter mm	6		6	3	6	6	4
<b>Part Numbers</b>	<b>326660</b>		<b>326666</b>	<b>326670</b>	<b>324944</b>	<b>324949</b>	<b>324954</b>
1 Reduction	21:1		79:1	132:1	295:1	531:1	913:1
2 Absolute reduction	$\frac{299}{14}$		$\frac{3887}{49}$	$\frac{3312}{25}$	$\frac{101062}{343}$	$\frac{331776}{625}$	$\frac{36504}{40}$
3 Max. motor shaft diameter mm	6		6	4	6	4	3
<b>Part Numbers</b>	<b>326661</b>		<b>326667</b>	<b>326671</b>	<b>324945</b>	<b>324950</b>	
1 Reduction	23:1		86:1	159:1	318:1	589:1	
2 Absolute reduction	$\frac{579}{25}$		$\frac{14976}{175}$	$\frac{1587}{10}$	$\frac{389376}{1225}$	$\frac{20633}{35}$	
3 Max. motor shaft diameter mm	4		6	3	6	6	
<b>Part Numbers</b>	<b>326662</b>		<b>320297</b>		<b>324946</b>	<b>324951</b>	
1 Reduction	28:1		103:1		411:1	636:1	
2 Absolute reduction	$\frac{138}{5}$		$\frac{3588}{35}$		$\frac{359424}{675}$	$\frac{79488}{125}$	
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 gcm <sup>2</sup>	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



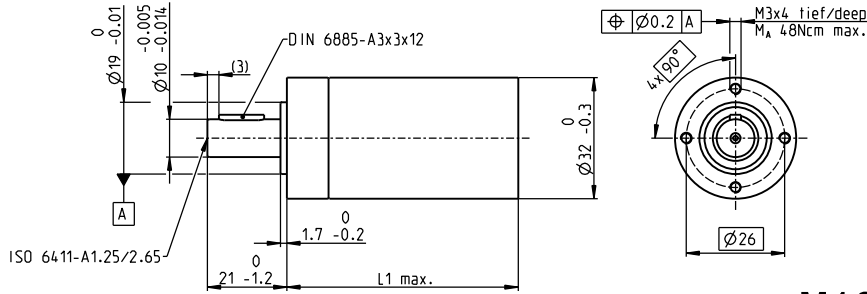
## maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts						
RE 35, 90 W	139			119.4	119.4	126.1	126.1	132.8	132.8	132.8
RE 35, 90 W	139	MR	464	130.8	130.8	137.5	137.5	144.2	144.2	144.0
RE 35, 90 W	139	HED_ 5540	471/473	140.1	140.1	146.8	146.8	153.5	153.5	153.5
RE 35, 90 W	139	DCT 22	480	137.5	137.5	144.2	144.2	150.9	150.9	150.9
RE 35, 90 W	139	AB 28	519	155.5	155.5	162.2	162.2	168.9	168.9	168.9
RE 35, 90 W	139	HEDS 5540/AB 28	471/519	172.7	172.7	179.4	179.4	186.1	186.1	186.1
EC-max 30, 40 W	240			90.2	90.2	96.9	96.9	103.6	103.6	103.6
EC-max 30, 40 W	240	MR	463	102.4	102.4	109.1	109.1	115.8	115.8	115.8
EC-max 30, 40 W	240	HEDL 5540	475	110.8	110.8	117.5	117.5	124.2	124.2	124.2
EC-max 30, 40 W	240	AB 20	516	125.8	125.8	132.5	132.5	139.2	139.2	139.2
EC-max 30, 40 W	240	HEDL 5540/AB 20	475/516	146.4	146.4	153.1	153.1	159.8	159.8	159.8
EC-max 30, 60 W	241			112.2	112.2	118.9	118.9	125.6	125.6	125.6
EC-max 30, 60 W	241	MR	463	124.4	124.4	131.1	131.1	137.8	137.8	137.8
EC-max 30, 60 W	241	HEDL 5540	475	132.8	132.8	139.5	139.5	146.2	146.2	146.2
EC-max 30, 60 W	241	AB 20	516	147.8	147.8	154.5	154.5	161.2	161.2	161.2
EC-max 30, 60 W	241	HEDL 5540/AB 20	475/516	168.4	168.4	175.1	175.1	181.8	181.8	181.8
EC-4pole 30, 100 W	249			95.2	95.2	101.9	101.9	108.6	108.6	108.6
EC-4pole 30, 100 W	249	16 EASY/XT/Abs.	449-453	109.1	109.1	115.8	115.8	122.5	122.5	122.5
EC-4pole 30, 100 W	249	16 EASY Abs. XT	455	109.6	109.6	116.3	116.3	123.0	123.0	123.0
EC-4pole 30, 100 W	249	16 RIO	466	107.6	107.6	114.3	114.3	121.0	121.0	121.0
EC-4pole 30, 100 W	249	AEDL/HEDL	469/475	115.8	115.8	122.5	122.5	129.2	129.2	129.2
EC-4pole 30, 100 W	249	AB 20	516	131.4	131.4	138.1	138.1	144.8	144.8	144.8
EC-4pole 30, 100 W	249	16 EASY/XT/Abs./AB 20	449/516	145.5	145.5	152.2	152.2	158.9	158.9	158.9
EC-4pole 30, 100 W	249	16 EASY Abs. XT/AB 20	455/516	146.0	146.0	153.0	153.0	159.4	159.4	159.4
EC-4pole 30, 100 W	249	16 RIO/AB 20	466/516	144.0	144.0	151.0	151.0	157.4	157.4	157.4
EC-4pole 30, 100 W	249	AEDL/HEDL/AB 20	469/516	152.2	152.2	158.9	158.9	165.6	165.6	165.6

# Planetary Gearhead GP 32 HP $\varnothing 32$ mm, 4.0–8.0 Nm

High Power

gear



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

Gearhead Data	Part Numbers							
	320247	326663	326664	326668	326672	324947	324952	
1 Reduction	14:1	33:1	51:1	111:1	190:1	456:1	706:1	
2 Absolute reduction	$\frac{676}{49}$	$\frac{529}{16}$	$\frac{17576}{343}$	$\frac{13824}{125}$	$\frac{456976}{2401}$	$\frac{89401}{196}$	$\frac{15817}{224}$	
3 Max. motor shaft diameter	mm 6	3	6	4	6	3	3	
<b>Part Numbers</b>	<b>326659</b>		<b>326665</b>	<b>326669</b>	<b>324942</b>	<b>324948</b>	<b>324953</b>	
1 Reduction	18:1		66:1	123:1	246:1	492:1	762:1	
2 Absolute reduction	$\frac{624}{35}$		$\frac{16224}{245}$	$\frac{6877}{56}$	$\frac{421824}{1715}$	$\frac{86112}{175}$	$\frac{19044}{25}$	
3 Max. motor shaft diameter	mm 6		6	3	6	6	4	
<b>Part Numbers</b>	<b>326660</b>		<b>326666</b>	<b>326670</b>	<b>324944</b>	<b>324949</b>	<b>324954</b>	
1 Reduction	21:1		79:1	132:1	295:1	531:1	913:1	
2 Absolute reduction	$\frac{299}{14}$		$\frac{3887}{49}$	$\frac{3312}{25}$	$\frac{101062}{343}$	$\frac{331776}{625}$	$\frac{36501}{40}$	
3 Max. motor shaft diameter	mm 6		6	4	6	4	3	
<b>Part Numbers</b>	<b>326661</b>		<b>326667</b>	<b>326671</b>	<b>324945</b>	<b>324950</b>		
1 Reduction	23:1		86:1	159:1	318:1	589:1		
2 Absolute reduction	$\frac{576}{25}$		$\frac{14976}{175}$	$\frac{1587}{10}$	$\frac{389376}{1225}$	$\frac{20631}{35}$		
3 Max. motor shaft diameter	mm 4		6	3	6	6		
<b>Part Numbers</b>	<b>326662</b>		<b>320297</b>		<b>324946</b>	<b>324951</b>		
1 Reduction	28:1		103:1		411:1	636:1		
2 Absolute reduction	$\frac{138}{5}$		$\frac{3588}{35}$		$\frac{359424}{675}$	$\frac{79488}{125}$		
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	gcm <sup>2</sup> 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	

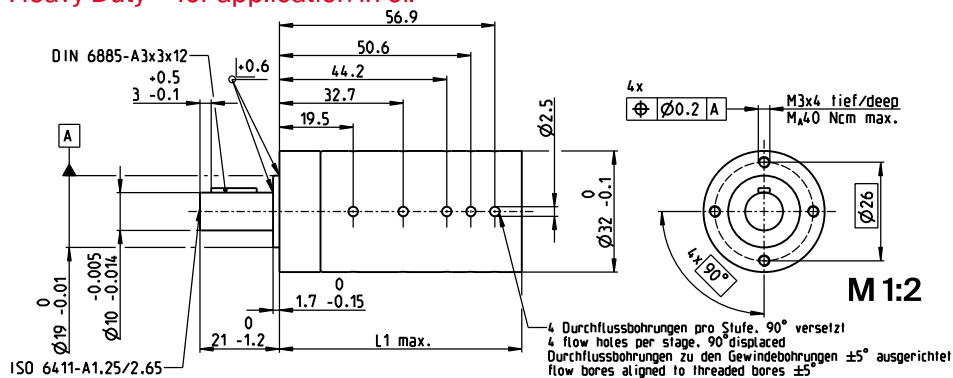


maxon Modular System										
+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts						
EC-4pole 30, 200 W	251			112,2	112,2	118,9	118,9	125,6	125,6	125,6
EC-4pole 30, 200 W	251	16 EASY/XT/Abs.	449/453	126,1	126,1	132,8	132,8	139,5	139,5	139,5
EC-4pole 30, 200 W	251	16 EASY Abs. XT	455	126,6	126,6	133,3	133,3	140,0	140,0	140,0
EC-4pole 30, 200 W	251	16 RIO	466	124,6	124,4	131,3	131,3	138,0	138,0	138,0
EC-4pole 30, 200 W	251	HEDL 5540	475	132,8	132,8	139,5	139,5	146,2	146,2	146,2
EC-4pole 30, 200 W	251	AB 20	516	148,4	148,4	155,1	155,1	161,8	161,8	161,8
EC-4pole 30, 200 W	251	16 EASY/XT/Abs./AB 20	449/516	162,5	162,5	169,2	169,2	175,9	175,9	175,9
EC-4pole 30, 200 W	251	16 EASY Abs. XT/AB 20	455/516	163,0	163,0	169,7	169,7	176,4	176,4	176,4
EC-4pole 30, 200 W	251	16 RIO/AB 20	466/516	161,0	161,0	167,7	167,7	174,4	174,4	174,4
EC-4pole 30, 200 W	251	HEDL 5540/AB 20	475/516	169,2	169,2	175,9	175,9	182,6	182,6	182,6



# Planetary Gearhead GP 32 HD $\varnothing 32$ 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

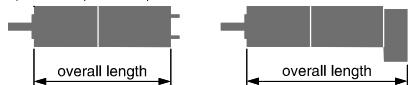
gear

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

Gearhead Data (provisional)	526077	526080	526086	526092	526095	526101	526106	526112	526117	526123
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	$\frac{29}{7}$	$\frac{678}{49}$	$\frac{17578}{343}$	$\frac{6877}{56}$	$\frac{456976}{2401}$	$\frac{8612}{175}$	$\frac{11881376}{16807}$	$\frac{1162213}{686}$	$\frac{7962624}{3125}$	$\frac{3637933}{686}$
3 Max. motor shaft diameter	mm 6	6	6	3	6	6	6	6	4	6
<b>Part Numbers</b>	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	$\frac{24}{5}$	$\frac{624}{35}$	$\frac{16224}{245}$	$\frac{3312}{25}$	$\frac{421824}{1715}$	$\frac{331776}{625}$	$\frac{10967424}{12005}$	$\frac{2238912}{1225}$	$\frac{2056223}{784}$	$\frac{109503}{25}$
3 Max. motor shaft diameter	mm 4	6	6	4	6	4	6	6	6	4
<b>Part Numbers</b>	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	$\frac{23}{4}$	$\frac{289}{14}$	$\frac{3887}{49}$	$\frac{1587}{10}$	$\frac{101062}{343}$	$\frac{20631}{35}$	$\frac{2627612}{2401}$	$\frac{8626176}{4375}$	$\frac{495144}{175}$	$\frac{839523}{160}$
3 Max. motor shaft diameter	mm 3	6	6	3	6	6	6	4	6	4
<b>Part Numbers</b>	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	$\frac{578}{25}$	$\frac{14978}{175}$		$\frac{389376}{1225}$	$\frac{79488}{125}$	$\frac{10123776}{8575}$	$\frac{536406}{245}$	$\frac{1907712}{625}$	$\frac{6436343}{1024}$	
3 Max. motor shaft diameter	mm 4	6		6	4	6	6	4	3	
<b>Part Numbers</b>	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	$\frac{138}{5}$	$\frac{3588}{35}$		$\frac{359424}{875}$	$\frac{19044}{25}$	$\frac{2425488}{1715}$	$\frac{2066688}{875}$	$\frac{474513}{140}$		
3 Max. motor shaft diameter	mm 4	6		6	4	6	6	6		
<b>Part Numbers</b>	526085*	526091		526100		526111		526122		
1 Reduction	33:1	111:1		456:1		1526:1		3656:1		
2 Absolute reduction	$\frac{529}{16}$	$\frac{13824}{125}$		$\frac{89407}{196}$		$\frac{9345024}{6125}$		$\frac{457056}{125}$		
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 <sup>1)</sup>	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	gcm <sup>2</sup> 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 32.9	45.3	55.1	55.1	61.6	61.6	68.1	68.1	68.1	68.1
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

<sup>1)</sup> Reduced expected life span



## maxon Modular System

+ Motor	Page	+ Sensor/Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts
EC-4pole 32 HD oil, A	253			194.0 206.5 216.5 216.5 223.0 223.0 229.5 229.5 229.5
EC-4pole 32 HD oil, B	253			174.0 186.5 196.5 196.5 203.0 203.0 209.5 209.5 209.5

<sup>\*)</sup> Overall length + 2 mm

## Application

### General

- 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

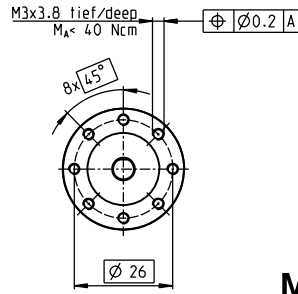
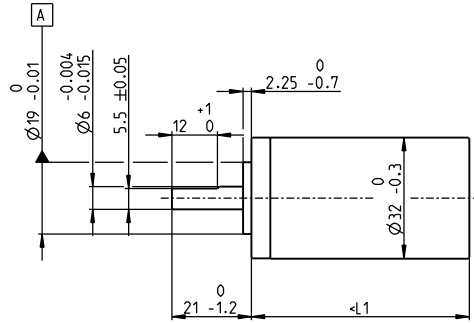
## Important Notice

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.

# Koaxdrive KD 32 Ø32 mm, 1.0–4.5 Nm

Low Noise

gear



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

Gearhead Data	354722	354725	354962	354730	354731	354734	354737	354963	354742
1 Reduction	11:1	41:1	82:1	158:1	152:1	253:1	392:1	705:1	1091:1
2 Absolute reduction	$\frac{1}{1}$	$\frac{286}{7}$	$\frac{408}{5}$	$\frac{792}{5}$	$\frac{7436}{49}$	$\frac{6336}{25}$	$\frac{9792}{25}$	$\frac{9867}{14}$	$\frac{17457}{16}$
7 Max. efficiency	% 78	70	65	61	63	63	59	55	55
10 Mass inertia	gcm <sup>2</sup> 0.65	0.60	0.60	0.35	0.60	0.60	0.35	0.35	0.22
<b>Part Numbers</b>	<b>354723</b>	<b>354726</b>	<b>354728</b>	<b>354744</b>	<b>354732</b>	<b>354735</b>	<b>354738</b>	<b>354740</b>	
1 Reduction	17:1	53:1	98:1	190:1	196:1	304:1	455:1	760:1	
2 Absolute reduction	$\frac{17}{1}$	$\frac{264}{5}$	$\frac{391}{4}$	$\frac{759}{4}$	$\frac{6864}{35}$	$\frac{1518}{5}$	$\frac{22308}{49}$	$\frac{19008}{25}$	
7 Max. efficiency	% 72	70	65	65	63	63	55	55	
10 Mass inertia	gcm <sup>2</sup> 0.38	0.60	0.35	0.35	0.60	0.60	0.22	0.22	
<b>Part Numbers</b>	<b>354724</b>	<b>354727</b>	<b>354729</b>		<b>354733</b>	<b>354736</b>	<b>354739</b>	<b>354741</b>	
1 Reduction	33:1	63:1	123:1		235:1	364:1	588:1	911:1	
2 Absolute reduction	$\frac{33}{1}$	$\frac{442}{7}$	$\frac{859}{7}$		$\frac{11492}{49}$	$\frac{5819}{16}$	$\frac{20592}{35}$	$\frac{4554}{5}$	
7 Max. efficiency	% 68	70	61		63	63	59	55	
10 Mass inertia	gcm <sup>2</sup> 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	134/136			95.3	112.5	112.5	112.5	122.2	122.2	122.2	122.2
RE 25	134/136	MR	463	106.3	123.5	123.5	123.5	133.2	133.2	133.2	133.2
RE 25	134/136	Enc 22	468	109.4	126.6	126.6	126.6	136.3	136.3	136.3	136.3
RE 25	134/136	HEDL_5540	471/473	116.1	133.3	133.3	133.3	143.0	143.0	143.0	143.0
RE 25	134/136	DCT 22	480	117.6	134.8	134.8	134.8	144.5	144.5	144.5	144.5
RE 25, 20 W	135			83.8	101.0	101.0	101.0	110.7	110.7	110.7	110.7
RE 25, 20 W	135	MR	463	94.8	112.0	112.0	112.0	121.7	121.7	121.7	121.7
RE 25, 20 W	135	HEDL_5540	472/473	104.6	121.8	121.8	121.8	131.5	131.5	131.5	131.5
RE 25, 20 W	135	DCT 22	480	106.1	123.3	123.3	123.3	133.0	133.0	133.0	133.0
RE 25, 20 W	135	AB 28	519	117.9	135.1	135.1	135.1	144.8	144.8	144.8	144.8
RE 25, 20 W	135	HEDL_5540/AB 28	472/519	135.1	152.3	152.3	152.3	162.0	162.0	162.0	162.0
RE 30, 60 W	138			108.8	126.0	126.0	126.0	135.7	135.7	135.7	135.7
RE 30, 60 W	138	MR	464	120.2	137.4	137.4	137.4	147.1	147.1	147.1	147.1
RE 30, 60 W	138	HEDL 5540	473	129.6	146.8	146.8	146.8	156.5	156.5	156.5	156.5
EC-max 22, 12 W	238			72.8	90.0	90.0	90.0	99.7	99.7	99.7	99.7
EC-max 22, 12 W	238	MR	462	82.4	99.6	99.6	99.6	109.3	109.3	109.3	109.3
EC-max 22, 12 W	238	AB 20	516	108.4	125.6	125.6	125.6	135.3	135.3	135.3	135.3
EC-max 22, 25 W	239			89.3	106.5	106.5	106.5	116.2	116.2	116.2	116.2
EC-max 22, 25 W	239	MR	462	98.9	116.1	116.1	116.1	125.8	125.8	125.8	125.8
EC-max 22, 25 W	239	AB 20	516	125.0	142.2	142.2	142.2	151.9	151.9	151.9	151.9
EC-max 30, 40 W	240			82.8	100.0	100.0	100.0	109.7	109.7	109.7	109.7
EC-max 30, 40 W	240	MR	463	95.0	112.2	112.2	112.2	121.9	121.9	121.9	121.9
EC-max 30, 40 W	240	HEDL 5540	475	103.4	120.6	120.6	120.6	130.3	130.3	130.3	130.3
EC-max 30, 40 W	240	AB 20	516	118.4	135.6	135.6	135.6	145.3	145.3	145.3	145.3
EC-max 30, 40 W	240	HEDL 5540/AB 20	475/516	139.2	156.2	156.2	156.2	165.8	165.8	165.8	165.8
EC-max 30, 60 W	241			104.8	122.0	122.0	122.0	131.7	131.7	131.7	131.7
EC-max 30, 60 W	241	MR	463	117.0	134.2	134.2	134.2	143.9	143.9	143.9	143.9
EC-max 30, 60 W	241	HEDL 5540	475	125.4	142.6	142.6	142.6	152.3	152.3	152.3	152.3
EC-max 30, 60 W	241	AB 20	516	140.4	157.6	157.6	157.6	167.3	167.3	167.3	167.3
EC-max 30, 60 W	241	HEDL 5540/AB 20	475/516	161.2	178.2	178.2	178.2	187.8	187.8	187.8	187.8





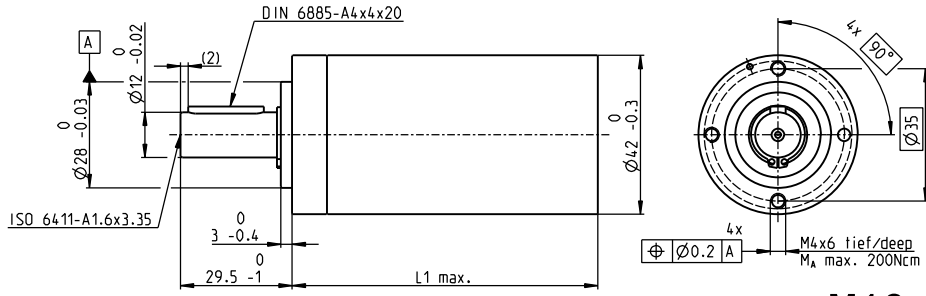
# Planetary Gearhead GP 42 C $\varnothing 42$ mm, 3.0–15.0 Nm

Ceramic Version

## 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	12720 N240 N360 N 360 N

gear



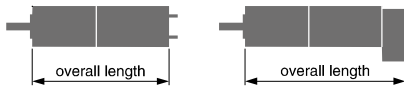
M 1:2

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

Gearhead Data	203113	203115	203119	203120	203124	203129	203128	203133	203137	203141
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	$\frac{7}{2}$	$\frac{49}{4}$	26	$\frac{343}{8}$	$\frac{2197}{27}$	156	$\frac{2401}{16}$	$\frac{15379}{54}$	441	756
10 Mass inertia	gcm <sup>2</sup> 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
<b>Part Numbers</b>	<b>203114</b>	<b>203116</b>	<b>260552*</b>	<b>203121</b>	<b>203125</b>	<b>260553*</b>	<b>203130</b>	<b>203134</b>	<b>203138</b>	<b>203142</b>
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	$\frac{13}{3}$	$\frac{91}{6}$	$\frac{39}{1}$	$\frac{637}{12}$	91	$\frac{216}{1}$	$\frac{4459}{24}$	$\frac{637}{2}$	$\frac{4394}{9}$	936
10 Mass inertia	gcm <sup>2</sup> 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
<b>Part Numbers</b>	<b>260551*</b>	<b>203117</b>		<b>203122</b>	<b>203126</b>		<b>203131</b>	<b>203135</b>	<b>203139</b>	<b>260554*</b>
1 Reduction	6:1	19:1		66:1	113:1		230:1	353:1	546:1	1296:1
2 Absolute reduction	$\frac{6}{1}$	$\frac{169}{9}$		$\frac{1183}{18}$	$\frac{338}{3}$		$\frac{8281}{36}$	$\frac{28561}{81}$	546	$\frac{1296}{1}$
10 Mass inertia	gcm <sup>2</sup> 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
<b>Part Numbers</b>		<b>203118</b>		<b>203123</b>	<b>203127</b>		<b>203132</b>	<b>203136</b>	<b>203140</b>	
1 Reduction		21:1		74:1	126:1		257:1	394:1	676:1	
2 Absolute reduction		21		$\frac{141}{2}$	126		$\frac{1029}{4}$	$\frac{1183}{3}$	676	
10 Mass inertia	gcm <sup>2</sup>	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
5 Max. continuous torque	Nm	3.0	7.5	7.5	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
7 Max. efficiency	%	90	81	81	72	72	72	64	64	64
8 Weight	g	260	360	360	460	460	460	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
11 Gearhead length L1**	mm	41.0	55.5	55.5	70.0	70.0	70.0	84.5	84.5	84.5

\*no combination with EC 45 (150/250 W) and EC-i 40  
\*\*for EC 45 flat L1 is -3.6 mm



## maxon Modular System

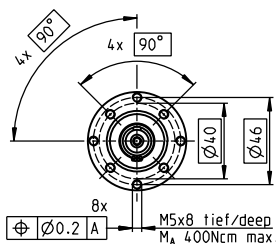
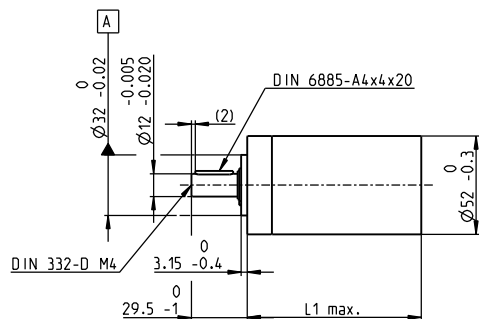
+ Motor	Page	+ Sensor	Page	Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts
EC-max 30, 60 W	241					105.1 119.6 119.6 134.1 134.1 134.1 148.6 148.6 148.6 148.6
EC-max 30, 60 W	241	MR	463			117.3 131.8 131.8 146.3 146.3 146.3 160.8 160.8 160.8 160.8
EC-max 30, 60 W	241	HEDL 5540	475			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	241			AB 20	516	141.2 155.1 155.1 169.5 169.5 169.5 184.2 184.2 184.2 184.2
EC-max 30, 60 W	241	HEDL 5540	475	AB 20	516	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	242					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	242	MR	464			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	242	HEDL 5540	475			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	242			AB 28	518	133.5 148.0 148.0 162.5 162.5 162.5 177.0 177.0 177.0 177.0
EC-max 40, 70 W	242	HEDL 5540	475	AB 28	518	151.8 166.3 166.3 180.8 180.8 180.8 195.3 195.3 195.3 195.3
EC-4pole 30, 100 W	249					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	249	16 EASY/XT/Abs.	449-453			102.0 116.5 116.5 131.0 131.0 131.0 145.5 145.5 145.5 145.5
EC-4pole 30, 100 W	249	16 EASY Abs. XT	455			102.5 117.0 117.0 131.5 131.5 131.5 146.0 146.0 146.0 146.0
EC-4pole 30, 100 W	249	16 RIO	466			100.5 115.0 115.0 129.5 129.5 129.5 144.0 144.0 144.0 144.0
EC-4pole 30, 100 W	249	AEDL/HEDL	469/475			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	249			AB 20	516	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	249	16 EASY/XT/Abs.	449-453	AB 20	516	138.4 152.9 152.9 167.4 167.4 167.4 181.9 181.9 181.9 181.9
EC-4pole 30, 100 W	249	16 EASY Abs. XT	455	AB 20	516	138.9 153.4 153.4 167.9 167.9 167.9 182.4 182.4 182.4 182.4
EC-4pole 30, 100 W	249	16 RIO	466	AB 20	516	136.9 151.4 151.4 165.9 165.9 165.9 180.4 180.4 180.4 180.4
EC-4pole 30, 100 W	249	AEDL/HEDL	469/475	AB 20	516	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	251					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	251	16 EASY/XT/Abs.	449-453			119.0 133.5 133.5 148.0 148.0 148.0 162.5 162.5 162.5 162.5
EC-4pole 30, 200 W	251	16 EASY Abs. XT	455			119.5 134.0 134.0 148.5 148.5 148.5 163.0 163.0 163.0 163.0
EC-4pole 30, 200 W	251	16 RIO	466			117.5 132.0 132.0 146.5 146.5 146.5 161.0 161.0 161.0 161.0
EC-4pole 30, 200 W	251	AEDL/HEDL	469/475			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	251			AB 20	516	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	251	16 EASY/XT/Abs.	449-453	AB 20	516	155.4 169.9 169.9 184.4 184.4 184.4 198.9 198.9 198.9 198.9
EC-4pole 30, 200 W	251	16 EASY Abs. XT	455	AB 20	516	155.9 170.4 170.4 184.9 184.9 184.9 199.4 199.4 199.4 199.4





# Planetary Gearhead GP 52 C $\varnothing 52$ mm, 4.0–30.0 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

gear

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

	223080	223083	223089	223094	223097	223104	223109
<b>Gearhead Data</b>							
1 Reduction	3.5:1	12:1	43:1	91:1	150:1	319:1	546:1
2 Absolute reduction	$\frac{7}{2}$	$\frac{49}{4}$	$\frac{343}{8}$	91	$\frac{2407}{16}$	$\frac{637}{2}$	546
10 Mass inertia	gcm <sup>2</sup> 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
<b>Part Numbers</b>							
1 Reduction	4.3:1	15:1	53:1	113:1	186:1	353:1	676:1
2 Absolute reduction	$\frac{13}{3}$	$\frac{97}{6}$	$\frac{637}{12}$	$\frac{338}{3}$	$\frac{4459}{24}$	$\frac{28567}{81}$	676
10 Mass inertia	gcm <sup>2</sup> 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
<b>Part Numbers</b>							
1 Reduction	19:1	66:1	126:1	230:1	394:1	756:1	
2 Absolute reduction	$\frac{169}{9}$	$\frac{1183}{18}$	126	$\frac{8287}{36}$	$\frac{1183}{3}$	756	
10 Mass inertia	gcm <sup>2</sup> 9.5	16.7	16.4	16.8	16.7	16.4	
3 Max. motor shaft diameter	mm 8	10	10	10	10	10	
<b>Part Numbers</b>							
1 Reduction	21:1	74:1	156:1	257:1	441:1	936:1	
2 Absolute reduction	21	$\frac{147}{2}$	156	$\frac{1029}{4}$	441	936	
10 Mass inertia	gcm <sup>2</sup> 16.5	17.2	9.1	17.3	16.5	9.1	
3 Max. motor shaft diameter	mm 10	10	8	10	10	8	
<b>Part Numbers</b>							
1 Reduction	26:1	81:1	285:1	488:1			
2 Absolute reduction	26	$\frac{2197}{27}$	$\frac{15379}{54}$	$\frac{4394}{6}$			
10 Mass inertia	gcm <sup>2</sup> 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	4	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



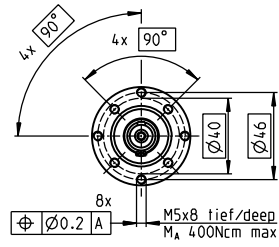
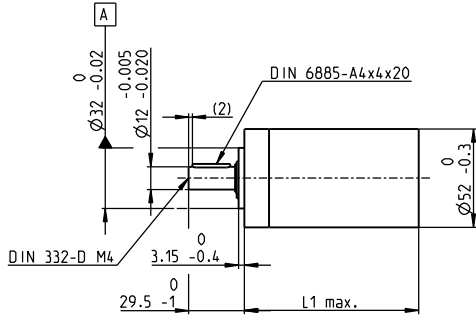
## maxon Modular System

+ Motor	Page	+ Sensor	Page	Brake	Page	Overall length [mm] = Motor length + gearhead length + (sensor/brake) + assembly parts						
RE 40, 150 W	141					120.1	136.1	149.6	149.6	163.1	163.1	163.1
RE 40, 150 W	141	MR	464			131.5	147.5	161.0	161.0	174.5	174.5	174.5
RE 40, 150 W	141	HED_ 5540	471/474			140.8	156.8	170.3	170.3	183.8	183.8	183.8
RE 40, 150 W	141	HEDL 9140	478			174.1	190.1	203.6	203.6	217.1	217.1	217.1
RE 40, 150 W	141			AB 28	519	156.2	172.2	185.7	185.7	199.2	199.2	199.2
RE 40, 150 W	141			AB 28	520	164.2	180.2	193.7	193.7	207.2	207.2	207.2
RE 40, 150 W	141	HED_ 5540	471/474	AB 28	519	173.4	189.4	202.9	202.9	216.4	216.4	216.4
RE 40, 150 W	141	HEDL 9140	478	AB 28	520	184.6	200.6	214.1	214.1	227.6	227.6	227.6
RE 50, 200 W	142					157.1	173.1	186.6	186.6	200.1	200.1	200.1
RE 50, 200 W	142	HED_ 5540	472/474			177.8	193.8	207.3	207.3	220.8	220.8	220.8
RE 50, 200 W	142	HEDL 9140	479			219.5	235.5	249.0	249.0	262.5	262.5	262.5
RE 50, 200 W	142			AB 44	524	219.5	235.5	249.0	249.0	262.5	262.5	262.5
RE 50, 200 W	142	HEDL 9140	479	AB 44	524	232.5	248.5	262.0	262.0	275.5	275.5	275.5
EC 40, 170 W	229					129.1	145.1	158.6	158.6	172.1	172.1	172.1
EC 40, 170 W	229	HED_ 5540	472/474			152.5	168.5	182.0	182.0	195.5	195.5	195.5
EC 40, 170 W	229	Res 26	481			156.3	172.3	185.8	185.8	199.3	199.3	199.3
EC 40, 170 W	229			AB 32	521	171.8	187.8	201.3	201.3	214.8	214.8	214.8
EC 40, 170 W	229	HED_ 5540	472/474	AB 32	521	190.2	206.2	219.7	219.7	233.2	233.2	233.2
EC 45, 150 W	230					160.3	176.3	189.8	189.8	203.3	203.3	203.3
EC 45, 150 W	230	HEDL 9140	478			175.9	191.9	205.4	205.4	218.9	218.9	218.9
EC 45, 150 W	230	Res 26	481			160.3	176.3	189.8	189.8	203.3	203.3	203.3
EC 45, 150 W	230			AB 28	520	167.7	183.7	197.2	197.2	210.7	210.7	210.7
EC 45, 150 W	230	HEDL 9140	478	AB 28	520	184.7	200.7	214.2	214.2	227.7	227.7	227.7
EC 45, 250 W	231					193.1	209.1	222.6	222.6	236.1	236.1	236.1
EC 45, 250 W	231	HEDL 9140	478			208.7	224.7	238.2	238.2	251.7	251.7	251.7

# Planetary Gearhead GP 52 C $\varnothing 52$ mm, 4.0–30.0 Nm

Ceramic Version

gear



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)

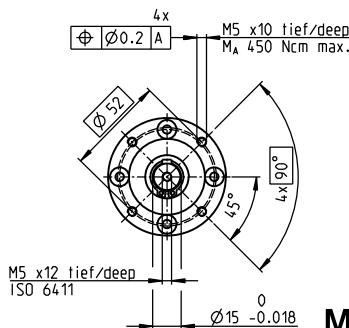
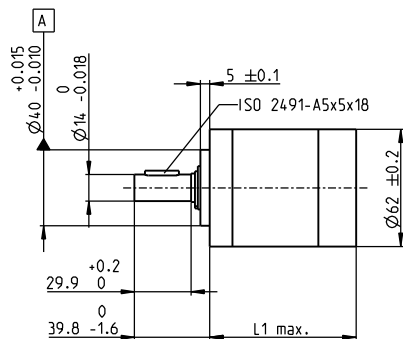
Gearhead Data	Part Numbers							
	223080	223083	223089	223094	223097	223104	223109	
1 Reduction	3,5:1	12:1	43:1	91:1	150:1	319:1	546:1	
2 Absolute reduction	$\frac{7}{2}$	$\frac{49}{4}$	$\frac{343}{8}$	91	$\frac{2401}{16}$	$\frac{637}{2}$	546	
10 Mass inertia	gcm <sup>2</sup> 20.7	17.6	17.3	16.7	17.3	16.8	16.4	
3 Max. motor shaft diameter	mm 10	10	10	10	10	10	10	
<b>Part Numbers</b>	<b>223081</b>	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	$\frac{13}{3}$	$\frac{9}{2}$	$\frac{637}{12}$	$\frac{339}{3}$	$\frac{4459}{24}$	$\frac{2856}{81}$	676	
10 Mass inertia	gcm <sup>2</sup> 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	
<b>Part Numbers</b>		<b>223085</b>	223091	223096	223101	223106	223111	
1 Reduction		19:1	66:1	126:1	230:1	394:1	756:1	
2 Absolute reduction		$\frac{169}{9}$	$\frac{1183}{18}$	126	$\frac{828}{36}$	$\frac{1183}{3}$	756	
10 Mass inertia	gcm <sup>2</sup> 9.5	16.7	16.4	16.8	16.7	16.7	16.4	
3 Max. motor shaft diameter	mm 8	10	10	10	10	10	10	
<b>Part Numbers</b>		223086	223092	223098	223102	223107	223112	
1 Reduction		21:1	74:1	156:1	257:1	441:1	936:1	
2 Absolute reduction		21	$\frac{147}{2}$	156	$\frac{1029}{4}$	441	936	
10 Mass inertia	gcm <sup>2</sup> 16.5	17.2	9.1	17.3	16.5	16.5	9.1	
3 Max. motor shaft diameter	mm 10	10	8	10	10	10	8	
<b>Part Numbers</b>		223087	<b>223093</b>		223103	223108		
1 Reduction		26:1	81:1		285:1	488:1		
2 Absolute reduction		26	$\frac{2197}{27}$		$\frac{15379}{54}$	$\frac{4394}{9}$		
10 Mass inertia	gcm <sup>2</sup> 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, 250 W	231			AB 28	520	200.5	216.5	230.0	230.0	243.5	243.5
EC 45, 250 W	231	HEDL 9140	478	AB 28	520	217.5	233.5	247.0	247.0	260.5	260.5
EC-max 40, 120 W	243					137.1	153.1	166.6	166.6	180.1	180.1
EC-max 40, 120 W	243	MR	464			153.0	169.0	182.5	182.5	196.0	196.0
EC-max 40, 120 W	243	HEDL 5540	475			160.5	176.5	190.0	190.0	203.5	203.5
EC-max 40, 120 W	243			AB 28	518	171.5	187.5	201.0	201.0	214.5	214.5
EC-max 40, 120 W	243	HEDL 5540	475	AB 28	518	189.8	205.8	219.3	219.3	232.8	232.8
EC-i 52, 180 W	268					129.1	145.1	158.6	158.6	172.1	172.1
EC-i 52, 180 W	268	16 EASY/Abs.	449/453			142.8	158.8	172.3	172.3	185.8	185.8
EC-i 52, 180 W	268	16 RIO	466			142.8	158.8	172.3	172.3	185.8	185.8
EC-i 52, 180 W	268	AEDL 5810	469/470			151.9	168.9	181.4	181.4	194.9	194.9
EC-i 52, 180 W	268	HEDL 5540	473-477			151.9	168.9	181.4	181.4	194.9	194.9
EC-i 52, 200 W	269					159.1	175.1	188.6	188.6	202.1	202.1
EC-i 52, 200 W	269	16 EASY/XT/Abs.	450-454			172.8	188.8	202.3	202.3	215.8	215.8
EC-i 52, 200 W	269	16 EASY Abs, XT	456			173.3	189.3	202.8	202.8	216.3	216.3
EC-i 52, 200 W	269	16 RIO	467			172.8	188.8	202.3	202.3	215.8	215.8
EC-i 52, 200 W	269	AEDL 5810	469/470			181.9	198.9	211.4	211.4	224.9	224.9
EC-i 52, 200 W	269	HEDL 5540	473-477			181.9	198.9	211.4	211.4	224.9	224.9
EC 60 flat, 100 W	294					89.8	105.8	119.3	119.3	132.8	132.8
EC 60 flat, 100 W	294	MILE	446			90.8	106.8	120.3	120.3	133.8	133.8
EC 60 flat, 150 W	295					89.8	105.8	119.3	119.3	132.8	132.8
EC 60 flat, 150 W	295	MILE	446			90.8	106.8	120.3	120.3	133.8	133.8
EC 60 flat, 200 W	296					97.6	113.6	127.1	127.1	140.6	140.6
EC 60 flat, 200 W	296	MILE	446			98.6	114.6	128.1	128.1	141.6	141.6



# Planetary Gearhead GP 62 A $\varnothing 62$ mm, 8.0–50.0 Nm



## 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

gear

- Stock program
- Standard program
- Special program (on request)

## Part Numbers

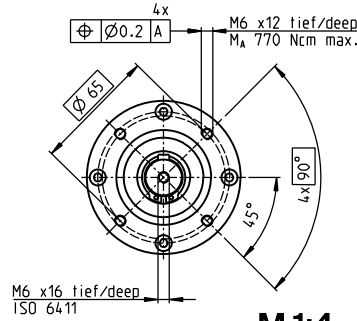
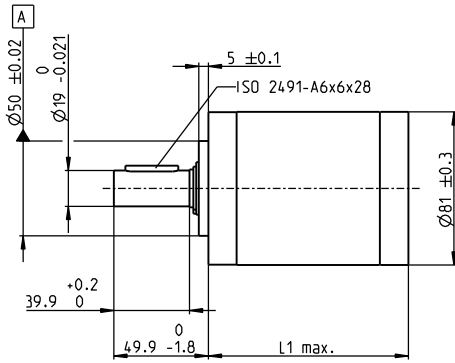
Gearhead Data	110499	110501	110502	110503	110504	110505	110506	110507	110508
1 Reduction	5.2:1	19:1	27:1	35:1	71:1	100:1	139:1	181:1	236:1
2 Absolute reduction	$\frac{57}{11}$	$\frac{359}{187}$	$\frac{3249}{121}$	$\frac{1539}{44}$	$\frac{226223}{3179}$	$\frac{204687}{2057}$	$\frac{185193}{1331}$	$\frac{87723}{484}$	$\frac{41553}{176}$
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 <sup>2</sup> 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	142					180.6	196.4	196.4	196.4	212.3	212.3	212.3	212.3
RE 50, 200 W	142	HEDS 5540	472			201.3	217.1	217.1	217.1	233.0	233.0	233.0	233.0
RE 50, 200 W	142	HEDL 5540	474			201.3	217.1	217.1	217.1	233.0	233.0	233.0	233.0
RE 50, 200 W	142	HEDL 9140	479			243.0	258.8	258.8	258.8	274.7	274.7	274.7	278.7
RE 50, 200 W	142			AB 44	524	243.0	258.8	258.8	258.8	274.7	274.7	274.7	278.7
RE 50, 200 W	142	HEDL 9140	479	AB 44	524	256.0	271.8	271.8	271.8	287.7	287.7	287.7	287.7
EC 45, 250 W	231					216.6	232.4	232.4	232.4	248.3	248.3	248.3	248.3
EC 45, 250 W	231	HEDL 9140	478			232.2	248.0	248.0	248.0	263.9	263.9	263.9	263.9
EC 45, 250 W	231	Res 26	481			216.6	232.4	232.4	232.4	248.3	248.3	248.3	248.3
EC 45, 250 W	231			AB 28	520	224.0	239.8	239.8	239.8	255.7	255.7	255.7	255.7
EC 45, 250 W	231	HEDL 9140	478	AB 28	520	241.0	256.8	256.8	256.8	272.7	272.7	272.7	272.7

# Planetary Gearhead GP 81 A Ø81 mm, 20.0–120.0 Nm

gear



M 1:4

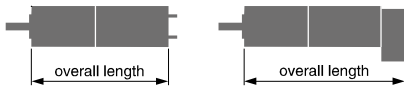
## Technical Data

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

Gearhead Data	Part Numbers					
	110408	110409	110410	110411	110412	110413
1 Reduction	3.7:1	14:1	25:1	51:1	93:1	308:1
2 Absolute reduction	$\frac{63}{17}$	$\frac{3969}{289}$	$\frac{170}{68}$	$\frac{250047}{4913}$	$\frac{107163}{1156}$	$\frac{19683}{64}$
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	gcm <sup>2</sup> 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	143					223.5	245.2	245.2	266.8	266.8	266.8
RE 65, 250 W	143	HEDS 5540	472			249.4	271.1	271.1	292.7	292.7	292.7
RE 65, 250 W	143	HEDL 5540	474			249.4	271.1	271.1	292.7	292.7	292.7
RE 65, 250 W	143	HEDL 9140	479			279.6	301.3	301.3	322.9	322.9	322.9
RE 65, 250 W	143			AB 44	524	279.6	301.3	301.3	322.9	322.9	322.9
RE 65, 250 W	143	HEDL 9140	479	AB 44	524	297.6	319.3	319.3	340.9	340.9	340.9
EC 60, 400 W	232					269.4	291.1	291.1	312.7	312.7	312.7
EC 60, 400 W	232	HEDL 9140	478			269.4	291.1	291.1	312.7	312.7	312.7
EC 60, 400 W	232	Res 26	481			269.4	291.1	291.1	312.7	312.7	312.7
EC 60, 400 W	232			AB 41	523	283.0	304.7	304.7	326.3	326.3	326.3
EC 60, 400 W	232	HEDL 9140	478	AB 41	523	307.0	328.7	328.7	350.3	350.3	350.3