

# ASSUN

DRIVING THE FUTURE



TOTAL SOLUTION for Precision  
DC Drive System 2020

## PLANETARY GEARBOX

Assun Planetary Gearbox are made for precision DC drive systems. The high efficiency, small backlash, and wide range of stages and ratios made the gearboxes ideal for various DC drive applications. With diameter from 16mm to 60mm, wide range ratios and various output torques, customers could choose their best fitting gearbox for combination.



AM-16P	AM-32P	AM-20GP	AM-36GP
AM-22P	AM-36P	AM-24GP	AM-40GP
AM-26P	AM-45P	AM-28GP	AM-45GP
AM-28P	AM-16GP	AM-32GP	AM-52GP

Company Name Abbreviation

**AM - 16GPA - 5.4:1**

Gearbox Dimension  
16 - Diameter (mm)

Gearbox Type  
GP - Precisions Gearbox  
P - Regular Gearbox

Gearbox Type  
GP - Precisions Gearbox  
P Regular Gearbox

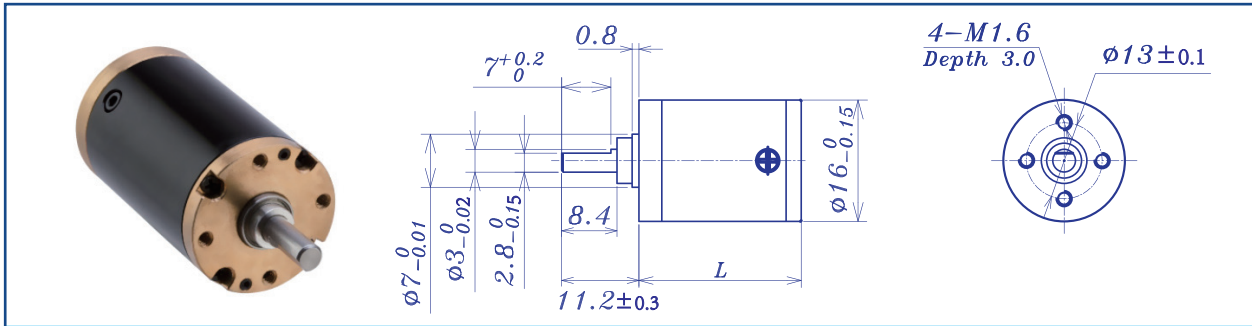
Gear Ratio

PLANETARY GEARBOX —  
REGULAR SERIES

Assun Planetary Gearbox of regular series are most widely used planetary gearbox for DC drive system. With diameter from 16mm to 45mm, these gearboxes made by hobbing gears provide a bunch of choices for customers' applications.



### AM-16P Series



GEARBOX CHARACTER			
Gear type	Straight teeth	Average backlash on load	$\leq 3^\circ$
Output shaft	Stainless steel hardened	Radial Play	$\leq 0.04$
Main gear	Alloy Steel	Permissible axial load	$\leq 10N$
Ring gear	Steel	Permissible force press fits	$\leq 50N$ (5mm from mounting face)
Adapter plate	Copper	Recommended inut speed	$\leq 10000RPM$
Bearing AT output	Ball bearing	Operating temperature range	$-20^\circ C \sim +50^\circ C$
Axial play	0-0.3	Operating humidity range	10-90%RH
Directions	CW/CCW		

GEARBOX DATA												
Number of stage	1		2			3			4		5	
Reduction ratio X:1	3.3	11	19	37	62	97	175	370	591	742	1996	
	3.8	12	20	41	64	104	198	410	690	1014	2458	
	4.4	14	24	47	72	109	231	455	850	1185	3027	
	5.4	16	29	53	76	128	270	522		1386	3728	
Reduction ratio absolute	63/19	3969/361	3249/169	250049/6859	1215/16		21625/1216	6561/16		759375/1024		
	15/4	945/76	81/4	59635/1444	185193/2197		50625/256	5000/211/10985		10965375/10816		
	57/13	225/16	1539/65	3375/64	45927/475		192375/832	1240029/2375		41668425/35152		
	27/5	855/52	729/25	14175/304	87723/845		731025/2704	2368521/4225		158340015/114244		
		1701/95		12825/208	2187/20		2777895/8788	59049/100		601692057/371293		
			204687/3211	41553/325		10556001/28561	1121931/625		285012027/142805			
			48735/676	19683/125			531441/625		135005697/54925			
									63950067/21125			
									30292137/8125			
									14348907/3125			
Gearbox length "L" (mm)	18.5	22.4		26.3			30.2			34.0		
Max. continuous torque (N.m)	0.3	0.5		0.6			0.7			0.7		
Max. intermitten torque (N.m)	0.5	0.7		0.9			1			1		
Gearbox efficiency	90%	81%		72%			65%			59%		
Moment of inertia range (g.cm <sup>2</sup> )	0.06	0.05		0.05			0.05			0.05		
Gearbox weight approx (g)	23	28		31			36			40		
Gearbox model	AM-16PA-X-01	AM-16PB-X-01		AM-16PC-X-01			AM-16PD-X-01			AM-16PE-X-01		

AM-16P Example of combination

INPUT GEARBOX DATA	
Modulus	0.3
Press angle	20°
Teeth number	10 13 16 19
Max gear hole "A"	1.5 2.0
Max motor shaft	1.5 2.0
Motor dimension "D"	6.0

MOTOR DIMENSION	
Pinion	2.0
Motor dimension "D"	6.0
Motor shaft diameter	$\phi 1.5$
Motor shaft length	$5.9_{-0.15}$
Mounting hole diameter	$\phi 1.6$

GEARBOX MOTOR LENGTH "LT"				
Gear motor length $L_T$	52.2	59.1	70	82.2
Gearbox length $L_1$	18.5	22.4	26.3	30.2
Motor length $L_2$	23	26	33	40
Encoder length $L_3$	10.7	10.7	10.7	12

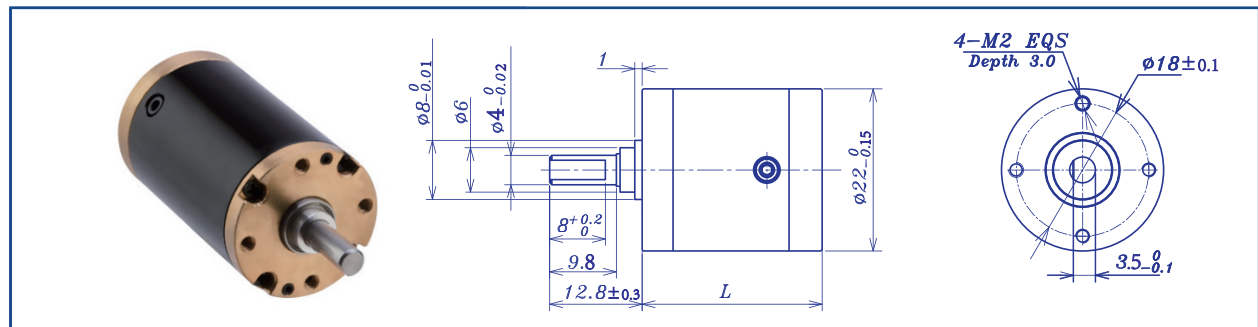
Recommend Motor:	Recommend Encoder:
Coreless Motor: AM-CL1642MA	Suitable for Coreless Motor Encoder S: AM-EN1611S***
Coreless Motor (w/E): AM-CL1623MAN AM-CL1626MAN AM-CL1633MAN AM-CL1643MAN	Suitable for Brushless Motor Encoder S: AM-EN1611S***
Brushless Motor (w/E) AM-BL1640A/B	Encoder T: AM-EN1612T***

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AM-22P Series



GEARBOX CHARACTER			
Gear type	Straight teeth	Average backlash on load	$\leq 2^\circ$
Output shaft	Stainless steel hardened	Radial Play	$\leq 0.1$
Main gear	Alloy Steel	Permissible axial load	$\leq 40N$
Ring gear	Steel	Permissible force press fits	$\leq 100N$ (5mm from mounting face)
Adapter plate	Copper	Recommended input speed	$\leq 10000RPM$
Bearing AT output	Ball bearing	Operating temperature range	$-20^\circ C \sim +50^\circ C$
Axial play	0-0.3	Operating humidity range	10-90%RH
Directions	CW/CCW		

GEARBOX DATA											
Number of stage	1		2		3			4		5	
Reduction ratio X:1	3.3	11	19	37	62	97	175	370	591	742	1996
	3.8	12	20	41	64	104	198	410	690	1014	2458
	4.4	14	24	47	72	109	231	455	850	1185	3027
	5.4	16	29	53	76	128	270	522		1386	3728
Reduction ratio absolute	63/19	3969/361	3249/169	250047/6859	1215/16		21625/1216	6561/16		759375/1024	
	15/4	945/76	81/4	59535/1444	185193/2197		50625/256	5000211/10985		10965375/10816	
	57/13	225/16	1639/65	3375/64	45927/475		192375/832	1240029/2375		41668425/35152	
	27/5	855/52	729/25	14175/304	87723/845		731025/2704	2368521/4225		158340015/114244	
		1701/95		12825/208	2187/20		2777895/8788	59049/100		601692057/371293	
			204687/3211	41553/325		10556001/28561	1121931/625		285012027/142805		
			48735/676	19683/125			531441/625		135005697/54925		
									63950067/21125		
									30292137/8125		
									14348907/3125		
Gearbox length "L" (mm)	22.3	27.3		32.3			37.3			42.6	
Max. continuous torque (N.m)	0.6	0.8		1			1.2			1.2	
Max. intermitten torque (N.m)	0.9	1.2		1.5			1.8			1.8	
Gearbox efficiency	90%	81%		72%			65%			59%	
Moment of inertia range (g.cm <sup>2</sup> )	0.5	0.4		0.5			0.4			0.5	
Gearbox weight approx (g)	56	68		82			92			103	
Gearbox model	AM-22PA-X-01	AM-22PB-X-01		AM-22PC-X-01			AM-22PD-X-01			AM-22PE-X-01	

AM-22P Example of combination

INPUT GEARBOX DATA	
Modulus	0.35
Press angle	20°
Teeth number	10 13 16 19
Max gear hole "A"	2.0 3.0
Max motor shaft	2.0 3.0
Motor dimension "D"	6.15 8.0

MOTOR DIMENSION	
Pinion	2.0
Motor dimension "D"	$\phi 12.0$
Motor shaft	$\phi 2$
Motor mounting holes	2-M2.0
Motor mounting hole diameter	$7.3_{-0.15}$

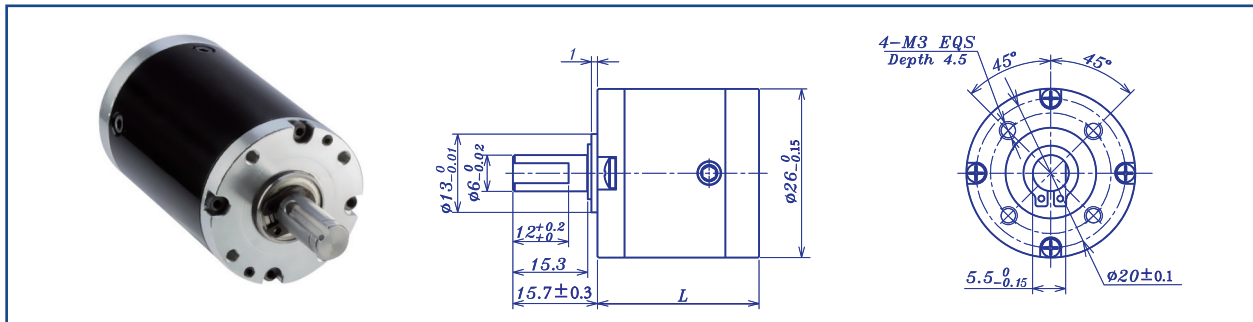
GEARBOX MOTOR LENGTH "LT"					
Gear motor length $L_T$	66.5	80.0	80.3	101	
Gearbox length $L_1$	22.3	27.3	32.3	37.3	
Motor length $L_2$	32.2	42	40	53	
Encoder length $L_3$	12	10.7	12	10.7	

Recommend Motor:	Recommend Encoder:
	Suitable for Coreless Motor Encoder S: AM-EN2211S***
Coreless Motor: (w/E): AM-CL2232MAN AM-CL2232GAN AM-CL2242MAN AM-CL2242GAN	Suitable for Brushless Motor Encoder S: AM-EN1611S***
	Encoder T: AM-EN1612T***
Brushless Motor (w/E): AM-BL2040AN AM-BL2453AN	

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## AM-26P Series

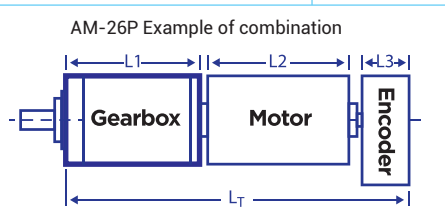


### GEARBOX CHARACTER

Gear type	Straight teeth	Average backlash on load	$\leq 2^\circ$
Output shaft	Stainless steel hardened	Radial Play	$\leq 0.1$
Main gear	Alloy Steel	Permissible axial load	$\leq 80N$
Ring gear	Steel	Permissible force press fits	$\leq 150N$ (5mm from mounting face)
Adapter plate	Alluminium alloy	Recommended input speed	$\leq 8000RPM$
Bearing AT output	Ball bearing	Operating temperature range	$-20^\circ C \sim +50^\circ C$
Axial play	0-0.3	Operating humidity range	10-90%RH
Directions	CW/CCW		

### GEARBOX DATA

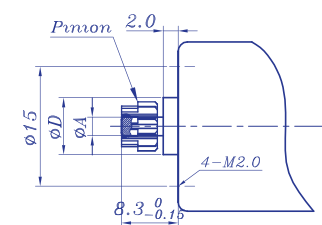
Number of stage	1	2			3			4		
Reduction ratio X:1	3.4 3.8 4.4 5.3 6.7	12 13 15 17 26	18 19 20 23 26	28 29 35 44	40 45 50 56 65	74 85 95 106 121	129 152 184 233 296	296 327 375 405 447	534 637 760 860 965	1016 1136 1304 1556 1975
Reduction ratio absolute	24/7 23/6 22/5 21/4 20/3	576/49 92/7 529/36 253/15	18/1 484/25 161/8 231/10 230/9	441/16 88/3 35/1 400/9	13824/343 2208/49 1053/21 12167/2 5819/90 5566/75 10648/125	189/2 3381/32 4851/40 1936/15 3200/21 735/4 700/3 8000/27	85169/288 122452/375 234256/625 25921/64 53361/100 101871/160	194481/256 7744/9 15435/16 64000/63 92000/81 35200/27 14000/9 160000/81		
Gearbox length "L" (mm)	28.2	34.5			40.8			47.1		
Max. continuous torque (N.m)	1.3	1.7			2.1			2.6		
Max. intermitten torque (N.m)	1.9	2.6			3.2			3.8		
Gearbox efficiency	90%	81%			72%			65%		
Moment of inertia range (g.cm <sup>2</sup> )	1	0.9			0.6			0.6		
Gearbox weight approx (g)	65	85			105			120		
Gearbox model	AM-26PA-X-01	AM-26PB-X-01			AM-26PC-X-01			AM-26PD-X-01		



### INPUT GEARBOX DATA

Modulus	0.4				
Press angle	20°				
Teeth number	9	12	15	18	21
Max gear hole "A"	1.5	3.0	4.0		
Max motor shaft	1.5	3.0	4.0		
Motor dimension "D"	10.0				

### MOTOR DIMENSION



<p>Recommend Motor:</p> <p>Coreless Motor (w/E): AM-CL2532MAN AM-CL2545MAN</p> <p>Brushless Motor (w/E) AM-BL2453AN</p>	<p>Recommend Encoder:</p> <p>Suitable for Coreless Motor Encoder S: AM-EN1611S***</p> <p>Suitable for Brushless Motor Encoder S: AM-EN1611S*** Encoder T: AM-EN2412T***</p>
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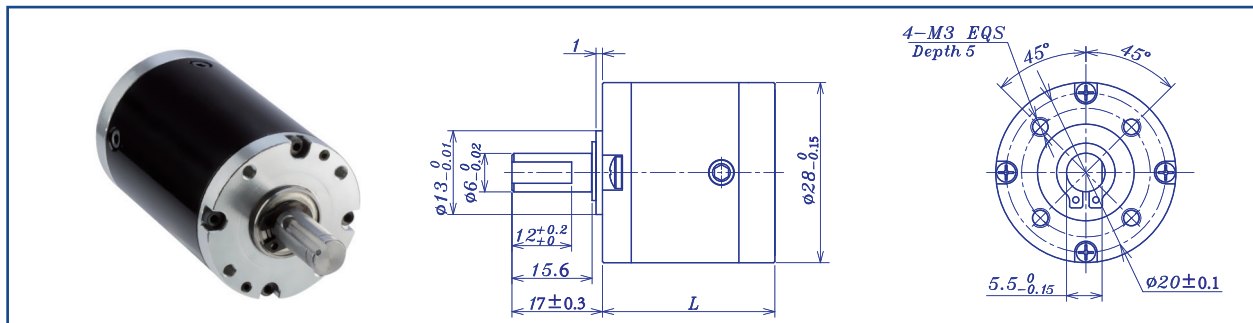
### GEARBOX MOTOR LENGTH "LT"

Gear motor length $L_T$	72.2	90.2
Gearbox length $L_1$	28.2	34.5
Motor length $L_2$	32	45
Encoder length $L_3$	12	10.7

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## AM-28P Series

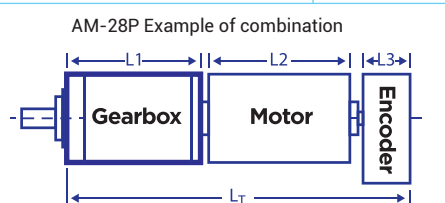


### GEARBOX CHARACTER

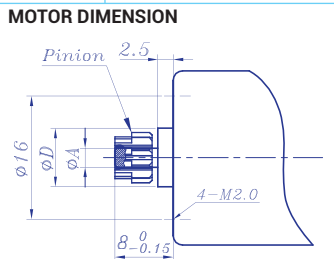
Gear type	Straight teeth	Average backlash on load	$\leq 2^\circ$
Output shaft	Stainless steel hardened	Radial Play	$\leq 0.1$
Main gear	Alloy Steel	Permissible axial load	$\leq 80N$
Ring gear	Steel	Permissible force press fits	$\leq 150N$ (5mm from mounting face)
Adapter plate	Aluminum Alloy	Recommended inut speed	$\leq 8000RPM$
Bearing AT output	Ball bearing	Operating temperature range	$-20^\circ C \sim +50^\circ C$
Axial play	0-0.3	Operating humidity range	10-90%RH
Directions	CW/CCW		

### GEARBOX DATA

Number of stage	1	2		3		4				
Reduction ratio X:1	3.4 3.8 4.4 5.3 6.7	12 13 15 17	18 19 20 23 26	28 29 35 44	40 45 50 56 65	74 85 95 106 121	129 152 184 233 296	296 327 375 405 447	534 637 760 860 965	1016 1136 1304 1556 1975
Reduction ratio absolute	24/7 23/6 22/5 21/4 20/3	576/49 92/7 529/36 253/15	18/1 484/25 16//18 231/10 230/9	441/16 88/3 35/1 400/9	13824/343 2208/49 1053/21 12167/2 5819/90 5566/75 10648/125	189/2 3381/32 4851/40 1936/15 3200/21 735/4 700/3 8000/27	85169/288 122452/375 234256/625 25921/64 53361/100 101871/160	194481/256 7744/9 15435/16 64000/63 92000/81 35200/27 14000/9 160000/81		
Gearbox length "L" (mm)	26.9	33.2		39.5		45.8				
Max. continuous torque (N.m)	1.3	1.7		2.1		2.6				
Max. intermitten torque (N.m)	1.9	2.6		3.2		3.8				
Gearbox efficiency	90%	81%		72%		65%				
Moment of inertia range (g.cm <sup>2</sup> )	1	0.9		0.6		0.6				
Gearbox weight approx (g)	78	102		126		149				
Gearbox model	AM-28PA-X-01	AM-28PB-X-01		AM-28PC-X-01		AM-28PD-X-01				



INPUT GEARBOX DATA	
Modulus	0.4
Press angle	$20^\circ$
Teeth number	9 12 15 18 21
Max gear hole "A"	1.5 3.0 4.0
Max motor shaft	1.5 3.0 4.0
Motor dimension "D"	10.0



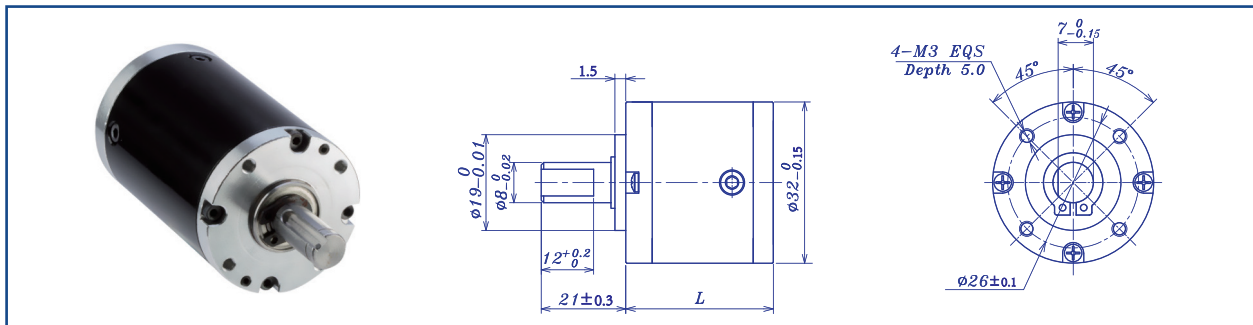
Recommend Motor:	Recommend Encoder:
Coreless Motor: AM-CL2532MAN AM-CL2545MAN AM-CL2831MAN AM-CL2845MAN	Suitable for Coreless Motor Encoder S: AM-EN1611S***
Brushless Motor AM-BL2845AN AM-BL2453AN	Suitable for Brushless Motor Encoder S: AM-EN1611S*** Encoder T: AM-EN2412T***

GEARBOX MOTOR LENGTH "LT"	
Gear motor length $L_T$	69.6 90.2 81.2 109.5
Gearbox length $L_1$	26.9 33.2 39.5 45.8
Motor length $L_2$	32 45 31 53
Encoder length $L_3$	10.7 12 10.7 10.7

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AM-32P Series



GEARBOX CHARACTER			
Gear type	Straight teeth	Average backlash on load	≤2°
Output shaft	Stainless steel hardened	Radial Play	≤0.1
Main gear	Alloy Steel	Permissible axial load	≤110N
Ring gear	Steel	Permissible force press fits	≤200N (5mm from mounting face)
Adapter plate	Aluminium alloy	Recommended inut speed	≤8000RPM
Bearing AT output	Ball bearing	Operating temperature range	-20°C ~ +50°C
Axial play	0-0.3	Operating humidity range	10-90%RH
Directions	CW/CCW		

GEARBOX DATA										
Number of stage	1	2		3	4					
Reduction ratio X:1	3.4	12	18	28	40	74	129	296	534	1016
	3.8	13	19	29	45	85	152	327	637	1136
	4.4	15	20	35	50	95	184	375	760	1304
	5.3	17	23	44	56	106	233	405	860	1556
	6.7		26		65	121	296	447	965	1975
Reduction ratio absolute	24/7	576/49	18/1	441/16	13824/343	189/2	85169/288	194481/256		
	23/6	92/7	484/25	88/3	2208/49	3381/32	122452/375	7744/9		
	22/5	529/36	16/18	35/1	1053/21	4851/40	234256/625	15435/16		
	21/4	253/15	231/10	400/9	12167/2	1936/15	25921/64	64000/63		
	20/3		230/9		5819/90	3200/21	53361/100	92000/81		
					5566/75	735/4	101871/160	35200/27		
				10648/125	700/3		14000/9			160000/81
Gearbox length "L" (mm)	31.2	38.7		46.2	53.7					
Max. continuous torque (N.m)	1.9	2.5		3.2	3.9					
Max. intermitten torque (N.m)	2.9	3.8		4.8	5.7					
Gearbox efficiency	90%	81%		72%	65%					
Moment of inertia range (g.cm <sup>2</sup> )	1.5	1		1	1					
Gearbox weight approx (g)	135	168		200	236					
Gearbox model	AM-32PA-X-01	AM-32PB-X-01		AM-32PC-X-01	AM-32PD-X-01					

AM-32P Example of combination

INPUT GEARBOX DATA	
Modulus	0.45
Press angle	20°
Teeth number	9 12 15 18 21
Max gear hole "A"	2.0 3.0 4.0 5.0 6.0
Max motor shaft	2.0 3.0 4.0 5.0 6.0
Motor dimension "D"	10.0 16.0

MOTOR DIMENSION

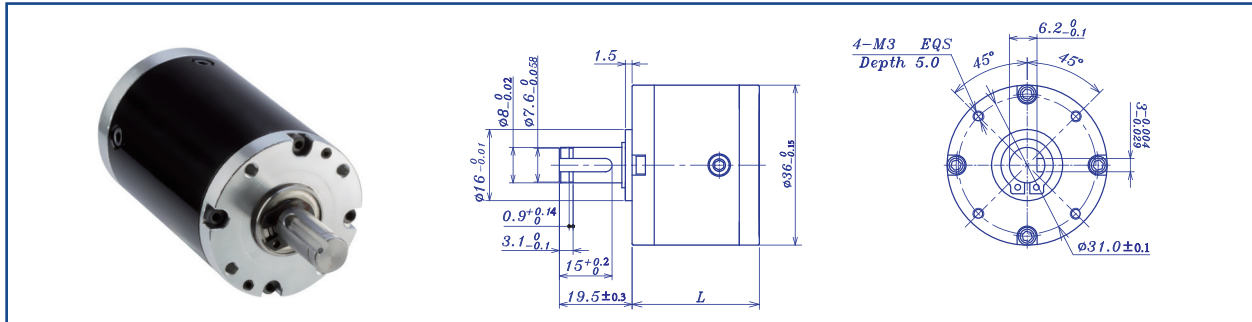
RECOMMEND MOTOR																	
Recommend Motor: Coreless Motor: (w/E) AM-CL2831MAN AM-CL2845MAN	Recommend Encoder: Suitable for Coreless Motor Encoder S: AM-EN1611S***	<table border="1"> <thead> <tr> <th colspan="3">GEARBOX MOTOR LENGTH "LT"</th> </tr> </thead> <tbody> <tr> <td>Gear motor length L<sub>T</sub></td> <td>72.9</td> <td>95.7</td> </tr> <tr> <td>Gearbox length L<sub>1</sub></td> <td>31.2</td> <td>38.7</td> </tr> <tr> <td>Motor length L<sub>2</sub></td> <td>31</td> <td>45</td> </tr> <tr> <td>Encoder length L<sub>3</sub></td> <td>10.7</td> <td>12</td> </tr> </tbody> </table>	GEARBOX MOTOR LENGTH "LT"			Gear motor length L <sub>T</sub>	72.9	95.7	Gearbox length L <sub>1</sub>	31.2	38.7	Motor length L <sub>2</sub>	31	45	Encoder length L <sub>3</sub>	10.7	12
	GEARBOX MOTOR LENGTH "LT"																
Gear motor length L <sub>T</sub>	72.9	95.7															
Gearbox length L <sub>1</sub>	31.2	38.7															
Motor length L <sub>2</sub>	31	45															
Encoder length L <sub>3</sub>	10.7	12															
Brushless Motor (w/E) AM-BL2845AN	Suitable for Brushless Motor Encoder S: AM-EN1611S***  Encoder T: AM-EN2412T***																

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AM-36P Series

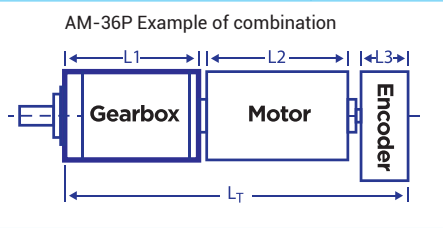


GEARBOX CHARACTER

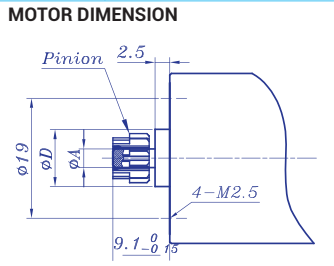
Gear type	Straight teeth	Average backlash on load	$\leq 2.5^\circ$
Output shaft	Stainless steel hardened	Radial Play	$\leq 0.06$
Main gear	Alloy Steel	Permissible axial load	$\leq 150N$
Ring gear	Steel	Permissible force press fits	$\leq 240N$ (5mm from mounting face)
Adapter plate	Aluminium alloy	Recommended inut speed	$\leq 8000RPM$
Bearing AT output	Ball bearing	Operating temperature range	$-20^\circ C \sim +50^\circ C$
Axial play	0-0.3	Operating humidity range	10-90%RH
Directions	CW/CCW		

GEARBOX DATA

Number of stage	1	2	3	4
Reduction ratio X:1	3.4	12 22	40 83 162	224 399 649 1270
	3.8	13 26	44 98 171	255 421 738
	4.3	14 32	50 111 202	283 446 824
	5.1	16 40	66 131	322 513 948
	6.3	19	75 150	358 570 1078
Reduction ratio absolute	75/22	5625/484 2277/104	421875/10648 75141/676	607500/2717 107163/209
	72/19	2700/209 4356/169	101250/2299 287496/2197	1164375/4576 5143824/9025
	69/16	5814/361 2079/65	388125/7744 71441/475	139725/494 2464749/3800
	66/13	621/38 3969/100	16200/247 137214/845	1071225/3328 18896409/25600
	63/10	4761/256	15525/208 273861/1600	1414017/3952 9056124/10985
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		313632/3211	1352538/3211 17253243/16000	
			980100/2197 8251551/6500	
Gearbox length "L" (mm)	30.7	39.3	47.9	56.5
Max. continuous torque (N.m)	2.7	3.6	4.5	5.4
Max. intermitten torque (N.m)	4	5.3	6.6	7.9
Gearbox efficiency	90%	81%	72%	65%
Moment of inertia range (g.cm <sup>2</sup> )	4.9	4.9	6.1	6.1
Gearbox weight approx (g)	162	208	288	323
Gearbox model	AM-36PA-X-01	AM-36PB-X-01	AM-36PC-X-01	AM-36PD-X-01



INPUT GEARBOX DATA				
Modulus	0.5			
Press angle	20°			
Teeth number	10	13	16	19 22
Max gear hole "A"	2.5	4.0	5.0	6.0
Max motor shaft	2.5	4.0	5.0	6.0
Motor dimension "D"	13			



Recommend Motor:  
Coreless Motor: (w/E)  
AM-CL3570GAN  
Brushless Motor (w/E)  
AM-BL3660AN  
AM-BL3675BF  
AM-BL3690BF

Recommend Encoder:  
Suitable for Coreless Motor  
Encoder S: AM-EN2211S\*\*\*  
Encoder T: AM-EN2412T\*\*\*

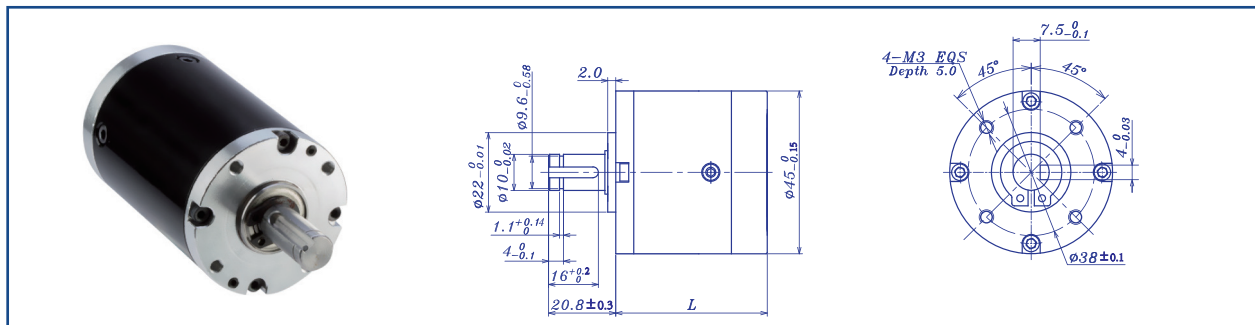
Suitable for Brushless Motor  
Encoder S: AM-EN2211S\*\*\*  
Encoder T: AM-EN3612T\*\*\*

GEARBOX MOTOR LENGTH "LT"		
Gear motor length $L_T$	113.2	110.5
Gearbox length $L_1$	30.7	39.3
Motor length $L_2$	70.5	60.5
Encoder length $L_3$	12	10.7

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AM-45P Series



GEARBOX CHARACTER			
Gear type	Straight teeth	Average backlash on load	$\leq 1.5^\circ$
Output shaft	Stainless steel hardened	Radial Play	$\leq 0.06$
Main gear	Alloy Steel	Permissible axial load	$\leq 150N$
Ring gear	Steel	Permissible force press fits	$\leq 280N$ (5mm from mounting face)
Adapter plate	Aluminium alloy	Recommended input speed	$\leq 8000RPM$
Bearing AT output	Ball bearing	Operating temperature range	$-20^\circ C \sim +50^\circ C$
Axial play	0-0.3	Operating humidity range	10-90%RH
Directions	CW/CCW		

GEARBOX DATA										
Number of stage	1	2		3	4					
Reduction ratio X:1	3.4	12	22	40	83	162	224	399	649	1270
	3.8	13	26	44	98	171	255	421	738	
	4.3	14	32	50	111	202	283	446	824	
	5.1	16	40	66	131		322	513	948	
	6.3	19		75	150		358	570	1078	
Reduction ratio absolute	75/22	5625/484	2277/104	421875/10648	75141/676	607500/2717	107163/209			
	72/19	2700/209	4356/169	101250/2299	287496/2197	1164375/4576	5143824/9025			
	69/16	5814/361	2079/65	388125/7744	71441/475	139725/494	2464749/3800			
	66/13	621/38	3969/100	16200/247	137214/845	1071225/3328	18896409/25600			
	63/10	4761/256		15525/208	273861/1600	1414017/3952	9056124/10985	4499145/11264	2250423/2375	1352538/3211
			313632/3211		130977/650	980100/2197	8251551/6500			
Gearbox length "L" (mm)	38.9	49.7		60.5		71.3				
Max. continuous torque (N.m)	5.4	7.2		9		10.8				
Max. intermitten torque (N.m)	7.9	10.6		13.2		15.9				
Gearbox efficiency	90%	81%		72%		65%				
Moment of inertia range (g.cm <sup>2</sup> )	12	14		14		15				
Gearbox weight approx (g)	305	418		520		633				
Gearbox model	AM-45PA-X-01	AM-45PB-X-01		AM-45PC-X-01		AM-45PD-X-01				

AM-45P Example of combination

INPUT GEARBOX DATA					
Modulus	0.6				
Press angle	20°				
Teeth number	10	13	16	19	22
Max gear hole "A"	2.5	5.0	6.0	8.0	
Max motor shaft	2.5	5.0	6.0	8.0	
Motor dimension "D"	13.0			16.0	

MOTOR DIMENSION

GEARBOX MOTOR LENGTH "LT"			
Gear motor length $L_T$	119.6	121.7	172.5
Gearbox length $L_1$	38.9	49.7	60.5
Motor length $L_2$	70	60	100
Encoder length $L_3$	10.7	12	12

Recommend Motor:

Coreless Motor: (w/E)  
AM-CL3570GAN  
AM-CL4071GAE

Brushless Motor (w/E)  
AM-BL3660AN  
AM-BL45100AN

Recommend Encoder:  
Suitable for Coreless Motor  
Encoder S: AM-EN2211S\*\*\*  
Encoder T: AM-EN2412T\*\*\*

Suitable for Brushless Motor  
Encoder S: AM-EN2211S\*\*\*  
Encoder T: AM-EN3612T\*\*\*

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PLANETARY GEARBOX  
PRECISION SERIES

Assun Planetary Gearbox of precision series are manufactured with the latest production technology to achieve very low backlash, higher efficiency, longer lifetime and higher output torque. Diameter from 16mm to 60mm, the precision series planetary gearboxes offer a wide range of high precision choices for DC drive solution.



AM-16P	AM-32P	AM-20GP	AM-36GP
AM-22P	AM-36P	AM-24GP	AM-40GP
AM-26P	AM-45P	AM-28GP	AM-45GP
AM-28P	AM-16GP	AM-32GP	AM-52GP

Company Name Abbreviation

**AM - 16GPA - 5.4:1**

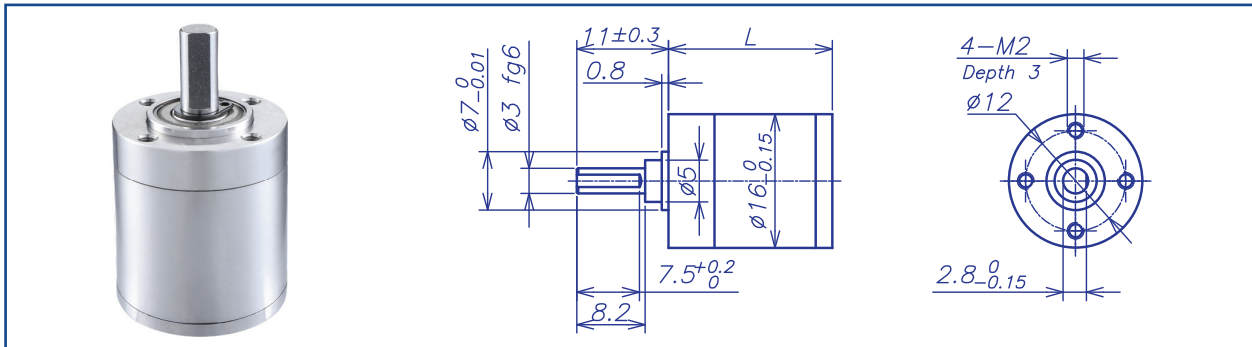
Gearbox Dimension  
16 - Diameter (mm)

Gearbox Type  
GP - Precisions Gearbox  
P - Regular Gearbox

Gearbox Type  
GP - Precisions Gearbox  
P Regular Gearbox

Gear Ratio

AM-16GP Series



GEARBOX CHARACTER			
Gear type	Straight teeth	Radial Play (6mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 100 N
Main gear	Alloy Steel hardened	Permissible axial load (dynamic)	max. 10N
Ring gear	Stainless steel hardened	Recommended input speed	8000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1    2    3    4
Directions	CW/CCW	Permissible load (6mm from flange)	15N   23N   23N   23N

GEARBOX DATA											
Number of stage	1			2		3			4		
Reduction ratio X:1	3.8	4.4	5.4	14	29	53	84	157	198	370 590	850
				16		62	89		231	289 690	
				19		72	104		270	410	
				20		76	109		285	455	
				24			128		316	479	
Reduction ratio absolute	15/4	57/13	27/5	225/16		3375/64	185193/2197		50625/256	10556001/28561	531441/3225
				855/52		12825/208	4617/52		192375/832	263169/676	
				3249/169	729/25	48735/676	87723/845	19683/125	731025/2704	6561/16	
				81/4		1215/16	2187/20		18225/64	5000211/10985	
				1539/65			41551/325		2777895/8788	124659/260	
Motor shaft max. diameter (mm)	2	1.5	2	1.5	2	1.5	2	1.5	2	1.5	
Gearbox length "L" (mm)	15.9			19.6		23.3			27		
Max. continuous torque (N.m)	0.1			0.2		0.25			0.3		
Max. intermittent torque (N.m)	0.15			0.3		0.375			0.45		
Average backlash no load	1.2°			1.4°		1.5°			1.5°		
Gearbox efficiency	90%			81%		73%			65%		
Max. mass inertia (g.cm²)	0.05			0.06		0.06			0.06		
Gearbox weight approx (g)	20			25		30			35		
gearbox model	AM-16GPA-X			AM-16GPB-X		AM-16GPC-X			AM-16GPD-X		

AM-16GP Example of combination

INPUT GEARBOX DATA	
Modulus	0.3
Press angle	20°
Teeth number	10    13    16
Max gear hole "A"	1.5    2.0
Max motor shaft	1.5    2.0
Motor dimension "D"	6.0

MOTOR DIMENSION	

GEARBOX MOTOR LENGTH "LT"			
Gear motor length $L_T$	49.6	67	79
Gear box length $L_1$	15.9	23.3	27
Motor length $L_2$	23	33	40
Encoder length $L_3$	10.7	10.7	12

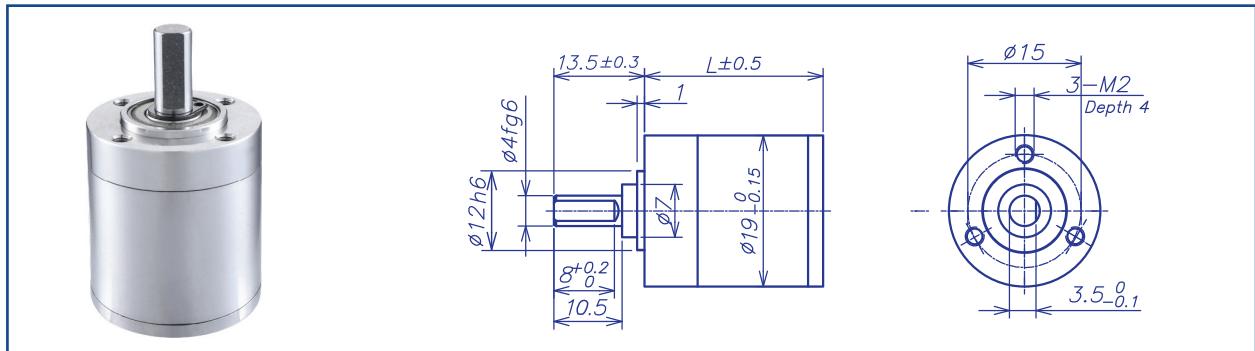
Recommend Motor: Coreless Motor (w/E): AM-CL1623MAN AM-CL1626MAN AM-CL1633MAN AM-CL1643MAN  Brushless Motor (w/E): AM-BL1632AN AM-BL1640AN	Recommend Encoder: Suitable for Coreless Motor Encoder S: AM-EN1611S***
	Suitable for Brushless Motor Encoder S: AM-EN1611S***  Encoder T: AM-EN1612T***

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PLANETARY GEARBOX

## AM-19GP Series

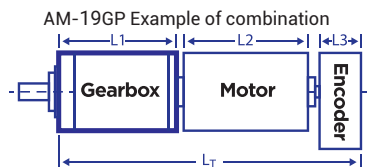


### GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (8mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 100 N
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 50N
Ring gear	Stainless steel hardened	Recommended inut speed	8000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1    2    3    4
Directions	CW/CCW	Permissible load (8mm from flange)	40N   60N   60N   60N

### GEARBOX DATA

Number of stage	1			2			3			4		
Reduction ratio X:1	3.8	4.4	5.4	14	19	53	109	84	128	198	316	370
				16	24	62		104	157	231	389	455
				20	29	72				270	479	561
						76				285	590	690
						89				333		850
										410		
Reduction ratio absolute	15/4	57/13	27/5	225/16	3249/169	3375/64	185193/2197	41551/325	50625/256	2777895/8788	10556001/28561	
				855/52	1539/65	12825/208			192375/832	263169/676	5000211/10985	
				81/4	729/25	48735/676	87723/845	19683/125	731025/2704	124659/260	2368521/4225	
						1215/16			18225/64	59049/100	1121931/1625	
						4617/52			2777895/8788		531441/625	
						2187/20			69255/208			
Motor shaft max. diametre (mm)	3	2		3	2	3		2		3		2
Gearbox length "L" (mm)	18.8			23.6			28.4			33.2		
Max. continuous torque (N.m)	0.2			0.3			0.5			0.6		
Max. intermittent torque (N.m)	0.3			0.45			0.75			0.9		
Average backlash no load	1.2°			1.4°			1.4°			1.4°		
Gearbox efficiency	90%			81%			73%			65%		
Max. mass inertia (g.cm <sup>2</sup> )	0.1			0.1			0.1			0.1		
Gearbox weight approx (g)	35			45			55			65		
gearbox model	AM-19GPA-X			AM-19GPB-X			AM-19GPC-X			AM-19GPD-X		



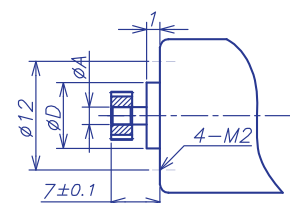
Recommend Motor:  
Coreless Motor (w/E): AM-CL1623MAN, AM-CL1626MAN, AM-CL1633MAN, AM-CL1643MAN, AM-CL2232GAN, AM-CL2232MAN, AM-CL2242GAN, AM-CL2242MAN, AM-CL1934GAE  
Brushless Motor (w/E): AM-BL1632AN, AM-BL1640AN, AM-BL2032AN, AM-BL2040AN, AM-BL2051AN

Recommend Encoder:  
Suitable for Coreless Motor  
Encoder S: AM-EN1611S\*\*\*  
AM-EN2211S\*\*\*  
Suitable for Brushless Motor  
Encoder S: AM-EN1611S\*\*\*  
Encoder T: AM-EN1612T\*\*\*

### INPUT GEARBOX DATA

Modulus	0.35		
Press angle	20°		
Teeth number	10	13	16
Max gear hole "A"	2	2	3
Max motor shaft	2	2	3
Motor dimension "D"	5	5.5	6.5

### MOTOR DIMENSION



### GEARBOX MOTOR LENGTH "LT"

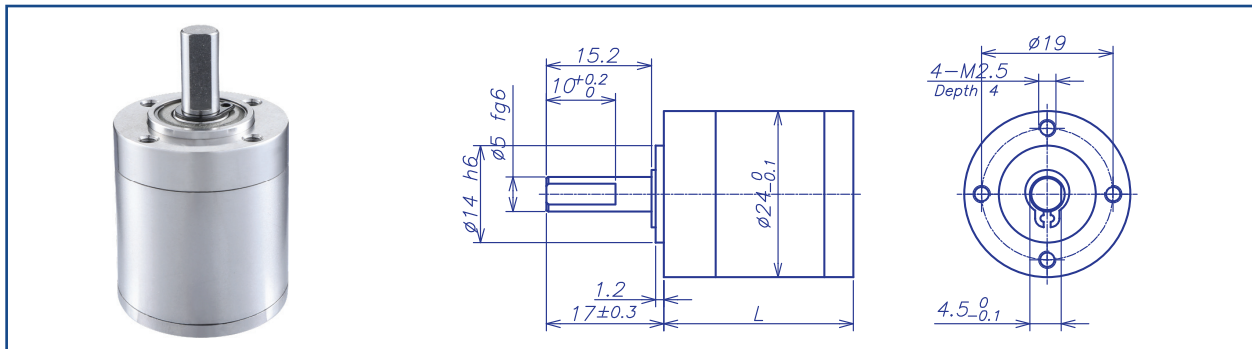
Gear motor length L <sub>T</sub>	55.5	74.3	80.4
Gearbox length L <sub>1</sub>	18.8	23.6	28.4
Motor length L <sub>2</sub>	26	40	40
Encoder length L <sub>3</sub>	10.7	10.7	12

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AM-24GP Series

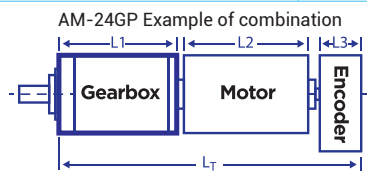


**GEARBOX CHARACTER**

Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 150 N
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 100N
Ring gear	Stainless steel hardened	Recommended inut speed	8000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1    2    3    4
Directions	CW/CCW	Permissible load (12mm from flange)	65N   65N   70N   70N

**GEARBOX DATA**

Number of stage	1			2		3		4				
		3.3	4	5.5	11	30	34	64	166	112	256	541
Reduction ratio X:1				13		42	72		137	286	666	
				16		52	88		169	320		
				18		58	98		189	352		
				22			121		208	393		
									232	484		
Reduction ratio absolute	13/4	4/1	11/2	169/16	121/4	2197/64	64/1	1331/8	28561/256	256/1	14641/16	
				13/1		169/4	143/2		2197/16	286/1		
				16/1		52/1	88/1		169/1	20449/64		
				143/8		1859/32	1573/16		24167/128	352/1		
				22/1			121/1		208/1	1573/4		
									1859/8	484/1		
										17303/32		
										1331/2		
Motor shaft max. diametre (mm)	4	2		4	2	4		2	4		2	
Gearbox lenght "L" (mm)	22.2			27.4		32.6		37.8				
Max. continuous torque (N.m)	0.5			0.7		0.9		1.2				
Max. intermittent torque (N.m)	0.75			1.05		1.35		1.8				
Average backlash no load	1.0°			1.2°		1.3°		1.3°				
Gearbox efficiency	90%			81%		73%		65%				
Max. mass inertia (g.cm <sup>2</sup> )	0.33			0.34		0.34		0.34				
Gearbox weight approx (g)	70			85		100		115				
gearbox model	AM-24GPA-X			AM-24GPB-X		AM-24GPC-X		AM-24GPD-X				



**Recommend Motor:**  
Coreless Motor (w/E)  
AM-CL2232GAN  
AM-CL2232MAN  
AM-CL2242GAN  
AM-CL2242MAN  
AM-CL2532MAN  
AM-CL2545MAN

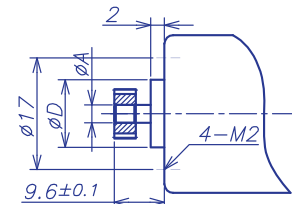
Brushless Motor (w/E)  
AM-BL2032AN  
AM-BL2040AN  
AM-BL2051AN  
AM-BL2453AN

**Recommend Encoder:**  
Suitable for Coreless Motor  
Encoder S: AM-EN1611S\*\*\*  
Encoder S: AM-EN2211S\*\*\*  
Suitable for Brushless Motor  
Encoder S: AM-EN1611S\*\*\*  
Encoder T: AM-EN2412T\*\*\*

**INPUT GEARBOX DATA**

Modulus	0.35
Press angle	20°
Teeth number	12    18    24
Max gear hole "A"	2    4    4
Max motor shaft	2    4    4
Motor dimension "D"	5.5    7.5    9.5

**MOTOR DIMENSION**



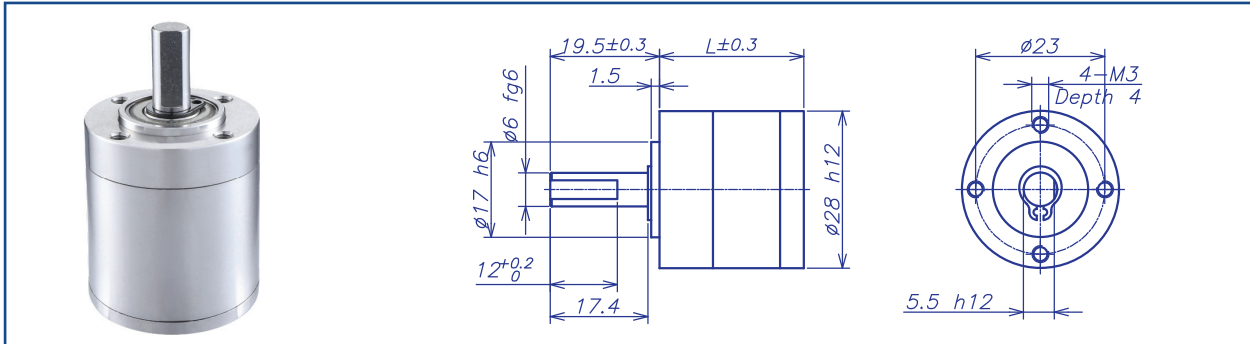
**GEARBOX MOTOR LENGTH "LT"**

Gear motor length L <sub>T</sub>	64.9	80.1	97.6
Gear box length L <sub>1</sub>	22.2	27.4	32.6
Motor length L <sub>2</sub>	32	42	53
Encoder length L <sub>3</sub>	10.7	10.7	12

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### AM-28GP Series



GEARBOX CHARACTER			
Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 150 N
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 100N
Ring gear	Stainless steel hardened	Recommended input speed	8000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1    2    3    4
Directions	CW/CCW	Permissible load (13mm from flange)	65N    100N    120N    120N

GEARBOX DATA												
Number of stage	1			2		3			4			
Reduction ratio X:1	3.4	4.2	5.8	11	33	38	72	190	130	301	642	1093
				14		47	81		160	337	792	
				17		59	100		198	377		
				19		65	112		221	416		
				24			138		244	465		
									273	574		
Reduction ratio absolute	27/8	25/6	23/4	729/64	529/16	19683/512	15625/216	12167/64	531441/4096	390625/1296		279841/256
				225/16		6075/128	5175/64		164025/1024	43125/128		
				625/36		1875/32	14375/144		50625/256	385641/1024		
				621/32		16767/256	14283/128		452709/2048	359375/864		
				575/24			13225/96		15625/64	119025/256		
									139725/512	330625/576		
										328509/512		
										304175/384		
Motor shaft max. diameter (mm)	4	3	4	3	4	3	4	3	4	3	4	3
Gearbox length "L" (mm)	26.1			33.3		40.5			47.7			
Max. continuous torque (N.m)	0.6			0.8		2.0			2.4			
Max. intermittent torque (N.m)	0.9			1.2		3.0			3.6			
Average backlash no load	0.8°			1.0°		1.0°			1.0°			
Gearbox efficiency	90%			81%		73%			65%			
Max. mass inertia (g.cm²)	0.89			0.94		0.95			0.95			
Gearbox weight approx (g)	140			170		200			230			
gearbox model	AM-28GPA-X			AM-28GPB-X		AM-28GPC-X			AM-28GPD-X			

AM-28GP Example of combination

INPUT GEARBOX DATA	
Modulus	0.4
Press angle	20°
Teeth number	12    18    24
Max gear hole "A"	3    4    4
Max motor shaft	3    4    4
Motor dimension "D"	6    8.5    10.5

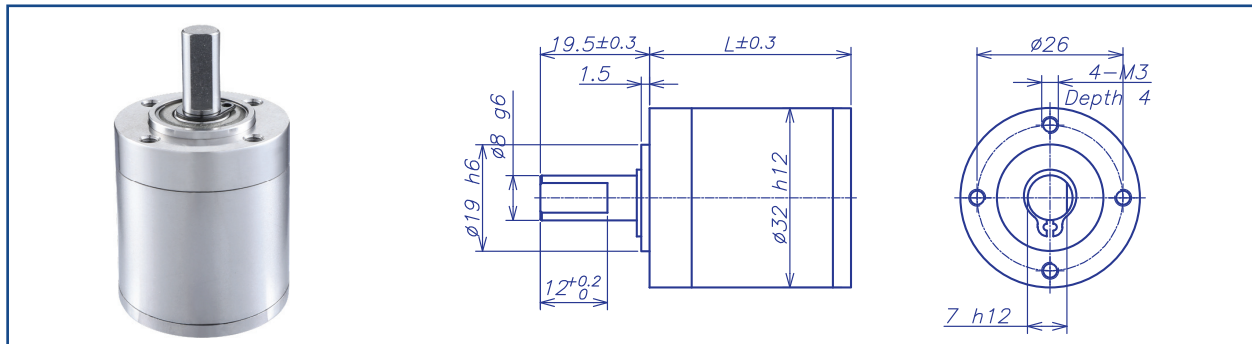
MOTOR DIMENSION

<p><b>Recommend Motor:</b></p> <p>Coreless Motor (w/E)    Brushless Motor (w/E)</p> <p>AM-CL2532MAN    AM-BL2453AN</p> <p>AM-CL2545MAN    AM-BL2845AN</p> <p>AM-CL2831MAN</p> <p>AM-CL2845MAN</p>	<p><b>Recommend Encoder:</b></p> <p>Suitable for Coreless Motor</p> <p>Encoder S: AM-EN1611S***</p> <hr/> <p>Suitable for Brushless Motor</p> <p>Encoder S: AM-EN1611S***</p> <p>Encoder T: AM-EN2412T***</p>
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## AM-32GP Series



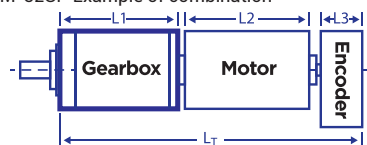
### GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 150 N
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 120N
Ring gear	Stainless steel hardened	Recommended input speed	8000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (13mm from flange)	80N 130N 145N 145N

### GEARBOX DATA

Number of stage	1			2		3			4			
	Reduction ratio X:1	3.4	4.2	5.8	11	33	38	72	190	130	301	642
Reduction ratio absolute				14		47	81		160	337	792	
				17		59	100		198	377		
				19		65	112		221	416		
				24			138		244	465		
									273	574		
Reduction ratio absolute	27/8	25/6	23/4	729/64	529/16	19683/512	15625/216	12167/64	531441/4096	390625/1296		279841/256
Motor shaft max. diameter (mm)	4	3		4	3		4	3		4		3
Gearbox length "L" (mm)	27.4			35.9		44.4			52.9			
Max. continuous torque (N.m)	0.8			2		3.6			4			
Max. intermittent torque (N.m)	1.2			3		5.4			6			
Average backlash no load	0.8°			1.0°		1.0°			1.0°			
Gearbox efficiency	90%			81%		73%			65%			
Max. mass inertia (g.cm <sup>2</sup> )	1.75			1.82		1.82			1.82			
Gearbox weight approx (g)	155			200		245			290			
gearbox model	AM-32GPA-X			AM-32GPB-X		AM-32GPC-X			AM-32GPD-X			

### AM-32GP Example of combination



**Recommend Motor:**  
Coreless Motor (w/E)  
AM-CL2831MAN  
AM-CL2845MAN  
Brushless Motor (w/E)  
AM-BL2453AN  
AM-BL2845AN  
AM-BL3260AN  
AM-BL3270AN  
AM-BD2845AN  
AM-BD3260AN  
AM-BD3270AN

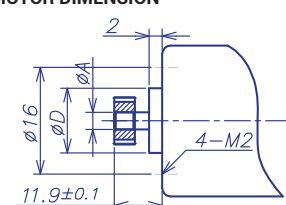
**Recommend Encoder:**  
Suitable for Coreless Motor  
Encoder S: AM-EN1611S\*\*\*  
2~3 Channels

Suitable for Brushless Motor  
Encoder S: AM-EN1611S\*\*\*  
2~3 Channels  
Encoder T: AM-EN2412T\*\*\*  
2~3 Channels  
Encoder S: AM-EN2211S\*\*\*  
2~3 Channels

### INPUT GEARBOX DATA

Modulus	0.45
Press angle	20°
Teeth number	12 18 24
Max gear hole "A"	3 4 4
Max motor shaft	3 4 4
Motor dimension "D"	7 10 12

### MOTOR DIMENSION



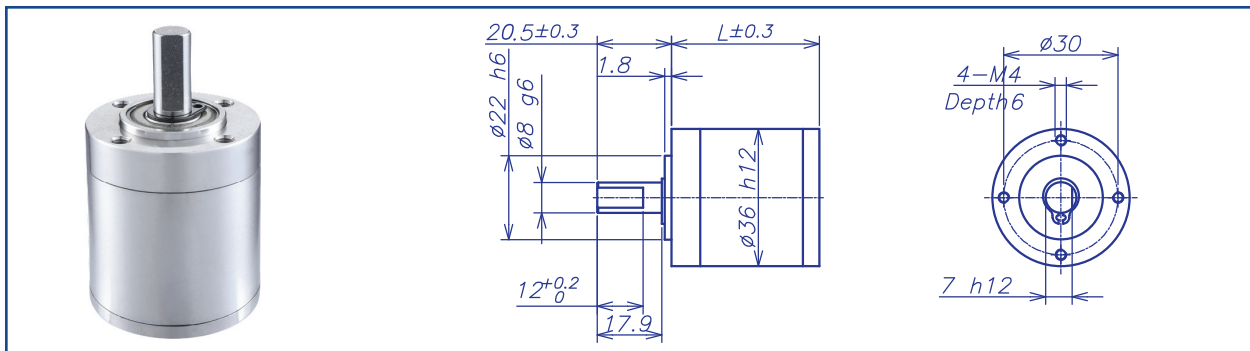
### GEARBOX MOTOR LENGTH "LT"

Gear motor length L <sub>T</sub>	83.1	106.6	126.4
Gear box length L <sub>1</sub>	27.4	35.9	44.4
Motor length L <sub>2</sub>	45	60	70
Encoder length L <sub>3</sub>	10.7	10.7	12

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## AM-36GP Series

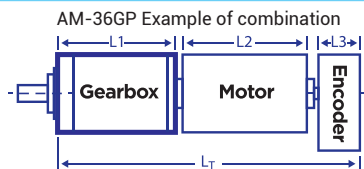


### GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm			
Output shaft	Stainless steel hardened	Permissible force press fits	max. 150 N			
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 150N			
Ring gear	Stainless steel hardened	Recommended inut speed	8000RPM			
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C			
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH			
Axial play	0-0.3	Number of stages	1	2	3	4
Directions	CW/CCW	Permissible load (14mm from flange)	140N	230N	230N	230N

### GEARBOX DATA

Number of stage	1			2		3			4			
	Reduction ratio X:1	3.5	4.3	6.0	12	36	43	81	216	150	353	756
Reduction ratio absolute	7/2	13/3	6/1	49/4	36/1	343/8	2197/27	216/1	2401/16	28561/81		
Motor shaft max. diametre (mm)	6	4	6	4	6	4	6	4	6	6	4	4
Gearbox length "L" (mm)	30.6			39.6		48.6			57.6			
Max. continuous torque (N.m)	1.2			3		5			6			
Max. intermittent torque (N.m)	1.8			4.5		7.5			9			
Average backlash no load	0.7°			0.8°		0.8°			0.8°			
Gearbox efficiency	90%			81%		73%			65%			
Max. mass inertia (g.cm <sup>2</sup> )	3			3.17		3.18			3.18			
Gearbox weight approx (g)	210			270		330			360			
gearbox model	AM-36GPA-X			AM-36GPB-X		AM-36GPC-X			AM-36GPD-X			



Recommend Motor:  
Coreless Motor (w/E)  
AM-CL3570GAN  
AM-CL4071GAE  
Brushless Motor (w/E)  
AM-BL3260AN AM-BD3260AN  
AM-BL3270AN AM-BD3270AN  
AM-BL3660AN AM-BD3660AN  
AM-BL3675BF  
AM-BL3690BF

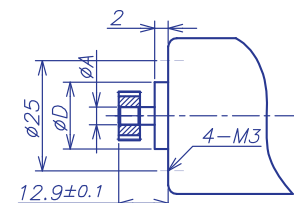
Recommend Encoder:  
Suitable for Coreless Motor  
Encoder S: AM-EN2211S\*\*\*  
Encoder T: AM-EN2412T\*\*\*

Suitable for Brushless Motor  
Encoder S: AM-EN2211S\*\*\*  
Encoder T: AM-EN2412T\*\*\*  
AM-EN3612T\*\*\*

### INPUT GEARBOX DATA

Modulus	0.5		
Press angle	20°		
Teeth number	12	18	24
Max gear hole "A"	4	6	6
Max motor shaft	4	6	6
Motor dimension "D"	8	11	13.5

### MOTOR DIMENSION



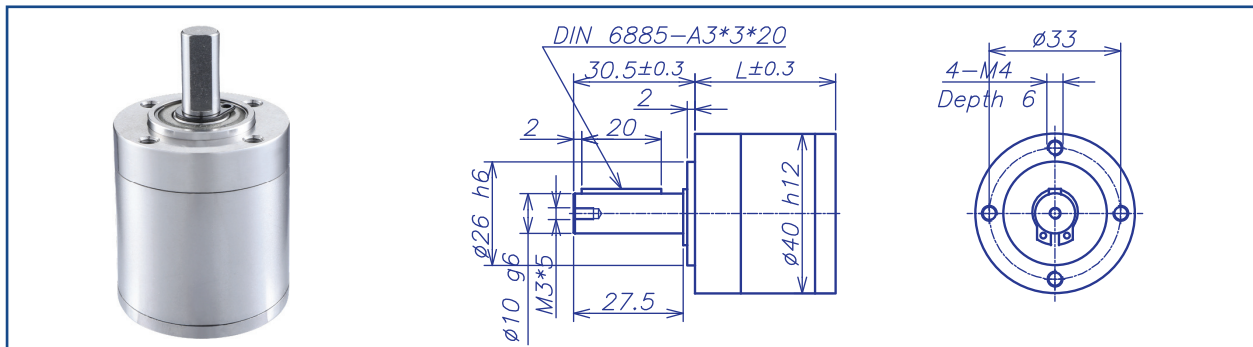
### GEARBOX MOTOR LENGTH "LT"

Gear motor length L <sub>T</sub>	120.3	119.3	159.6
Gear box length L <sub>1</sub>	39.6	48.6	57.6
Motor length L <sub>2</sub>	70	60	90
Encoder length L <sub>3</sub>	10.7	10.7	12

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## AM-40GP Series



GEARBOX CHARACTER				
Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm	
Output shaft	Stainless steel hardened	Permissible force press fits	max. 150 N	
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 150N	
Ring gear	Stainless steel hardened	Recommended input speed	8000RPM	
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C	
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH	
Axial play	0-0.3	Number of stages	1	2
Directions	CW/CCW	Permissible load (18mm from flange)	170N	250N

GEARBOX DATA												
Number of stage	1			2		3			4			
Reduction ratio X:1	3.3	4	5.5	11	30	34	64	166	112	256	541	915
				13		42	72		137	286	666	
				16		52	88		169	320		
				18		58	98		189	352		
				22			121		208	393		
Reduction ratio absolute	13/4	4/1	11/2	169/16	121/4	2197/64	64/1	1331/8	28561/256	256/1		14641/16
				13/1		169/4	143/2		2197/16	286/1		
				16/1		52/1	88/1		169/1	20449/64		
				143/8		1859/32	1573/16		24167/128	352/1		
				22/1			121/1		208/1	1573/4		
Motor shaft max. diameter (mm)	6	5	6	5	6	5	6	5	6	5		
Gearbox length "L" (mm)	35.3			46.8		58.3			69.8			
Max. continuous torque (N.m)	2			3		7			9			
Max. intermittent torque (N.m)	3			4.5		10.5			13.5			
Average backlash no load	0.7°			0.8°		0.8°			0.8°			
Gearbox efficiency	90%			81%		73%			65%			
Max. mass inertia (g.cm <sup>2</sup> )	7.12			7.46		7.49			7.5			
Gearbox weight approx (g)	320			415		510			605			
gearbox model	AM-40GPA-X			AM-40GPB-X		AM-40GPC-X			AM-40GPD-X			

AM-40GP Example of combination

INPUT GEARBOX DATA	
Modulus	0.6
Press angle	20°
Teeth number	12 18 24
Max gear hole "A"	5 6 6
Max motor shaft	5 6 6
Motor dimension "D"	9.5 13 16

**MOTOR DIMENSION**

RECOMMEND MOTOR:			
Coreless Motor (w/E)	AM-CL3570GAN	AM-CL4071GAE	
Brushless Motor (w/E)	AM-BL3660AN	AM-BL3675BF	AM-BL3690BF
	AM-BL4060BF	AM-BD3660AN	

RECOMMEND ENCODER:	
Suitable for Coreless Motor	Encoder S: AM-EN2211S***
Encoder T:	AM-EN2412T***
Suitable for Brushless Motor	Encoder S: AM-EN2211S***
Encoder T:	AM-EN2412T***
	AM-EN3612T***

GEARBOX MOTOR LENGTH "LT"			
Gear motor length L <sub>T</sub>	127.5	129	141.8
Gear box length L <sub>1</sub> *	46.8	58.3	69.8
Motor length L <sub>2</sub>	70	60	60
Encoder length L <sub>3</sub>	10.7	10.7	12

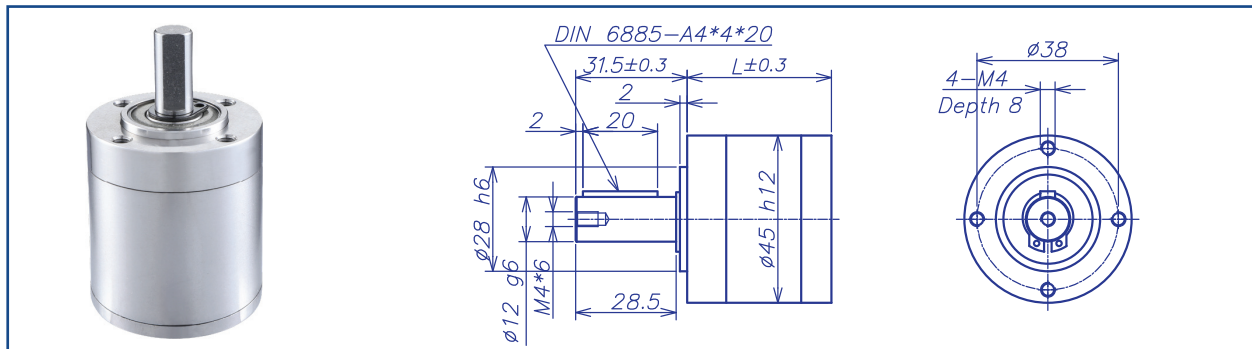
\*Note: If combined with AM-CL3570, L<sub>1</sub>=L+5mm, distance between gear and motor=14.6+5mm.

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AM-45GP Series

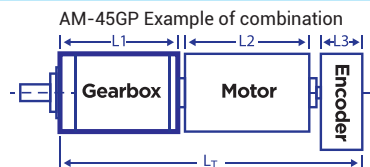


**GEARBOX CHARACTER**

Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 300 N
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 150N
Ring gear	Alloy steel hardened	Recommended input speed	8000RPM
Adapter plate	Stainless steel hardened	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1    2    3    4
Directions	CW/CCW	Permissible load (18mm from flange)	180N   280N   370N   370N

**GEARBOX DATA**

Number of stage	1			2		3			4			
Reduction ratio X:1	3.3	4.0	5.2	11	27	37	64	141	123	256	469	731
Reduction ratio absolute	10/3	4/1	26/5	100/9	676/25	1000/27	64/1	17576/125	10000/81	256/1		456976/625
Motor shaft max. diametre (mm)	8	6		8	6		8	6		8		6
Gearbox length "L" (mm)	36.1			48.1		60.1			72.1			
Max. continuous torque (N.m)	3			7		12			14			
Max. intermittent torque (N.m)	4.5			10.5		18			21			
Average backlash no load	0.6°			0.7°		0.7°			0.7°			
Gearbox efficiency	90%			81%		73%			65%			
Max. mass inertia (g.cm <sup>2</sup> )	12.85			13.35		13.39			13.4			
Gearbox weight approx (g)	435			560		685			810			
gearbox model	AM-45GPA-X			AM-45GPB-X		AM-45GPC-X			AM-45GPD-X			



Recommend Motor:  
Coreless Motor (w/E)  
AM-CL3570GAN  
AM-CL4071GAE  
Brushless Motor (w/E)  
AM-BL3660AN    AM-BD3660AN  
AM-BL3675BF    AM-BD45100AN  
AM-BL3690BF  
AM-BL4060BF  
AM-BL45100AN  
AM-BL45100BF

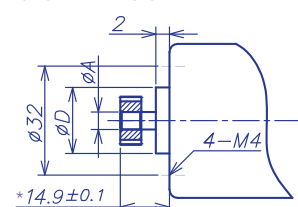
Recommend Encoder:  
Suitable for Coreless Motor  
Encoder S: AM-EN2211S\*\*\*  
Encoder T: AM-EN2412T\*\*\*

Suitable for Brushless Motor  
Encoder S: AM-EN2211S\*\*\*  
Encoder T: AM-EN3612T\*\*\*

**INPUT GEARBOX DATA**

Modulus	0.6		
Press angle	20°		
Teeth number	15	21	27
Max gear hole "A"	6.0	8.0	8.0
Max motor shaft	6.0	8.0	8.0
Motor dimension "D"	11	15	18

**MOTOR DIMENSION**



**GEARBOX MOTOR LENGTH "LT"**

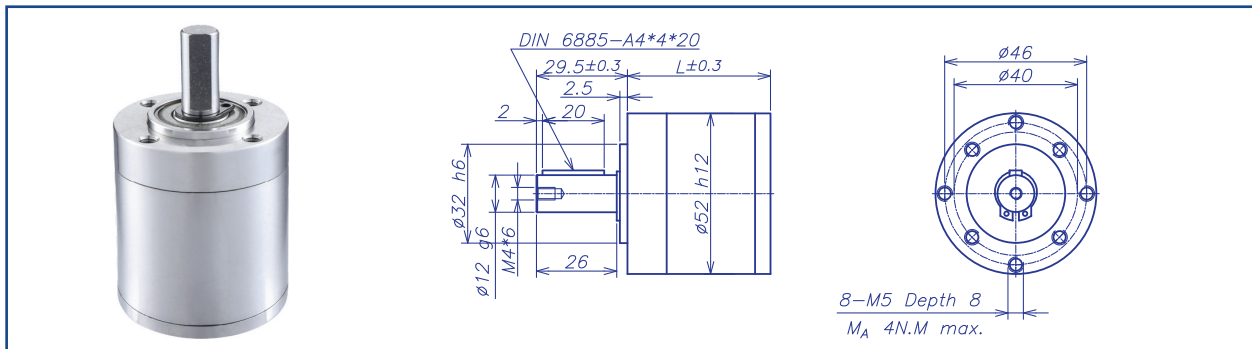
Gear motor length L <sub>T</sub>	130.8	184.1
Gear box length L <sub>1</sub> *	60.1	72.1
Motor length L <sub>2</sub>	60	100
Encoder length L <sub>3</sub>	10.7	12

\*Note: If combined with AM-CL3570, L1=L+5mm, distance between gear and motor=14.9+5mm.

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AM-52GP Series

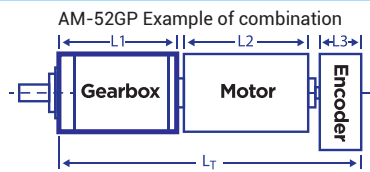


**GEARBOX CHARACTER**

Gear type	Straight teeth	Radial Play (12mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 500 N
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 200N
Ring gear	Alloy steel hardened	Recommended inut speed	6000RPM
Adapter plate	Aluminium alloy	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1    2    3    4
Directions	CW/CCW	Permissible load (12mm from flange)	420N   630N   900N   900N

**GEARBOX DATA**

Number of stage	1		2		3		4		
Reduction ratio X:1	3.5	4.3	12 15 21	19 26	43 53 66 74 126	81 91 113 156	150 186 230 257 285	319 394 441 546 756	353 488 546 676 936
Reduction ratio absolute	7/2	13/3	49/4 91/6 21/1	169/9 26/1	343/8 637/12 1183/18 126/1	2197/27 91/1 338/3 156/1	2401/16 4459/24 8281/36 1029/4 15379/54	637/2 1183/3 441/1 546/1 756/1	28561/81 4394/9 546/1 676/1 936/1
Motor shaft max. diameter (mm)	10	8	10	8	10	8	10	8	
Gearbox length "L" (mm)	46.3		62.8		79.3		95.8		
Max. continuous torque (N.m)	4		15		30		30		
Max. intermittent torque (N.m)	6		22.5		45		45		
Average backlash no load	0.6°		0.7°		0.7°		0.7°		
Gearbox efficiency	90%		81%		73%		65%		
Max. mass inertia (g.cm <sup>2</sup> )	19.99		20.98		21.06		21.07		
Gearbox weight approx (g)	510		720		930		1140		
gearbox model	AM-52GPA-X		AM-52GPB-X		AM-52GPC-X		AM-52GPD-X		



Recommend Motor:  
Coreless Motor (w/E)

Brushless Motor (w/E)  
AM-BL4060BF    AM-BD45100AN  
AM-BL45100AN  
AM-BL45100BF

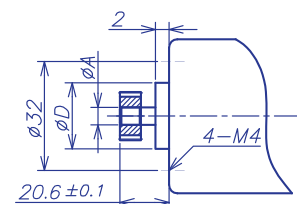
Recommend Encoder:  
Suitable for Coreless Motor  
-

Suitable for Brushless Motor  
Encoder S: AM-EN2211S\*\*\*  
Encoder T: AM-EN3612T\*\*\*

**INPUT GEARBOX DATA**

Modulus	0.7	
Press angle	20°	
Teeth number	12	18    24
Max gear hole "A"	-	8.0    10
Max motor shaft	-	8.0    10
Motor dimension "D"	-	15    19

**MOTOR DIMENSION**



**GEARBOX MOTOR LENGTH "LT"**

Gear motor length L <sub>T</sub>	190
Gear box length L <sub>1</sub>	79.3
Motor length L <sub>2</sub>	100
Encoder length L <sub>3</sub>	10.7

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