Zilvertron
mechanics & electronics

vishan 唯川
BLDC MOTOR & CONTROLLER

PRODUCT CATALOGUE

Perfect customized Slotless BLDC motors, gearheads, encoders, controllers

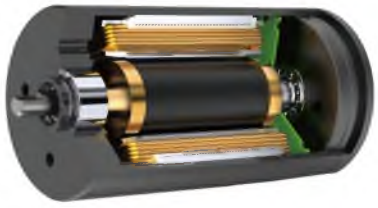
Silent, Reliable, Efficient, Powerful

www.vishanmotor.com

Creative ideas for drive

2025

OUR PRODUCTS OVERVIEW



Brushless DC motor
Slotless Winding

Brushelss DC motors are electronically commutated, the size is from φ6-50mm, with up to 300W

Main Characteristics

-No cogging torque
-Very long lifetime
-Well control properties
-Speed up to 60,000rpm

Product lines

-EC SERIES Basic product range
-ECD series Electronics integrated
-ECH Series Provide high speed performance

Brushless DC motor
Slotless Winding-4Pole

The innovative 4-pole magnet and winding design can greatly increase the power density of the motor, with sizes from φ22mm to 30mm with up to 200W

Main Characteristics

-Ultra high power density
-Ultra High efficienty
-High reliability
-Low noise
-No Cogging
-Low inductance

Product lines

-EC-4pole 22 series
-EC-4pole 28 series
-EC-4pole 30 series

Brushless DC motor
Slotted Winding

The slotted structure design concentrates the magnetic field, improving efficiency and torque density, allowing the motor to achieve greater output in a smaller volume.

Main Characteristics

-Cost effective
-Large starting torque
-Low noise
-Good heat dissipation
-Long operational lifetime
-Customizable

Product lines

-BL SERIES: Basic product range
-BD series: Electronics integrated
-BF Series: External rotor structure & Electronics integrated
-ECI Series: Multipole internal rotor design

Planetary gearbox

Through the high-precision planetary gearbox design and flexible gear material, internal structure and grease customization, it can meet the design requirements of the non-pass to the greatest extent, with dimensions ranging from φ8mm to 42mm and maximum torque up to 20Nm

Product lines

Planetary gearhead

Screws planetary gearhead

Encoder

The encoder range covers magnetic encoders, optical encoders, and is available in multiturn or singleturn absolute solutions in sizes from φ 8 mm to 24 mm

Product lines

Magnetic encoders

Optical encoders

High position accuracy, repeability and high signal quality.

Multifarious function customization

Controllers

Based on the hardware and software solutions of our own drive team, we can provide motor control solutions for motors with hallsensors, without Hallsensors, and servo motors. It is mainly suitable for working voltages ranging from 4.5VDC to 52VDC, with a maximum current up to 30A.

Product lines:

For motor with hallsensor

For motor without hallsensor

Motion control

We continue to innovate to create high precision and performance in the field of micro-kinematics, based on a series of standard products, through in-depth communication, to understand your specific needs and provide professional, flexible customization and fast sample delivery services for specific applications.

Planetary gearhead

Screw gearhead

Model	Dimension (mm)	Nominal Troque (mNm)	Page
PG08	Φ8	0.01-0.1	118
PG10	Φ10	0.03-0.3	119
PG12	Φ12	0.1-0.2	120
PG13	Φ13	0.18-0.36	121
PG16	Φ16	0.42-0.9	122
PG22	Φ22	0.72-1.45	123
PG28	Φ28	1.55-3.1	124
PG32	Φ32	2.34-4.65	125
PG36	Φ36	3.24-6.48	126
PG42	Φ42	6.5-13	127

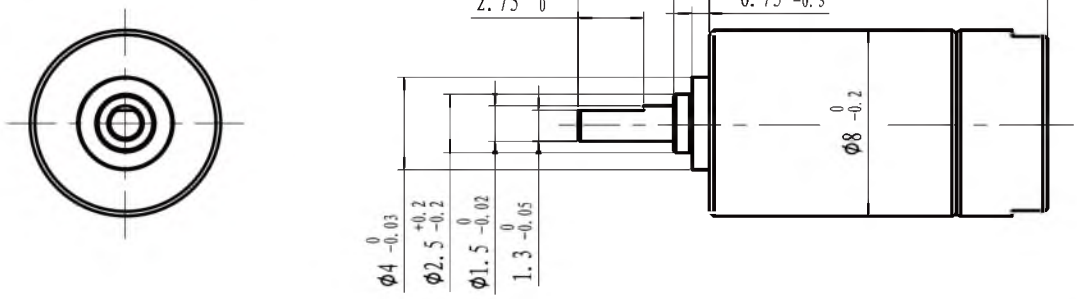
Model	Dimension (mm)	Type	Page
GS16	Φ16	ball screw	128
GS22	Φ22	ball screw	129
GS30	Φ30	ball screw	130

Our high-precision planetary reduction gearbox can provide comprehensive customization of external dimensions,internal grease and gear materials, and achieve the best overall performance by adjusting the motor input speed

Basic Data:
Diameter: φ8mm-42mmm
Maximum Continuous torque: 25Nm
MaximumPermissiblespeed: 50,000rpm
Operate temperature: -30°C-+80°C

Modular platform:

EC Series	BL Series
EC- 4Pole series	BD Series
ECD Series	BF Series
ECH Series	ECI Series



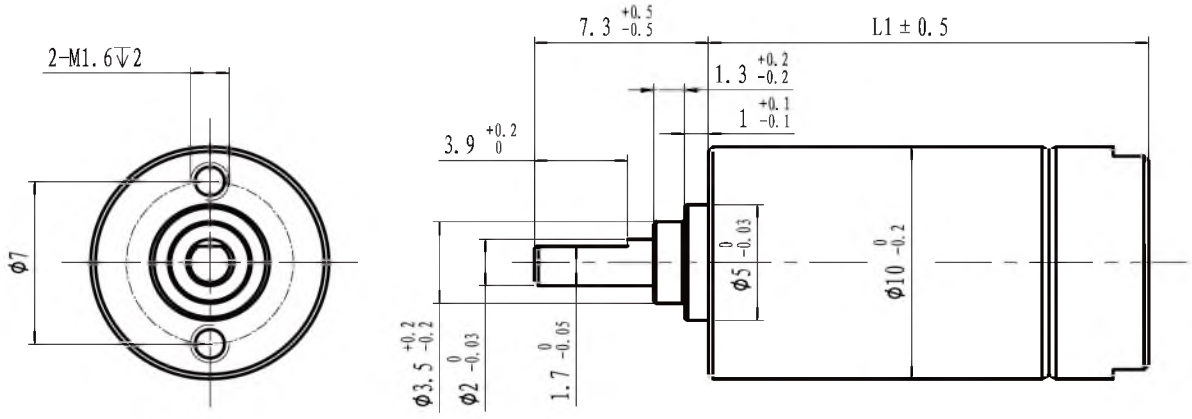
M 3:1

			PG08				
Gearhead Data							
1	Housing material				Steel		
2	Geartrain material				Steel		
3	Bearing type on output shaft				Ball bearing		
4	Max. radial load (4.5mm from flange)	N			8		
5	Max. axial load	N			5		
6	Radial play of shaft	mm			0.08		
7	Thrust play of shaft	mm			0.1		
8	Bcaklash at no load	°			3		
9	Max. continuous speed	rpm			22000		
10	Operating temperatue range	℃			-30..+100		
11	Number of stages		1	2	3	4	5
12	Max continuous torque	Nm	0.01	0.02	0.06	0.08	0.1
13	Max. intermittent torque	Nm	0.015	0.03	0.09	0.12	0.15
14	Max. efficiency	%	80	64	51	41	33
15	Gearhead length L1	mm	9.2	11.7	14.2	16.7	19.2
16	Ratio	X:1	4.64	21.5	99.6	462	2141

Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft

More:
Special design for high speed/high torque
Details please contact our sales engineer



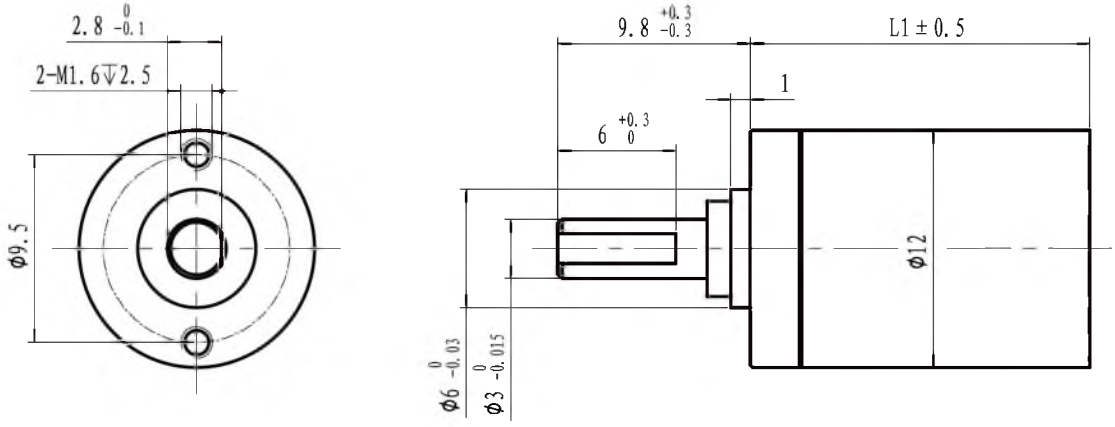
M 3:1

			PG08				
Gearhead Data							
1	Housing material				Steel		
2	Geartrain material				Steel		
3	Bearing type on output shaft				Ball bearing		
4	Max. radial load (5mm from flange)	N			10		
5	Max. axial load	N			5		
6	Radial play of shaft	mm			0.08		
7	Thrust play of shaft	mm			0.1		
8	Bcaklash at no load	°			3		
9	Max. continuous speed	rpm			30000		
10	Operating temperatue range	℃			-30..+100		
11	Number of stages		1	2	3	4	5
12	Max continuous torque	Nm	0.03	0.05	0.1	0.2	0.3
13	Max. intermittent torque	Nm	0.045	0.08	0.15	0.3	0.45
14	Max. efficiency	%	85	72	61	52	44
15	Gearhead length L1	mm	11.5	15	18.5	22	25.5
16	Ratio	X:1	4	16	64	256	1024

Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft

More:
Special design for high speed/high torque
Details please contact our sales engineer



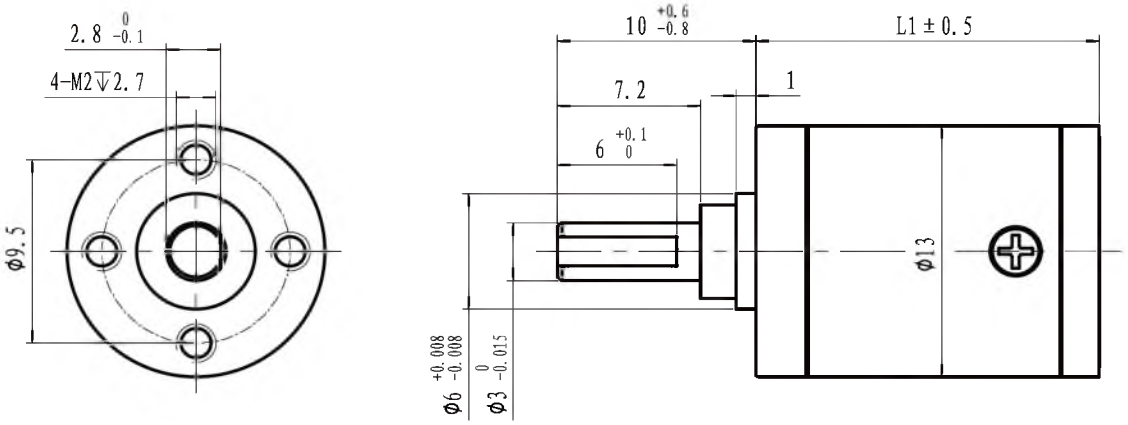
M 2.5:1

			PG12				
Gearhead Data							
1	Housing material				Steel		
2	Geartrain material				Steel		
3	Bearing type on output shaft				Ball bearing		
4	Max. radial load (10mm from flange)	N			5		
5	Max. axial load	N			5		
6	Radial play of shaft	mm			0.1		
7	Thrust play of shaft	mm			0.2		
8	Bcaklash at no load	°			3		
9	Max. continuous speed	rpm			42000		
10	Operating temperatue range	℃			-30..+100		
11	Number of stages		1	2	3	4	5
12	Max continuous torque	Nm	0.1	0.2	0.2	0.2	0.2
13	Max. intermittent torque	Nm	0.15	0.25	0.25	0.25	0.25
14	Max. efficiency	%	90	81	73	65	59
15	Gearhead length L1	mm	15.1	17.9	20.7	23.5	26.3
16	Ratio	X:1	3.47, 3.94	12.07, 13.68 15.5, 18.17	41.92, 47.51 55.69, 53.86 63.13 61.05 71.56, 83.88	145.6, 165.04 187,08, 219.29 248.56, 281.75 291.36 330.26	505.8,

Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft

More:
Special design for high speed/high torque
Details please contact our sales engineer



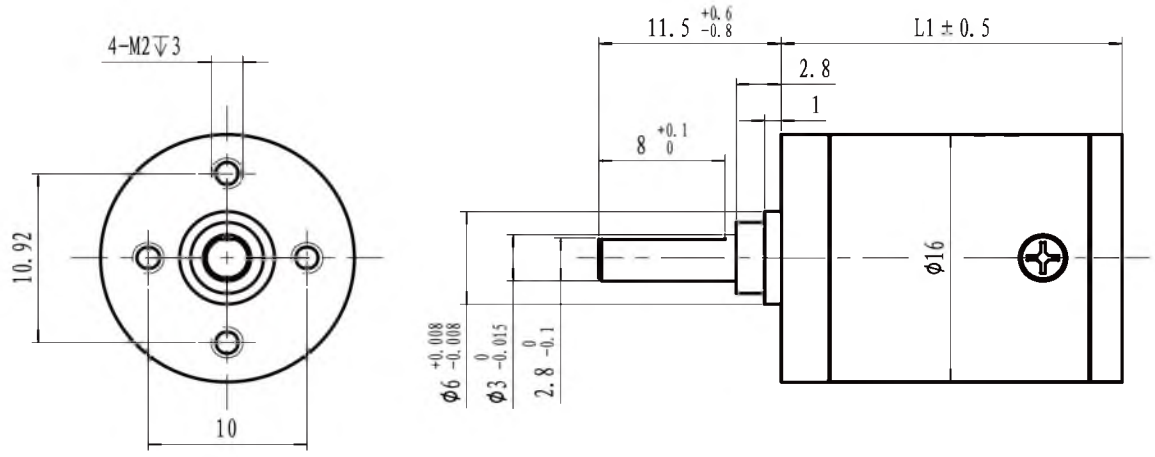
M 2.5:1

			PG12				
Gearhead Data							
1	Housing material				Steel		
2	Geartrain material				Steel		
3	Bearing type on output shaft				Ball bearing		
4	Max. radial load (10mm from flange)	N			5		
5	Max. axial load	N			5		
6	Radial play of shaft	mm			0.04		
7	Thrust play of shaft	mm			0.4		
8	Bcaklash at no load	°			2		
9	Max. continuous speed	rpm			42000		
10	Operating temperatue range	℃			-30..+100		
11	Number of stages		1	2	3	4	5
12	Max continuous torque	Nm	0.18	0.24	0.3	0.36	0.36
13	Max. intermittent torque	Nm	0.54	0.72	0.9	1.08	1.08
14	Max. efficiency	%	93	86	80	75	70
15	Gearhead length L1	mm	16.1	19.6	23.1	26.6	30.1
16	Ratio	X:1	3.6, 4.9	13, 17.6 24	46.7, 63.5 86.4, 117.6	168, 228.6 311.2, 423.5 576.5	604,7, 823, 1120.2, 1524.7, 2075.3,2824.8

Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft

More:
Special design for high speed/high torque
Details please contact our sales engineer



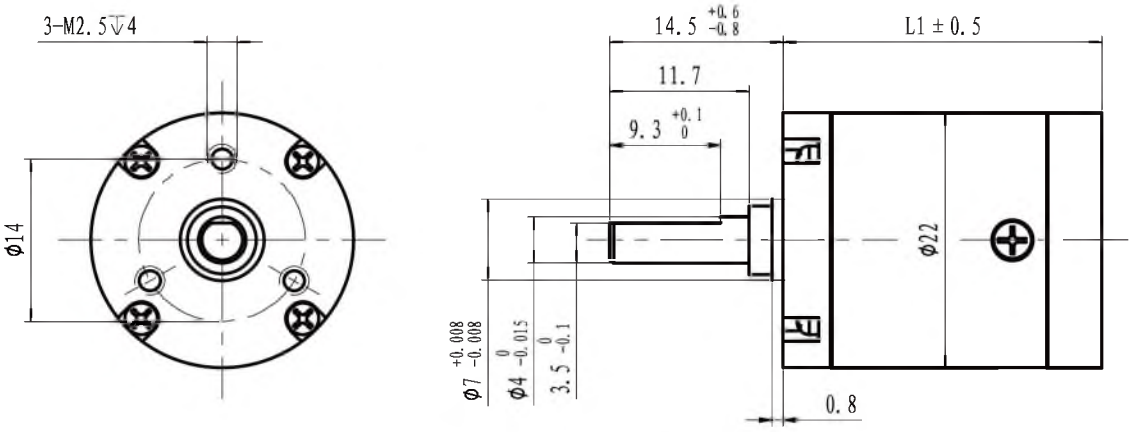
M 2:1

			PG16				
Gearhead Data							
1	Housing material				Steel		
2	Geartrain material				Steel		
3	Bearing type on output shaft				Ball bearing		
4	Max. radial load (10mm from flange)	N			15.6		
5	Max. axial load	N			4.9		
6	Radial play of shaft	mm			0.04		
7	Thrust play of shaft	mm			0.4		
8	Bcaklash at no load	°			2		
9	Max. continuous speed	rpm			42000		
10	Operating temperatue range	℃			-30..+100		
11	Number of stages		1	2	3	4	5
12	Max continuous torque	Nm	0.42	0.6	0.75	0.9	0.9
13	Max. intermittent torque	Nm	0.84	1.2	1.5	1.8	1.8
14	Max. efficiency	%	90	83	77	72	67
15	Gearhead length L1	mm	17.9	21.8	25.7	29.6	33.5
16	Ratio	X:1	3.7, 4.4, 5.4, 6.5	14.5, 16.4, 19.2, 23.7, 28.5, 35.1 42.3,	48.2, 54.5, 61.7, 67.1, 75.9, 80.8, 88.8, 94.5, 103.8, 109.3 125, 131 154, 185.3	204, 228, 251.8, 274.6, 294.4, 313.3 333, 354.4, 389.3, 400.8 455.2, 493.6, 547.9, 560.6 674.8, 690.4	738, 850.3, 944.2, 1023.5, 1136.6, 1232 1328.9, 1447.2, 1502.9, 1636.7, 1757, 1851 1996, 2164, 2402, 2530, 3027, 3644,

Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft

More:
Special design for high speed/high torque
Details please contact our sales engineer



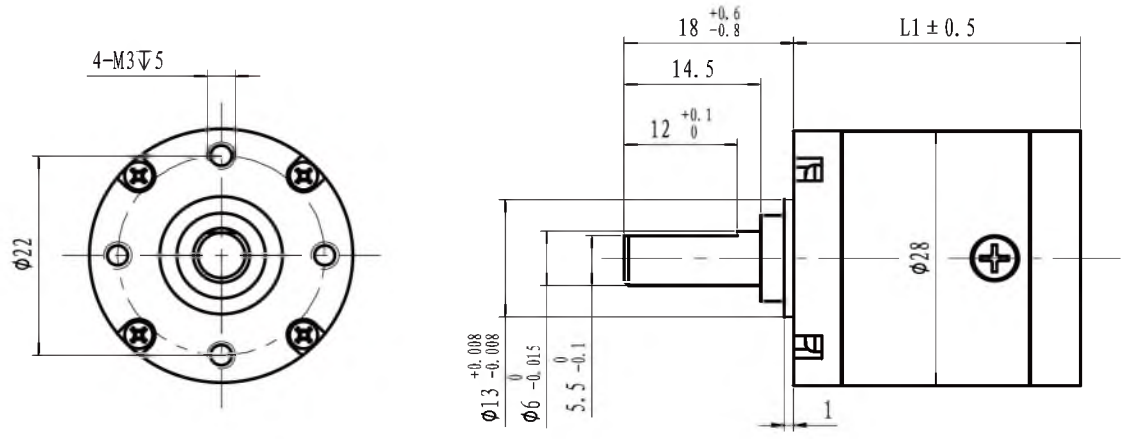
M 1.2:1

			PG22				
Gearhead Data							
1	Housing material				Steel		
2	Geartrain material				Steel		
3	Bearing type on output shaft				Ball bearing		
4	Max. radial load (10mm from flange)	N			15.6		
5	Max. axial load	N			4.9		
6	Radial play of shaft	mm			0.04		
7	Thrust play of shaft	mm			0.4		
8	Bcaklash at no load	°			2		
9	Max. continuous speed	rpm			42000		
10	Operating temperatue range	℃			-30..+100		
11	Number of stages		1	2	3	4	5
12	Max continuous torque	Nm	0.72	0.96	1.2	1.45	1.45
13	Max. intermittent torque	Nm	1.44	1.92	2.4	2.9	2.9
14	Max. efficiency	%	90	83	77	72	72
15	Gearhead length L1	mm	22.6	27.6	32.7	37.7	42.8
16	Ratio	X:1	3.7, 4.4, 5.4, 6.5	14.5, 16.4, 19.2, 23.7, 28.5, 35.1 42.3,	48.2, 54.5, 61.7, 67.1, 75.9, 80.8, 88.8, 94.5, 103.8, 109.3 125, 131 154, 185.3	204, 228, 251.8, 274.6, 294.4, 313.3 333, 354.4, 389.3, 400.8 455.2, 493.6, 547.9, 560.6 674.8, 690.4	738, 850.3, 944.2, 1023.5, 1136.6, 1232 1328.9, 1447.2, 1502.9, 1636.7, 1757, 1851 1996, 2164, 2402, 2530, 3027, 3644,

Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft

More:
Special design for high speed/high torque
Details please contact our sales engineer



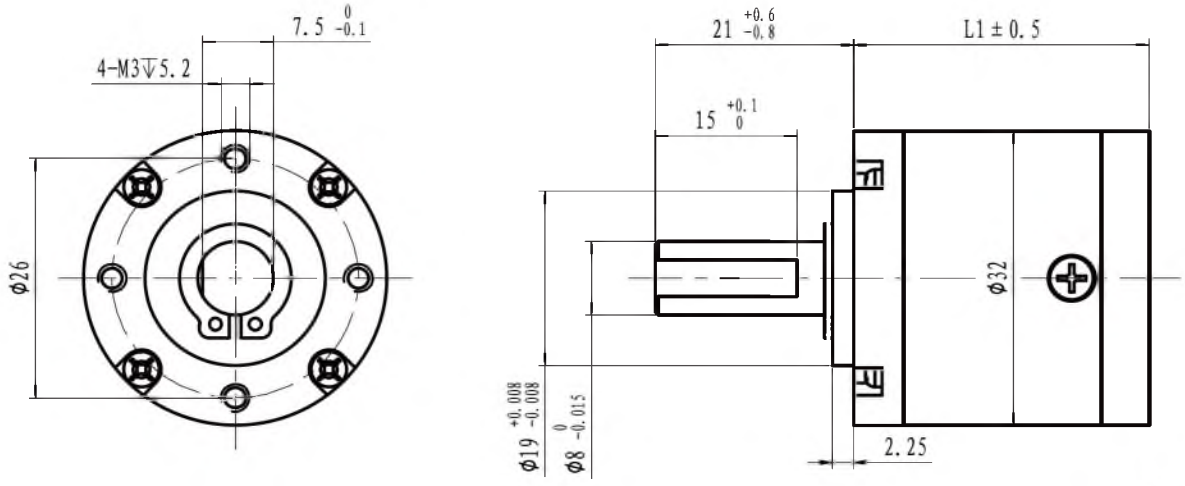
M 1.2:1

			PG28			
Gearhead Data						
1	Housing material			Steel		
2	Geartrain material			Steel		
3	Bearing type on output shaft			Ball bearing		
4	Max. radial load (10mm from flange)	N		58.8		
5	Max. axial load	N		29.4		
6	Radial play of shaft	mm		0.04		
7	Thrust play of shaft	mm		0.4		
8	Bcaklash at no load	°		2		
9	Max. continuous speed	rpm		36000		
10	Operating temperatue range	℃		-30..+100		
11	Number of stages		1	2	3	4
12	Max continuous torque	Nm	1.55	2.1	2.6	3.1
13	Max. intermittent torque	Nm	3.1	4.2	5.2	6.2
14	Max. efficiency	%	90	83	77	72
15	Gearhead length L1	mm	28.4	34.7	41	47.3
16	Ratio	X:1	4.4, 5.2, 6.7, 8.3	15.1, 16.9, 18, 20.1, 23.1, 25.6 27.6, 29.3, 31.8, 35, 43.5, 55.2,	61.7, 68,7, 77,1, 87,6, 100.6, 109, 120, 125, 129, 134.1 139.8, 144.7 149.1, 154 166.8, 183.8 211.7, 243 264.5, 290	335.9, 385.5, 411.4, 494.8, 528, 630, 677.6, 705.8 759.7, 860.4 964.7, 1069 1158, 1276, 1523, 1755, 2014, 3051 3792, 4713

Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft

More:
Special design for high speed/high torque
Details please contact our sales engineer



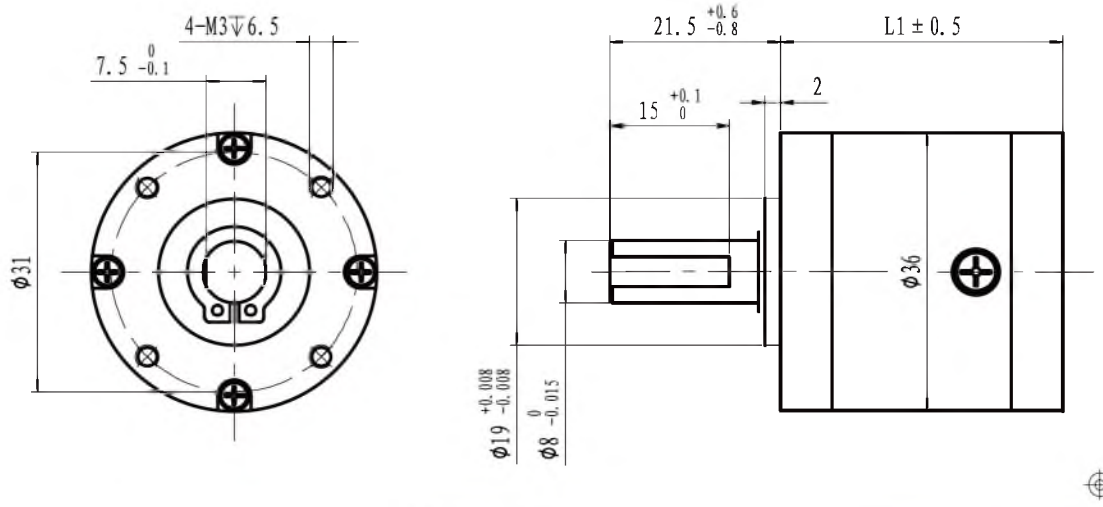
M 1.2:1

			PG32			
Gearhead Data						
1	Housing material			Steel		
2	Geartrain material			Steel		
3	Bearing type on output shaft			Ball bearing		
4	Max. radial load (10mm from flange)	N		98		
5	Max. axial load	N		58.8		
6	Radial play of shaft	mm		0.04		
7	Thrust play of shaft	mm		0.4		
8	Bcaklash at no load	°		2		
9	Max. continuous speed	rpm		36000		
10	Operating temperatue range	℃		-30..+100		
11	Number of stages		1	2	3	4
12	Max continuous torque	Nm	2.34	3.1	3.88	4.65
13	Max. intermittent torque	Nm	4.68	6.2	7.76	9.3
14	Max. efficiency	%	90	83	77	72
15	Gearhead length L1	mm	31.2	38.7	46.2	53.7
16	Ratio	X:1	4.4, 5.2, 6.7, 8.3	15.1, 16.9, 18, 20.1, 23.1, 25.6 27.6, 29.3, 31.8, 35, 43.5, 55.2,	61.7, 68,7, 77,1, 87,6, 100.6, 109, 120, 125, 129, 134.1 139.8, 144.7 149.1, 154 166.8, 183.8 211.7, 243 264.5, 290	335.9, 385.5, 411.4, 494.8, 528, 630, 677.6, 705.8 759.7, 860.4 964.7, 1069 1158, 1276, 1523, 1755, 2014, 3051 3792, 4713

Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft

More:
Special design for high speed/high torque
Details please contact our sales engineer



M 1:1

			PG36			
Gearhead Data						
1	Housing material			Steel		
2	Geartrain material			Steel		
3	Bearing type on output shaft			Ball bearing		
4	Max. radial load (10mm from flange)	N		98		
5	Max. axial load	N		58.8		
6	Radial play of shaft	mm		0.04		
7	Thrust play of shaft	mm		0.4		
8	Bcaklash at no load	°		2		
9	Max. continuous speed	rpm		30000		
10	Operating temperatue range	℃		-30..+100		
11	Number of stages		1	2	3	4
12	Max continuous torque	Nm	3.24	4.32	5.4	6.48
13	Max. intermittent torque	Nm	6.48	8.64	10.8	13
14	Max. efficiency	%	90	83	77	72
15	Gearhead length L1	mm	35.6	44.2	52.8	61.4
16	Ratio	X:1	4.3, 5.1, 6.3, 7.6	14.7, 16.3, 18.6, 19.2, 21.9, 23.9, 25.8, 27.2, 28.9, 32 38.7, 39.7, 48, 58.1	65.6, 74.6, 81.4, 90.5, 98.5, 109, 112.1, 124.6, 123, 141.8, 150.4, 162.4, 171.2, 182, 196.5, 220.3 243.9, 250.7	277.4, 302.6, 335.8, 351, 382.2, 413.2, 459.3, 500.1, 537.4, 583.5, 620.6, 686.9, 744.7, 824.4, 869, 924.2 1006, 1388, 1680, 3380

Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft

More:
Special design for high speed/high torque
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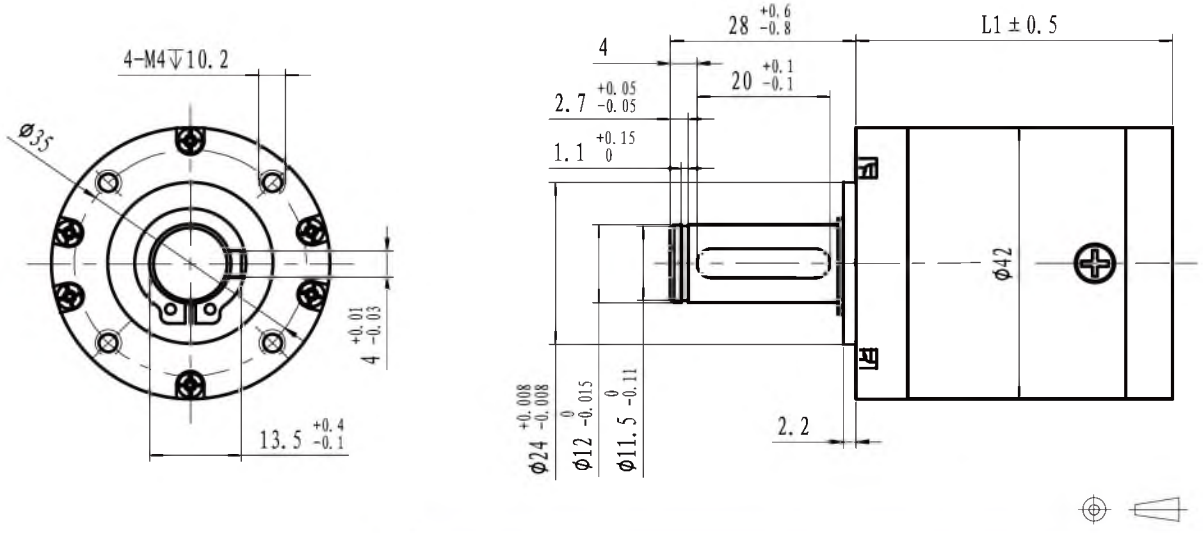


M 1:1.2

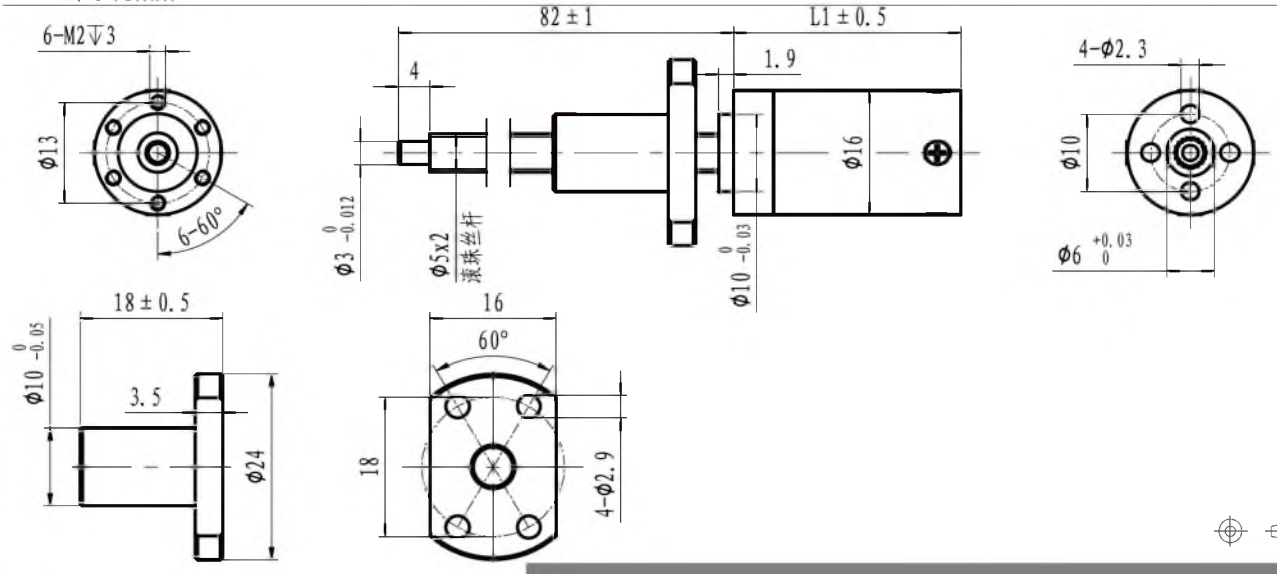
			PG42			
Gearhead Data						
1	Housing material			Steel		
2	Geartrain material			Steel		
3	Bearing type on output shaft			Ball bearing		
4	Max. radial load (10mm from flange)	N		196		
5	Max. axial load	N		98		
6	Radial play of shaft	mm		0.04		
7	Thrust play of shaft	mm		0.4		
8	Bcaklash at no load	°		2		
9	Max. continuous speed	rpm		30000		
10	Operating temperatue range	℃		-30..+100		
11	Number of stages		1	2	3	4
12	Max continuous torque	Nm	6.5	8.6	10.8	13
13	Max. intermittent torque	Nm	13	17.2	21.6	26
14	Max. efficiency	%	90	83	77	72
15	Gearhead length L1	mm	43.8	54.6	65.4	76
16	Ratio	X:1	4.3, 5.1, 6.3, 7.6	14.7, 16.3, 18.6, 19.2, 21.9, 23.9, 25.8, 27.2, 28.9, 32 38.7, 39.7, 48, 58.1	65.6, 74.6, 81.4, 90.5, 98.5, 109, 112.1, 124.6, 123, 141.8, 150.4, 162.4, 171.2, 182, 196.5, 220.3 243.9, 250.7	277.4, 302.6, 335.8, 351, 382.2, 413.2, 459.3, 500.1, 537.4, 583.5, 620.6, 686.9, 744.7, 824.4, 869, 924.2 1006, 1388, 1680, 3380

Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft

More:
Special design for high speed/high torque
Details please contact our sales engineer

GS16, Φ16mm



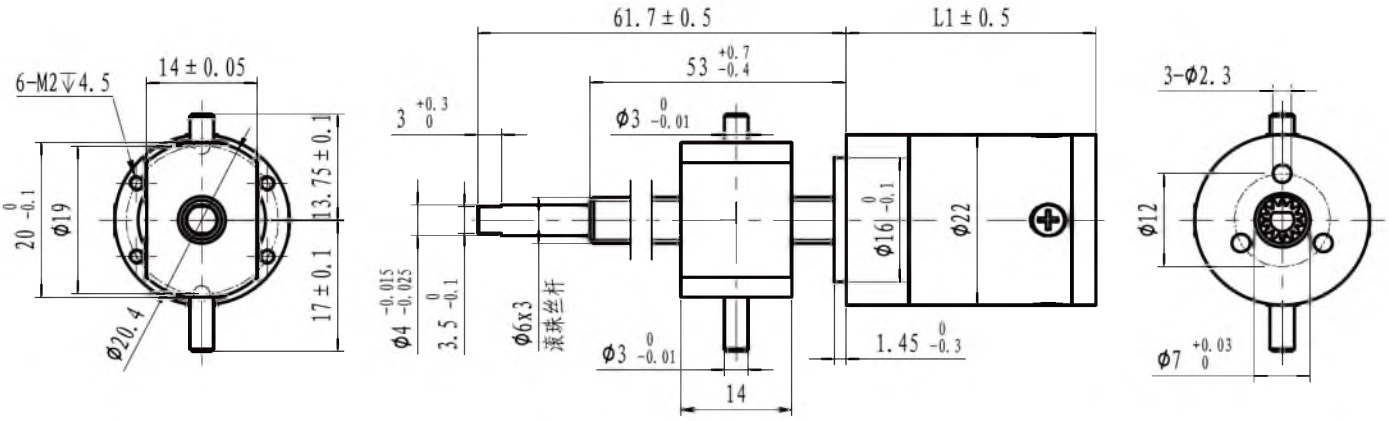
M 1:1

			GS16			
Gearhead Data						
1	Housing material				Steel	
2	Geartrain material				Steel	
3	Bearing type on output shaft				Ball bearing	
4	Max. radial load (5mm from flange)	N			60	
5	Max. axial load	N			400	
6	Radial play of shaft	mm			0.04	
7	Axial play	mm			preloaded	
8	Max. continuous speed	rpm			12000	
9	Operating temperatue range	℃			-20..+100	
10	Number of stages		1	2	3	4
11	Max. continuous feed force	N	60	110	200	280
12	Max. intermittent feed force	N	120	220	400	400
13	Max. efficiency	%	80	72	63	55
14	Bcaklash at no load	°	1.5	2	2	2.2
15	Mechanical positioning accuracy	mm	0.045	0.045	0.05	0.05
16	Gearhead length L1	mm	22.7	28.7	33	37.3
17	Ratio	X:1	3.55, 3.95 5.31	13, 14 16, 19 21, 26 28, 35	45, 50 55, 62 67, 74 83, 92 100, 103 111, 124 138, 150 172, 186 231	158, 176 196, 218 237, 243 263, 293 326, 354 365, 394 406, 439 490, 530 546, 590 610, 659 679, 734 794, 820 987, 1135 1227

Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft

More:
Special design for high speed/high torque
Details please contact our sales engineer



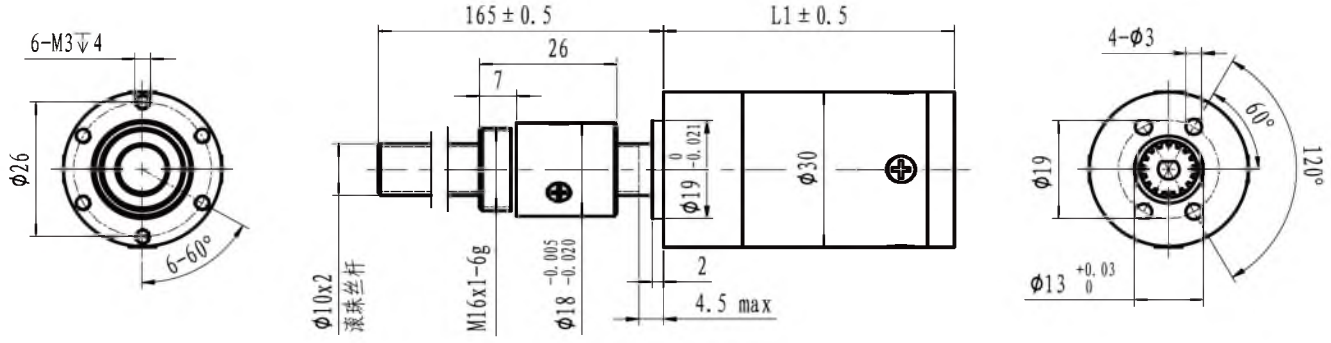
M 1:1

			GS22			
Gearhead Data						
1	Housing material				Steel	
2	Geartrain material				Steel	
3	Bearing type on output shaft				Ball bearing	
4	Max. radial load (10mm from flange)	N			100	
5	Max. axial load	N			600	
6	Radial play of shaft	mm			0.04	
7	Axial play	mm			preloaded	
8	Max. continuous speed	rpm			8000	
9	Operating temperatue range	℃			-20..+100	
10	Number of stages		1	2	3	4
11	Max. continuous feed force	N	110	200	290	400
12	Max. intermittent feed force	N	220	400	500	550
13	Max. efficiency	%	80	72	63	55
14	Bcaklash at no load	°	1	1.2	1.6	1.6
15	Mechanical positioning accuracy	mm	0.04	0.04	0.045	0.045
16	Gearhead length L1	mm	31.5	38.5	43	47.5
17	Ratio	X:1	3.7, 4.3	12, 14 16, 18 19, 22 25, 29	40, 45 47, 51 52, 59 61, 63 68, 71 73, 79 82, 93 95, 100 107, 115 124, 130 169	150, 168 173, 186 194, 209 218, 225 235, 242 252, 264 272, 292 305, 315 328, 337 344, 353 369, 380 397, 409 426, 480 493, 516 531, 556 596, 626 642, 672 777, 837 1012, 1140

Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft

More:
Special design for high speed/high torque
Details please contact our sales engineer



M 1:1.5

			GS30			
Gearhead Data						
1	Housing material				Steel	
2	Geartrain material				Steel	
3	Bearing type on output shaft				Ball bearing	
4	Max. radial load (10mm from flange)	N			100	
5	Max. axial load	N			600	
6	Radial play of shaft	mm			0.04	
7	Axial play	mm			preloaded	
8	Max. continuous speed	rpm			8000	
9	Operating temperatue range	°C			-20..+100	
10	Number of stages		1	2	3	4
11	Max. continuous feed force	N	500	1000	1500	2000
12	Max. intermittent feed force	N	1000	2000	2500	2700
13	Max. efficiency	%	80	72	63	55
14	Bcaklash at no load	°	0.8	1	1	1.5
15	Mechanical positioning accuracy	mm	0.045	0.045	0.055	0.055
16	Gearhead length L1	mm	45.5	55	61.7	68.4
17	Ratio	X:1	3.11, 3.71 4.8	10, 12 14, 15 18, 21 23, 28	45, 50 55, 62 67, 74 83, 92 100, 103 111, 124 138, 150 172, 186 231	30, 36 43, 46 51, 55 66, 72 79, 86 103, 111 123, 132 159, 173 190, 206 223, 246 266, 295 318, 381 412, 456 492, 531 589, 636 706, 762

Configuration

Pinion: Metal/Plastic
Ball bearing: Preload
Flange: Standard frange front&back/customize the frange
Shaft: Length/Diameter/Cut face/double shaft/hollow shaft

More:
Special design for high speed/high torque
Details please contact our sales engineer

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