

# PL(E/F) Series High Precision Planetary Gear Head

## Key Features:

- Low Backlash (as low as 3 arcmin.)
- Low noise ( $\leq 65$  dB(A))
- Long life (30,000 Hours)
- High Output Torque
- High Efficiency (96%)
- Life Long Lubrication.
- Easy Motor mounting (custom made mounting configurations)



## Production Number Code for PL Series Gear Head:

80      PLE      40  
①          ②          ③

① Frame Size: 80 = 80mm

② Gear Head Type  
PLE: Round Output Flange Type  
PLF: Square Output Flange Type

③ Reduction Ratio: 40 = 40:1

## Applications:

- Servo Motors
- Stepping Motor
- Brushless DC Motors
- PMDC Motors

# PL(E/F) Series Precision Planetary Gear Head



## Technical Data

Model	40PL(E/F)	60PL(E/F)	80PL(E/F)	120PL(E/F)	160PL(E/F)	Ratio	Stage	
Rated Output Torque	N.m	4.5	12	40	80	400	3	1
		6	16	50	100	450	4	
		6	16	50	110	450	5	
		5	15	45	120	450	8	
		5	15	45	120	305	10	
		16.5	44	110	210	N/A	9	2
		18	44	120	260	800	12	
		18	40	110	230	700	15	
		20	44	120	260	800	16	
		20	44	120	260	800	20	
		18	40	110	230	700	25	
		20	44	120	260	800	32	
		18	40	110	230	700	40	
		7.5	18	50	120	450	64	
		20	44	120	260	N/A	60	
		20	44	120	260	N/A	80	
		20	44	120	260	N/A	100	
		18	40	110	230	N/A	120	
		20	44	120	260	N/A	160	
		18	40	110	230	N/A	200	
20	44	120	260	N/A	256			
18	40	110	230	N/A	320			
7.5	18	50	120	N/A	512			
Life	Hour	30,000						
Max. Torque	N.m	2 times of the rated output torque						

Model	40PL(E/F)	60PL(E/F)	80PL(E/F)	120PL(E/F)	160PL(E/F)	Unit	Stage
Permissible Radial Load	160	340	650	1500	4200	N	
Permissible Axial Load	160	450	900	2100	6000	N	
Full Load Efficiency	96					%	1
	94						2
	90						3
Weight	0.4	0.9	2.1	6	18	Kg	1
	0.5	1.1	2.6	8	22		2
	0.6	1.3	3.1	9.5			3
Working Temperature	-25°C ~ +90°C					°C	
Protection Class	IP54						
Lubrication	Life time						
Mounting Orientation	Any						

Note: Permissible radial and axial load point at middle of the shaft (L4/2) and speed at 100RPM

# PL(E/F) Series Precision Planetary Gear Head



## Technical Data

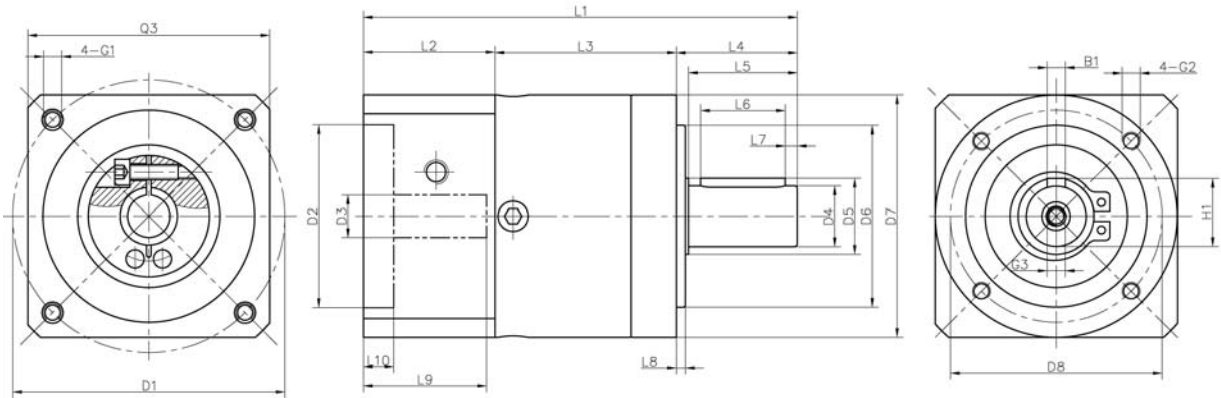
Model		40PL(E/F)	60PL(E/F)	80PL(E/F)	120PL(E/F)	160PL(E/F)	Ratio
Load Inertia	Kgcm <sup>2</sup>	0.031	0.135	0.77	2.63	12.14	3
		0.022	0.093	0.52	1.79	7.78	4
		0.019	0.078	0.45	1.53	6.07	5
		0.017	0.065	0.39	1.32	4.63	8
		0.015	0.054	0.34	1.14	3.52	10
		0.03	0.131	0.74	2.62	12.1	9
		0.029	0.127	0.72	2.56	12.37	12
		0.023	0.077	0.71	2.53	12.35	15
		0.022	0.088	0.5	1.75	7.47	16
		0.019	0.075	0.44	1.5	6.65	20
		0.019	0.075	0.44	1.49	5.81	25
		0.017	0.064	0.39	1.3	4.5	32
		0.016	0.064	0.39	1.3	4.5	40
		0.016	0.064	0.39	1.3	4.5	64
		0.029	0.13	0.7	2.57	N/A	60
		0.019	0.075	0.5	1.5	N/A	80
		0.019	0.075	0.44	1.49	N/A	100
		0.029	0.13	0.7	2.5	N/A	120
		0.016	0.064	0.39	1.3	N/A	160
		0.016	0.064	0.39	1.3	N/A	200
0.016	0.064	0.39	1.3	N/A	256		
0.016	0.064	0.39	1.3	N/A	320		
0.016	0.064	0.39	1.3	N/A	512		
Model		40PL(E/F)	60PL(E/F)	80PL(E/F)	120PL(E/F)	160PL(E/F)	Stage
Backlash (arcmin)	High	<5	<3	<3	<3	<3	1
	Standard	<10	<8	<8	<8	<8	
	High	<8	<5	<5	<5	<5	2
	Standard	<12	<10	<10	<10	<10	
	High	<10	<8	<8	<8	N/A	3
	Standard	<15	<12	<12	<12	N/A	
Torsion Stiffness	N.m/arcmin	0.7	1.8	4.5	12	38	
Noise	dB(A)	55	58	60	65	70	
Max. Input Speed	RPM	10000	8000	6000	6000	6000	
Rated Input speed	RPM	4500	4000	4000	3500	3000	

Note: Load Inertia varies with different shaft length and diameter.

Note: Noise tested @ 1.0 m, no load input speed of 3000RPM.

# PLE Series Precision Planetary Gear Head – (Round Output Flange)

## Mechanical Dimensions:



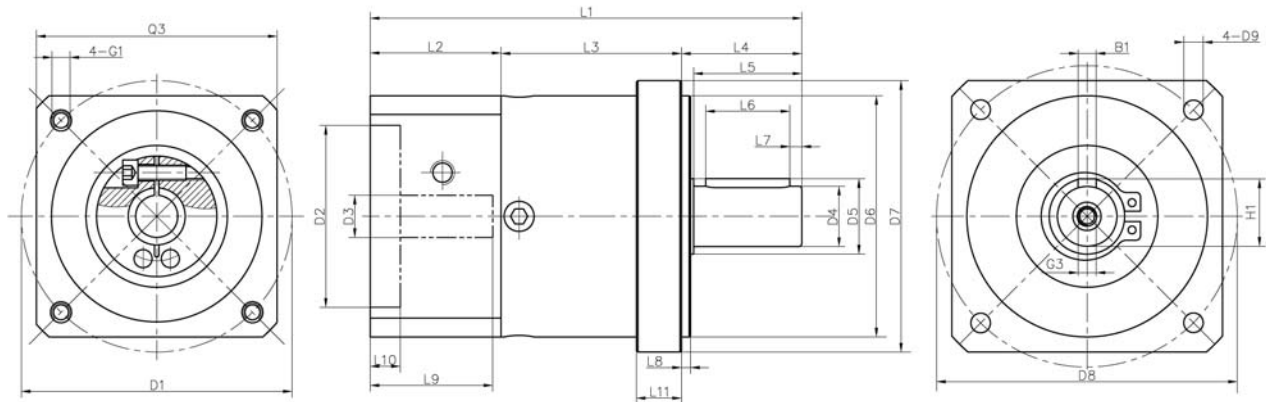
Unit (单位): mm

Model	40PLE			60PLE			80PLE			120PLE			160PLE	
Stage	1	2	3	1	2	3	1	2	3	1	2	3	1	2
L1=Total Length	93.5	106.5	119	113	126	138.5	143.5	161.5	179	191.7	221.5	249	285.5	335
L3=Head Length	39	52	64	46.5	59.5	72	60	78	95.5	73.7	101.5	129	104	153.5
<b>Output side</b>														
L4=Shaft Length	26			35			40			55			87	
L5=Usable Length	24			30.5			36			50			82	
L6=Keyway Length.	16			25			28			40			70	
L7=Key to Shaft end	2.5			2.5			4			5			5	
L8=Pilot Height	2			3			3			4			5	
D4=Shaft Diameter	Φ10 h7			Φ14h7			Φ20h7			Φ25h7			Φ40 h7	
D5=Base Diameter	Φ12			Φ17			Φ25			Φ35			Φ55	
D6=Pilot Diameter	Φ26			Φ40			Φ60			Φ80			Φ130	
D7=Head Diameter	Φ40			Φ60			Φ80			Φ115			Φ160	
D8=Mounting Dia.	Φ34			Φ52			Φ70			Φ100			Φ145	
B1=Key Width	3			5			6			8			12	
H1=Key Height	11.2			16			22.5			28			43	
G2=Mounting Screw	M4x6			M5x8			M6x10			M10x16			M12x20	
G3=Center Screw	M3x9			M5x12			M6x16			M10x22			M12x25	
<b>Input Side</b>														
L2=Endbell Length	24.3			31.5			43.5			63			25	
L9=Motor shaft L	25			30			40			55			79	
L10=Pilot Depth	6			10			10			12			12	
D1=Mounting Dia.	46			Φ70			Φ90			Φ145			Φ200	
D2=Pilot Diameter	Φ30 H7			Φ50H7			Φ70H7			Φ110H7			Φ114.3	
D3=Shaft Diameter	Φ8			Φ14			Φ19			Φ24			Φ35	
G1=Mounting Screw	M4x10			M5x15			M6x15			M8x22			M12x25	
Q3=Endbell Size	□40			□60			□80			□130			□175	

Note: Input dimensions can be changed to match front end-bell & shaft dimensions of the desired motor

# PLF Series Precision Planetary Gear Head – (Square Output Flange)

## Mechanical Dimensions:



Unit (单位): mm

Model	40PLF			60PLF			80PLF			120PLF			160PLF	
Stage	1	2	3	1	2	3	1	2	3	1	2	3	1	2
L1=Total Length	93.5	106.5	119	113	126	138.5	143.5	161.5	179	191.7	221.5	249	285.5	335
L3=Head Length	39	52	64	46.5	59.5	72	60	78	95.5	73.7	101.5	129	104	153.5
<b>Output side</b>														
L4=Shaft Length	26			35			40			55			87	
L5=Usable Length	24			30.5			36			50			82	
L6=Keyway Length	16			25			28			40			70	
L7=Key to Shaft end	2.5			2.5			4			5			5	
L8=Pilot Height	2			3			3			4			5	
L11=Endbell Length	6			8			10			15			15	
D4=Shaft Diameter	Φ10 h7			Φ14h7			Φ20h7			Φ25h7			Φ40 h7	
D5=Base Diameter	Φ12			Φ17			Φ25			Φ35			Φ55	
D6=Pilot Diameter	Φ26			Φ50			Φ80			Φ110			Φ130	
D7=Head Diameter	□45			□60			□90			□120			□175	
D8=Mounting Cir Dia.	Φ50			Φ70			Φ100			Φ130			Φ185	
B1=Key Width	Φ3.5			Φ5.5			Φ6.5			Φ8.5			Φ11	
H1=Key Height	3			5			6			8			12	
G2=Mounting Screw	11.2			16			22.5			28			43	
G3=Center Screw	M3x9			M5x12			M6x16			M10x22			M12x25	
<b>Input Side</b>														
L2=Endbell Length	24.3			31.5			43.5			63			25	
L9=Motor shaft L	25			30			40			55			79	
L10=Pilot Depth	6			10			10			12			12	
D1=Mounting Cir Dia.	Φ46			Φ70			Φ90			Φ145			200	
D2=Pilot Diameter	Φ30 H7			Φ50H7			Φ70H7			Φ110H7			Φ114.3H7	
D3=Shaft Diameter	Φ8			Φ14			Φ19			Φ24			Φ35	
G1=Mounting Screw	M4x10			M5x15			M6x15			M8x22			M12x25	
Q3=Endbell Size	□40			□60			□80			□130			□175	

Note: Input dimensions can be changed to match front end-bell & shaft dimensions of the desired motor