



# PLN

**这款完全密封的直齿行星减速机能提供极高的效能，且不会损失必要的刚性**

我们的直齿高精度行星减速机是针对最高的性能和扭矩设计的。**PLN** 的预胀紧的圆锥滚子轴承和专门调整过的密封确保了在有灰尘和喷淋水的条件下仍然达到最佳性能。

The perfectly sealed planetary gearbox with straight gearing delivers the maximum performance without ever losing the required stiffness

Our precision straight-toothed planetary gearbox is designed for maximum power and torque. The preloaded tapered roller bearings in the **PLN** and the specially matched seal guarantee optimum performance even in applications where dust and water spray are encountered.

周期性扭矩  
Cyclic torque **27 - 1800 Nm**

径向力  
Radial force **3200 - 21000 N**

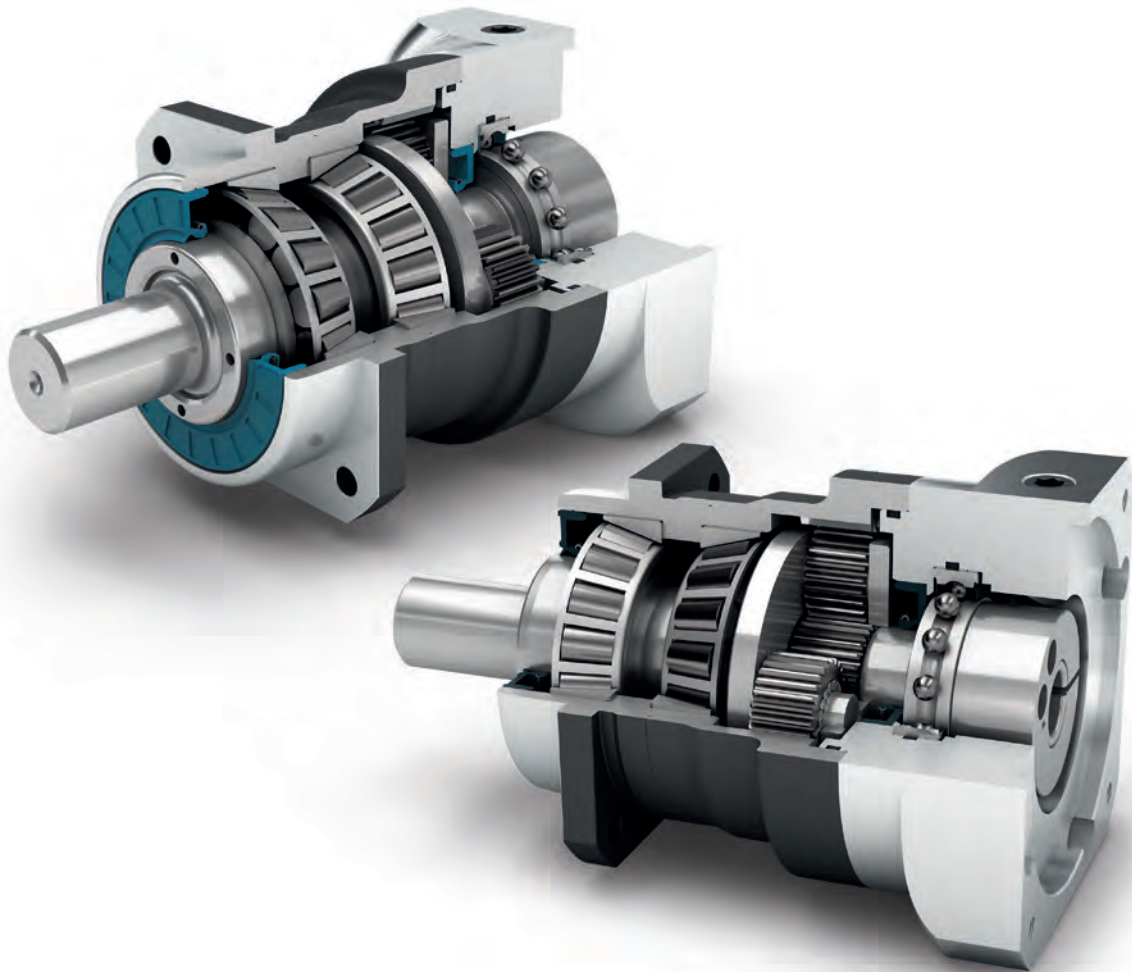
轴向力  
Axial force **4400 - 21000 N**

回程间隙  
Torsional backlash **1 - 5 arcmin**

防护等级  
Protection class **IP65**

结构尺寸  
Frame sizes

- 70
- 90
- 115
- 142
- 190



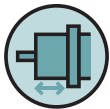
精密型  
Precision Line



直齿  
Spur gear



配有预紧的圆锥滚子轴承  
Preloaded tapered roller bearings



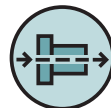
输出端带有超长定心环  
Extra long centering collar



可选: 降低回程间隙  
Option: Reduced backlash



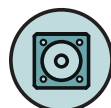
可选: 齿轮-齿条  
行星减速机 (细节见第 158 页)  
Option: Rack and pinion  
Planetary gearbox (Details on page 158)



同轴减速机  
Coaxial gearbox



旋转方向 同方向  
Equidirectional rotation



正方形输出法兰  
Square type output flange



径向轴密封  
Rotary shaft seal



行星齿轮架 (笼状结构)  
Planet carrier in cage design



可选: 喷漆表面  
——RAL 9005 黑色  
Option: Painted surface  
- RAL 9005 Jet black

技术特点的详细解释, 请从第201页读起。  
Detailed explanations of the technical features starting on page 201.

Code	减速机参数	Gearbox characteristics			PLN070	PLN090	PLN115	PLN142	PLN190	p <sup>(1)</sup>
	使用寿命 <sup>(2)</sup>	Service life <sup>(2)</sup>	L <sub>h</sub>	h	20.000					
	有效系数 <sup>(3)</sup>	Efficiency <sup>(3)</sup>	η	%	98					1
	最低工作温度	Min. operating temperature	T <sub>min</sub>	°C	95					2
	最高工作温度	Max. operating temperature	T <sub>max</sub>		-25					
	防护等级	Protection class			90					
					IP65					
S	标准润滑	Standard lubrication			润滑油 (终生润滑) / Oil (lifetime lubrication)					
F	食品级润滑	Food grade lubrication			润滑油 (终生润滑) / Oil (lifetime lubrication)					
	安装位置	Installation position			Beliebig / Any					
S	标准回程间隙	Standard backlash	φ	arcmin	< 3					1
R	降低回程间隙	Reduced backlash			< 5					2
					< 2	< 1	< 1	< 1	< 1	
	抗扭刚度 <sup>(3)</sup>	Torsional stiffness <sup>(3)</sup>	C <sub>2t</sub>	Nm / arcmin	3,4 - 5,0	9,4 - 12,4	22,0 - 29,0	61,0 - 76,0	155,0 - 218,0	1
					3,4 - 5,0	9,0 - 12,4	22,5 - 29,5	61,0 - 78,0	169,0 - 224,0	2
	减速机重量 <sup>(3)</sup>	Gearbox weight <sup>(3)</sup>	m	kg	1,9 - 2,0	3,3 - 3,5	6,4 - 7,2	15,8 - 17,3	32,9 - 41,5	1
					2,4 - 2,5	4,0 - 4,2	8,0 - 8,8	20,8 - 21,5	44,3 - 48,5	2
S	标准的箱体表面	Standard surface			箱体: 钢 - 热处理后氧化 (黑色) Housing: Steel - heat-treated and post-oxidized (black)					
B	喷漆表面 <sup>(4)</sup>	Painted surface <sup>(4)</sup>			RAL 9005 黑色 RAL 9005 Jet black					
	运行噪音 <sup>(3)</sup>	Running noise <sup>(3)</sup>	L <sub>pA</sub>	dB(A)	60	62	65	70	74	

输出轴载荷	Output shaft loads			PLN070	PLN090	PLN115	PLN142	PLN190	p <sup>(1)</sup>
最大径向力	Maximum radial force	F <sub>r max</sub>	N	3200	5500	6000	12500	21000	
最大轴向力	Maximum axial force	F <sub>a max</sub>		3400	4500	6500	12000	17000	
最大倾斜力矩	Maximum tilting moment	M <sub>K max</sub>	Nm	191	383	488	1420	2535	

输入特性	Input characteristics			PLN070	PLN090	PLN115	PLN142	PLN190	p <sup>(1)</sup>
输入端锁紧系统直径 (代码)	Clamping system diameter input (Code)	D26	mm	14 (D) <sup>(5)</sup>	19 (E) <sup>(5)</sup>	24 (F) <sup>(5)</sup>	35 (G) <sup>(5)</sup>	48 (K) <sup>(5)</sup>	
				19 (E)	24 (F)	35 (G)	42 (H)	-	
转动惯量 <sup>(3)(5)</sup>	Mass moment of inertia input <sup>(3)(5)</sup>	J <sub>1</sub>	kgcm <sup>2</sup>	0,216	0,560	1,942	7,008	22,876	1
				-	-	-	-	-	2
				0,365	1,028	3,256	15,270	63,815	
				0,209	0,544	1,933	6,811	22,430	1
				-	-	-	-	-	
平均空载扭矩 <sup>(3)(5)</sup>	Average idle torque <sup>(3)(5)</sup>	T <sub>0</sub>	Nm	0,25 - 0,70	0,40 - 1,15	0,85 - 2,30	1,85 - 8,00	3,70 - 18,90	2
					0,20 - 0,35	0,30 - 0,70	0,65 - 1,75	1,40 - 5,70	2,90 - 13,90
基于减速机输入法兰的最大弯矩	Max. bending moment based on the gearbox input flange	M <sub>b1</sub>		18	38	80	180	300	

(1) 减速机级数

(2) 利用 NCP 针对应用进行专门设计 - www.neugart.com

(3) 传动比相关的数值可在 Tec Data Finder 中检索 - www.neugart.com

(4) 更多信息见第 183

(5) 参考 锁紧系统直径

(1) Number of stages

(2) Application specific configuration with NCP - www.neugart.com

(3) The ratio-dependent values can be retrieved in Tec Data Finder - www.neugart.com

(4) More information on page 183

(5) Reference clamping system diameter

输出扭矩	Output torques			PLN070	PLN090	PLN115	PLN142	PLN190	i <sup>(1)</sup>	p <sup>(2)</sup>
周期性扭矩 <sup>(3)(4)</sup>	Cyclic torque <sup>(3)(4)</sup>	T <sub>2z</sub>	Nm	45	105	230	450	990	3	1
				60	140	300	600	1330	4	
				65	140	260	750	1660	5	
				45	90	180	530	1300	7	
				40	80	150	450	1000	8	
				27	60	125	305	630	10	
				68	110	250	780	1500	12	2
				68	110	250	780	1500	15	
				77	150	300	1000	1800	16	
				77	150	300	1000	1800	20	
				65	140	260	900	1800	25	
				77	150	300	1000	1800	32	
				65	140	260	900	1800	40	
				40	80	150	450	1000	64	
				27	60	125	305	630	100	
				45	105	230	450	990	3	
60	140	305	600	1330	4					
75	175	385	750	1660	5					
72	144	285	840	2080	7					
64	128	240	720	1600	8					
43	96	200	485	1000	10					
108	176	400	1240	2400	12	2				
108	176	400	1240	2400	15					
123	240	480	1600	2880	16					
123	240	480	1600	2880	20					
104	220	415	1440	2880	25					
123	240	480	1600	2880	32					
104	220	415	1440	2880	40					
64	128	240	720	1600	64					
43	96	200	485	1000	100					

<sup>(1)</sup> 传动比 (i=n<sub>1</sub>/n<sub>2</sub>)

<sup>(2)</sup> 减速级数

<sup>(3)</sup> 利用 NCP 针对应用进行专门设计 – www.neugart.com

<sup>(4)</sup> 参考夹紧系统直径

<sup>(1)</sup> Ratios (i=n<sub>1</sub>/n<sub>2</sub>)

<sup>(2)</sup> Number of stages

<sup>(3)</sup> Application specific configuration with NCP – www.neugart.com

<sup>(4)</sup> Based on reference clamping system diameter

输出扭矩	Output torques			PLN070	PLN090	PLN115	PLN142	PLN190	i <sup>(1)</sup>	p <sup>(2)</sup>
连续扭矩 <sup>(3)</sup>	Continuous torque <sup>(3)</sup>	T <sub>2D</sub>	Nm	22	50	115	225	500	3	1
				30	70	150	300	650	4	
				32	70	130	375	800	5	
				22	45	90	265	650	7	
				20	40	75	225	500	8	
				13,5	30	62	152	315	10	
				34	55	125	390	750	12	2
				34	55	125	390	750	15	
				38	75	150	500	900	16	
				38	75	150	500	900	20	
				32	70	130	450	900	25	
				38	75	150	500	900	32	
				32	70	130	450	900	40	
				20	40	75	225	500	64	
				13,5	30	62	152	315	100	

输入转速	Input speeds			PLN070	PLN090	PLN115	PLN142	PLN190	i <sup>(1)</sup>	p <sup>(2)</sup>
连续输入转速 <sup>(3)(4)</sup>	Continuous input speed <sup>(3)(4)</sup>	n <sub>1D</sub>	min <sup>-1</sup>	2050	1950	1500	850	700	3	1
				2300	2100	1600	950	750	4	
				2650	2500	2000	1050	850	5	
				3450	3550	2800	1550	1200	7	
				3800	3950	3200	1800	1450	8	
				4400	4000	3500	2250	1900	10	
				3550	3400	2450	1300	1000	12	2
				4000	4000	3000	1600	1250	15	
				3800	3550	2550	1350	1050	16	
				4300	4000	3050	1600	1300	20	
				4500	4000	3400	1850	1400	25	
				4500	4000	3500	2300	1900	32	
				4500	4000	3500	2550	2100	40	
				4500	4000	3500	3000	2500	64	
				4500	4000	3500	3000	2500	100	
				4500	4000	3500	3000	2500	100	
最高机械输入转速 <sup>(3)</sup>	Max. mechanical input speed <sup>(3)</sup>	n <sub>1max</sub>	min <sup>-1</sup>	10000	10000	8500	6500	6000		

输出扭矩	Output torques			PLN070	PLN090	PLN115	PLN142	PLN190	i <sup>(1)</sup>	p <sup>(2)</sup>
急停扭矩 <sup>(4)(5)</sup>	Emergency stop torque <sup>(4)(5)</sup>	T <sub>2stop</sub>	Nm	60	150	375	850	1890	3	1
				80	200	500	1140	2520	4	
				100	250	620	1420	3150	5	
				80	175	340	1300	2210	7	
				90	200	380	970	2440	8	
				52	121	295	570	1350	10	
				135	220	500	1500	3000	12	2
				135	220	500	1500	3000	15	
				150	300	650	2000	3600	16	
				150	300	650	2000	3600	20	
				150	300	650	1800	3600	25	
				150	300	650	2000	3600	32	
				150	300	650	1800	3600	40	
				80	200	380	970	2440	64	
				50	120	240	560	1350	100	

(1) 传动比 (i=n<sub>1</sub>/n<sub>2</sub>)

(2) 减速级数

(3) 利用 NCP 针对应用进行专门设计 - www.neugart.com

(4) 参考夹紧系统直径

(5) 允许 1000 次

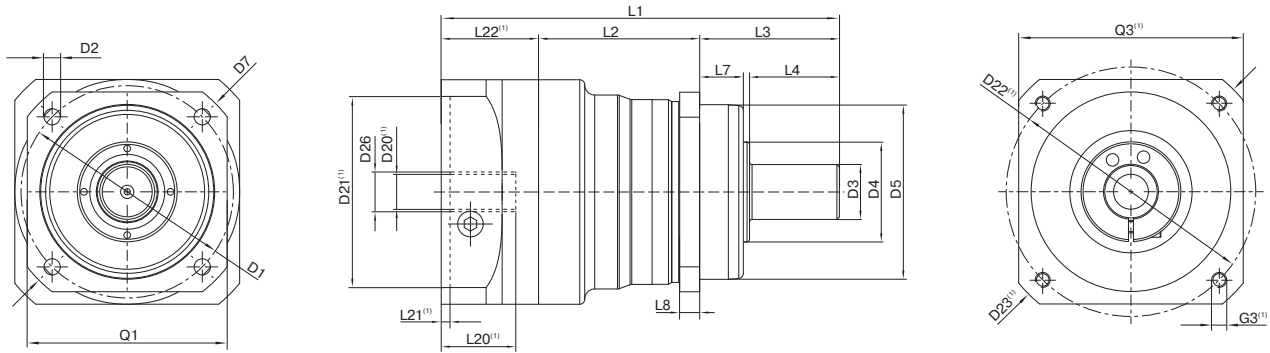
(1) Ratios (i=n<sub>1</sub>/n<sub>2</sub>)

(2) Number of stages

(3) Application specific configuration with NCP - www.neugart.com

(4) Based on reference clamping system diameter

(5) Permitted 1000 times



图示为带平键的 PLN090 / 1 级 / 光滑输出轴 / 19 mm 锁紧系统 / 适配电机法兰 – 2 件式 – 圆形通用法兰 / B5 电机法兰类型  
 Drawing corresponds to a PLN090 / 1-stage / smooth output shaft / 19 mm clamping system / motor adaptation – 2-part – round universal flange / B5 flange type motor

<sup>(1)</sup> 具体尺寸视电机/减速机法兰而定。可以在 [www.neugart.com](http://www.neugart.com) 下 Tec Data Finder。中针对每个电机适配电机特有的输入法兰几何尺寸。  
<sup>(1)</sup> The dimensions vary with the motor/gearbox flange. The input flange dimensions can be retrieved for each specific motor in Tec Data Finder at [www.neugart.com](http://www.neugart.com)

几何尺寸 <sup>(2)</sup>	Geometry <sup>(2)</sup>			PLN070	PLN090	PLN115	PLN142	PLN190	p <sup>(3)</sup>	Code
输出端安装孔节圆直径	Pitch circle diameter output	D1		68 - 75	85	120	165	215		
输出端安装孔直径	Mounting bore output	D2	4x	5,5	6,5	9,0	11,0	13,5		
输出轴直径	Shaft diameter output	D3	k6	16	22	32	40	55		
输出轴轴肩直径	Shaft collar output	D4		35	40	45	70	80		
输出端定位凸台直径	Centering diameter output	D5	g7	60	70	90	130	160		
输出法兰对角线尺寸	Diagonal dimension output	D7		92	100	140	185	240		
输出端法兰外方	Flange cross section output	Q1	■	70	80	110	142	190		
最小总长	Min. total length	L1		137,5	159,5	201	276	310,5	1	
				166,5	191,5	241	335	382,5	2	
箱体长度	Housing length	L2		58,5	64,5	61	91,5	116	1	
				88	96,5	101,5	150,5	188	2	
输出端定位凸台深度	Centering depth output	L7		19	17,5	28	28	28		
输出端法兰厚度	Flange thickness output	L8		7	8	10	12	15		
电机轴直径 j6/k6	Motor shaft diameter j6/k6	D20		更多信息见第 191/192 页 More information on page 191/192						
输入端锁紧系统直径	Clamping system diameter input	D26		更多信息见第 130 页 More information on page 130						
带平键的输出轴 (DIN 6885-1)	Output shaft with feather key (DIN 6885-1)			A 5x5x25	A 6x6x28	A 10x8x50	A 12x8x65	A 16x10x70		A
平键宽度 (DIN 6885-1)	Feather key width (DIN 6885-1)	B1		5	6	10	12	16		
含平键在内的轴高 (DIN 6885-1)	Shaft height including feather key (DIN 6885-1)	H1		18	24,5	35	43	59		
输出轴轴长	Shaft length output	L3		48	56	88	110	112		
到轴肩的距离	Shaft length from shoulder	L4		28	36	58	80	82		
平键长度	Feather key length	L5		25	28	50	65	70		
到轴端的距离	Distance from shaft end	L6		2	4	4	8	6		
中心孔 (DIN 332, DR 形)	Center hole (DIN 332, type DR)	C		M5x12,5	M8x19	M12x28	M16x36	M20x42		
光滑输出轴	Smooth output shaft									B
输出轴轴长	Shaft length output	L3		48	56	88	110	112		
到轴肩的距离	Shaft length from shoulder	L4		28	36	58	80	82		
花键输出轴 (DIN 5480)	Splined output shaft (DIN 5480)			W16x0,8x18x6m	W22x1,25x16x6m	W32x1,25x24x6m	W40x2,0x18x6m	W55x2,0x26x6m		C
花键或键槽的长度	Width of gearing	L <sub>v</sub>		15	15	15	20	22		
输出轴轴长	Shaft length output	L3		46	46	55,5	70	71		
到轴肩的距离	Shaft length from shoulder	L4		26	26	26	40	41,5		
中心孔 (DIN 332, DR 形)	Center hole (DIN 332, type DR)	C		M5x12,5	M8x19	M12x28	M16x36	M20x42		

<sup>(2)</sup> 所有的尺寸单位为mm  
<sup>(3)</sup> 减速机级数

<sup>(2)</sup> Dimensions in mm  
<sup>(3)</sup> Number of stages