WPLN

直角减速机
配有准双曲面齿轮，因此运行时十分安静

借助其准双曲面齿轮，**WPLN** 的同步运行性能得到了优化，应用设备工件加工表面质量也可达到最高水平。由于振动幅度降至最低，**WPLN** 运行时十分稳定且安静。这款高精度直角减速机终生润滑免维护，且可安装在任意位置。

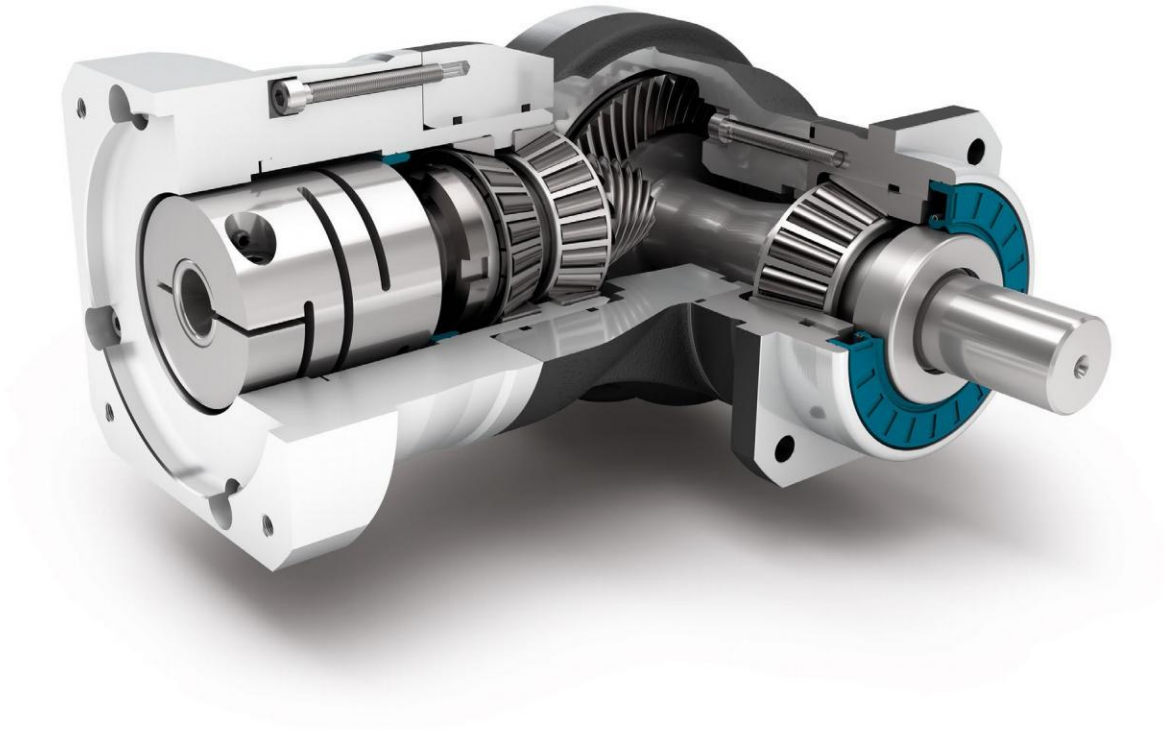
The versatile right angle gearbox with spiral gearing for a quiet drive

Thanks to its spiral teeth, our **WPLN** achieves the optimal synchronism for the best surface qualities. By minimizing vibrations, it runs uniformly and quietly. The precision right angle planetary gearbox features lifetime lubrication and can be mounted virtually anywhere.

额定扭矩 Nominal output torque	**22 - 800 Nm**
径向力 Radial force	**3200 - 12500 N**
轴向力 Axial force	**4300 - 15000 N**
回程间隙 Torsional backlash	**3 - 5 arcmin**
防护等级 Protection class	**IP65**

结构尺寸
Frame sizes

70 **90** **115** **142**



精密型
Precision Line

直角型减速机
Right angle gearbox

旋转方向 反方向
Counterdirectional rotation

准双曲面齿轮 直角箱
Hypoid gear right angle stage

正方形输出法兰
Square type output flange

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

径向轴密封
Rotary shaft seal

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

可选：降低回程间隙（2级）
Option: Reduced backlash (2-stage)

可选：装有小齿轮的高精度减速机 140页
Option: Planetary gearbox with mounted pinion on page 140

技术特点的详细解释，请从第169页读起。
Detailed explanations of the technical features starting on page 169.

Code	减速机参数	Gearbox characteristics			WPLN070	WPLN090	WPLN115	WPLN142	p[1]
	使用寿命 (L_{10h})	Service life (L_{10h})	t_L	h	20.000				
	T_{2N} x 0,88 时的使用寿命	Service life at T_{2N} x 0,88			30.000				
	满载时效率[2]	Efficiency at full load[2]	η	%	95				1
					94				2
	最低工作温度	Min. operating temperature	T_{min}	°C	-25				
	最高工作温度	Max. operating temperature	T_{max}		90				
	防护等级	Protection class			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			任意 / Any				
S	标准回程间隙	Standard backlash	j_t	arcmin	< 5				
R	降低回程间隙	Reduced backlash			-				1
					< 3				2
	抗扭刚度[2]	Torsional stiffness[2]	c_g	Nm / arcmin	1,8 - 3,1	4,6 - 7,0	8,6 - 13,5	24,5 - 34,0	1
					2,3 - 3,6	5,9 - 8,6	11,3 - 16,9	31,5 - 42,5	2
	减速机重量[2]	Gearbox weight[2]	m_G	kg	3,4	5,4 - 5,9	11,3	25,9 - 26,5	1
					4,4 - 4,5	5,8 - 5,9	10,4 - 10,7	24,6 - 25,2	2
S	标准的箱体表面	Standard surface			直角箱体: 铝 – 阳极氧化处理（黑色） Right angle housing: Aluminum – anodized (black)				
	运行噪音[3]	Running noise[3]	Q_g	dB(A)	66	67	68	70	
	基于减速机输入法兰的最大弯矩[4]	Max. bending moment based on the gearbox input flange[4]	M_b	Nm	12	25,5	53	120	1
					12	12	25,5	53	2

输出轴载荷	Output shaft loads			WPLN070	WPLN090	WPLN115	WPLN142	p[1]
20,000 h 的径向力[5][6]	Radial force for 20,000 h[5][6]	$F_{r\,20.000\,h}$	N	3200	5200	6000	12500	1
				3200	5500	6000	12500	2
20,000 h 的轴向力[5][6]	Axial force for 20,000 h[5][6]	$F_{a\,20.000\,h}$		4300	5900	7000	14500	1
				4400	6400	8000	15000	2
30,000 h 的径向力[5][6]	Radial force for 30,000 h[5][6]	$F_{r\,30.000\,h}$		3200	5200	6000	10900	1
				3200	4800	5400	11400	2
30,000 h 的轴向力[5][6]	Axial force for 30,000 h[5][6]	$F_{a\,30.000\,h}$		3700	5200	6100	12000	1
				3900	5700	7000	13200	2
最大径向力[6][7]	Maximum radial force[6][7]	$F_{r\,Stat}$		3200	5200	6000	12500	1
				3200	5500	6000	12500	2
最大轴向力[6][7]	Maximum axial force[6][7]	$F_{a\,Stat}$		4300	5900	7000	14500	1
				4400	6400	8000	15000	2
20,000 h 倾斜力矩[5][7]	Tilting moment for 20,000 h[5][7]	$M_{K\,20.000\,h}$	Nm	322	624	1010	2225	1
				322	660	1010	2225	2
30,000 h 倾斜力矩[5][7]	Tilting moment for 30,000 h[5][7]	$M_{K\,30.000\,h}$		322	624	1010	1940	1
				322	576	909	2029	2

转动惯量	Moment of inertia			WPLN070	WPLN090	WPLN115	WPLN142	p[1]
转动惯量[2]	Mass moment of inertia[2]	J	$kgcm^2$	0,500 - 0,658	1,013 - 1,387	4,767 - 5,875	15,090 - 20,883	1
				0,498 - 0,642	0,497 - 0,649	1,014 - 1,419	4,807 - 6,387	2

WPLN

(1) 减速机级数
(2) 传动比相关的数值可在 Tec Data Finder 中检索 – www.neugart.com
(3) 距离减速机 1 m 时; 在输入转速为 n_1=3000 min^{-1} 且无负荷时测得; i=5
(4) 最大电机重量* (单位 : kg) = 0.2 x M_b / 电机长度 (单位: m)
* 电机重量对称分布
* 水平和固定的安装位置
(5) 数据以 n_2=100 min^{-1} 的输出轴转速为准。
(6) 以输出轴中心为准
(7) 更改 T_{2N}, F_r, F_a 以及周期和轴承使用寿命时; 数值存在偏差 (部分较高)。利用 NCP 针对应用进行专门设计 – www.neugart.com

(1) Number of stages
(2) The ratio-dependent values can be retrieved in Tec Data Finder – www.neugart.com
(3) Sound pressure level from 1 m, measured on input running at n_1=3000 rpm no load; i=5
(4) Max. motor weight* in kg = 0.2 x M_b / motor length in m
* with symmetrically distributed motor weight
* with horizontal and stationary mounting
(5) These values are based on an output shaft speed of n_2=100 rpm
(6) Based on center of output shaft
(7) Other (sometimes higher) values following changes to T_{2N}, F_r, F_a, cycle, and service life of bearing. Application specific configuration with NCP – www.neugart.com

输出扭矩	**Output torques**			**WPLN070**	**WPLN090**	**WPLN115**	**WPLN142**	**i(1)**	**p(2)**
额定输出扭矩(3)(4)	Nominal output torque(3)(4)	T_{2N}	Nm	45	90	160	320	4	1
				42	75	140	280	5	
				28	51	91	189	7	
				27	50	90	180	8	
				22	40	75	160	10	
				77	150	300	640	16	2
				77	150	300	800	20	
				65	140	260	700	25	
				60	112	204	364	28	
				77	108	200	360	32	
				65	140	255	455	35	
				65	135	250	450	40	
				65	110	200	375	50	
				40	80	150	450	64	
				27	60	125	305	100	
最大输出扭矩(4)(5)	Max. output torque(4)(5)	T_{2max}	Nm	72	144	256	512	4	1
				67	120	224	448	5	
				45	82	145	302	7	
				43	80	144	288	8	
				35	64	120	256	10	
				123	240	480	1024	16	2
				123	240	480	1280	20	
				104	224	416	1120	25	
				96	180	328	580	28	
				123	172	320	576	32	
				104	224	410	725	35	
				104	216	400	720	40	
				104	176	320	600	50	
				64	128	240	720	64	
				43	96	200	488	100	

(1) 传动比 ($i=n_1/n_2$)
(2) 减速机级数
(3) 利用 NCP 针对应用进行专门设计 – www.neugart.com
(4) 平键 (代码 "A")时的数值: 针对交变载荷
(5) 允许输出轴转动30.000转; 参见第 158 页

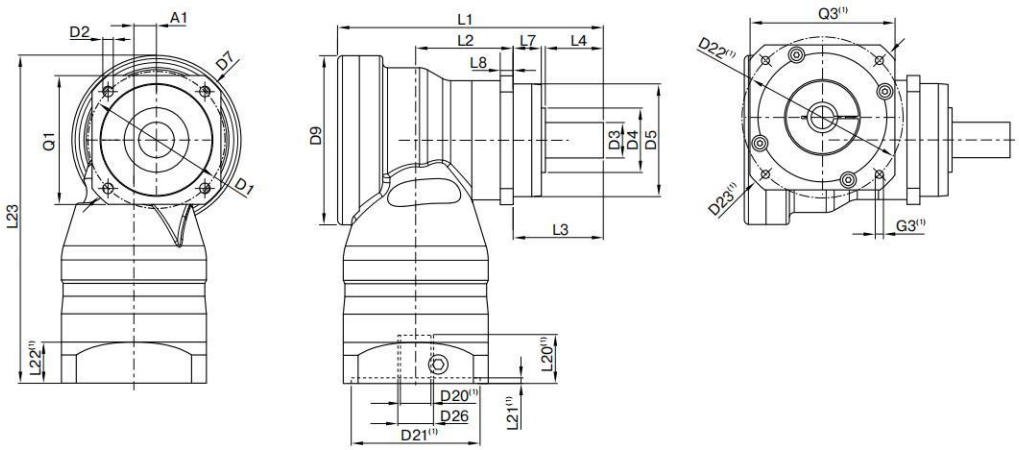
(1) Ratios ($i=n_1/n_2$)
(2) Number of stages
(3) Application specific configuration with NCP – www.neugart.com
(4) Values for feather key (code "A"): for repeated load
(5) 30,000 rotations of the output shaft permitted; see page 159

输出扭矩	Output torques			WPLN070	WPLN090	WPLN115	WPLN142	i[1]	p[2]
急停扭矩[3]	Emergency stop torque[3]	T_{2Stop}	Nm	100	200	400	800	4	1
				100	200	400	800	5	
				75	150	300	700	7	
				75	150	300	700	8	
				75	150	300	700	10	
				150	300	650	1600	16	2
				150	300	650	1600	20	
				150	300	650	1600	25	
				120	280	600	1200	28	
				150	300	600	1200	32	
				130	280	650	1500	35	
				150	300	650	1500	40	
				150	300	600	1200	50	
				80	200	380	1000	64	
				80	200	480	750	100	

输入转速	Input speeds			WPLN070	WPLN090	WPLN115	WPLN142	i[1]	p[2]
T_{2N} 和 S1 时的平均热输入转速[4][5]	Average thermal input speed at T_{2N} and S1[4][5]	n_{1N}	min^{-1}	1800[6]	1650[6]	1150[6]	950[6]	4	1
				2000[6]	1900[6]	1250[6]	1000[6]	5	
				2350[6]	2250[6]	1400[6]	1200[6]	7	
				2350[6]	2250[6]	1450[6]	1200[6]	8	
				2500[6]	2400[6]	1500[6]	1300[6]	10	
				1850[6]	1800[6]	1650[6]	1000[6]	16	2
				2000[6]	2100[6]	1950[6]	1050[6]	20	
				2150[6]	2250[6]	2150[6]	1150[6]	25	
				2200[6]	2250[6]	2150[6]	1400[6]	28	
				2300[6]	2300[6]	2200[6]	1400[6]	32	
				2350[6]	2300[6]	2200[6]	1400[6]	35	
				2400[6]	2300[6]	2250[6]	1450[6]	40	
				2500[6]	2450[6]	2400[6]	1550[6]	50	
				2600[6]	2950[6]	2850[6]	1750[6]	64	
				2700[6]	3100[6]	3050[6]	1900[6]	100	
最高机械输入转速[4]	Max. mechanical input speed[4]	n_{1Limit}	min^{-1}	16000	14000	9500	8000		1
				16000	16000	14000	9500		2

(1) 传动比 ($i=n_1/n_2$)
(2) 减速机级数
(3) 允许 1000 次
(4) 利用 NCP 针对应用设计转速 – www.neugart.com
(5) 定义请参见第 158 页
(6) 在 50% T_{2N} 输出和 S1 模式下 的平均热传动转速

(1) Ratios ($i=n_1/n_2$)
(2) Number of stages
(3) Permitted 1000 times
(4) Application-specific speed configurations with NCP – www.neugart.com
(5) See page 159 for the definition
(6) Average thermal input speed at 50% T_{2N} and S1



图示为带平键的 WPLN090 / 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 WPLN090 / 1-stage / smooth output shaft / 19 mm clamping system / motor adaptation – 2-part – round universal flange / B5 flange type motor

(1) 具体尺寸视电机/减速机法兰而定。可以在 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。
(1) 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

几何尺寸(2)	Geometry(2)			WPLN070	WPLN090	WPLN115	WPLN142	p(3)	Code
轴向偏差	Axis offset	A1		10	14	20	26	1	
				10	10	14	20	2	
输出端安装孔节圆直径	Pitch circle diameter output	D1		68 - 75	85	120	165		
输出端安装孔直径	Mounting bore output	D2	4x	5,5	6,5	9,0	11,0		
输出轴直径	Shaft diameter output	D3	k6	16	22	32	40		
输出轴轴肩直径	Shaft collar output	D4		30	40	45	70	1	
				35	40	45	70	2	
输出端定位凸台直径	Centering diameter output	D5	g7	60	70	90	130		
输出法兰对角线尺寸	Diagonal dimension output	D7		92	100	140	185		
最大直径	Max. diameter	D9		86	105	120	170	1	
				86	86	105	120	2	
输出端法兰外方	Flange cross section output	Q1	■	70	80	110	142		
总长	Total length	L1		137,5	165	218	273	1	
				185	207	248,5	342,5	2	
箱体长度	Housing length	L2		46,5	60,5	73,5	76	1	
				94	108	112	176	2	
输出轴轴长	Shaft length output	L3		48	56	88	110		
输出端定位凸台深度	Centering depth output	L7		18	17,5	28	28	1	
				19	17,5	28	28	2	
输出端法兰厚度	Flange thickness output	L8		7	8	10	12		
偏差距离	Offset length	L9		43	48,5	56,5	87	1	
				43	43	48,5	56,5	2	
最小总高度	Min. overall height	L23		179,0	203,5	247,5	318,0	1	
				179,0	182,5	210,0	258,5	2	
电机轴直径j6/k6	Motor shaft diameter j6/k6	D20		更多信息见第 155/156 页 More information on page 155/156					
输入端锁紧系统直径	Clamping system diameter input	D26							
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
平键宽度 (DIN 6885-1)	Feather key width (DIN 6885-1)	B1		5	6	10	12		
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		
到轴肩的距离	Shaft length from shoulder	L4		28	36	58	80		
平键长度	Feather key length	L5		25	28	50	65		
到轴端的距离	Distance from shaft end	L6		2	4	4	8		
中心孔 (DIN 332, DR 形)	Center hole (DIN 332, type DR)	C		M5x12,5	M8x19	M12x28	M16x36		
光滑输出轴	Smooth output shaft								B
到轴肩的距离	Shaft length from shoulder	L4		28	36	58	80		
花键输出轴 (DIN 5480)	Splined output shaft (DIN 5480)			W16x0,8 x18x6m	W22x1,25 x16x6m	W32x1,25 x24x6m	W40x2,0 x18x6m		C
花键或键槽的长度	Width of gearing	L_v		15	15	15	20		
输出轴轴肩直径	Shaft collar output	L3		48	56	88	110		
到轴肩的距离	Shaft length from shoulder	L4		28	36	58	80		
中心孔 (DIN 332, DR 形)	Center hole (DIN 332, type DR)	C		M5x12,5	M8x19	M12x28	M16x36		

(2) 所有的尺寸单位为mm
(3) 减速机级数

(2) Dimensions in mm
(3) Number of stages