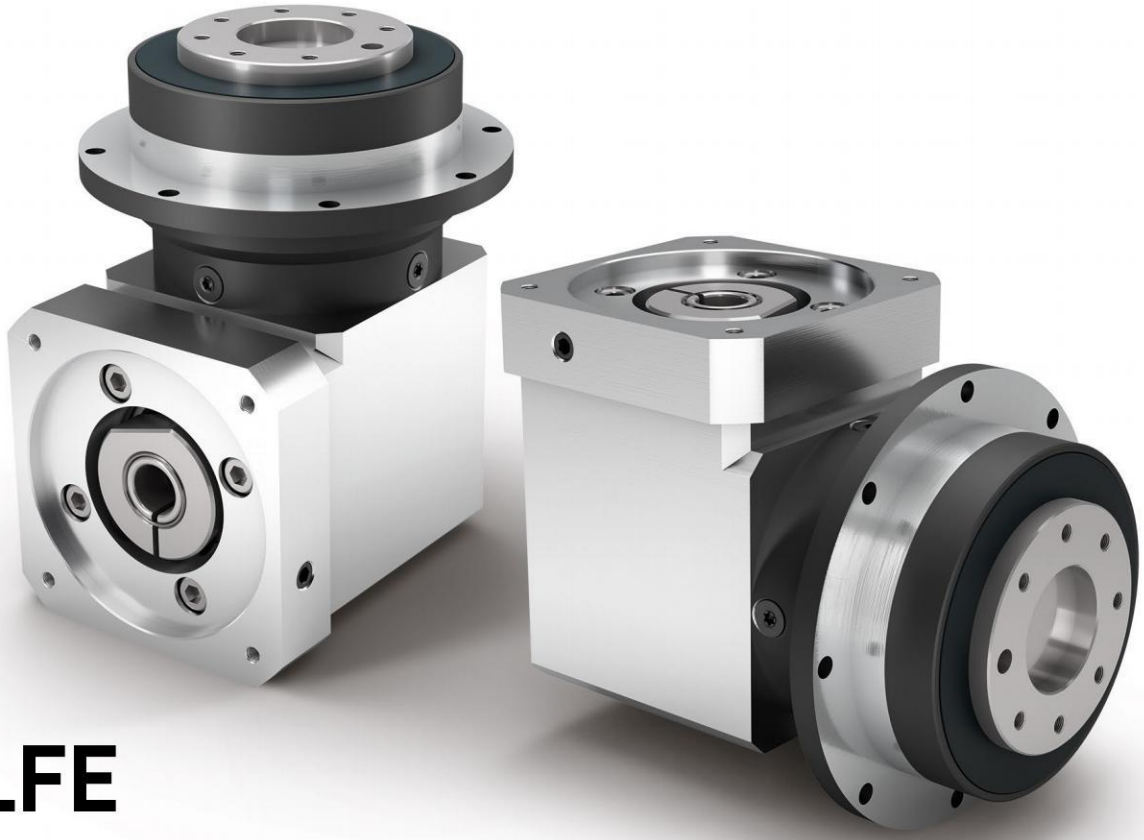


WPLFE

最短的直角行星减速机 配有法兰输出轴 扭转刚度极高

即使面临困境，也要冲破局限，发挥创新思维。**WPLFE** 是一款配有紧凑型法兰输出轴的直角行星减速机。它可以节省超过三分之一的空间而且扭转刚度显著提高。凭借其标准化的法兰接口，该行星减速机的安装极其简便。内置的定位销孔还为固定时的安全性提供了额外的保障。

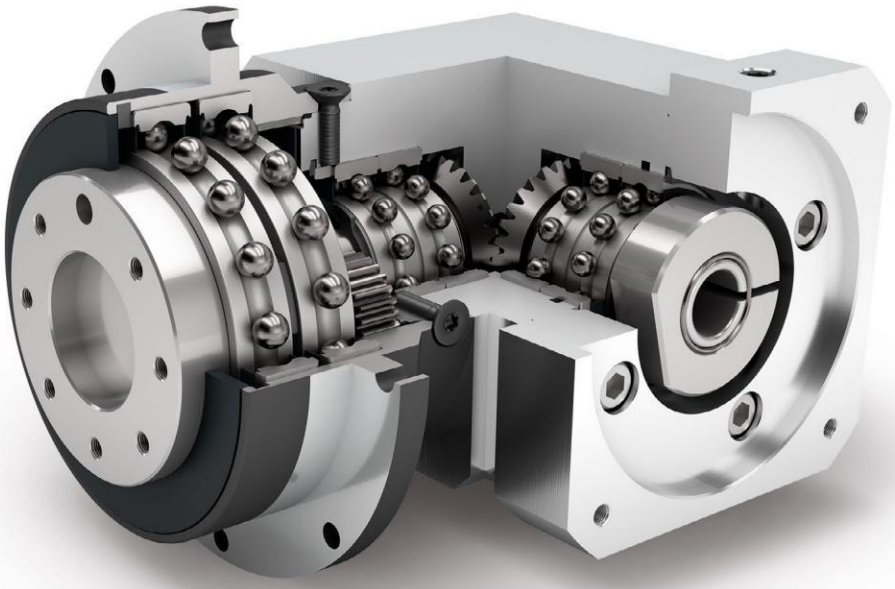
The shortest right angle planetary gearbox with flange output shaft and maximum torsional stiffness

Thinking around corners even in tight spaces. The **WPLFE** is our right angle planetary gearbox with compact flange output shaft. You save more than a third of the space and gain a significantly higher torsional stiffness. Thanks to its standardized flange interface, it is especially easy to install. The integrated dowel hole provides additional secureness during fitting.

额定扭矩 Nominal output torque	**14 - 260 Nm**
径向力 Radial force	**550 - 2400 N**
轴向力 Axial force	**1200 - 3300 N**
回程间隙 Torsional backlash	**11 - 18 arcmin**
防护等级 Protection class	**IP54**

结构尺寸
Frame sizes

64 **90** **110**



经济型
Economy Line

直角型减速机
Right angle gearbox

旋转方向 同方向
Equidirectional rotation

直齿
Spur gear

锥齿轮 直角箱
Bevel gear right angle stage

圆形特大号输出法兰
Extra large round type output flange

低摩擦深沟球轴承
Low-friction deep groove ball bearings

法兰输出轴（按 ISO 9409 标准）
Flange output shaft (ISO 9409)

行星齿轮架
Planet carrier in disc design

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			WPLFE064	WPLFE090	WPLFE110	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	%	94			1
					93			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			IP54			
S	标准润滑	Standard lubrication			润滑脂（终生润滑）/ Grease (lifetime lubrication)			
F	食品级润滑	Food grade lubrication			润滑脂（终生润滑）/ Grease (lifetime lubrication)			
L	低温润滑[3]	Low temperature lubrication[3]			润滑脂（终生润滑）/ Grease (lifetime lubrication)			
	安装位置	Installation position			任意 / Any			
S	标准回程间隙	Standard backlash	j_t	arcmin	< 16	< 13	< 11	1
					< 18	< 15	< 13	2
	抗扭刚度[2]	Torsional stiffness[2]	c_g	Nm / arcmin	2,9 - 6,2	5,8 - 17,5	15,9 - 40,5	1
					4,9 - 9,9	14,3 - 29,5	26,0 - 69,0	2
	减速机重量[2]	Gearbox weight[2]	m_G	kg	1,8	4,5 - 4,6	10,5 - 10,6	1
					2,0 - 2,1	5,0 - 5,3	12,2 - 12,5	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)			
	运行噪音[4]	Running noise[4]	Q_g	dB(A)	70	73	75	
	基于减速机输入法兰的最大弯矩[5]	Max. bending moment based on the gearbox input flange[5]	M_b	Nm	5	10,5	26	

输出轴载荷	Output shaft loads			WPLFE064	WPLFE090	WPLFE110	p[1]
20,000 h 的径向力[6][7]	Radial force for 20,000 h[6][7]	$F_{r\,20.000\,h}$	N	550	1400	2400	
20,000 h 的轴向力[6][7]	Axial force for 20,000 h[6][7]	$F_{a\,20.000\,h}$		1200	3000	3300	
30,000 h 的径向力[6][7]	Radial force for 30,000 h[6][7]	$F_{r\,30.000\,h}$		500	1200	2100	
30,000 h 的轴向力[6][7]	Axial force for 30,000 h[6][7]	$F_{a\,30.000\,h}$		1200	3000	3300	
最大径向力[7][8]	Maximum radial force[7][8]	$F_{r\,Stat}$		900	2200	3800	
最大轴向力[7][8]	Maximum axial force[7][8]	$F_{a\,Stat}$		1200	3300	5200	
20,000 h 倾斜力矩[6][8]	Tilting moment for 20,000 h[6][8]	$M_{K\,20.000\,h}$	Nm	12	46	109	
30,000 h 倾斜力矩[6][8]	Tilting moment for 30,000 h[6][8]	$M_{K\,30.000\,h}$		11	40	96	

转动惯量	Moment of inertia			WPLFE064	WPLFE090	WPLFE110	p[1]
转动惯量[2]	Mass moment of inertia[2]	J	$kgcm^2$	0,228 - 0,439	0,957 - 1,783	1,926 - 3,914	1
				0,220 - 0,359	0,909 - 1,286	1,819 - 2,892	2

(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) T_{min} = -40°C. 理想运行温度最高为 50°C
(4) 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
(5) 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
(6) 数据以 n_2=100 min^{-1} 的输出轴转速为准。
(7) 以输出轴中心为准
(8) 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) T_{min} = -40°C. Optimal operating temperature max. 50°C
(4) Sound pressure level from 1 m, measured on input running at n_1=3000 rpm no load; i=5
(5) Max. motor weight* in kg = 0.2 x M_b / motor length in m
* with symmetrically distributed motor weight
* with horizontal and stationary mounting
(6) These values are based on an output shaft speed of n_2=100 rpm
(7) Based on the end of the output shaft
(8) 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**			**WPLFE064**	**WPLFE090**	**WPLFE110**	**i**[1]	**p**[2]
额定输出扭矩[3]	Nominal output torque[3]	T_{2N}	Nm	14	40[4]	80[4]	3	1
				19	53[4]	105[4]	4	
				24	67[4]	130[4]	5	
				25	65	135	7	
				18	50	120	8	
				15	38	95	10	
				44[4]	130[4]	210[4]	9	2
				44	120[4]	260[4]	12	
				44	110	230	15	
				44	120	260	16	
				44	120	260	20	
				40	110	230	25	
				44	120	260	32	
				40	110	230	40	
				18	50	120	64	
				15	38	95	100	
最大输出扭矩[5]	Max. output torque[5]	T_{2max}	Nm	22	64	128	3	1
				30	85	168	4	
				38	107	208	5	
				40	104	216	7	
				29	80	192	8	
				24	61	152	10	
				70	208	336	9	2
				70	192	416	12	
				70	176	368	15	
				70	192	416	16	
				70	192	416	20	
				64	176	368	25	
				70	192	416	32	
				64	176	368	40	
				29	80	192	64	
				24	61	152	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) T_{2N} 作用时 寿命不是10.000 h
(5) 允许输出轴转动30.000转; 参见第 158 页

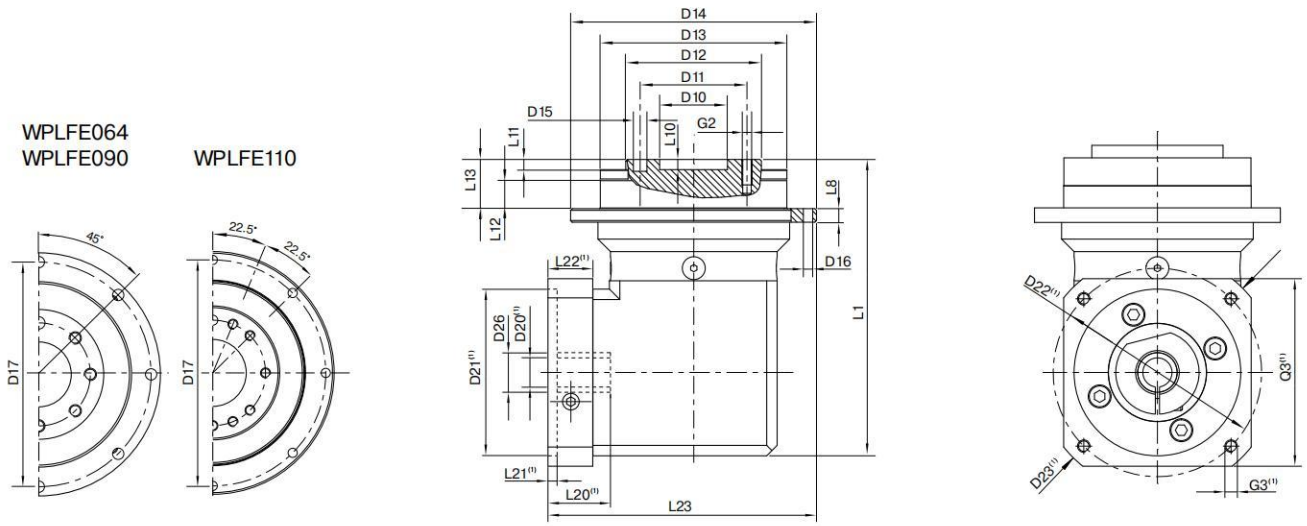
(1) Ratios ($i=n_1/n_2$)
(2) Number of stages
(3) Application specific configuration with NCP – www.neugart.com
(4) Different service life: 10,000 h at T_{2N}
(5) 30,000 rotations of the output shaft permitted; see page 159

输出扭矩	Output torques			WPLFE064	WPLFE090	WPLFE110	i[1]	p[2]
急停扭矩[3]	Emergency stop torque[3]	T_{2Stop}	Nm	66	180	360	3	1
				86	240	474	4	
				80	220	500	5	
				80	178	340	7	
				80	190	380	8	
				70	170	430	10	
				88	260	500	9	2
				88	240	520	12	
				88	220	500	15	
				88	240	520	16	
				88	240	520	20	
				80	220	500	25	
				88	240	520	32	
				80	220	500	40	
				80	190	380	64	
				80	200	430	100	

输入转速	Input speeds			WPLFE064	WPLFE090	WPLFE110	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}	4000[6]	2800[6]	2200[6]	3	1
				4400[6]	3000[6]	2400[6]	4	
				4500[6]	3200[6]	2600[6]	5	
				4500[6]	4000[6]	3000[6]	7	
				4500	4000[6]	3300[6]	8	
				4500	4000	3500[6]	10	
				4300[6]	2900[6]	2400[6]	9	2
				4500[6]	3400[6]	2600[6]	12	
				4500[6]	3800[6]	3100[6]	15	
				4500[6]	3800[6]	3000[6]	16	
				4500	4000[6]	3400[6]	20	
				4500	4000[6]	3500[6]	25	
				4500	4000	3500[6]	32	
				4500	4000	3500	40	
				4500	4000	3500	64	
				4500	4000	3500	100	
最高机械输入转速[4]	Max. mechanical input speed[4]	n_{1Limit}	min^{-1}	13000	7000	6500		1
				13000	7000	6500		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 WPLFE090 / 1 级 / 带有配合销孔的法兰输出轴 / 19 mm 锁紧系统 / 适配电机法兰 – 2 件式 – 正方形通用法兰 / B5 电机法兰类型
Drawing corresponds to a WPLFE090 / 1-stage / flange output shaft with dowel hole / 19 mm clamping system / motor adaptation – 2-part – square 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)			WPLFE064	WPLFE090	WPLFE110	p(3)	Code
输出端定位凹槽直径	Centering diameter output shaft	D10	H7	20	31,5	40		
输出端安装孔节圆直径	Pitch circle diameter output shaft	D11		31,5	50	63		
法兰输出轴的直径	Flange output shaft diameter	D12	h7	40	63	80		
输出法兰定位凸台直径	Centering diameter output flange	D13		64	90	110		
输出法兰直径	Flange diameter output	D14		86	118	145		
输出端安装孔直径	Mounting bore output	D16		4,5 8x45°	5,5 8x45°	5,5 8x45°		
输出法兰安装孔节圆直径	Pitch circle diameter output flange	D17		79	109	135		
总长	Total length	L1		110	149	198,5	1	
				122,5	165,5	225,5	2	
输出端法兰厚度	Flange thickness output	L8		4	7	8		
输出轴定位凸台深度	Centering depth output shaft	L10		4	6	6		
		L11		3	6	6		
输出法兰定位凸台深度	Centering depth output flange	L12		7,5	10,5	10,5		
输出法兰长度	Output flange length	L13		19,5	30,0	29,0		
最小总高度	Min. overall height	L23		98,5	129	160,5		
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						
带有配合销孔的法兰输出轴 (EN ISO 9409-1)	Flange output shaft with dowel hole (EN ISO 9409-1)							E
配合销孔 x 深度	Dowel hole x depth	D15	H7	5x6	6x7	6x7		
数量 x 螺纹 x 深度	Number x thread x depth	G2		7 x M5x7	7 x M6x10	11 x M6x12		

(2) 所有的尺寸单位为mm
(3) 减速机级数

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