

# WPLFE

## 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.

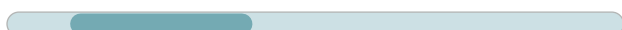
Nominal output torque **14 - 260 Nm**



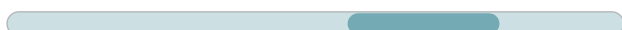
Radial force **550 - 2400 N**



Axial force **1200 - 3300 N**



Torsional backlash **11 - 18 arcmin**

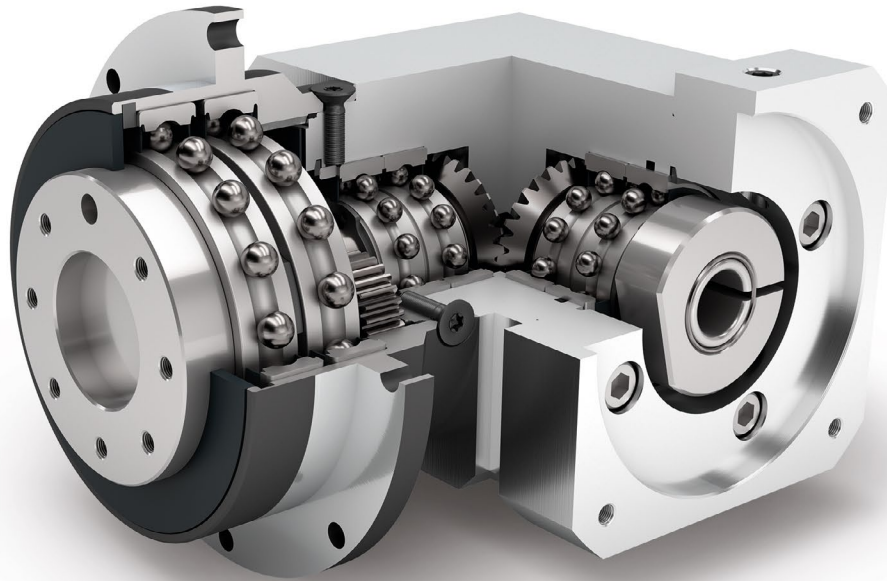


Protection class **IP54**



Frame sizes

- 64
- 90
- 110



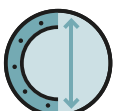
Economy Line



Right angle gearbox



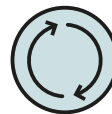
Spur gear



Extra large round type output flange



Flange output shaft (ISO 9409)



Equidirectional rotation



Bevel gear right angle stage



Low-friction deep groove ball bearings



Planet carrier in disc design

Detailed explanations of the technical features starting on page 169.

Code	Gearbox characteristics			WPLFE064	WPLFE090	WPLFE110	p <sup>(1)</sup>
	Service life (L <sub>10h</sub> )	t <sub>L</sub>	h	20,000			
	Service life at T <sub>2N</sub> × 0,88			30,000			
	Efficiency at full load <sup>(2)</sup>	η	%	94			1
				93			2
	Min. operating temperature	T <sub>min</sub>	°C	-25 (-13)			
	Max. operating temperature	T <sub>max</sub>	(°F)	90 (194)			
	Protection class				IP54		
<b>S</b>	Standard lubrication				Grease (lifetime lubrication)		
<b>F</b>	Food grade lubrication				Grease (lifetime lubrication)		
<b>L</b>	Low temperature lubrication <sup>(3)</sup>				Grease (lifetime lubrication)		
	Installation position				Any		
<b>S</b>	Standard backlash	j <sub>t</sub>	arcmin	< 16	< 13	< 11	1
				< 18	< 15	< 13	2
	Torsional stiffness <sup>(2)</sup>	c <sub>g</sub>	Nm /arcmin (lb <sub>i</sub> .in / arcmin)	2.9 - 6.2 (26 - 55)	5.8 - 17.5 (51 - 155)	15.9 - 40.5 (141 - 358)	1
				4.9 - 9.9 (43 - 88)	14.3 - 29.5 (127 - 261)	26.0 - 69.0 (230 - 611)	2
	Gearbox weight <sup>(2)</sup>	m <sub>G</sub>	kg (lb <sub>m</sub> )	1.8 (4.0)	4.5 - 4.6 (10.0 - 10.1)	10.5 - 10.6 (23.1 - 23.3)	1
				2.0 - 2.1 (4.4 - 4.7)	5.0 - 5.3 (11.0 - 11.6)	12.2 - 12.5 (26.9 - 27.6)	2
<b>S</b>	Standard surface				Housing: Steel – heat-treated and post-oxidized (black)		
	Running noise <sup>(4)</sup>	Q <sub>g</sub>	dB(A)	70	73	75	
	Max. bending moment based on the gearbox input flange <sup>(5)</sup>	M <sub>b</sub>	Nm (lb <sub>i</sub> .in)	5 (44)	10.5 (93)	26 (230)	

Output shaft loads			WPLFE064	WPLFE090	WPLFE110	p <sup>(1)</sup>
Radial force for 20,000 h <sup>(6)(7)</sup>	F <sub>r,20.000h</sub>	N (lb <sub>i</sub> )	550 (124)	1400 (315)	2400 (540)	
Axial force for 20,000 h <sup>(6)(7)</sup>	F <sub>a,20.000h</sub>		1200 (270)	3000 (674)	3300 (742)	
Radial force for 30,000 h <sup>(6)(7)</sup>	F <sub>r,30.000h</sub>		500 (112)	1200 (270)	2100 (472)	
Axial force for 30,000 h <sup>(6)(7)</sup>	F <sub>a,30.000h</sub>		1200 (270)	3000 (674)	3300 (742)	
Maximum radial force <sup>(7)(8)</sup>	F <sub>r,Stat</sub>		900 (202)	2200 (495)	3800 (854)	
Maximum axial force <sup>(7)(8)</sup>	F <sub>a,Stat</sub>		1200 (270)	3300 (742)	5200 (1169)	
Tilting moment for 20,000 h <sup>(6)(8)</sup>	M <sub>K,20.000h</sub>	Nm (lb <sub>i</sub> .in)	12 (106)	46 (407)	109 (965)	
Tilting moment for 30,000 h <sup>(6)(8)</sup>	M <sub>K,30.000h</sub>		11 (97)	40 (354)	96 (850)	

Moment of inertia			WPLFE064	WPLFE090	WPLFE110	p <sup>(1)</sup>
Mass moment of inertia <sup>(2)</sup>	J	kgcm <sup>2</sup> (lb <sub>i</sub> .in.s <sup>2</sup> 10 <sup>-4</sup> )	0.228 - 0.439 (2.018 - 3.885)	0.957 - 1.783 (8.470 - 15.781)	1.926 - 3.914 (17.047 - 34.642)	1
			0.220 - 0.359 (1.947 - 3.177)	0.909 - 1.286 (8.045 - 11.382)	1.819 - 2.892 (16.100 - 25.596)	2

(1) Number of stages  
 (2) The ratio-dependent values can be retrieved in Tec Data Finder – www.neugart.com  
 (3) T<sub>min</sub> = -40°C. Optimal operating temperature max. 50°C  
 (4) Sound pressure level from 1 m, measured on input running at n<sub>i</sub>=3000 rpm no load; i=5  
 (5) Max. motor weight\* in kg = 0.2 × M<sub>b</sub> / 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<sub>2</sub>=100 rpm  
 (7) Based on the end of the output shaft  
 (8) Other (sometimes higher) values following changes to T<sub>2N</sub>, F<sub>r</sub>, F<sub>a</sub>, cycle, and service life of bearing. Application specific configuration with NCP – www.neugart.com

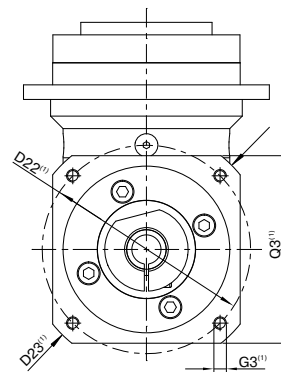
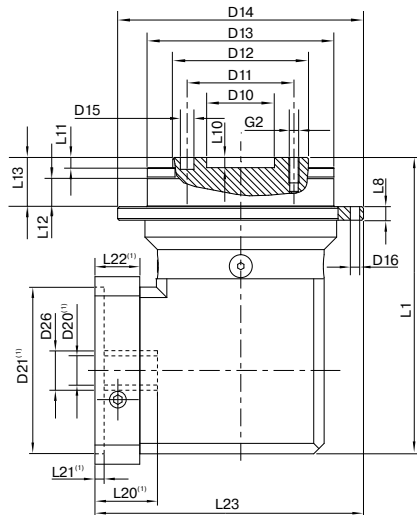
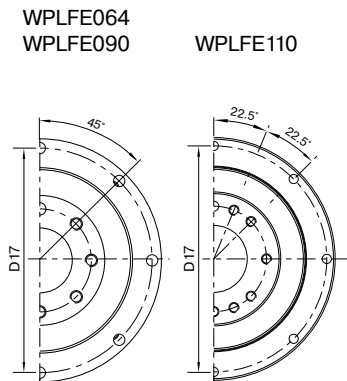
Output torques			WPLFE064	WPLFE090	WPLFE110	i <sup>(1)</sup>	p <sup>(2)</sup>				
Nominal output torque <sup>(3)</sup>	T <sub>2N</sub>	Nm (lb <sub>r</sub> .in)	14 (124)	40 (354) <sup>(4)</sup>	80 (708) <sup>(4)</sup>	3	1				
			19 (168)	53 (469) <sup>(4)</sup>	105 (929) <sup>(4)</sup>	4					
			24 (212)	67 (593) <sup>(4)</sup>	130 (1151) <sup>(4)</sup>	5					
			25 (221)	65 (575)	135 (1195)	7					
			18 (159)	50 (443)	120 (1062)	8					
			15 (133)	38 (336)	95 (841)	10					
			44 (389) <sup>(4)</sup>	130 (1151) <sup>(4)</sup>	210 (1859) <sup>(4)</sup>	9	2				
			44 (389)	120 (1062) <sup>(4)</sup>	260 (2301) <sup>(4)</sup>	12					
			44 (389)	110 (974)	230 (2036)	15					
			44 (389)	120 (1062)	260 (2301)	16					
			44 (389)	120 (1062)	260 (2301)	20					
			40 (354)	110 (974)	230 (2036)	25					
			44 (389)	120 (1062)	260 (2301)	32					
			40 (354)	110 (974)	230 (2036)	40					
			18 (159)	50 (443)	120 (1062)	64					
			15 (133)	38 (336)	95 (841)	100					
			Max. output torque <sup>(5)</sup>	T <sub>2max</sub>	Nm (lb <sub>r</sub> .in)	22 (195)		64 (566)	128 (1133)	3	1
						30 (266)		85 (752)	168 (1487)	4	
38 (336)	107 (947)	208 (1841)				5					
40 (354)	104 (920)	216 (1912)				7					
29 (257)	80 (708)	192 (1699)				8					
24 (212)	61 (540)	152 (1345)				10					
70 (620)	208 (1841)	336 (2974)				9	2				
70 (620)	192 (1699)	416 (3682)				12					
70 (620)	176 (1558)	368 (3257)				15					
70 (620)	192 (1699)	416 (3682)				16					
70 (620)	192 (1699)	416 (3682)				20					
64 (566)	176 (1558)	368 (3257)				25					
70 (620)	192 (1699)	416 (3682)				32					
64 (566)	176 (1558)	368 (3257)				40					
29 (257)	80 (708)	192 (1699)				64					
24 (212)	61 (540)	152 (1345)				100					

(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) Different service life: 10,000 h at T<sub>2N</sub>  
 (5) 30,000 rotations of the output shaft permitted; see page 158

Output torques			WPLFE064	WPLFE090	WPLFE110	i <sup>(1)</sup>	p <sup>(2)</sup>		
Emergency stop torque <sup>(3)</sup>	T <sub>2Stop</sub>	Nm (lb <sub>f</sub> .in)	66 (584)	180 (1593)	360 (3186)	3	1		
			86 (761)	240 (2124)	474 (4195)	4			
			80 (708)	220 (1947)	500 (4425)	5			
			80 (708)	178 (1575)	340 (3009)	7			
			80 (708)	190 (1682)	380 (3363)	8			
			70 (620)	170 (1505)	430 (3806)	10			
			88 (779)	260 (2301)	500 (4425)	9			
			88 (779)	240 (2124)	520 (4602)	12			
			88 (779)	220 (1947)	500 (4425)	15			
					88 (779)	240 (2124)	520 (4602)	16	2
					88 (779)	240 (2124)	520 (4602)	20	
					80 (708)	220 (1947)	500 (4425)	25	
					88 (779)	240 (2124)	520 (4602)	32	
					80 (708)	220 (1947)	500 (4425)	40	
					80 (708)	190 (1682)	380 (3363)	64	
					80 (708)	200 (1770)	430 (3806)	100	

Input speeds			WPLFE064	WPLFE090	WPLFE110	i <sup>(1)</sup>	p <sup>(2)</sup>						
Average thermal input speed at T <sub>2N</sub> and S1 <sup>(4)(5)</sup>	n <sub>1N</sub>	rpm	4000 <sup>(6)</sup>	2800 <sup>(6)</sup>	2200 <sup>(6)</sup>	3	1						
			4400 <sup>(6)</sup>	3000 <sup>(6)</sup>	2400 <sup>(6)</sup>	4							
			4500 <sup>(6)</sup>	3200 <sup>(6)</sup>	2600 <sup>(6)</sup>	5							
			4500 <sup>(6)</sup>	4000 <sup>(6)</sup>	3000 <sup>(6)</sup>	7							
			4500	4000 <sup>(6)</sup>	3300 <sup>(6)</sup>	8							
			4500	4000	3500 <sup>(6)</sup>	10							
			4300 <sup>(6)</sup>	2900 <sup>(6)</sup>	2400 <sup>(6)</sup>	9							
			4500 <sup>(6)</sup>	3400 <sup>(6)</sup>	2600 <sup>(6)</sup>	12							
			4500 <sup>(6)</sup>	3800 <sup>(6)</sup>	3100 <sup>(6)</sup>	15							
					4500 <sup>(6)</sup>	3800 <sup>(6)</sup>	3000 <sup>(6)</sup>	16	2				
					4500	4000 <sup>(6)</sup>	3400 <sup>(6)</sup>	20					
					4500	4000 <sup>(6)</sup>	3500 <sup>(6)</sup>	25					
					4500	4000	3500 <sup>(6)</sup>	32					
					4500	4000	3500	40					
					4500	4000	3500	64					
					4500	4000	3500	100					
					Max. mechanical input speed <sup>(4)</sup>	n <sub>1Limit</sub>	rpm	13000		7000	6500		1
								13000		7000	6500		2

(1) Ratios (i=n<sub>1</sub>/n<sub>2</sub>)  
 (2) Number of stages  
 (3) Permitted 1000 times  
 (4) Application-specific speed configurations with NCP – www.neugart.com  
 (5) See page 158 for the definition  
 (6) Average thermal input speed at 50% T<sub>2N</sub> and S1



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

<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)

Geometry <sup>(2)</sup>			WPLFE064	WPLFE090	WPLFE110	p <sup>(3)</sup>	Code	
Centering diameter output shaft	D10	H7	20 (0.787)	31.5 (1.240)	40 (1.575)			
Pitch circle diameter output shaft	D11		31.5 (1.240)	50 (1.969)	63 (2.480)			
Flange output shaft diameter	D12	h7	40 (1.575)	63 (2.480)	80 (3.150)			
Centering diameter output flange	D13		64 (2.520)	90 (3.543)	110 (4.331)			
Flange diameter output	D14		86 (3.386)	118 (4.646)	145 (5.709)			
Mounting bore output	D16		4.5 8x45°	5.5 8x45°	5.5 8x45°			
Pitch circle diameter output flange	D17		79 (3.110)	109 (4.291)	135 (5.315)			
Total length	L1		110 (4.331)	149 (5.866)	198.5 (7.815)	1		
			122.5 (4.823)	165.5 (6.516)	225.5 (8.878)	2		
Flange thickness output	L8		4 (0.157)	7 (0.276)	8 (0.315)			
Centering depth output shaft	L10		4 (0.157)	6 (0.236)	6 (0.236)			
	L11		3 (0.118)	6 (0.236)	6 (0.236)			
Centering depth output flange	L12		7.5 (0.295)	10.5 (0.413)	10.5 (0.413)			
Output flange length	L13		19.5 (0.768)	30.0 (1.181)	29.0 (1.142)			
Min. overall height	L23		98,5 (3.878)	129 (5.079)	160,5 (6.319)			
Motor shaft diameter j6/k6	D20		More information on page 155/156					
Clamping system diameter input	D26							
Flange output shaft with dowel hole (EN ISO 9409-1)							E	
Dowel hole x depth	D15	H7	5x6	6x7	6x7			
Number x thread x depth	G2		7 x M5x7	7 x M6x10	11 x M6x12			

<sup>(2)</sup> Dimensions in mm (in)

<sup>(3)</sup> Number of stages