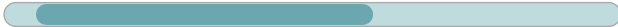


PLFE

The shortest planetary gearbox with high torsional stiffness and flange output shaft

There is no such thing as too short: The **PLFE** is our planetary gearbox with compact flange output shaft. They are more than one-third smaller in size. Its standardized flange interface makes it particularly easy to install. The integrated dowel pin drill hole provides additional stability during installation.

Nominal output torque **15 - 260 Nm**



Radial force **550 - 2400 N**



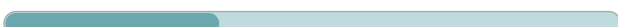
Axial force **1200 - 3300 N**



Torsional backlash **7 - 12 arcmin**

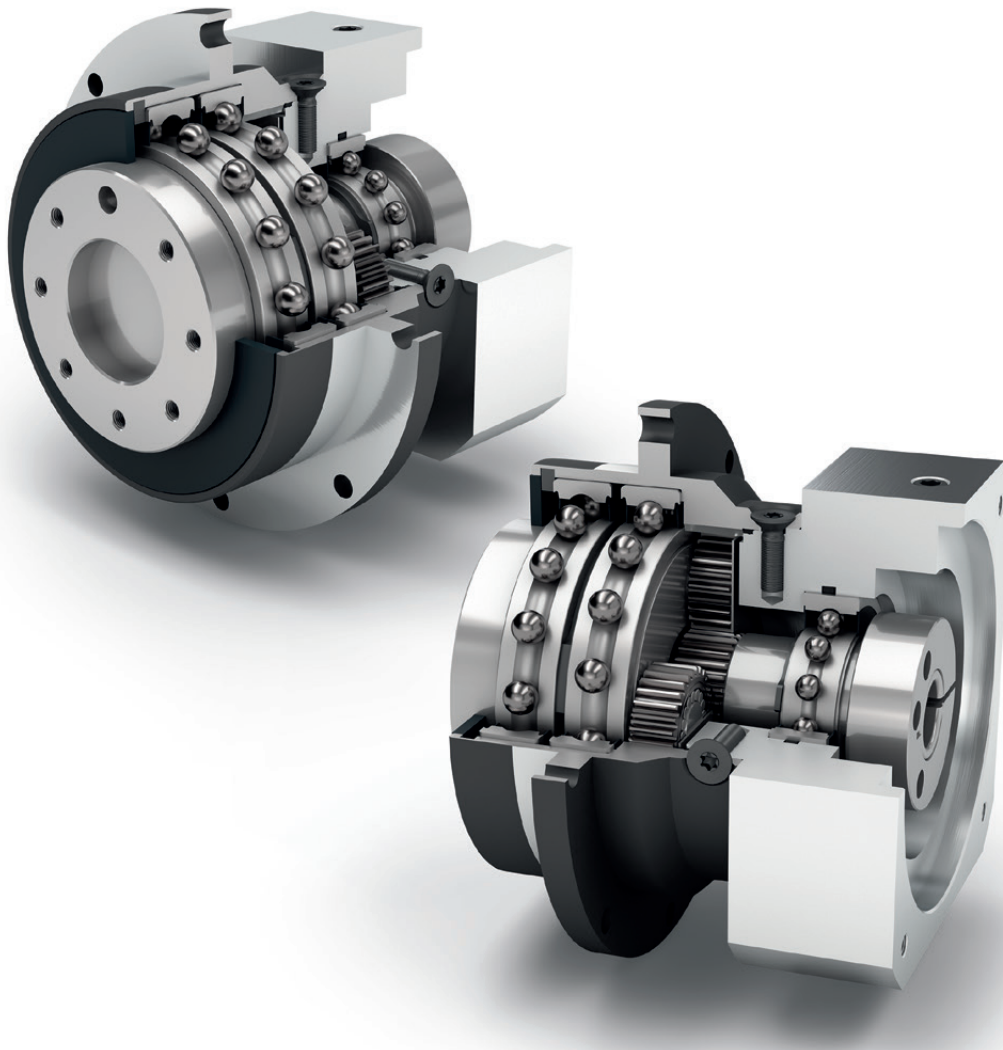


Protection class **IP54**



Frame sizes

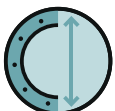
64	90	110
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Economy Line



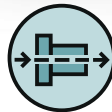
Equidirectional rotation



Extra large round type output flange



Flange output shaft (ISO 9409-1)



Coaxial gearbox



Spur gear



Low-friction deep groove ball bearings



Planet carrier in disc design

Detailed explanations of the technical features starting on page 173.

Code	Gearbox characteristics			PLFE064	PLFE090	PLFE110	p ⁽¹⁾	
	Service life (L _{10h})	t _L	h	30,000				
	Efficiency at full load ⁽²⁾	η	%	98			1	
				97			2	
	Min. operating temperature	T _{min}	°C	-25 (-13)				
	Max. operating temperature	T _{max}	(°F)	90 (194)				
	Protection class				IP54			
S	Standard lubrication				Grease (lifetime lubrication)			
F	Food grade lubrication				Grease (lifetime lubrication)			
L	Low temperature lubrication ⁽³⁾				Grease (lifetime lubrication)			
	Installation position				Any			
S	Standard backlash	j _t	arcmin	< 10	< 7	< 7	1	
				< 12	< 9	< 9	2	
	Torsional stiffness ⁽²⁾	c _g	Nm /arcmin (lb _f .in/ arcmin)	5.5 - 11.0 (49 - 97)	16.3 - 33.5 (144 - 296)	36.0 - 72.0 (319 - 637)	1	
				5.1 - 11.9 (45 - 105)	15.9 - 39.5 (141 - 350)	29.5 - 88.0 (261 - 779)	2	
	Gearbox weight ⁽²⁾	m _G	kg (lb _m)	1.1 (2.4)	3.0 (6.6)	6.4 - 6.5 (14.2 - 14.4)	1	
				1.3 - 1.4 (2.8 - 3.0)	3.4 - 3.7 (7.6 - 8.1)	8.1 - 8.5 (17.9 - 18.6)	2	
S	Standard surface				Housing: Steel – heat-treated and post-oxidized (black)			
	Running noise ⁽⁴⁾	Q _g	dB(A)	58	60	65		
	Max. bending moment based on the gearbox input flange ⁽⁵⁾	M _b	Nm (lb _f .in)	12 (106)	16 (142)	40 (354)		

Output shaft loads			PLFE064	PLFE090	PLFE110	p ⁽¹⁾
Radial force for 20,000 h ⁽⁶⁾⁽⁷⁾	F _{r20.000h}	N (lb _f)	550 (124)	1400 (315)	2400 (540)	
Axial force for 20,000 h ⁽⁶⁾⁽⁷⁾	F _{a20.000h}		1200 (270)	3000 (674)	3300 (742)	
Radial force for 30,000 h ⁽⁶⁾⁽⁷⁾	F _{r30.000h}		500 (112)	1200 (270)	2100 (472)	
Axial force for 30,000 h ⁽⁶⁾⁽⁷⁾	F _{a30.000h}		1200 (270)	3000 (674)	3300 (742)	
Maximum radial force ⁽⁷⁾⁽⁸⁾	F _{rStat}		900 (202)	2200 (495)	3800 (854)	
Maximum axial force ⁽⁷⁾⁽⁸⁾	F _{aStat}		1200 (270)	3300 (742)	5200 (1169)	
Tilting moment for 20,000 h ⁽⁶⁾⁽⁸⁾	M _{K20.000h}	Nm (lb _f .in)	12 (106)	46 (407)	109 (965)	
Tilting moment for 30,000 h ⁽⁶⁾⁽⁸⁾	M _{K30.000h}		11 (97)	40 (354)	96 (850)	

Moment of inertia			PLFE064	PLFE090	PLFE110	p ⁽¹⁾
Mass moment of inertia ⁽²⁾	J	kgcm ² (lb _f .in.s ² 10 ⁻⁴)	0.072 - 0.210 (0.637 - 1.859)	0.406 - 1.164 (3.593 - 10.302)	1.484 - 3.430 (13.135 - 30.358)	1
			0.064 - 0.130 (0.566 - 1.151)	0.356 - 0.666 (3.151 - 5.895)	1.377 - 2.407 (12.187 - 21.304)	2

(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_i=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 n₂=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

Output torques			PLFE064	PLFE090	PLFE110	i ⁽¹⁾	p ⁽²⁾
Nominal output torque ⁽³⁾	T _{2N}	Nm (lb _r .in)	28 (248)	85 (752)	115 (1018)	3	1
			38 (336)	115 (1018)	155 (1372)	4	
			40 (354)	110 (974)	195 (1726)	5	
			25 (221)	65 (575)	135 (1195)	7	
			18 (159)	50 (443)	120 (1062)	8	
			15 (133)	38 (336)	95 (841)	10	
			44 (389)	130 (1151)	210 (1859)	9	2
			44 (389)	120 (1062)	260 (2301)	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 ⁽⁴⁾	T _{2max}	Nm (lb _r .in)	45 (398)	136 (1204)	184 (1629)	3	1
			61 (540)	184 (1629)	248 (2195)	4	
			64 (566)	176 (1558)	312 (2761)	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	

PLFE

⁽¹⁾ Ratios (i=n₁/n₂)
⁽²⁾ Number of stages
⁽³⁾ Application specific configuration with NCP – www.neugart.com
⁽⁴⁾ 30,000 rotations of the output shaft permitted; see page 166

Output torques			PLFE064	PLFE090	PLFE110	$i^{(1)}$	$p^{(2)}$
Emergency stop torque ⁽³⁾	T_{2Stop}	Nm (lb _f .in)	66 (584)	180 (1593)	390 (3452)	3	1
			88 (779)	240 (2124)	520 (4602)	4	
			80 (708)	220 (1947)	500 (4425)	5	
			80 (708)	178 (1575)	340 (3009)	7	
			80 (708)	190 (1682)	380 (3363)	8	
			80 (708)	200 (1770)	480 (4248)	10	
			88 (779)	260 (2301)	500 (4425)	9	2
			88 (779)	240 (2124)	520 (4602)	12	
			88 (779)	220 (1947)	500 (4425)	15	
			88 (779)	240 (2124)	520 (4602)	16	
			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)	480 (4248)	100	

Input speeds			PLFE064	PLFE090	PLFE110	$i^{(1)}$	$p^{(2)}$
Average thermal input speed at T_{2N} and S1 ⁽⁴⁾⁽⁵⁾	n_{1N}	rpm	3950 ⁽⁶⁾	2800 ⁽⁶⁾	2350 ⁽⁶⁾	3	1
			4500 ⁽⁶⁾	3000 ⁽⁶⁾	2550 ⁽⁶⁾	4	
			4500 ⁽⁶⁾	3550 ⁽⁶⁾	2700 ⁽⁶⁾	5	
			4500	4000	3500 ⁽⁶⁾	7	
			4500	4000	3500 ⁽⁶⁾	8	
			4500	4000	3500	10	
			4500 ⁽⁶⁾	4000 ⁽⁶⁾	2850 ⁽⁶⁾	9	2
			4500	4000 ⁽⁶⁾	3100 ⁽⁶⁾	12	
			4500	4000	3500 ⁽⁶⁾	15	
			4500	4000	3500 ⁽⁶⁾	16	
			4500	4000	3500 ⁽⁶⁾	20	
			4500	4000	3500	25	
			4500	4000	3500	32	
			4500	4000	3500	40	
			4500	4000	3500	64	
			4500	4000	3500	100	
			Max. mechanical input speed ⁽⁴⁾	n_{1Limit}	rpm	13,000	

⁽¹⁾ Ratios ($i=n_1/n_2$)

⁽²⁾ Number of stages

⁽³⁾ Permitted 1000 times

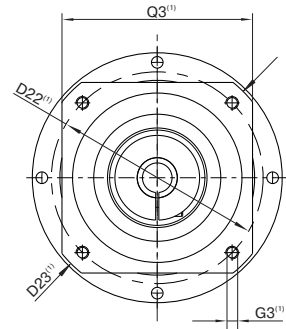
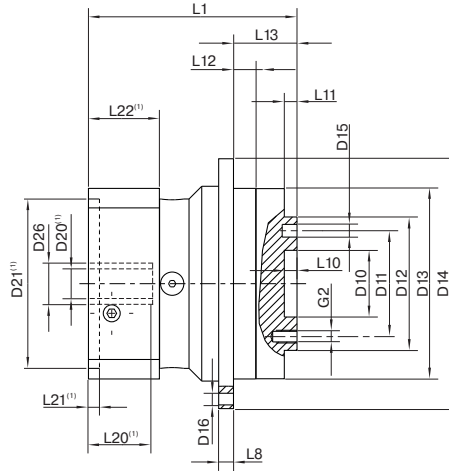
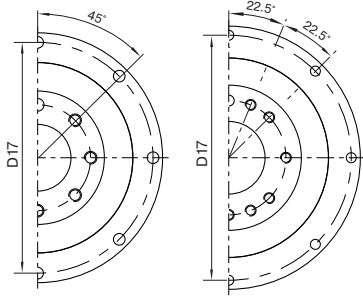
⁽⁴⁾ Application-specific speed configurations with NCP – www.neugart.com

⁽⁵⁾ See page 166 for the definition

⁽⁶⁾ Average thermal input speed at 50% T_{2N} and S1

PLFE064
PLFE090

PLFE110



Drawing corresponds to a PLFE090 / 1-stage / flange output shaft with dowel hole / 19 mm clamping system / motor adaptation – one part / B5 flange type motor

⁽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

Geometry ⁽²⁾			PLFE064	PLFE090	PLFE110	p ⁽³⁾	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)			
Min. total length	L1		69 (2.717)	98.5 (3.878)	125.5 (4.941)	1		
			81.5 (3.209)	116 (4.567)	152.5 (6.004)	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 (1.181)	29 (1.142)			
Motor shaft diameter j6/k6	D20		More information on page 163/164					
Clamping system diameter input	D26							
Flange output shaft with dowel hole (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			

⁽²⁾ Dimensions in mm

⁽³⁾ Number of stages