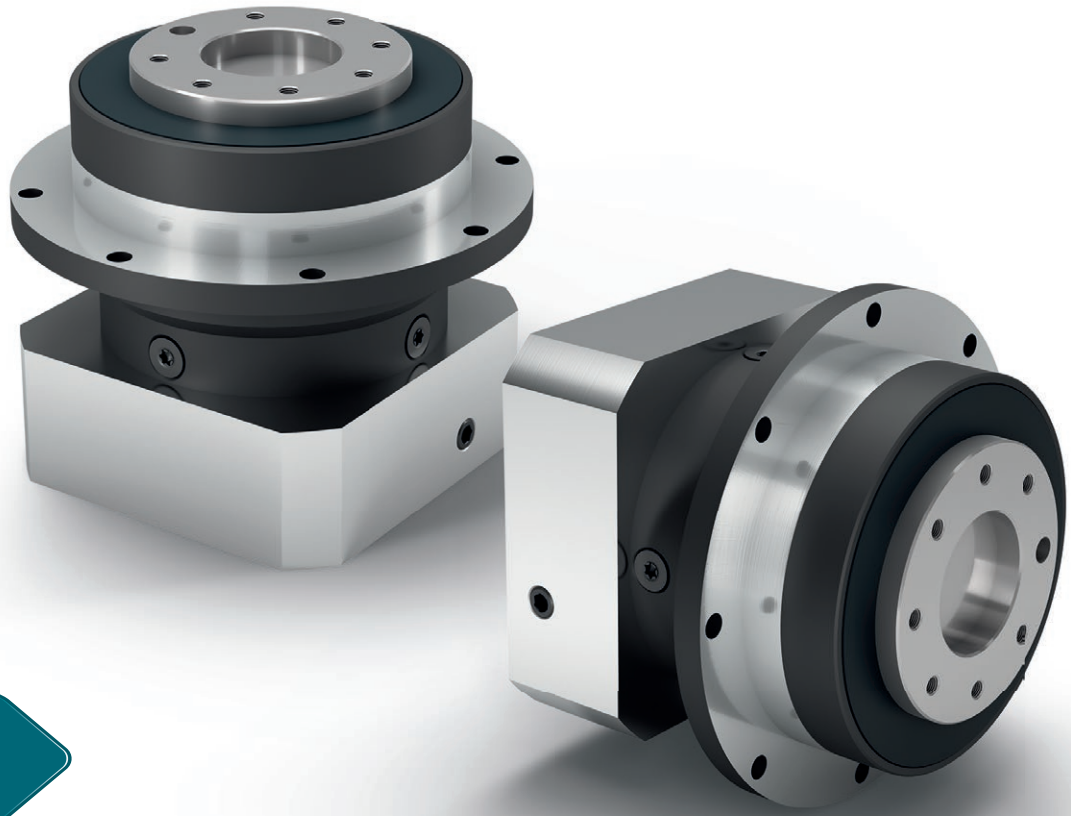


PLFE

The shortest planetary gearbox with the highest torsional stiffness and flange output shaft

There's no such thing as too short: The **PLFE** is our planetary gearbox with compact flange output shaft. You save more than a third of the space and gain a significantly higher torsional stiffness. Due to its standardized flange interface, it is especially easy to install. The integrated dowel hole provides additional secureness during fitting.

Nominal output torque	**15 - 260 Nm**
Torsional backlash	**7 - 12 arcmin**
Tilting moment	**12 - 109 Nm**
Protection class	**IP54**

Frame sizes

64 **90** **110**



- Economy Line
- Equidirectional rotation
- Extra large round type output flange
- Flange output shaft (ISO 9409)
- Coaxial gearbox
- Spur gear
- Low-friction deep groove ball bearings
- Planet carrier in disc design

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 (°F)	-25 (-13)			
	Max. operating temperature	T_{max}		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	m_G	kg (lb$_m$)	1.1 (2.4)	2.9 (6.4)	7 (15.4)	1
				1.5 (3.3)	3.3 (7.3)	9 (19.8)	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)	8 (71)	16 (142)	40 (354)	

Output shaft loads			PLFE064	PLFE090	PLFE110	p[1]
Radial force for 20,000 h[6][7]	$F_{r\,20.000\,h}$	N (lb$_f$)	550 (124)	1400 (315)	2400 (540)	
Axial force for 20,000 h[6][7]	$F_{a\,20.000\,h}$		1200 (270)	3000 (674)	3300 (742)	
Radial force for 30,000 h[6][7]	$F_{r\,30.000\,h}$		500 (112)	1200 (270)	2100 (472)	
Axial force for 30,000 h[6][7]	$F_{a\,30.000\,h}$		1200 (270)	3000 (674)	3300 (742)	
Maximum radial force[7][8]	$F_{r\,Stat}$		900 (202)	2200 (495)	3800 (854)	
Maximum axial force[7][8]	$F_{a\,Stat}$		1200 (270)	3300 (742)	5200 (1169)	
Tilting moment for 20,000 h[6][8]	$M_{K\,20.000\,h}$	Nm (lb$_f$.in)	12 (106)	46 (407)	109 (965)	
Tilting moment for 30,000 h[6][8]	$M_{K\,30.000\,h}$		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_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

Output torques			PLFE064	PLFE090	PLFE110	i(1)	p(2)
Nominal output torque(3)	T_{2N}	Nm (lb_f.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)	240 (2124)	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_f.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)	384 (3399)	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 ($i=n_1/n_2$)
(2) Number of stages
(3) Application specific configuration with NCP – www.neugart.com
(4) 30,000 rotations of the output shaft permitted; see page 142

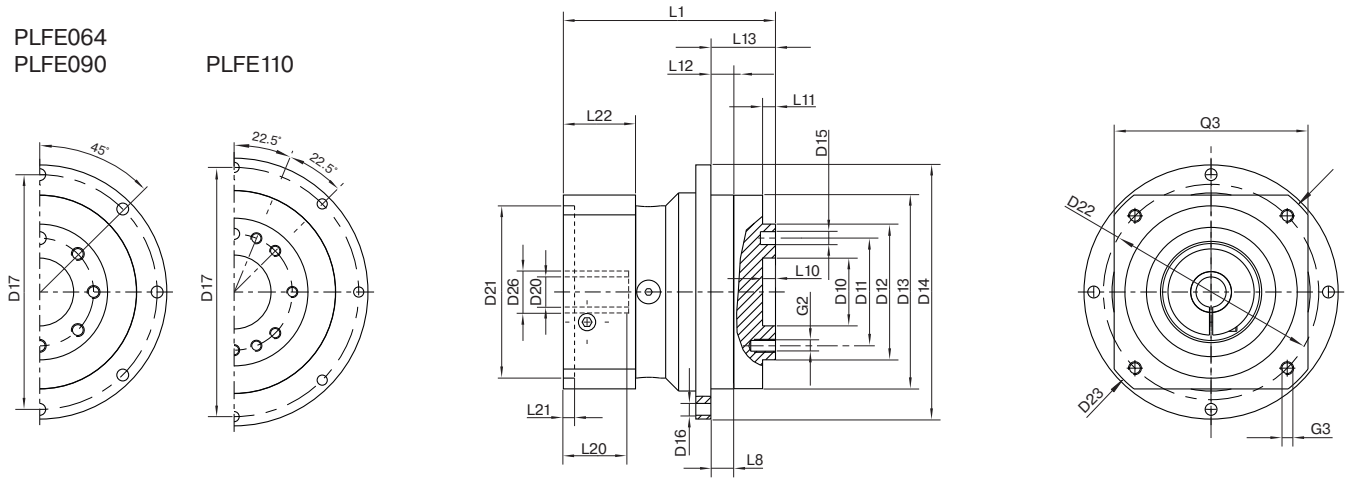
Output torques			PLFE064	PLFE090	PLFE110	i[1]	p[2]
Emergency stop torque[3]	T_{2Stop}	Nm (lb_f.in)	66 (584)	180 (1593)	390 (3452)	3	1
			88 (779)	240 (2124)	520 (4602)	4	
			80 (708)	220 (1947)	500 (4425)	5	
			80 (708)	178 (1575)	340 (3009)	7	
			80 (708)	190 (1682)	380 (3363)	8	
			80 (708)	200 (1770)	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	13000	7000	6500		

(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 142 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

All other variants can be retrieved in the Tec Data Finder at www.neugart.com

Geometry[1]			PLFE064	PLFE090	PLFE110	z[2]	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)		
Centering diameter output shaft	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)		
Centering depth output shaft	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)		
Clamping system diameter input	D26		More information on page 131				
Motor shaft diameter j6/k6	D20		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				
Max. permis. motor shaft length	L20						
Min. permis. motor shaft length							
Centering diameter input	D21						
Centering depth input	L21						
Pitch circle diameter input	D22						
Motor flange length	L22						
Diagonal dimension input	D23						
Mounting thread x depth	G3	4x					
Flange cross section input	Q3	■					
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		

[1] Dimensions in mm (in)
[2] Number of stages