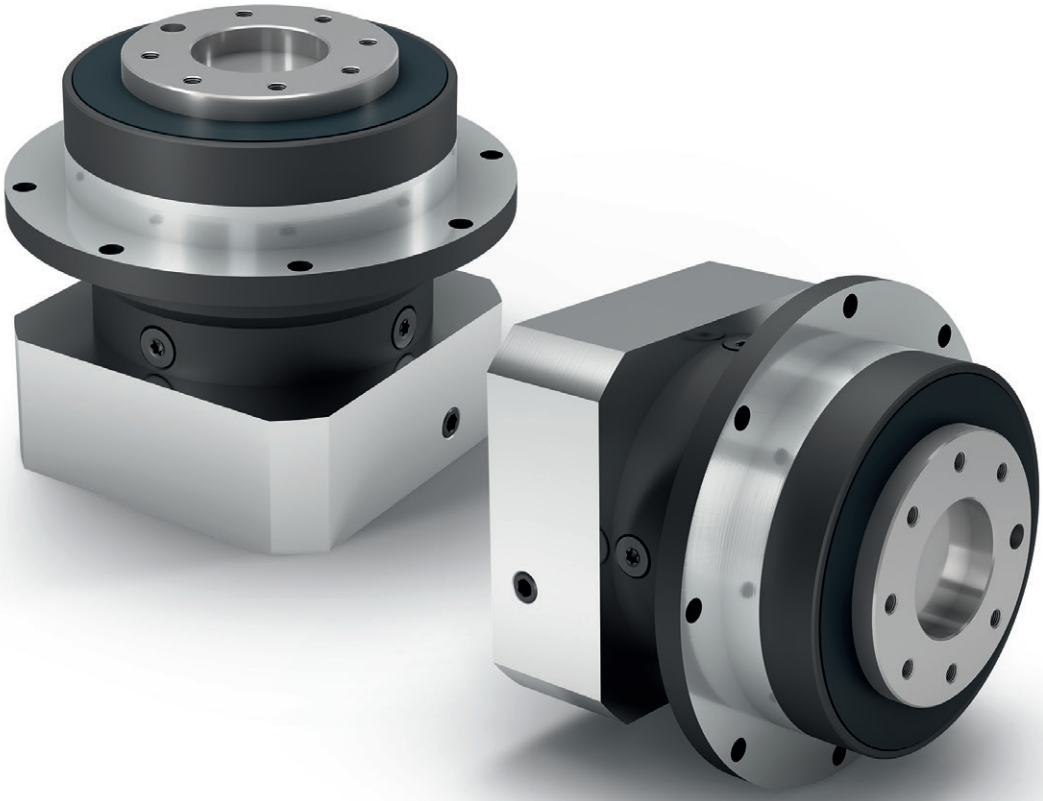


PLFE

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	**5 - 260 Nm**
Radial force	**550 - 2400 N**
Axial force	**480 - 3300 N**
Torsional backlash	**7 - 15 arcmin**
Protection class	**IP54**

Frame sizes

55 **64** **90** **110**

Economy Line

Coaxial gearbox

Equidirectional rotation

Spur gear

Extra large round type output flange

Low-friction deep groove ball bearings

Flange output shaft (ISO 9409-1)

Planet carrier in disc design

Detailed explanations of the technical features starting on page 173.

Code	Gearbox characteristics			PLFE055	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	< 15	< 10	< 7	< 7	1
				< 19	< 12	< 9	< 9	2
	Torsional stiffness[2]	c_g	Nm /arcmin (lb_f.in/ arcmin)	1.7 - 4.1 (15 - 36)	5.5 - 11.0 (49 - 97)	16.3 - 33.5 (144 - 296)	36.0 - 72.0 (319 - 637)	1
				1.5 - 5.6 (13 - 50)	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)	0.7 (1.5)	1.1 (2.4)	3.0 (6.6)	6.4 - 6.5 (14.2 - 14.4)	1
				0.8 (1.7)	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	58	60	65	
	Max. bending moment based on the gearbox input flange[5]	M_b	Nm (lb_f.in)	4.5 (40)	12 (106)	16 (142)	40 (354)	

Output shaft loads			PLFE055	PLFE064	PLFE090	PLFE110	p[1]
Radial force for 20,000 h[6][7]	$F_{r\,20.000\,h}$	N (lb_f)	550 (124)	550 (124)	1400 (315)	2400 (540)	
Axial force for 20,000 h[6][7]	$F_{a\,20.000\,h}$		840 (189)	1200 (270)	3000 (674)	3300 (742)	
Radial force for 30,000 h[6][7]	$F_{r\,30.000\,h}$		480 (108)	500 (112)	1200 (270)	2100 (472)	
Axial force for 30,000 h[6][7]	$F_{a\,30.000\,h}$		710 (160)	1200 (270)	3000 (674)	3300 (742)	
Maximum radial force[7][8]	$F_{r\,Stat}$		1150 (259)	900 (202)	2200 (495)	3800 (854)	
Maximum axial force[7][8]	$F_{a\,Stat}$		1000 (225)	1200 (270)	3300 (742)	5200 (1169)	
Tilting moment for 20,000 h[6][8]	$M_{K\,20.000\,h}$	Nm (lb_f.in)	12 (107)	12 (106)	46 (407)	109 (965)	
Tilting moment for 30,000 h[6][8]	$M_{K\,30.000\,h}$		11 (94)	11 (97)	40 (354)	96 (850)	

Moment of inertia			PLFE055	PLFE064	PLFE090	PLFE110	p[1]
Mass moment of inertia[2]	J	kgcm² (lb_f.in.s²10⁻⁴)	0.018 - 0.064 (0.159 - 0.566)	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
			0.014 - 0.030 (0.124 - 0.266)	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			PLFE055	PLFE064	PLFE090	PLFE110	i(1)	p(2)
Nominal output torque(3)	T_{2N}	Nm (lb_f.in)	11 (97)	28 (248)	85 (752)	115 (1018)	3	1
			15 (133)	38 (336)	115 (1018)	155 (1372)	4	
			14 (124)	40 (354)	110 (974)	195 (1726)	5	
			8,5 (75)	25 (221)	65 (575)	135 (1195)	7	
			6 (53)	18 (159)	50 (443)	120 (1062)	8	
			5 (44)	15 (133)	38 (336)	95 (841)	10	
			16.5 (146)	44 (389)	130 (1151)	210 (1859)	9	2
			20 (177)	44 (389)	120 (1062)	260 (2301)	12	
			18 (159)	44 (389)	110 (974)	230 (2036)	15	
			20 (177)	44 (389)	120 (1062)	260 (2301)	16	
			20 (177)	44 (389)	120 (1062)	260 (2301)	20	
			18 (159)	40 (354)	110 (974)	230 (2036)	25	
			20 (177)	44 (389)	120 (1062)	260 (2301)	32	
			18 (159)	40 (354)	110 (974)	230 (2036)	40	
			7.5 (66)	18 (159)	50 (443)	120 (1062)	64	
			5 (44)	15 (133)	38 (336)	95 (841)	100	
Max. output torque(4)	T_{2max}	Nm (lb_f.in)	17.5 (155)	45 (398)	136 (1204)	184 (1629)	3	1
			24 (212)	61 (540)	184 (1629)	248 (2195)	4	
			22 (195)	64 (566)	176 (1558)	312 (2761)	5	
			13.5 (119)	40 (354)	104 (920)	216 (1912)	7	
			10 (89)	29 (257)	80 (708)	192 (1699)	8	
			8 (71)	24 (212)	61 (540)	152 (1345)	10	
			26 (230)	70 (620)	208 (1841)	336 (2974)	9	2
			32 (283)	70 (620)	192 (1699)	416 (3682)	12	
			29 (257)	70 (620)	176 (1558)	368 (3257)	15	
			32 (283)	70 (620)	192 (1699)	416 (3682)	16	
			32 (283)	70 (620)	192 (1699)	416 (3682)	20	
			29 (257)	64 (566)	176 (1558)	368 (3257)	25	
			32 (283)	70 (620)	192 (1699)	416 (3682)	32	
			29 (257)	64 (566)	176 (1558)	368 (3257)	40	
			12 (106)	29 (257)	80 (708)	192 (1699)	64	
			8 (71)	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 166

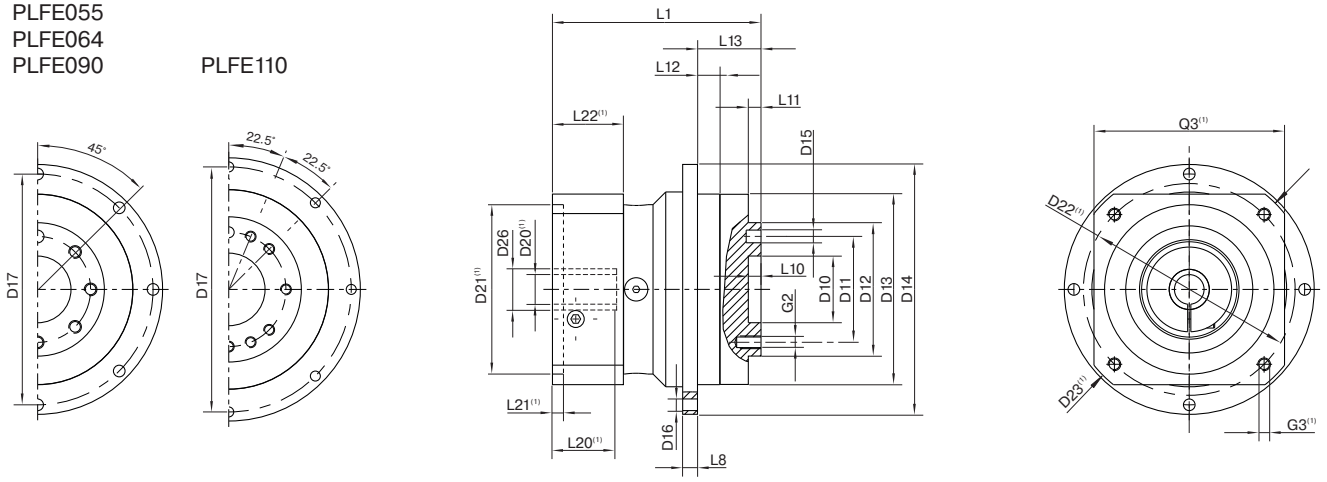
Output torques			PLFE055	PLFE064	PLFE090	PLFE110	i[1]	p[2]
Emergency stop torque[3]	T_{2Stop}	Nm (lb_f.in)	22.5 (199)	66 (584)	180 (1593)	390 (3452)	3	1
			30 (266)	88 (779)	240 (2124)	520 (4602)	4	
			36 (319)	80 (708)	220 (1947)	500 (4425)	5	
			26 (230)	80 (708)	178 (1575)	340 (3009)	7	
			27 (239)	80 (708)	190 (1682)	380 (3363)	8	
			27 (239)	80 (708)	200 (1770)	480 (4248)	10	
			33 (292)	88 (779)	260 (2301)	500 (4425)	9	2
			40 (354)	88 (779)	240 (2124)	520 (4602)	12	
			36 (319)	88 (779)	220 (1947)	500 (4425)	15	
			40 (354)	88 (779)	240 (2124)	520 (4602)	16	
			40 (354)	88 (779)	240 (2124)	520 (4602)	20	
			36 (319)	80 (708)	220 (1947)	500 (4425)	25	
			40 (354)	88 (779)	240 (2124)	520 (4602)	32	
			36 (319)	80 (708)	220 (1947)	500 (4425)	40	
			27 (239)	80 (708)	190 (1682)	380 (3363)	64	
			27 (239)	80 (708)	200 (1770)	480 (4248)	100	

Input speeds			PLFE055	PLFE064	PLFE090	PLFE110	i[1]	p[2]
Average thermal input speed at T_{2N} and S1[4][5]	n_{1N}	rpm	5000	3950[6]	2800[6]	2350[6]	3	1
			5000	4500[6]	3000[6]	2550[6]	4	
			5000	4500[6]	3550[6]	2700[6]	5	
			5000	4500	4000	3500[6]	7	
			5000	4500	4000	3500[6]	8	
			5000	4500	4000	3500	10	
			5000	4500[6]	4000[6]	2850[6]	9	2
			5000	4500	4000[6]	3100[6]	12	
			5000	4500	4000	3500[6]	15	
			5000	4500	4000	3500[6]	16	
			5000	4500	4000	3500[6]	20	
			5000	4500	4000	3500	25	
			5000	4500	4000	3500	32	
			5000	4500	4000	3500	40	
			5000	4500	4000	3500	64	
			5000	4500	4000	3500	100	
Max. mechanical input speed[4]	n_{1Limit}	rpm	18,000	13,000	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 166 for the definition
(6) Average thermal input speed at 50% T_{2N} and S1

PLFE055
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)			**PLFE055**	**PLFE064**	**PLFE090**	**PLFE110**	**p**(3)	**Code**
Centering diameter output shaft	D10	H7	16 (0.630)	20 (0.787)	31.5 (1.240)	40 (1.575)		
Pitch circle diameter output shaft	D11		25 (0.984)	31.5 (1.240)	50 (1.969)	63 (2.480)		
Flange output shaft diameter	D12	h7	34 (1.339)	40 (1.575)	63 (2.480)	80 (3.150)		
Centering diameter output flange	D13		55 (2.165)	64 (2.520)	90 (3.543)	110 (4.331)		
Flange diameter output	D14		72 (2.835)	86 (3.386)	118 (4.646)	145 (5.709)		
Mounting bore output	D16		3.4 8x45°	4.5 8x45°	5.5 8x45°	5.5 8x45°		
Pitch circle diameter output flange	D17		67 (2.638)	79 (3.110)	109 (4.291)	135 (5.315)		
Min. total length	L1		71.5 (2.815)	69 (2.717)	98.5 (3.878)	125.5 (4.941)	1	
			84.5 (3.327)	81.5 (3.209)	116 (4.567)	152.5 (6.004)	2	
Flange thickness output	L8		4 (0.157)	4 (0.157)	7 (0.276)	8 (0.315)		
Centering depth output shaft	L10		6 (0.236)	4 (0.157)	6 (0.236)	6 (0.236)		
	L11		3 (0.118)	3 (0.118)	6 (0.236)	6 (0.236)		
Centering depth output flange	L12		8 (0.315)	7.5 (0.295)	10.5 (0.413)	10.5 (0.413)		
Output flange length	L13		19 (0.748)	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	4x5	5x6	6x7	6x7		
Number x thread x depth	G2		7 x M4x6	7 x M5x7	7 x M6x10	11 x M6x12		

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