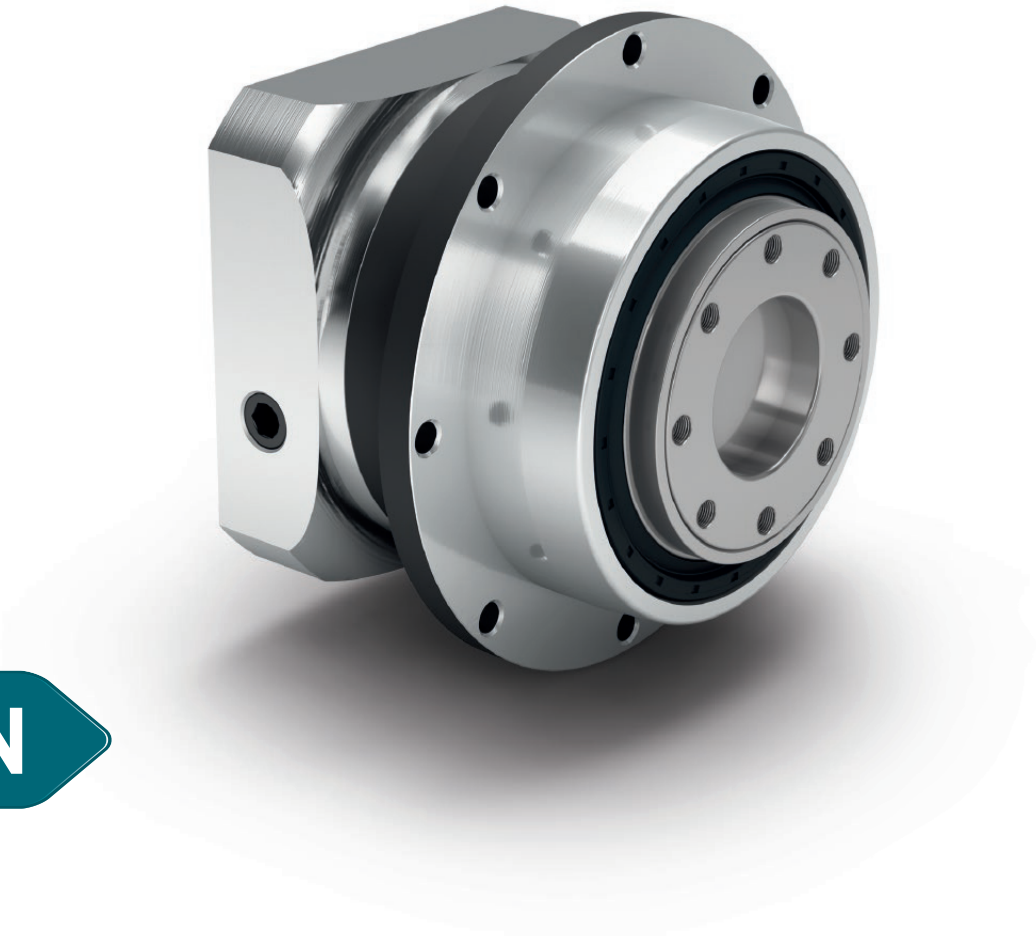

PLFN

The precision planetary gearbox for maximum loads and the highest performance – fast and easy to install

Our **PLFN** features a standardized flange interface for ease of installation. The straight-teeth precision planetary gearbox has been designed for the highest performance and torque. Its high tilting moment delivers the best performance even under the highest radial and axial forces.

❷ Maximized loads

Thanks to its high tilting moment, the **PLFN** is particularly robust and withstands even the highest axial and radial forces. This advanced technology is intended for your complex applications, e.g. turntable or rack and pinion.

❶ Standardized flange interface

Fitted with an EN ISO 9409-1 interface, the **PLFN** precision planetary gearbox promises you fast and easy installation of the drive components like flange pinion, pulley, or turntable. The optional dowel hole provides additional secureness during fitting.

❸ Maximized torque

Thanks to its straight teeth, the **PLFN** is ideal for the highest performance. Its intelligent design delivers greater power than conventional planetary gearboxes.

- Minimized backlash for maximized precision (< 1 arcmin)
- For any mounting position
- Individual adaptation of the input flange to the motor
- Lifetime lubrication for maintenance-free operation
- Equidirectional rotation
- Clamping systems with optimized mass moment of inertia

Code	Gearbox characteristics			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	z[1]
	Service life	t_L	h	20,000					
	Service life at T_{2N} x 0.88			30,000					
	Efficiency at full load[2]	η	%	97					1
				96					2
	Min. operating temperature	T_{min}	°C (°F)	-25 (-13)					
	Max. operating temperature	T_{max}		90 (194)					
	Protection class			IP 65					
S	Standard lubrication			Oil					
F	Food grade lubrication			Oil					
L	Low temperature lubrication[3]			Oil					
	Installation position			Any					
S	Standard backlash	j_t	arcmin	< 3					1
				< 5					2
R	Reduced backlash			< 2	< 1	< 1	< 1	< 1	
	Torsional stiffness[2]	c_g	Nm/arcmin (lb_f.in/ arcmin)	10.8 - 14.5 (96 - 128)	25.5 - 34.0 (226 - 301)	64.0 - 86.0 (566 - 761)	145.0 - 195.0 (1283 - 1726)	470.0 - 630.0 (4160 - 5576)	1
				11.0 - 14.5 (97 - 128)	25.0 - 32.5 (221 - 288)	63.0 - 83.0 (558 - 735)	142.0 - 187.0 (1257 - 1655)	460.0 - 605.0 (4071 - 5354)	2
	Gearbox weight	m_G	kg (lb_m)	1.5 (3.3)	3 (6.6)	6.5 (14.3)	13.8 (30.4)	35.5 (78.3)	1
				2.2 (4.9)	4 (8.8)	8 (17.6)	16 (35.3)	42.5 (93.7)	2
S	Standard surface			Housing: Steel – nitrocarburized and post-oxidized (black)					
	Running noise[4]	Q_g	dB(A)	60	62	65	70	74	
	Max. bending moment based on the gearbox input flange[5]	M_b	Nm (lb_f.in)	18 (159)	38 (336)	80 (708)	180 (1593)	300 (2655)	1
				18 (159)	18 (159)	38 (336)	80 (708)	180 (1593)	2
	Motor flange precision			DIN 42955-R					

Output shaft loads			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	z[1]
Radial force for 20,000 h[6][7]	$F_{r\,20.000\,h}$	N (lb_f)	2400 (540)	4400 (990)	5500 (1238)	12000 (2700)	33000 (7425)	
Axial force for 20,000 h[6][7]	$F_{a\,20.000\,h}$		4300 (968)	8200 (1845)	9500 (2138)	8500 (1913)	15000 (3375)[8]	
Radial force for 30,000 h[6][7]	$F_{r\,30.000\,h}$		2100 (473)	3900 (878)	4800 (1080)	11000 (2475)	29500 (6638)	
Axial force for 30,000 h[6][7]	$F_{a\,30.000\,h}$		3800 (855)	7200 (1620)	8400 (1890)	7500 (1688)	13500 (3038)[8]	
Static radial force[7][8]	$F_{r\,Stat}$		2400 (540)	4400 (990)	5500 (1238)	12000 (2700)	33000 (7425)	
Static axial force[7][8]	$F_{a\,Stat}$		4300 (968)	8200 (1845)	9500 (2138)	8500 (1913)	15000 (3375)[8]	
Tilting moment for 20,000 h[6][8]	$M_{K\,20.000\,h}$	Nm (lb_f.in)	148 (1310)	363 (3213)	534 (4726)	1219 (10788)	4957 (43869)	
Tilting moment for 30,000 h[6][8]	$M_{K\,30.000\,h}$		129 (1142)	322 (2850)	466 (4124)	1117 (9885)	4431 (39214)	

Moment of inertia			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	z[1]
Mass moment of inertia[2]	J	$kgcm^2$ ($lb_f.in.s^2 10^{-4}$)	0.217 - 0.288 (1.920 - 2.549)	0.580 - 0.920 (5.133 - 8.142)	2.036 - 2.942 (18.019 - 26.037)	7.313 - 12.365 (64.720 - 109.430)	26.880 - 61.170 (237.888 - 541.355)	1
			0.209 - 0.243 (1.850 - 2.151)	0.211 - 0.269 (1.867 - 2.381)	0.546 - 0.737 (4.832 - 6.522)	1.951 - 2.784 (17.266 - 24.638)	6.911 - 11.813 (61.162 - 104.545)	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 (-40°F). Optimal operating temperature max. 50°C (122°F)
(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			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	i[1]	z[2]
Nominal output torque[3]	T_{2N}	Nm (lb_f.in)	60 (531)	140 (1239)	300 (2655)	600 (5310)	1300 (11505)	4	1
			65 (575)	140 (1239)	260 (2301)	750 (6638)	1600 (14160)	5	
			45 (398)	90 (797)	180 (1593)	530 (4691)	1300 (11505)	7	
			40 (354)	80 (708)	150 (1328)	450 (3983)	1000 (8850)	8	
			27 (239)	60 (531)	125 (1106)	305 (2699)	630 (5576)	10	
			77 (681)	150 (1328)	300 (2655)	1000 (8850)	1800 (15930)	16	2
			77 (681)	150 (1328)	300 (2655)	1000 (8850)	1800 (15930)	20	
			65 (575)	140 (1239)	260 (2301)	900 (7965)	1800 (15930)	25	
			77 (681)	150 (1328)	300 (2655)	600 (5310)	1800 (15930)	32	
			65 (575)	140 (1239)	260 (2301)	750 (6638)	1800 (15930)	40	
			65 (575)	130 (1151)	260 (2301)	620 (5487)	1525 (13496)	50	
			40 (354)	80 (708)	150 (1328)	450 (3983)	1000 (8850)	64	
			27 (239)	60 (531)	125 (1106)	305 (2699)	630 (5576)	100	
Max. output torque[4]	T_{2max}	Nm (lb_f.in)	96 (850)	224 (1982)	480 (4248)	960 (8496)	2080 (18408)	4	1
			104 (920)	224 (1982)	416 (3682)	1200 (10620)	2560 (22656)	5	
			72 (637)	144 (1274)	288 (2549)	848 (7505)	2080 (18408)	7	
			64 (566)	128 (1133)	240 (2124)	720 (6372)	1600 (14160)	8	
			43 (381)	96 (850)	200 (1770)	488 (4319)	1008 (8921)	10	
			123 (1089)	240 (2124)	480 (4248)	1600 (14160)	2880 (25488)	16	2
			123 (1089)	240 (2124)	480 (4248)	1600 (14160)	2880 (25488)	20	
			104 (920)	224 (1982)	416 (3682)	1440 (12744)	2880 (25488)	25	
			123 (1089)	240 (2124)	480 (4248)	960 (8496)	2880 (25488)	32	
			104 (920)	224 (1982)	416 (3682)	1200 (10620)	2880 (25488)	40	
			104 (920)	208 (1841)	416 (3682)	992 (8779)	2440 (21594)	50	
			64 (566)	128 (1133)	240 (2124)	720 (6372)	1600 (14160)	64	
			43 (381)	96 (850)	200 (1770)	488 (4319)	1008 (8921)	100	

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(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 136

Output torques			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	i[1]	z[2]
Emergency stop torque[3]	T_{2Stop}	Nm (lb_f.in)	120 (1062)	280 (2478)	650 (5753)	1300 (11505)	2700 (23895)	4	1
			130 (1151)	280 (2478)	650 (5753)	1500 (13275)	3200 (28320)	5	
			90 (797)	175 (1549)	340 (3009)	1300 (11505)	2600 (23010)	7	
			90 (797)	200 (1770)	380 (3363)	1000 (8850)	2600 (23010)	8	
			90 (797)	200 (1770)	480 (4248)	750 (6638)	1350 (11948)	10	
			150 (1328)	300 (2655)	650 (5753)	2000 (17700)	3600 (31860)	16	2
			150 (1328)	300 (2655)	650 (5753)	2000 (17700)	3600 (31860)	20	
			150 (1328)	300 (2655)	650 (5753)	1800 (15930)	3600 (31860)	25	
			150 (1328)	300 (2655)	650 (5753)	1500 (13275)	3600 (31860)	32	
			150 (1328)	300 (2655)	650 (5753)	1500 (13275)	3600 (31860)	40	
			150 (1328)	300 (2655)	650 (5753)	1500 (13275)	3600 (31860)	50	
			80 (708)	200 (1770)	380 (3363)	1000 (8850)	2600 (23010)	64	
			80 (708)	200 (1770)	480 (4248)	750 (6638)	1350 (11948)	100	

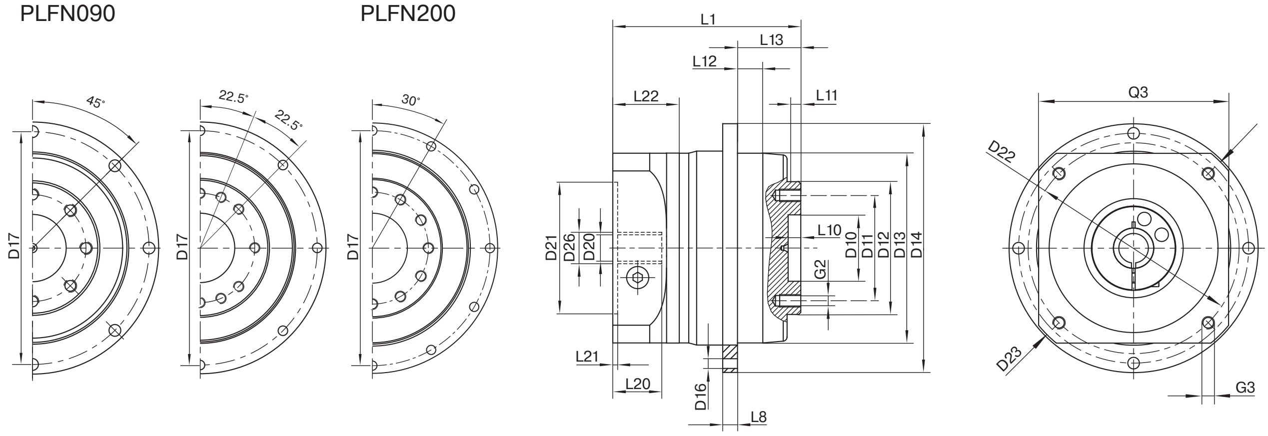
Input speeds			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	i[1]	z[2]
Average thermal input speed at T_{2N} and S1[4][5]	n_{1N}	rpm	2100[6]	1750[6]	1300[6]	850[6]	500[6]	4	1
			2450[6]	2100[6]	1650[6]	950[6]	600[6]	5	
			3200[6]	3000[6]	2350[6]	1400[6]	850[6]	7	
			3550[6]	3350[6]	2650[6]	1650[6]	1000[6]	8	
			4100[6]	4000[6]	3150[6]	2050[6]	1300[6]	10	
			3700[6]	3850[6]	3150[6]	1700[6]	1100[6]	16	2
			4200[6]	4450[6]	3750[6]	2100[6]	1350[6]	20	
			4500[6]	4500[6]	4000[6]	2500[6]	1550[6]	25	
			4500[6]	4500	4000	3500[6]	2000[6]	32	
			4500	4500	4000	3500[6]	2250[6]	40	
			4500	4500	4000	3500	2750[6]	50	
			4500	4500	4000	3500	3000[6]	64	
			4500	4500	4000	3500	3000	100	
Max. mechanical input speed[4]	n_{1Limit}	rpm	14000	10000	8500	6500	6000		1
			14000	14000	10000	8500	6500		2

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

PLFN064
PLFN090

PLFN110

PLFN140
PLFN200



Drawing corresponds to a PLFN090 / 1-stage / flange output shaft / 19 mm clamping system / motor adaptation – 2-part – round universal flange / B5 flange type motor
All other variants can be retrieved in the Tec Data Finder at www.neugart.com

Geometry(1)			**PLFN064**	**PLFN090**	**PLFN110**	**PLFN140**	**PLFN200**	**z**(2)	**Code**
Centering diameter output shaft	D10	H7	20 (0.787)	31.5 (1.240)	40 (1.575)	50 (1.969)	80 (3.150)		
Pitch circle diameter output shaft	D11		31.5 (1.240)	50 (1.969)	63 (2.480)	80 (3.150)	125 (4.921)		
Centering diameter output shaft	D12	h7	40 (1.575)	63 (2.480)	80 (3.150)	100 (3.937)	160 (6.299)		
Centering diameter output flange	D13		64 (2.520)	90 (3.543)	110 (4.331)	140 (5.512)	200 (7.874)		
Flange diameter output	D14		86 (3.386)	118 (4.646)	145 (5.709)	179 (7.047)	247 (9.724)		
Mounting bore output	D16		4.5 8x45°	5.5 8x45°	5.5 8x45°	6.6 12x30°	9 12x30°		
Pitch circle diameter output flange	D17		79 (3.110)	109 (4.291)	135 (5.315)	168 (6.614)	233 (9.173)		
Min. total length	L1		71 (2.795)	89 (3.504)	108 (4.252)	157 (6.181)	212.5 (8.366)	1	
			99.5 (3.917)	111 (4.370)	130 (5.118)	187.5 (7.382)	264 (10.394)	2	
Flange thickness output	L8		4 (0.157)	7 (0.276)	8 (0.315)	10 (0.394)	12 (0.472)		
Centering depth output shaft	L10		4.5 (0.177)	6.5 (0.256)	6.5 (0.256)	6.5 (0.256)	10 (0.394)		
Centering depth output shaft	L11		3 (0.118)	6 (0.236)	6 (0.236)	6 (0.236)	8 (0.315)		
Centering depth output flange	L12		10 (0.394)	12 (0.472)	12 (0.472)	14 (0.551)	17.5 (0.689)		
Output flange length	L13		19.5	30.0	29.0	38.0	50.0		
Clamping system diameter input	D26		More information on page 125						
Motor shaft diameter j6/k6	D20		The dimensions vary with the motor/gearbox flange. The input flange geometries 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 (similar EN ISO 9409-1)									D
Number x thread x depth	G2		8xM5x7	8xM6x10	12xM6x12	12xM8x15	12xM10x20		
Flange output shaft with dowel hole (EN ISO 9409-1)									E
Dowel hole x depth	D15	H7	5x5	6x6	6x6	8x8	10x10		
Number x thread x depth	G2	-	7xM5x7	7xM6x10	11xM6x12	11xM8x15	11xM10x20		

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

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