



PLFN

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

Our **PLFN** has a standardized flange interface, which allows easy mounting. The straight-toothed precision planetary gearbox is designed for high performance and torque. Its high tilting moment allows the best performance even with the highest radial and axial forces.

Nominal output torque **27 - 1800 Nm**



Radial force **2150 - 33000 N**



Axial force **4300 - 15000 N**



Torsional backlash **1 - 5 arcmin**



Protection class **IP65**



Frame sizes

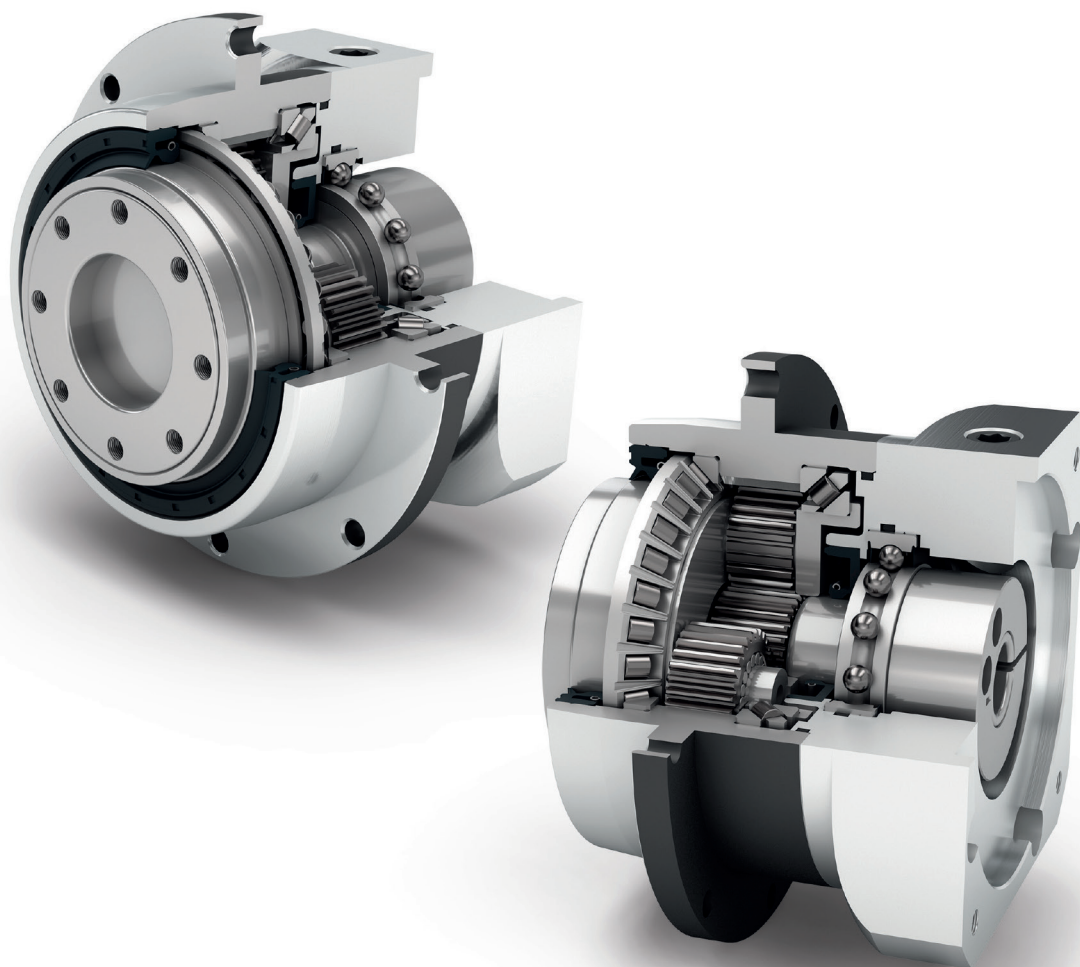
64

90

110

140

200



Precision Line



Equidirectional rotation



Extra large round type output flange



Rotary shaft seal



Planet carrier in cage design



Option: Planetary gearbox with mounted pinion on page 132



Coaxial gearbox



Spur gear



Preloaded angular contact roller bearings



Flange output shaft (ISO 9409-1)



Option: Reduced backlash



Option: Painted surface
– RAL 9005 Jet black

Detailed explanations of the technical features starting on page 173.

Code	Gearbox characteristics			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	p ⁽¹⁾
	Service life (L _{10h})	t _L	h	20,000					
	Service life at T _{2N} × 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			IP65					
S	Standard lubrication			Oil (lifetime lubrication)					
F	Food grade lubrication			Oil (lifetime lubrication)					
L	Low temperature lubrication ⁽³⁾			Oil (lifetime lubrication)					
	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 _r .in/ arcmin)	7.7 - 14.8 (68 - 131)	22.0 - 40.5 (195 - 358)	59.0 - 92.0 (522 - 814)	156.0 - 255.0 (1381 - 2257)	330.0 - 636.0 (2921 - 5629)	1
					7.6 - 14.7 (67 - 130)	18.5 - 38.0 (164 - 336)	58.0 - 91.0 (513 - 805)	177.0 - 264.0 (1567 - 2337)	391.0 - 656.0 (3461 - 5806)
	Gearbox weight ⁽²⁾	m _G	kg (lb _m)	1.3 (2.9 - 3.0)	2.9 (6.3 - 6.5)	4.9 - 5.2 (10.8 - 11.5)	12.6 - 13.2 (27.9 - 29.1)	36.6 - 38.8 (80.7 - 85.5)	1
					1.8 - 1.9 (4.0 - 4.2)	3.3 - 3.4 (7.3 - 7.5)	5.8 - 6.1 (12.7 - 13.4)	14.4 - 15.0 (31.7 - 33.1)	42.3 - 44.7 (93.3 - 98.7)
S	Standard surface			Housing: Steel – heat-treated and post-oxidized (black)					
B	Painted surface			RAL 9005 Jet 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 _r .in)	18 (159)	38 (336)	80 (708)	180 (1593)	300 (2655)	
					18 (159)	18 (159)	38 (336)	80 (708)	

Output shaft loads				PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	p ⁽¹⁾
Radial force for 20,000 h ⁽⁶⁾⁽⁷⁾	$F_{r20.000h}$	N (lb _f)		2150 (483)	3950 (888)	4900 (1102)	12000 (2698)	33000 (7419)	
Axial force for 20,000 h ⁽⁶⁾⁽⁷⁾	$F_{a20.000h}$			4300 (967)	8200 (1843)	9500 (2136)	8500 (1911)	15000 (3372)	
Radial force for 30,000 h ⁽⁶⁾⁽⁷⁾	$F_{r30.000h}$			1900 (427)	3500 (787)	4350 (978)	11000 (2473)	29500 (6632)	
Axial force for 30,000 h ⁽⁶⁾⁽⁷⁾	$F_{a30.000h}$			3800 (854)	7200 (1619)	8400 (1888)	7500 (1686)	13500 (3035)	
Maximum radial force ⁽⁷⁾⁽⁸⁾	F_{rStat}			2150 (483)	3950 (888)	4900 (1102)	12000 (2698)	33000 (7419)	
Maximum axial force ⁽⁷⁾⁽⁸⁾	F_{aStat}			4300 (967)	8200 (1843)	9500 (2136)	8500 (1911)	15000 (3372)	
Tilting moment for 20,000 h ⁽⁶⁾⁽⁸⁾	$M_{K20.000h}$	Nm (lb _i .in)		132 (1170)	326 (2888)	475 (4207)	1219 (10786)	4957 (43870)	
Tilting moment for 30,000 h ⁽⁶⁾⁽⁸⁾	$M_{K30.000h}$			117 (1035)	289 (2559)	422 (3735)	1117 (9887)	4431 (39217)	

Moment of inertia				PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	p ⁽¹⁾
Mass moment of inertia ⁽²⁾	J	kgcm ² (lb _i .in.s ² 10 ⁻⁴)		0.217 - 0.288 (1.921 - 2.549)	0.580 - 0.920 (5.133 - 8.143)	2.036 - 2.942 (18.020 - 26.039)	7.313 - 12.365 (64.726 - 109.439)	26.880 - 61.170 (237.908 - 541.400)	1
				0.209 - 0.243 (1.850 - 2.151)	0.211 - 0.269 (1.868 - 2.381)	0.546 - 0.737 (4.833 - 6.523)	1.951 - 2.784 (17.268 - 24.640)	6.911 - 11.813 (61.168 - 104.554)	2

(1) Number of stages

(2) The ratio-dependent values can be retrieved in Tec Data Finder – www.neugart.com(3) $T_{min} = -40^\circ\text{C}$. 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 = $0.2 \times M_b$ / 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⁾	p ⁽²⁾
Nominal output torque ⁽³⁾	T _{2N}	Nm (lb _f .in)	60 (531)	140 (1239)	300 (2655)	600 (5310)	1300 (11506)	4	1
			65 (575)	140 (1239)	260 (2301)	750 (6638)	1600 (14161)	5	
			45 (398)	90 (797)	180 (1593)	530 (4691)	1300 (11506)	7	
			40 (354)	80 (708)	150 (1328)	450 (3983)	1000 (8851)	8	
			27 (239)	60 (531)	125 (1106)	305 (2699)	630 (5576)	10	
			77 (682)	150 (1328)	300 (2655)	1000 (8851)	1800 (15931)	16	2
			77 (682)	150 (1328)	300 (2655)	1000 (8851)	1800 (15931)	20	
			65 (575)	140 (1239)	260 (2301)	900 (7966)	1800 (15931)	25	
			77 (682)	150 (1328)	300 (2655)	600 (5310)	1800 (15931)	32	
			65 (575)	140 (1239)	260 (2301)	750 (6638)	1800 (15931)	40	
			65 (575)	130 (1151)	260 (2301)	620 (5487)	1525 (13497)	50	
			40 (354)	80 (708)	150 (1328)	450 (3983)	1000 (8851)	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 (1983)	480 (4248)	960 (8497)	2080 (18410)	4	1
			104 (920)	224 (1983)	416 (3682)	1200 (10621)	2560 (22658)	5	
			72 (637)	144 (1275)	288 (2549)	848 (7505)	2080 (18410)	7	
			64 (566)	128 (1133)	240 (2124)	720 (6373)	1600 (14161)	8	
			43 (381)	96 (850)	200 (1770)	488 (4319)	1008 (8922)	10	
			123 (1089)	240 (2124)	480 (4248)	1600 (14161)	2880 (25490)	16	2
			123 (1089)	240 (2124)	480 (4248)	1600 (14161)	2880 (25490)	20	
			104 (920)	224 (1983)	416 (3682)	1440 (12745)	2880 (25490)	25	
			123 (1089)	240 (2124)	480 (4248)	960 (8497)	2880 (25490)	32	
			104 (920)	224 (1983)	416 (3682)	1200 (10621)	2880 (25490)	40	
			104 (920)	208 (1841)	416 (3682)	992 (8780)	2440 (21596)	50	
			64 (566)	128 (1133)	240 (2124)	720 (6373)	1600 (14161)	64	
			43 (381)	96 (850)	200 (1770)	488 (4319)	1008 (8922)	100	

⁽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			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	i ⁽¹⁾	p ⁽²⁾
Emergency stop torque ⁽³⁾	T _{2Stop}	Nm (lb _f .in)	120 (1062)	280 (2478)	650 (5753)	1300 (11506)	2700 (23897)	4	1
			130 (1151)	280 (2478)	650 (5753)	1500 (13276)	3200 (28322)	5	
			90 (797)	175 (1549)	340 (3009)	1300 (11506)	2600 (23012)	7	
			90 (797)	200 (1770)	380 (3363)	1000 (8851)	2600 (23012)	8	
			90 (797)	200 (1770)	480 (4248)	750 (6638)	1350 (11949)	10	
			150 (1328)	300 (2655)	650 (5753)	2000 (17701)	3600 (31863)	16	2
			150 (1328)	300 (2655)	650 (5753)	2000 (17701)	3600 (31863)	20	
			150 (1328)	300 (2655)	650 (5753)	1800 (15931)	3600 (31863)	25	
			150 (1328)	300 (2655)	650 (5753)	1500 (13276)	3600 (31863)	32	
			150 (1328)	300 (2655)	650 (5753)	1500 (13276)	3600 (31863)	40	
			150 (1328)	300 (2655)	650 (5753)	1500 (13276)	3600 (31863)	50	
			80 (708)	200 (1770)	380 (3363)	1000 (8851)	2600 (23012)	64	
			80 (708)	200 (1770)	480 (4248)	750 (6638)	1350 (11949)	100	

Input speeds			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	i ⁽¹⁾	p ⁽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	14,000	10,000	8500	6500	6000		1
			14,000	14,000	10,000	8500	6500		2

⁽¹⁾ Ratios (i=n₁/n₂)

⁽²⁾ Number of stages

⁽³⁾ Permitted 1000 times

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

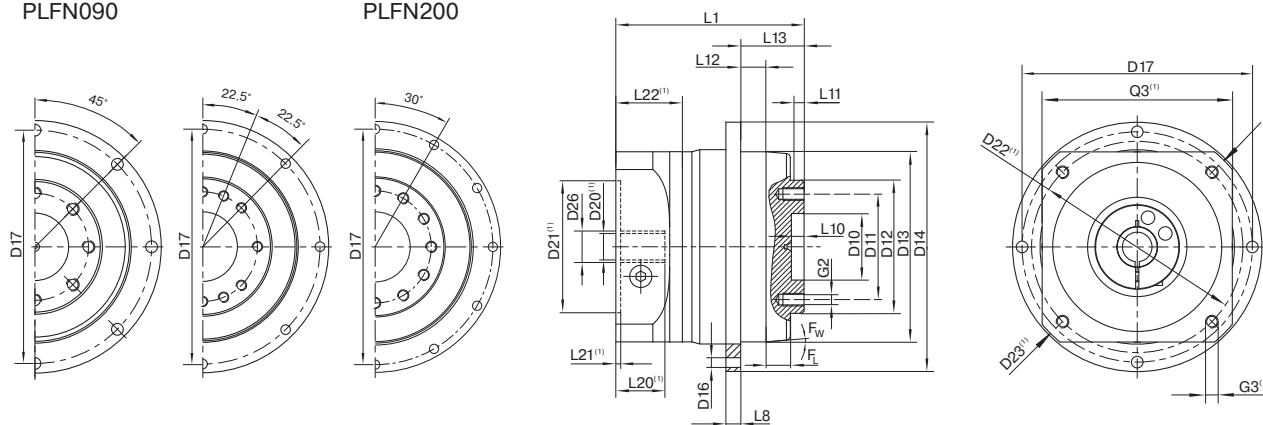
⁽⁵⁾ See page 166 for the definition

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

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

⁽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⁾			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	p ⁽³⁾	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)		
Flange output shaft diameter	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)		
	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 (0.760)	30.0 (1.181)	29.0 (1.142)	38.0 (1.496)	50.0 (1.969)		
Motor shaft diameter j6/k6	D20		More information on page 163/164						
Clamping system diameter input	D26								
Flange output shaft (similar ISO 9409-1)									
Number x thread x depth	G2		8 x M5x7	8 x M6x10	12 x M6x12	12 x M8x15	12 x M10x20		D
Flange output shaft with dowel hole (ISO 9409-1)									
Dowel hole x depth	D15	H7	5x5	6x6	6x6	8x8	10x10		E
Number x thread x depth	G2		7 x M5x7	7 x M6x10	11 x M6x12	11 x M8x15	11 x M10x20		

⁽²⁾ Dimensions in mm

⁽³⁾ Number of stages