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.

Cyclic 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 158
- 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 201.

Code	Gearbox characteristics			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	p(1)
	Service life(2)	L_h	h	20,000					
	Efficiency(3)	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)					
	Installation position			Any					
S	Standard backlash	φ	arcmin	< 3					1
				< 5					2
R	Reduced backlash			< 2	< 1	< 1	< 1	< 1	
	Torsional stiffness(3)	C_{2t}	Nm / arcmin (lb_f.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)	2
	Gearbox weight(3)	m	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)	2
S	Standard surface			Housing: Steel – heat-treated and post-oxidized (black)					
B	Painted surface(4)			RAL 9005 Jet black					
	Running noise(3)	L_{pA}	dB(A)	60	62	65	70	74	

Output shaft loads			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	p(1)
Maximum radial force	$F_{r\,max}$	N (lb_f)	2150 (483)	3950 (888)	4900 (1102)	12000 (2698)	33000 (7419)	
Maximum axial force	$F_{a\,max}$		2850 (641)	5450 (1225)	6450 (1450)	7500 (1686)	12000 (2698)	
Maximum tilting moment	$M_{K\,max}$	Nm (lb_f.in)	132 (1170)	326 (2888)	475 (4207)	1219 (10786)	4957 (43870)	

Input characteristics			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	p(1)
Clamping system diameter input (Code)	D26	mm	14 (D)(5)	19 (E)(5)	24 (F)(5)	35 (G)(5)	48 (K)(5)	1
			19 (E)	24 (F)	35 (G)	42 (H)	-	
			14 (D)(5)	14 (D)(5)	19 (E)(5)	24 (F)(5)	35 (G)(5)	2
			19 (E)	19 (E)	24 (F)	35 (G)	42 (H)	
Mass moment of inertia input(3)(5)	J_1	kgcm² (lb_f.in.s²$10^{-4}$)	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
Average idle torque(3)(5)	T_0	Nm (lb_f.in)	0.30 - 0.70 (3 - 6)	0.55 - 1.55 (5 - 14)	1.15 - 3.70 (10 - 33)	2.60 - 9.40 (23 - 83)	6.00 - 25.80 (53 - 228)	1
			0.20 - 0.35 (2 - 3)	0.20 - 0.40 (2 - 4)	0.30 - 0.95 (3 - 8)	0.75 - 3.00 (7 - 27)	1.60 - 7.80 (14 - 69)	2
Maximum bending moment input	M_{b1}		18 (159)	38 (336)	80 (708)	180 (1593)	300 (2655)	1
			18 (159)	18 (159)	38 (336)	80 (708)	180 (1593)	2

(1) Number of stages
(2) Application specific configuration with NCP – www.neugart.com
(3) The ratio-dependent values can be retrieved in Tec Data Finder – www.neugart.com
(4) More information on page 183
(5) Reference clamping system diameter

Output torques			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	i(1)	p(2)
Cyclic torque(3)(4)	T_{2Z}	Nm (lb_f.in)	60 (531)	140 (1239)	300 (2655)	600 (5310)	1330 (11771)	4	1
			65 (575)	140 (1239)	260 (2301)	750 (6638)	1660 (14692)	5	
			39 (345)	86 (761)	170 (1505)	510 (4514)	1100 (9736)	7	
			40 (354)	80 (708)	150 (1328)	450 (3983)	1000 (8851)	8	
			27 (239)	60 (531)	125 (1106)	270 (2390)	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)	135 (1195)	260 (2301)	620 (5487)	1420 (12568)	50	
			40 (354)	80 (708)	150 (1328)	450 (3983)	1000 (8851)	64	
			27 (239)	60 (531)	125 (1106)	280 (2478)	600 (5310)	100	
Maximum torque(3)(4)	T_{2max}	Nm (lb_f.in)	60 (531)	140 (1239)	305 (2699)	600 (5310)	1330 (11771)	4	1
			75 (664)	175 (1549)	385 (3408)	750 (6638)	1660 (14692)	5	
			59 (522)	138 (1221)	260 (2301)	810 (7169)	1270 (11240)	7	
			64 (566)	128 (1133)	240 (2124)	560 (4956)	1410 (12480)	8	
			43 (381)	96 (850)	200 (1770)	325 (2876)	1000 (8851)	10	
			103 (912)	240 (2124)	480 (4248)	1230 (10886)	2400 (21242)	16	2
			103 (912)	240 (2124)	480 (4248)	1540 (13630)	2880 (25490)	20	
			97 (859)	220 (1947)	415 (3673)	1440 (12745)	2880 (25490)	25	
			103 (912)	240 (2124)	480 (4248)	960 (8497)	2250 (19914)	32	
			97 (859)	220 (1947)	415 (3673)	1200 (10621)	2810 (24871)	40	
			97 (859)	215 (1903)	415 (3673)	1000 (8851)	1640 (14515)	50	
			62 (549)	128 (1133)	240 (2124)	560 (4956)	1410 (12480)	64	
			43 (381)	96 (850)	200 (1770)	325 (2876)	840 (7435)	100	

(1) Ratios ($i=n_1/n_2$)
(2) Number of stages
(3) Application specific configuration with NCP – www.neugart.com
(4) Based on reference clamping system diameter

Output torques			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	i[1]	p[2]
Continuous torque[3]	T_{2D}	Nm (lb_f.in)	30 (266)	70 (620)	150 (1328)	300 (2655)	650 (5753)	4	1
			32 (283)	70 (620)	130 (1151)	375 (3319)	800 (7081)	5	
			22 (195)	45 (398)	90 (797)	265 (2345)	650 (5753)	7	
			20 (177)	40 (354)	75 (664)	225 (1991)	500 (4425)	8	
			13.5 (119)	30 (266)	62 (549)	152 (1345)	315 (2788)	10	
			38 (336)	75 (664)	150 (1328)	500 (4425)	900 (7966)	16	2
			38 (336)	75 (664)	150 (1328)	500 (4425)	900 (7966)	20	
			32 (283)	70 (620)	130 (1151)	450 (3983)	900 (7966)	25	
			38 (336)	75 (664)	150 (1328)	300 (2655)	900 (7966)	32	
			32 (283)	70 (620)	130 (1151)	375 (3319)	900 (7966)	40	
			32 (283)	65 (575)	130 (1151)	310 (2744)	760 (6727)	50	
			20 (177)	40 (354)	75 (664)	225 (1991)	500 (4425)	64	
			13.5 (119)	30 (266)	62 (549)	152 (1345)	315 (2788)	100	

Input speeds			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	i[1]	p[2]
Continuous input speed[3][4]	n_{1D}	rpm	2100	1750	1300	850	500	4	1
			2450	2100	1650	950	600	5	
			3200	3000	2350	1400	850	7	
			3550	3350	2650	1650	1000	8	
			4100	4000	3150	2050	1300	10	
			3700	3850	3150	1700	1100	16	2
			4200	4450	3750	2100	1350	20	
			4500	4500	4000	2500	1550	25	
			4500	4500	4000	3500	2000	32	
			4500	4500	4000	3500	2250	40	
			4500	4500	4000	3500	2750	50	
			4500	4500	4000	3500	3000	64	
			4500	4500	4000	3500	3000	100	
Max. mechanical input speed[3]	n_{1max}	rpm	10000	10000	8500	6500	6000		1
			10000	10000	10000	8500	6500		2

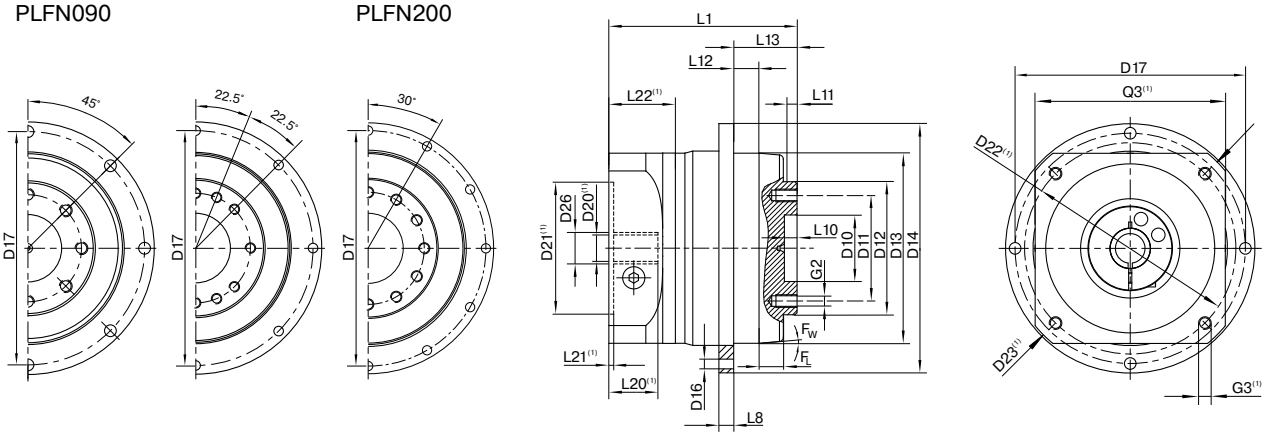
Output torques			PLFN064	PLFN090	PLFN110	PLFN140	PLFN200	i[1]	p[2]
Emergency stop torque[4][5]	T_{2Stop}	Nm (lb_f.in)	80 (708)	200 (1770)	500 (4425)	1140 (10090)	2520 (22304)	4	1
			100 (885)	250 (2213)	620 (5487)	1420 (12568)	3150 (27880)	5	
			90 (797)	175 (1549)	340 (3009)	1300 (11506)	2210 (19560)	7	
			90 (797)	200 (1770)	380 (3363)	970 (8585)	2440 (21596)	8	
			52 (460)	121 (1071)	295 (2611)	570 (5045)	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)	250 (2213)	600 (5310)	1200 (10621)	2850 (25225)	50	
			80 (708)	200 (1770)	380 (3363)	970 (8585)	2440 (21596)	64	
			50 (443)	120 (1062)	240 (2124)	560 (4956)	1350 (11949)	100	

[1] Ratios ($i=n_1/n_2$)
[2] Number of stages
[3] Application specific configuration with NCP – www.neugart.com
[4] Based on reference clamping system diameter
[5] Permitted 1000 times

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)		
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)		
	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		
Motor shaft diameter j6/k6	D20		More information on page 191/192						
Clamping system diameter input	D26		More information on page 136						
Flange output shaft (similar ISO 9409-1)									**D**
Number x thread x depth	G2		8 x M5x7	8 x M6x10	12 x M6x12	12 x M8x15	12 x M10x20		
Flange output shaft with dowel hole (ISO 9409-1)									**E**
Dowel hole x depth	D15	H7	5x5	6x6	6x6	8x8	10x10		
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