PLPE

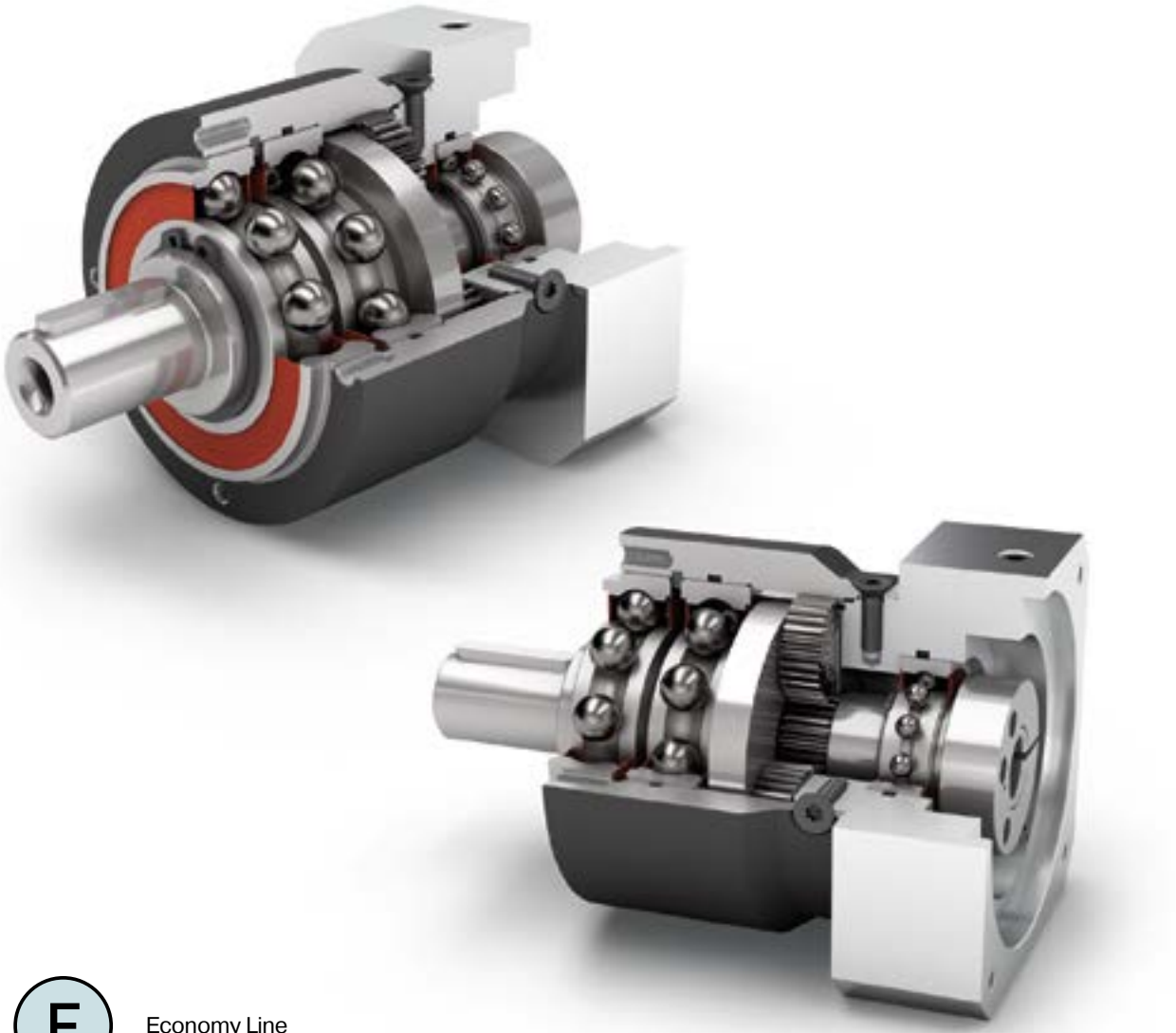
The cost effective planetary gearbox with the best torque-low heat performance

Our **PLPE** combines the best features of the Economy series with a performance bonus: The optimized output bearing is designed for higher radial and axial forces. The compact outer contour of the **PLPE** also allows it to be used in limited spaces.

Cyclic torque	**5- 460 Nm**
Radial force	**1300 - 8400 N**
Axial force	**1000 - 11000 N**
Torsional backlash	**6 - 19 arcmin**
Protection class	**IP54**

Frame sizes

50 **70** **90** **120** **155**



Economy Line

Equidirectional rotation

Round type output flange

Planet carrier in disc design

Option: Rack and pinion
Planetary gearbox (Details on page 158)

Coaxial gearbox

Spur gear

Reinforced deep groove ball bearings

Option: Painted surface
– RAL 9005 Jet black

Detailed explanations of the technical features starting on page 201.

Code	Gearbox characteristics			PLPE050	PLPE070	PLPE090	PLPE120	PLPE155	p(1)
	Service life(2)	L_h	h	20,000					
	Efficiency(3)	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)					
	Installation position			Any					
S	Standard backlash	φ	arcmin	< 15	< 10	< 7	< 7	< 6	1
				< 19	< 12	< 9	< 9	< 9	2
	Torsional stiffness(3)	C_{2t}	Nm / arcmin (lb_f.in/ arcmin)	0.7 - 1.0 (6 - 9)	3.5 - 6.6 (31 - 58)	9.7 - 18.5 (86 - 164)	24.5 - 52.5 (217 - 465)	54.5 - 96.0 (482 - 850)	1
				0.7 - 1,1 (6 - 9)	3.3 - 7.0 (29 - 62)	9.7 - 20.0 (86 - 177)	21.0 - 60.0 (186 - 531)	55.0 - 100.0 (487 - 885)	2
	Gearbox weight(3)	m	kg (lb_m)	0.6 (1.4)	1.4 (3.1 - 3.2)	3.2 - 3.3 (7.1 - 7.3)	7.4 - 7.7 (16.3 - 17.0)	16.7 (36.7 - 36.9)	1
				0.8 (1.7 - 1.8)	1.7 - 1.9 (3.7 - 4.1)	3.9 - 4.1 (8.5 - 8.9)	9.3 - 9.8 (20.5 - 21.6)	21.9 - 22.3 (48.3 - 49.2)	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)	58	58	60	65	70	

Output shaft loads			PLPE050	PLPE070	PLPE090	PLPE120	PLPE155	p(1)
Maximum radial force	$F_{r\,max}$	N (lb_f)	1300 (292)	1500 (337)	3100 (697)	4000 (899)	8400 (1888)	
Maximum axial force	$F_{a\,max}$		1000 (225)	2000 (450)	3800 (854)	5900 (1326)	11000 (2473)	
Maximum tilting moment	$M_{k\,max}$	Nm (lb_f.in)	42 (369)	61 (537)	162 (1429)	268 (2372)	803 (7104)	

Input characteristics			PLPE050	PLPE070	PLPE090	PLPE120	PLPE155	p(1)
Clamping system diameter input (Code)	D26	mm	8 (A)	11 (C)	19 (E)(5)	24 (F)(5)	35 (G)(5)	
			9 (B)(5)	14 (D)(5)	24 (F)	35 (G)	42 (H)	
			11 (C)	19 (E)	-	-	-	
Mass moment of inertia input(3)(5)	J_1	$kgcm^2$ (lb_f. $in.s^2 10^{-4}$)	0.022 - 0.035 (0.195 - 0.310)	0.090 - 0.195 (0.797 - 1.726)	0.374 - 0.789 (3.310 - 6.983)	1.419 - 2.764 (12.559 - 24.463)	4.932 - 7.611 (43.652 - 67.363)	1
			0.022 - 0.032 (0.195 - 0.283)	0.084 - 0.147 (0.743 - 1.301)	0.356 - 0.625 (3.151 - 5.532)	1.376 - 2.334 (12.179 - 20.658)	4.759 - 7.108 (42.121 - 62.911)	2
Average idle torque(3)(5)	T_0	Nm (lb_f.in)	0.05 - 0.10 (0 - 1)	0.15 - 0.40 (1 - 4)	0.25 - 0.75 (2 - 7)	0.60 - 1.80 (5 - 16)	0.75 - 1.70 (7 - 15)	1
			0.05 (0)	0.10 - 0.15 (1)	0.15 - 0.30 (1 - 3)	0.45 - 0.85 (4 - 8)	0.65 - 1.45 (6 - 13)	2
Maximum bending moment input	M_{b1}		4.5 (40)	12 (106)	16 (142)	40 (354)	180 (1593)	

(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			PLPE050	PLPE070	PLPE090	PLPE120	PLPE155	i(1)	p(2)
Cyclic torque(3)(4)	T_{2Z}	Nm (lb_f.in)	11 (97)	28 (248)	85 (752)	115 (1018)	-	3	1
			15 (133)	33 (292)	90 (797)	155 (1372)	460 (4071)	4	
			13 (115)	30 (266)	82 (726)	172 (1522)	445 (3939)	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)	210 (1859)	10	
			12 (106)	33 (292)	97 (859)	157 (1390)	-	9	2
			15 (133)	33 (292)	90 (797)	195 (1726)	-	12	
			13 (115)	33 (292)	82 (726)	172 (1522)	-	15	
			15 (133)	33 (292)	90 (797)	195 (1726)	460 (4071)	16	
			15 (133)	33 (292)	90 (797)	195 (1726)	460 (4071)	20	
			13 (115)	30 (266)	82 (726)	172 (1522)	445 (3939)	25	
			15 (133)	33 (292)	90 (797)	195 (1726)	-	32	
			13 (115)	30 (266)	82 (726)	172 (1522)	460 (4071)	40	
			-	-	-	-	445 (3939)	50	
			7.5 (66)	18 (159)	50 (443)	120 (1062)	-	64	
			5 (44)	15 (133)	38 (336)	95 (841)	210 (1859)	100	
Maximum torque(3)(4)	T_{2max}	Nm (lb_f.in)	11 (97)	44 (389)	105 (929)	184 (1629)	-	3	1
			24 (212)	48 (425)	140 (1239)	245 (2168)	600 (5310)	4	
			20 (177)	46 (407)	131 (1159)	275 (2434)	710 (6284)	5	
			13.5 (119)	40 (354)	104 (920)	215 (1903)	-	7	
			9.5 (84)	28 (248)	80 (708)	192 (1699)	-	8	
			8 (71)	24 (212)	60 (531)	152 (1345)	335 (2965)	10	
			14.5 (128)	52 (460)	146 (1292)	250 (2213)	-	9	2
			24 (212)	48 (425)	144 (1275)	310 (2744)	-	12	
			20 (177)	52 (460)	131 (1159)	275 (2434)	-	15	
			24 (212)	48 (425)	144 (1275)	310 (2744)	730 (6461)	16	
			24 (212)	48 (425)	144 (1275)	310 (2744)	730 (6461)	20	
			20 (177)	46 (407)	131 (1159)	275 (2434)	710 (6284)	25	
			24 (212)	48 (425)	144 (1275)	310 (2744)	-	32	
			20 (177)	46 (407)	131 (1159)	275 (2434)	730 (6461)	40	
			-	-	-	-	710 (6284)	50	
			12 (106)	28 (248)	80 (708)	192 (1699)	-	64	
			8 (71)	24 (212)	60 (531)	152 (1345)	335 (2965)	100	

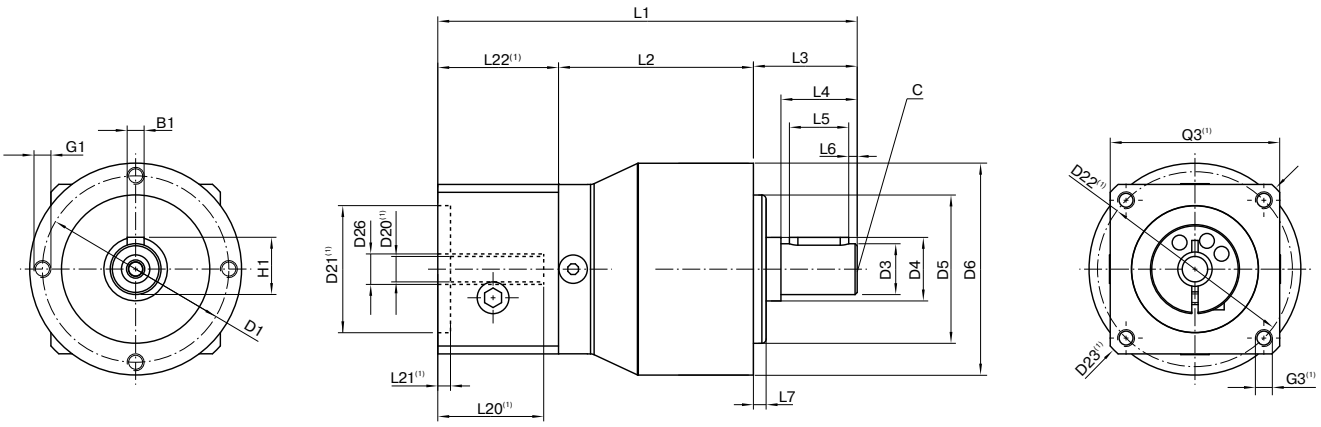
(1) Ratios ($i=n_1/n_2$)
(2) Number of stages
(3) Application specific configuration with NCP – www.neugart.com
(4) Based on reference clamping system diameter

Output torques			PLPE050	PLPE070	PLPE090	PLPE120	PLPE155	i[1]	p[2]
Continuous torque[3]	T_{2D}	Nm (lb_f.in)	3.5 (31)	16.5 (146)	37 (327)	97 (859)	-	3	1
			11 (97)	17.5 (155)	60 (531)	131 (1159)	390 (3452)	4	
			11 (97)	18 (159)	63 (558)	146 (1292)	375 (3319)	5	
			7 (62)	19.5 (173)	55 (487)	114 (1009)	-	7	
			5 (44)	15 (133)	42 (372)	102 (903)	-	8	
			4 (35)	12.5 (111)	32 (283)	80 (708)	178 (1575)	10	
			6.5 (58)	23 (204)	70 (620)	133 (1177)	-	9	2
			12.5 (111)	24 (212)	76 (673)	165 (1460)	-	12	
			11 (97)	26 (230)	69 (611)	146 (1292)	-	15	
			12.5 (111)	26 (230)	76 (673)	165 (1460)	390 (3452)	16	
			12.5 (111)	28 (248)	76 (673)	165 (1460)	390 (3452)	20	
			11 (97)	25 (221)	69 (611)	146 (1292)	375 (3319)	25	
			12.5 (111)	28 (248)	76 (673)	165 (1460)	-	32	
			11 (97)	25 (221)	69 (611)	146 (1292)	390 (3452)	40	
			-	-	-	-	375 (3319)	50	
			6 (53)	15 (133)	42 (372)	102 (903)	-	64	
			4 (35)	12.5 (111)	32 (283)	80 (708)	178 (1575)	100	

Input speeds			PLPE050	PLPE070	PLPE090	PLPE120	PLPE155	i[1]	p[2]
Continuous input speed[3][4]	n_{1D}	rpm	5000	4500	4000	1550	-	3	1
			5000	4500	4000	1750	1400	4	
			5000	4500	4000	2150	1600	5	
			5000	4500	4000	2800	-	7	
			5000	4500	4000	3500	-	8	
			5000	4500	4000	3500	2700	10	
			5000	4500	4000	2250	-	9	2
			5000	4500	4000	2350	-	12	
			5000	4500	4000	3100	-	15	
			5000	4500	4000	2800	2600	16	
			5000	4500	4000	3400	2950	20	
			5000	4500	4000	3500	3000	25	
			5000	4500	4000	3500	-	32	
			5000	4500	4000	3500	3000	40	
			-	-	-	-	3000	50	
			5000	4500	4000	3500	-	64	
			5000	4500	4000	3500	3000	100	
Max. mechanical input speed[3]	n_{1max}	rpm	18000	13000	7000	6500	5500		

Output torques			PLPE050	PLPE070	PLPE090	PLPE120	PLPE155	i[1]	p[2]
Emergency stop torque[4][5]	T_{2Stop}	Nm (lb_f.in)	22 (195)	60 (531)	150 (1328)	375 (3319)	-	3	1
			30 (266)	80 (708)	200 (1770)	500 (4425)	920 (8143)	4	
			36 (319)	80 (708)	220 (1947)	500 (4425)	890 (7877)	5	
			26 (230)	80 (708)	178 (1575)	340 (3009)	-	7	
			27 (239)	80 (708)	190 (1682)	380 (3363)	-	8	
			27 (239)	75 (664)	200 (1770)	480 (4248)	420 (3717)	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)	920 (8143)	16	
			40 (354)	88 (779)	240 (2124)	520 (4602)	920 (8143)	20	
			36 (319)	80 (708)	220 (1947)	500 (4425)	890 (7877)	25	
			40 (354)	88 (779)	240 (2124)	520 (4602)	-	32	
			36 (319)	80 (708)	220 (1947)	500 (4425)	920 (8143)	40	
			-	-	-	-	890 (7877)	50	
			27 (239)	80 (708)	190 (1682)	380 (3363)	-	64	
			27 (239)	75 (664)	200 (1770)	480 (4248)	420 (3717)	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



Drawing corresponds to a PLPE050 / 1-stage / output shaft with feather key / 8 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)			**PLPE050**	**PLPE070**	**PLPE090**	**PLPE120**	**PLPE155**	**p**(3)	**Code**
Pitch circle diameter output	D1		44 (1.732)	62 (2.441)	80 (3.150)	108 (4.252)	140 (5.512)		
Shaft diameter output	D3	k7	12 (0.472)	16 (0.630)	22 (0.866)	32 (1.260)	40 (1.575)		
Shaft collar output	D4		15 (0.591)	30 (1.181)	35 (1.378)	50 (1.969)	55 (2.165)		
Centering diameter output	D5	h7	35 (1.378)	52 (2.047)	68 (2.677)	90 (3.543)	120 (4.724)		
Housing diameter	D6		50 (1.969)	70 (2.756)	90 (3.543)	120 (4.724)	155 (6.102)		
Mounting thread x depth	G1	4x	M4x8	M5x8	M6x9	M8x20	M10x20		
Min. total length	L1		94 (3.701)	111 (4.370)	147 (5.787)	192 (7.559)	275.5 (10.846)	1	
			106.5 (4.193)	124 (4.882)	165 (6.496)	219.5 (8.642)	320 (12.598)	2	
Housing length	L2		46 (1.811)	51 (2.008)	67.5 (2.657)	76.5 (3.012)	100 (3.937)	1	
			58.5 (2.303)	64 (2.520)	85 (3.346)	104 (4.094)	144.5 (5.689)	2	
Shaft length output	L3		24.5 (0.965)	36 (1.417)	46 (1.811)	68 (2.677)	97 (3.819)		
Centering depth output	L7		3 (0.118)	3 (0.118)	4 (0.157)	5 (0.197)	8 (0.315)		
Motor shaft diameter j6/k6	D20		More information on page 191/192						
Clamping system diameter input	D26		More information on page 36						
Output shaft with feather key (DIN 6885-1)			A 4x4x14	A 5x5x25	A 6x6x32	A 10x8x50	A 12x8x70		**A**
Feather key width (DIN 6885-1)	B1		4 (0.157)	5 (0.197)	6 (0.236)	10 (0.394)	12 (0.472)		
Shaft height including feather key (DIN 6885-1)	H1		13.5 (0.531)	18 (0.709)	24.5 (0.965)	35 (1.378)	43 (1.693)		
Shaft length from shoulder	L4		18 (0.709)	28 (1.102)	36 (1.417)	58 (2.283)	82 (3.228)		
Feather key length	L5		14 (0.551)	25 (0.984)	32 (1.260)	50 (1.969)	70 (2.756)		
Distance from shaft end	L6		2 (0.079)	2 (0.079)	2 (0.079)	4 (0.157)	6 (0.236)		
Center hole (DIN 332, type DR)	C		M4x10	M5x12,5	M8x19	M12x28	M16x36		
Smooth output shaft									**B**
Shaft length from shoulder	L4		18 (0.709)	28 (1.102)	36 (1.417)	58 (2.283)	82 (3.228)		

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