

# PLQE

The easy to install planetary gearbox absorbs high forces with low heat generation

Our **PLQE** is uncomplicated and powerful. It can be connected directly to your installation without the need for an intermediate flange. The larger deep groove ball bearings on the output allow higher axial and radial forces to be absorbed. Thanks to its favorable efficiency, this means that it always operates reliably even when production cycles are demanding.

Nominal output torque **5 - 260 Nm**



Radial force **390 - 2950 N**



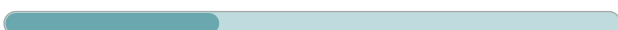
Axial force **620 - 2500 N**



Torsional backlash **7 - 15 arcmin**

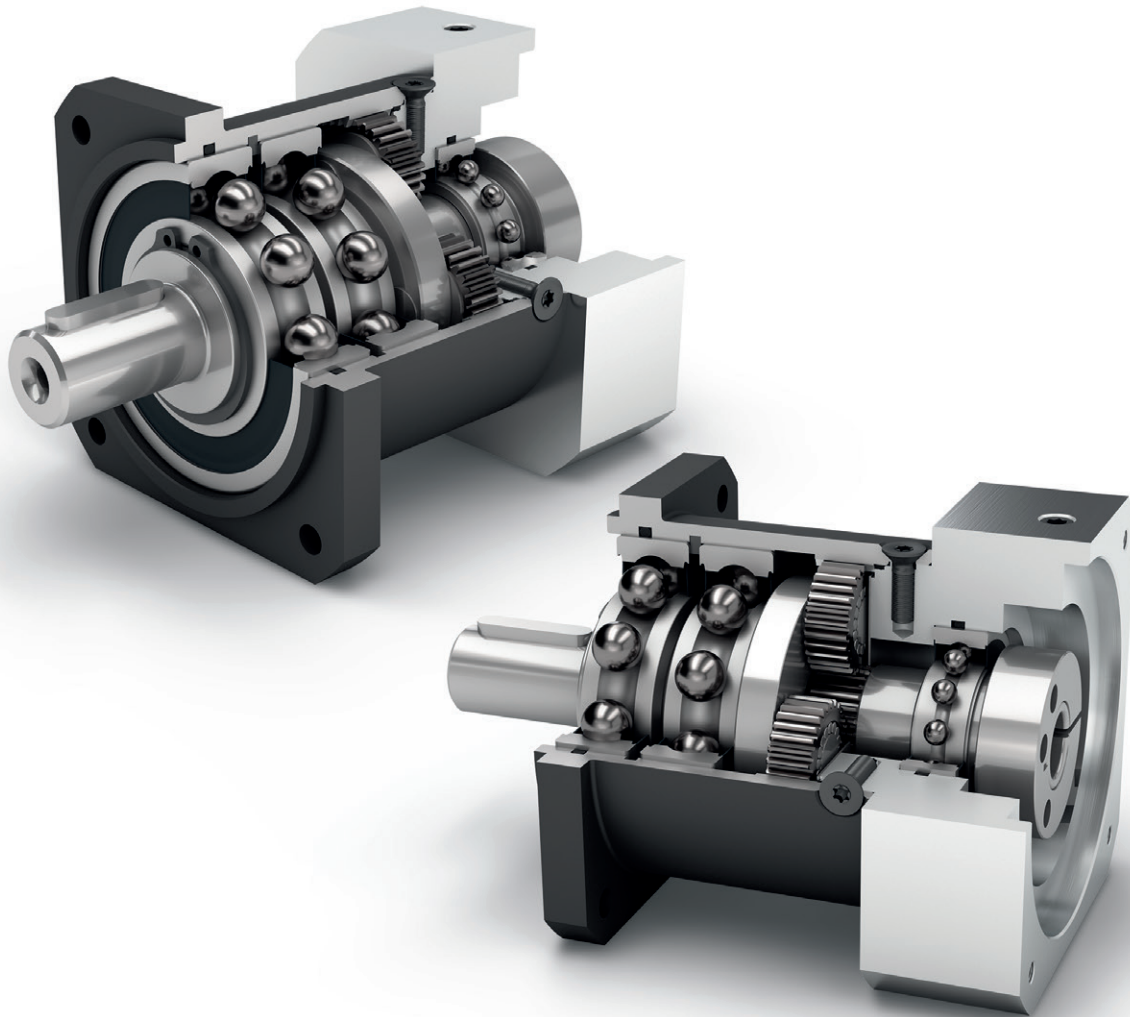


Protection class **IP54**



Frame sizes





Economy Line



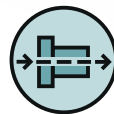
Equidirectional rotation



Square type output flange



High ratio variety  $i=3$  up to  $i=512$



Coaxial gearbox



Spur gear



Reinforced deep groove ball bearings



Planet carrier in disc design

Detailed explanations of the technical features starting on page 173.

PLQE

Code	Gearbox characteristics			PLQE040	PLQE060	PLQE080	PLQE120	p <sup>(1)</sup>
	Service life (L <sub>10h</sub> )	t <sub>L</sub>	h	30,000				
	Efficiency at full load <sup>(2)</sup>	η	%	98				1
97				2				
92				3				
	Min. operating temperature	T <sub>min</sub>	°C (°F)	-25 (-13)				
	Max. operating temperature	T <sub>max</sub>		90 (194)				
	Protection class			IP54				
<b>S</b>	Standard lubrication			Grease (lifetime lubrication)				
<b>F</b>	Food grade lubrication			Grease (lifetime lubrication)				
<b>L</b>	Low temperature lubrication <sup>(3)</sup>			Grease (lifetime lubrication)				
	Installation position			Any				
<b>S</b>	Standard backlash	j <sub>t</sub>	arcmin	< 15	< 10	< 7	< 7	1
				< 19	< 12	< 9	< 9	2
				< 22	< 15	< 11	< 11	3
	Torsional stiffness <sup>(2)</sup>	c <sub>g</sub>	Nm /arcmin (lb <sub>f</sub> .in/ arcmin)	1.2 - 2.2 (10 - 19)	2.8 - 4.0 (25 - 35)	8.5 - 12.6 (75 - 112)	14.0 - 18.5 (124 - 164)	1
				1.4 - 2.5 (12 - 22)	3.3 - 4.1 (29 - 36)	9.4 - 13.3 (83 - 118)	15.6 - 19.0 (138 - 168)	2
				1.5 - 2.6 (13 - 23)	3.3 - 4.1 (29 - 36)	9.4 - 13.4 (83 - 119)	15.6 - 19.0 (138 - 168)	3
	Gearbox weight <sup>(2)</sup>	m <sub>G</sub>	kg (lb <sub>m</sub> )	0.4 (0.9)	1.1 (2.4)	2.7 - 2.9 (5.8 - 6.5)	6.4 - 6.5 (14.1 - 14.3)	1
				0.5 (1.1)	1.3 (2.8)	3.4 - 3.5 (7.5 - 7.6)	8.1 - 8.3 (17.9 - 18.3)	2
				0.6 (1.3)	1.5 (3.3)	3.9 - 4.0 (8.6 - 8.8)	9.9 - 10.1 (21.9 - 22.4)	3
<b>S</b>	Standard surface			Housing: Steel – heat-treated and post-oxidized (black)				
	Running noise <sup>(4)</sup>	Q <sub>g</sub>	dB(A)	58	58	60	65	
	Max. bending moment based on the gearbox input flange <sup>(5)</sup>	M <sub>b</sub>	Nm (lb <sub>f</sub> .in)	4,5 (40)	12 (106)	16 (142)	40 (354)	

Output shaft loads			PLQE040	PLQE060	PLQE080	PLQE120	p <sup>(1)</sup>
Radial force for 20,000 h <sup>(6)(7)</sup>	F <sub>r,20.000h</sub>	N (lb <sub>f</sub> )	250 - 390 (56 - 88)	900 (202)	2050 (461)	2950 (663)	
Axial force for 20,000 h <sup>(6)(7)</sup>	F <sub>a,20.000h</sub>		620 (139)	1000 (225)	2500 (562)	2500 (562)	
Radial force for 30,000 h <sup>(6)(7)</sup>	F <sub>r,30.000h</sub>		250 - 340 (56 - 76)	700 (157)	1700 (382)	2400 (540)	
Axial force for 30,000 h <sup>(6)(7)</sup>	F <sub>a,30.000h</sub>		620 (139)	800 (180)	2000 (450)	2100 (472)	
Maximum radial force <sup>(7)(8)</sup>	F <sub>r,Stat</sub>		520 (117)	1500 (337)	2500 (562)	4000 (899)	
Maximum axial force <sup>(7)(8)</sup>	F <sub>a,Stat</sub>		620 (139)	1950 (438)	3800 (854)	3800 (854)	
Tilting moment for 20,000 h <sup>(6)(8)</sup>	M <sub>K,20.000h</sub>	Nm (lb <sub>f</sub> .in)	7 - 10 (58 - 90)	37 (327)	101 (894)	232 (2053)	
Tilting moment for 30,000 h <sup>(6)(8)</sup>	M <sub>K,30.000h</sub>		7 - 9 (58 - 79)	29 (257)	84 (743)	188 (1664)	

Moment of inertia			PLQE040	PLQE060	PLQE080	PLQE120	p <sup>(1)</sup>
Mass moment of inertia <sup>(2)</sup>	J	kgcm <sup>2</sup> (lb <sub>f</sub> .in.s <sup>2</sup> 10 <sup>-4</sup> )	0.015 - 0.029 (0.133 - 0.257)	0.066 - 0.142 (0.584 - 1.257)	0.371 - 0.783 (3.284 - 6.930)	1.381 - 2.393 (12.223 - 21.180)	1
			0.015 - 0.026 (0.133 - 0.230)	0.066 - 0.123 (0.584 - 1.089)	0.366 - 0.625 (3.239 - 5.532)	1.414 - 2.292 (12.515 - 20.286)	2
			0.015 - 0.025 (0.133 - 0.221)	0.066 - 0.076 (0.584 - 0.673)	0.365 - 0.590 (3.231 - 5.222)	1.413 - 2.196 (12.506 - 19.436)	3

(1) Number of stages  
(2) The ratio-dependent values can be retrieved in Tec Data Finder – www.neugart.com  
(3) T<sub>min</sub> = -40°C. Optimal operating temperature max. 50°C  
(4) Sound pressure level from 1 m, measured on input running at n<sub>i</sub>=3000 rpm no load; i=5  
(5) Max. motor weight\* in kg = 0.2 x M<sub>G</sub> / 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<sub>2</sub>=100 rpm  
(7) Based on center of output shaft  
(8) Other (sometimes higher) values following changes to T<sub>2N</sub>, F<sub>r</sub>, F<sub>a</sub>, cycle, and service life of bearing. Application specific configuration with NCP – www.neugart.com

Output torques			PLQE040	PLQE060	PLQE080	PLQE120	i <sup>(1)</sup>	p <sup>(2)</sup>
Nominal output torque <sup>(3)(4)</sup>	T <sub>2N</sub>	Nm (lb <sub>r</sub> .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	3
			18 (159)	40 (354)	110 (974)	230 (2036)	40	
			7,5 (66)	18 (159)	50 (443)	120 (1062)	64	
			20 (177)	44 (389)	110 (974)	260 (2301)	60	
			20 (177)	44 (389)	120 (1062)	260 (2301)	80	
			20 (177)	44 (389)	120 (1062)	260 (2301)	100	
			18 (159)	44 (389)	110 (974)	230 (2036)	120	3
			20 (177)	44 (389)	120 (1062)	260 (2301)	160	
			18 (159)	40 (354)	110 (974)	230 (2036)	200	
			20 (177)	44 (389)	120 (1062)	260 (2301)	256	
			18 (159)	40 (354)	110 (974)	230 (2036)	320	
			7.5 (66)	18 (159)	50 (443)	120 (1062)	512	
Max. output torque <sup>(4)(5)</sup>	T <sub>2max</sub>	Nm (lb <sub>r</sub> .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	3
			29 (257)	64 (566)	176 (1558)	368 (3257)	40	
			12 (106)	29 (257)	80 (708)	192 (1699)	64	
			32 (283)	70 (620)	176 (1558)	416 (3682)	60	
			32 (283)	70 (620)	192 (1699)	416 (3682)	80	
			32 (283)	70 (620)	192 (1699)	416 (3682)	100	
			29 (257)	70 (620)	176 (1558)	368 (3257)	120	3
			32 (283)	70 (620)	192 (1699)	416 (3682)	160	
			29 (257)	64 (566)	176 (1558)	368 (3257)	200	
			32 (283)	70 (620)	192 (1699)	416 (3682)	256	
			29 (257)	64 (566)	176 (1558)	368 (3257)	320	
			12 (106)	29 (257)	80 (708)	192 (1699)	512	

PLQE

(1) Ratios (i=n<sub>1</sub>/n<sub>2</sub>)  
 (2) Number of stages  
 (3) Application specific configuration with NCP – www.neugart.com  
 (4) Values for feather key (code "A"): for repeated load  
 (5) 30,000 rotations of the output shaft permitted; see page 166

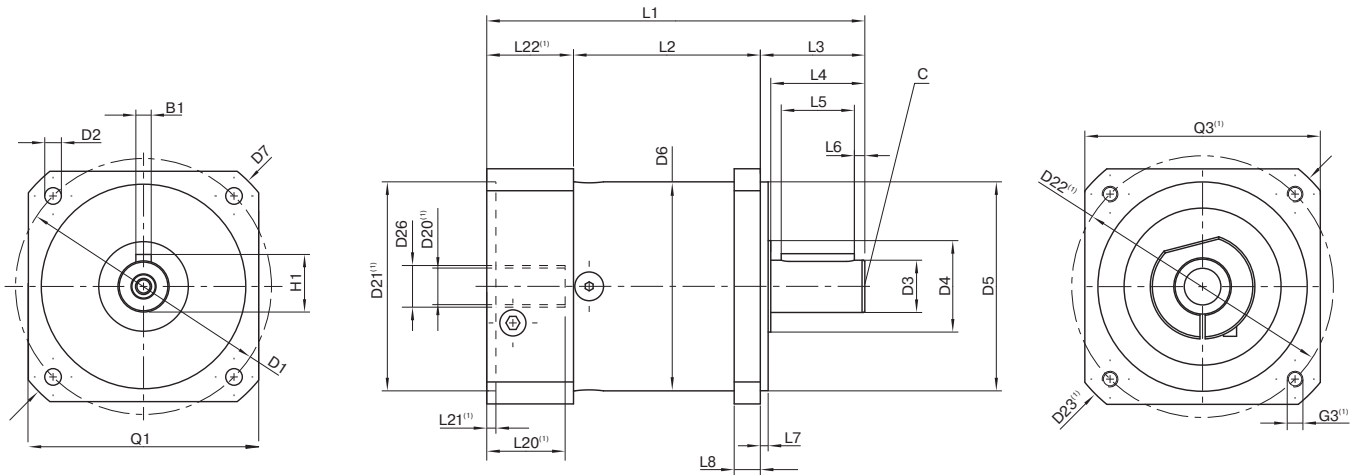
PLQE

Output torques			PLQE040	PLQE060	PLQE080	PLQE120	i <sup>(1)</sup>	p <sup>(2)</sup>
Emergency stop torque <sup>(3)</sup>	T <sub>2Stop</sub>	Nm (lb <sub>r</sub> .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	
			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	2	
		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		
		40 (354)	88 (779)	220 (1947)	520 (4602)	60		
		40 (354)	88 (779)	240 (2124)	520 (4602)	80		
		40 (354)	88 (779)	240 (2124)	520 (4602)	100		
		36 (319)	88 (779)	220 (1947)	500 (4425)	120		
		40 (354)	88 (779)	240 (2124)	520 (4602)	160		
36 (319)	80 (708)	220 (1947)	500 (4425)	200	3			
40 (354)	88 (779)	240 (2124)	520 (4602)	256				
36 (319)	80 (708)	220 (1947)	500 (4425)	320				
27 (239)	80 (708)	190 (1682)	380 (3363)	512				

Input speeds			PLQE040	PLQE060	PLQE080	PLQE120	i <sup>(1)</sup>	p <sup>(2)</sup>
Average thermal input speed at T <sub>2N</sub> and S1 <sup>(4)(5)</sup>	n <sub>1N</sub>	rpm	5000	4500 <sup>(6)</sup>	3400 <sup>(6)</sup>	3400 <sup>(6)</sup>	3	1
			5000	4500 <sup>(6)</sup>	3450 <sup>(6)</sup>	3500 <sup>(6)</sup>	4	
			5000	4500	4000 <sup>(6)</sup>	3500 <sup>(6)</sup>	5	
			5000	4500	4000	3500	7	
			5000	4500	4000	3500	8	
			5000	4500	4000	3500	10	
			5000	4500	4000 <sup>(6)</sup>	3500 <sup>(6)</sup>	9	
			5000	4500	4000 <sup>(6)</sup>	3500 <sup>(6)</sup>	12	
			5000	4500	4000	3500 <sup>(6)</sup>	15	
			5000	4500	4000	3500 <sup>(6)</sup>	16	
		5000	4500	4000	3500	20	2	
		5000	4500	4000	3500	25		
		5000	4500	4000	3500	32		
		5000	4500	4000	3500	40		
		5000	4500	4000	3500	64		
		5000	4500	4000	3500	60		
		5000	4500	4000	3500	80		
		5000	4500	4000	3500	100		
		5000	4500	4000	3500	120		
		5000	4500	4000	3500	160		
5000	4500	4000	3500	200	3			
5000	4500	4000	3500	256				
5000	4500	4000	3500	320				
5000	4500	4000	3500	512				

Max. mechanical input speed <sup>(4)</sup>	n <sub>1Limit</sub>	rpm	18,000	13,000	7000	6500		
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(1) Ratios (i=n<sub>1</sub>/n<sub>2</sub>)  
 (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<sub>2N</sub> and S1



Drawing corresponds to a PLQE080 / 1-stage / output shaft with feather key / 19 mm clamping system / motor adaptation – one part / B5 flange type motor

<sup>(1)</sup>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](http://www.neugart.com)

Geometry <sup>(2)</sup>			PLQE040	PLQE060	PLQE080	PLQE120	p <sup>(3)</sup>	Code
Pitch circle diameter output	D1		50 (1.969)	75 (2.953)	100 (3.937)	130 (5.118)		
Mounting bore output	D2	4x	3.4 (0.134)	5.5 (0.217)	6.5 (0.256)	8.5 (0.335)		
Shaft diameter output	D3	h7	13 (0.512)	16 (0.630)	20 (0.787)	25 (0.984)		
Shaft collar output	D4		17 (0.669)	20 (0.787)	35 (1.378)	35 (1.378)		
Centering diameter output	D5	h7	35 (1.378)	60 (2.362)	80 (3.150)	110 (4.331)		
Housing diameter	D6		40 (1.575)	60 (2.362)	80 (3.150)	115 (4.528)		
Diagonal dimension output	D7		57 (2.244)	92 (3.622)	116 (4.567)	145 (5.709)		
Flange cross section output	Q1	■	42 (1.654)	70 (2.756)	90 (3.543)	115 (4.528)		
Min. total length	L1		90 (3.543)	111 (4.370)	145 (5.709)	201.5 (7.933)	1	
			103 (4.055)	123.5 (4.862)	162.5 (6.398)	229.5 (9.035)	2	
			115.5 (4.547)	136 (5.354)	180 (7.087)	257 (10.118)	3	
Housing length	L2		35.5 (1.398)	55 (2.165)	71 (2.795)	99 (3.898)	1	
			48.5 (1.909)	67.5 (2.657)	89 (3.504)	127 (5.000)	2	
			61 (2.402)	80.5 (3.169)	106.5 (4.193)	154.5 (6.083)	3	
Shaft length output	L3		26 (1.024)	32 (1.260)	40 (1.575)	55 (2.165)		
Centering depth output	L7		5.5 (0.217)	3 (0.118)	3 (0.118)	4 (0.157)		
Flange thickness output	L8		7 (0.256)	10 (0.394)	10 (0.394)	15 (0.591)		
Motor shaft diameter j6/k6	D20		More information on page 163/164					
Clamping system diameter input	D26		More information on page 163/164					
Output shaft with feather key (DIN 6885-1)			A 5x5x14	A 5x5x20	A 6x6x28	A 8x7x40		A
Feather key width (DIN 6885-1)	B1		5 (0.197)	5 (0.197)	6 (0.236)	8 (0.315)		
Shaft height including feather key (DIN 6885-1)	H1		15 (0.591)	18 (0.709)	22.5 (0.886)	28 (1.102)		
Shaft length from shoulder	L4		18 (0.709)	28 (1.102)	36 (1.417)	50 (1.969)		
Feather key length	L5		14 (0.551)	20 (0.787)	28 (1.102)	40 (1.575)		
Distance from shaft end	L6		2 (0.079)	4 (0.157)	4 (0.157)	5 (0.197)		
Center hole (DIN 332. type DR)	C		M4x10	M5x12.5	M6x16	M10x22		
Smooth output shaft								B
Shaft length from shoulder	L4		18 (0.709)	28 (1.102)	36 (1.417)	50 (1.969)		

<sup>(2)</sup> Dimensions in mm

<sup>(3)</sup> Number of stages