

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 large deep groove ball bearings at the output can absorb large axial and radial forces. In the process, only little heat is generated, so reliable operations are assured even in complex production cycles.

2 Easy installation

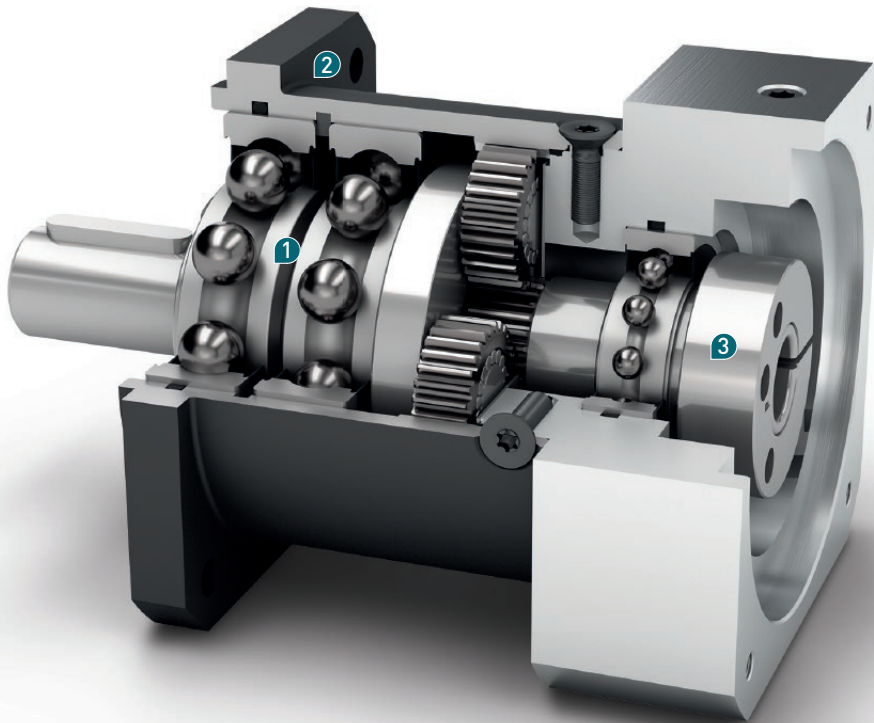
The square output flange on the **PLQE** with through hole can be mounted directly on the installation – saving time and money. These through holes facilitate full accessibility during installation. This makes your engineering much easier.

1 Optimized output bearing

Large deep groove ball bearings make the **PLQE** especially powerful. It can even absorb high axial and radial forces with ease. Your drive elements can therefore be installed directly on the output shaft without the need for additional bearing components.

3 Low heat generation at the highest speeds

A Neugart developed low-friction bearing design and optimized lubrication make it possible: The **PLQE** overcomes extreme challenges.



- + For any mounting position
- + Individual adaptation of the input flange to the motor
- + Lifetime lubrication for maintenance-free operation
- + Equidirectional rotation
- + Wide range of output shaft designs
- + Clamping systems with optimized mass moment of inertia
- + Precise gearing

Code	Gearbox characteristics			PLQE060	PLQE080	PLQE120	z ⁽¹⁾		
	Service life	t _L	h	30,000					
	Efficiency at full load ⁽²⁾	η	%	98			1		
				97			2		
				92			3		
	Min. operating temperature	T _{min}	°C	-25 (-13)					
	Max. operating temperature	T _{max}	(°F)	90 (194)					
	Protection class			IP 54					
S	Standard lubrication			Grease					
F	Food grade lubrication			Grease					
L	Low temperature lubrication ⁽³⁾			Grease					
	Installation position			Any					
S	Standard backlash	j _t	arcmin	< 10	< 7	< 7	1		
				< 12	< 9	< 9	2		
				< 15	< 11	< 11	3		
Torsional stiffness ⁽²⁾	c _g	Nm/arcmin (lb _t .in/ arcmin)	1.8 - 2.4 (16 - 21)	5.2 - 7.0 (46 - 62)	11.3 - 15.2 (100 - 135)	1			
			1.9 - 2.4 (17 - 21)	5.7 - 7.0 (50 - 62)	12.3 - 15.2 (109 - 135)	2			
			1.8 - 2.4 (16 - 21)	5.4 - 7.0 (48 - 62)	11.7 - 15.2 (104 - 135)	3			
Gearbox weight	m _G	kg (lb _m)	1.1 (2.4)	3.2 (7.1)	6.6 (14.6)	1			
			1.3 (2.9)	3.7 (8.2)	8.6 (19.0)	2			
			1.5 (3.3)	4.2 (9.3)	10.6 (23.4)	3			
S	Standard surface			Housing: Steel – nitrocarburized and post-oxidized (black)					
	Running noise ⁽⁴⁾	Q _g	dB(A)	58	60	65			
	Max. bending moment based on the gearbox input flange ⁽⁵⁾	M _b	Nm (lb _t .in)	8 (71)	16 (142)	40 (354)			
	Motor flange precision			DIN 42955-N					

Output shaft loads			PLQE060	PLQE080	PLQE120	z ⁽¹⁾
Radial force for 20,000 h ⁽⁶⁾⁽⁷⁾	F _{r20.000h}	N (lb _t)	900 (203)	2050 (461)	2950 (664)	
Axial force for 20,000 h ⁽⁶⁾⁽⁷⁾	F _{a20.000h}		1000 (225)	2500 (563)	2500 (563)	
Radial force for 30,000 h ⁽⁶⁾⁽⁷⁾	F _{r30.000h}		700 (158)	1700 (383)	2400 (540)	
Axial force for 30,000 h ⁽⁶⁾⁽⁷⁾	F _{a30.000h}		800 (180)	2000 (450)	2100 (473)	
Static radial force ⁽⁷⁾⁽⁸⁾	F _{rStat}		1500 (338)	2500 (563)	4000 (900)	
Static axial force ⁽⁷⁾⁽⁸⁾	F _{aStat}		1950 (439)	3800 (855)	3800 (855)	
Tilting moment for 20,000 h ⁽⁶⁾⁽⁸⁾	M _{K20.000h}	Nm (lb _t .in)	37 (327)	101 (894)	232 (2053)	
Tilting moment for 30,000 h ⁽⁶⁾⁽⁸⁾	M _{K30.000h}		29 (257)	84 (743)	188 (1664)	

Moment of inertia			PLQE060	PLQE080	PLQE120	z ⁽¹⁾
Mass moment of inertia ⁽²⁾	J	kgcm ² (lb _t .in.s ² 10 ⁻⁴)	0.066 - 0.142 (0.584 - 1.257)	0.371 - 0.783 (3.283 - 6.930)	1.381 - 2.393 (12.222 - 21.178)	1
			0.066 - 0.123 (0.584 - 1.089)	0.366 - 0.625 (3.239 - 5.531)	1.414 - 2.292 (12.514 - 20.284)	2
			0.066 - 0.076 (0.584 - 0.673)	0.365 - 0.590 (3.230 - 5.222)	1.413 - 2.196 (12.505 - 19.435)	3

(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 n₁=3000 rpm no load; i=5
 (5) Max. motor weight* in kg = 0.2 × 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 n₂=100 rpm
 (7) Based on center of 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			PLQE060	PLQE080	PLQE120	$i^{(1)}$	$z^{(2)}$	
Nominal output torque ⁽³⁾⁽⁴⁾	T_{2N}	Nm (lb.in)	28 (248)	85 (752)	115 (1018)	3	1	
			38 (336)	115 (1018)	155 (1372)	4		
			40 (354)	110 (974)	195 (1726)	5		
			25 (221)	65 (575)	135 (1195)	7		
			18 (159)	50 (443)	120 (1062)	8		
			15 (133)	38 (336)	95 (841)	10		
			44 (389)	130 (1151)	210 (1859)	9	2	
			44 (389)	120 (1062)	260 (2301)	12		
			44 (389)	110 (974)	230 (2036)	15		
			44 (389)	120 (1062)	260 (2301)	16		
			44 (389)	120 (1062)	260 (2301)	20		
			40 (354)	110 (974)	230 (2036)	25		
			44 (389)	120 (1062)	260 (2301)	32		
			40 (354)	110 (974)	230 (2036)	40		
			18 (159)	50 (443)	120 (1062)	64		
			44 (389)	110 (974)	260 (2301)	60		
			44 (389)	120 (1062)	260 (2301)	80		
			44 (389)	120 (1062)	260 (2301)	100		
			44 (389)	110 (974)	230 (2036)	120	3	
			44 (389)	120 (1062)	260 (2301)	160		
			40 (354)	110 (974)	230 (2036)	200		
			44 (389)	120 (1062)	260 (2301)	256		
			40 (354)	110 (974)	230 (2036)	320		
			18 (159)	50 (443)	120 (1062)	512		
Max. output torque ⁽⁴⁾⁽⁵⁾	T_{2max}	Nm (lb.in)	45 (398)	136 (1204)	184 (1628)	3		1
			61 (540)	184 (1628)	248 (2195)	4		
			64 (566)	176 (1558)	312 (2761)	5		
			40 (354)	104 (920)	216 (1912)	7		
			29 (257)	80 (708)	192 (1699)	8		
			24 (212)	61 (540)	152 (1345)	10		
			70 (620)	208 (1841)	336 (2974)	9	2	
			70 (620)	192 (1699)	416 (3682)	12		
			70 (620)	176 (1558)	368 (3257)	15		
			70 (620)	192 (1699)	416 (3682)	16		
			70 (620)	192 (1699)	416 (3682)	20		
			64 (566)	176 (1558)	368 (3257)	25		
			70 (620)	192 (1699)	416 (3682)	32		
			64 (566)	176 (1558)	368 (3257)	40		
			29 (257)	80 (708)	192 (1699)	64		
			70 (620)	176 (1558)	416 (3682)	60		
			70 (620)	192 (1699)	416 (3682)	80		3
			70 (620)	192 (1699)	416 (3682)	100		
			70 (620)	176 (1558)	368 (3257)	120		
			70 (620)	192 (1699)	416 (3682)	160		
			64 (566)	176 (1558)	368 (3257)	200		
			70 (620)	192 (1699)	416 (3682)	256		
			64 (566)	176 (1558)	368 (3257)	320		
			29 (257)	80 (708)	192 (1699)	512		

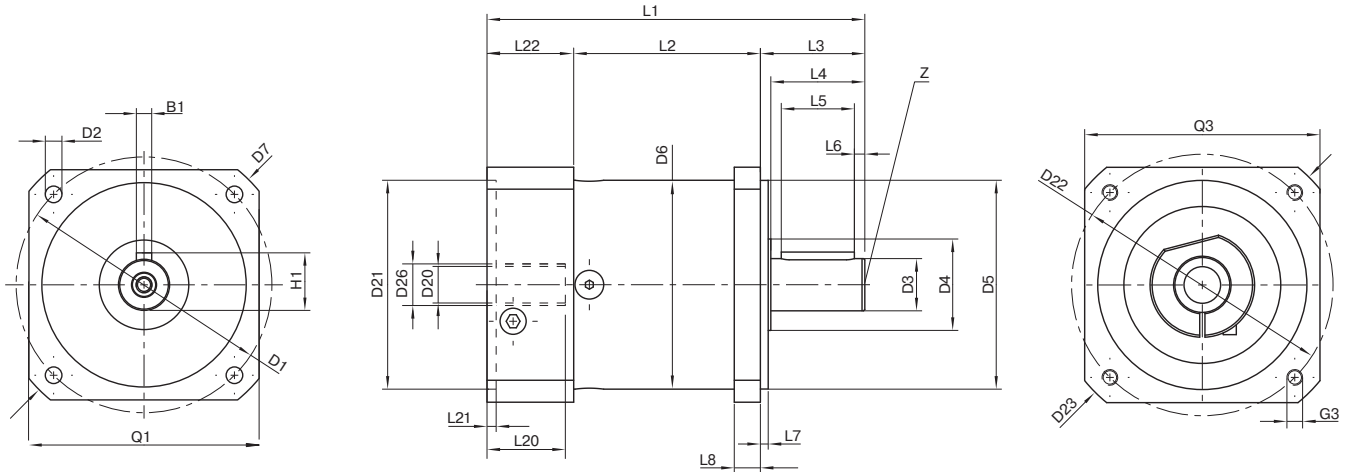
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(1) Ratios ($i=n_1/n_2$)
 (2) Number of stages
 (3) Application specific configuration with NCP – www.neugart.com
 (4) Values for feather key (code "A"): for repeated load
 (5) 30,000 rotations of the output shaft permitted; see page 136

Output torques			PLQE060	PLQE080	PLQE120	i ⁽¹⁾	z ⁽²⁾
Emergency stop torque ⁽³⁾	T _{2Stop}	Nm (lb _f .in)	66 (584)	180 (1593)	390 (3452)	3	1
			88 (779)	240 (2124)	520 (4602)	4	
			80 (708)	220 (1947)	500 (4425)	5	
			80 (708)	178 (1575)	340 (3009)	7	
			80 (708)	190 (1682)	380 (3363)	8	
			80 (708)	200 (1770)	480 (4248)	10	
			88 (779)	260 (2301)	500 (4425)	9	2
			88 (779)	240 (2124)	520 (4602)	12	
			88 (779)	220 (1947)	500 (4425)	15	
			88 (779)	240 (2124)	520 (4602)	16	
			88 (779)	240 (2124)	520 (4602)	20	
			80 (708)	220 (1947)	500 (4425)	25	
			88 (779)	240 (2124)	520 (4602)	32	3
			80 (708)	220 (1947)	500 (4425)	40	
			80 (708)	190 (1682)	380 (3363)	64	
			88 (779)	220 (1947)	520 (4602)	60	
			88 (779)	240 (2124)	520 (4602)	80	
			88 (779)	240 (2124)	520 (4602)	100	
			88 (779)	220 (1947)	500 (4425)	120	3
			88 (779)	240 (2124)	520 (4602)	160	
			80 (708)	220 (1947)	500 (4425)	200	
			88 (779)	240 (2124)	520 (4602)	256	
			80 (708)	220 (1947)	500 (4425)	320	
			80 (708)	190 (1682)	380 (3363)	512	

Input speeds			PLQE060	PLQE080	PLQE120	i ⁽¹⁾	z ⁽²⁾
Average thermal input speed at T _{2N} and S1 ⁽⁴⁾⁽⁵⁾	n _{1N}	rpm	4500 ⁽⁶⁾	3400 ⁽⁶⁾	3400 ⁽⁶⁾	3	1
			4500 ⁽⁶⁾	3450 ⁽⁶⁾	3500 ⁽⁶⁾	4	
			4500	4000 ⁽⁶⁾	3500 ⁽⁶⁾	5	
			4500	4000	3500	7	
			4500	4000	3500	8	
			4500	4000	3500	10	
			4500	4000 ⁽⁶⁾	3500 ⁽⁶⁾	9	2
			4500	4000 ⁽⁶⁾	3500 ⁽⁶⁾	12	
			4500	4000	3500 ⁽⁶⁾	15	
			4500	4000	3500 ⁽⁶⁾	16	
			4500	4000	3500	20	
			4500	4000	3500	25	
			4500	4000	3500	32	3
			4500	4000	3500	40	
			4500	4000	3500	64	
			4500	4000	3500	60	
			4500	4000	3500	80	
			4500	4000	3500	100	
			4500	4000	3500	120	3
			4500	4000	3500	160	
			4500	4000	3500	200	
			4500	4000	3500	256	
			4500	4000	3500	320	
			4500	4000	3500	512	
Max. mechanical input speed ⁽⁴⁾	n _{1Limit}	rpm	13000	7000	6500		

(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 136 for the definition
 (6) Average thermal input speed at 50% T_{2N} 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
 All other variants can be retrieved in the Tec Data Finder at www.neugart.com

Geometry ⁽¹⁾			PLQE060	PLQE080	PLQE120	z ⁽²⁾	Code
Pitch circle diameter output	D1		75 (2.953)	100 (3.937)	130 (5.118)		
Mounting bore output	D2	4x	5.5 (0.217)	6.5 (0.256)	8.5 (0.335)		
Shaft diameter output	D3	h7	16 (0.630)	20 (0.787)	25 (0.984)		
Shaft collar output	D4		20 (0.787)	35 (1.378)	35 (1.378)		
Centering diameter output	D5	h7	60 (2.362)	80 (3.150)	110 (4.331)		
Housing diameter	D6		60 (2.362)	80 (3.150)	115 (4.528)		
Diagonal dimension output	D7		92 (3.622)	116 (4.567)	145 (5.709)		
Flange cross section output	Q1	■	70 (2.756)	90 (3.543)	115 (4.528)		
Min. total length	L1		111 (4.370)	145 (5.709)	201.5 (7.933)	1	
			123.5 (4.862)	162.5 (6.398)	229.5 (9.035)	2	
			136 (5.354)	180 (7.087)	257 (10.118)	3	
Housing length	L2		55 (2.165)	71.5 (2.815)	99 (3.898)	1	
			67.5 (2.657)	89 (3.504)	127 (5.000)	2	
			80 (3.150)	106.5 (4.193)	154.5 (6.083)	3	
Shaft length output	L3		32 (1.260)	40 (1.575)	55 (2.165)		
Centering depth output	L7		3 (0.118)	3 (0.118)	4 (0.157)		
Flange thickness output	L8		10 (0.394)	10 (0.394)	15 (0.591)		
Clamping system diameter input	D26		More information on page 125				
Motor shaft diameter j6/k6	D20						
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	■					
Output shaft with feather key (DIN 6885-1)			A 5x5x20	A 6x6x28	A 8x7x40		
Feather key width (DIN 6885-1)	B1		5 (0.197)	6 (0.236)	8 (0.315)		A
Shaft height including feather key (DIN 6885-1)	H1		18 (0.709)	22.5 (0.886)	28 (1.102)		
Shaft length from shoulder	L4		28 (1.102)	36 (1.417)	50 (1.969)		
Feather key length	L5		20 (0.787)	28 (1.102)	40 (1.575)		
Distance from shaft end	L6		4 (0.157)	4 (0.157)	5 (0.197)		
Center hole (DIN 332, type DR)	Z		M5x12.5	M6x16	M10x22		
Smooth output shaft							
Shaft length from shoulder	L4		28 (1.102)	36 (1.417)	50 (1.969)		B

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