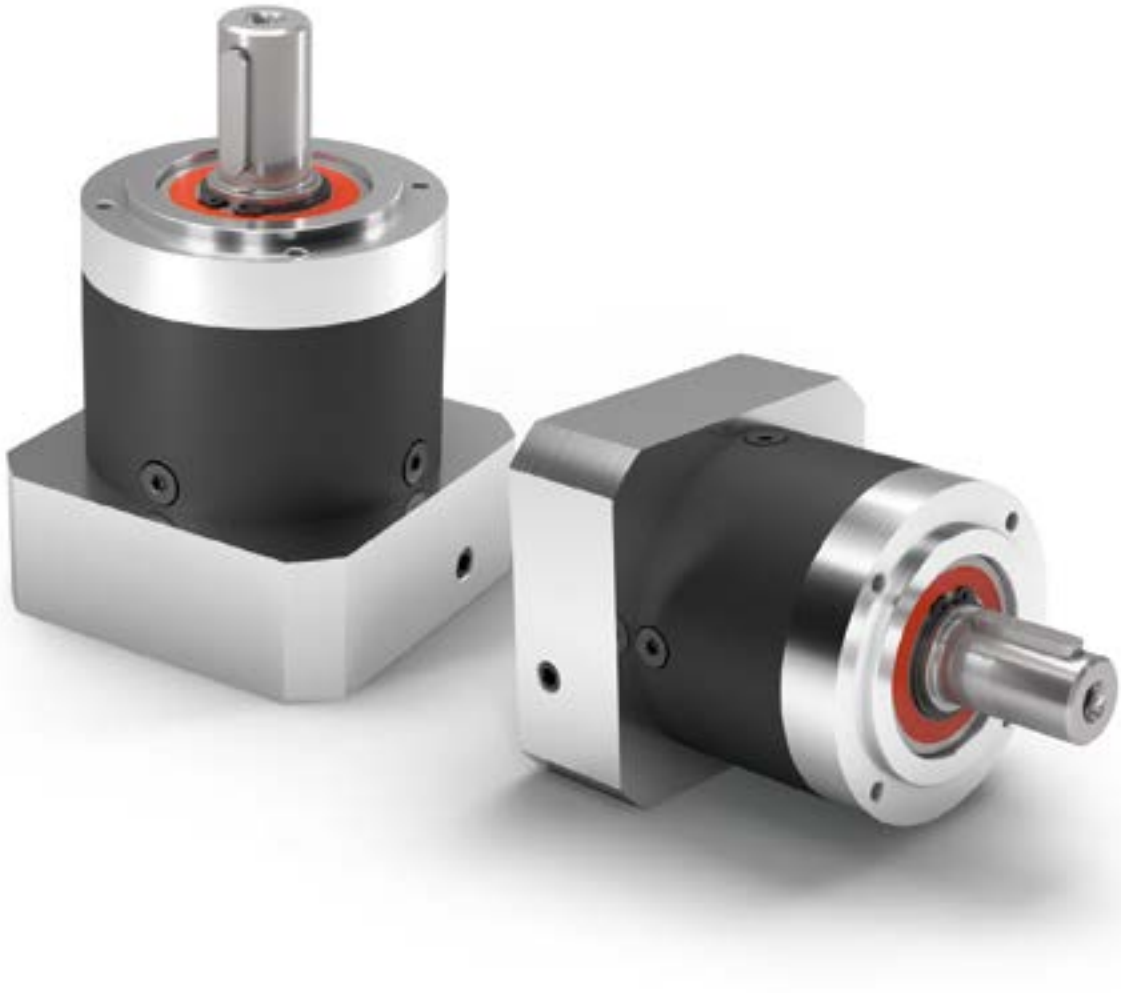


PLE

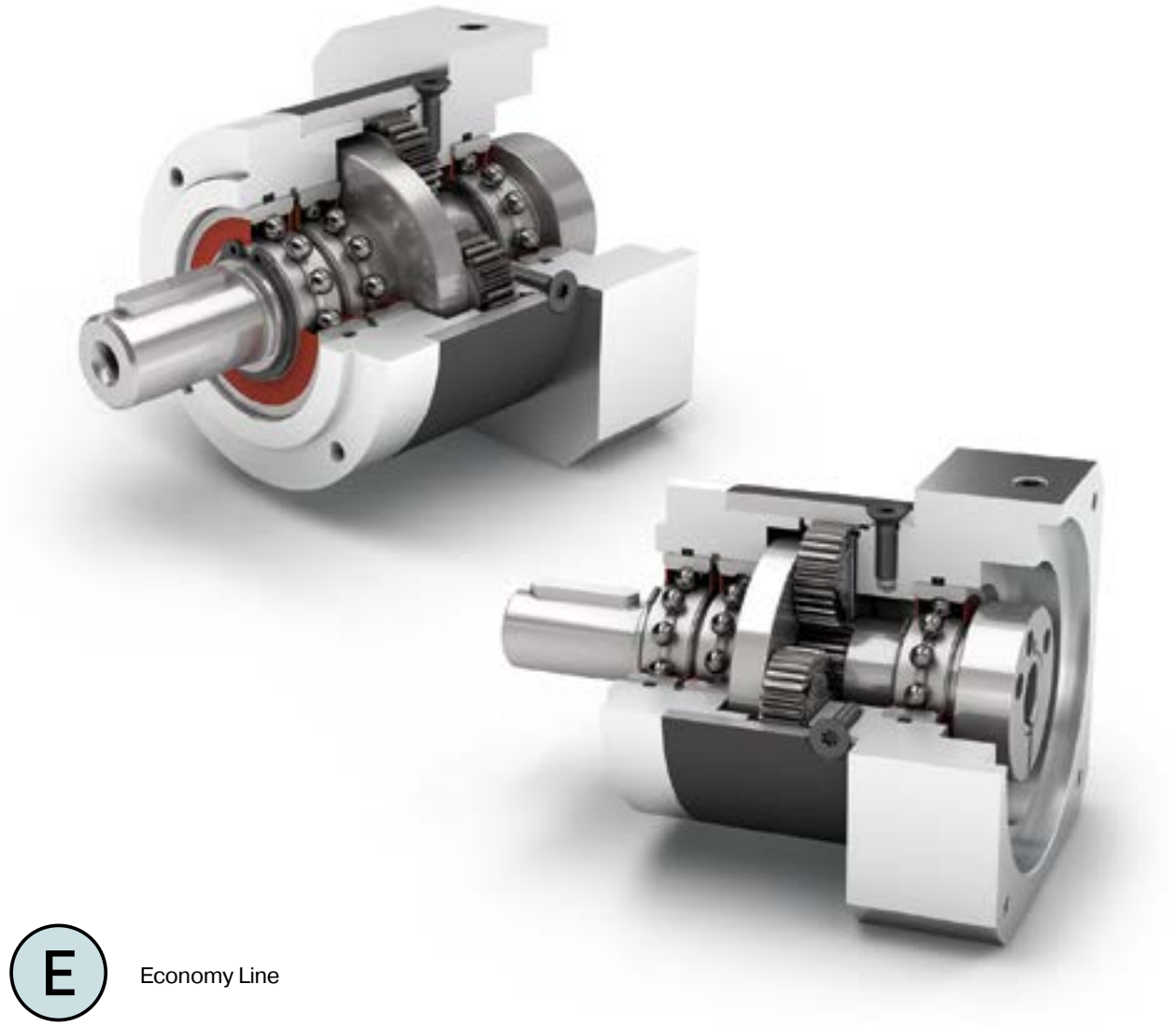
Unparalleled: This planetary gearbox maintains its maximum efficiency even at the highest speeds

The **PLE** is our price/performance wonder. It is particularly lightweight, extremely powerful and yet still suitable for demanding production cycles thanks to its low-friction bearingconcept and optimized lubrication. A real power-house at an attractive and fair price.

Cyclic torque	**5 - 800 Nm**
Radial force	**200 - 5000 N**
Axial force	**240 - 11000 N**
Torsional backlash	**6 - 22 arcmin**
Protection class	**IP54**

Frame sizes

40 **60** **80** **120** **160**



Economy Line

Coaxial gearbox

Spur gear

Low-friction deep groove ball bearings

Planet carrier in disc design

Equidirectional rotation

Round type output flange

3 i 512

High ratio variety i=3 up to i=512

RAL 9005

Option: Painted surface
– RAL 9005 Jet black

Detailed explanations of the technical features starting on page 201.

Code	Gearbox characteristics			PLE040	PLE060	PLE080	PLE120	PLE160	p[1]
	Service life[2]	L_h	h	20,000					
	Efficiency[3]	η	%	98					1
				97					2
				92					3
	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
				< 22	< 15	< 11	< 11	-	3
	Torsional stiffness[3]	C_{2t}	Nm / arcmin (lb_f.in/ arcmin)	0.7 - 1.0 (6 - 8)	2.0 - 2.7 (18 - 24)	7.2 - 10.0 (64 - 89)	15.5 - 21.0 (137 - 186)	57.5 - 69.0 (509 - 611)	1
				0.8 - 1.0 (7 - 9)	2.3 - 2.8 (20 - 25)	7.9 - 10.4 (70 - 92)	17.5 - 22.0 (155 - 195)	61.0 - 75.0 (540 - 664)	2
				0.8 - 1.0 (7 - 9)	2.3 - 2.8 (20 - 25)	7.9 - 10.5 (70 - 93)	17.5 - 22.0 (155 - 195)	-	3
	Gearbox weight[3]	m	kg (lb_m)	0.4 (0.8)	0.9 (1.9 - 2.0)	2.1 - 2.2 (4.6 - 4.7)	5.6 - 5.9 (12.3 - 13.0)	17.3 - 17.5 (38.2 - 38.5)	1
				0.4 - 0.5 (1.0)	1.0 - 1.1 (2.3 - 2.4)	2.6 - 2.7 (5.6 - 5.8)	7.3 - 7.7 (16.1 - 17.0)	23.2 - 23.5 (51.3 - 51.7)	2
				0.5 (1.2)	1.2 - 1.3 (2.7 - 2.8)	3.0 - 3.2 (6.7 - 7.0)	9.1 - 9.5 (20.1 - 21.0)	-	3
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			PLE040	PLE060	PLE080	PLE120	PLE160	p[1]
Maximum radial force	$F_{r\,max}$	N (lb_f)	200 (45)	700 (157)	1000 (225)	2000 (450)	5000 (1124)	
Maximum axial force	$F_{a\,max}$		240 (54)	800 (180)	1450 (326)	3800 (854)	11000 (2473)	
Maximum tilting moment	$M_{k\,max}$	Nm (lb_f.in)	6 (49)	25 (220)	41 (364)	115 (1018)	474 (4191)	

Input characteristics			PLE040	PLE060	PLE080	PLE120	PLE160	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)	-	
			11 (C)	19 (E)	-	-	-	
Mass moment of inertia input[3][5]	J_1	$kgcm^2$ (lb_f. $in.s^2 10^{-4}$)	0.022 - 0.033 (0.195 - 0.292)	0.085 - 0.149 (0.752 - 1.319)	0.359 - 0.654 (3.177 - 5.788)	1.378 - 2.361 (12.196 - 20.897)	3.726 - 11.999 (32.978 - 106.200)	1
			0.022 - 0.032 (0.195 - 0.283)	0.086 - 0.142 (0.761 - 1.257)	0.365 - 0.613 (3.231 - 5.426)	1.414 - 2.288 (12.515 - 20.251)	3.502 - 10.087 (30.995 - 89.277)	2
			0.022 - 0.031 (0.195 - 0.274)	0.086 - 0.096 (0.761 - 0.850)	0.365 - 0.590 (3.231 - 5.222)	1.413 - 2.196 (12.506 - 19.436)	-	3
Average idle torque[3][5]	T_0	Nm (lb_f.in)	0.05 (0)	0.10 - 0.15 (1)	0.20 - 0.35 (2 - 3)	0.50 - 1.05 (4 - 9)	1.10 - 2.90 (10 - 26)	1
			0.05 (0)	0.10 (1)	0.15 - 0.25 (1 - 2)	0.45 - 0.80 (4 - 7)	0.80 - 1.80 (7 - 16)	2
			0.05 (0)	0.10 (1)	0.15 - 0.20 (1 - 2)	0.45 - 0.75 (4 - 7)	-	3
Maximum bending moment input	M_{b1}		4.5 (40)	12 (106)	16 (142)	40 (354)	140 (1239)	

[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			PLE040	PLE060	PLE080	PLE120	PLE160	i[1]	p[2]
Cyclic torque[3][4]	T_{2Z}	Nm (lb_f.in)	11 (97)	28 (248)	85 (752)	115 (1018)	400 (3540)	3	1
			15 (133)	38 (336)	115 (1018)	155 (1372)	450 (3983)	4	
			14 (124)	40 (354)	110 (974)	195 (1726)	450 (3983)	5	
			8.5 (75)	25 (221)	65 (575)	135 (1195)	-	7	
			6 (53)	18 (159)	50 (443)	120 (1062)	450 (3983)	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)	800 (7081)	12	
			18 (159)	44 (389)	110 (974)	230 (2036)	700 (6196)	15	
			20 (177)	44 (389)	120 (1062)	260 (2301)	800 (7081)	16	
			20 (177)	44 (389)	120 (1062)	260 (2301)	800 (7081)	20	
			18 (159)	40 (354)	110 (974)	230 (2036)	700 (6196)	25	
			20 (177)	44 (389)	120 (1062)	260 (2301)	800 (7081)	32	
			18 (159)	40 (354)	110 (974)	230 (2036)	700 (6196)	40	
			7.5 (66)	18 (159)	50 (443)	120 (1062)	450 (3983)	64	
			20 (177)	44 (389)	120 (1062)	260 (2301)	-	60	3
			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	
			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	
Maximum torque[3][4]	T_{2max}	Nm (lb_f.in)	11 (97)	44 (389)	105 (929)	184 (1629)	450 (3983)	3	1
			24 (212)	60 (531)	140 (1239)	245 (2168)	600 (5310)	4	
			22 (195)	61 (540)	175 (1549)	310 (2744)	720 (6373)	5	
			13.5 (119)	40 (354)	104 (920)	215 (1903)	-	7	
			9.5 (84)	28 (248)	80 (708)	192 (1699)	720 (6373)	8	
			8 (71)	24 (212)	60 (531)	152 (1345)	-	10	
			16.5 (146)	70 (620)	182 (1611)	335 (2965)	-	9	2
			32 (283)	65 (575)	192 (1699)	415 (3673)	1280 (11329)	12	
			28 (248)	70 (620)	176 (1558)	365 (3231)	1120 (9913)	15	
			32 (283)	65 (575)	192 (1699)	415 (3673)	1280 (11329)	16	
			32 (283)	65 (575)	192 (1699)	415 (3673)	1280 (11329)	20	
			28 (248)	61 (540)	176 (1558)	365 (3231)	1120 (9913)	25	
			32 (283)	65 (575)	192 (1699)	415 (3673)	1280 (11329)	32	
			28 (248)	61 (540)	176 (1558)	365 (3231)	1120 (9913)	40	
			12 (106)	28 (248)	80 (708)	192 (1699)	720 (6373)	64	
			32 (283)	65 (575)	192 (1699)	415 (3673)	-	60	3
			32 (283)	65 (575)	192 (1699)	415 (3673)	-	80	
			32 (283)	65 (575)	192 (1699)	415 (3673)	-	100	
			28 (248)	70 (620)	176 (1558)	365 (3231)	-	120	
			32 (283)	65 (575)	192 (1699)	415 (3673)	-	160	
			28 (248)	61 (540)	176 (1558)	365 (3231)	-	200	
			32 (283)	65 (575)	192 (1699)	415 (3673)	-	256	
			28 (248)	61 (540)	176 (1558)	365 (3231)	-	320	
			12 (106)	28 (248)	80 (708)	192 (1699)	-	512	

(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

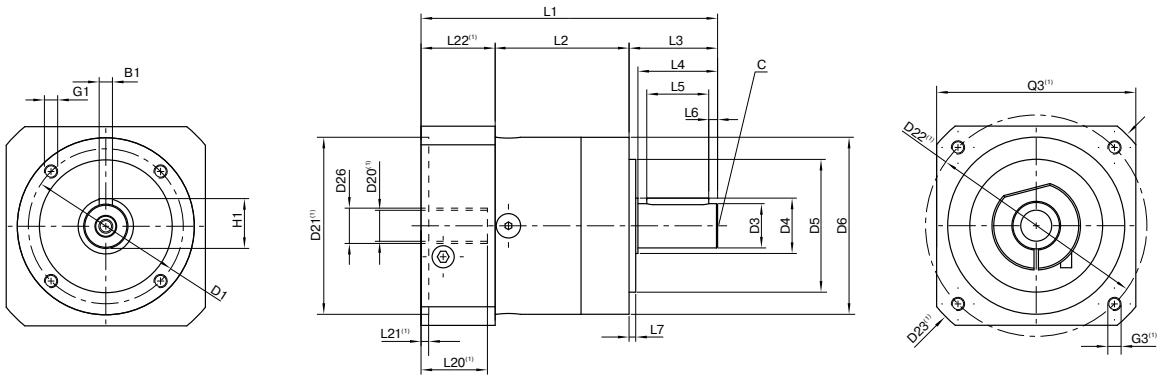
Output torques			PLE040	PLE060	PLE080	PLE120	PLE160	i[1]	p[2]
Continuous torque[3]	T_{2D}	Nm (lb_f.in)	3.5 (31)	22 (195)	37 (327)	97 (859)	340 (3009)	3	1
			12.5 (111)	23 (204)	82 (726)	131 (1159)	380 (3363)	4	
			11.5 (102)	24 (212)	84 (743)	165 (1460)	380 (3363)	5	
			7 (62)	19.5 (173)	55 (487)	114 (1009)	-	7	
			5 (44)	15 (133)	42 (372)	102 (903)	380 (3363)	8	
			4 (35)	12.5 (111)	32 (283)	80 (708)	-	10	
			10.5 (93)	30 (266)	87 (770)	178 (1575)	-	9	2
			14.5 (128)	32 (283)	102 (903)	220 (1947)	680 (6019)	12	
			15 (133)	35 (310)	93 (823)	195 (1726)	590 (5222)	15	
			17 (150)	35 (310)	102 (903)	220 (1947)	680 (6019)	16	
			17 (150)	37 (327)	102 (903)	220 (1947)	680 (6019)	20	
			15 (133)	34 (301)	93 (823)	195 (1726)	590 (5222)	25	
			17 (150)	37 (327)	102 (903)	220 (1947)	680 (6019)	32	
			15 (133)	34 (301)	93 (823)	195 (1726)	590 (5222)	40	
			6 (53)	15 (133)	42 (372)	102 (903)	380 (3363)	64	
			17 (150)	37 (327)	102 (903)	220 (1947)	-	60	3
			17 (150)	37 (327)	102 (903)	220 (1947)	-	80	
			17 (150)	37 (327)	102 (903)	220 (1947)	-	100	
			15 (133)	37 (327)	93 (823)	195 (1726)	-	120	
			17 (150)	37 (327)	102 (903)	220 (1947)	-	160	
			15 (133)	34 (301)	93 (823)	195 (1726)	-	200	
			17 (150)	37 (327)	102 (903)	220 (1947)	-	256	
			15 (133)	34 (301)	93 (823)	195 (1726)	-	320	
			6 (53)	15 (133)	42 (372)	102 (903)	-	512	

Input speeds			PLE040	PLE060	PLE080	PLE120	PLE160	i[1]	p[2]
Continuous input speed[3][4]	n_{1D}	rpm	5000	4500	4000	2150	1150	3	1
			5000	4500	3750	2300	1300	4	
			5000	4500	4000	2500	1550	5	
			5000	4500	4000	3500	-	7	
			5000	4500	4000	3500	1700	8	
			5000	4500	4000	3500	-	10	
			5000	4500	4000	2100	-	9	2
			5000	4500	4000	2450	1150	12	
			5000	4500	4000	3000	1650	15	
			5000	4500	4000	2850	1500	16	
			5000	4500	4000	3350	1800	20	
			5000	4500	4000	3500	2450	25	
			5000	4500	4000	3500	2300	32	
			5000	4500	4000	3500	3000	40	
			5000	4500	4000	3500	3000	64	
			5000	4500	4000	3500	-	60	3
			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	
			5000	4500	4000	3500	-	256	
			5000	4500	4000	3500	-	320	
			5000	4500	4000	3500	-	512	
Max. mechanical input speed[3]	n_{1max}	rpm	18000	13000	7000	6500	6500		

[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			PLE040	PLE060	PLE080	PLE120	PLE160	i[1]	p[2]
Emergency stop torque[3][4]	T_{2Stop}	Nm (lb_f.in)	22 (195)	60 (531)	150 (1328)	375 (3319)	800 (7081)	3	1
			30 (266)	80 (708)	200 (1770)	500 (4425)	900 (7966)	4	
			36 (319)	80 (708)	220 (1947)	500 (4425)	900 (7966)	5	
			26 (230)	80 (708)	178 (1575)	340 (3009)	-	7	
			27 (239)	80 (708)	190 (1682)	380 (3363)	900 (7966)	8	
			27 (239)	75 (664)	200 (1770)	480 (4248)	-	10	
			33 (292)	88 (779)	260 (2301)	500 (4425)	-	9	2
			40 (354)	88 (779)	240 (2124)	520 (4602)	1600 (14161)	12	
			36 (319)	88 (779)	220 (1947)	500 (4425)	1400 (12391)	15	
			40 (354)	88 (779)	240 (2124)	520 (4602)	1600 (14161)	16	
			40 (354)	88 (779)	240 (2124)	520 (4602)	1600 (14161)	20	
			36 (319)	80 (708)	220 (1947)	500 (4425)	1400 (12391)	25	
			40 (354)	88 (779)	240 (2124)	520 (4602)	1600 (14161)	32	
			36 (319)	80 (708)	220 (1947)	500 (4425)	1400 (12391)	40	
			27 (239)	80 (708)	190 (1682)	380 (3363)	900 (7966)	64	
			40 (354)	88 (779)	220 (1947)	520 (4602)	-	60	3
			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	
			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	

[1] Ratios ($i=n_1/n_2$)
[2] Number of stages
[3] Permitted 1000 times
[4] Based on reference clamping system diameter



Drawing corresponds to a PLE060 / 1-stage / output shaft with feather key / 11 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)			PLE040	PLE060	PLE080	PLE120	PLE160	p(3)	Code
Pitch circle diameter output	D1		34 (1.339)	52 (2.047)	70 (2.756)	100 (3.937)	145 (5.709)		
Shaft diameter output	D3	h7	10 (0.394)	14 (0.551)	20 (0.787)	25 (0.984)	40 (1.575)		
Shaft collar output	D4		12 (0.472)	17 (0.669)	25 (0.984)	35 (1.378)	55 (2.165)		
Centering diameter output	D5	h7	26 (1.024)	40 (1.575)	60 (2.362)	80 (3.150)	130 (5.118)		
Housing diameter	D6		40 (1.575)	60 (2.362)	80 (3.150)	115 (4.528)	160 (6.299)		
Mounting thread x depth	G1	4x	M4x6	M5x8	M6x10	M10x16	M12x20		
Min. total length	L1		88.5 (3.484)	106 (4.173)	133.5 (5.256)	176.5 (6.949)	255.5 (10.059)	1	
			106.5 (4.193)	118.5 (4.665)	150.5 (5.925)	204 (8.032)	305 (12.008)	2	
			114 (4.488)	131 (5.157)	168.5 (6.634)	231.5 (9.114)	-	3	
Housing length	L2		39 (1.535)	47 (1.850)	60 (2.362)	74 (2.913)	104 (4.094)	1	
			51.5 (2.028)	59.5 (2.343)	78 (3.071)	102 (4.016)	153.5 (6.043)	2	
			64.5 (2.539)	72 (2.835)	95 (3.740)	129.5 (5.098)	-	3	
Shaft length output	L3		26 (1.024)	35 (1.378)	40 (1.575)	55 (2.165)	87 (3.425)		
Centering depth output	L7		2 (0.079)	3 (0.118)	3 (0.118)	4 (0.157)	5 (0.197)		
Motor shaft diameter j6/k6	D20		More information on page 191/192						
Clamping system diameter input	D26		More information on page 20						
Output shaft with feather key (DIN 6885-1)			A 3x3x18	A 5x5x25	A 6x6x28	A 8x7x40	A 12x8x65		A
Feather key width (DIN 6885-1)	B1		3 (0.118)	5 (0.197)	6 (0.236)	8 (0.315)	12 (0.472)		
Shaft height including feather key (DIN 6885-1)	H1		11.2 (0.441)	16 (0.630)	22.5 (0.886)	28 (1.102)	43 (1.693)		
Shaft length from shoulder	L4		23 (0.906)	30 (1.181)	36 (1.417)	50 (1.969)	80 (3.150)		
Feather key length	L5		18 (0.709)	25 (0.984)	28 (1.102)	40 (1.575)	65 (2.559)		
Distance from shaft end	L6		2.5 (0.098)	2.5 (0.098)	4 (0.157)	5 (0.197)	8 (0.315)		
Center hole (DIN 332, type DR)	C		M3x9	M5x12.5	M6x16	M10x22	M16x36		
Smooth output shaft									B
Shaft length from shoulder	L4		23 (0.906)	30 (1.181)	36 (1.417)	50 (1.969)	80 (3.150)		

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