WPLE

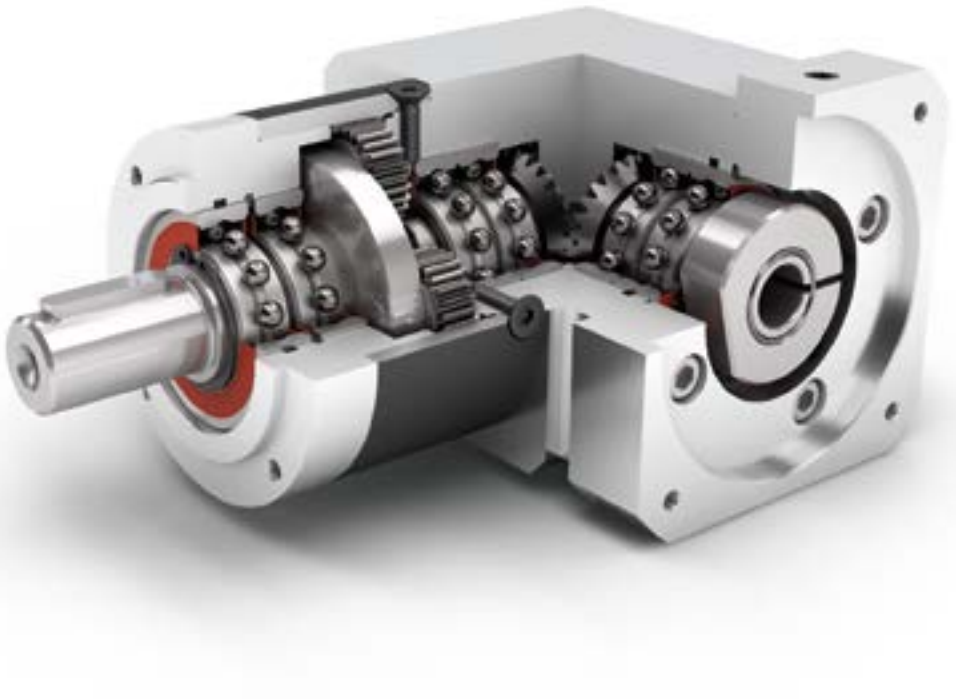
The versatile right angle planetary gearbox with lower weight and appealing cost effectiveness

The **WPLE** consistently continues the advantages of the Economy series. With its compact but powerful design, it is perfectly suited for dynamic multi-axis systems. Our right-angle gearbox is lubricated for life, easy to mount and offers an unmatched price/performance ratio.

Cyclic torque	**5 - 260 Nm**
Radial force	**200 - 2000 N**
Axial force	**240 - 3800 N**
Torsional backlash	**11 - 28 arcmin**
Protection class	**IP54**

Frame sizes

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



- Economy Line
- Equidirectional rotation
- Bevel gear right angle stage
- Low-friction deep groove ball bearings
- Planet carrier in disc design
- Right angle gearbox
- Spur gear
- Round type output flange
- High ratio variety i=3 up to i=512
- Option: Painted surface – RAL 9005 Jet black

Detailed explanations of the technical features starting on page 201.

Code	Gearbox characteristics			WPLE040	WPLE060	WPLE080	WPLE120	p[1]
	Service life[2]	L_h	h	20,000				
	Efficiency[3]	η	%	95				1
				94				2
				88				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	< 21	< 16	< 13	< 11	1
				< 25	< 18	< 15	< 13	2
				< 28	< 21	< 17	< 15	3
	Torsional stiffness[3]	C_{2t}	Nm / arcmin (lb_f.in/ arcmin)	0.5 - 0.8 (4 - 7)	1.5 - 2.3 (13 - 20)	4.0 - 7.9 (35 - 70)	9.9 - 17.5 (88 - 155)	1
				0.7 - 1.0 (6 - 9)	2.3 - 2.8 (20 - 25)	7.2 - 10.3 (64 - 91)	17.5 - 22.0 (155 - 195)	2
				0.8 - 1.0 (7 - 9)	2.3 - 2.8 (20 - 25)	7.9 - 10.4 (70 - 92)	17.5 - 22,0 (155 - 195)	3
	Gearbox weight[3]	m	kg (lb_m)	0.6 (1.2 - 1.3)	1.6 (3.5 - 3.6)	3.7 (8.0 - 8.1)	9.6 - 9.7 (21.2 - 21.4)	1
				0.7 (1.4 - 1.5)	1.8 (3.9 - 4.0)	4.1 - 4.2 (9.1 - 9.2)	11.3 - 11.5 (25.0 - 25.4)	2
				0.7 - 0.8 (1.6 - 1.7)	2.0 (4.3 - 4.4)	4.6 - 4.7 (10.1 - 10.3)	13.1 - 13.3 (29.0 - 29.4)	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)	68	70	73	75	

Output shaft loads			WPLE040	WPLE060	WPLE080	WPLE120	p[1]
Maximum radial force	$F_{r\,max}$	N (lb_f)	200 (45)	700 (157)	1000 (225)	2000 (450)	
Maximum axial force	$F_{a\,max}$		240 (54)	800 (180)	1450 (326)	3800 (854)	
Maximum tilting moment	$M_{K\,max}$	Nm (lb_f.in)	6 (49)	25 (220)	41 (364)	115 (1018)	

Input characteristics			WPLE040	WPLE060	WPLE080	WPLE120	p[1]
Clamping system diameter input (Code)	D26	mm	8 (A)	11 (C)	19 (E)[5]	24 (F)[5]	
			9 (B)[5]	14 (D)[5]	-	-	
Mass moment of inertia input[3][5]	J_1	$kgcm^2$ (lb_f. $in.s^2 10^{-4}$)	0.040 - 0.057 (0.354 - 0.504)	0.227 - 0.363 (2.009 - 3.213)	0.862 - 1.226 (7.629 - 10.851)	2.645 - 3.670 (23.410 - 32.482)	1
			0.040 - 0,057 (0.354 - 0.504)	0.228 - 0.356 (2.018 - 3.151)	0.868 - 1.184 (7.682 - 10.479)	2.679 - 3.597 (23.711 - 31.836)	2
			0.040 - 0.056 (0.354 - 0.496)	0.228 - 0.238 (2.018 - 2.106)	0.868 - 1.162 (7.682 - 10.285)	2.679 - 3.506 (23.711 - 31.031)	3
Average idle torque[3][5]	T_0	Nm (lb_f.in)	0.05 (0)	Maximum bending moment input	0.25 - 0.60 (2 - 5)	0.80 - 1.35 (7 - 12)	1
			0.05 (0)	0.15 - 0.20 (1 - 2)	0.25 - 0.60 (2 - 5)	0.85 - 1.45 (8 - 13)	2
			0.05 (0)	0.15 (1)	0.25 - 0.35 (2 - 3)	0.85 - 1.05 (8 - 9)	3
Maximum bending moment input	M_{b1}		2 (18)	5 (44)	10,5 (93)	26 (230)	

(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			WPLE040	WPLE060	WPLE080	WPLE120	i(1)	p(2)
Cyclic torque(3)(4)	T_{2Z}	Nm (lb_f.in)	4.5 (40)	14 (124)	40 (354)	78 (690)	3	1
			6 (53)	19 (168)	53 (469)	104 (920)	4	
			7.5 (66)	24 (212)	67 (593)	130 (1151)	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	
			13.5 (119)	43 (381)	120 (1062)	210 (1859)	9	2
			18 (159)	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	
			18 (159)	40 (354)	110 (974)	230 (2036)	40	
			75 (66)	18 (159)	50 (443)	120 (1062)	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)	7 (62)	23 (204)	64 (566)	124 (1097)	3	1
			9.5 (84)	30 (266)	85 (752)	166 (1469)	4	
			12 (106)	38 (336)	107 (947)	205 (1814)	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)	10	
			16.5 (146)	69 (611)	182 (1611)	335 (2965)	9	2
			28 (248)	65 (575)	192 (1699)	415 (3673)	12	
			28 (248)	70 (620)	176 (1558)	365 (3231)	15	
			32 (283)	65 (575)	192 (1699)	415 (3673)	16	
			32 (283)	65 (575)	192 (1699)	415 (3673)	20	
			28 (248)	61 (540)	176 (1558)	365 (3231)	25	
			32 (283)	65 (575)	192 (1699)	415 (3673)	32	
			28 (248)	61 (540)	176 (1558)	365 (3231)	40	
			12 (106)	28 (248)	80 (708)	192 (1699)	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

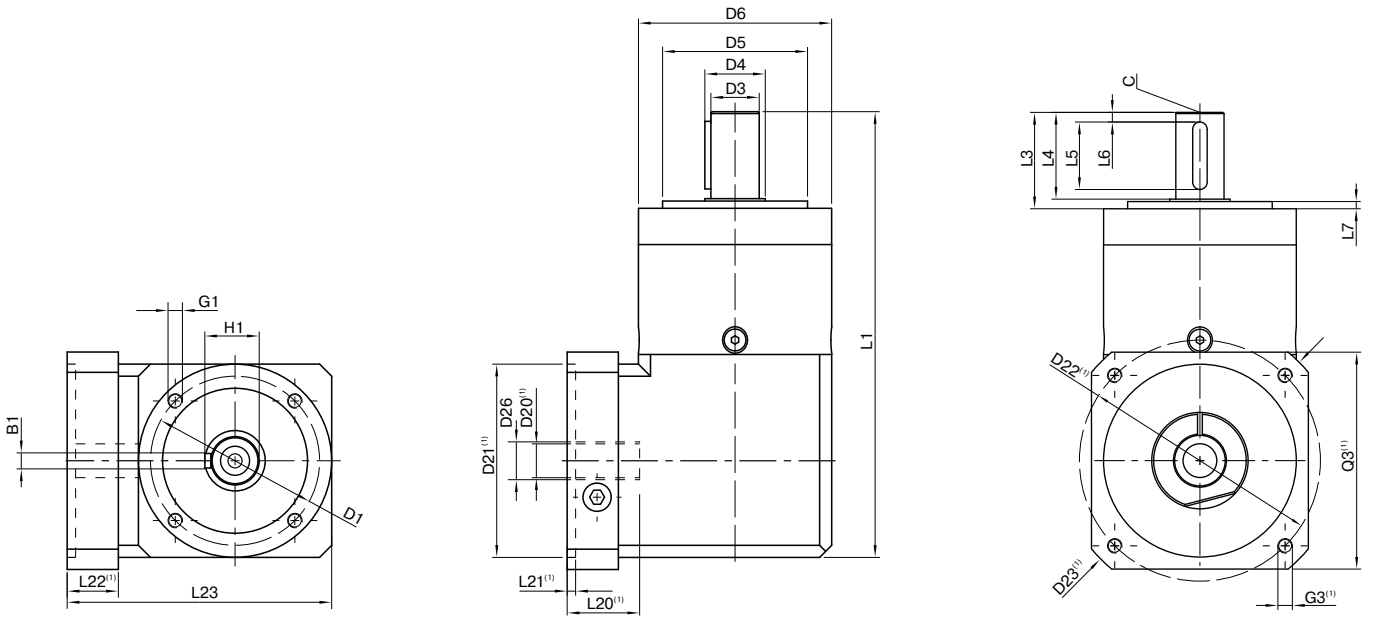
Output torques			WPLE040	WPLE060	WPLE080	WPLE120	i(1)	p(2)
Continuous torque(3)	T_{2D}	Nm (lb_f.in)	1.5 (13)	6 (53)	13.5 (119)	32 (283)	3	1
			2.5 (22)	8.5 (75)	18 (159)	43 (381)	4	
			3 (27)	10.5 (93)	22 (195)	53 (469)	5	
			4.5 (40)	15 (133)	32 (283)	75 (664)	7	
			5 (44)	15 (133)	36 (319)	86 (761)	8	
			4 (35)	12.5 (111)	32 (283)	80 (708)	10	
			5.5 (49)	19 (168)	41 (363)	96 (850)	9	2
			7.5 (66)	25 (221)	55 (487)	129 (1142)	12	
			9.5 (84)	32 (283)	68 (602)	161 (1425)	15	
			10 (89)	34 (301)	73 (646)	172 (1522)	16	
			12.5 (111)	37 (327)	91 (805)	215 (1903)	20	
			15 (133)	34 (301)	93 (823)	195 (1726)	25	
			17 (150)	37 (327)	102 (903)	220 (1947)	32	
			15 (133)	34 (301)	93 (823)	195 (1726)	40	
			6 (53)	15 (133)	42 (372)	102 (903)	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			WPLE040	WPLE060	WPLE080	WPLE120	i(1)	p(2)
Continuous input speed(3)(4)	n_{1D}	rpm	5000	4500	4000	3500	3	1
			5000	4500	4000	3500	4	
			5000	4500	4000	3500	5	
			5000	4500	4000	3500	7	
			5000	4500	4000	3500	8	
			5000	4500	4000	3500	10	
			5000	4500	4000	3500	9	2
			5000	4500	4000	3500	12	
			5000	4500	4000	3500	15	
			5000	4500	4000	3500	16	
			5000	4500	4000	3500	20	
			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	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		

(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

Output torques			WPLE040	WPLE060	WPLE080	WPLE120	i[1]	p[2]
Emergency stop torque[4][5]	T_{2Stop}	Nm (lb_f.in)	12 (106)	60 (531)	135 (1195)	300 (2655)	3	1
			16 (142)	80 (708)	180 (1593)	400 (3540)	4	
			20 (177)	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	
			25 (221)	70 (620)	170 (1505)	430 (3806)	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)	16	
			40 (354)	88 (779)	240 (2124)	520 (4602)	20	
			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	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] Application specific configuration with NCP – www.neugart.com
[4] Based on reference clamping system diameter
[5] Permitted 1000 times



Drawing corresponds to a WPLE080 / 1-stage / output shaft with feather key / 19 mm clamping system / motor adaptation – 2-part – square 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)			**WPLE040**	**WPLE060**	**WPLE080**	**WPLE120**	**p(3)**	**Code**
Pitch circle diameter output	D1		34 (1.339)	52 (2.047)	70 (2.756)	100 (3.937)		
Shaft diameter output	D3	h7	10 (0.394)	14 (0.551)	20 (0.787)	25 (0.984)		
Shaft collar output	D4		12 (0.472)	17 (0.669)	25 (0.984)	35 (1.378)		
Centering diameter output	D5	h7	26 (1.024)	40 (1.575)	60 (2.362)	80 (3.150)		
Housing diameter	D6		40 (1.575)	60 (2.362)	80 (3.150)	115 (4.528)		
Mounting thread x depth	G1	4x	M4x6	M5x8	M6x10	M10x16		
Total length	L1		110 (4.331)	147 (5.787)	184 (7.244)	249.5 (9.823)	1	
			123 (4.843)	159.5 (6.280)	201.5 (7.933)	277 (10.906)	2	
			135.5 (5.335)	172 (6.772)	219 (8.622)	304.5 (11.988)	3	
Shaft length output	L3		26 (1.024)	35 (1.378)	40 (1.575)	55 (2.165)		
Centering depth output	L7		2 (0.079)	3 (0.118)	3 (0.118)	4 (0.157)		
Min. overall height	L23		67 (2.638)	85.5 (3.366)	109.5 (4.311)	145.5 (5.728)		
Motor shaft diameter j6/k6	D20		More information on page 191/192					
Clamping system diameter input	D26		More information on page 60					
Output shaft with feather key (DIN 6885-1)			A 3x3x18	A 5x5x25	A 6x6x28	A 8x7x40		A
Feather key width (DIN 6885-1)	B1		3 (0.118)	5 (0.197)	6 (0.236)	8 (0.315)		
Shaft height including feather key (DIN 6885-1)	H1		11.2 (0.441)	16 (0.630)	2.5 (0.886)	28 (1.102)		
Shaft length from shoulder	L4		23 (0.906)	30 (1.181)	36 (1.417)	50 (1.969)		
Feather key length	L5		18 (0.709)	25 (0.984)	28 (1.102)	40 (1.575)		
Distance from shaft end	L6		2.5 (0.098)	2.5 (0.098)	4 (0.157)	5 (0.197)		
Center hole (DIN 332, type DR)	C		M3x9	M5x12,5	M6x16	M10x22		
Smooth output shaft								B
Shaft length from shoulder	L4		23 (0.906)	30 (1.181)	36 (1.417)	50 (1.969)		

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