WPLN

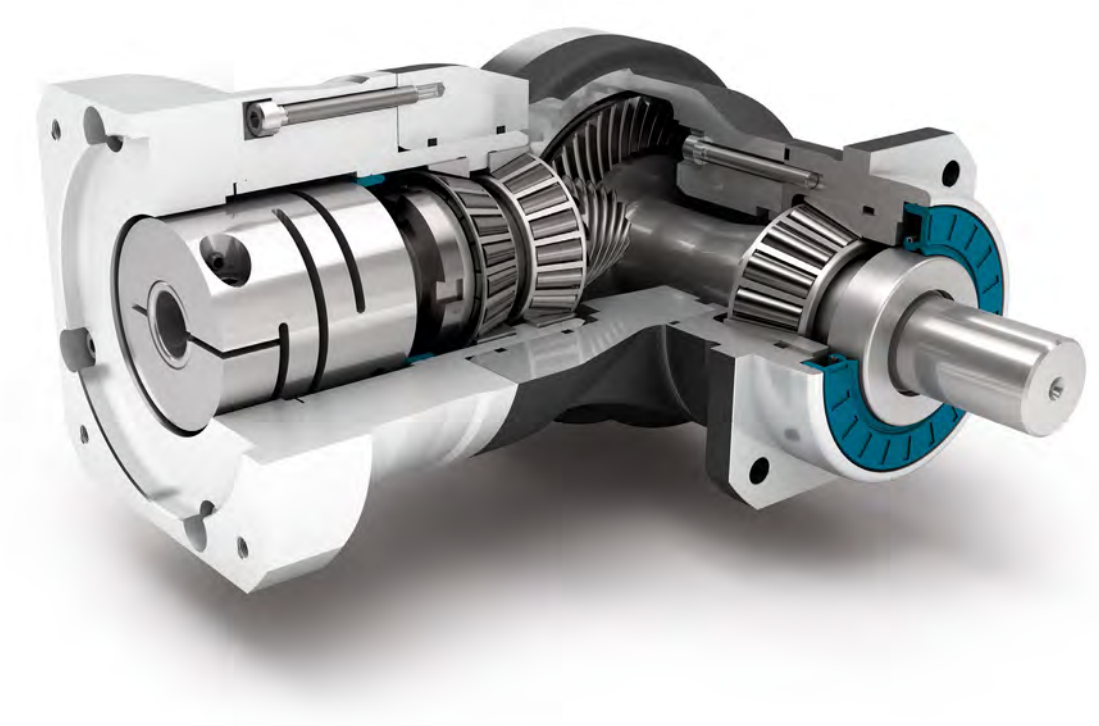
The versatile right-angle gearbox with hypoid gearing for a quiet drive

Due to its hypoid gearing, our **WPLN** achieves optimal synchronization. Because vibrations are reduced to a minimum, it operates smoothly, precisely and quietly. The right-angle precision gearbox is lubricated for life and can be mounted in a variety of ways.

Cyclic torque	**22 - 800 Nm**
Radial force	**3200 - 12500 N**
Axial force	**4300 - 15000 N**
Torsional backlash	**3 - 5 arcmin**
Protection class	**IP65**

Frame sizes

70 **90** **115** **142**



- Precision Line
- Right angle gearbox
- Hypoid gear right angle stage
- Preloaded tapered roller bearings
- Extra long centering collar
- Option: Rack and pinion Planetary gearbox (Details on page 158)
- Counterdirectional rotation
- Square type output flange
- Rotary shaft seal
- Option: Reduced backlash (2-stage)
- Option: Painted surface – RAL 9005 Jet black

Detailed explanations of the technical features starting on page 201.

Code	Gearbox characteristics			WPLN070	WPLN090	WPLN115	WPLN142	p[1]
	Service life[2]	L_h	h	20,000				
	Efficiency[3]	η	%	95				1
				94				2
	Min. operating temperature	T_{min}	°C (°F)	-25 (-13)				
	Max. operating temperature	T_{max}		90 (194)				
	Protection class			IP65				
S	Standard lubrication			Oil (lifetime lubrication)				
F	Food grade lubrication			Oil (lifetime lubrication)				
	Installation position			Any				
S	Standard backlash	φ	arcmin	< 5				
R	Reduced backlash			-				1
				< 3				2
	Torsional stiffness[3]	C_{2t}	Nm / arcmin (lb_f.in/ arcmin)	1.8 - 3.1 (16 - 27)	4.6 - 7.0 (41 - 62)	8.6 - 13.5 (76 - 119)	24.5 - 34.0 (217 - 301)	1
				2.3 - 3.6 (20 - 32)	5.9 - 8.6 (52 - 76)	11.3 - 16.9 (100 - 150)	31.5 - 42.5 (279 - 376)	2
	Gearbox weight[3]	m	kg (lb_m)	3.3 - 3.4 (7.3 - 7.4)	5.3 - 5.8 (11.7 - 12.7)	11.0 - 11.1 (24.3 - 24.5)	25.3 - 25.9 (55.8 - 57.0)	1
				4.3 - 4.4 (9.5 - 9.6)	5.6 - 5.7 (12.3 - 12.7)	10.0 - 10.3 (22.1 - 22.8)	23.7 - 24.3 (52.4 - 53.5)	2
S	Standard surface			Right angle housing: Aluminum – anodized (black)				
B	Painted surface[4]			RAL 9005 Jet black				
	Running noise[3]	L_{pA}	dB(A)	66	67	68	70	

Output shaft loads			WPLN070	WPLN090	WPLN115	WPLN142	p[1]
Maximum radial force	$F_{r\,max}$	N (lb_f)	3200 (719)	5200 (1169)	6000 (1349)	12500 (2810)	1
			3200 (719)	5500 (1236)	6000 (1349)	12500 (2810)	2
Maximum axial force	$F_{a\,max}$		3400 (764)	4500 (1012)	6500 (1461)	12000 (2698)	
Maximum tilting moment	$M_{K\,max}$	Nm (lb_f.in)	322 (2846)	624 (5523)	1010 (8935)	2225 (19693)	1
			191 (1690)	383 (3393)	488 (4317)	1420 (12572)	2

Input characteristics			WPLN070	WPLN090	WPLN115	WPLN142	p[1]
Clamping system diameter input (Code)	D26	mm	14 (D)[5]	19 (E)[5]	24 (F)[5]	35 (G)[5]	1
			19 (E)	24 (F)	35 (G)	42 (H)	
			14 (D)[5]	14 (D)[5]	19 (E)[5]	24 (F)[5]	2
			19 (E)	19 (E)	24 (F)	35 (G)	
Mass moment of inertia input[3][5]	J_1	kgcm² (lb_f. in.s²10⁻⁴)	0.500 - 0.658 (4.425 - 5.824)	1.013 - 1.387 (8.966 - 12.276)	4.767 - 5.875 (42.192 - 51.998)	15.090 - 20.883 (133.558 - 184.830)	1
			0.498 - 0.642 (4.408 - 5.682)	0.497 - 0.649 (4.399 - 5.744)	1.014 - 1.419 (8.975 - 12.559)	4.807 - 6.387 (42.546 - 56.530)	2
Average idle torque[3][5]	T_0	Nm (lb_f.in)	1.20 - 1.50 (11 - 13)	1.80 - 2.30 (16 - 20)	6.00 - 6.90 (53 - 61)	16.00 (142)	1
			0.75 - 1.00 (7 - 9)	0.75 - 1.25 (7 - 11)	1.15 - 2.05 (10 - 18)	4.00 - 7.70 (35 - 68)	2
Max. bending moment based on the gearbox input flange	M_{b1}		12 (106)	25.5 (226)	53 (469)	120 (1062)	1
			12 (106)	12 (106)	25.5 (226)	53 (469)	2

(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			WPLN070	WPLN090	WPLN115	WPLN142	i[1]	p[2]
Cyclic torque[3][4]	T_{2Z}	Nm (lb_f.in)	45 (398)	90 (797)	160 (1416)	320 (2832)	4	1
			42 (372)	75 (664)	140 (1239)	280 (2478)	5	
			28 (248)	51 (451)	91 (805)	189 (1673)	7	
			27 (239)	50 (443)	90 (797)	180 (1593)	8	
			22 (195)	40 (354)	75 (664)	160 (1416)	10	
			77 (682)	150 (1328)	300 (2655)	640 (5664)	16	2
			77 (682)	150 (1328)	300 (2655)	800 (7081)	20	
			65 (575)	140 (1239)	260 (2301)	700 (6196)	25	
			77 (682)	112 (991)	200 (1770)	360 (3186)	28	
			77 (682)	108 (956)	200 (1770)	360 (3186)	32	
			65 (575)	140 (1239)	255 (2257)	455 (4027)	35	
			65 (575)	135 (1195)	250 (2213)	450 (3983)	40	
			65 (575)	110 (974)	200 (1770)	375 (3319)	50	
			40 (354)	80 (708)	150 (1328)	450 (3983)	64	
			24 (212)	60 (531)	125 (1106)	290 (2567)	100	
Maximum torque[3][4]	T_{2max}	Nm (lb_f.in)	60 (531)	140 (1239)	255 (2257)	510 (4514)	4	1
			67 (593)	120 (1062)	220 (1947)	445 (3939)	5	
			44 (389)	81 (717)	145 (1283)	300 (2655)	7	
			43 (381)	80 (708)	144 (1275)	285 (2522)	8	
			35 (310)	64 (566)	120 (1062)	255 (2257)	10	
			103 (912)	240 (2124)	480 (4248)	1020 (9028)	16	2
			103 (912)	240 (2124)	480 (4248)	1280 (11329)	20	
			97 (859)	220 (1947)	415 (3673)	1120 (9913)	25	
			103 (912)	179 (1584)	325 (2876)	580 (5133)	28	
			103 (912)	172 (1522)	320 (2832)	570 (5045)	32	
			97 (859)	220 (1947)	405 (3585)	720 (6373)	35	
			97 (859)	215 (1903)	400 (3540)	720 (6373)	40	
			97 (859)	176 (1558)	320 (2832)	600 (5310)	50	
			64 (566)	128 (1133)	240 (2124)	570 (5045)	64	
			38 (336)	96 (850)	200 (1770)	335 (2965)	100	

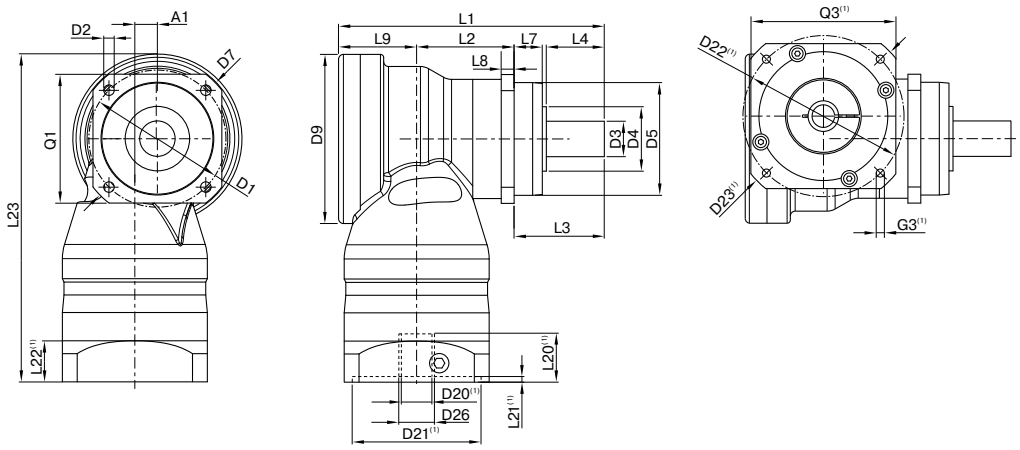
[1] Ratios ($i=n_1/n_2$)
[2] Number of stages
[3] Application specific configuration with NCP – www.neugart.com
[4] Based on reference clamping system diameter

Output torques			WPLN070	WPLN090	WPLN115	WPLN142	i[1]	p[2]
Continuous torque[3]	T_{2D}	Nm (lb_f.in)	29 (257)	41 (363)	104 (920)	235 (2080)	4	1
			32 (283)	39 (345)	101 (894)	235 (2080)	5	
			23 (204)	40 (354)	77 (682)	160 (1416)	7	
			22 (195)	38 (336)	76 (673)	153 (1354)	8	
			18.5 (164)	34 (301)	63 (558)	136 (1204)	10	
			65 (575)	123 (1089)	170 (1505)	435 (3850)	16	2
			65 (575)	127 (1124)	200 (1770)	540 (4779)	20	
			55 (487)	119 (1053)	199 (1761)	520 (4602)	25	
			65 (575)	95 (841)	167 (1478)	305 (2699)	28	
			65 (575)	91 (805)	156 (1381)	305 (2699)	32	
			55 (487)	119 (1053)	205 (1814)	385 (3408)	35	
			55 (487)	114 (1009)	210 (1859)	380 (3363)	40	
			55 (487)	93 (823)	170 (1505)	315 (2788)	50	
			34 (301)	68 (602)	127 (1124)	380 (3363)	64	
			22 (195)	51 (451)	106 (938)	255 (2257)	100	

Input speeds			WPLN070	WPLN090	WPLN115	WPLN142	i[1]	p[2]
Continuous input speed[3][4]	n_{1D}	rpm	1650	1700	1050	870	4	1
			1800	1850	1150	880	5	
			2050	2050	1300	1100	7	
			2100	2100	1300	970	8	
			2300	2200	1400	1000	10	
			1550	1500	1550	910	16	2
			1700	1750	1850	920	20	
			1900	1850	1850	1000	25	
			1850	1900	1900	1200	28	
			2000	2000	2000	1250	32	
			2150	1950	1900	1200	35	
			2200	2000	2000	1250	40	
			2300	2200	2150	1350	50	
			2450	2750	2650	1600	64	
			2650	3000	2900	1800	100	
Max. mechanical input speed[3]	n_{1max}	rpm	16000	14000	9500	8000		1
			16000	16000	14000	9500		2

Output torques			WPLN070	WPLN090	WPLN115	WPLN142	i[1]	p[2]
Emergency stop torque[4][5]	T_{2Stop}	Nm (lb_f.in)	80 (708)	200 (1770)	400 (3540)	800 (7081)	4	1
			100 (885)	200 (1770)	400 (3540)	800 (7081)	5	
			75 (664)	150 (1328)	300 (2655)	700 (6196)	7	
			75 (664)	150 (1328)	300 (2655)	700 (6196)	8	
			75 (664)	150 (1328)	300 (2655)	700 (6196)	10	
			150 (1328)	300 (2655)	650 (5753)	1600 (14161)	16	2
			150 (1328)	300 (2655)	650 (5753)	1600 (14161)	20	
			150 (1328)	300 (2655)	650 (5753)	1600 (14161)	25	
			120 (1062)	280 (2478)	600 (5310)	1200 (10621)	28	
			150 (1328)	300 (2655)	600 (5310)	1200 (10621)	32	
			130 (1151)	280 (2478)	650 (5753)	1500 (13276)	35	
			150 (1328)	300 (2655)	650 (5753)	1500 (13276)	40	
			150 (1328)	300 (2655)	600 (5310)	1200 (10621)	50	
			80 (708)	200 (1770)	380 (3363)	980 (8674)	64	
			50 (443)	120 (1062)	240 (2124)	580 (5133)	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 WPLN090 / 1-stage / smooth output shaft / 19 mm clamping system / motor adaptation – 2-part – round 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)			WPLN070	WPLN090	WPLN115	WPLN142	p(3)	Code
Axis offset	A1		10 (0.394)	14 (0.551)	20 (0.787)	26 (1.024)	1	
			10 (0.394)	10 (0.394)	14 (0.551)	20 (0.787)	2	
Pitch circle diameter output	D1		68 (2.677) - 75 (2.953)	85 (3.346)	120 (4.724)	165 (6.496)		
Mounting bore output	D2	4x	5.5 (0.217)	6.5 (0.256)	9.0 (0.354)	11.0 (0.433)		
Shaft diameter output	D3	k6	16 (0.630)	22 (0.866)	32 (1.260)	40 (1.575)		
Shaft collar output	D4		30 (1.181)	40 (1.575)	45 (1.772)	70 (2.756)	1	
			35 (1.378)	40 (1.575)	45 (1.772)	70 (2.756)	2	
Centering diameter output	D5	g7	60 (2.362)	70 (2.756)	90 (3.543)	130 (5.118)		
Diagonal dimension output	D7		92 (3.622)	100 (3.937)	140 (5.512)	185 (7.283)		
Max. diameter	D9		86 (3.386)	105 (4.134)	120 (4.724)	170 (6.693)	1	
			86 (3.386)	86 (3.386)	105 (4.134)	120 (4.724)	2	
Flange cross section output	Q1	■	70 (2.756)	80 (3.150)	110 (4.331)	142 (5.591)		
Total length	L1		137.5 (5.413)	165 (6.496)	218 (8.583)	273 (10.748)	1	
			185 (7.283)	207 (8.150)	248.5 (9.783)	342.5 (13.484)	2	
Housing length	L2		46.5 (1.831)	60.5 (2.382)	73.5 (2.894)	76 (2.992)	1	
			94 (3.701)	108 (4.252)	112 (4.409)	176 (6.929)	2	
Shaft length output	L3		48 (1.890)	56 (2.205)	88 (3.465)	110 (4.331)		
Centering depth output	L7		18 (0.709)	17.5 (0.689)	28 (1.102)	28 (1.102)	1	
			19 (0.748)	17.5 (0.689)	28 (1.102)	28 (1.102)	2	
Flange thickness output	L8		7 (0.276)	8 (0.315)	10 (0.394)	12 (0.472)		
Offset length	L9		43 (1.693)	48.5 (1.909)	56.5 (2.224)	87 (3.425)	1	
			43 (1.693)	43 (1.693)	48.5 (1.909)	56.5 (2.224)	2	
Min. overall height	L23		179 (7.047)	203.5 (8.012)	247.5 (9.744)	318 (12.520)	1	
			179 (7.047)	182.5 (7.185)	210 (8.268)	258.5 (10.177)	2	
Motor shaft diameter j6/k6	D20		More information on page 191/192					
Clamping system diameter input	D26		More information on page 142					
Output shaft with feather key (DIN 6885-1)			A 5x5x25	A 6x6x28	A 10x8x50	A 12x8x65		A
Feather key width (DIN 6885-1)	B1		5 (0.197)	6 (0.236)	10 (0.394)	12 (0.472)		
Shaft height including feather key (DIN 6885-1)	H1		18 (0.709)	24.5 (0.965)	35 (1.378)	43 (1.693)		
Shaft length from shoulder	L4		28 (1.102)	36 (1.417)	58 (2.283)	80 (3.150)		
Feather key length	L5		25 (0.984)	28 (1.102)	50 (1.969)	65 (2.559)		
Distance from shaft end	L6		2 (0.079)	4 (0.157)	4 (0.157)	8 (0.315)		
Center hole (DIN 332, type DR)	C		M5x12.5	M8x19	M12x28	M16x36		
Smooth output shaft								B
Shaft length from shoulder	L4		28 (1.102)	36 (1.417)	58 (2.283)	80 (3.150)		
Splined output shaft (DIN 5480)			W16x0.8x18x6m	W22x1.25x16x6m	W32x1.25x24x6m	W40x2.0x18x6m		C
Width of gearing	L_v		15 (0.591)	15 (0.591)	15 (0.591)	20 (0.787)		
Shaft collar output	L3		46 (1.811)	46 (1.811)	56 (2.205)	70 (2.756)		
Shaft length from shoulder	L4		26 (1.024)	26 (1.024)	26 (1.024)	40 (1.575)		
Center hole (DIN 332, type DR)	C		M5x12.5	M8x19	M12x28	M16x36		

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