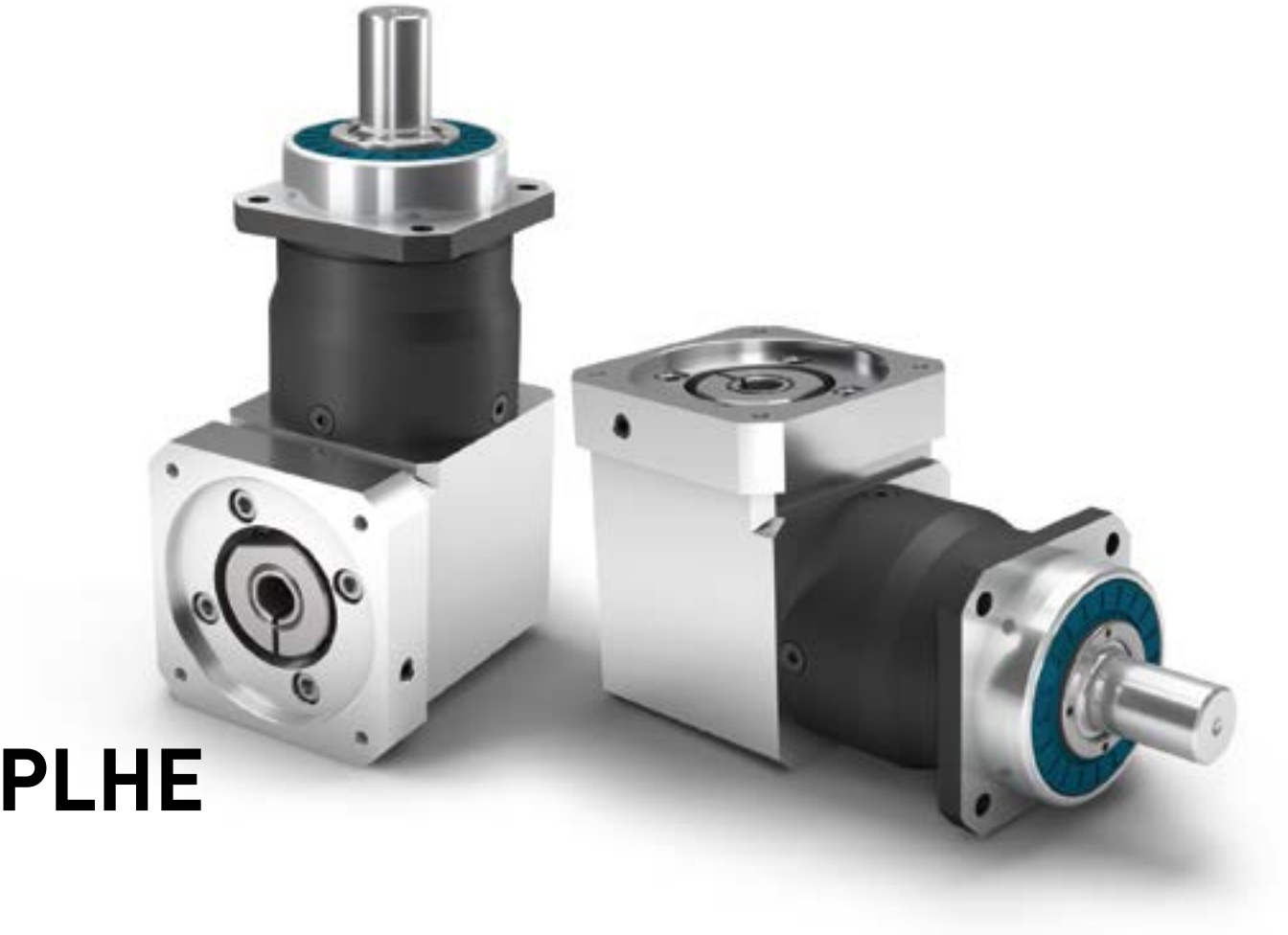


WPLHE

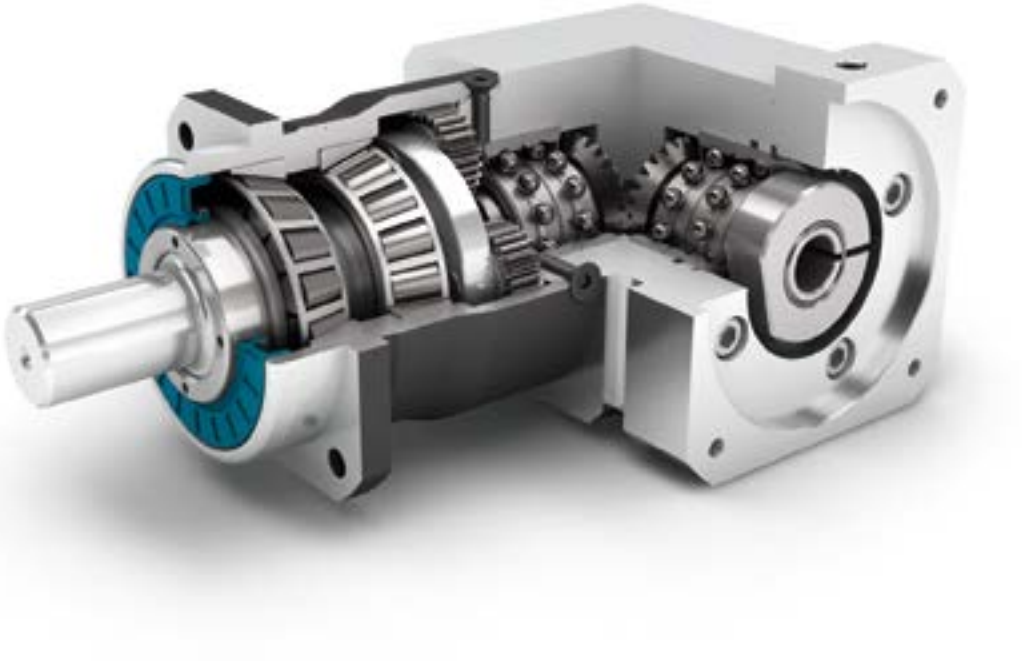
Economical and with a heavy-duty output bearing: The WPLHE right-angle gearbox

Axially space-saving, economical, IP65-compliant and designed for high radial and axial forces at the output: The **WPLHE** combines all the advantages of the successful PLHE, the world's first combination of the Economy and Precision gearboxes, as an right-angle variant.

Cyclic torque	**14 - 260 Nm**
Radial force	**3200 - 6000 N**
Axial force	**4400 - 8000 N**
Torsional backlash	**11 - 18 arcmin**
Protection class	**IP65**

Frame sizes

60 **80** **120**



- Economy Line
- Spur gear
- Square type output flange
- Rotary shaft seal
- Planet carrier in disc design
- Option: Rack and pinion Planetary gearbox (Details on page 158)
- Right angle gearbox
- Equidirectional rotation
- Bevel gear right angle stage
- Preloaded tapered roller bearings
- Extra long centering collar
- Option: Painted surface – RAL 9005 Jet black

Detailed explanations of the technical features starting on page 201.

Code	Gearbox characteristics			WPLHE060	WPLHE080	WPLHE120	p(1)
	Service life(2)	L_h	h	20,000			
	Efficiency(3)	η	%	94			
	Min. operating temperature	T_{min}	°C (°F)	-25 (-13)			
	Max. operating temperature	T_{max}		90 (194)			
	Protection class			IP65			
S	Standard lubrication			Grease (lifetime lubrication)			
F	Food grade lubrication			Grease (lifetime lubrication)			
	Installation position			Any			
S	Standard backlash	φ	arcmin	< 16	< 13	< 11	1
				< 18	< 15	< 13	2
	Torsional stiffness(3)	C_{2t}	Nm / arcmin (lb_f.in/ arcmin)	1.8 - 3.4 (16 - 30)	4.1 - 9.0 (36 - 80)	11.2 - 20.5 (99 - 181)	1
				2.5 - 4.5 (22 - 40)	7.3 - 12.1 (65 - 107)	16.7 - 27.0 (148 - 239)	2
	Gearbox weight(3)	m	kg (lb_m)	2.3 (5.0 - 5.1)	4.6 (10.0 - 10.1)	10.9 - 11.0 (23.9 - 24.2)	1
				2.5 (5.4 - 5.5)	5.0 - 5.1 (11.0 - 11.3)	12.5 - 12.8 (27.6 - 28.3)	2
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)	70	73	75	

Output shaft loads			WPLHE060	WPLHE080	WPLHE120	p(1)
Maximum radial force	$F_{r\,max}$	N (lb_f)	3200 (719)	5500 (1236)	6000 (1349)	
Maximum axial force	$F_{a\,max}$		3400 (764)	4500 (1012)	6500 (1461)	
Maximum tilting moment	$M_{K\,max}$	Nm (lb_f.in)	191 (1690)	383 (3393)	488 (4317)	

Input characteristics			WPLHE060	WPLHE080	WPLHE120	p(1)
Clamping system diameter input (Code)	D26	mm (in)	11 (C)	19 (E)(5)	24 (F)(5)	
			14 (D)(5)	-	-	
Mass moment of inertia input(3)(5)	J_1	kgcm² (lb_f. in.s²10⁻⁴)	0.231 - 0.413 (2.045 - 3.655)	0.873 - 1.346 (7.727 - 11.913)	2.656 - 3.795 (23.508 - 33.589)	1
			0.226 - 0.361 (2.000 - 3.195)	0.859 - 1.199 (7.603 - 10.612)	2.643 - 3.611 (23.393 - 31.960)	2
Average idle torque(3)(5)	T_0	Nm (lb_f.in)	0.30 - 0.65 (3 - 6)	0.60 - 1.20 (5 - 11)	1.10 - 2.20 (10 - 19)	1
			0.20 - 0.30 (2 - 3)	0.45 - 0.65 (4 - 6)	0.90 - 1.40 (8 - 12)	2
Maximum bending moment input	M_{b1}		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			WPLHE060	WPLHE080	WPLHE120	i(1)	p(2)
Cyclic torque(3)	T_{2Z}	Nm (lb_f.in)	14 (124)	40 (354)	78 (690)	3	1
			19 (168)	53 (469)	104 (920)	4	
			24 (212)	67 (593)	130 (1151)	5	
			25 (221)	65 (575)	135 (1195)	7	
			18 (159)	50 (443)	120 (1062)	8	
			15 (133)	38 (336)	95 (841)	10	
			43 (381)	120 (1062)	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	
			15 (133)	38 (336)	95 (841)	100	
Maximum torque(3)	T_{2max}	Nm (lb_f.in)	23 (204)	64 (566)	124 (1097)	3	1
			30 (266)	85 (752)	166 (1469)	4	
			38 (336)	107 (947)	205 (1814)	5	
			40 (354)	104 (920)	215 (1903)	7	
			28 (248)	80 (708)	192 (1699)	8	
			24 (212)	60 (531)	152 (1345)	10	
			69 (611)	182 (1611)	335 (2965)	9	2
			65 (575)	192 (1699)	415 (3673)	12	
			70 (620)	176 (1558)	365 (3231)	15	
			65 (575)	192 (1699)	415 (3673)	16	
			65 (575)	192 (1699)	415 (3673)	20	
			61 (540)	176 (1558)	365 (3231)	25	
			65 (575)	192 (1699)	415 (3673)	32	
			61 (540)	176 (1558)	365 (3231)	40	
			28 (248)	80 (708)	192 (1699)	64	
			24 (212)	60 (531)	152 (1345)	100	

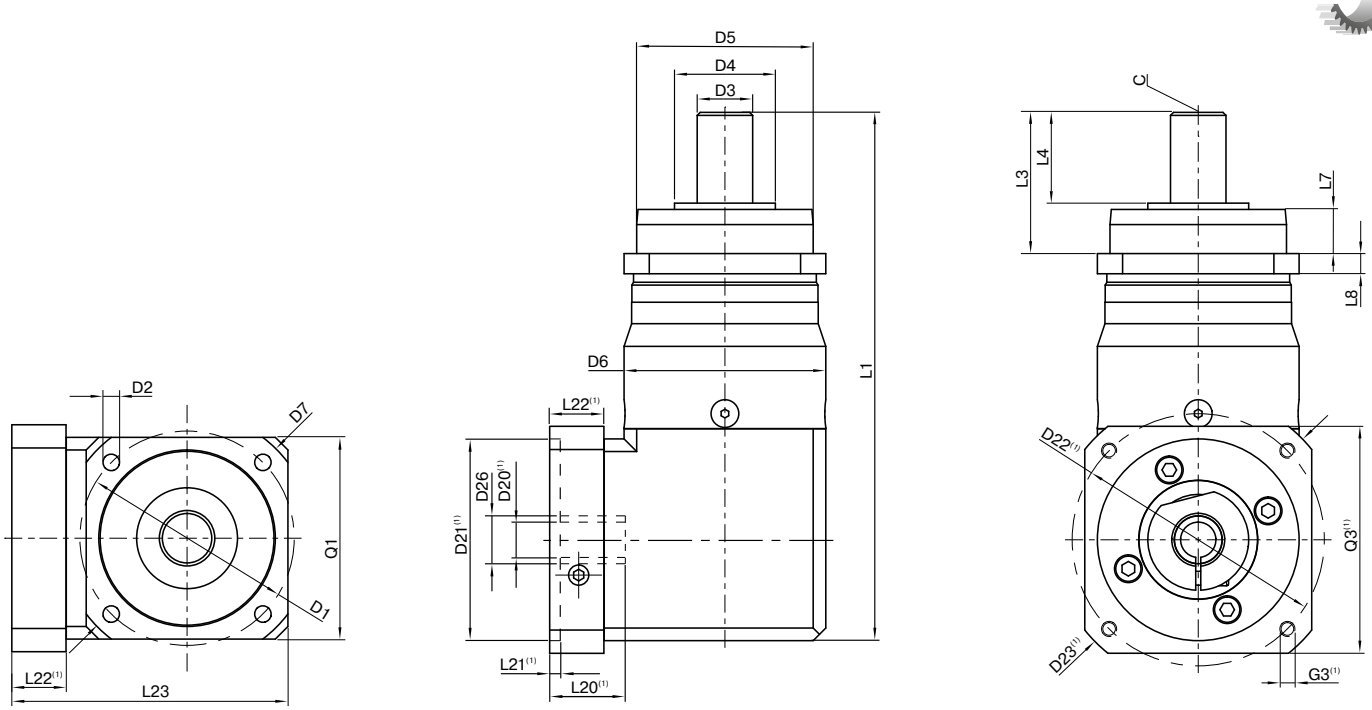
(1) Ratios ($i=n_1/n_2$)
(2) Number of stages
(3) Application specific configuration with NCP – www.neugart.com

Output torques			WPLHE060	WPLHE080	WPLHE120	i[1]	p[2]
Continuous torque[3]	T_{2D}	Nm (lb_f.in)	7 (62)	15.5 (137)	34 (301)	3	1
			8.5 (75)	19.5 (173)	43 (381)	4	
			10.5 (93)	23 (204)	53 (469)	5	
			15 (133)	32 (283)	75 (664)	7	
			15 (133)	36 (319)	86 (761)	8	
			12.5 (111)	32 (283)	80 (708)	10	
			20 (177)	42 (372)	107 (947)	9	2
			25 (221)	55 (487)	137 (1213)	12	
			32 (283)	68 (602)	168 (1487)	15	
			34 (301)	73 (646)	181 (1602)	16	
			37 (327)	91 (805)	220 (1947)	20	
			34 (301)	93 (823)	195 (1726)	25	
			37 (327)	102 (903)	220 (1947)	32	
			34 (301)	93 (823)	195 (1726)	40	
			15 (133)	42 (372)	102 (903)	64	
			12.5 (111)	32 (283)	80 (708)	100	

Input speeds			WPLHE060	WPLHE080	WPLHE120	i[1]	p[2]
Continuous input speed[3][4]	n_{1D}	rpm	3100	2750	3000	3	1
			3950	3300	3500	4	
			4500	3800	3500	5	
			4500	4000	3500	7	
			4500	4000	3500	8	
			4500	4000	3500	10	
			3900	3600	2550	9	2
			4500	3950	2900	12	
			4500	4000	3100	15	
			4500	4000	3000	16	
			4500	4000	3100	20	
			4500	4000	3500	25	
			4500	4000	3500	32	
			4500	4000	3500	40	
			4500	4000	3500	64	
			4500	4000	3500	100	
Max. mechanical input speed[3]	n_{1max}	rpm	13000	7000	6500		

Output torques			WPLHE060	WPLHE080	WPLHE120	i[1]	p[2]
Emergency stop torque[4][5]	T_{2Stop}	Nm (lb_f.in)	60 (531)	135 (1195)	300 (2655)	3	1
			80 (708)	180 (1593)	400 (3540)	4	
			80 (708)	220 (1947)	500 (4425)	5	
			80 (708)	178 (1575)	340 (3009)	7	
			80 (708)	190 (1682)	380 (3363)	8	
			70 (620)	170 (1505)	430 (3806)	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	
			80 (708)	220 (1947)	500 (4425)	40	
			80 (708)	190 (1682)	380 (3363)	64	
			75 (664)	200 (1770)	430 (3806)	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 WPLHE080 / 1-stage / smooth output shaft / 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)			WPLHE060	WPLHE080	WPLHE120	p(3)	Code
Pitch circle diameter output	D1		68 (2.677) - 75 (2.953)	85 (3.346)	120 (4.724)		
Mounting bore output	D2	4x	5.5 (0.217)	6.5 (0.256)	9.0 (0.354)		
Shaft diameter output	D3	k7	16 (0.630)	22 (0.866)	32 (1.260)		
Shaft collar output	D4		35 (1.378)	40 (1.575)	45 (1.772)		
Centering diameter output	D5	h7	60 (2.362)	70 (2.756)	90 (3.543)		
Housing diameter	D6		60 (2.362)	80 (3.150)	115 (4.528)		
Diagonal dimension output	D7		92 (3.622)	100 (3.937)	140 (5.512)		
Flange cross section output	Q1	■	70 (2.756)	80 (3.150)	110 (4.331)		
Total length	L1		168 (6.614)	209.5 (8.248)	272.5 (10.728)	1	
			180.5 (7.106)	227.5 (8.957)	300 (11.811)	2	
Shaft length output	L3		48 (1.890)	56 (2.205)	88 (3.465)		
Centering depth output	L7		19 (0.748)	18 (0.689)	28 (1.102)		
Flange thickness output	L8		7 (0.276)	8 (0.315)	10 (0.394)		
Min. overall height	L23		90.5 (3.563)	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 82				
Output shaft with feather key (DIN 6885-1)			A 5x5x25	A 6x6x28	A 10x8x50		A
Feather key width (DIN 6885-1)	B1		5 (0.197)	6 (0.236)	10 (0.394)		
Shaft height including feather key (DIN 6885-1)	H1		18 (0.709)	24,5 (0.965)	35 (1.378)		
Shaft length from shoulder	L4		28 (1.102)	36 (1.417)	58 (2.283)		
Feather key length	L5		25 (0.984)	28 (1.102)	50 (1.969)		
Distance from shaft end	L6		2 (0.079)	4 (0.157)	4 (0.157)		
Center hole (DIN 332, type DR)	C		M5x12.5	M8x19	M12x28		
Smooth output shaft							B
Shaft length from shoulder	L4		28 (1.102)	36 (1.417)	58 (2.283)		
Splined output shaft (DIN 5480)			W16x0.8x18x6m	W22x1.25x16x6m	W32x1.25x24x6m		C
Width of gearing	L_v		15 (0.591)	15 (0.591)	15 (0.591)		
Shaft length output	L3		46 (1.811)	46 (1.811)	56 (2.205)		
Shaft length from shoulder	L4		26 (1.024)	26 (1.024)	26 (1.024)		
Center hole (DIN 332, type DR)	C		M5x12.5	M8x19	M12x28		

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