

PLE□ - Serie

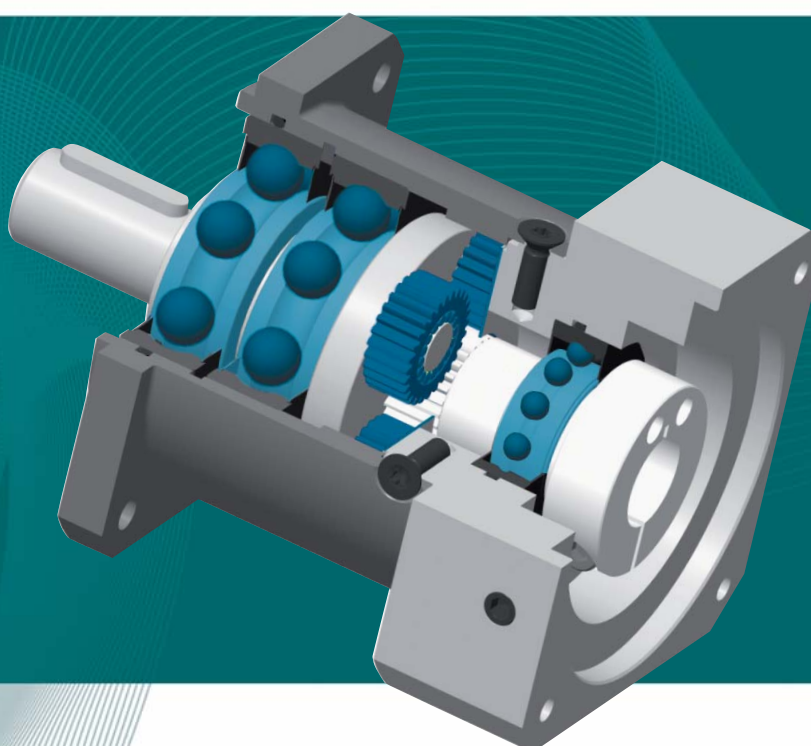
The base of the
Economy gearboxes
with square
output flange

The PLE series with square output flange. A strong alternative for additionally increased radial and axial forces

- Low backlash
- High output torque - the industry's highest torque density
- Balanced motor pinion
- High efficiency (up to 97%)
- 24 ratios 3:1 to 512:1
- Low noise
- Consistent quality (ISO 9001 and 14001)
- Operable in any mounting positions
- Lifetime lubrication
- Numerous options

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page **108** Options



PLE - line Technical data

Gearbox type		PLE	Z ⁽²⁾
Gearbox life at full load	h	30,000	
Efficiency at full load ⁽³⁾	%	97	1
		95	2
		91	3
Min. operating temp. ⁽⁴⁾	°C	-25	
Max. operating temp. ⁽⁴⁾		90	
Protection class		IP 54	
Lubrication		lifetime lubrication	
Mounting position		any	
Recommended motor flange / shaft tolerance		DIN 42955-N	

Type-Size		PLE 60/70	PLE 80/90	PLE 120/115	i ⁽¹⁾	Z ⁽²⁾
Nominal (rated continuous duty) Output torque T _{2N} ⁽⁵⁾⁽⁶⁾⁽⁷⁾	Nm	28	85	115	3	1
		38	115	155	4	
		40	110	195	5	
		25	65	135	7	
		18	50	120	8	
		15	38	95	10	
		44	130	210	9	2
		44	120	260	12	
		44	110	230	15	
		44	120	260	16	
		44	120	260	20	
		40	110	230	25	
		44	120	260	32	3
		40	110	230	40	
		18	50	120	64	
		44	110	260	60	
		44	120	260	80	
		44	120	260	100	
		44	110	230	120	
		44	120	260	160	
		40	110	230	200	
		44	120	260	256	
		40	110	230	320	
		18	50	120	512	

⁽¹⁾ Ratio ($i = n_{1 \text{ rpm high speed side}} / n_{2 \text{ rpm low speed side}}$)

⁽²⁾ Number of gear stages

⁽³⁾ Ratio dependent; based on $n_2 = 100$ rpm output shaft speed

⁽⁴⁾ Measured at the middle of the gearbox housing surface

⁽⁵⁾ Values reference output shaft speed $n_2 = 100$ rpm, S1= 100% duty cycle, $K_A = 1$ application factor and $T = 30^\circ\text{C}$, 86 F ambient temperature

⁽⁶⁾ Dependent on the motor shaft diameter

⁽⁷⁾ Keyed shaft subjected to dynamic unidirectional load

PLE - line Technical data

Type-Size		PLE 60/70	PLE 80/90	PLE 120/115	i ⁽¹⁾	Z ⁽²⁾	
Output torque sustainable 30,000 output shaft rotations ⁽³⁾⁽⁴⁾⁽⁵⁾⁽⁶⁾	Nm	45	136	184	3	1	
		61	184	248	4		
		64	176	312	5		
		40	104	216	7		
		29	80	192	8		
		24	61	152	10		
		70	208	336	9	2	
		70	192	416	12		
		70	176	368	15		
		70	192	416	16		
		70	192	416	20		
		64	176	368	25		
		70	192	416	32		
		64	176	368	40		
		29	80	192	64		
		70	176	416	60		
		70	192	416	80		3
		70	192	416	100		
		70	176	368	120		
		70	192	416	160		
		64	176	368	200		
		70	192	416	256		
		64	176	368	320		
		29	80	192	512		

⁽¹⁾ Ratio ($i = n_{1 \text{ rpm high speed side}} / n_{2 \text{ rpm low speed side}}$)

⁽²⁾ Number of gear stages

⁽³⁾ Values reference output shaft speed $n_2 = 100 \text{ rpm}$, $S1 = 100\%$ duty cycle, $K_A = 1$ application factor and $T = 30^\circ\text{C}$, 86 F ambient temperature

⁽⁴⁾ Dependent on the motor shaft diameter

⁽⁵⁾ Keyed shaft subjected to dynamic unidirectional load

⁽⁶⁾ Recommended gearbox operating temperature should not be exceeded, consult Neugart in case higher than listed rpm is required

PLE - line Technical data

Type-Size		PLE 60/70	PLE 80/90	PLE 120/115	Z ⁽²⁾
Standard backlash	arcmin	< 10	< 7	< 7	1
		< 12	< 9	< 9	2
		< 15	< 11	< 11	3
Fr for 20,000 h ⁽³⁾⁽⁴⁾	N	900	2050	2950	
Fa for 20,000 h ⁽³⁾⁽⁴⁾		1000	2500	2500	
Fr for 30,000 h ⁽³⁾⁽⁴⁾		700	1700	2400	
Fa for 30,000 h ⁽³⁾⁽⁴⁾		800	2000	2100	
Fr _{max.} ⁽³⁾⁽⁴⁾⁽⁸⁾		1500	2500	4000	
Fa _{max.} ⁽³⁾⁽⁴⁾⁽⁸⁾		1950	3800	3800	
Torsional stiffness	Nm / arcmin	2.3	6	12	1
		2.5	6.5	13	2
		2.5	6.3	12	3
Weight	kg	1.1	3.2	6.6	1
		1.3	3.7	8.6	2
		1.5	4.2	10.6	3
Running noise ⁽⁵⁾	dB(A)	58	60	65	
Max.recommend input speed ⁽⁶⁾	min ⁻¹	13000	7000	6500	

Type-Size		PLE 60/70	PLE 80/90	PLE 120/115	i ⁽¹⁾	Z ⁽²⁾
Emergency stop torque ⁽⁷⁾	Nm	66	180	390	3	1
		88	240	520	4	
		80	220	500	5	
		80	178	340	7	
		80	190	380	8	
		80	200	480	10	
		88	260	500	9	2
		88	240	520	12	
		88	220	500	15	
		88	240	520	16	
		88	240	520	20	
		80	220	500	25	
		88	240	520	32	3
		80	220	500	40	
		80	190	380	64	
		88	220	520	60	
		88	240	520	80	
		88	240	520	100	
		88	220	500	120	
		88	240	520	160	
		80	220	500	200	
		88	240	520	256	
		80	220	500	320	
		80	190	380	512	

⁽¹⁾ Ratio ($i = n_{1 \text{ rpm high speed side}} / n_{2 \text{ rpm low speed side}}$)

⁽²⁾ Number of gear stages

⁽³⁾ Values reference output shaft speed $n_2 = 100 \text{ rpm}$, $S_1 = 100\%$ duty cycle, $K_A = 1$ application factor and $T = 30^\circ\text{C}$, 86 F ambient temperature

⁽⁴⁾ Measured at the middle of the output shaft

⁽⁵⁾ Sound pressure level measured 1 m from the gearbox for ratio 5:1 at 3000 input rpm and no load

⁽⁶⁾ Recommended gearbox operating temperature should not be exceeded, consult Neugart in case higher than listed rpm is required

⁽⁷⁾ Permissible about 1000 times during the gearbox life

⁽⁸⁾ Depending on the specified input torque, radial and axial loads, cycle and required bearing life, deviating or in some cases higher values are possible. We recommend accurate dimensioning by means of NCP or in coordination with Neugart.

PLE - line Technical data

Type-Size		PLE 60/70	PLE 80/90	PLE 120/115	i ⁽¹⁾
Mass moment of inertia ⁽²⁾	kgcm ²	0.135	0.770	2.630	3
		0.093	0.520	1.790	4
		0.078	0.450	1.530	5
		0.072	0.420	1.410	7
		0.065	0.390	1.320	8
		0.131	0.740	2.620	9
		0.064	0.390	1.300	10
		0.127	0.720	2.560	12
		0.077	0.710	2.530	15
		0.088	0.500	1.750	16
		0.075	0.440	1.500	20
		0.075	0.440	1.490	25
		0.064	0.390	1.300	32
		0.064	0.390	1.300	40
		0.076	0.510	2.570	60
		0.064	0.390	1.300	64
		0.075	0.500	1.500	80
		0.075	0.440	1.490	100
		0.064	0.700	2.500	120
		0.064	0.390	1.300	160
0.064	0.390	1.300	200		
0.064	0.390	1.300	256		
0.064	0.390	1.300	320		
0.064	0.390	1.300	512		

Type-Size		PLE 60/70	PLE 80/90	PLE 120/115	i ⁽¹⁾
Max. middle input speed at T _{2N} and S1 ⁽³⁾⁽⁴⁾	min ⁻¹	4500 ⁽⁵⁾	3400 ⁽⁵⁾	3400 ⁽⁵⁾	3
		4500 ⁽⁵⁾	3450 ⁽⁵⁾	3500 ⁽⁵⁾	4
		4500	4000 ⁽⁵⁾	3500 ⁽⁵⁾	5
		4500	4000	3500	7
		4500	4000	3500	8
		4500	4000 ⁽⁵⁾	3500 ⁽⁵⁾	9
		4500	4000	3500	10
		4500	4000 ⁽⁵⁾	3500 ⁽⁵⁾	12
		4500	4000	3500	15
		4500	4000	3500 ⁽⁵⁾	16
		4500	4000	3500	20
		4500	4000	3500	25
		4500	4000	3500	32
		4500	4000	3500	40
		4500	4000	3500	60
		4500	4000	3500	64
		4500	4000	3500	80
		4500	4000	3500	100
		4500	4000	3500	120
		4500	4000	3500	160
4500	4000	3500	200		
4500	4000	3500	256		
4500	4000	3500	320		
4500	4000	3500	512		

⁽¹⁾ Ratio (i=n_{1 rpm high speed side}/n_{2 rpm low speed side})

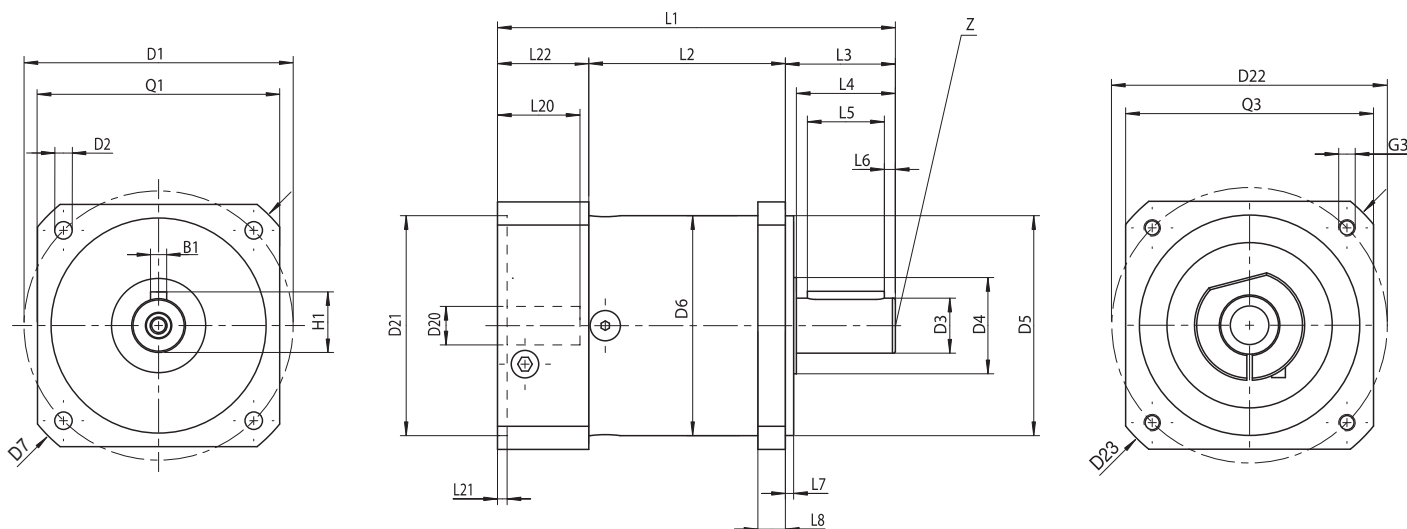
⁽²⁾ The moment of inertia relates to the high speed side (typically motor shaft)

⁽³⁾ Recommended gearbox operating temperature should not be exceeded, consult Neugart in case higher than listed rpm is required

⁽⁴⁾ Exact definition see page 123

⁽⁵⁾ Max. middle input speed at 50% T_{2N} and S1

PLE - line Dimensions



2 and 3 stage drawing available in the TEC Data Finder under www.neugartusa.com

Type-Size		PLE 60/70	PLE 80/90	PLE 120/115	Z ⁽²⁾
All dimensions in mm					
B1 Key DIN 6885 T1		5	6	8	
D1 Flange bolt hole circle		75	100	130	
D2 Mounting bolt hole diameter	4x	5.5	6.5	8.5	
D3 Output shaft diameter	h7	16	20	25	
D4 Output shaft collar diameter		20	35	35	
D5 Pilot diameter	h7	60	80	110	
D7 Output flange diagonal		92	116	145	
D6 Housing diameter		60	80	115	
D20 Motor mounting hole diameter ⁽¹⁾⁽⁴⁾		9	14	19	
D21 Motor centering pilot diameter ⁽¹⁾		40	80	95	
D22 Hole circle diameter ⁽¹⁾		63	100	115	
D23 Motor matching adapter diagonal ⁽¹⁾		80	115	145	
G3 Mounting hole thread x depth ⁽¹⁾	4x	M5x8	M6x15	M8x20	
H1 Key DIN 6885 T1		18	22.5	28	
L1 Overall length ⁽³⁾		111.5	145	201.5	1
		124	162.5	229.5	2
		136.5	180	257	3
L2 Main-body length		55	71.5	99	1
		67.5	89	127	2
		80	106.5	154.5	3
L3 Output shaft length from mounting face		32	40	55	
L4 Output shaft length from collar		28	36	50	
L14 Key length		20	28	40	
L6 Distance from shaft end		4	4	5	
L7 Pilot length		3	3	4	
L8 Flange width		10	10	15	
L20 Reference motor shaft length ⁽³⁾		23	30	40	
L21 Motor pilot depth		2.5	3.5	3.5	
L22 Reference motor adapter flange width ⁽³⁾		24.5	33.5	47.5	
Q1 Min. Flange square		70	90	115	
Q3 Min. Flange square ⁽¹⁾	□	60	90	115	
Z Center bore, DIN 332, page 2, form DR		M5x12.5	M6x16	M10x22	

⁽¹⁾ Dimensions reference to the mounted motor-type

⁽²⁾ Number of gear stages

⁽³⁾ For longer motor shaft > L20,
actual minimal L22 dimension = L22 + (Motor shaft length - L20) ; L1 = L2 + L3 + L22

⁽⁴⁾ For shaft fit j6 to k6