

Economical Planetary Gearheads - PE

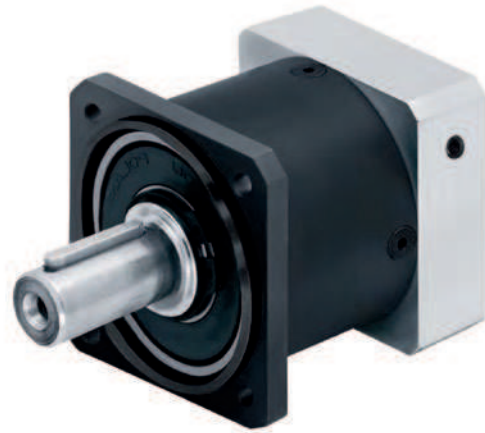
Overview

Description

The PE is the perfect economy gearbox. This planetary gearbox was especially designed for all applications where a considerably low backlash is not of vital importance.

Features

- Excellent price/performance ratio
- Input speeds up to 18000 min⁻¹
- Low backlash
- High output torques
- PCS-2 system
- High efficiency (96 %)
- 15 ratios $i=3...64$
- Low noise
- High quality (ISO 9001)
- Any fitting position possible
- Simple motor fitting
- Lubricated for life
- Direction of rotation equidirectional
- Balanced motor pinion



Technical Characteristics Overview

Features	Unit	Division
Geometry		Planetary Gearheads
Type		Inline
Drives sizes	[mm]	40, 60, 90, 115, 155
Maximum input speed	[min ⁻¹]	up to 18000
Nominal torque	[Nm]	460
Radial force	[N]	up to 4600
Service life	[h]	30 000
Minimum backlash	[arcmin]	< 7

Layout / Features

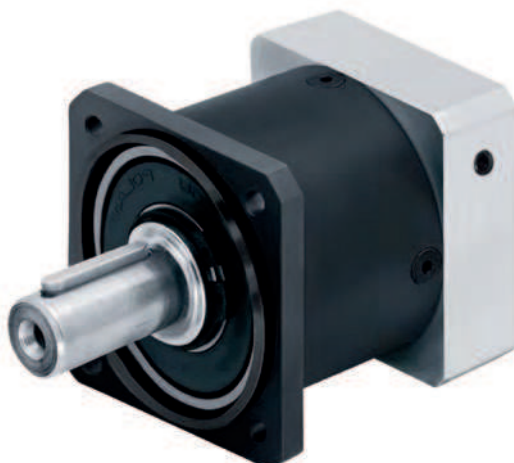
PE2 / PE3

The Economy gearbox with round output flange



PE4 / PE5

The Economy gearbox with square output flange



PE7

Gearbox for high torque applications (in combination with ETH125 electro cylinder)



Technical Data

Parameter	Unit	Ratio	PE2	PE3	PE4	PE5	PE7	
Nominal torque $T_{nom r}$ / Maximum permissible acceleration torque $T_{acc r}$ / Emergency stop torque $T_{em r}^{(5)}$ $T_{nom r} / T_{acc r} / T_{em r}^{(5)}$ (1)(2)(3)(4)	[Nm]	1 step	3	11/17.5/22.5	28/45/66	85/136/180	115/184/390	-
			4	15/24/30	38/61/88	115/184/240	155/248/520	460/736/920
			5	14/22/36	40/64/80	110/176/220	195/312/500	445/712/890
			7	8.5/13.5/26	25/40/80	65/104/178	135/216/340	-
			8	6/10/27	18/29/80	50/80/190	120/192/380	-
		2 step	10	5/8/27	15/24/80	38/61/200	95/152/480	210/336/420
			9	16.5/26/33	44/70/88	130/208/260	210/336/500	-
			12	20/32/40	44/70/88	120/192/240	260/416/520	-
			15	18/29/36	44/70/88	110/176/220	230/368/500	-
			16	20/32/40	44/70/88	120/192/240	260/416/520	460/736/920
			20	20/32/40	44/70/88	120/192/240	260/416/520	460/736/920
			25	18/29/36	40/64/80	110/176/220	230/368/500	445/712/890
			32	20/32/40	44/70/88	120/192/240	260/416/520	-
			40	18/29/36	40/64/80	110/176/220	230/368/500	460/736/920
50		-	-	-	445/712/890			
64	7.5/12/27	18/29/80	50/80/190	120/192/380	-			
Nominal drive speed at $T_{nom r}$ $N_{nom r}^{(6)}$	[min ⁻¹]	3	5000	4500	3400*	3400*	-	
		4	5000	4500	3450*	3500*	1800*	
		5	5000	4500	4000*	3500*	2150*	
		7	5000	4500	4000	3500	-	
		8	5000	4500	4000	3500	-	
		9	5000	4500	4000*	3500*	-	
		10	5000	4500	4000	3500	3000	
		12	5000	4500	4000*	3500*	-	
		15	5000	4500	4000	3500*	-	
		16	5000	4500	4000	3500*	2900*	
20...64	5000	4500	4000	3500	3000 (* for ratio 20,25)			
Maximum mechanical input speed $N_{max r}^{(6)}$	[min ⁻¹]	3...64	18 000	13 000	7 000	6 500	5 500	
Maximum radial force $P_{r_{max}}^{(1)(7)}$	[N]		160	340	1 700	2 400	4 600	
Maximum axial force $P_{a_{max}}^{(1)(7)}$	[N]		160	450	2 000	2 100	6 000	
Lifetime	[h]		30 000 (lifetime lubrication)					
Backlash	[arcmin]	(1 step)	< 15	< 10	< 7	< 7	< 8	
		(2 step)	< 19	< 12	< 9	< 9	< 10	

(1) the data refer to an output shaft speed of $n_2=100 \text{ min}^{-1}$ and application factor $KA=1$ as well as S1 operating mode for electrical machines and $T=30 \text{ }^\circ\text{C}$

(2) dependent on the respective motor shaft diameter

(3) with keyway: for dynamic loads

(4) permitted for 30 000 revolutions of the output shaft

(5) permitted 1000 times

(6) permitted operating temperatures may not be exceeded.

(7) referred to the center of the output shaft

* at 50 % $T_{nom r}$ and S1

Technical Characteristics

Parameter	Unit	Ratio	PE2	PE3	PE4	PE5	PE7	
Efficiency at full load ⁽⁸⁾	%	(1 step)	97					
		(2 step)	95					
Noise level at 3000 min⁻¹ ⁽⁹⁾	[dB (A)]		58	58	60	65	70	
Torsional stiffness ⁽⁹⁾	[Nm/arcmin]	(1 step)	0.7 - 1	1.7 - 2.3	5.2 - 7	11.3 - 15.2	38.5 - 52	
		(2 step)	0.8 - 1	1.9 - 2.3	5.7 - 7	12.3 - 15.2	39.5 - 52	
Operating temperature ⁽¹⁰⁾	[°C]		-25 ... +90					
Lubrication			Lifetime lubrication					
Orientation			Any					
Direction of Rotation			Same as input					
Product Enclosure Rating			IP54					
Moment of inertia ⁽¹¹⁾	[kgmm ²]	1 step	3	3.1	13.5	77	263	-
			4	2.2	9.3	52	179	707.3
			5	1.9	7.8	45	153	604.6
			7	1.8	7.2	42	141	-
			8	1.7	6.5	39	132	-
			10	1.6	6.4	39	130	466.3
		2 step	9	3.0	13.1	74	262	-
			12	2.9	12.7	72	256	-
			15	2.3	7.7	71	253	-
			16	2.2	8.8	50	175	615.6
			20	1.9	7.5	44	150	519.4
			25	1.9	7.5	44	149	514.7
			32	1.7	6.4	39	130	-
			40	1.6	6.4	39	130	445.4
50		-	-	-	975.4			
64	1.6	6.4	39	130	-			
Weight	[kg]	(1 step)		0.9	3.2	6.6	16.5	
		(2 step)		1.1	3.7	8.6	20.5	

⁽⁸⁾ depends on the ratio

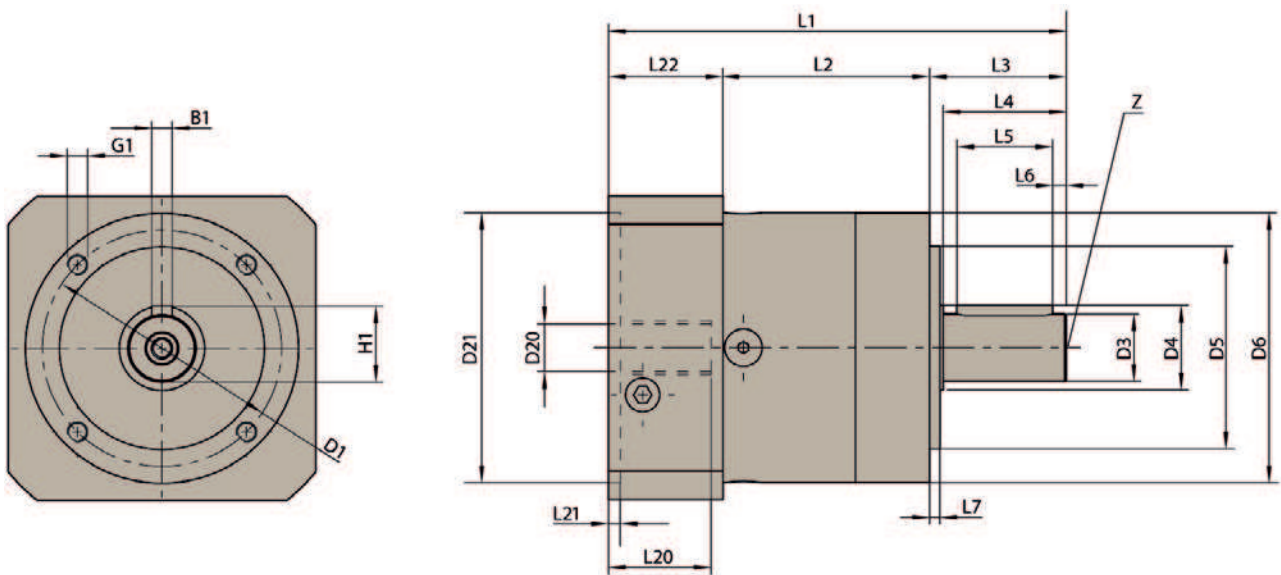
⁽⁹⁾ Noise level at a distance of 1 m; measured at a drive speed of $n_1=3000 \text{ min}^{-1}$ without load; $i=5$

⁽¹⁰⁾ referred to the center of the housing surface

⁽¹¹⁾ Inertia refers to the input shaft and to the standard motor shaft diameter D20

Dimensions

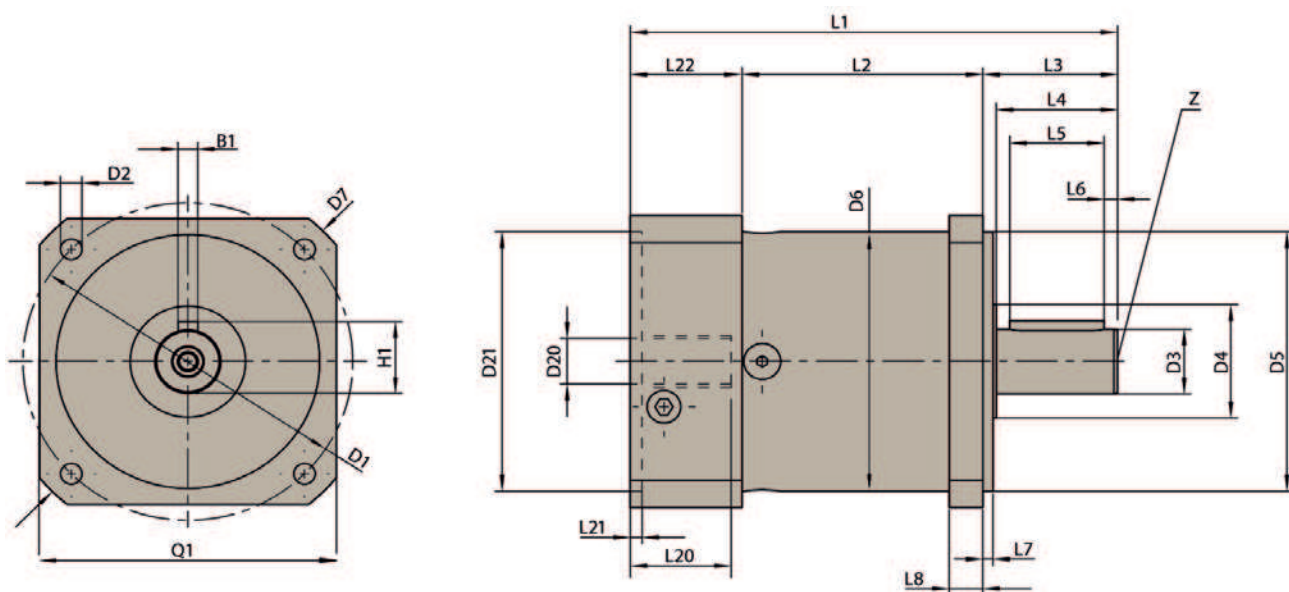
PE2 / PE3



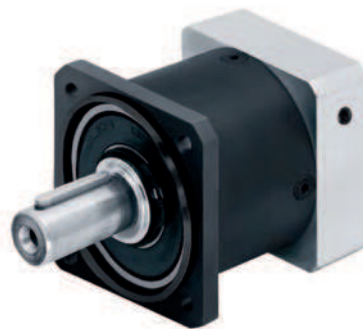
All dimensions in mm		PE2	PE3	
B1	Keyway DIN 6885 T1	3	5	
D1	Flange bolt circle	34	52	
D2	Mounting bore	-	-	
D3	Shaft diameter	10	14	
D4	Shaft collar	12	17	
D5	Centering	26	40	
D6	Housing diameter	40	60	
D20	Hole	6	9	
D21	Centering diameter for motor	30	40	
G1	Tapped hole x depth	M4x6	M5x8	
H1	Keyway DIN 6885 T1	11.2	16	
L1	Overall length	1 step	93.5	106.5
		2 step	106.5	119
L2	Housing length	1 step	39	47
		2 step	52	59.5
L3	Input shaft end	26	35	
L4	Shaft end to collar	23	30	
L5	Length of keyway	18	25	
L6	Distance to shaft end	2.5	2.5	
L7	Pilot	2	3	
L8	Flange width	-	-	
L22	Motor flange length	28.5	24.5	
Q1	Flange cross section	-	-	
Z	Centering bore DIN332, sheet 2, form DR	M3x9	M5x12	



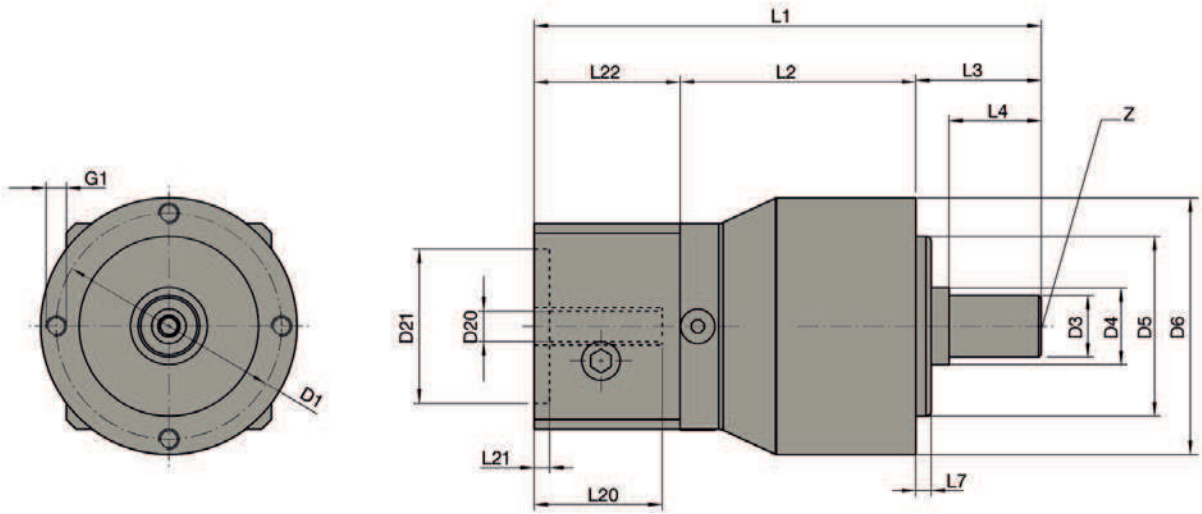
PE4, PE5



All dimensions in mm		PE4	PE5	
B1	Keyway DIN 6885 T1	6	8	
D1	Flange bolt circle	100	130	
D2	Mounting bore	6.5	8.5	
D3	Shaft diameter	20	25	
D4	Shaft collar	35	35	
D5	Centering	80	110	
D6	Housing diameter	80	115	
D20	Hole	14	19	
D21	Centering diameter for motor	80	95	
G1	Tapped hole x depth	-	-	
H1	Keyway DIN 6885 T1	22.5	28	
L1	Overall length	1 step	145	201.5
		2 step	162.5	229.5
L2	Housing length	1 step	71.5	99
		2 step	89	127
L3	Input shaft end	40	55	
L4	Shaft end to collar	36	50	
L5	Length of keyway	28	40	
L6	Distance to shaft end	4	5	
L7	Pilot	3	4	
L8	Flange width	10	15	
L22	Motor flange length	33.5	47.5	
Q1	Flange cross section	90	115	
Z	Centering bore DIN332, sheet 2, form DR	M6x16	M10x22	



PE7



All dimensions in mm		PE7	
D1	Flange bolt circle	140	
D2	Mounting bore	-	
D3	Shaft diameter	40	
D4	Shaft collar	55	
D5	Centering	120	
D6	Housing diameter	155	
D20	Hole		
D21	Centering diameter for motor		
G1	Tapped hole x depth	M10x20	
L1	Overall length	1 step	
		2 step	
L2	Housing length	1 step	100
		2 step	144.5
L3	Input shaft end	97	
L4	Shaft end to collar	82	
L7	Pilot	8	
L8	Flange width	-	
L22	Motor flange length		
Q1	Flange cross section	-	
Z	Centering bore DIN332, sheet 2, form DR	M16x36	



Motor Gearhead Combination

	Motor 1	Motor 2	Motor 3	Order Code (Gearhead)	Mounting thread G3
PE2	SMH40			PE2 XXX 10 M 030/046/06/25	M4
PE3	SMH60/B08/09		MH056/B05/09	PE3 XXX 10 M 040/063/09/20	M5
			MH056/B05/11	PE3 XXX 10 M 040/063/11/23	M5
	NX205/NX210			PE3 XXX 10 M 040/063/11/25	M5
	SMH60/B05/11	NX310	MH070/B05/11	PE3 XXX 10 M 060/075/11/23	M5
			MH070/B05/14	PE3 XXX 10 M 060/075/14/30	M5
	SY56 (NEMA 23)			PE3 XXX 10 M 038/066/06/21	M5
	SY87 (NEMA 34)			PE3 XXX 10 M 073/098/09/32	M6
PE4	SMH60/B05/11	NX310	MH070/B05/11	PE4 XXX 10 M 060/075/11/23	M5
	SMH82/B08/14			PE4 XXX 10 M 080/100/14/30	M6
	SMH82/B08/19	NX420/NX430	MH105/B09/19	PE4 XXX 10 M 080/100/19/40	M6
	SMH82/B05/19	SMH100/B05/19	MH105/B05/19	PE4 XXX 10 M 095/115/19/40	M8
	SY107 (NEMA 42)			PE4 XXX 10 M 055/125/15/32	M8
	SY87 (NEMA 34)			PE4 XXX 10 M 073/098/09/32	M6
PE5	MH105/B09/19	NX420/NX430		PE5 XXX 10 M 080/100/19/40	M6
	SMH82/B05/19	SMH100/B05/19	MH105/B05/19	PE5 XXX 10 M 095/115/19/40	M6
	SMH100/B05/24	SMH115/B09/24	MH105/B05/24	PE5 XXX 10 M 095/115/24/50	M8
	SMH115/B07/24	NX620/NX630	MH105/B06/24	PE5 XXX 10 M 110/130/24/50	M8
	SMH115/B05/24		MH145/B05/24	PE5 XXX 10 M 130/165/24/50	M10
PE7	SMH170/B05/38	MH205/B05/38		PE7 XXX 16 M 180/215/38/80	M12

Bold = Preferred motor gearhead combinations
 Only for motors with mounting bores (no mounting thread)
 Other mounting possibilities available on request (please contact Parker)

Order Code

PE Gearheads

	1	2	3	4	5	6	7	8	9
Order example	PE	3	003	10	M	038	063	06	20

1 Gearhead Type	PE	Economy planetary gearbox
2 Gearhead Size	2	PE2
	3	PE3
	4	PE4
	5	PE5
	7	PE7
3 Ratio	003	3
	...	4, 5, 7, 8, 9, 10, 12, 15, 16, 20, 25, 32, 40, 50
	064	64
4 Output shaft	16	without keyway
	10	with keyway (not possible for PE7)
5 Motor connection flange	M	
6 Pilot diameter	038	38 mm
	...	
	180	180mm
7 Pilot Center Diameter PCD	063	63 mm
	...	
	215	215 mm
8 Shaft diameter	06	6 mm
	...	
	42	38 mm
9 Motor shaft length	20	20 mm
	...	
	110	110 mm