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	-
			10	5/8/27	15/24/80	38/61/200	95/152/480	210/336/420
		2 step	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	460736/920
			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		18000	13000	7000	6500	5500
Maximum radial force Pr_{max} [1] [7]	[N]			160	340	1700	2400	4600
Maximum axial force Pa_{max} [1] [7]	[N]			160	450	2000	2100	6000
Lifetime	[h]			30000 (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 min^{-1} and application factor KA=1 as well as S1 operating mode for electrical machines and T=30 °C
[2] dependent on the respective motor shaft diameter
[3] with keyway: for dynamic loads
[4] permitted for 30000 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

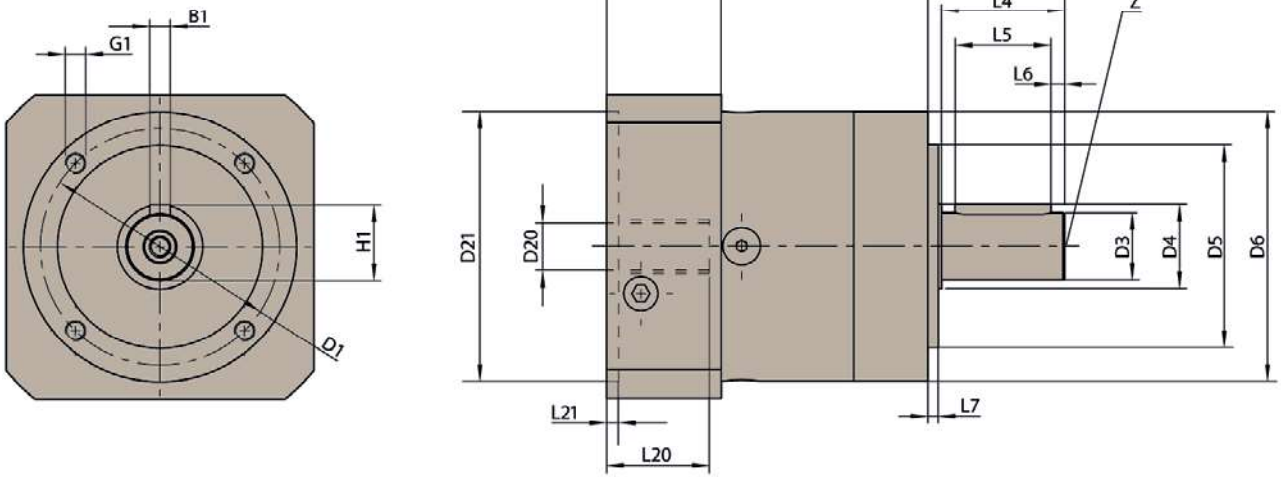
Technical Characteristics

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 [8]	[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 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

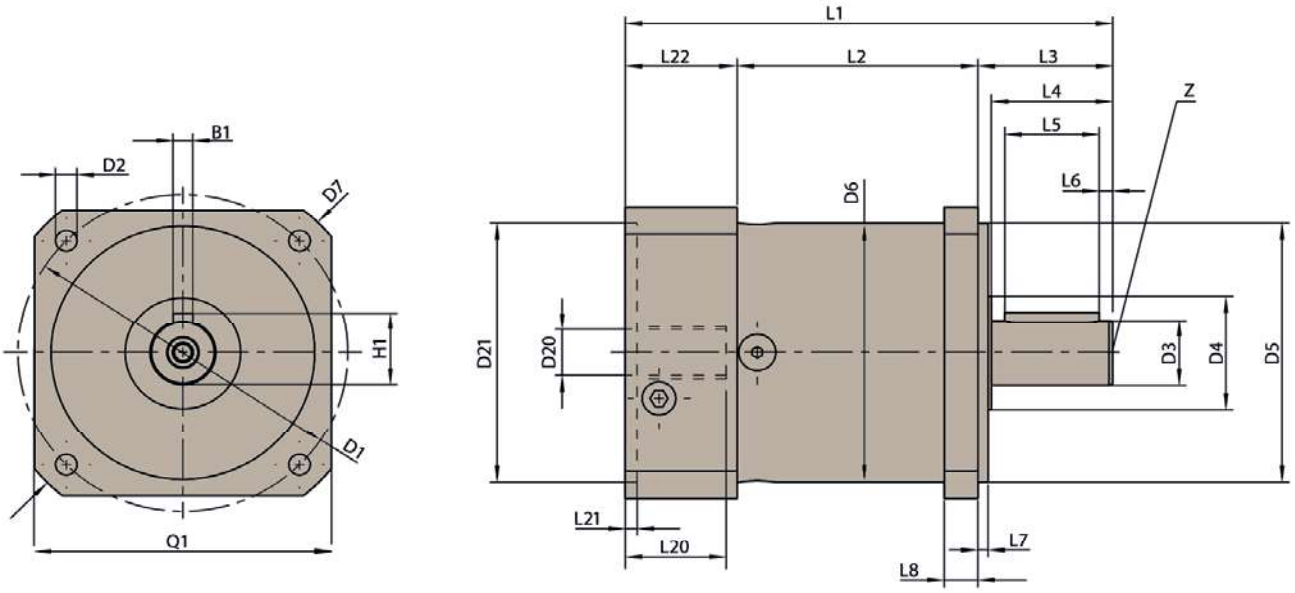
Dimensions

PE2 / PE3



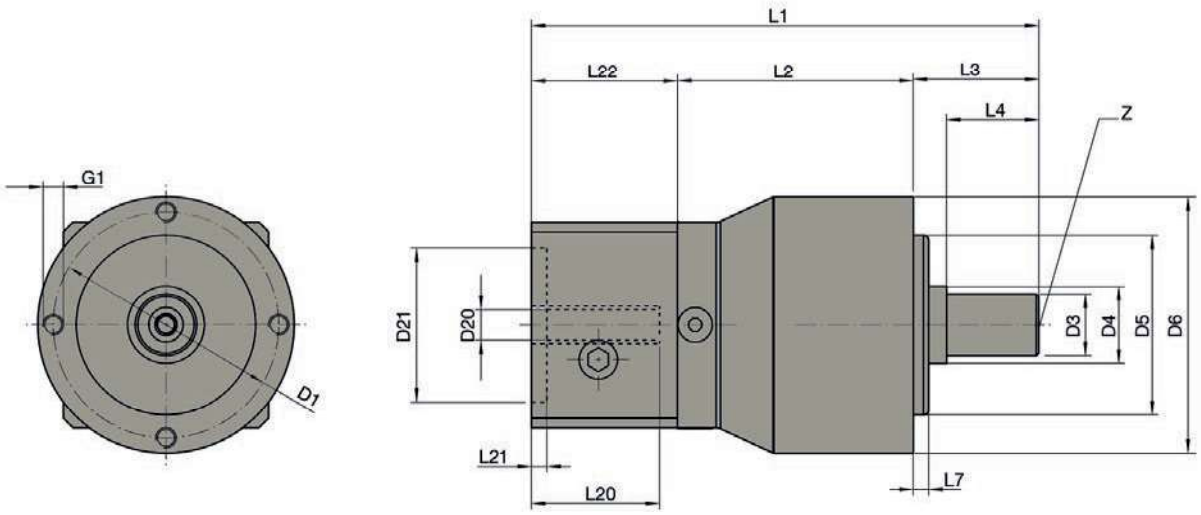
All dimensions in mm			PE2	PE3
B1	Keyway DIN 6885 T1		3	5
D1	Flange bolt circle		34	52
D2	Mounting bore		-	-
D3	Shaft diameter		10	14
D4	Shaft collar		12	17
D5	Centering		26	40
D6	Housing diameter		40	60
D20	Hole		6	9
D21	Centering diameter for motor		30	40
G1	Tapped hole x depth		M4x6	M5x8
H1	Keyway 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