

PSFN

## The precision planetary gearbox for maximum loads with particularly quiet drive and flange output shaft

Thanks to its standardized flange interface, our **PSFN** can be installed easily and reliably. Our Neugart-designed helical teeth makes additional noise absorption measures absolute. Thanks to its high tilting moment, you may demand the utmost from this precision planetary gearbox.

### 1 Easy, reliable, fast

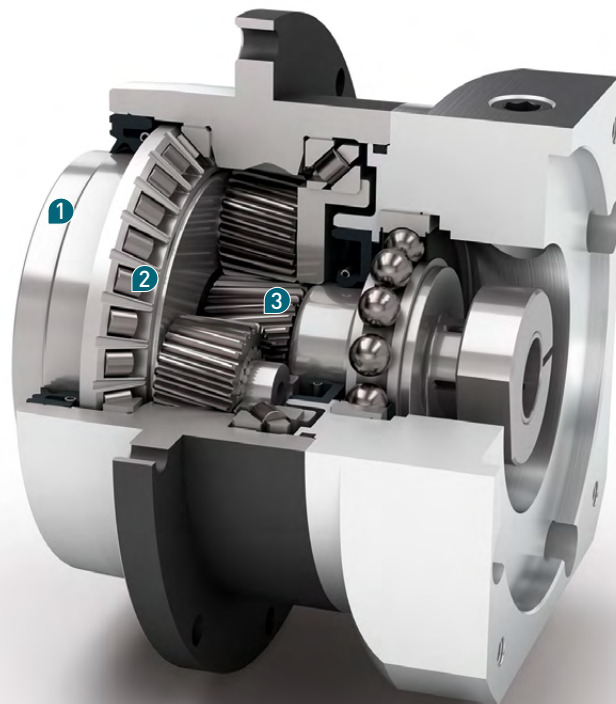
Fitted with an EN ISO 9409-1 flange interface, the **PSFN** lets you install drive components quickly and easily like flange pinion, pulley, or turntable. The optional dowel hole provides additional secureness during fitting.

### 2 Particularly quiet drive

The **PSFN** runs particularly quiet. Thanks to the helical teeth we have developed, you need not think about noise absorption measures for your machine. This saves you money.

### 3 Maximized loads

Thanks to its high tilting moment, you can subject the **PSFN** to the highest radial and axial forces. This has genuine benefits for the design of turntables or rack and pinion assemblies – and all this, of course, with the best performance.



- + Minimized backlash for maximized precision (< 1 arcmin)
- + For any mounting position
- + Individual adaptation of the input flange to the motor
- + Lifetime lubrication for maintenance-free operation
- + Equidirectional rotation
- + Clamping systems with optimized mass moment of inertia

Code	Gearbox characteristics			PSFN064	PSFN090	PSFN110	PSFN140	PSFN200	z <sup>(1)</sup>	
	Service life	t <sub>L</sub>	h	20,000						
	Service life at T <sub>2N</sub> x 0.88			30,000						
	Efficiency at full load <sup>(2)</sup>	η	%	97					1	
				96					2	
	Min. operating temperature	T <sub>min</sub>	°C (°F)	-25 (-13)						
	Max. operating temperature	T <sub>max</sub>		90 (194)						
	Protection class				IP 65					
<b>S</b>	Standard lubrication				Oil					
<b>F</b>	Food grade lubrication				Oil					
<b>L</b>	Low temperature lubrication <sup>(3)</sup>				Oil					
	Installation position				Any					
<b>S</b>	Standard backlash	j <sub>t</sub>	arcmin	< 3					1	
				< 5					2	
<b>R</b>	Reduced backlash				< 2	< 1	< 1	< 1	< 1	
	Torsional stiffness <sup>(2)</sup>	c <sub>g</sub>	Nm/arcmin (lb <sub>r</sub> .in/ arcmin)	8.9 - 12.0 (79 - 106)	24.5 - 33.0 (217 - 292)	61.0 - 82.0 (540 - 726)	142.0 - 190.0 (1257 - 1682)	455.0 - 610.0 (4027 - 5399)	1	
					9.1 - 12.0 (81 - 106)	24.0 - 31.5 (212 - 279)	60.0 - 79.0 (531 - 699)	139.0 - 182.0 (1230 - 1611)		445.0 - 585.0 (3938 - 5177)
	Gearbox weight	m <sub>G</sub>	kg (lb <sub>m</sub> )	1.5 (3.3)	3 (6.6)	6.5 (14.3)	12 (26.5)	28.3 (62.4)	1	
					2.2 (4.9)	4 (8.8)	8 (17.6)	13.5 (29.8)	32 (70.6)	2
<b>S</b>	Standard surface				Housing: Steel – nitrocarburized and post-oxidized (black)					
	Running noise <sup>(4)</sup>	Q <sub>g</sub>	dB(A)	57	58	63	66	68		
	Max. bending moment based on the gearbox input flange <sup>(5)</sup>	M <sub>b</sub>	Nm (lb <sub>r</sub> .in)	18 (159)	38 (336)	80 (708)	180 (1593)	300 (2655)	1	
					18 (159)	18 (159)	38 (336)	80 (708)	180 (1593)	2
	Motor flange precision				DIN 42955-R					

Output shaft loads			PSFN064	PSFN090	PSFN110	PSFN140	PSFN200	z <sup>(1)</sup>
Radial force for 20,000 h <sup>(6)(7)</sup>	F <sub>r 20.000 h</sub>	N (lb <sub>r</sub> )	2400 (540)	4400 (990)	5500 (1238)	12000 (2700)	23000 (5175)	
Axial force for 20,000 h <sup>(6)(7)</sup>	F <sub>a 20.000 h</sub>		4300 (968)	8200 (1845)	9500 (2138)	8500 (1913)	16000 (3600)	
Radial force for 30,000 h <sup>(6)(7)</sup>	F <sub>r 30.000 h</sub>		2100 (473)	3900 (878)	4800 (1080)	11000 (2475)	21000 (4725)	
Axial force for 30,000 h <sup>(6)(7)</sup>	F <sub>a 30.000 h</sub>		3800 (855)	7200 (1620)	8400 (1890)	7500 (1688)	14000 (3150)	
Static radial force <sup>(7)(8)</sup>	F <sub>r Stat</sub>		2400 (540)	4400 (990)	5500 (1238)	12000 (2700)	23000 (5175)	
Static axial force <sup>(7)(8)</sup>	F <sub>a Stat</sub>		4300 (968)	8200 (1845)	9500 (2138)	8500 (1913)	16000 (3600)	
Tilting moment for 20,000 h <sup>(6)(8)</sup>	M <sub>K 20.000 h</sub>	Nm (lb <sub>r</sub> .in)	147 (1301)	361 (3195)	534 (4726)	1030 (9116)	2445 (21638)	
Tilting moment for 30,000 h <sup>(6)(8)</sup>	M <sub>K 30.000 h</sub>		129 (1142)	320 (2832)	466 (4124)	944 (8354)	2232 (19753)	

Moment of inertia			PSFN064	PSFN090	PSFN110	PSFN140	PSFN200	z <sup>(1)</sup>
Mass moment of inertia <sup>(2)</sup>	J	kgcm <sup>2</sup> (lb <sub>r</sub> .in.s <sup>2</sup> 10 <sup>-4</sup> )	0.128 - 0.188 (1.133 - 1.664)	0.342 - 0.611 (3.027 - 5.407)	0.892 - 1.741 (7.894 - 15.408)	6.526 - 9.670 (57.755 - 85.580)	22.520 - 40.642 (199.302 - 359.682)	1
			0.124 - 0.180 (1.097 - 1.593)	0.125 - 0.197 (1.106 - 1.743)	0.325 - 0.587 (2.876 - 5.195)	0.853 - 1.836 (7.549 - 16.249)	6.434 - 10.410 (56.941 - 92.129)	2

(1) Number of stages  
(2) The ratio-dependent values can be retrieved in Tec Data Finder – www.neugart.com  
(3) T<sub>min</sub> = -40°C (-40°F). Optimal operating temperature max. 50°C (122°F)  
(4) Sound pressure level from 1 m, measured on input running at n<sub>1</sub>=3000 rpm no load; i=5  
(5) Max. motor weight\* in kg = 0.2 x M<sub>o</sub> / motor length in m  
\* with symmetrically distributed motor weight  
\* with horizontal and stationary mounting  
(6) These values are based on an output shaft speed of n<sub>2</sub>=100 rpm  
(7) Based on the end of the output shaft  
(8) Other (sometimes higher) values following changes to T<sub>2N</sub>, F<sub>r</sub>, F<sub>a</sub>, cycle, and service life of bearing. Application specific configuration with NCP – www.neugart.com

Output torques			PSFN064	PSFN090	PSFN110	PSFN140	PSFN200	$i^{(1)}$	$z^{(2)}$				
Nominal output torque <sup>(3)</sup>	$T_{2N}$	Nm (lb.in)	39 (345)	80 (708)	180 (1593)	470 (4160)	950 (8408)	4	1				
			40 (354)	80 (708)	175 (1549)	405 (3584)	950 (8408)	5					
			37 (327)	78 (690)	175 (1549)	355 (3142)	900 (7965)	7					
			28 (248)	59 (522)	140 (1239)	305 (2699)	750 (6638)	10					
			39 (345)	80 (708)	180 (1593)	450 (3983)	950 (8408)	16	2				
			39 (345)	80 (708)	180 (1593)	450 (3983)	950 (8408)	20					
			40 (354)	80 (708)	175 (1549)	405 (3584)	950 (8408)	25					
			40 (354)	80 (708)	175 (1549)	405 (3584)	950 (8408)	35					
			39 (345)	80 (708)	180 (1593)	470 (4160)	950 (8408)	40					
			40 (354)	80 (708)	175 (1549)	405 (3584)	950 (8408)	50					
			37 (327)	78 (690)	175 (1549)	355 (3142)	900 (7965)	70					
			28 (248)	59 (522)	140 (1239)	305 (2699)	750 (6638)	100					
			Max. output torque <sup>(4)</sup>	$T_{2max}$	Nm (lb.in)	62 (549)	128 (1133)	288 (2549)		752 (6655)	1520 (13452)	4	1
						64 (566)	128 (1133)	280 (2478)		648 (5735)	1520 (13452)	5	
59 (522)	125 (1106)	280 (2478)				568 (5027)	1440 (12744)	7					
45 (398)	94 (832)	224 (1982)				488 (4319)	1200 (10620)	10					
62 (549)	128 (1133)	288 (2549)				720 (6372)	1520 (13452)	16	2				
62 (549)	128 (1133)	288 (2549)				720 (6372)	1520 (13452)	20					
64 (566)	128 (1133)	280 (2478)				648 (5735)	1520 (13452)	25					
64 (566)	128 (1133)	280 (2478)				648 (5735)	1520 (13452)	35					
62 (549)	128 (1133)	288 (2549)				752 (6655)	1520 (13452)	40					
64 (566)	128 (1133)	280 (2478)				648 (5735)	1520 (13452)	50					
59 (522)	125 (1106)	280 (2478)				568 (5027)	1440 (12744)	70					
45 (398)	94 (832)	224 (1982)				488 (4319)	1200 (10620)	100					

<sup>(1)</sup> Ratios ( $i=n_1/n_2$ )  
<sup>(2)</sup> Number of stages  
<sup>(3)</sup> Application specific configuration with NCP – [www.neugart.com](http://www.neugart.com)  
<sup>(4)</sup> 30,000 rotations of the output shaft permitted; see page 128

Output torques			PSFN064	PSFN090	PSFN110	PSFN140	PSFN200	i <sup>(1)</sup>	z <sup>(2)</sup>		
Emergency stop torque <sup>(3)</sup>	T <sub>2Stop</sub>	Nm (lb <sub>f</sub> .in)	120 (1062)	280 (2478)	650 (5753)	1650 (14603)	3200 (28320)	4	1		
			130 (1151)	280 (2478)	650 (5753)	1650 (14603)	3200 (28320)	5			
			80 (708)	175 (1549)	340 (3009)	1300 (11505)	3200 (28320)	7			
			90 (797)	200 (1770)	480 (4248)	600 (5310)	1700 (15045)	10			
			150 (1328)	300 (2655)	650 (5753)	1650 (14603)	3200 (28320)	16			
			150 (1328)	300 (2655)	650 (5753)	1650 (14603)	3200 (28320)	20			
					150 (1328)	300 (2655)	650 (5753)	1650 (14603)	3200 (28320)	25	2
					150 (1328)	300 (2655)	650 (5753)	1650 (14603)	3200 (28320)	35	
					150 (1328)	300 (2655)	650 (5753)	1650 (14603)	3200 (28320)	40	
					150 (1328)	300 (2655)	650 (5753)	1650 (14603)	3200 (28320)	50	
					80 (708)	175 (1549)	340 (3009)	1300 (11505)	3200 (28320)	70	
					90 (797)	200 (1770)	480 (4248)	600 (5310)	1700 (15045)	100	

Input speeds			PSFN064	PSFN090	PSFN110	PSFN140	PSFN200	i <sup>(1)</sup>	z <sup>(2)</sup>						
Average thermal input speed at T <sub>2N</sub> and S1 <sup>(4)(5)</sup>	n <sub>1N</sub>	rpm	3200 <sup>(6)</sup>	2400 <sup>(6)</sup>	1800 <sup>(6)</sup>	1100 <sup>(6)</sup>	750 <sup>(6)</sup>	4	1						
			3800 <sup>(6)</sup>	2950 <sup>(6)</sup>	2250 <sup>(6)</sup>	1350 <sup>(6)</sup>	950 <sup>(6)</sup>	5							
			4500	3800 <sup>(6)</sup>	2950 <sup>(6)</sup>	1800 <sup>(6)</sup>	1250 <sup>(6)</sup>	7							
			4500	4000	3500	2300 <sup>(6)</sup>	1700 <sup>(6)</sup>	10							
			4500	4500	3800 <sup>(6)</sup>	2450 <sup>(6)</sup>	1550 <sup>(6)</sup>	16							
			4500	4500	4000	3050 <sup>(6)</sup>	1900 <sup>(6)</sup>	20							
					4500	4500	4000	3350 <sup>(6)</sup>	2050 <sup>(6)</sup>	25	2				
					4500	4500	4000	3500	2650 <sup>(6)</sup>	35					
					4500	4500	4000	3500	3000 <sup>(6)</sup>	40					
					4500	4500	4000	3500	3000	50					
					4500	4500	4000	3500	3000	70					
					4500	4500	4000	3500	3000	100					
					Max. mechanical input speed <sup>(4)</sup>	n <sub>1Limit</sub>	rpm	14000	10000	8500		6500	6000		1
								14000	14000	10000		8500	6500		2

<sup>(1)</sup> Ratios (i=n<sub>1</sub>/n<sub>2</sub>)

<sup>(2)</sup> Number of stages

<sup>(3)</sup> Permitted 1000 times

<sup>(4)</sup> Application-specific speed configurations with NCP – www.neugart.com

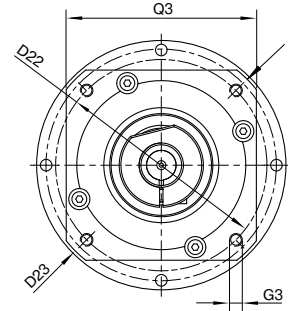
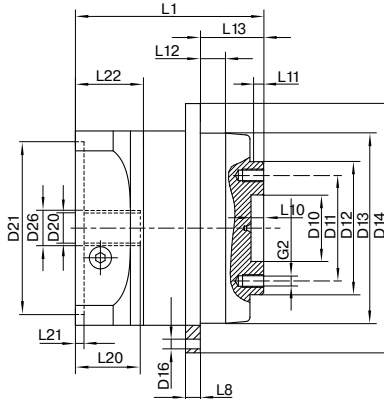
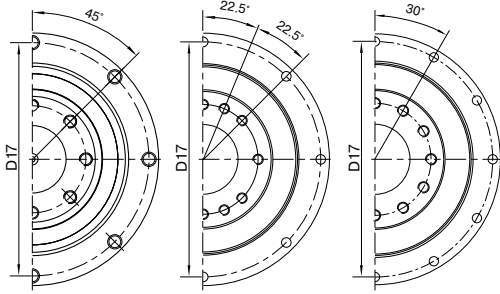
<sup>(5)</sup> See page 128 for the definition

<sup>(6)</sup> Average thermal input speed at 50% T<sub>2N</sub> and S1

PSFN064  
PSFN090

PSFN110

PSFN140  
PSFN200



Drawing corresponds to a PSFN090 / 1-stage / flange output shaft / 14 mm clamping system / motor adaptation – 2-part – round universal flange / B5 flange type motor  
All other variants can be retrieved in the Tec Data Finder at [www.neugart.com](http://www.neugart.com)

Geometry <sup>(1)</sup>			PSFN064	PSFN090	PSFN110	PSFN140	PSFN200	z <sup>(2)</sup>	Code	
Centering diameter output shaft	D10	H7	20 (0.787)	31.5 (1.240)	40 (1.575)	50 (1.969)	80 (3.150)			
Pitch circle diameter output shaft	D11		31.5 (1.240)	50 (1.969)	63 (2.480)	80 (3.150)	125 (4.921)			
Centering diameter output shaft	D12	h7	40 (1.575)	63 (2.480)	80 (3.150)	100 (3.937)	160 (6.299)			
Centering diameter output flange	D13		64 (2.520)	90 (3.543)	110 (4.331)	140 (5.512)	200 (7.874)			
Flange diameter output	D14		86 (3.386)	118 (4.646)	145 (5.709)	179 (7.047)	247 (9.724)			
Mounting bore output	D16		4.5 8x45°	5.5 8x45°	5.5 8x45°	6.6 12x30°	9 12x30°			
Pitch circle diameter output flange	D17		79 (3.110)	109 (4.291)	135 (5.315)	168 (6.614)	233 (9.173)			
Min. total length	L1		71 (2.795)	89.5 (3.524)	108 (4.252)	142 (5.591)	172 (6.772)	1		
			99.5 (3.917)	111.5 (4.390)	130 (5.118)	173 (6.811)	217 (8.543)	2		
Flange thickness output	L8		4 (0.157)	7 (0.276)	8 (0.315)	10 (0.394)	12 (0.472)			
Centering depth output shaft	L10		4.5 (0.177)	6.5 (0.256)	6.5 (0.256)	6.5 (0.256)	10 (0.394)			
Centering depth output shaft	L11		3 (0.118)	6 (0.236)	6 (0.236)	6 (0.236)	7 (0.276)			
Centering depth output flange	L12		10 (0.394)	12 (0.472)	12 (0.472)	14 (0.551)	17.5 (0.689)			
Output flange length	L13		19.5	30.0	29.0	38.0	50.0			
Clamping system diameter input	D26	More information on page 117								
Motor shaft diameter j6/k6	D20	The dimensions vary with the motor/gearbox flange. The input flange geometries can be retrieved for each specific motor in Tec Data Finder at <a href="http://www.neugart.com">www.neugart.com</a>								
Max. permis. motor shaft length	L20									
Min. permis. motor shaft length										
Centering diameter input	D21									
Centering depth input	L21									
Pitch circle diameter input	D22									
Motor flange length	L22									
Diagonal dimension input	D23									
Mounting thread x depth	G3									4x
Flange cross section input	Q3									■
Flange output shaft (similar EN ISO 9409-1)									D	
Number x thread x depth	G2		8 x M5x7	8 x M6x10	12 x M6x12	12 x M8x15	12 x M10x20			
Flange output shaft with dowel hole (EN ISO 9409-1)									E	
Dowel hole x depth	D15	H7	5x5	6x6	6x6	8x8	10x10			
Number x thread x depth	G2		7 x M5x7	7 x M6x10	11 x M6x12	11 x M8x15	11 x M10x20			

<sup>(1)</sup> Dimensions in mm (in)

<sup>(2)</sup> Number of stages