



PSFN

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

Thanks to its standardized flange interface and a planet carrier in a cage design, our **PSFN** is extremely torsionally rigid. The specially developed helical gearing reduces vibrations to a minimum. With its high tilting moment, you can demand a lot from this precision planetary gearbox.

Nominal output torque **14 - 950 Nm**



Radial force **1600 - 23000 N**



Axial force **3550 - 16000 N**



Torsional backlash **1 - 8 arcmin**



Protection class **IP65**



Frame sizes

55

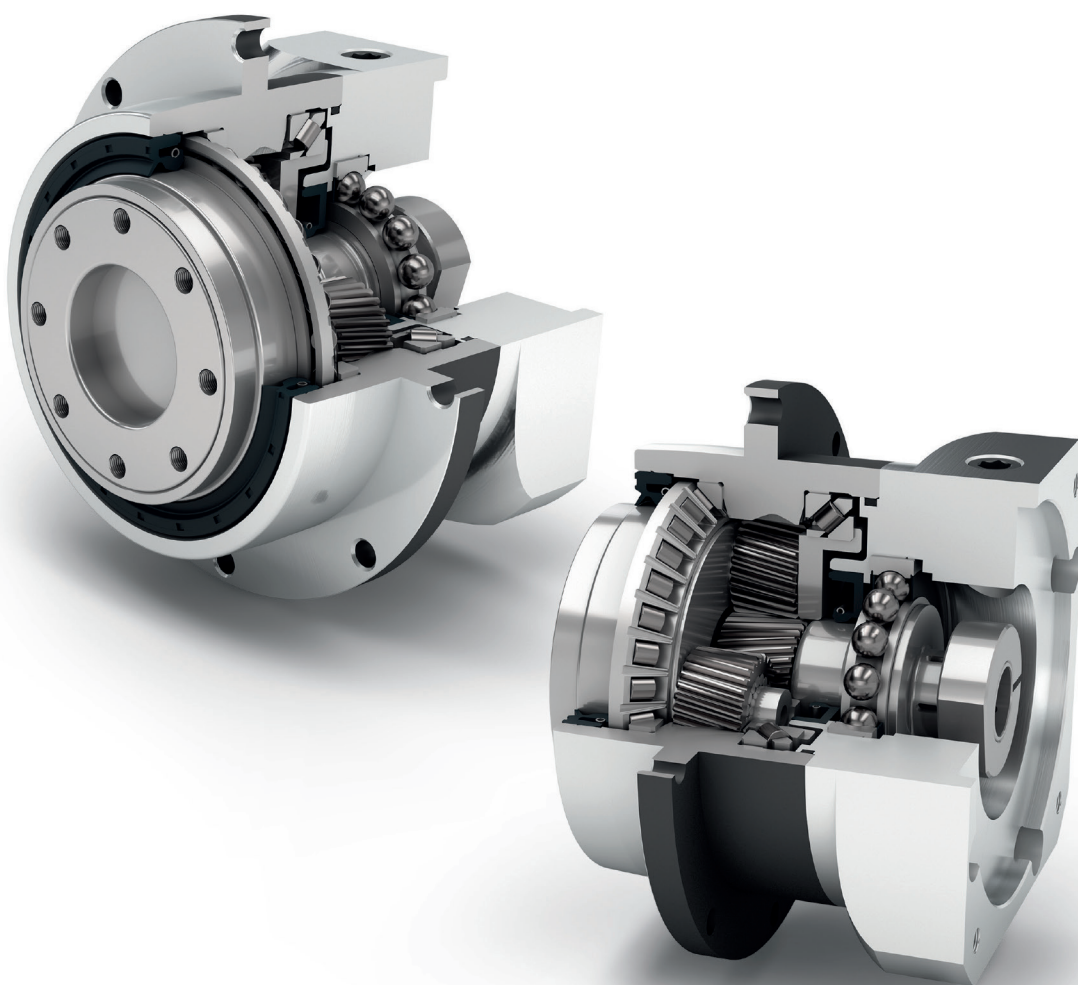
64

90

110

140

200



Precision Line



Equidirectional rotation



Extra large round type output flange



Rotary shaft seal



Planet carrier in cage design



Option: Planetary gearbox with mounted pinion on page 132



Coaxial gearbox



Helical gear



Preloaded angular contact roller bearings



Flange output shaft (ISO 9409-1)



Option: Reduced backlash



Option: Painted surface
– RAL 9005 Jet black

Detailed explanations of the technical features starting on page 173.

Code	Gearbox characteristics			PSFN055	PSFN064	PSFN090	PSFN110	PSFN140	PSFN200	p ⁽¹⁾
	Service life (L _{10h})	t _L	h	20,000						
	Service life at T _{2N} × 0,88			30,000						
	Efficiency at full load ⁽²⁾	η	%	97						1
				96						2
	Min. operating temperature	T _{min}	°C (°F)	-25 (- 13)						
	Max. operating temperature	T _{max}		90 (194)						
	Protection class			IP65						
S	Standard lubrication			Oil (lifetime lubrication)						
F	Food grade lubrication			Oil (lifetime lubrication)						
L	Low temperature lubrication ⁽³⁾			Oil (lifetime lubrication)						
	Installation position			Any						
S	Standard backlash	j _t	arcmin	< 6	< 3	< 3	< 3	< 3	< 3	1
				< 8	< 5	< 5	< 5	< 5	< 5	2
R	Reduced backlash			< 4	< 2	< 1	< 1	< 1	< 1	1
				< 6	< 2	< 1	< 1	< 1	< 1	2
	Torsional stiffness ⁽²⁾	C _g	Nm /arcmin (lb _r .in/ arcmin)	2.8 - 6.2 (25 - 55)	8.2 - 11.8 (73 - 104)	21.0 - 27.5 (186 - 243)	55.0 - 62.0 (487 - 549)	129.0 - 218.0 (1142 - 1929)	374.0 - 602.0 (3310 - 5328)	1
				2.8 - 6.5 (25 - 58)	8.2 - 13.3 (73 - 118)	21.0 - 31.0 (186 - 274)	64.0 - 81.0 (566 - 717)	127.0 - 201.0 (1124 - 1779)	365.0 - 668.0 (3231 - 5912)	2
	Gearbox weight ⁽²⁾	m _G	kg (lb _m)	0.7 (1.6)	1.3 - 1.4 (2.9 - 3.0)	2.9 - 3.0 (6.4 - 6.6)	4.9 - 5.1 (10.8 - 11.2)	11.5 - 11.7 (25.3 - 25.9)	28.1 - 29.1 (62.0 - 64.2)	1
				1.1 (2.3 - 2.4)	2.0 (4.3 - 4.5)	3.5 (7.6 - 7.8)	6.1 - 6.3 (13.5 - 13.9)	12.9 - 13.3 (28.3 - 29.2)	32.4 - 33.6 (71.4 - 74.2)	2
S	Standard surface			Housing: Steel – heat-treated and post-oxidized (black)						
B	Painted surface			RAL 9005 Jet black						
	Running noise ⁽⁴⁾	Q _g	dB(A)	56	57	58	63	66	68	
	Max. bending moment based on the gearbox input flange ⁽⁵⁾	M _b	Nm (lb _r .in)	10 (89)	18 (159)	38 (336)	80 (708)	180 (1593)	300 (2655)	1
				10 (89)	18 (159)	18 (159)	38 (336)	80 (708)	180 (1593)	2

Output shaft loads			PSFN055	PSFN064	PSFN090	PSFN110	PSFN140	PSFN200	p ⁽¹⁾
Radial force for 20,000 h ⁽⁶⁾⁽⁷⁾	$F_{r,20,000 h}$	N (lb _f)	1450 (326)	2150 (483)	3950 (888)	4900 (1102)	12000 (2698)	23000 (5171)	
Axial force for 20,000 h ⁽⁶⁾⁽⁷⁾	$F_{a,20,000 h}$		2350 (528)	4300 (967)	8200 (1843)	9500 (2136)	8500 (1911)	16000 (3597)	
Radial force for 30,000 h ⁽⁶⁾⁽⁷⁾	$F_{r,30,000 h}$		1400 (315)	1900 (427)	3500 (787)	4350 (978)	11000 (2473)	21000 (4721)	
Axial force for 30,000 h ⁽⁶⁾⁽⁷⁾	$F_{a,30,000 h}$		2350 (528)	3800 (854)	7200 (1619)	8400 (1888)	7500 (1686)	14000 (3147)	
Maximum radial force ⁽⁷⁾⁽⁸⁾	$F_{r,Stat}$		1450 (326)	2150 (483)	3950 (888)	4900 (1102)	12000 (2698)	23000 (5171)	
Maximum axial force ⁽⁷⁾⁽⁸⁾	$F_{a,Stat}$		2350 (528)	4300 (967)	8200 (1843)	9500 (2136)	8500 (1911)	16000 (3597)	
Tilting moment for 20,000 h ⁽⁶⁾⁽⁸⁾	$M_{K,20,000 h}$	Nm (lb _f .in)	75 (667)	132 (1170)	326 (2888)	475 (4207)	1030 (9113)	2445 (21639)	
Tilting moment for 30,000 h ⁽⁶⁾⁽⁸⁾	$M_{K,30,000 h}$		73 (644)	117 (1036)	289 (2558)	422 (3735)	944 (8355)	2232 (19755)	

Moment of inertia			PSFN055	PSFN064	PSFN090	PSFN110	PSFN140	PSFN200	p ⁽¹⁾
Mass moment of inertia ⁽²⁾	J	kgcm ² (lb _f .in.s ² 10 ⁻⁴)	0.097 - 0.117 (0.859 - 1.036)	0.128 - 0.188 (1.133 - 1.664)	0.342 - 0.611 (3.027 - 5.408)	0.892 - 1.741 (7.895 - 15.409)	6.526 - 9.670 (57.760 - 85.587)	22.520 - 40.642 (199.319 - 359.712)	1
			0.095 - 0.109 (0.841 - 0.965)	0.124 - 0.180 (1.097 - 1.593)	0.125 - 0.197 (1.106 - 1.744)	0.325 - 0.587 (2.876 - 5.195)	0.853 - 1.836 (7.550 - 16.250)	6.434 - 10.410 (56.946 - 92.136)	2

⁽¹⁾ Number of stages

⁽²⁾ The ratio-dependent values can be retrieved in Tec Data Finder – www.neugart.com

⁽³⁾ T_{min} = -40°C. Optimal operating temperature max. 50°C

⁽⁴⁾ Sound pressure level from 1 m, measured on input running at n_1 =3000 rpm no load; i =5

⁽⁵⁾ Max. motor weight* in kg = $0.2 \times M_b$ / 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_2 =100 rpm

⁽⁷⁾ Based on the end of the output shaft

⁽⁸⁾ Other (sometimes higher) values following changes to T_{2N} , F_r , F_a , cycle, and service life of bearing. Application specific configuration with NCP – www.neugart.com

Output torques			PSFN055	PSFN064	PSFN090	PSFN110	PSFN140	PSFN200	i ⁽¹⁾	p ⁽²⁾
Nominal output torque ⁽³⁾	T _{2N}	Nm (lb _r .in)	18 (159)	39 (345)	80 (708)	180 (1593)	470 (4160)	950 (8408)	4	1
			18 (159)	40 (354)	80 (708)	175 (1549)	405 (3585)	950 (8408)	5	
			18 (159)	37 (327)	78 (690)	175 (1549)	355 (3142)	900 (7966)	7	
			18 (159)	39 (345)	75 (664)	155 (1372)	350 (3098)	-	8	
			13.5 (119)	28 (248)	59 (522)	140 (1239)	305 (2699)	750 (6638)	10	
			18 (159)	39 (345)	80 (708)	180 (1593)	450 (3983)	950 (8408)	16	2
			18 (159)	39 (345)	80 (708)	180 (1593)	450 (3983)	950 (8408)	20	
			18 (159)	40 (354)	80 (708)	175 (1549)	405 (3585)	950 (8408)	25	
			18 (159)	40 (354)	80 (708)	175 (1549)	405 (3585)	950 (8408)	35	
			18 (159)	39 (345)	80 (708)	180 (1593)	470 (4160)	950 (8408)	40	
			18 (159)	40 (354)	80 (708)	175 (1549)	405 (3585)	950 (8408)	50	
			18 (159)	37 (327)	78 (690)	175 (1549)	355 (3142)	900 (7966)	70	
			13.5 (119)	28 (248)	59 (522)	140 (1239)	305 (2699)	750 (6638)	100	
Max. output torque ⁽⁴⁾	T _{2max}	Nm (lb _r .in)	29 (257)	62 (549)	128 (1133)	288 (2549)	752 (6656)	1520 (13453)	4	1
			29 (257)	64 (566)	128 (1133)	280 (2478)	648 (5735)	1520 (13453)	5	
			29 (257)	59 (522)	125 (1106)	280 (2478)	568 (5027)	1440 (12745)	7	
			29 (257)	62 (549)	120 (1062)	248 (2195)	560 (4956)	-	8	
			22 (195)	45 (398)	94 (832)	224 (1983)	488 (4319)	1200 (10621)	10	
			29 (257)	62 (549)	128 (1133)	288 (2549)	720 (6373)	1520 (13453)	16	2
			29 (257)	62 (549)	128 (1133)	288 (2549)	720 (6373)	1520 (13453)	20	
			29 (257)	64 (566)	128 (1133)	280 (2478)	648 (5735)	1520 (13453)	25	
			29 (257)	64 (566)	128 (1133)	280 (2478)	648 (5735)	1520 (13453)	35	
			29 (257)	62 (549)	128 (1133)	288 (2549)	752 (6656)	1520 (13453)	40	
			29 (257)	64 (566)	128 (1133)	280 (2478)	648 (5735)	1520 (13453)	50	
			29 (257)	59 (522)	125 (1106)	280 (2478)	568 (5027)	1440 (12745)	70	
			22 (195)	45 (398)	94 (832)	224 (1983)	488 (4319)	1200 (10621)	100	

⁽¹⁾ Ratios (i=n₁/n₂)

⁽²⁾ Number of stages

⁽³⁾ Application specific configuration with NCP – www.neugart.com

⁽⁴⁾ 30,000 rotations of the output shaft permitted; see page 166

Output torques			PSFN055	PSFN064	PSFN090	PSFN110	PSFN140	PSFN200	i ⁽¹⁾	p ⁽²⁾
Emergency stop torque ⁽³⁾	T _{2Stop}	Nm (lb _f .in)	90 (797)	120 (1062)	280 (2478)	650 (5753)	1650 (14,604)	3200 (28,322)	4	1
			90 (797)	130 (1151)	280 (2478)	650 (5753)	1650 (14,604)	3200 (28,322)	5	
			70 (620)	80 (708)	175 (1549)	340 (3009)	1300 (11,506)	3200 (28,322)	7	
			50 (443)	90 (797)	200 (1770)	380 (3363)	1100 (9736)	-	8	
			24 (212)	90 (797)	200 (1770)	480 (4248)	600 (5310)	1700 (15,046)	10	
			90 (797)	150 (1328)	300 (2655)	650 (5753)	1650 (14,604)	3200 (28,322)	16	2
			90 (797)	150 (1328)	300 (2655)	650 (5753)	1650 (14,604)	3200 (28,322)	20	
			90 (797)	150 (1328)	300 (2655)	650 (5753)	1650 (14,604)	3200 (28,322)	25	
			90 (797)	150 (1328)	300 (2655)	650 (5753)	1650 (14,604)	3200 (28,322)	35	
			90 (797)	150 (1328)	300 (2655)	650 (5753)	1650 (14,604)	3200 (28,322)	40	
			90 (797)	150 (1328)	300 (2655)	650 (5753)	1650 (14,604)	3200 (28,322)	50	
			70 (620)	80 (708)	175 (1549)	340 (3009)	1300 (11,506)	3200 (28,322)	70	
			24 (212)	90 (797)	200 (1770)	480 (4248)	600 (5310)	1700 (15,046)	100	

Input speeds			PSFN055	PSFN064	PSFN090	PSFN110	PSFN140	PSFN200	i ⁽¹⁾	p ⁽²⁾
Average thermal input speed at T _{2N} and S1 ⁽⁴⁾⁽⁵⁾	n _{1N}	rpm	4800 ⁽⁶⁾	3200 ⁽⁶⁾	2400 ⁽⁶⁾	1800 ⁽⁶⁾	1100 ⁽⁶⁾	750 ⁽⁶⁾	4	1
			5000 ⁽⁶⁾	3800 ⁽⁶⁾	2950 ⁽⁶⁾	2250 ⁽⁶⁾	1350 ⁽⁶⁾	950 ⁽⁶⁾	5	
			5000	4500	3800 ⁽⁶⁾	2950 ⁽⁶⁾	1800 ⁽⁶⁾	1250 ⁽⁶⁾	7	
			5000	4500	4000 ⁽⁶⁾	3300 ⁽⁶⁾	1950 ⁽⁶⁾	-	8	
			5000	4500	4000	3500	2300 ⁽⁶⁾	1700 ⁽⁶⁾	10	
			5000 ⁽⁶⁾	4500	4500	3800 ⁽⁶⁾	2450 ⁽⁶⁾	1550 ⁽⁶⁾	16	2
			5000	4500	4500	4000	3050 ⁽⁶⁾	1900 ⁽⁶⁾	20	
			5000	4500	4500	4000	3350 ⁽⁶⁾	2050 ⁽⁶⁾	25	
			5000	4500	4500	4000	3500	2650 ⁽⁶⁾	35	
			5000	4500	4500	4000	3500	3000 ⁽⁶⁾	40	
			5000	4500	4500	4000	3500	3000	50	
			5000	4500	4500	4000	3500	3000	70	
			5000	4500	4500	4000	3500	3000	100	
Max. mechanical input speed ⁽⁴⁾	n _{1Limit}	rpm	10,000	14,000	10,000	8500	6500	6000		1
			10,000	14,000	14,000	10,000	8500	6500		2

⁽¹⁾ Ratios (i=n₁/n₂)

⁽²⁾ Number of stages

⁽³⁾ Permitted 1000 times

⁽⁴⁾ Application-specific speed configurations with NCP – www.neugart.com

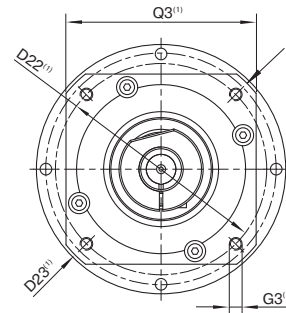
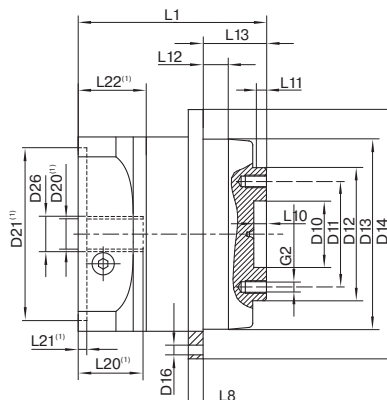
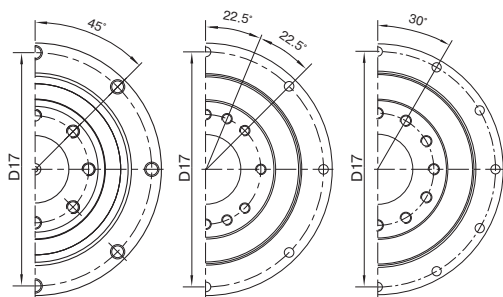
⁽⁵⁾ See page 166 for the definition

⁽⁶⁾ Average thermal input speed at 50% T_{2N} and S1

PSFN055
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

(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 ⁽¹⁾			PSFN055	PSFN064	PSFN090	PSFN110	PSFN140	PSFN200	p ⁽²⁾	Code
Centering diameter output shaft	D10	H7	16 (0.630)	20 (0.787)	31.5 (1.240)	40 (1.575)	50 (1.969)	80 (3.150)		
Pitch circle diameter output shaft	D11		25 (0.984)	31.5 (1.240)	50 (1.969)	63 (2.480)	80 (3.150)	125 (4.921)		
Centering diameter output shaft	D12	h7	34 (1.339)	40 (1.575)	63 (2.480)	80 (3.150)	100 (3.937)	160 (6.299)		
Centering diameter output flange	D13		55 (2.165)	64 (2.520)	90 (3.543)	110 (4.331)	140 (5.512)	200 (7.874)		
Flange diameter output	D14		72 (2.835)	86 (3.386)	118 (4.646)	145 (5.709)	179 (7.047)	247 (9.724)		
Mounting bore output	D16		3.4 8x45°	4.5 8x45°	5.5 8x45°	5.5 8x45°	6.6 12x30°	9 12x30°		
Pitch circle diameter output flange	D17		67 (2.638)	79 (3.110)	109 (4.291)	135 (5.315)	168 (6.614)	233 (9.173)		
Min. total length	L1		66 (2.598)	71 (2.795)	89.5 (3.524)	108 (4.252)	142 (5.591)	172 (6.772)	1	
			89.5 (3.524)	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)	4 (0.157)	7 (0.276)	8 (0.315)	10 (0.394)	12 (0.472)		
Centering depth output shaft	L10		4.1 (0.161)	4.5 (0.177)	6.5 (0.256)	6.5 (0.256)	6.5 (0.256)	10 (0.394)		
	L11		3 (0.118)	3 (0.118)	6 (0.236)	6 (0.236)	6 (0.236)	7 (0.276)		
Centering depth output flange	L12		8 (0.315)	10 (0.394)	12 (0.472)	12 (0.472)	14 (0.551)	17.5 (0.689)		
Output flange length	L13		19.0	19.5	30.0	29.0	38.0	50.0		
Motor shaft diameter j6/k6	D20		More information on page 163/164							
Clamping system diameter input	D26									
Flange output shaft (similar ISO 9409-1)										D
Number x thread x depth	G2		8 x M4x6	8 x M5x7	8 x M6x10	12 x M6x12	12 x M8x15	12 x M10x20		
Flange output shaft with dowel hole (ISO 9409-1)										E
Dowel hole x depth	D15	H7	4x5	5x5	6x6	6x6	8x8	10x10		
Number x thread x depth	G2		7 x M4x6	7 x M5x7	7 x M6x10	11 x M6x12	11 x M8x15	11 x M10x20		

(1) Dimensions in mm

(2) Number of stages